Preliminary Investigation (PI-0255)

Caltrans Division of Research, Innovation and System Information

# High-Tension Cable Barrier as Guardrail: Survey of Practice

*Requested by*
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## Table of Contents

# Executive Summary

## Background

Cable barrier systems are traditionally used as median barriers, but their widespread use as guardrail is largely unknown. Some departments of transportation (DOTs) have used high-tension cable barrier in this application, including California Department of Transportation (Caltrans) District 11, which has reported a successful installation on a section of Interstate 15. These safety systems are easy to repair, can be installed in more conditions than traditional thrie-beam barriers and are also cost-effective, oftentimes costing up to 50% less than traditional thrie-beam barrier systems.

Caltrans is considering expanding its use of high-tension cable barrier as guardrail in some applications. To inform its evaluation of the safety barrier in this application, the agency is seeking information from other state transportation agencies about their use of high-tension cable barrier as guardrail on the right shoulder of the road. Specifically, Caltrans is interested in best practices, standards and specifications to use in updating its policies and standards for using high-tension cable barrier as guardrail. Product and safety information from cable barrier manufacturers and crash testing facilities is also of interest to Caltrans.

To assist Caltrans in this information-gathering effort, CTC & Associates surveyed state DOTs, cable barrier vendors and crash testing facilities for their knowledge and experience using or testing high-tension cable barrier as guardrail. Supplementing the survey findings is a sampling of publicly available international and domestic resources and guidance.

## Summary of Findings

This Preliminary Investigation presents information in three areas:

- Survey of state practice.
- Survey of barrier vendors.
- Related research and resources.

### Survey of State Practice

An online survey was distributed to members of the American Association of State Highway and Transportation Officials (AASHTO) Committee on Traffic Engineering. Fourteen state DOTs responded to the survey. Only two agencies (Iowa and Missouri DOTs) have used high-tension cable barrier as guardrail on the right shoulder of the road. One agency (New York State DOT) has approved the use of cable barrier in this application but has not yet installed the system. Two agencies (Connecticut and Wisconsin DOTs) have not used the system in this application but are considering it. Nine agencies (Arizona, Arkansas, Indiana, Michigan, Nevada, New Mexico and Pennsylvania DOTs; Kentucky Transportation Cabinet; and Louisiana Department of Transportation and Development) have not used high-tension cable barrier in this application and are not considering its use.

Findings from these state transportation agencies are presented in the following topic areas:

- Users of high-tension cable as guardrail.
- Nonusers of high-tension cable as guardrail.

Users of High-Tension Cable as Guardrail

Three agencies—Iowa, Missouri and New York State DOTs—described their use or intended use of high-tension cable barrier as guardrail on the right shoulder of the road. New York State DOT allows the use of high-tension cable barrier on roadsides but has only recently approved a version of the Brifen USA cable fence as the standard for roadside use. Because the agency does not anticipate an installation of high-tension cable on a roadside until the end of this construction season, the details provided in this Preliminary Investigation are estimates or anticipated outcomes.

*System Description*

Iowa and New York State DOTs use or have approved the use of Brifen USA cable barrier systems for a roadside application. Iowa DOT also uses cable barrier systems produced by Gibraltar and Trinity Highway Products (the CASS cable barrier system). The Missouri DOT respondent did not provide the name of the barrier or vendor used in the state.

The respondents from Iowa and Missouri DOTs noted that the systems used were complete systems, that is, they include tie-downs, end protection and other elements necessary for installation. The New York State DOT respondent, however, reported that the system approved for use in the state was not complete as the general contractor is required to supply the end anchor blocks and install the system. None of the respondents provided information about a project plan set that was used for a specific barrier installation. Standard plans, specifications and other guidance are provided for selecting, installing and maintaining the high-tension cable barrier systems used by these agencies as guardrail on the right shoulder of the road.

*System Implementation and Maintenance*

**Implementation Considerations**

Missouri DOT has used high-tension cable barrier in this application for approximately 10 years; Iowa DOT has used its system for approximately 15 years. (New York State DOT has approved the use of cable barrier in this application and anticipates its first installation will be completed by the end of this construction season.)

To determine if high-tension cable barrier is suitable as guardrail for a specific location, these agencies consider allowable deflection (Iowa), reduced visual impact (New York) and the duration of the installation (Iowa). In Iowa, W-beam is less expensive for short-term installations compared to the cost of anchors needed for cable. Cost is also a consideration in New York; the respondent noted that historically, its generic cable system has been much less expensive than traditional barriers.

Agencies consider a range of conditions to determine whether a high-tension cable barrier system is more appropriate than the traditional Midwest Guardrail System or concrete barrier for a specific application. Among the selection criteria considered are deflection distance (New York), ease and cost of repair (Iowa), frequency of impacts (New York), limited use (Missouri), sight distance on shared four-lane roads (Missouri), slope steepness (New York) and snow drifting (Iowa).

**Installation Specifications**

Installation specifications for high-tension cable barrier systems on the right shoulder of the road vary among agencies, which often rely on the manufacturer's recommendations. Table ES-1 summarizes agency specifications (when provided).

**Table ES-1. Cable Barrier System Installation Specifications**

| Topic | Iowa | Missouri | New York* |
|---|---|---|---|
| **System/ Vendor** | High-tension cable barrier<br>*Brifen USA, Gibraltar, CASS* | Unknown | Cable fence<br>*Brifen USA* |
| **Minimum Length of Right Side Barrier** | 60 to 100 feet (minimum for installations consisting only of anchor sections) | No minimum | 500 feet |
| **Minimum Radius** | Manufacturer's recommendation | Manufacturer's recommendation | Approx. 500 feet |
| **Minimum Deflection Area** | 10 feet minimum (preferred) | 8 feet to 12 feet | • 11 feet for 16-foot post spacing.<br>• 8 feet for 8-foot post spacing. |
| **Post Spacing** | Typically 10 feet:<br>• May change to 5 feet to reduce deflection.<br>• May decrease post spacing in areas with tight curve radius. | Manufacturer's recommendation | N/R |
| **Required Installation Space** | Determined by contractor's operations. | Manufacturer's recommendation | N/R |
| **Section Cross Slope** | • Preferred: 6:1<br>• Acceptable: 4:1 | • Preferred: 6:1<br>• Acceptable: 4:1 | N/R |
| **Slope Hinge Point/ Slope Breakpoint** | • Preferred: 2 feet behind the post<br>• Minimum: 1 foot | Varies by location | N/R |
| **Attaching to a Structure** | Transition using an approach guardrail transition and end terminal | Varies by structure | No |
| **Speed of Facility** | 55 mph to 70 mph | 45 mph to 65 mph | Any operating speed. |

N/R No response.

* Estimates only. Installation specifications in New York have not yet been finalized.

### Maintenance Practices

Two respondents noted issues with the posts used with cable barrier systems. Iowa DOT uses sockets instead of driven posts, and in winter, the posts tend to freeze in the sockets. Maintenance crews typically must heat the posts to melt the ice before removing the posts. Although New York State DOT does not have experience maintaining these cable barrier systems in this application, the agency has used the Brifen USA system with posts in concrete sockets. The agency banned the use of socketed posts after severe corrosion occurred when briny water accumulated in the sockets.

Another issue in Iowa is ensuring cables are properly tensioned. The respondent noted that time is limited for maintenance crews to check cable tensions.

*System Assessment*

**Safety Implications**

In Iowa, a decreased risk of severe injuries has been noted with this barrier system because cable barrier provides a "softer hit" than W-beam or concrete barriers. Also, repairs are quicker than with W-beam barriers, which reduces maintenance crews' exposure to traffic. In Missouri, these systems increase safety in areas where sight distance is a challenge, but there are concerns about vehicles traveling under the right shoulder cables due to deflections and slopes.

**System Performance**

Iowa DOT uses crash data and cost of maintenance data to evaluate barrier system performance. Missouri DOT also uses crash data in these evaluations, and New York State DOT anticipates developing a "picture of safety performance" that will include information from field crews about maintenance efforts and costs.

**System Benefits**

Improved safety conditions were reported by respondents that use high-tension cable barrier as guardrail. Iowa DOT finds that repairing these systems is easier, which reduces the time maintenance crews are exposed to traffic. Missouri DOT noted improved sight distances, and New York State DOT reported that if a high-tension cable barrier system is impacted, the cables maintain a height that enables the system to engage an errant vehicle. Both Iowa and New York State DOTs also reported reduced repair costs.

**System Challenges**

Iowa and Missouri DOTs also identified challenges with using high-tension cable barrier as guardrail, including the cost of concrete anchors, adequate deflection area and installations along slopes. The New York State DOT respondent noted that the agency anticipates similar challenges with this application once installed.

**Recommendations for Implementation**

Because these agencies either have limited experience or lack direct experience with this application, the respondents from Missouri and New York State DOTs noted that it would be difficult to provide implementation recommendations. The respondent from Iowa DOT noted that "[a]s with all systems, there is a right time and right place for cable installations on the right side of the road." He recommended documenting these aspects of an installation for designers to use in future installations.

<u>Nonusers of High-Tension Cable as Guardrail</u>

*Agencies Considering High-Tension Cable Use as Guardrail*

Two agencies—Connecticut and Wisconsin DOTs—currently do not use high-tension cable barrier as guardrail on the right shoulder of the road, but both agencies are considering this application. While Connecticut DOT does not have plans to use high-tension cable as guiderail, the agency is not averse to using it in future interstate applications. Wisconsin DOT has implemented a trial application of this barrier system on a local road where snow drifting is a problem. The respondent noted three issues with installing cable barrier on the right side of the road:

- Inadequate space for the working width of cable barriers.
- Grading.
- Impacts to cable barrier terminals. (Impacts to these terminals appear to be more severe than impacts to beam guard end terminals.)

In general, if the working width for cable barrier and the grading are adequate, the agency would prefer to use cable barrier.

*High-Tension Cable Use in Median Applications Only*

Transportation agency respondents from nine states—Arizona, Arkansas, Indiana, Kentucky, Louisiana, Michigan, Nevada, New Mexico and Pennsylvania—reported that their agencies have never used high-tension cable barrier as guardrail on the right shoulder of the road and are not considering using the barrier in this application.

Transportation agency respondents from Arkansas, Louisiana, Michigan, Nevada and Pennsylvania noted that their agencies only use high-tension cable barrier systems in the median to reduce the frequency and severity of cross-median crashes. Respondents provided a range of reasons for limiting the use of cable barriers to this application, including cost (Nevada and New Mexico); deflection issues (Arkansas, Louisiana, Nevada, New Mexico and Pennsylvania); loss of tension (Michigan); and terrain (Indiana, Louisiana and Pennsylvania).

## Survey of Barrier Vendors

An email survey was distributed to cable barrier vendors and crash testing facilities to inquire about the high-tension cable barrier products that these organizations manufactured or tested. Two vendors responded to the survey: Brifen USA, Inc. and Trinity Highway Products, LLC. None of the crash testing facilities responded to the survey.

Project Descriptions

Brifen USA briefly described the Interstate 15 project in Caltrans District 11 where Wire Rope Safety Fence was installed. According to the vendor, this system complies with NCHRP 350 Test Level 4 crash testing requirements and uses steel posts, anchors and four ropes with a Natina finish field. The fencing is installed at a 10-foot post spacing.

Trinity Highway Products provided general information about CASS, the company's high-tension cable barrier system, which has been used on both the right and left side of the road globally. While most states and Canadian provinces have used the system primarily on the left side of the road and in median applications, the following states have used the system on both the right and left side of the road: Arizona, Louisiana, North Carolina, North Dakota, South Dakota and Texas. The company does not provide specific details about CASS projects and installations, and the respondent recommended contacting a state's design/standards engineer for specific project information.

Crash Testing

The Brifen USA respondent noted that Manual for Assessing Safety Hardware (MASH) 2016 testing criteria for wire rope systems are much more rigorous than NCHRP Report 350 testing requirements. He added that while most systems are installed in medians, the tests replicate many roadside applications. The Trinity Highway Products respondent reported that CASS has been tested to NCHRP Report 350 and MASH, 1st edition, specifications in both Test Level 3

and Test Level 4 configurations. These systems are eligible for Federal Highway Administration funding as a flexible longitudinal barrier for right- or left-side roadway installations.

Multimodal Facility Applications

Brifen Wire Rope Safety Fence O-Post with Flared-End Wire Rope Gating Terminals has been used in Oklahoma City, Oklahoma, to separate bicycle facilities. The project was completed under Oklahoma City's MAPS 3 program, a capital improvements program, and placed cable barrier on the right shoulder of a four-lane undivided surface road to shield a newly installed bike path. The City of Oklahoma City designed the project and specified a MASH system.

Design Considerations

Trinity Highway Products' instructions for installing cable barrier as guardrail include offset from hinge break points, allowable steepness of slope behind cable barrier and preferred offsets. The company's assembly manuals provide guidance about where to install the barrier system with respect to slopes that are suitable for CASS.

The Brifen USA respondent reported that state transportation agencies design projects, and the projects typically follow guardrail design policies for offsets from hinge point and slope placement. No testing has been conducted to separately evaluate specific placement or slope conditions beyond NCHRP 350 MASH 2016 tests. The company has employed finite element analysis to simulate and evaluate curbs in front of the system.

Restrictions on Use

Brifen USA cable barrier systems have no restrictions that would prevent them from use as guardrail if the field conditions (such as approach slope or dike placement) were the same as crash testing criteria.

Trinity Highway Products' CASS system does have restrictions. CASS was tested according to NCHRP Report 350 and/or MASH, 1st edition, specifications as a Test Level 3 or Test Level 4 flexible longitudinal barrier in a condition where no obstructions were encountered during testing. In general, the topography was smooth and free of materials that could have affected the stability of the vehicle. The respondent added that all CASS manuals include the following requirement within the details:

> The CASS System shall be placed on shoulders or medians without obstructions, depressions, etc., that may significantly affect the stability of an errant vehicle.

In addition, the General Notes of all CASS system drawings include the following requirement:

> CASS shall be installed on shoulders or medians with slopes of 6:1 (or 4:1, if a 4:1 system) or flatter without obstructions, depressions, etc., that may significantly affect the stability of an errant vehicle. Grading of site and/or appropriate fill materials may be required. The designer/installer shall "flatten" or "round" various topographical inconsistencies that could interfere with the ability of the installer to consistently maintain the design height (in relation to the terrain) of the cables.

## Related Research and Resources

Supplementing the survey results are documents sourced through a limited literature search of domestic and international research. These resources include an anticipated NCHRP project that will focus on developing guidance for nonstandard roadside hardware installations. This project has been tentatively selected and a project statement (request for proposals) is

expected in August 2020. Also included is NCHRP Report 711, which provides guidance for the selection, use and maintenance of cable barrier systems, and AASHTO's 2011 Roadside Design Guide, which includes a discussion of the structural and safety characteristics of high-tension cable barriers, selection guidelines, placement recommendations and system upgrades.

Publications highlighting state research and practices include guidelines, specifications and policies for using high-tension cable barrier systems in roadside applications. Resources provide requirements for using vendor products, including those described in this Preliminary Investigation. Citations from the Roadside Safety Pooled Fund's MASH implementation database describe three high-tension cable barrier systems: Brifen Wire Rope Safety Fence O-Post, CASS S3 MASH and CASS S3 on 4H:1V.

A sampling of international resources include reports that address using wire rope barriers on the roadside and on pedestrian and cyclist paths in Australia, safety evaluations of cable barrier installations on rural highways in British Columbia, and a comparison of roadside and median barrier systems in Alberta. Cable barrier system information from additional vendors and manufacturers is also presented.

## Gaps in Findings

The survey of state DOTs received a limited response, with only two respondents providing information about the use of high-tension cable barriers as guardrail in their states. Information from vendors about specific projects that used their products was also limited, and none of the crash testing facilities responded to the survey. Gathering information from additional state transportation agencies, including agencies in states that reportedly use Trinity Highway Products, could provide additional material to inform Caltrans' evaluation of high-tension cable barrier as guardrail.

## Next Steps

Moving forward, Caltrans could consider:

- Following up with the respondents from Iowa and Missouri DOTs to learn more about their use of high-tension cable barrier as guardrail.
- Engaging with New York State DOT, which anticipates installing cable barrier as guardrail by the end of this construction season, to monitor the performance of this system and the agency's experience using it.
- Reviewing the plans, specifications and other guidance provided by survey respondents and sourced through the limited literature search for relevance to Caltrans' needs.
- Reaching out to state design/standards engineers in Arizona, Louisiana, North Carolina, North Dakota, South Dakota and Texas for information about their experience using Trinity Highway Products' CASS cable barrier system. These states reportedly have used cable barrier on both the right and left side of the road.
- Reviewing the literature about Brifen USA and Trinity Highway Products cable barrier systems and other cable barrier vendors discussed in this Preliminary Investigation for applications that would be useful to Caltrans.
- Seeking information about this application from other state transportation agencies, cable barrier system vendors and crash testing facilities.

# Detailed Findings

## Background

Cable barrier systems are traditionally used as median barriers, but their widespread use as guardrail is largely unknown. California Department of Transportation (Caltrans) District 11 has installed high-tension cable barrier on a section of Interstate 15; the barrier has performed well and has been easy to repair. When this barrier is impacted, repair time is about 15 to 20 minutes compared to an hour or more to repair the same length of guardrail. These safety systems are also cost-effective, oftentimes costing up to 50% less than traditional thrie-beam barrier systems. Given the potential to significantly reduce the time that repair crews are exposed to traffic, and that high-tension cable barrier can be installed in more conditions than traditional thrie-beam barriers (for example, locations with steep slopes), Caltrans is considering the use of high-tension cable barrier in some guardrail applications.

Caltrans is seeking information from other state departments of transportation (DOTs) about their use of high-tension cable barrier as guardrail on the right shoulder of the road. Specifically, Caltrans is interested in best practices, standards and specifications to use in updating its policies, standards and specifications for using high-tension cable barrier in this application. In addition to querying state DOTs, Caltrans is interested in learning about high-tension cable barrier practices and standards from manufacturers and crash testing facilities.

To assist Caltrans in this information-gathering effort, CTC & Associates surveyed three groups:

- **State DOTs.** Agencies were contacted about their knowledge of and experience with using high-tension cable barrier as guardrail. Fourteen state DOTs responded to the survey.
- **Barrier vendors.** Three vendors were contacted about the cable barrier products they manufacture:
    - Brifen USA, Inc.
    - Gregory Highway Products.
    - Trinity Highway Products, LLC.

  Brifen USA and Trinity Highway Products responded to the survey.
- **Crash testing facilities.** Three organizations were contacted about their experience testing high-tension cable barrier in this application:
    - KARCO–San Bernardino.
    - Midwest Roadside Safety Facility.
    - Texas Transportation Institute.

  None of the crash testing facilities responded to the survey.

A literature search supplemented the results of these surveys. The search examined publicly available national and international information sources that describe the use of high-tension cable barrier as guardrail. Findings from these efforts are presented in this Preliminary Investigation in three areas:

- Survey of state practice.
- Survey of barrier vendors.
- Related research and resources.

# Survey of State Practice

An online survey was distributed to members of the American Association of State Highway and Transportation Officials (AASHTO) Committee on Traffic Engineering. Survey questions are provided in Appendix A. The full text of survey responses is presented in a supplement to this report.

## Summary of Survey Results

Fourteen state DOTs responded to the survey:

- Arizona.
- Arkansas.
- Connecticut.
- Indiana.
- Iowa.
- Kentucky.
- Louisiana.
- Michigan.
- Missouri.
- Nevada.
- New Mexico.
- New York.
- Pennsylvania.
- Wisconsin.

Only two agencies (Iowa and Missouri DOTs) have used high-tension cable barrier as guardrail on the right shoulder of the road. One agency (New York State DOT) has approved the use of cable barrier in this application but has not yet installed the system. Two agencies (Connecticut and Wisconsin DOTs) have not used the system in this application but are considering it. The remaining nine agencies have not used high-tension cable barrier in this application and are not considering its use.

Survey results are summarized below in the following topic areas:

- Users of high-tension cable as guardrail.
- Nonusers of high-tension cable as guardrail.

## Users of High-Tension Cable as Guardrail

Three agencies—Iowa, Missouri and New York State DOTs—described their use or intended use of high-tension cable barrier as guardrail on the right shoulder of the road.

*Note*: Information below from the New York State DOT respondent is aspirational. The agency allows the use of high-tension cable barrier on roadsides but has only recently approved a version of the Brifen USA cable fence as the standard for roadside use. New York State DOT anticipates an installation of high-tension cable on a roadside by the end of this construction season.

The agency's medium-tension generic cable system, which it had been using for median and roadside applications, has not received Manual for Assessing Safety Hardware (MASH) approval, but testing is underway. Other proprietary alternatives are expected to be fully approved within a year, and the agency expects its medium-tension generic cable to pass MASH testing.

The New York State DOT respondent reported that the agency has not used high-tension cable barrier as guardrail on the right shoulder of the road in a pilot or trial application. Iowa and Missouri DOTs did not provide information about a trial application.

Survey results from these agencies are summarized below in the following topic areas:

- System description.
- System implementation and maintenance.
- System assessment.

## System Description

Iowa and New York State DOTs use or have approved the use of Brifen USA cable barrier systems for a roadside application. Iowa DOT also uses cable barrier systems produced by Gibraltar and Trinity Highway Products (the CASS cable barrier system). (See **Related Resources**, page 23, and **Related Research and Resources**, page 25, for more information about these products and manufacturers.)

The respondent from Iowa DOT noted that the systems used were complete systems, that is, they include tie-downs, end protection and other elements necessary for installation. The New York State DOT respondent, however, reported that the system approved for use in the state was not complete as the general contractor is required to supply the end anchor blocks and install the system. The Missouri DOT respondent did not provide the name of the barrier or vendor used in the state, but reported that the barrier was a complete system.

None of the respondents provided information about a project plan set that was used for a specific barrier installation.

Table 1 summarizes survey responses.

**Table 1. High-Tension Cable Barrier Systems: Description**

| State | System | Vendor | Complete System |
|---|---|---|---|
| **Iowa** | High-tension cable guardrail | • Brifen USA<br>• Gibraltar<br>• Trinity Highway Products (CASS) | Yes |
| **Missouri** | Unknown | Unknown | Yes |
| **New York*** | Brifen USA cable fence | Brifen USA | No |

* New York State DOT only recently approved the use of a Brifen USA cable system for this application. The first installation of high-tension cable on a roadside is expected by the end of this construction season.

### Plans, Specifications and Other Guidance

The publications cited below include standard plans, specifications and other guidance for selecting, installing and maintaining high-tension cable barrier systems as guardrail on the right shoulder of the road. These resources were provided by survey respondents or sourced through a limited search.

*Iowa*

**Section 2505, Guardrail Construction and Removal**, Standard Specifications for Highway and Bridge Construction, Iowa Department of Transportation, April 2020.
https://www.iowadot.gov/erl/current/GS/content/2505.htm
Section 2505.03B describes the permissible products and installation practices associated with high-tension cable guardrail.

**Section 4155, Guardrail**, Standard Specifications for Highway and Bridge Construction, Iowa Department of Transportation, April 2020.
https://www.iowadot.gov/erl/current/GS/content/4155.htm
This specification identifies the guardrail materials the agency requires for the type of guardrail specified, including cable rail.

**Section 8B-5, Choosing a Barrier**, Chapter 8, Roadside Safety, Design Manual, Iowa Department of Transportation, Revised February 2020.
https://iowadot.gov/design/dmanual/08b-05.pdf
*From the publication*: Once the decision has been made to shield an obstacle, the next step is to select an appropriate barrier system. This section discusses factors that influence barrier choice. The systems discussed in this section include permanent concrete barrier rail, steel beam guardrail and high tension cable guardrail.
….
High tension cable guardrail is the Department's preferred traffic barrier. It has passed crash tests with a wide range of vehicles, is more aesthetically pleasing than concrete barrier or steel beam guardrail, and drifts snow less than other barriers. When faced with an obstacle that must be shielded, consider using high tension cable guardrail first. A permanent concrete barrier rail is usually chosen when deflection of the barrier is unacceptable, in areas with high truck traffic, or when penetration of the barrier by some vehicles must be avoided.

In restricted areas where a long barrier installation is not feasible, a crash cushion may be an acceptable option. Refer to Section 8C-5 for details.

**Section 8C-3, High Tension Cable Guardrail**, Chapter 8, Roadside Safety, Design Manual, Iowa Department of Transportation, Revised February 2020.
https://iowadot.gov/design/dmanual/08c-03.pdf
*From the publication*:

> High tension cable guardrail is most often used to reduce cross-median crashes and is also the preferred method of shielding median bridge piers. It can also be used to protect other types of obstacles, as long as adequate distance is provided from the face of the obstacle to the installation line to account for deflection of the cable system.

The publication describes the design process for protecting roadside obstacles for one- and two-way traffic, end anchors, application on curves, and the connection between high-tension cable and steel beam guardrail.

**High Tension Cable Guardrail**, Standard Road Plan BA-351, Iowa Department of Transportation, October 2019.
https://iowadot.gov/design/SRP/IndividualStandards/eba351.pdf
This is the standard plan for installation of high-tension cable barrier for one- and two-way traffic and median obstacle protection.

**High Tension Cable Guardrail**, Materials Instructional Memorandum 455.01, Iowa Department of Transportation, October 2014.
https://www.iowadot.gov/erl/urrent/IM/content/455.01.htm
This memorandum provides links to other sources that identify the products and materials accepted for use in connection with high-tension cable barrier installations.

**Steel Beam Guardrail Barrier Transition Section (MASH TL-3)**, Standard Road Plan BA-201, Iowa Department of Transportation, April 2017.
https://iowadot.gov/design/SRP/IndividualStandards/eba201.pdf
This plan shows a guardrail transition section.

**Steel Beam Guardrail Flared End Terminal for Cable Connection**, Standard Road Plan BA-206, Iowa Department of Transportation, October 2019.
https://iowadot.gov/design/SRP/IndividualStandards/eba206.pdf
This plan shows how to connect steel beam and cable guardrail.

*Missouri*

**Plans for State Highway 5, Laclede County**, Missouri Highways and Transportation Commission, July 2011.
See Attachment A.
These plans show details of a project where guard cable was used as guardrail.

*New York*

**MASH-Compliant Cable Barrier Systems—Design Guidance**, Engineering Instruction 20-007, New York State Department of Transportation, March 2020.
https://www.dot.ny.gov/portal/pls/portal/mexis_app.pa_ei_eb_admin_app.show_pdf?id=13322
The survey respondent indicated that a revision to this design guidance had begun after reaching agreement on the use of a direct-driven post option that should make cable installations economically competitive with the agency's noncable options.

## System Implementation and Maintenance

In addition to providing general information about their cable barrier systems, respondents provided details related to system implementation and maintenance, which is summarized in the following sections.

### Implementation Considerations

The states participating in this survey that have experience using high-tension cable barrier as guardrail have used the barrier for approximately 10 years (Missouri) to approximately 15 years (Iowa).

The primary factors that determine when agencies use high-tension cable barrier as guardrail are allowable deflection (Iowa) and reduced visual impact (New York). The duration of the installation is the next factor considered by Iowa DOT; the respondent reported that for short-term installations, W-beam is less expensive because of the anchors needed for cable. Cost is also a consideration in New York; the respondent noted that historically, its generic cable system has been much less expensive. However, in future installations, the importance of lower costs is unclear.

Respondents also described criteria used to determine whether a high-tension cable barrier system is more appropriate than the traditional Midwest Guardrail System or concrete barrier for a specific application. Iowa DOT considers snow drifting and ease and cost of repair in these decisions while Missouri DOT examines sight distance issues on shared four-lane roads and considers limited use. The primary criteria in New York are related to deflection distance. Depending on the post spacing used, a clear area with a width of 11 feet must be present behind the rail (for 16-foot post spacing). The agency also does not allow slopes steeper than 1:3 as a drop-off within 8 feet of the rail, and considers the frequency of impacts. If a high frequency of impacts is anticipated, the agency urges the use of concrete as a more durable system. Table 2 summarizes survey responses.

**Table 2. Cable Barrier System Implementation Considerations**

| Topic | Iowa | Missouri | New York* |
|---|---|---|---|
| **System/ Vendor** | High-tension cable barrier<br>*Brifen USA, Gibraltar, Trinity Highway Products* | Unknown | Cable fence<br>*Brifen USA* |
| **Length of Use** | 15+ years | Approx. 10 years (approx. 2011) | N/A* |
| **Criteria for Use** | • Allowable deflection (primary factor).<br>• Length of installation.<br>• Snow drifting. | • Reduced sight distance.<br>• Narrow shoulders. | • Aesthetics: Reduced visual impact (primary factor).<br>• Cost. |
| **Selection Criteria** | • Snow drifting.<br>• Ease of repair.<br>• Cost of repair.<br>(see Supporting Documents below) | • Sight distance issues on shared four-lane roads.<br>• Limited use. | • Deflection distance.<br>• Clear area with a width of 11 feet behind the rail (for 16-foot post spacing).<br>• Slopes not steeper than 1:3 as a drop-off within 8 feet of the rail.<br>• Frequency of impacts. |

* N/A = not available. New York State DOT only recently approved the use of a Brifen USA cable system for this application. The first installation of high-tension cable on a roadside is expected by the end of this construction season. *Note*: The agency began trial applications of this system in medians more than 10 years ago.

### Installation Specifications

Agency respondents also provided installation specifications for high-tension cable barrier systems, including the minimum length of the barrier on the right side, minimum deflection area, post spacing and the space needed to install the barrier. *Note:* Installation specifications in New York have not yet been finalized. The respondent provided estimates, adding that designers determine the specifications. Table 3 summarizes survey responses.

**Table 3. Cable Barrier System Implementation Specifications**

| Topic | Iowa | Missouri | New York* |
|---|---|---|---|
| **System/ Vendor** | High-tension cable barrier *Brifen USA, Gibraltar, CASS* | Unknown | Cable fence *Brifen USA* |
| **Minimum Length of Right Side Barrier** | 60 to 100 feet (minimum length for installations consisting only of anchor sections) | No minimum | 500 feet (to spread the high cost of large anchor blocks over a long distance run) |
| **Minimum Radius** | Manufacturer's recommendation | Manufacturer's recommendation | Approx. 500 feet (since posts cease to be vertical on tight radii) |
| **Minimum Deflection Area** | 10 feet minimum (but 10 feet is preferred) | 8 feet to 12 feet | • 11 feet for 16-foot post spacing.<br>• 8 feet for 8-foot post spacing. |
| **Post Spacing** | Typically 10 feet:<br>• May change to 5 feet to reduce deflection.<br>• May decrease post spacing in areas with tight curve radius. | Manufacturer's recommendation | N/R |
| **Required Installation Space** | Determined by contractor's operations. | Manufacturer's recommendation | N/R |
| **Section Cross Slope** | Preferred: 6:1, but 4:1 is acceptable. | Preferred: 6:1, but 4:1 is acceptable. | N/R |
| **Slope Hinge Point/ Slope Breakpoint** | Preferred: 2 feet behind the post; 1-foot minimum (manufacturer's recommendations from several years ago). | Varies by location for right shoulder installations. | N/R |
| **Attaching to a Structure** | Transition using an approach guardrail transition (AGT) and end terminal (see Supporting Documents below). | Varies by structure. | No |
| **Speed of Facility** | Typically 55 mph to 70 mph | 45 mph to 65 mph | Any operating speed. |

N/R No response.

* Estimates only. Installation specifications in New York have not yet been finalized.

## Maintenance Practices

The Iowa and New York State DOT respondents described their agencies' experience with maintaining these cable barrier systems. In Iowa, the primary maintenance issue is removing

posts in winter. According to the respondent, Iowa uses sockets instead of driven posts, and in winter, the posts tend to freeze in the sockets. Crews typically must heat the posts to melt the ice before removing the posts. Another issue in Iowa is ensuring cables are properly tensioned. The respondent noted that time is limited for maintenance crews to check cable tensions.

Although New York State DOT does not have experience maintaining these cable barrier systems, it previously used the Brifen USA system with posts placed in concrete sockets. After maintenance crews noted a few instances of severe corrosion due to briny water accumulating in the sockets, the agency banned the use of socketed posts.

Supporting Documents

*Iowa*

**Section 8B-5, Choosing a Barrier**, Chapter 8, Roadside Safety, Design Manual, Iowa Department of Transportation, Revised February 2020.
https://iowadot.gov/design/dmanual/08b-05.pdf
Factors that influence barrier choice are discussed in this section, including deflection of the system when impacted, system cost and the types of vehicles the system is expected to contain and redirect.

**Steel Beam Guardrail Flared End Terminal for Cable Connection**, Standard Road Plan BA-206, Iowa Department of Transportation, October 2019.
https://iowadot.gov/design/SRP/IndividualStandards/eba206.pdf
This plan shows how to connect steel beam and cable guardrail.

**Steel Beam Guardrail Barrier Transition Section (MASH TL-3)**, Standard Road Plan BA-201, Iowa Department of Transportation, April 2017.
https://iowadot.gov/design/SRP/IndividualStandards/eba201.pdf
This plan shows a guardrail transition section.

## System Assessment

Safety Implications

Respondents described the safety implications for using high-tension cable barrier as guardrail. The Iowa DOT respondent noted the decreased risk of severe injuries because cable barrier provides a “softer hit” than W-beam or concrete barriers. Also, repairs are quicker than with W-beam barriers, which reduces maintenance crews’ exposure to traffic. In Missouri, these systems “work well” in areas where sight distance is a challenge, however, the respondent noted that there are concerns about vehicles traveling under the right shoulder cables due to deflections and slopes. Although New York State DOT does not have experience with using high-tension cable barrier as guardrail, the respondent noted that no negative safety impacts were experienced in trial installations of high-tension cable in medians.

System Performance

Both Iowa and Missouri DOTs use crash data to evaluate the performance of the barrier system. Iowa DOT also uses the cost of maintenance data in these evaluations. New York State DOT does not have a rigorous program for assessing in-service performance. Instead, it collects periodic reports of performance issues from maintenance crews and “usually attempt[s] to investigate adverse outcomes” to determine the circumstances. In the future, the agency will develop a “picture of safety performance” that will include information from field crews about maintenance efforts and costs.

### System Benefits

Improved safety conditions and reduced costs were among the benefits that respondents noted when using high-tension cable barrier as guardrail. The Iowa DOT respondent noted that repairs are easier with cable barrier systems, which reduces the time maintenance crews are exposed to traffic. Sight distances are also improved, according to the Missouri DOT respondent. The New York DOT respondent added that when compared to medium-tension generic cable systems, the cables in high-tension cable barrier systems maintain a height that enables the system to still engage an errant vehicle after an impact. When the agency's generic medium-tension system is impacted, the cables often become slack and sag, creating a system that cannot reliably capture a second errant vehicle until the cable is repaired. Table 4 summarizes survey responses.

**Table 4. Benefits of Using High-Tension Cable Barrier as Guardrail**

| Benefit | State | Description |
|---|---|---|
| **Ease of Repair** | Iowa | N/R |
| **Improved Safety Conditions** | Iowa, Missouri, New York* | *Iowa*. Crews are exposed to traffic for shorter periods.<br>*Missouri*. Improved sight distance.<br>*New York*. After an impact, cables remain at a height that enables the barrier system to still engage an errant vehicle after a second impact. |
| **Reduced Repair Costs** | Iowa, New York* | *Iowa*. Cost of repair tends to be less than with other systems since repairs typically consist of replacing posts only. |
| **Other** | Missouri, New York* | *Missouri*. Snowplowing.<br>*New York*. Reduced visual impact. |

N/R No response.

* Anticipated benefits. New York State DOT has not yet installed its first application of high-tension cable barrier as guardrail.

### System Challenges

The respondents from Iowa and Missouri DOTs also identified challenges with using high-tension cable barrier as guardrail. These challenges include component cost, deflection area and installations along slopes. The New York State DOT respondent noted that the agency anticipates similar challenges with this application once installed. Table 5 summarizes survey responses.

**Table 5. Challenges With Using High-Tension Cable Barrier as Guardrail**

| Challenge | State | Description |
|---|---|---|
| **Costs** | Iowa, New York* | *Iowa*. Underground concrete anchors are expensive. |
| **Deflection Area** | Iowa, New York* | *Iowa*. Locations with 10 feet or more of allowable deflection (required by systems).<br>*New York*. Locations with adequate clear deflection area. |

| Challenge | State | Description |
|---|---|---|
| **Installation Location** | Missouri, New York* | *Missouri.* Steep side slopes in the state limit installation.<br>*New York*:<br>• Locations of a sufficient length can be installed to offset the high installed cost of the large concrete anchor blocks.<br>• Locations that do not have steep drop-offs close behind the rail. |
| **Rates of Curvatures** | New York* | *New York*. Locations with rates of curvature that are low enough, which may limit use on secondary highways. |
| **Other** | Iowa, New York* | *Iowa*. Underground concrete anchors are large.<br>*New York*. More contractor experience with these systems to eliminate an "uncertainty premium" in bids. |

* Anticipated challenges. New York State DOT has not yet installed its first application of high-tension cable barrier as guardrail.

Recommendations for Implementation

Because these agencies either have limited experience or lack direct experience with this application, the respondents from Missouri and New York State DOTs noted that it would be difficult to provide implementation recommendations. The respondent from Iowa DOT noted that "[a]s with all systems, there is a right time and right place for cable installations on the right side of the road." He recommended documenting these aspects of an installation for designers to use in future installations.

# Nonusers of High-Tension Cable as Guardrail

## Agencies Considering High-Tension Cable Use as Guardrail

Respondents from two agencies—Connecticut and Wisconsin DOTs—reported that their agencies currently do not use high-tension cable barrier as guardrail on the right shoulder of the road as a general practice, but both agencies are considering this application.

The Connecticut DOT respondent noted that the agency does not have plans to use high-tension cable as guiderail, but the agency "is not averse" to use in future interstate applications.

Wisconsin DOT has implemented a trial application where high-tension cable barrier was used as guardrail on the right shoulder of a local road where snow drifting was a problem. The respondent noted three issues with installing cable barrier on the right side of the road:

- Inadequate space for the working width of cable barriers.
- Grading.
- Impacts to cable barrier terminals. (Impacts to these terminals appear to be more severe than impacts to beam guard end terminals.)

In general, the respondent added, if the working width for cable barrier and the grading are available, the agency would prefer to use cable barrier.

## High-Tension Cable Use in Median Applications Only

Transportation agency respondents from nine states—Arizona, Arkansas, Indiana, Kentucky, Louisiana, Michigan, Nevada, New Mexico and Pennsylvania—reported that their agencies have never used high-tension cable barrier as guardrail on the right shoulder of the road and are not considering using the barrier in this application.

Transportation agency respondents from Arkansas, Michigan, Nevada and Pennsylvania DOTs and from Louisiana Department of Transportation and Development noted that their agencies only use high-tension cable barrier systems in the median to reduce the frequency and severity of cross-median crashes. Respondents provided a range of reasons for limiting the use of cable barriers to this application. The Michigan DOT respondent noted that an entire run of high-tension cable barrier may lose tension and become inoperative in certain cases (for example, when cables are cut or an impacted terminal results in the release of the cables from the end terminal foundation). Therefore, it is not typically used for shielding fixed objects or other fixed hazards such as steep slopes, which is typically found on the right side of the road.

Nevada DOT, which also uses cable rail exclusively in the median, does not have a standard construction plan; instead it relies on the manufacturer's installation instructions. (*Note*: Nevada DOT uses Brifen USA and Trinity Highway Products cable barrier systems.) In Pennsylvania, there are very few applications for high-tension cable barrier on the right side of the road because of large deflections and required slopes (according to National Cooperative Highway Research Program (NCHRP) Report 711; see **Related Research and Resources**, page 26). However, the respondent added that if cable systems are crash-tested with a hinge point 2 feet behind the cable, there would be many applications in the state. Table 6 summarizes survey responses.

**Table 6. Factors Limiting the Use of High-Tension Cable Barriers as Guardrail**

| Topic | State | Description |
|---|---|---|
| **Cost** | Nevada, New Mexico | *Nevada*:<br>• Cost of tightened post spacing is similar to guardrail.<br>• Flattening road shoulders for cable rail is expensive. If slope is extended, rail and maintenance costs increase.<br>*New Mexico.* More posts are needed to lower the deflection, which increases the cost. |
| **Deflection/Post Spacing Issues** | Arkansas, Louisiana, Nevada, New Mexico, Pennsylvania | *Arkansas*. Because the deflection of high-tension cable far exceeds that of guardrail, high-tension cable is not a preferred barrier treatment within the roadway clear zone.<br>*Louisiana*. Typically, obstacles on the right side of the road are closer, and the deflection associated with cable barrier is a concern.<br>*Nevada*. Deflection is too great.<br>*New Mexico:*<br>• Deflection in post and cable is about 8 feet to 12 feet based on post spacing.<br>• The "nuisance hit" from post and cable can cause more severe damage.<br>*Pennsylvania*. Large deflections. |

| Topic | State | Description |
|---|---|---|
| **Loss of Tension** | Michigan | An entire length of high-tension cable barrier may lose tension and become inoperative (for example, when cables are cut or impact to the cable barrier terminal results in the release of the cables from the end terminal foundation). Therefore, cable barrier is not typically used for shielding fixed objects or other fixed hazards (such as steep slopes), which is typically found on the right side of the road. |
| **Median Crash Protection Only** | Arizona, Arkansas, Louisiana, Michigan, Nevada, Pennsylvania | *Arizona*. Cable barrier is used for cross-median crash protection at many locations.<br>*Arkansas, Louisiana, Michigan, Nevada and Pennsylvania*. Only use cable barrier in the median to prevent crossover accidents. |
| **Special Applications Only** | Arizona | According to Arizona DOT guidance, cable barrier is used on the outside of the roadway only for special applications. |
| **Terrain** | Indiana, Louisiana, Pennsylvania | *Indiana*. Since the topography in Indiana is mostly flat, the clear zone can generally be met.<br>*Louisiana*. A large number of roadways are on fill sections with steep outside cross slopes (3:1 or steeper), and cable barriers are not tested for these conditions. The agency would have to regrade the slopes in these areas, which would affect drainage, right of way and other factors.<br>*Pennsylvania*. The state's terrain does not allow for using cable barrier on the right side of the road. |
| **Other** | Indiana | W-beam guardrail has been used successfully on the right side of the road, both from a performance and maintenance perspective. |

# Survey of Barrier Vendors

An email survey was distributed to the following vendors to inquire about the high-tension cable barrier products they manufactured:

- Brifen USA.
- Gregory Highway Products.
- Trinity Highway Products.

The survey questions are provided in Appendix A. The full text of survey responses is presented in a supplement to this report.

## Summary of Survey Results

Two vendors responded to the survey: Brifen USA and Trinity Highway Products. Information provided by these vendors is summarized below in the following topic areas:

- Project descriptions.
- Crash testing.
- Multimodal facility applications.
- Design considerations.
- Restrictions on use.

Supplementary resources are provided following these topics and include guidance and product information provided by respondents or sourced through a limited literature search.

### Project Descriptions

Both respondents reported that their companies manufacture cable barrier that has been used in place of guardrail on the right or left side of the road (primarily applications with longer runs). Details about these applications are summarized below.

**Brifen USA**

| | |
|---|---|
| **Product** | Wire Rope Safety Fence. |
| **Project Description** | Used in roadside and median applications, the Wire Rope Safety Fence complies with NCHRP 350 Test Level 4 crash testing requirements. The system uses steel posts, anchors and four ropes with a Natina finish field; fencing is installed at 10-foot post spacing. |
| **Location** | Interstate 15 in San Diego County |
| **Project Owner** | Caltrans District 11 |
| **Contact Information** | Troy Bucko, Division of Traffic Operations, Caltrans, 916-654-5975 |

### Trinity Highway Products

Instead of describing specific projects, the respondent from Trinity Highway Products provided general information about CASS, the company's high-tension cable barrier system. He noted that as a publicly traded company, "we do not comment on or provide specific details as to where CASS is installed, nor provide project information." The respondent recommended contacting a state's design/standards engineer for specific project information (see **Locations** below).

| | |
|---|---|
| **Project Description** | CASS has been installed globally on the right or left side of the roadway. However, most U.S. states and Canadian provinces have used it primarily in left-sided roadside and median applications. |
| **Locations** | States that have used it on both the right and left side of the road: Arizona, Louisiana, North Carolina, North Dakota, South Dakota and Texas. |

## Crash Testing

Both vendor representatives also commented on testing related to their barrier systems. The Brifen USA respondent noted that MASH 2016 testing criteria for wire rope systems are much more rigorous than NCHRP Report 350 testing requirements. He added that while most systems are installed in medians, the tests replicate many roadside applications. The Trinity Highway Products respondent reported that CASS has been tested to NCHRP Report 350 and MASH, 1st edition, specifications in both Test Level 3 and Test Level 4 configurations. These systems are eligible for Federal Highway Administration (FHWA) funding as a flexible longitudinal barrier for right- or left-side roadway installations.

## Multimodal Facility Applications

Brifen Wire Rope Safety Fence O-Post (MASH Test Level 3) with Flared-End Wire Rope Gating Terminals (WRGT-FL) (NCHRP 350 Test Level 3) has been used in Oklahoma City, Oklahoma, to separate bicycle facilities. The project was completed under Oklahoma City MAPS 3 (M-3-T002A), "a capital improvements program in Oklahoma City that uses a one-cent, limited-term sales tax to pay for debt-free projects that improve [Oklahoma residents'] quality of life." The project placed cable barrier on the right shoulder (grassed area with mountable curb) of a four-lane undivided surface road to shield a newly installed bike path. The City of Oklahoma City designed the project and specified a MASH system. (Brifen USA was not consulted on the design.)

## Design Considerations

The respondent from Trinity Highway Products reported that the company has instructions for installing cable barrier as guardrail that include offset from hinge break points, allowable steepness of slope behind cable barrier and preferred offsets. The company's assembly manuals provide guidance about where to install the barrier system with respect to slopes that are suitable for CASS (see **Related Resources**, page 23).

The Brifen USA respondent reported that state transportation agencies design projects, and the projects typically follow guardrail design policies for offsets from hinge point and slope placement. No testing has been conducted to separately evaluate specific placement or slope conditions beyond NCHRP 350 MASH 2016 tests. The company has employed finite element analysis to simulate and evaluate curbs in front of the system.

## Restrictions on Use

There are no restrictions with Brifen USA products that would prevent its cable barrier system from being used as guardrail if the field conditions (such as approach slope or dike placement) were the same as crash testing criteria.

Trinity Highway Products' CASS system does have restrictions. The respondent noted that CASS was tested according to NCHRP Report 350 and/or MASH, 1st edition, specifications as a Test Level 3 or Test Level 4 flexible longitudinal barrier in a condition where no obstructions were encountered during testing. In general, the topography was smooth and free of materials that could have affected the stability of the vehicle. The respondent added that all CASS manuals include the following requirement within the details:

> The CASS System shall be placed on shoulders or medians without obstructions, depressions, etc., that may significantly affect the stability of an errant vehicle.

In addition, the General Notes (Note #3) of all CASS system drawings include the following requirement:

> CASS shall be installed on shoulders or medians with slopes of 6:1 (or 4:1, if a 4:1 system) or flatter without obstructions, depressions, etc., that may significantly affect the stability of an errant vehicle. Grading of site and/or appropriate fill materials may be required. The designer/installer shall "flatten" or "round" various topographical inconsistencies that could interfere with the ability of the installer to consistently maintain the design height (in relation to the terrain) of the cables.

## Related Resources

Brifen USA

**Brifen Wire Rope Safety Fence**, Brifen USA, Inc., 2015.
http://www.brifenusa.com/ (click on *Brifen WRSF* on the left navigation bar)
*From the web site*: Brifen Wire Rope Safety Fence (WRSF) i[s] a high-tension median or roadside cable (wire rope) barrier system widely used around the world and in many U.S. states.

Brifen is available in several designs, all approved by the Federal Highway Administration (FHWA) as fully complying with NCHRP 350 TL-3 [and] TL-4 crash testing requirements. There are several types of end treatments also available, all of which meet FHWA compliance. These choices allow you to choose the system that best meets your specific needs.

Brifen's unique patented interweaving of the wire ropes are used to contain [and] redirect errant vehicles by preventing the vehicles from crossing the barrier or deflecting back into the traffic flow. Brifen WRSF is designed to absorb the energy of an impact, minimizing injury to passengers and damage to vehicles.

Trinity Highway Products

**Cable Barriers**, Trinity Highway Products, LLC, 2020.
https://trinityhighway.com/product-category/barriers/cable-barriers/
This web site provides information about four cable barrier products that are described for use in roadway medians:

> *CASS C-Channel Cable*
> https://trinityhighway.com/product/cass-c-channel-cable/

*CASS S3 M10*
https://trinityhighway.com/product/cass-s3-m10/

*CASS TL-3*
https://trinityhighway.com/product/cass-tl3-barrier/

*CASS TL-4*
https://trinityhighway.com/product/cass-tl4/

The NU-CABLE barrier system is also listed among the products Trinity Highway Products offers (see https://trinityhighway.com/product/nu-cable-cable-barrier/).

This vendor web page also includes information about HARP (High-Tension Anchor Release Post), which is a "single foundation anchor post terminal for use with Trinity Highway Products' CASS, the Nucor Nu-Cable or other eligible high tension three[-] or four[-]wire rope cable barriers. It is comprised of a single reinforced concrete foundation, anchor post, knee brace, trigger braces and an innovative release post that works in conjunction with terminal line posts to provide an effective length of only 25' 6"." The site indicates that the HARP terminal is not yet available for purchase in the United States.

*Related Resources:*

Trinity Highway Products' assembly manuals provide guidance that includes where to install a barrier system with respect to slopes that are suitable for CASS, offset from hinge break points, allowable steepness of slope behind cable barrier and preferred offsets:

*CASS C-Channel Cable*

**CASS TL-3 (Utilizing C-Shaped Post) Assembly Manual**, March 2007.
https://trinityhighway.com/wp-content/uploads/2018/07/620289-CASS-Assembly-C-Shape-Post.pdf

*CASS S3 M10*

**CASS S3 4:1 Product Description Assembly Manual**, August 2012.
https://trinityhighway.com/wp-content/uploads/2018/07/620005-CASS-S3-Assembly-Product-Manual.pdf

*CASS TL-3*

**CASS TL-3 (Utilizing C-Shaped Post) Assembly Manual**, March 2007.
https://trinityhighway.com/wp-content/uploads/2018/07/620289-CASS-Assembly-C-Shape-Post.pdf

*CASS TL-4*

**CASS TL-3 & TL-4 Systems Assembly Manual**, September 2012,
https://trinityhighway.com/wp-content/uploads/2018/07/620038-CASS-TL3-TL4-Assembly-Manual.pdf

# Related Research and Resources

A literature search of recent publicly available resources identified publications and other resources that are organized into the following topic areas:

- Domestic research and resources:
  - National guidance.
  - State guidance and practices.
  - MASH-compliant cable systems for roadside applications.
- International resources.
- Manufacturers and vendors.

## Domestic Research and Resources

### National Guidance

**Anticipated Research: NCHRP Project 15-79, Development of Guidance for Non-Standard Roadside Hardware Installations**.
Project description at https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4970
*From the project description*:

> *This project has been tentatively selected and a project statement (request for proposals) is expected in August 2020. The project statement will be available on this site. The problem statement below will be the starting point for a panel of experts to develop the project statement.*
>
> Roadside safety hardware is critical for reducing severe crashes on U.S. highways. Roadside safety hardware such as guardrail is crash tested to assess its crashworthiness. The current crash test criteria [are] contained in the AASHTO Manual for Assessing Safety Hardware (MASH), and all highway agencies are in the process of implementing MASH hardware on their systems.
>
> While MASH tested hardware is available for and reduces the risk of severe crashes for the majority of applications, situations may be encountered where the approved roadside safety hardware does not fit the specific location. There is an urgent need to develop guidance for special site-specific designs to guide highway agencies on appropriate hardware use and implementation for these non-standard situations where standard practices of crash tested barrier cannot be used. In absence of this research, the frequency of severe injury and fatal crashes will likely escalate as more miles of roadway with non-standard roadside hardware installations continue to increase.
>
> The objectives of this research are to:
>
> 1. Identify common nonstandard situations that are encountered by highway agencies.
> 2. Investigate potential crash tested solutions for these situations, if practical.
> 3. Identify best practices for situations where a crash tested solution may not be practical.
> 4. Develop guidelines that agencies can use for these situations.

**NCHRP Report 711: Guidance for the Selection, Use and Maintenance of Cable Barrier Systems**, Dhafer Marzougui, Umashankar Mahadevaiah, Fadi Tahan, Dao Cing Kan, Richard McGinnis and Richard Powers, 2012.
Publication available at http://www.trb.org/Publications/Blurbs/167753.aspx
*From the foreword*:

> The research involved (1) efforts to determine agency experiences with cable barrier systems and their practices for design, selection and maintenance and (2) the identification of cable barrier system features available. Research focused on issues related to lateral placement, system length, anchorage requirements, transitions, and cost and maintenance. Computer simulation was used extensively to investigate key factors on performance with varied design parameters, installation configurations, road median geometrics, and impact conditions to isolate the effects of these parameters on barrier response. The research results coupled with the findings of previous studies provided the basis for developing the recommended guidelines.

Appendices A through D, not included in the PDF, are available at http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_711AppendicesA-D.pdf. They include:

- Appendix A: State DOT Survey Questionnaire.
- Appendix B: Available Cable Barrier Systems.
- Appendix C: Cable Barrier Lateral Placement Plots.
- Appendix D: Summary of Cable Barrier Full-Scale Crash Tests (FHWA Database).

**Roadside Design Guide**, 4th Edition, American Association of State Highway and Transportation Officials, 2011.
Publication description at https://store.transportation.org/Item/CollectionDetail?ID=105
Chapter 5 addresses roadside barriers, including the structural and safety characteristics of high-tension cable barriers generally and specific vendor products highlighted in this Preliminary Investigation. The chapter also addresses selection guidelines, placement recommendations and system upgrades.

## State Guidance and Practices

Arizona

**Arizona Highway Barrier Pocket Guide**, Arizona Department of Transportation, November 2017.
https://azdot.gov/sites/default/files/2019/04/arizona-highway-barrier-pocket-guide.pdf
*From page 10 of the guide, page 18 of the PDF*:

> **Flexible Systems**
> High Tension Cable Barriers (HTC) are installed with the cables placed under significant tension (>5000 lbs., depending on manufacturer and temperature) and are typically used in median applications in Arizona, though roadside applications are appropriate. A major advantage of these HTC systems is that the cables remain near the proper height after most normal impacts (with damage limited to a few posts) so that the barrier is still effective. The HTC systems do experience rather large deflections (around 8 ft.) when compared to rigid and semi-rigid barriers; so this should be considered. Post spacing and type, and cable heights and attachment vary with the manufacturer.

The following systems are on ADOT Approved Product List (APL). These systems should be installed in accordance with the manufacturer's recommendations and the ADOT plan requirements. Cable barrier may be placed on 4:1 slopes with a maximum offset of 4 ft. from the shoulder.

The guide describes the following approved products:

- Brifen Wire Rope Safety Fence three- and four-wire systems (Brifen USA).
- CASS three-wire wire system (Trinity Highway Products).
- Gibraltar (Gibraltar Global).
- SAFENCE (Gregory Highway Products).

Colorado

**CDOT Cable Barrier Guide**, Colorado Department of Transportation, August 2017.
https://www.codot.gov/business/designsupport/bulletins_manuals/cable-barrier-guide/cable-barrier-guide
In addition to describing median placement, this guide addresses outside shoulder placement of cable barrier. *From page 5 of the guide*:

> Cable barrier may be placed on the outside shoulder similar to other types of barrier. However due to deflection upon impact there should be a minimum 10 foot offset from fixed hazards. If the roadside slope is steep, the deflection of the cable barrier could allow a vehicle to penetrate the barrier, therefore it is desirable that the roadside slope be 4:1 or flatter for at least 10 feet behind the cable barrier.

Florida

**Section 540, High Tension Cable Barrier System**, Developmental Specification, Florida Department of Transportation, June 2018.
https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/content/programmanagement/otherfdotlinks/developmental/files/dev540.pdf?sfvrsn=7b335210_0
This is the agency's specification for high-tension cable barrier systems.

*Related Resources*:

> **Index D540-00 High Tension Cable Barrier**, Developmental Standard Plans, Florida Department of Transportation, August 2017.
> https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/design/standardplans/dev/d540-001.pdf?sfvrsn=e0c0a81c_8
> This resource provides the standard drawings for the agency's high-tension cable barrier system designs listed on the agency's Innovative Products List (IPL). The IPL, available at https://fdotwp1.dot.state.fl.us/ApprovedProductList/ProductTypes/Index/679, includes the following products:
>
> - Brifen Wire Rope Safety Fence (Brifen USA).
> - CASS TL-4 (Trinity Highway Products).
> - Gibraltar (Gibraltar Global).
> - NU-CABLE (Nucor Corporation).

**Index D540-001 High Tension Cable Barrier**, Developmental Standard Plans Instructions, Florida Department of Transportation, December 2017.
https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/design/standardplans/dev/dspi/dspi-d540-001.pdf?sfvrsn=9851c975_2
This specification provides details of the design assumptions and limitations, selection and placement guidelines, plan content requirements and payment associated with high-tension cable barrier. Also included are examples of data tables and a table for use in estimating quantities.

Minnesota

**Design Guidelines for High-Tension Cable Barriers (HTCB)**, Technical Memorandum No. 15-08-TS-04, Engineering Services Division, Minnesota Department of Transportation, August 2015.
http://dotapp7.dot.state.mn.us/edms/download?docId=1607915
*From the introduction*: High-Tension Cable Barrier (HTCB) is a flexible barrier system used on a roadside or as a median barrier to reduce the severity of run-off-the-road crashes. These systems typically consist of three or four cables under high tension supported by breakaway steel line posts. The most common use of these systems has been in wide depressed medians.

HTCBs have greater deflection than W-beam, box-beam and concrete barriers, but where adequate deflection space is available, HTCB systems offer key advantages over these other systems. A primary advantage of HTCB is that it can be placed on slopes as steep as 1:4, meaning it can be placed further down an inslope, farther away from the traveling public, allowing errant vehicles more room to regain control and avoid impact. Another prime advantage of HTCB is that, upon impact, it exerts less G-force on the occupants of the errant vehicle than semi-rigid and rigid barriers, typically lessening injury potential. Additionally, these systems are able to effectively contain and redirect the vehicle. In some cases, after a less severe and isolated hit, the cables will maintain their approximate heights and may be able to contain and redirect subsequent errant vehicles that impact the same location prior to the system's repair.

Texas

**Supplemental Specifications and Attachments: TxDOT—Purchasing**, Texas Department of Transportation, 2020.
http://www.dot.state.tx.us/gsd/purchasing/supps.htm (scroll down to *Detailed Drawings*)
Links to standard plans and other drawings for proprietary cable barrier systems are provided on this web page.

Virginia

**Guardrail Installation Training Manual (GRIT): Procedures and Practices for the Design, Installation, Replacement and Repair of Guardrail and Crash Terminals**, Virginia Department of Transportation, August 2019.
http://www.virginiadot.org/business/resources/LocDes/GRIT_Manual.pdf
Chapter 5, Special Guardrail Treatments, which begins on page 50 of the PDF, includes a brief discussion of cable barriers:

D. High-Tension Cable Systems
V[irginia] DOT has installed approximately 50 miles of high-tension cable barrier on roadways in the Commonwealth. All high-tension cable guardrail systems are proprietary. All high-tension cable guardrail systems must meet the MASH TL-3 or TL-4 crash test

standards. The installed system must meet the VDOT's specifications for the project's application.

Washington

**Chapter 1610, Traffic Barriers**, Design Manual, Washington State Department of Transportation, December 2019.
https://www.wsdot.wa.gov/publications/manuals/fulltext/M22-01/1610.pdf
High-tension cable barrier systems are discussed in Section 1610.05, beginning on page 25 of the PDF. The requirements for nonmedian roadside applications are described on page 28 of the PDF:

> **1610.05(1)(b) Roadside Applications**
> For typical non-median roadside applications, the following apply:
>
> - Install the cable barrier as far from the edge of traveled way as site constraints allow.
> - Consider a minimum placement distance of 8 feet from the edge of traveled way to allow vehicles to use this area for refuge.
> - Install cable barrier on slopes 6H:1V or flatter
> - There are approved high-tension cable barrier systems that can be placed on slopes as steep as 4H:1V. The use of these systems requires special placement considerations, contact the HQ Design Office for guidance.
> - Along horizontal curves, consider installing along the inside of the curve. Reduce post spacing per manufacturer's recommendations.
> - Provide an obstruction free zone within the cable barrier system's lateral deflection distance (see 1610.05(2).

**Cable Barrier Design**, Roadside Safety Design, Design Policy, Washington State Department of Transportation, undated.
https://www.wsdot.wa.gov/Design/Policy/TrafficBarriers.htm
Links to standard plans for cable barrier systems are provided on this web page.

## MASH-Compliant Cable Systems for Roadside Applications

The Roadside Safety Pooled Fund maintains a MASH implementation database (available at https://www.roadsidepooledfund.org/mash-implementation/search/) of testing information for a wide range of roadside hardware, including high-tension cable barriers. A query of this database identified the following high-tension cable barrier systems:

- *Brifen Wire Rope Safety Fence O-Post, MASH*
  https://www.roadsidepooledfund.org/longitudinal-barrier/brifen-wire-rope-safety-fence-o-post/
  This product uses "[f]our wire ropes interwoven between O-shaped steel posts." A report detailing test results is available at https://www.roadsidepooledfund.org/wp-content/uploads/2017/01/B245-1.pdf.

- *CASS S3 MASH*
  https://www.roadsidepooledfund.org/longitudinal-barrier/cass-s3-m10-2/
  *From the description:*

  > High-Tension Cable System. Proprietary wave-shaped slot in S3 x 5.7# post working in tandem with strategically positioned cables to lower deflections in roadside or

median barrier applications. Driven socket, driven post or concreted socket options available and utilizing prestretched or standard 3/4" cables; MASH TL4 on 10:1 or flatter slopes.

A report detailing test results is available at https://www.roadsidepooledfund.org/wp-content/uploads/2017/01/b232a-1.pdf.

- *CASS S3 on 4H:1V*
  https://www.roadsidepooledfund.org/longitudinal-barrier/cass-s3-m10/
  *From the description*:

  High-Tension Cable System. Proprietary wave-shaped slot in S3 x 5.7# post working in tandem with strategically positioned cables to lower deflections in roadside or median barrier applications. Driven socket, driven post or concreted socket options available and utilizing prestretched or standard 3/4" cables; MASH TL3 on 4:1 or flatter slopes.

  A report detailing test results is available at https://www.roadsidepooledfund.org/wp-content/uploads/2017/01/b232-1.pdf.

## International Resources

**Network Design for Road Safety (Stereotypes for Cross-Sections and Intersections): User Guide**, Peter Aumann, Madeleine Bekavac, Lisa Steinmetz, Michael Tziotis, Farhana Ahmed, Richard Fanning and David Bobberman, Austroads, May 2020.
Citation at https://trid.trb.org/view/1709443
*From the abstract*:

This user guide provides guidance to road managers, planners and designers on achieving improved safety outcomes by applying consistent standards along a road corridor. Thirteen road stereotype tables were identified covering the road network from rural freeways to urban local access roads. For each road stereotype, a range of cross-sections was developed with appropriate attributes. Each cross-section was assessed for crash risk using the International Road Assessment Program (iRAP) and the Australian National Risk Assessment Model (ANRAM).

Section 5.7 (page 26 of the report, 32 page of the PDF) provides considerations for using roadside safety barriers.

**"Safety Evaluation of Cable Barriers Installation on Rural Highways in British Columbia,"** Mohamed El Esawey, Caitlin Sowers, Joy Sengupta and Raoul Jain, *Traffic Injury Prevention*, Vol. 20, Issue 2, pages 220-225, April 2019.
Citation at https://doi.org/10.1080/15389588.2018.1555819
*From the abstract*:

**Objective:** The objective of this study was to evaluate the safety effectiveness of cable barrier systems installation on rural highway sections in British Columbia, Canada.

**Methods:** Data on police-attended serious collisions (injury + fatality) on a number of rural highway sections in British Columbia, Canada, were used in the analysis. An empirical Bayes (EB) approach was employed to ensure that the evaluation results were reliable and to account for the regression to the mean artifact. Safety performance functions (SPFs) were

developed using data collected at similar sites. For both median cable barrier (MCB) and roadside cable barrier (RCB) sections, the evaluation was undertaken using all serious collisions, truck serious collisions, and off-road serious collisions.

**Results:** For MCB sections, the evaluation results showed statistically significant reductions of 21.7[%], 53.8[%] and 34.8% in all serious collisions, truck serious collisions, and off-road left (ORL) combined with head-on (HO) serious collisions. For RCB sections, statistically significant reductions of 74.7[%], 100[%] and 100% were found in all serious collisions, truck serious collisions and off-road right (ORR) serious collisions, respectively. The impact of the after period on the evaluation results was explored. It was found that the changes in safety become more stable using an after period of 2 [to] 5 years.

**Conclusions:** Cable barriers were successful in reducing the frequency of serious collisions on provincial highways in British Columbia.

**Guide to Road Design – Part 6: Roadside Design, Safety and Barriers**, Graeme Nichols and Gary Veith, Austroads, August 2018.
https://www.onlinepublications.austroads.com.au/items/AGRD06-10
*From the abstract*: The Guide to Road Design — Part 6: Roadside Design, Safety and Barriers provides an introduction to roadside design and in particular guidance on roadside safety and the selection and use of road safety barrier systems. Roadsides have to accommodate many features that support the road and the safe and efficient operation of traffic, and have to be designed with regard to environmental requirements. Part 6 should therefore be read in conjunction with the following parts of the Guide to Road Design that are briefly described in Section 2 of this guide, namely: 1. Part 6A: Pedestrian and Cyclist Paths; 2. Part 6B: Roadside Environment. Part 6 provides information to enable designers to understand principles that lead to the design of safe roads, identify hazards, undertake a risk assessment process of roadside hazards, establish the need for treatment of hazards and determine the most appropriate treatment to mitigate hazards. Methods of evaluating roadside hazards and the effectiveness of treatment options are summarized and references are provided for detailed information on project evaluation. A comprehensive design process, guidance and design considerations are provided for the selection of a suitable road safety barrier and for the lateral and longitudinal placement of road safety barrier systems.

**Chapter H-5: Roadside and Median Barrier Systems**, *Roadside Design Guide*, Alberta Infrastructure and Transportation, February 2018.
http://www.transportation.alberta.ca/Content/docType233/Production/H5RoadsideMedianBarrierSystems.pdf
A comparison of roadside and median barrier systems is presented in this chapter. Section H.5.5.2 provides design and placement considerations for high-tension cable barrier systems (page 21 of the PDF). W-beam barriers are discussed in Section H.5.5.4 (page 37 of the PDF), and thrie-beam barriers are discussed in Section H.5.5.5 (page 40 of the PDF).

## Manufacturers and Vendors

**Gibraltar Cable Barrier System**, Gibraltar Global, 2020.
https://gibraltarglobal.com/
Gibraltar products include:

- *TL-3*: This system consists of a three-strand, high-tension cable barrier designed to contain vehicle types from smaller cars up to three-quarter-ton pickup trucks.

- *TL-4 Three Cable*: This system consists of a three-strand, high-tension cable barrier designed to contain vehicle types from smaller cars up to 18,000-pound cargo trucks.
- *TL-4 Four Cable*: This four-cable system is designed to contain vehicle types from smaller cars up to 18,000-pound cargo trucks.

**SAFENCE**, Gregory Highway Products, Gregory Industries, 2020.
https://www.gregorycorp.com/gregory-highway/safence
*From the web site*:

> SAFENCE is the tensioned wire-rope cable barrier system from Gregory Industries. As a "soft" barrier, SAFENCE is designed to safely absorb energy while redirecting the impacting vehicle along the barrier. SAFENCE also saves money because it is the only barrier system that meets TL-3 and TL-4 standards with either three or four cables.
>
> SAFENCE is a longitudinal cable barrier system that is [NCHRP] 350 TL-3 and TL-4 approved.
>
> It is available in 3-cable or 4-cable configurations with non-releasable anchors. This is a preferred system because cables remain under tension after vehicle impact.
>
> SAFENCE meets Test Level-4 requirements with just three cables. A fourth cable can be added without the need for added testing for installations that specify four cables. Eliminating the fourth cable from project specifications can result in significant savings while still meeting test standards.

**NU-CABLE High Tension Barrier System**, Nucor Steel Marion, Inc., Nucor Corporation, 2013.
https://www.nucorhighway.com/cable-barrier-products/nu-cable-high-tension/
*From the web site*: The NU-CABLE High Tension Cable Barrier System offers a unique combination of TL-3 and TL-4 crash-test proven protection and visual appeal in both median and right-side guiderail applications. Plus the added bonus of a 50[%] to 75% cost saving versus traditional W-beam and concrete barriers, and up to 20% savings over other high-tension cable systems.

# Contacts

CTC contacted the individuals below to gather information for this investigation.

## State Agencies

### Arizona

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Arizona Department of Transportation
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### Arkansas

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Arkansas Department of Transportation
501-569-2054, david.baker@ardot.gov

### Connecticut

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### Indiana

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### Iowa

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### Michigan

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### Nevada

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### New Mexico

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### Wisconsin

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Wisconsin Department of Transportation
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## Vendors

### Brifen USA, Inc.

John Guevara
Regional Sales Manager
Brifen USA, Inc.
405-657-8582, john.g@brifenusa.com

### Trinity Highway Products, LLC

Don Gripne
Consultant
Trinity Highway Products, LLC
360-561-3966, don.gripne@trin.net

# Appendix A: Survey Questions

The following surveys were distributed to state departments of transportation (DOTs), vendors and crash testing facilities expected to have experience with high-tension cable barrier used as guardrail on the right shoulder of the road.

## State Department of Transportation Survey

The following survey was distributed to state DOT members of the American Association of State Highway and Transportation Officials (AASHTO) Committee on Traffic Engineering.

**Caltrans Survey on High-Tension Cable Barrier as Guardrail**

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*Note*: The response to the question below determines how a respondent is directed through the survey.

---

(Required) Does your agency **use** or **has it considered using** high-tension cable barrier as guardrail on the right shoulder of the road?

Response Options:

- Yes. Our agency **uses** high-tension cable barrier as guardrail on the right shoulder of the road. (Directs the respondent to the **General Information** section of the survey and the sections that follow it.)
- No. While our agency does not use high-tension cable barrier as guardrail on the right shoulder of the road, it **is considering** this application. (Directs the respondent to the **Agencies Considering High-Tension Cable Barrier as Guardrail** section of the survey.)
- No. Our agency **has never used** and **is not considering** using high-tension cable barrier as guardrail on the right shoulder of the road. (Directs the respondent to the **Agencies Not Using High-Tension Cable Barrier as Guardrail** section of the survey.)

**Agencies Not Using High-Tension Cable Barrier as Guardrail**

Please briefly describe why your agency is not using or considering for use high-tension cable barrier as guardrail.

---

*Note*: After responding to the question above, the respondent is directed to the **Wrap-Up** section of the survey.

---

**Agencies Considering High-Tension Cable Barrier as Guardrail**

1. Please briefly describe your agency's discussions or plans to use high-tension cable barrier as guardrail.
2. Has your agency used high-tension cable barrier as guardrail on the right shoulder of the road as a pilot or trial application (one-time use)?
    - No

- Yes (Please briefly describe the pilot or trial application; provide a link to any documents related to the pilot application or send any files not available online to carol.rolland@ctcandassociates.com.)

---

*Note*: After responding to the questions above, the respondent is directed to the **Wrap-Up** section of the survey.

---

### Agencies Using High-Tension Cable Barrier as Guardrail

#### General Information

Has your agency used high-tension cable barrier as guardrail on the right shoulder of the road as a pilot or trial application (one-time use)?

- No
- Yes (Please briefly describe the pilot or trial application; provide a link to any documents related to the pilot application or send any files not available online to carol.rolland@ctcandassociates.com.)

#### System Description

1. What is the name of your agency's high-tension cable barrier system?
2. What is the name of the vendor providing the system (for example, Brifen or Gibraltar)?
3. Does the vendor provide a complete barrier system? That is, does the system include tie-downs, end protection and other elements needed for installation?
    - Yes
    - No (Please describe the system elements that must be purchased separately.)
4. If available, please provide links to documentation that describes your agency's policies and practices for selecting, installing and maintaining high-tension cable barrier systems. Send any files not available online to carol.rolland@ctcandassociates.com.
5. Does your agency have standard plans or drawings for using high-tension cable barrier as guardrail?
    - No
    - Yes (Please provide a link to these documents or send any files not available online to carol.rolland@ctcandassociates.com.)
6. If available, please provide links to a project plan set that was used for a specific barrier installation. Send any files not available online to carol.rolland@ctcandassociates.com.

#### System Implementation and Maintenance

1. How long has your agency used high-tension cable barrier as guardrail?
2. What are the primary factors that determine when your agency will use high-tension cable barrier as guardrail (for example, narrow shoulder between highway and pedestrian/bicycle facility, or reduced visual impacts)?
3. Please describe the criteria your agency uses when choosing a high-tension cable barrier system instead of the more traditional Midwest Guardrail System or concrete barrier for a specific application.

4. Please describe your agency's installation specifications:
    - Minimum length of barrier on right side.
    - Minimum radius (e.g., 250-foot minimum).
    - Minimum deflection area.
    - Post spacing.
    - Space needed to install.
    - Section cross slope.
    - Slope hinge point/slope breakpoint.
    - Attaching to a structure.
    - Speed of facility.
    - Other. (Please describe.)
5. Please describe your agency's experience with maintaining these cable barrier systems.

**System Assessment**

1. In your agency's experience, what are the safety implications for using high-tension cable barrier as guardrail?
2. Please identify how your agency evaluates the performance of the barrier system. Select all that apply.
    - Our agency does not have any in-service performance data.
    - Crash data.
    - Cost of maintenance data.
    - Other. (Please specify.)
3. What are the benefits of using high-tension cable barrier in this application?
4. What are the challenges of using high-tension cable barrier in this application?
5. What recommendations does your agency have for using high-tension cable barrier as guardrail?

**Wrap-Up**

Please use this space to provide any comments or additional information about your previous responses.

## Barrier Vendor and Crash Testing Facility Survey

The survey below was distributed to the following high-tension cable barrier manufacturers and crash testing facilities recommended by the Caltrans project panel:

**Barrier Vendors**

- Brifen USA.
- Gregory Highway Products.
- Trinity Highway Products.

**Crash Testing Facilities**

- KARCO–San Bernardino.
- Midwest Roadside Safety Facility.
- Texas Transportation Institute.

**Caltrans Survey on High-Tension Cable Barrier as Guardrail**

1. Has your company manufactured or has your organization tested cable barrier that has been used in place of guardrail on the right or left side of the roadway (primarily longer runs)?
    - Yes (Please respond to question 1A below.)
    - No

1A. Please provide the following information about these applications:

- Project description.
- Location(s).
- Project owner (such as state DOT, other transportation-related agency, toll authority).
- Contact information.

2. If your company **has not manufactured** or your organization **has not tested** cable barrier that has been used in place of guardrail on the right or left side of the roadway, do you have any plans to develop and test cable barrier to be used as guardrail?
3. Has your company manufactured or has your organization tested cable barrier that has been used to separate multimodal facilities such as pedestrian and bicycle facilities?
    - Yes (Please respond to question 3A below.)
    - No

3A. Please provide the following information about these applications:

- Project description.
- Location(s).
- Project owner (such as state DOT, other transportation-related agency, toll authority).
- Contact information.

4. Does your company or organization have installation instructions or installation plan sheets for installing cable barrier as guardrail (primarily offset from hinge break points, allowable steepness of slope behind cable barrier and preferred offsets)?
    - No
    - Yes (Please provide a link to these documents or send any files not available online to carol.rolland@ctcandassociates.com.)
5. Are there any restrictions that would not allow cable barrier you manufacture or test to be used as guardrail if the field conditions (such as approach slope or dike placement) were the same as crash testing criteria?
    - No
    - Yes (Please describe these restrictions.)
6. **Crash testing facilities only:** Are you aware of any ongoing or planned testing of cable barrier used as guardrail?
    - No
    - Yes (Please describe the research facility and provide the researchers' contact information and research report, if available.)

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

# PLANS FOR STATE HIGHWAY 5

## LACLEDE COUNTY

## -FINAL PLANS-

FINAL PLANS

Prepared by: Craig Huckaby 7-25-11
Checked by: Keith Maddux 7-25-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 1 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

## DESIGN DESIGNATION

A.D.T. - 2008 = 16,400
A.D.T. - 2028 = 19,840
D.H.V. = 12%
T = 17%
V = 65 M.P.H.
DDT = 09%

FUNCTIONAL CLASSIFICATION-

## CONTROLLED ACCESS HIGHWAY

THIS SHALL BE A CONTROLLED ACCESS HIGHWAY, BETWEEN STA.41+34.8 TO STA.651+99.71 EXCEPT AT LOCATIONS AND AS OTHERWISE SPECIFICALLY SHOWN ON THESE PLANS. NO ABUTTER'S RIGHTS IN OR OF DIRECT ACCESS TO, FROM, OR ACROSS THE HIGHWAY OR ITS RIGHT-OF-WAY SHALL ATTACH OR BELONG TO ANY PROPERTY ABUTTING ON SAID SECTION OF HIGHWAY, OR TO ANY PERSON MERELY BECAUSE OF OWNERSHIP OF SUCH ABUTTING PROPERTY. THERE SHALL BE THE USUAL RIGHT OF ACCESS OVER ANY LOCATION SHOWN ON THESE PLANS EITHER AS (1) AN ENTRANCE OR (2) A PRIVATE UNDERPASS. WHEREVER AN ADJACENT OUTER ROADWAY OR SERVICE ROAD IS SHOWN, THERE SHALL BE THE USUAL RIGHT OF DIRECT ACCESS BETWEEN THE ABUTTING PROPERTY AND SUCH OUTER ROADWAY OR SERVICE ROAD (EXCEPT WHERE ACCESS IS SPECIFICALLY PROHIBITED BY THE SPECIAL SYMBOL DENOTING NO RIGHT OF ACCESS) AND ALONG IT TO AND FROM THE NEAREST LANE OF THE THROUGHWAY OF A PUBLIC HIGHWAY. OUTER ROADWAYS AND SERVICE ROADS, AS THE CASE MAY BE, ARE SO DESIGNATED ON THE PLANS.

- BEGINNING AND ENDING OF CONTROLLED ACCESS
- CONTROLLED ACCESS
- NO RIGHT OF ACCESS OR CROSSING OF LINES BEARING THIS SYMBOL WILL BE PERMITTED UNDER ANY CIRCUMSTANCES.

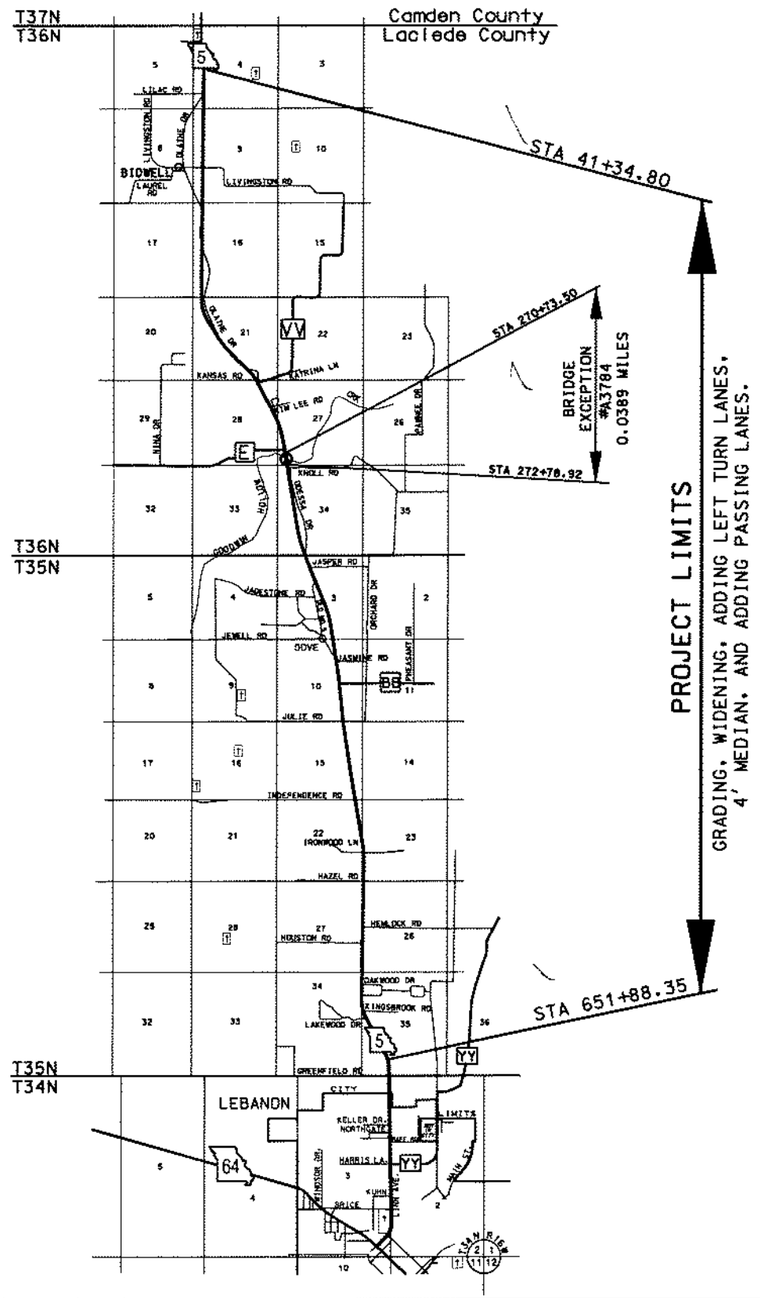
## CONVENTIONAL SYMBOLS

(USED IN PLANS)

| | EXISTING | NEW |
|---|---|---|
| BUILDINGS AND STRUCTURES | | |
| GUARD RAIL | | |
| CONCRETE RIGHT-OF-WAY MARKER | | |
| STEEL RIGHT-OF-WAY MARKER | | |
| LOCATION SURVEY MARKER | | |
| UTILITIES | | |
| FIBER OPTICS | -FO- | -FO- |
| OVERHEAD TELEPHONE | -O- | -O- |
| UNDERGROUND TELEPHONE | -T- | -T- |
| OVERHEAD POWER | -P- | -P- |
| UNDERGROUND POWER | -P- | -P- |
| GAS | -G- | -G- |
| WATER | -W- | -W- |
| MANHOLE | | |
| FIRE HYDRANT | | |
| WATER VALVE | | |
| WATER METER | | |
| DROP INLET | | |
| DITCH BLOCK | | |
| GROUND MOUNTED SIGN | | |
| LIGHT POLE | | |
| H-FRAME POWER POLE | | |
| TELEPHONE PEDESTAL | | |
| FENCE | | |
| CHAIN LINK | -V- | -V- |
| WOVEN WIRE | -X- | -X- |
| GATE POST | | |
| BENCHMARK | | |

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

NOT TO SCALE




## INDEX OF SHEETS



## LENGTH OF PROJECT

| | | |
|---|---|---|
| BEGINNING OF PROJECT | STA. 41+34.80 | |
| END OF PROJECT | STA. 651+88.35 | |
| APPARENT LENGTH | 61053.55 | FEET |
| EQUATIONS AND EXCEPTIONS: | | |
| STA 85+00.00BK = STA 84+99.15AHD= | +0.85 | FEET |
| STA 160+00.00BK = STA 159+98.91AHD= | +1.09 | FEET |
| STA 240+00.00BK = STA 239+99.02AHD= | +0.98 | FEET |
| BRIDGE EXCEPTION: STA 270+73.50 TO STA 272+78.92= | -205.42 | FEET |
| STA 316+00.00BK = STA 315+98.48AHD= | +1.52 | FEET |
| STA 328+50.00BK = STA 328+54.05AHD= | -4.05 | FEET |
| STA 615+00.00BK = STA 614+99.76AHD= | +0.24 | FEET |
| TOTAL CORRECTIONS | -204.79 | FEET |
| NET LENGTH OF PROJECT | 60848.76 | FEET |
| STATE LENGTH | 11.524 | MILES |

REV.

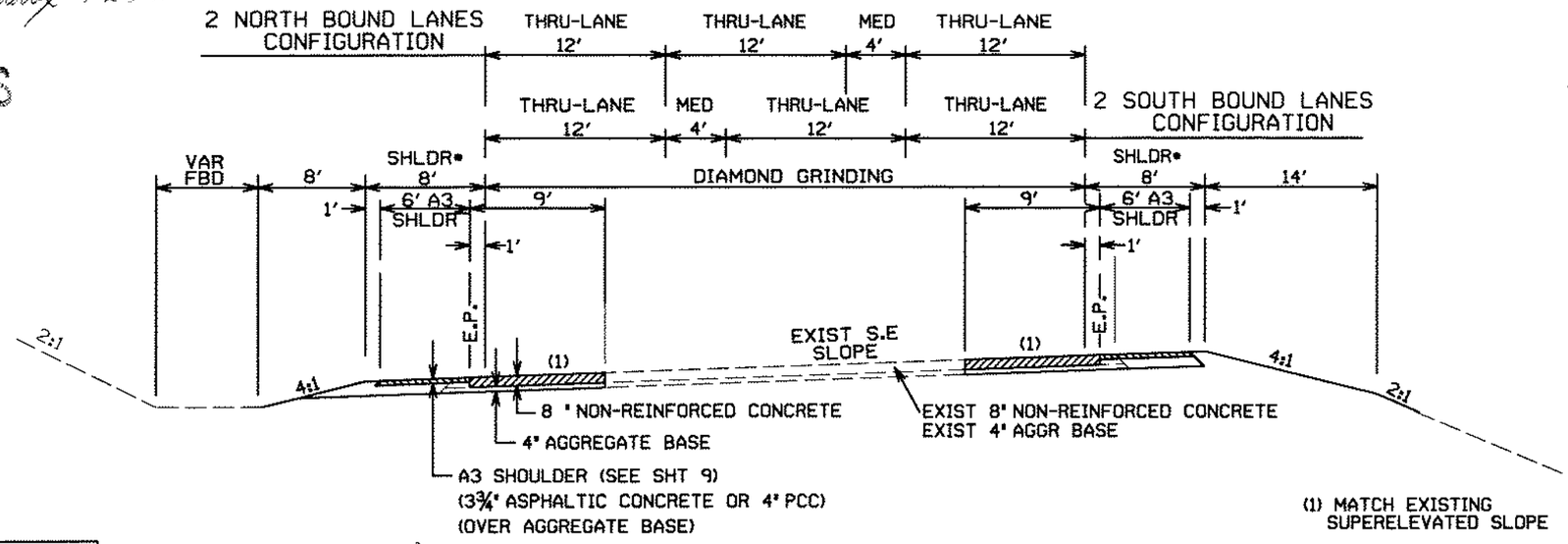
Prepared by: Craig Huckaby 7-25-11
Checked by: Keith Maddux 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 2 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."




(1) MATCH EXISTING SUPERELEVATED SLOPE

| STATIONS FOR 2 SB, 4' MED, & 1 NBL |
|---|
| 52+57 TO 122+78 |
| 281+52 TO 343+10 |
| 421+16 TO 487+58 |

2 AND 1 LANES W/ FLUSH 4' MEDIAN
41+34.80 TO 230+75.7
238+68.7 TO 253+62.4
272+78.9 TO 578+18.7
SUPERELEVATION SECTION

WIDTH TRANSITIONS

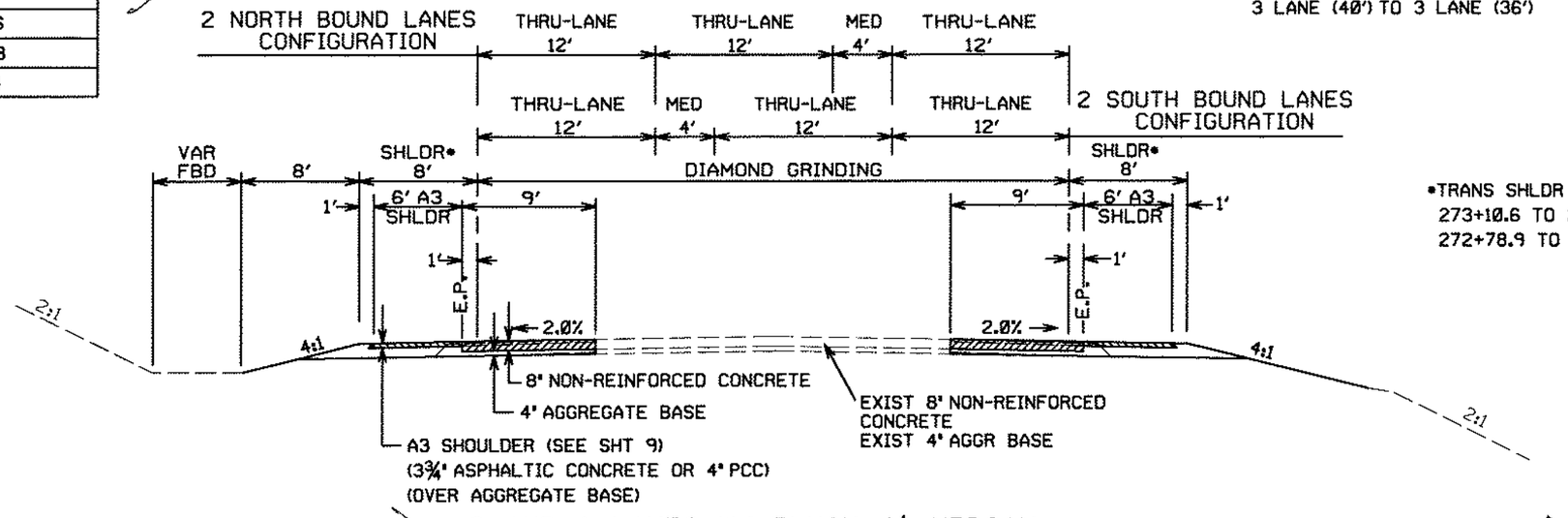
226+87 TO 230+75.7 TRANSITION
3 LANE (40') TO 2 LANE (28')

238+68.7 TO 242+57.5 TRANSITION
2 LANE (28') TO 3 LANE (40')

249+50 TO 253+62.4 TRANSITION
3 LANE (40') TO 2 LANE (28')

577+08.7 TO 578+18.7 TRANSITION
3 LANE (40') TO 3 LANE (36')

| STATIONS FOR 2 NB, 4' MED, & 1 SBL |
|---|
| 152+30 TO 209+36 |
| 366+54 TO 405+73 |
| 511+33 TO 566+04 |




*TRANS SHLDR 2' TO 8' (BRIDGE END)
273+10.6 TO 274+10.6 LT
272+78.9 TO 273+78.9 RT

NOTE: BRIDGE EXCEPTION
270+73.5 TO 272+78.9
NOT COVERED BY
TYPICAL SECTIONS

2 AND 1 LANES W/ FLUSH 4' MEDIAN
41+34.80 TO 230+75.7
238+68.7 TO 253+62.4
272+78.9 TO 578+18.7
TANGENT SECTION

# TYPICAL SECTIONS
RTE 5
SHEET 1 OF 4

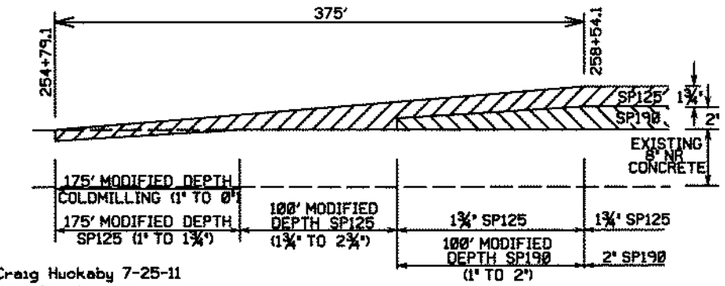
| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

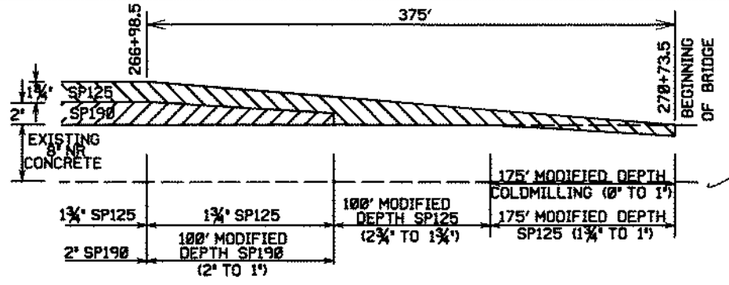
REV.

T:\de-proj\053\j8p0902\plan_sheets\002_TS_01_J8P0902_3_lane_I5_alternate_A.dgn 12:33:47 PM 7/25/2011




Prepared by: Craig Huckaby 7-25-11
Checked by: Mitch Madday 7-25-11

FINAL PLANS




| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 2 |

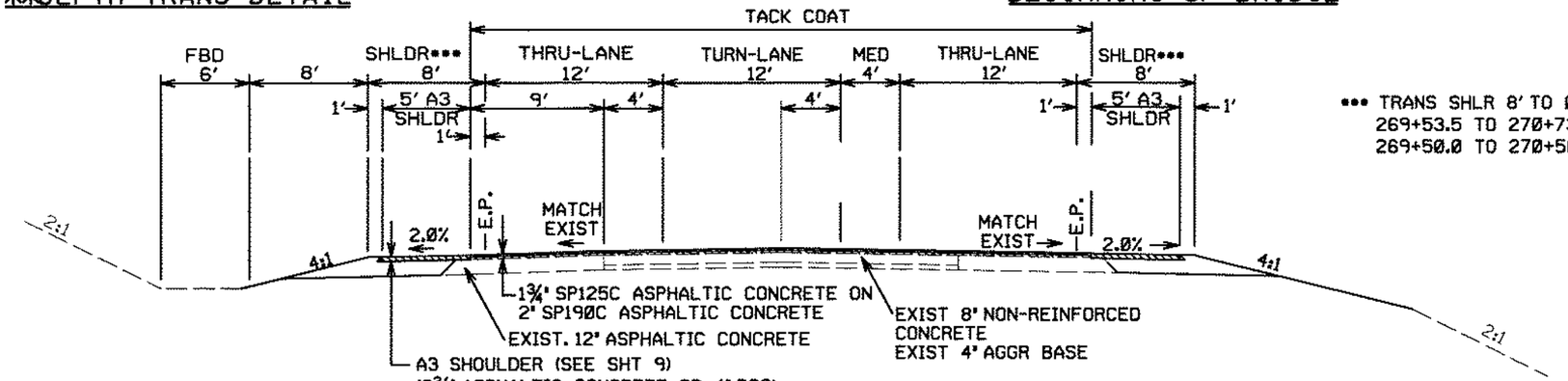
JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

**DEPTH TRANS DETAIL

**DEPTH TRANS DETAIL
BEGINNING OF BRIDGE

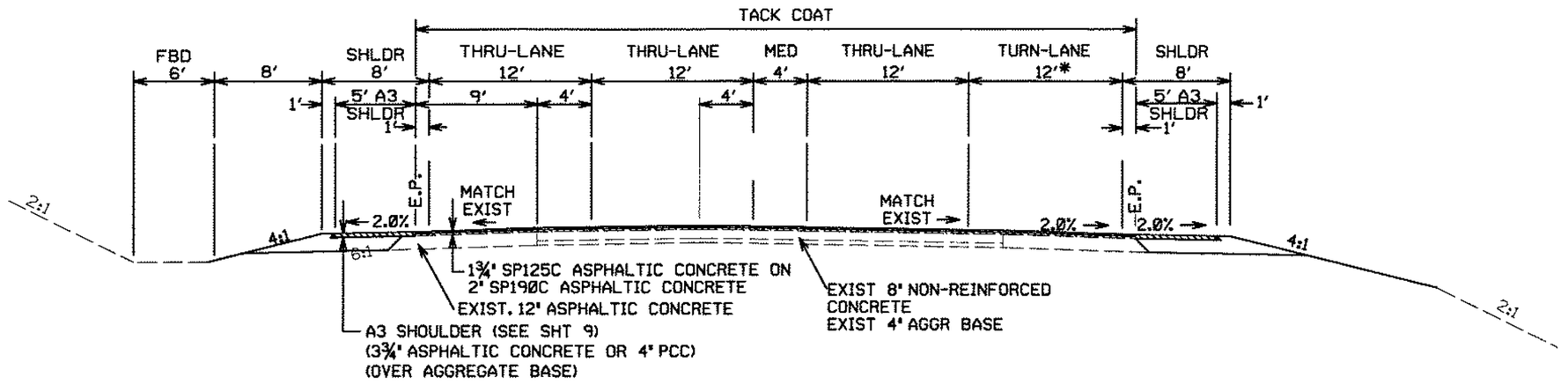



*** TRANS SHLR 8' TO 0' (BRIDGE END)
269+53.5 TO 270+73.5 LT
269+50.0 TO 270+50.0 RT

2 AND 1 LANES W/ FLUSH 4' MEDIAN
262+92.8 TO 270+73.5
TANGENT SECTION

* TRANSITION RIGHT TURN LANE
0' TO 12' STA. 258+54.1 TO 260+33.3

** TRANS COLD MILL ONLY IF ALTERNATE A MAINLINE PAVEMENT IS USED




2 AND 1 LANES W/ FLUSH 4' MEDIAN
258+54.1 TO 262+92.8
TANGENT SECTION

# TYPICAL SECTIONS
# RTE 5 @ RTE E

SHEET 2 OF 4

| REV. | DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|---|
| | | | | |

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Prepared by: Craig Huckaby 7-25-11
Checked by: Keith Maddux 7-25-11

FINAL PLANS

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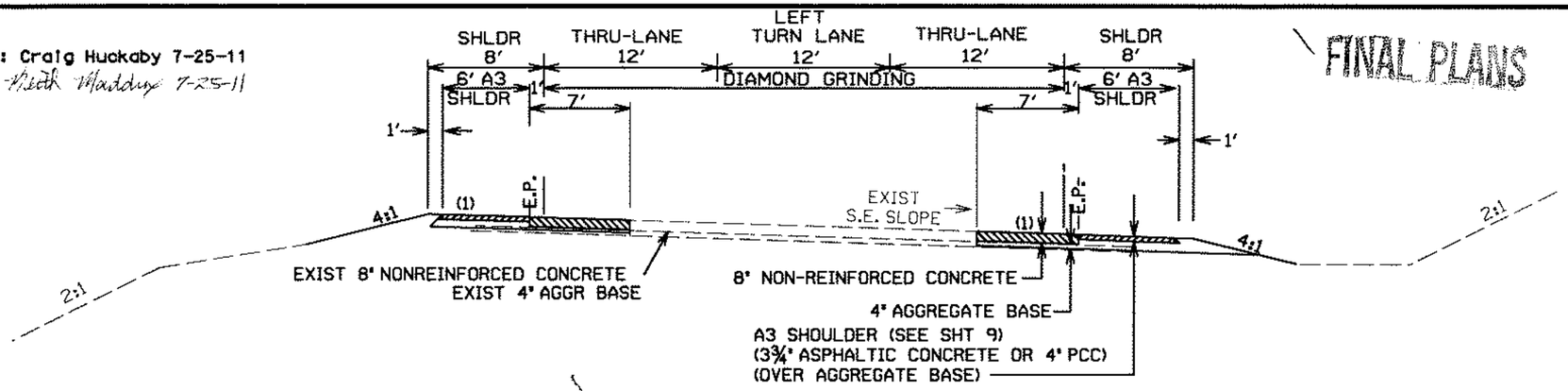
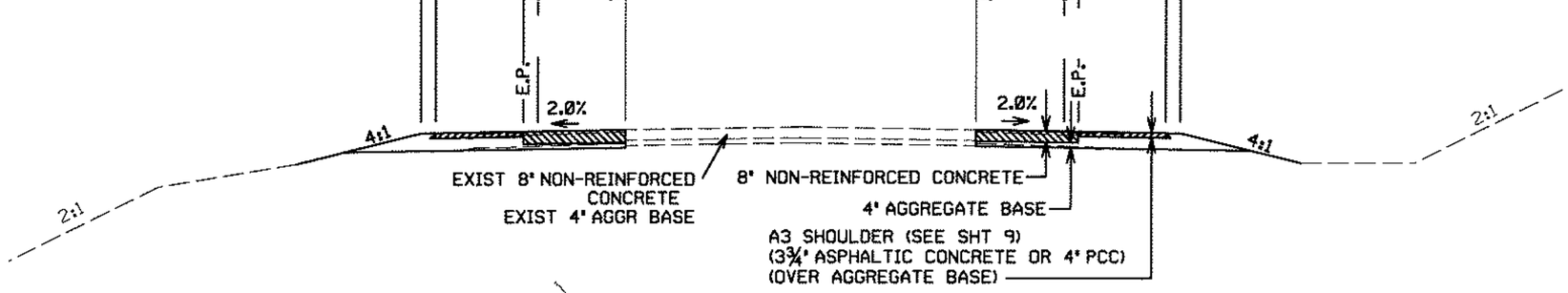



## 2 LANES W/ LEFT TURN LANE
## 578+18.7 TO 585+41.5
## 596+61.5 TO 651+88.35
## SUPERELEVATION SECTION

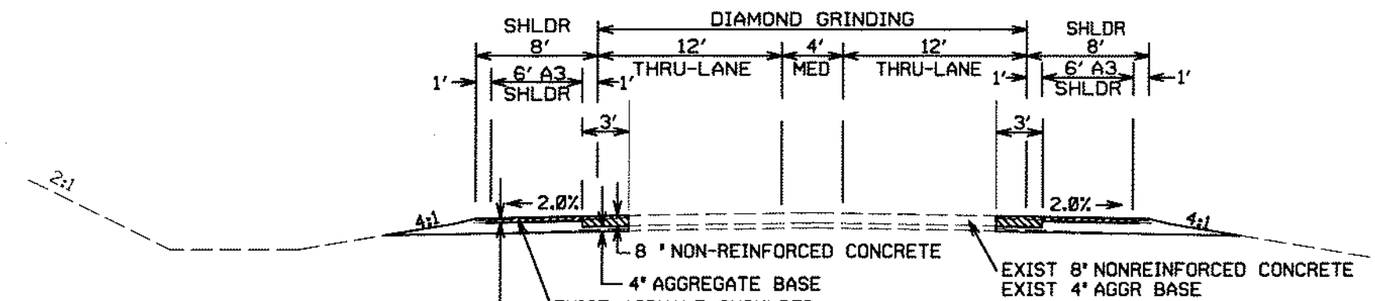
(1) MATCH EXISTING SUPERELEVATED SLOPE

WIDTH TRANSITIONS

646+00 TO 651+88.35 TRANSITION
3 LANE (40') TO 5 LANE (58')




## 2 LANES W/ LEFT TURN LANE
## 578+18.7 TO 585+41.5
## 596+61.5 TO 651+88.35
## TANGENT SECTION




## 2 LANES WIDENED W/ FLUSH 4' MEDIAN
## 230+75.7 TO 238+68.7
## 253+62.4 TO 258+54.1
## TANGENT SECTION

## TYPICAL SECTIONS
## RTE 5
## SHEET 3 OF 4

| REV. | DESCRIPTION | DATE | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|---|
| | | | | |


MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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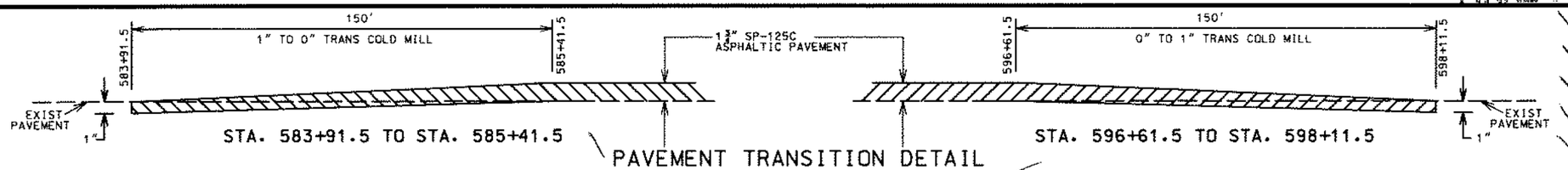
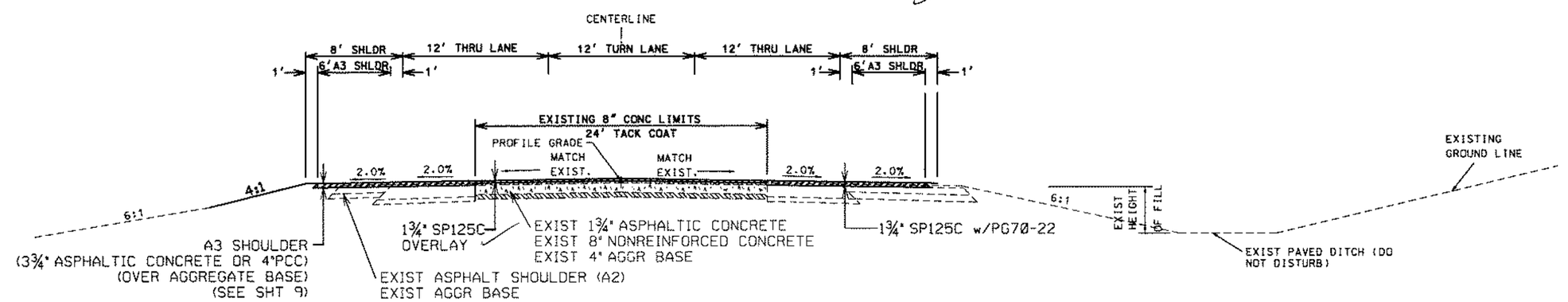
FINAL PLANS




PAVEMENT TRANSITION DETAIL




2 LANES W/ LEFT TURN LANE
585+41.5 TO 596+61.5
TANGENT SECTION

** 10'-4' TRANS EXIST SHOULDER FROM 585+41.5 TO 589+01.5
4' EXIST SHOULDER FROM 589+01.5 TO 593+01.5
4'-10' TRANS EXIST SHOULDER FROM 593+01.5 TO 596+61.5

* 10' EXIST SHOULDER FROM 585+41.5 TO 589+01.5
4' EXIST SHOULDER FROM 589+01.5 TO 593+01.5
4'-10' TRANS EXIST SHOULDER FROM 593+01.5 TO 596+61.5

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 2 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Prepared by: Craig Huckaby 7-25-11
Checked by: Keith Maddux 7-25-11

TYPICAL SECTIONS
RTE 5 @ HOUSTON RD
SHEET 4 OF 4

REV.

FINAL PLANS

# SUMMARY OF QUANTITIES

THESE PLANS ACCURATELY DEPICT THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL APPURTENANCE FEATURES, INCLUDING MODIFICATIONS DESIGNATED OR AUTHORIZED BY THE ENGINEER OF RECORD.

RESIDENT ENGINEER Dennis Krenning

DATE 8/5/11

REV. AUGUST 2008



| ITEM | DESCRIPTION | UNIT | QUANTITY |
|---|---|---|---|
| * | ROADWAY ITEMS - J8P0902 | | |
| 202-20.10 | REMOVAL OF IMPROVEMENTS | LS | 1 |
| 203-10.00 | CLASS A EXCAVATION | CUYD | 38165 |
| 203-60.00 | COMPACTING EMBANKMENT | CUYD | 18135 |
| 206-30.00 | CLASS 3 EXCAVATION | CUYD | 3 |
| 208-10.00 | INTERCEPTION DITCH | 100F | 6 |
| 304-01.43 | TYPE 1 AGGREGATE FOR BASE (4 IN. THICK) | SQYD | 856 |
| 304-99.09 | MISC. | STA | 1216.7 |
| | PROCESS AND PLACE AGGREGATE BASE | | |
| 310-70.02 | GRAVEL (A) OR CRUSHED STONE (B) OR CHAT (C) | TONS | 190 |
| 401-01.51 | TYPE A3 SHOULDER | SQYD | 79378.2 |
| 401-12.09 | BITUMINOUS PAVEMENT MIXTURE PG64-22, (BP-1) | TONS | 1405.8 |
| 601-10.00A | TYPE 2 FIELD LABORATORIES | LS | 0 |
| 606-10.10 | GUARDRAIL TYPE A | LF | 1754 |
| 606-22.00A | BRIDGE ANCHOR SECTION, 6.5 FT. POSTS (SAFETY BARRIER CURB) | EA | 4 |
| | ROADWAY AND REHABILITATION WORK ONLY) | | |
| | (ROADWAY AND REHABILITATION WORK ONLY) | | |
| 606-23.00A | TRANSITION SECTION, 6.5 FT. POSTS | EA | 4 |
| 606-30.15 | TYPE A CRASHWORTHY END TERMINAL | EA | 2 |
| 606-66.10 | END ANCHOR | EA | 0 |
| 606-99.02 | MISC. | EA | 94 |
| | HTGC ANCHOR ASSY | | |
| 606-99.03 | MISC. | LF | 44360 |
| | HIGH TENSION GUARD CABLE | | |
| 608-10.00 | CONCRETE MEDIAN | SQYD | 100.4 |
| 608-99.05 | MISC. | SQYD | 409.8 |
| | 8 IN NON-REINFORCED CONC FOR ENTRANCES | | |
| 609-70.00 | ROCK LINING | CUYD | 39 |
| 610-99.05 | MISC. | SQYD | 128.7 |
| | CONCRETE DITCH LINER | | |
| 612-30.00A | TRUCK OR TRAILER MOUNTED ATTENUATOR (TMA) | EA | 2 |
| 616-10.05 | CONSTRUCTION SIGNS | SQFT | 1488 |
| 616-10.08 | ADVANCED WARNING RAIL SYSTEM | EA | 5 |
| 616-10.25 | CHANNELIZER (TRIM LINE) | EA | 1217 |
| 616-10.98 | CHANGEABLE MESSAGE SIGN, CONTRACTOR FURNISHED, CONTRACTOR RE | EA | 2 |
| | TAINED | | |
| | CONTRACTOR RETAINED | | |
| 616-11.20 | INSTALLING 'DRIVE SMART' SIGN | EA | 2 |
| 616-11.33 | INSTALLING 'POINT OF PRESENCE' SIGN | EA | 2 |
| 616-20.10 | WORK ZONE LIGHTING | LS | 1 |
| 618-10.00 | MOBILIZATION | LS | 1 |
| 619-10.00 | PAVEMENT EDGE TREATMENT | LF | 97914 |
| 620-51.30 | TYPE 2 PREFORMED MARKING TAPE (GROOVED), LEFT/RIGHT ARROW | EA | 68 |
| 620-59.02 | 6 IN. WHITE HIGH BUILD ACRYLIC WATERBORNE PAVEMENT MARKING P | LF | 123021 |
| | AINT | | |
| | PAINT | | |
| 620-59.03 | 6 IN. YELLOW HIGH BUILD ACRYLIC WATERBORNE PAVEMENT MARKING | LF | 212412 |
| | PAINT | | |
| | PAINT | | |
| 620-59.09 | 24 IN. YELLOW HIGH BUILD ACRYLIC WATERBORNE PAVEMENT MARKING | LF | 1951 |
| | PAINT (HASH BARS) | | |
| | PAINT (HASH BARS) | | |
| 620-59.21 | 4 IN. YELLOW WET REFLECTIVE HIGH BUILD ACRYLIC WATERBORNE PA | LF | 19291 |

| ITEM | DESCRIPTION | UNIT | QUANTITY |
|---|---|---|---|
| | VEMENT MARKING PAINT | | |
| | PAVEMENT MARKING PAINT | | |
| 620-59.22 | 6 IN. WHITE WET REFLECTIVE HIGH BUILD ACRYLIC WATERBORNE PAV | LF | 14953 |
| | EMENT MARKING PAINT | | |
| | PAVEMENT MARKING PAINT | | |
| 620-70.01 | PAVEMENT MARKING REMOVAL | LF | 27857 |
| 620-80.65 | TEMPORARY RAISED PAVEMENT MARKER, TYPE 2 | EA | 1522 |
| 627-40.00 | CONTRACTOR FURNISHED SURVEYING AND STAKING | LS | 1 |
| 725-04.30 | 30 IN. PIPE GROUP C | LF | 23 |
| 725-04.36 | 36 IN. PIPE GROUP C | LF | 32 |
| 725-04.42 | 42 IN. PIPE GROUP C | LF | 36 |
| 726-13.24 | 24 IN. CLASS III REINFORCED CONCRETE PIPE CULVERT | LF | 19 |
| 732-10.16A | 24 IN. OR ALLOWED SUBSTITUTE SAFETY SLOPE END SECTION | EA | 4 |
| | SECTION | | |
| 732-10.17A | 30 IN. OR ALLOWED SUBSTITUTE SAFETY SLOPE END SECTION | EA | 1 |
| | SECTION | | |
| 732-10.18A | 36 IN. OR ALLOWED SUBSTITUTE SAFETY SLOPE END SECTION | EA | 1 |
| | SECTION | | |
| 732-10.19A | 42 IN. OR ALLOWED SUBSTITUTE SAFETY SLOPE END SECTION | EA | 1 |
| | SECTION | | |
| 732-20.30A | BEVELED PIPE END TREATMENT FOR 30 IN. OR ALLOWED SUBSTITUTE | EA | 1 |
| | PIPE | | |
| | OR ALLOWED SUBSTITUTE PIPE | | |
| 732-20.36A | BEVELED PIPE END TREATMENT FOR 36 IN. OR ALLOWED SUBSTITUTE | EA | 1 |
| | PIPE | | |
| | OR ALLOWED SUBSTITUTE PIPE | | |
| 732-20.42A | BEVELED PIPE END TREATMENT FOR 42 IN. OR ALLOWED SUBSTITUTE | EA | 1 |
| | PIPE | | |
| | OR ALLOWED SUBSTITUTE PIPE | | |
| 805-10.00A | SEEDING - COOL SEASON MIXTURES | ACRE | 33.5 |
| 805-20.00A | SEEDING - WARM SEASON MIXTURES | ACRE | 0 |
| 806-10.16 | SEDIMENT REMOVAL | CUYD | 0 |
| 806-10.17 | TEMPORARY SEEDING AND MULCHING | ACRE | 0 |
| 806-10.19 | SILT FENCE | LF | 500 |
| 806-10.22 | TYPE II DITCH CHECK | EA | 20 |
| 806-99.02 | MISC. | EA | 8 |
| | ROCK DITCH CHECK | | |
| 620-59.35 | 9 IN. BLACK ACRYLIC WATERBORNE CONTRAST PAVEMENT MARKING PAI | LF | 8730 |
| | NT | | |
| 401-99.05 | MISC. | SQYD | 4089.4 |
| | Misc. Option B-Route E Asphalt Overlay | | |
| 403-99.05 | MISC. | SQYD | 401.5 |
| | Misc. System Geosynthetic Interlayer | | |
| 407-10.05 | TACK COAT | GAL | 360 |
| | Tack Coat | | |
| 622-40.10 | MODIFIED COLD MILLING (DEPTH TRANSITIONS) | SQYD | 1498 |
| | Modified Coldmilling (Depth Transitions) | | |
| 403-99.05 | MISC. | SQYD | 6222.2 |
| | 1 3/4 In Asphalt Concrete Pavement | | |
| 403-99.05 | MISC. | SQYD | 0 |
| | Misc. Option B-Houston Rd Asphalt Overla | | |
| 403-99.05 | MISC. | SQYD | 0 |
| | Misc. System Geosynthetic Interlayer | | |

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DATE PREPARED 7/25/2011

ROUTE 5 | STATE MO

DISTRICT 08 | SHEET NO. 2A

COUNTY LACLEDE

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

BRIDGE NO.

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| | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

# SUMMARY OF QUANTITIES

FINAL PLANS

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RESIDENT ENGINEER Dennis Krenning

DATE 8/5/11

REV. AUGUST 2008

SHEET 2 OF 2

| ITEM | DESCRIPTION | UNIT | QUANTITY |
|---|---|---|---|
| 407-10.05 | TACK COAT | GAL | 310 |
| | Tack Coat | | |
| 622-40.10 | MODIFIED COLD MILLING (DEPTH TRANSITIONS) | SQYD | 1667 |
| | Modified Coldmilling (Depth Transitions) | | |
| 616-10.09 | FLAG ASSEMBLY | EA | 30 |
| 202-99.05 | MISC. Concrete Removal | SQYD | 65 |
| 109-99.01 | MISC. | LS | 1 |
| | Misc. Equipment Rental | | |
| 622-99.05 | MISC. Coldmilling | SQYD | 992.1 |
| 109-99.02 | MISC. | EA | 3119.05 |
| | 5114 - 25% Share Practical Design Value | | |
| | Rte. BB 2" overlay. | | |
| 616-10.30 | TYPE III MOVEABLE BARRICADE | EA | 9 |
| 622-99.09 | MISC. Coldmilling | STA | 0.5 |
| 109-99.02 | MISC. | EA | 1 |
| | 25% Share of Practical Design #4. | | |
| 613-10.14 | FULL DEPTH PAVEMENT REPAIR SAW CUT (FOR PERIMETER AND INTER | LF | 214 |
| | NAL SAW CUTS) | | |
| 613-10.15 | DOWEL BAR (DRILLING, FURNISHING AND INSTALLATION) FOR FULL | EA | 132 |
| | DEPTH PAVEMENT REPAIR | | |
| 613-10.18 | TIE BAR (DRILLING, FURNISHING AND INSTALLATION) FOR FULL DEP | EA | 30 |
| | TH PAVEMENT REPAIR (TYPE L JOINTS) | | |
| 613-10.10 | FURNISHING AND PLACING CONCRETE MATERIAL FOR FULL DEPTH PAVE | SQYD | 54.7 |
| | MENT REPAIR | | |
| 608-99.01 | MISC. Concrete Approach (Rte. VV) | LS | 1 |
| 109-99.01 | MISC. | LS | 1 |
| | Epoxy Polymer Overlay Repair | | |
| 109-40.00 | FORCE ACCOUNT | EA | 15421.09 |
| * | ALT PVMT A ITEMS - J8P0902 | | |
| 502-11.08 | CONCRETE PAVEMENT ( 8 IN. NON-REINF) | SQYD | 111722 |
| 622-30.10 | DIAMOND GRINDING (CONCRETE PAVEMENT) | SQYD | 254764 |
| 626-20.00A | PORTLAND CEMENT CONCRETE SHOULDER RUMBLE STRIP | STA | 1029.7 |
| 626-20.01 | PORTLAND CEMENT CONCRETE CENTERLINE RUMBLE STRIP | STA | 956.1 |
| 710-10.10 | EPOXY COATED TIE BARS (DRILLED AND INSTALLED) | LB | 63210 |
| * | HIGHWAY SIGNING ITEMS - J8P0902 | | |
| 903-10.10 | CONCRETE FOOTINGS, EMBEDDED | CUYD | 15.9 |
| 903-12.10 | STRUCTURAL STEEL POSTS | LB | 3778 |
| 903-12.40 | BREAKAWAY ASSEMBLY | EA | 51 |
| 903-12.70A | PERFORATED SQUARE STEEL TUBE POST, 2 IN., 12 GA. | LF | 892 |
| 903-12.71 | PERFORATED SQUARE STEEL TUBE POST ANCHOR | LF | 218 |
| 903-50.04 | TYPE SHR2L-1 SIGN | SQFT | 1124.2 |
| 903-50.09 | 36 IN. OR 900 MM STOP SIGN | EA | 27 |
| 903-50.11 | SIGN, TYPE STR2L-3 | SQFT | 465 |
| 903-99.03 | MISC. | LF | 1124 |
| | PERFORATED SQ. STEEL TUBE POST, 2 1/2 IN | | |
| 903-99.03 | MISC. | LF | 128 |
| | PERFORATED SQ. STEEL TUBE POST, 2 1/4 IN | | |
| 903-99.03 | MISC. | LF | 258 |
| | PERFORATED SQ. STL TUBE POST ANCHOR 3 IN | | |
| * | OPTION A AT ROUTE E - J8P0902 | | |
| 502-99.05 | MISC. | SQYD | 0 |
| | OPTION A-ROUTE E PLACEMENT WHITE TOPPING | | |
| 506-10.30 | ULTRATHIN CONCRETE WHITETOPPING | CUYD | 0 |

| ITEM | DESCRIPTION | UNIT | QUANTITY |
|---|---|---|---|
| 622-10.03 | COLDMILLING BITUMINOUS PAVEMENT FOR REMOVAL OF SURFACING (GR | SQYD | 0 |
| | EATER THAN 3 IN. THICK) | | |
| | (GREATER THAN 3 IN. THICK) | | |
| 622-30.10 | DIAMOND GRINDING (CONCRETE PAVEMENT) | SQYD | 0 |
| * | OPTION A AT HOUSTON ROAD - J8P0902 | | |
| 502-99.05 | MISC. | SQYD | 0 |
| | OPTION A-HOUSTON RD CONC WIDENING | | |
| 613-10.10 | FURNISHING AND PLACING CONCRETE MATERIAL FOR FULL DEPTH PAVE | SQYD | 0 |
| | MENT REPAIR | | |
| | DEPTH PAVEMENT REPAIR | | |
| 613-10.12 | SUBGRADE COMPACTION (6 IN. DEPTH) (PAVEMENT REPAIR) | SQYD | 0 |
| 613-10.13 | TYPE 1 OR 5 AGGREGATE FOR BASE (4 IN. THICK) (PAVEMENT REPA | SQYD | 0 |
| | IR) | | |
| | (PAVEMENT REPAIR) | | |
| 613-10.14 | FULL DEPTH PAVEMENT REPAIR SAW CUT (FOR PERIMETER AND INTER | LF | 0 |
| | NAL SAW CUTS) | | |
| | INTERNAL SAW CUTS) | | |
| 613-10.15 | DOWEL BAR (DRILLING, FURNISHING AND INSTALLATION) FOR FULL | EA | 0 |
| | DEPTH PAVEMENT REPAIR | | |
| | FULL DEPTH PAVEMENT REPAIR | | |
| 613-10.17 | DOWEL BAR (FURNISHING AND INSTALLATION WITH BASKETS) FOR FUL | EA | 0 |
| | L DEPTH PAVEMENT REPAIR | | |
| | FOR FULL DEPTH PAVEMENT REPAIR | | |
| 613-10.18 | TIE BAR (DRILLING, FURNISHING AND INSTALLATION) FOR FULL DEP | EA | 0 |
| | TH PAVEMENT REPAIR (TYPE L JOINTS) | | |
| | FULL DEPTH PAVEMENT REPAIR (TYPE L JOINT | | |
| 622-10.01 | COLDMILLING BITUMINOUS PAVEMENT FOR REMOVAL OF SURFACING (3 | SQYD | 0 |
| | IN. THICK OR LESS) | | |
| | (3 IN. THICK OR LESS) | | |
| 622-30.10 | DIAMOND GRINDING (CONCRETE PAVEMENT) | SQYD | 0 |
| 710-10.10 | EPOXY COATED TIE BARS (DRILLED AND INSTALLED) | LB | 0 |
| 109-99.02 | MISC. | EA | 19798.09 |
| | 25% Share Practical Design | | |

PROJ. ACCEPT: 6-30-11

PREPARED BY: Cy Hueker

CHECKED BY: [illegible] 8-1-11

REVIEWED BY: Dennis Krenning

DIST. OFFICE: Marilyn Gabriel

SUPPORT CTR: Charles Holdt

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED: 8/1/2011

ROUTE: 5 | STATE: MO

DISTRICT: 08 | SHEET NO.: 2A

COUNTY: LACLEDE

JOB NO.: J8P0902

CONTRACT ID.: 090626-501

PROJECT NO.: FAF-5-2(28)

BRIDGE NO.:

DESCRIPTION | DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

FINAL PLANS

REV. SEPT. 8, 9

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 2B |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

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DATE

Drawn by: Craig Huckaby 7-25-11

Checked by: Heidi Maddux 7-25-11

### REMOVAL OF IMPROVEMENTS

| SHEET | STA. | ROUTE | LOC | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|
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| | | | | TOTAL | 1 | LUMP SUM |

### ENTRANCES TO ROUTE 5

| SHEET | STA | LOCATION | SKEW | TYPE | GRADE | WIDTH (FT) | LENGTH (FT) | APPROACH RADII (FT) | SURFACE AREA (SY) | AGGREGATE ENTRANCES (TONS)* | CONCRETE ENTRANCES (SY) | ASPHALT ENTRANCES (TONS)* | ASPHALT SIDE ROADS (TONS)* | TYPE 1 AGG. 4" THICK BASE (SY) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 80+36.35 | LT | | ASPH | -0.90% | 22.0 | 70 | 50 & 50 | 293.8** | | | | | | Livingston Road. Reconstruct to 4" depth. |
| 4 | 80+36.35 | RT | | ASPH | -0.60% | 22.0 | 70 | 50 & 50 | 242.1** | | | | | | Livingston Road. 4" depth. |
| 5 | 123+03.40 | LT | 86 | AGGR | -6.50% | 12.0 | 10 | N/A | 25.1 | 3.7 | | | | | Field Entrance. Overlay depth tapers from 4" to 0" |
| 5 | 137+57.80 | LT | 18 | ASPH | 3.00% | 23.0 | 73.6 | 40 & 50 | 295.4 | | | | | | Olathe Drive. Overlay depth tapers from 3" to 0" |
| 5 | 137+57.80 | RT | 28 | ASPH | -6.00% | 24.0 | 73 | 40 & 50 | 325.2** | | | | | | Olathe Drive. Reconstruct to 4" depth. |
| 5 | 153+53.00 | LT | 92 | AGGR | -9.20% | 12.0 | 9.9 | N/A | 24.3 | 1.8 | | | | | Field Entrance. Overlay depth tapers from 2" to 0" |
| 6 | 167+47.00 | RT | | AGGR | -0.20% | 22.0 | 10 | N/A | 35.3 | 12.4 | | | | | Field Entrance. Overlay depth tapers from 9.5" to 0" |
| 6 | 191+01.72 | RT | | AGGR | -7.70% | 14.0 | 10 | N/A | 26.3 | 4.9 | | | | | Private Entrance. Overlay depth tapers from 5" to 0" |
| 6 | 220+30.60 | LT | 101 | ASPH | -8.50% | 26.5 | 63.7 | 40 & 50 | 318.9 | | 318.9 | | | | Route VV. Overlay depth tapers from 3" to 0" |
| 6 | 220+40.00 | RT | 109 | ASPH | -1.30% | 21.0 | 58.9 | 40 & 50 | 245.3** | | | | | | John Bryant Road. Reconstruct to 4" depth. |
| 7 | 223+75.50 | RT | | AGGR | 1.20% | 18.0 | 10 | N/A | 31.4** | 7.0 | | | | | Field Entrance. Reconstruct to 4" depth. |
| 7 | 249+15.00 | RT | | AGGR | 1.40% | 11.0 | 10.1 | N/A | 23.4** | 5.2 | | | | | Private Entrance. Reconstruct to 4" depth. |
| 7 | 249+26.00 | LT | | ASPH | 5.20% | 22.0 | 51.7 | 50 & 50 | 243.5 | | | | | | CR-985 County Road. Overlay depth tapers from 4" to 0" |
| 7 | 262+92.80 | RT | | ASPH | 2.40% | 24.0 | 99.1 | 90 & 90 | 1131.2** | | | | | | Route E (includes rt. turn pvmt). Reconst. to 4" depth. |
| 7 | 268+46.00 | LT | | AGGR | 2.20% | 16.0 | 10 | N/A | 28.7** | 6.4 | | | | | Field Entrance. Reconstruct to 4" depth. |
| 7 | 277+03.60 | LT | | ASPH | -4.20% | 21.0 | 61.7 | 50 & 50 | 270.1 | | | | | | Knoll Road. Overlay depth tapers from 5" to 0" |
| 8 | 283+69.00 | RT | 94 | AGGR | -9.40% | 10.0 | 10 | N/A | 22.3 | 8.7 | | | | | Field Entrance. Overlay depth tapers from 10.5" to 0" |
| 8 | 308+98.70 | RT | | AGGR | -8.60% | 28.0 | 10 | N/A | 42.5 | 11.0 | | | | | Commercial Entrance. Overlay depth tapers from 7" to 0" |
| 8 | 315+24.60 | LT | | AGGR | 6.20% | 12.0 | 10 | N/A | 24.9** | 5.5 | | | | | Field Entrance. Reconstruct to 4" depth. |
| 8 | 315+29.30 | RT | | AGGR | 2.00% | 23.0 | 10 | N/A | 36.6 | 2.0 | | | | | Field Entrance. Overlay depth tapers from 1.5" to 0" |
| 8 | 330+92.80 | RT | | AGGR | 0.80% | 15.0 | 10.2 | N/A | 28.1 | 2.1 | | | | | Private Entrance. Overlay depth tapers from 2" to 0" |
| 8 | 330+93.80 | LT | 70 | ASPH | 2.00% | 21.0 | 48.8 | 50 & 50 | 276.7 | | | | | | Odessa Road. Overlay depth tapers from 2" to 0" |
| 8 | 335+23.30 | RT | 99 | AGGR | 5.90% | 16.0 | 10 | N/A | 28.8 | 2.1 | | | | | Commercial Entrance. Overlay depth tapers from 2" to 0" |
| 8 | 338+23.60 | LT | | AGGR | 1.30% | 27.0 | 10 | N/A | 41.5 | 5.4 | | | | | Commercial Entrance. Overlay depth tapers from 3.5" to 0" |
| 8 | 342+28.40 | RT | | AGGR | 3.60% | 16.0 | 10 | N/A | 36.6 | 4.1 | | | | | Private Entrance. Overlay depth tapers from 3" to 0" |
| 9 | 343+60.20 | RT | | AGGR | 2.30% | 29.0 | 10 | N/A | 43.6 | 3.2 | | | | | Private Entrance. Overlay depth tapers from 2" to 0" |
| 9 | 343+65.80 | LT | | AGGR | -2.20% | 51.0 | 10 | N/A | 67.2** | 14.9 | | | | | Private Entrance. Reconstruct to 4" depth. |
| 9 | 347+13.50 | LT | | ASPH | 6.00% | 31.0 | 10 | N/A | 45.6 | | | | | | Commercial Entrance. Overlay depth tapers from 2" to 0" |
| 9 | 351+27.30 | RT | 65 | ASPH | 0.70% | 22.0 | 46.6 | 50 & 36 | 241.7 | | | | | | Old Route 5 County Road. Overlay depth tapers from 1.5" to 0" |
| 9 | 360+01.10 | LT | | AGGR | -6.20% | 21.0 | 10 | N/A | 34.5 | 7.7 | | | | | Commercial Entrance. Overlay depth tapers from 6" to 0" |
| 9 | 368+01.30 | LT | | AGGR | -13.60% | 17.0 | 10 | N/A | 30.0 | 7.8 | | | | | Private Entrance. Overlay depth tapers from 7" to 0" |
| 9 | 369+26.20 | RT | | AGGR | 5.20% | 14.0 | 10 | N/A | 26.5** | 5.9 | | | | | Private Entrance. Reconstruct to 4" depth. |
| 9 | 386+15.40 | LT | | AGGR | 6.50% | 12.0 | 10 | N/A | 24.4** | 5.4 | | | | | Private Entrance. Reconstruct to 4" depth. |
| 9 | 397+47.80 | LT | | AGGR | -8.20% | 13.0 | 10 | N/A | 260.0 | 48.1 | | | | | Commercial Entrance. Overlay depth tapers from 5" to 0" |
| 9 | 399+06.40 | RT | 118 | ASPH | 1.80% | 22.0 | 72.4 | 50 & 40 | 308.4 | | | | | | Old Route 5 County Road. Overlay depth tapers from 3" to 0" |
| 10 | 402+70.00 | LT | 100 | ASPH | -5.67% | 19.0 | 61.4 | 50 & 50 | 261.4 | | | | | | Jasmine Road. Overlay depth tapers from 5" to 0" |
| 10 | 408+69.40 | RT | | ASPH | 2.80% | 14.5 | 10 | N/A | 27.2 | | | | | | Private Entrance. Overlay depth tapers from 1.5" to 0" |
| 10 | 410+27.50 | RT | | CONC | 2.00% | 32.0 | 10 | N/A | 47.1** | | 47.1 | | | 47.1 | 8" Thick Commercial Entrance. |
| 10 | 410+95.50 | LT | | ASPH | -5.60% | 24.0 | 10 | N/A | 38.1 | | | | | | Private Entrance. Overlay depth tapers from 6.5" to 0" |
| 10 | 413+73.60 | RT | | CONC | 2.20% | 27.0 | 10 | N/A | 43.8** | | 43.8 | | | 43.8 | 8" Thick Commercial Entrance. |
| 10 | 416+69.85 | LT | 99 | ASPH | -1.60% | 42.5 | 101.8 | 75 & 75 | 992.1** | | | | | | Route BB. Reconstruct to 4" depth. |

* Quantities given in TONS are based on 2.00 tons/cubic yard.

** Denotes excavation quantities for these entrances are included in volume grading.

| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SUMMARY SHEET
SHEET 1 OF 11

REV.

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

FINAL PLANS

Drawn by: Craig Huckel 7-25-11
Checked by: Keith Maddux 7-25-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO. | 8 | 2B |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

ENTRANCES TO ROUTE 5 CON'T.

| SHEET | STA | LOCATION | SKEW | TYPE | GRADE | WIDTH (FT) | LENGTH (FT) | APPROACH RADII (FT) | SURFACE AREA (SY) | AGGREGATE ENTRANCES (TONS)* | CONCRETE ENTRANCES (SY) | BP-1 ASPH ENTRANCES (TONS)* | BP-1 ASPH SIDE ROADS (TONS)* | TYPE 1 AGG. 4" THICK BASE (SY) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 417+44.00 | RT | | AGGR | 6.50% | 16.0 | 10 | N/A | 29.1** | 6.5 | | | | | Private Entrance. Reconstruct to 4" depth. |
| 10 | 427+49.00 | RT | | AGGR | 2.80% | 21.0 | 10 | N/A | 34.3** | 7.6 | | | | | Field Entrance. Reconstruct to 4" depth. |
| 10 | 442+75.00 | LT | 96 | ASPH | 4.80% | 21.5 | 57.3 | 50 & 50 | 260.9** | | | | | | Jonquil Road. Reconstruct to 4" depth. |
| 10 | 442+75.00 | RT | 83 | ASPH | 2.10% | 21.0 | 55.8 | 50 & 50 | 253.2 | | | | | | CR-5-956 County Road. Overlay depth tapers from 5.5" to 0" |
| 10 | 460+20.20 | RT | | AGGR | 1.10% | 13.0 | 10 | N/A | 25.3 | 0.9 | | | | | Field Entrance. Overlay depth tapers from 1" to 0" |
| 11 | 496+46.90 | RT | 80 | ASPH | -3.10% | 20.0 | 61.5 | 50 & 50 | 265.6 | | | | | | Independence Road. Overlay depth tapers from 4.5" to 0" |
| 11 | 509+01.50 | RT | | ASPH | -2.00% | 20.0 | 10 | N/A | 33.8 | | | | | | Private Entrance. Overlay depth tapers from 1.5" to 0" |
| 11 | 512+14.70 | LT | 57 | ASPH | -1.20% | 23.0 | 62.2 | 30 & 75 | 268.0 | | | | | | Orchard Road. Overlay depth tapers from 3.5" to 0" |
| 11 | 518+09.30 | LT | 100 | ASPH | 0.70% | 15.0 | 10.2 | N/A | 26.9** | | | | | | Private Entrance. Reconstruct to 4" depth. |
| 12 | 523+38.70 | RT | | ASPH | 5.50% | 18.0 | 10 | 40 & 40 | 29.8 | | | | | | Private Entrance. Overlay depth tapers from 1.5" to 0" |
| 12 | 523+45.00 | LT | | ASPH | -1.90% | 30.0 | 39.5 | N/A | 171.** | | | | | 171.1 | Ironwood Road. Reconstruct to 4" depth |
| 12 | 524.71.80 | RT | | ASPH | 7.00% | 17.0 | 10 | N/A | 29.8** | | | | | 29.8 | Private Entrance. Reconstruct to 4" depth. |
| 12 | 526+95.00 | RT | | ASPH | 0.60% | 16.0 | 10 | N/A | 29.3 | | | | | | Private Entrance. Overlay depth tapers from 6" to 0" |
| 12 | 531+34.40 | LT | | ASPH | 2.90% | 44.0 | 10 | N/A | 59.7** | | | | | | Commercial Entrance. Reconstruct to 4" depth. |
| 12 | 531+71.80 | RT | | ASPH | -11.50% | 28.0 | 10 | N/A | 42.6 | | | | | | Private Entrance. Overlay depth tapers from 8" to 0" |
| 12 | 533+96.00 | RT | | ASPH | -10.10% | 17.0 | 10 | N/A | 29.8** | | | | | | Commercial Entrance. Overlay depth tapers from 2" to 0" |
| 12 | 541+88.80 | RT | | ASPH | 11.90% | 16.0 | 10 | N/A | 28.9** | | | | | | Private Entrance. Reconstruct to 4" depth. |
| 12 | 545+16.60 | LT | | ASPH | 2.30% | 17.0 | 10 | N/A | 29.9** | | | | | | Private Entrance. Reconstruct to 4" depth. |
| 12 | 546+03.40 | RT | | ASPH | 13.90% | 16.0 | 10 | N/A | 29.0** | | | | | | Private Entrance. Reconstruct to 4" depth. |
| 12 | 550+06.00 | RT | | ASPH | -10.00% | 22.0 | 50 | 50 & 50 | 244.2** | | | | | | Hazel Road. Reconstruct to 4" depth. |
| 12 | 552+08.40 | LT | | ASPH | -12.50% | 23.0 | 10 | N/A | 36.3 | | | | | | Private Entrance. Overlay depth tapers from 6" to 0" |
| 12 | 553+35.70 | RT | | ASPH | -6.60% | 22.0 | 10 | N/A | 30.2 | | | | | | Commercial Entrance. Overlay depth tapers from 2.5" to 0" |
| 12 | 554+72.00 | RT | | ASPH | -7.60% | 18.0 | 10 | N/A | 31.2 | | | | | | Private Entrance. Overlay depth tapers from 4.5" to 0" |
| 12 | 555+97.00 | LT | | ASPH | -10.10% | 22.0 | 10 | N/A | 35.2 | | | | | | Private Entrance. Overlay depth tapers from 4.5" to 0" |
| 12 | 557+33.70 | RT | | ASPH | -7.70% | 19.0 | 10 | N/A | 32.3 | | | | | | Private Entrance. Overlay depth tapers from 3.5" to 0" |
| 12 | 557+97.00 | LT | | ASPH | -9.00% | 16.0 | 10 | N/A | 29.3 | | | | | | Commercial Entrance. Overlay depth tapers from 5.5" to 0" |
| 12 | 558+08.00 | RT | | ASPH | -2.00% | 16.0 | 10 | N/A | 29.3 | | | | | | Private Entrance. Overlay depth tapers from 1.5" to 0" |
| 12 | 559+68.00 | RT | | ASPH | 1.50% | 16.0 | 10 | N/A | 29.0 | | | | | | Private Entrance. Overlay depth tapers from 1.5" to 0" |
| 12 | 559+98.90 | LT | | ASPH | 0.70% | 22.0 | 10 | N/A | 35.7** | | | | | 35.7 | Private Entrance. Reconstruct to 4" depth. |
| 12 | 560+48.30 | RT | | ASPH | 5.80% | 18.0 | 10 | N/A | 30.7** | | | | | | Private Entrance. Reconstruct to 4" depth. |
| 12 | 565+42.00 | LT | | ASPH | 6.10% | 17.0 | 10 | N/A | 30.4** | | | | | 30.4 | Private Entrance. Reconstruct to 4" depth. |
| 12 | 574+06.00 | RT | | ASPH | -3.00% | 17.0 | 10 | N/A | 30.4 | | | | | | Private Entrance. Overlay depth tapers from 2.5" to 0" |
| 12 | 574+08.20 | LT | | ASPH | -4.70% | 17.0 | 10 | N/A | 30.3 | | | | | | Commercial Entrance. Overlay depth tapers from 5" to 0" |
| 12 | 576+58.80 | LT | | ASPH | -6.50% | 22.0 | 50.2 | 50 & 50 | 243.6 | | | | | | Hemlock Road. Overlay depth tapers from 6" to 0" |
| 13 | 585+26.00 | RT | | ASPH | -6.70% | 16.0 | 10 | N/A | 28.2 | | | | | | Private Entrance. Overlay depth tapers from 5.5" to 0" |
| 13 | 587+70.20 | LT | | ASPH | -9.20% | 26.0 | 10 | N/A | 39.5 | | | | | | Private Entrance. Overlay depth tapers from 9.5" to 0" |
| 13 | 589+52.00 | RT | | ASPH | 0.00% | 23.0 | 82.1 | 80 & 80 | 520.3** | | | | | | Houston Road. Reconstruct to 4" depth. |
| 13 | 592+93.70 | LT | | ASPH | 6.80% | 26.0 | 10 | N/A | 39.6** | | | | | | Private Entrance. Reconstruct to 4" depth. |
| 13 | 598+17.40 | RT | | ASPH | -6.00% | 40.0 | 10 | N/A | 55.4 | | | | | | Commercial Entrance. Overlay depth tapers from 9.5" to 0" |
| 13 | 602+09.60 | RT | | ASPH | 4.50% | 16.0 | 10 | N/A | 55.8** | | | | | 55.8 | Commercial Entrance. Reconstruct to 4" depth. |
| 13 | 602+77.50 | LT | | ASPH | -3.10% | 33.0 | 9.8 | N/A | 27.7 | | | | | | Private Entrance. Overlay depth tapers from 2.5" to 0" |
| 13 | 604+65.60 | RT | | ASPH | 7.40% | 16.0 | 10 | N/A | 53.9** | | | | | 53.9 | Private Entrance. Reconstruct to 4" depth. |
| 13 | 606+29.70 | LT | | ASPH | -16.10% | 33.0 | 49.7 | 50 & 50 | 300.5 | | | | | | Oakwood Drive. Overlay depth tapers from 6.5" to 0" |
| 13 | 606+68.60 | RT | | ASPH | 1.00% | 16.0 | 10 | N/A | 34.0** | | | | | | Private Entrance. Reconstruct to 4" depth. |
| 13 | 612+88.00 | LT | | ASPH | 5.20% | 31.0 | 51.4 | 40 & 40 | 253.3** | | | | | 253.3 | Oakwood Drive. Reconstruct to 4" depth. |
| 13 | 615+49.30 | RT | | ASPH | -2.30% | 16.0 | 10 | N/A | 29.6** | | | | | | Commercial Entrance. Reconstruct to 4" depth. |
| 13 | 618+62.00 | RT | | ASPH | -4.20% | 40.0 | 49.6 | 50 & 50 | 341.4 | | | | | | Kingsbrook Road. Overlay depth tapers from 8.5" to 0" |
| 13 | 623+00.00 | LT | | ASPH | 0.40% | 27.0 | 30.6 | 30 & 30 | 134.9** | | | | | 134.9 | Kingsbrook Road. Reconstruct to 4" depth. |
| 13 | 627+06.00 | RT | | ASPH | -5.20% | 26.0 | 32 | 30 & 30 | 141.5 | | | | | | Lakeshore Road. Overlay depth tapers from 7.5" to 0" |
| 13 | 629+49.30 | RT | | ASPH | 4.50% | 20.0 | 10 | N/A | 33.5 | | | | | | Private Entrance. Overlay depth tapers from 4.5" to 0" |
| 13 | 639+76.50 | RT | | ASPH | 5.00% | 18.0 | 10 | N/A | 29.4** | | | | | | Commercial Entrance. Reconstruct to 4" depth. |
| 13 | 640+27.50 | LT | | ASPH | 2.80% | 18.0 | 10 | N/A | 30.1** | | | | | | Commercial Entrance. Reconstruct to 4" depth. |
| 14 | 644+76.30 | LT | | ASPH | 11.20% | 40.0 | 10 | N/A | 57.3** | | | | | | Commercial Entrance. Reconstruct to 4" depth. |
| 14 | 649+05.00 | RT | | ASPH | -4.20% | 40.0 | 10 | N/A | 29.2 | | | | | | Commercial Entrance. Overlay depth tapers from 4.5" to 0" |
| 14 | 650+05.00 | LT | | ASPH | -4.50% | 16.0 | 10 | N/A | 29.3 | | | | | | Commercial Entrance. Overlay depth tapers from 4" to 0" |
| | | | | | | | | | Totals= | 190.4 | 409.8 | 0 | 0 | 855.8 | |
| | | | | | | | | | | 190 | | 1405.8 | | 856 | |

* Quantities given in TONS are based on 2.00 tons/cubic yard.
** Denotes excavation quantities for these entrances are included in volume grading.

SUMMARY SHEET
SHEET 2 OF 11

| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

REV.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

FINAL PLANS

## SUMMARY OF QUANTITIES

Drawn by: CWA 7/11/11

Checked by: CJH 7-12-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 2B |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

### PAVEMENT EDGE TREATMENT

| STA | STA | LOCATION | PAVEMENT EDGE TREATMENT LF | REMARKS |
|---|---|---|---|---|
| 41+34.8 | 651+88.35 | LT | 60837.2 | INCL'S BRIDGE EXCEPTION |
| 41+34.8 | 143+23.2 | RT | 10188.4 | |
| 383+00 | 651+88.35 | RT | 26888.4 | |
| | | TOTAL= | 97914 | |

### PROCESS AND PLACE AGGREGATE BASE

| STA | STA | LOCATION | PROCESS & PLACE AGGR BASE STA | REMARKS |
|---|---|---|---|---|
| 41+34.8 | 651+88.35 | LT | 608.35 | INCL'S BRIDGE EXCEPTION |
| 41+34.8 | 651+88.35 | RT | 608.35 | INCL'S BRIDGE EXCEPTION |
| | | | | |
| | | TOTAL= | 1216.7 | |

### PIPES AND END TREATMENTS

| SHEET | STATION | LOCATION | RCP 24" CLASS 3 L.F. | GROUP C 30" L.F. | GROUP C 36" L.F. | GROUP C 42" L.F. | SAFETY SLOPE END SECTION (6:1 SLOPES) 24" EACH | SAFETY SLOPE END SECTION (6:1 SLOPES) 30" EACH | SAFETY SLOPE END SECTION (6:1 SLOPES) 36" EACH | SAFETY SLOPE END SECTION (6:1 SLOPES) 42" EACH | BEVELED END TREATMENT (3:1 SLOPES) 30" EACH | BEVELED END TREATMENT (3:1 SLOPES) 36" EACH | BEVELED END TREATMENT (3:1 SLOPES) 42" EACH | CLASS 3 EXC. C.Y. | ROCK LINING C.Y. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 242+68.10 | LT | 5 | | | | 1 | | | | | | | 1 | | |
| 9 | 344+99.76 | RT | 5 | | | | 1 | | | | | | | 1 | | |
| 10 | 412+19.6 | RT | 9 | | | | 1 | | | | | | | 1 | | |
| 12 | 558+00.0 | LT-ENT | | 23 | | | | 1 | | | 1 | | | | 15 | ROCK LINING FOR BOTH PIPE OUTLETS |
| 12 | 558+30.0 | LT | | | | | 1 | | | | | | | | | END SECTION FOR EXISTING PIPE |
| 12 | 559+98.9 | LT-ENT | | | 32 | | | | 1 | | | 1 | | | 9 | |
| 12 | 565+42.0 | LT-ENT | | | | 36 | | | | 1 | | | 1 | | | |
| | 410+27 | RT-ENT | | | | | | | | | | | | | 5 | |
| | 413+73 | RT-ENT | | | | | | | | | | | | | 10 | |
| | | TOTALS= | 19 | 23 | 32 | 36 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 39 | |

### SEEDING

| STA | STA | ROUTE | LOCATION | COOL SEASON ACRE | WARM SEASON ACRE | TEMPORARY SEED (20%) ACRE | REMARKS |
|---|---|---|---|---|---|---|---|
| 41+34.80 | 651+88.35 | 5 | LT. | | | | |
| 41+34.80 | 651+88.35 | 5 | RT. | | | | |
| | | | TOTALS= | 33.5 | 0 | 0 | |

### EARTHWORK

| SHEET | STA | STA | CLASS A EXCAVATION CY | COMPACTING EMBANKMENT CY | REMARKS |
|---|---|---|---|---|---|
| 4-14 | 41+34.8 | 651+88.35 | 37786.0 | 17360.0 | |
| 4-14 | ENTRANCES | | 379.0 | 775.0 | SEE ENTRANCE REMARKS |
| | | TOTALS= | 38165 | 18135 | |

### CONCRETE MEDIAN STRIP

| SHEET | STATION | STATION | ROUTE | LOCATION | 3" S.Y. | REMARKS |
|---|---|---|---|---|---|---|
| 7 | 262+54.15 | 262+77.22 | 5 | RT | 30.86 | LOW PROFILE ISLAND |
| 10 | 416+93.18 | 417+26.47 | 5 | LT | 65.94 | LOW PROFILE ISLAND |
| 13 | 589+64.54 | 589+71 | 5 | RT | 3.61 | LOW PROFILE ISLAND |
| | | | | | | |
| | | | | TOTAL= | 100.4 | |

**CONTRACTOR FURNISHED SURVEYING AND STAKING**
TOTAL = 1 LUMP SUM

**WORKZONE LIGHTING**
TOTAL = 1 LUMP SUM

**TYPE 2 FIELD LABORATORY**
TOTAL = 0 LUMP SUM

**MOBILIZATION**
TOTAL = 1 LUMP SUM

### LEVEE (PAID AS INTERCEPTION DITCH)

| SHEET | STATION | STATION | LOCATION | SIDE SLOPES | TOP WIDTH | MATERIAL | 100 FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 12 | 552+65 | 555+79 | LT. | 2:1 | 1.0' | ROCK | 3.14 | BUILD FULL LENGTH TO ELEV. 1192.92 AS SHOWN ON CROSS SECTIONS |
| 12 | 556+05 | 557+90 | LT. | 2:1 | 1.0' | ROCK | 1.85 | BUILD FULL LENGTH TO ELEV. 1190.36 AS SHOWN ON CROSS SECTIONS |
| 12 | 558+08 | 559+25 | LT. | 3:1 | 2.0' | EARTH | 1.17 | BUILD FULL LENGTH TO ELEV. 1189.50 AS SHOWN ON CROSS SECTIONS |
| | | | | | | TOTAL= | 6 | |

### CONCRETE DITCH LINER

| SHEET | STATION | STATION | LOCATION | DEPTH | S.Y. | REMARKS |
|---|---|---|---|---|---|---|
| 12 | 565+60 | 566+90 | LT. | 0.79' | 128.7 | EXTEND EXISTING LINER UPSTREAM TO ENTRANCE PIPE |
| | | | | TOTAL= | 128.7 | |

| DESCRIPTION | DATE | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

SUMMARY SHEET
SHEET 3 OF 11

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

FINAL PLANS

Drawn by: [illegible] 7/11/11

Checked by: Craig Hucheson 7-12-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 28 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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### PAVEMENT QUANTITIES

| SHEET | STATION | STATION | NET LENGTH FEET | LOC | PCCP 8" THK-LT SQ. YD. | PCCP 8" THK-RT SQ. YD. | DIAMOND GRINDING SQ. YD. | TIE BAR-LT LBS | TIE BARS-RT LBS | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-7 | 41+34.80 | 226+87.00 | 18552 | RTE 5 | 18552 | 18552 | 82454 | 9914 | 9914 | INCLUDES +1.94 FT FOR TWO EQUATIONS |
| 7 | 226+87.00 | 230+75.70 | 389 | RTE 5 | 259 | 259 | 1468 | 260 | 260 | WIDTH TRANSITION |
| 7 | 230+75.70 | 238+68.70 | 793 | RTE 5 | 264 | 264 | 2467 | 530 | 530 | |
| 7 | 238+68.70 | 242+57.50 | 389 | RTE 5 | 259 | 259 | 1469 | 260 | 260 | INCL +.98 FT FOR ONE EQUATION, WIDTH TRANS |
| 7 | 242+57.50 | 249+50.00 | 693 | RTE 5 | 693 | 693 | 3078 | 370 | 370 | |
| 7 | 249+50.00 | 253+62.40 | 412 | RTE 5 | 275 | 275 | 1558 | 275 | 275 | |
| 7 | 253+62.40 | 258+54.10 | 492 | RTE 5 | 164 | 164 | 1530 | 328 | 328 | WIDTH TRANSITION |
| 7 | 258+54.10 | 262+92.80 | 439 | RTE 5 | 0 | 0 | 0 | 0 | 0 | SEE OPTION A OR B FOR PAV'T QUANTITES |
| 7 | 262+92.80 | 270+73.50 | 781 | RTE 5 | 0 | 0 | 0 | 0 | 0 | SEE OPTION A OR B FOR PAV'T QUANTITES |
| 7-12 | 272+78.90 | 577+08.70 | 30430 | RTE 5 | 30430 | 30430 | 135244 | 16262 | 16262 | INCLUDES -2.53 FT FOR TWO EQUATIONS |
| 12 | 577+08.70 | 578+18.70 | 110 | RTE 5 | 98 | 98 | 464 | 59 | 59 | WIDTH TRANSITION |
| 12-13 | 578+20.00 | 585+41.50 | 722 | RTE 5 | 561 | 561 | 2886 | 386 | 386 | |
| 13 | 585+41.50 | 596+61.50 | 1120 | RTE 5 | 0 | 0 | 0 | 0 | 0 | SEE OPTION A OR B FOR PAVEMENT QUANTITES |
| 13-14 | 596+61.50 | 639+12.40 | 4251 | RTE 5 | 3306 | 3306 | 17004 | 2272 | 2272 | INCLUDES +0.24 FT FOR ONE EQUATION |
| 13-14 | 639+12.40 | 651+98.00 | 1286 | RTE 5 | 1000 | 1000 | 5142 | 687 | 687 | TRANS 38' TO 58' WIDE PAV'T |
| | | | | | 55861 | 55861 | 254764 | 31602 | 31602 | |
| | | | | TOTALS= | 111722 | | | 63204 | USE 63210 | |

SUMMARY SHEET
SHEET 4 OF 11

REV.

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# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

FINAL PLANS

## SUMMARY OF QUANTITIES

Drawn by: [illegible] 7/11/11

Checked by: Craig Hackley 7-12-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 2B |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

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DATE

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| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

### SILT FENCE

| SHEET | STA. | STA. | LOCATION | SILT FENCE L.F. | SEDIMENT REMOVAL CY | REMARKS |
|---|---|---|---|---|---|---|
| EC4 | 153+70 | 154+75 | LT. | 75 | | |
| EC7 | 242+25 | 242+90 | RT. | 113 | | |
| EC7 | 249+33 | 250+55 | RT. | 113 | | |
| EC8 | 268+55 | 269+55 | LT. | 104 | | |
| EC8 | 268+50 | 269+55 | RT. | 95 | | |
| | | | TOTALS= | 500 | 0 | |

### 25% SHARE PRACTICAL DESIGN VALUE ENGINEERING

| CONT. LINE NO. | V.E. NO. | LOCATION | AMOUNT |
|---|---|---|---|
| 5114 | #2 | RTE BB INTERSECTION | $3119.05 |
| 5115 | #3 | HOUSTON RD | $19798.09 |
| 5118 | #4 | RTE E INTERSECTION | 1 L.S. |

### MISC. COLDMILLING

| CONTINGENT LINE NO. | LOCATION | AMOUNT |
|---|---|---|
| 5113 | RTE BB INTERSEC. | 992.1 S.Y. |
| 5117 | RTE E JUNCTION | 0.5 STA |

### MISC. CONCRETE APPROACH

| CONTINGENT LINE NO. | LOCATION | AMOUNT |
|---|---|---|
| 5123 | RTE VV | 1 L.S. |

### MISC. CONCRETE REMOVAL

| CONTINGENT LINE NO. | AMOUNT |
|---|---|
| 5111 | 65 S.Y. |

### MISC. EQUIPMENT RENTAL

| CONTINGENT LINE NO. | AMOUNT |
|---|---|
| 5112 | 1 L.S. |

### MISC. EPOXY POLYMER OVERLAY REPAIR

| CONTINGENT LINE NO. | LOCATION | AMOUNT |
|---|---|---|
| 5124 | 270+00 +- TO 271+00 +- | 1 L.S. |

### ROUTE 5 AT ROUTE E

| STA | STA | LOCATION | CONTINGENT ITEM # | 5101 | 5102 | 5103 | 5104 | REMARKS |
|---|---|---|---|---|---|---|---|---|
| | | | WHITETOPPING 4" THICK | WHITETOPPING PLACEMENT | DIAMOND GRINDING | COLDMILLING 4" DEPTH | ASPHALT 3¾" THK | GEOSYNTHETIC INTERLAYER | TACK COAT | TRANSITION COLDMILLING | |
| | | | CY | SY | SY | SY | SY | SY | GALS | SY | |
| 254+79.1 | 258+54.1 | NB/SB | | | | | | | | 720.0 | 1 " TO 0" DEPTH TRANS |
| 258+54.1 | 262+77.0 | RT | | | | | | 70.5 | | | INCL RAD AT RTE E |
| 258+54.1 | 270+73.5 | LT | | | | | | 203.2 | | | |
| 258+54.1 | 270+73.5 | NB/SB | | | | | *4089.4 | | | | *INCL TRANS PAV'T |
| 263+06.9 | 270+73.5 | RT | | | | | | 127.8 | | | INCL RAD AT RTE E |
| 268+98.5 | 270+73.5 | NB/SB | | | | | | | | 778.0 | 0" TO 1" DEPTH TRANS |
| | | TOTAL= | 0 | 0 | 0 | 0 | 4089.4 | 401.5 | 360 | 1498.0 | |

### ROUTE 5 AT HOUSTON RD

| SHT | STA | STA | LOC | CONTINGENT ITEM # | | | | 5106 | 5105 | 5108 | 5109 | 5107 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 8" NON-REINF CONC PAV'T | 1¾" COLDMILL | DOWEL BARS DRILL, FURNISH, & INSTALL | DOWEL BARS FURNISH & INSTALL W/ BASKETS | TIE BARS DRILL, FURNISH, & INSTALL | FURNISH & PLACE CONCRETE | 4" TYPE 1 OR 5 AGGR. FOR BASE | 6" SUBGRADE COMPACTION | FULL DEPTH SAW CUT | TIE BARS DRILLED & INSTALLED | DIAMOND GRINDING | 12½" ASPH | 1¾" ASPH OVERLAY | TACK COAT | TRANS COLD MILL | GEOSYNTHETIC INTERLAYER | REMARKS |
| | | | | SY | SY | EA | EA | EA | SY | SY | SY | LF | LBS | SY | SY | SY | GALS | SY | SY | |
| 13 | 583+91.5 | 585+41.5 | NB/SB | | | | | | | | | | | | | | | 833.5 | | 1" TO 0" TRANS |
| 13 | 585+41.5 | 587+16.5 | NB/SB | | | | | | | | | | | | | | | | | |
| 13 | 585+41.5 | 596+61.5 | LT | | | | | | | | | | | | | | | | | |
| 13 | 585+41.5 | 596+61.5 | RT | | | | | | | | | | | | | | | | | |
| 13 | 585+41.5 | 596+61.5 | NB/SB | | | | | | | | | | | | | 6222.2 | | | | *INCL TRANS PAV'T |
| 13 | 587+16.5 | 594+86.5 | LT | | | | | | | | | | | | | | | | | |
| 13 | 587+16.5 | 594+86.5 | RT | | | | | | | | | | | | | | | | | |
| 13 | 587+16.5 | 594+86.5 | NB/SB | | | | | | | | | | | | | | | | | |
| 13 | 594+86.5 | 596+61.5 | NB/SB | | | | | | | | | | | | | | | | | |
| 13 | 596+61.5 | 598+11.5 | NB/SB | | | | | | | | | | | | | | | 833.5 | | 0" TO 1" TRANS |
| | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6222.2 | 310.0 | 1667.0 | 0 | |

SUMMARY SHEET
SHEET 5 OF 11

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# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

FINAL PLANS

Drawn by: [illegible] 5/26/11

Checked by: Mitch Maddux 5-26-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 28 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

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DATE

### 3 OR 4 STRAND HIGH TENSION GUARD CABLE

| SHEET | BEG. STA. | END STA. | TOTAL LENGTH RT. SIDE | TOTAL LENGTH LT. SIDE | ADJUSTED FOR ANCHORS RT. SIDE | ADJUSTED FOR ANCHORS LT. SIDE | END ANCHORS |
|---|---|---|---|---|---|---|---|
| 4 | 42+34.50 | 79+94.50 | 3760 | | 3700 | | 2 |
| 4 | 46+94.00 | 79+88.50 | | 3294.5 | | 3235 | 2 |
| 4-5 | 94+74.50 | 133+99.50 | 3925 | | 3865 | | 2 |
| 4-5 | 96+44.00 | 118+19.00 | | 2175 | | 2115 | 2 |
| 5 | 123+22.50 | 130+04.00 | | 681.5 | | 622 | 2 |
| 5 | 137+71.50 | 159+35.00 | 2163.5 | | 2104 | | 2 |
| 5 | 138+15.00 | 152+12.00 | | 1397 | | 1337 | 2 |
| 5 | 154+31.00 | 160+81.00 | | 650 | | 590 | 2 |
| 5-6 | 162+23.00 | 167+28.50 | 505.5 | | 446 | | 2 |
| 6 | 165+24.00 | 170+24.00 | | 500 | | 440 | 2 |
| 6 | 171+81.50 | 185+69.00 | 1387.5 | | 1328 | | 2 |
| 6 | 174+02.00 | 178+02.00 | | 400 | | 340 | 2 |
| 6 | 184+11.50 | 187+99.00 | | 387.5 | | 328 | 2 |
| 6 | 192+32.00 | 202+07.00 | | 975 | | 915 | 2 |
| 6 | 201+87.00 | 207+87.00 | 600 | | 540 | | 2 |
| 6 | 205+18.50 | 210+93.50 | | 575 | | 515 | 2 |
| 6-7 | 220+91.50 | 224+79.00 | | 387.5 | | 328 | 2 |
| 7 | 249+35.00 | 261+50.00 | 1215 | | 1155 | | 2 |
| 7 | 249+64.00 | 266+53.00 | | 1689 | | 1629 | 2 |
| 7 | Use GR at Goodwin Hollow Bridge | | | | | | |
| 7-8 | 277+58.00 | 282+50.00 | | 492 | | 432 | 2 |
| 8 | 283+80.50 | 292+23.00 | 842.5 | | 783 | | 2 |
| 8 | 285+80.25 | 296+17.75 | | 1037.5 | | 978 | 2 |
| 8 | 301+57.50 | 306+07.50 | 450 | | 390 | | 2 |
| 8 | 303+46.25 | 309+33.75 | | 587.5 | | 528 | 2 |
| 8 | 315+50.00 | 322+34.00 | 684 | | 624 | | 2 |
| 8 | 317+82.00 | 326+07.00 | | 825 | | 765 | 2 |
| 9 | 347+07.00 | 351+24.00 | 417 | | 357 | | 2 |
| 9 | 349+03.00 | 359+83.50 | | 1080.5 | | 1021 | 2 |
| 9 | 351+79.00 | 359+96.00 | 817 | | 757 | | 2 |
| 9 | 368+54.50 | 375+29.50 | | 675 | | 615 | 2 |
| 9 | 388+33.50 | 395+96.00 | 762.5 | | 703 | | 2 |
| 9 | 391+49.00 | 397+34.00 | | 585 | | 525 | 2 |
| 10 | 411+14.50 | 416+08.00 | | 493.5 | | 434 | 2 |
| 10 | 419+37.90 | 426+75.40 | | 737.5 | | 678 | 2 |
| 11 | 472+26.50 | 491+14.00 | 1887.5 | | 1828 | | 2 |
| 11 | 474+49.50 | 494+62.00 | | 2012.5 | | 1953 | 2 |
| 11 | 500+09.00 | 507+71.50 | 762.5 | | 703 | | 2 |
| 11 | 503+43.00 | 511+57.00 | | 814 | | 754 | 2 |
| 12 | 533+84.50 | 540+59.50 | | 675 | | 615 | 2 |
| 12 | 548+27.00 | 551+91.00 | | 364 | | 304 | 2 |
| 12 | 552+26.50 | 555+69.50 | | 343 | | 283 | 2 |
| 12 | 564+23.50 | 570+11.00 | 587.5 | | 528 | | 2 |
| 12 | 567+22.00 | 573+91.50 | | 669.5 | | 610 | 2 |
| 12 | 574+23.50 | 578+85.00 | 461.5 | | 402 | | 2 |
| 13 | 620+59.00 | 626+79.00 | 620 | | 560 | | 2 |
| 13 | 624+86.00 | 630+11.00 | | 525 | | 465 | 2 |
| 14 | 649+18.50 | 652+21.00 | 302.5 | | 243 | | 2 |
| | | | | Subtotals= | 21,011 | 23,349 | 94 |
| | | | | Totals= | 44,360 | | 94 |

### TURN ARROWS

| SHEET | STA | LOCATION | ARROW DIRECTION Left | ARROW DIRECTION Right | NO. ARROWS |
|---|---|---|---|---|---|
| 1 | 42+17 | LT | 1 | | 1 |
| 1 | 42+92 | LT | 1 | | 1 |
| 1 | 44+17 | LT | 1 | | 1 |
| 4 | 133+18 | RT | 1 | | 1 |
| 4 | 135+38 | RT | 1 | | 1 |
| 4 | 136+63 | RT | 1 | | 1 |
| 4 | 138+53 | LT | 1 | | 1 |
| 4 | 139+78 | LT | 1 | | 1 |
| 4 | 141+98 | LT | 1 | | 1 |
| 6 | 215+94 | RT | 1 | | 1 |
| 6 | 218+14 | RT | 1 | | 1 |
| 6 | 219+39 | RT | 1 | | 1 |
| 7 | 221+30 | LT | 1 | | 1 |
| 7 | 222+55 | LT | 1 | | 1 |
| 7 | 224+75 | LT | 1 | | 1 |
| 7 | 244+91 | RT | 1 | | 1 |
| 7 | 247+10 | RT | 1 | | 1 |
| 7 | 248+35 | RT | 1 | | 1 |
| 8 | 260+33 | RT | | 1 | 1 |
| 8 | 262+26 | RT | | 1 | 1 |
| 8 | 263+28 | LT | 1 | | 1 |
| 8 | 265+07 | LT | 1 | | 1 |
| 8 | 267+77 | LT | 1 | | 1 |
| 8 | 272+70 | RT | 1 | | 1 |
| 11 | 274+90 | RT | 1 | | 1 |
| 11 | 276+15 | RT | 1 | | 1 |
| 11 | 352+36 | LT | 1 | | 1 |
| 13 | 353+61 | LT | 1 | | 1 |
| 13 | 355+81 | LT | 1 | | 1 |
| 13 | 410+65 | LT | 2 | | 2 |
| 16 | 414+47 | RT | 1 | | 1 |
| 16 | 415+72 | RT | 1 | | 1 |
| 16 | 497+36 | LT | 1 | | 1 |
| 18 | 498+61 | LT | 1 | | 1 |
| 18 | 500+80 | LT | 1 | | 1 |
| 18 | 572+26 | RT | 1 | | 1 |
| 19 | 574+46 | RT | 1 | | 1 |
| 19 | 575+71 | RT | 1 | | 1 |
| 19 | 586+50 | LT | 1 | 1 | 2 |
| 19 | 590+42 | LT | 1 | | 1 |
| 19 | 591+67 | LT | 1 | | 1 |
| 19 | 592+43 | LT | 1 | | 1 |
| 19 | 599+00 | LT | 1 | 1 | 2 |
| 20 | 604+00 | LT | 1 | 1 | 2 |
| 20 | 609+00 | LT | 1 | 1 | 2 |
| 20 | 614+00 | LT | 1 | 1 | 2 |
| 20 | 619+00 | LT | 1 | 1 | 2 |
| 20 | 624+00 | LT | 1 | 1 | 2 |
| 20 | 629+00 | LT | 1 | 1 | 2 |
| 21 | 634+00 | LT | 1 | 1 | 2 |
| 21 | 639+00 | LT | 1 | 1 | 2 |
| 21 | 644+00 | RT | 1 | 1 | 2 |
| 21 | 649+00 | RT | 1 | 1 | 2 |
| 21 | 654+00 | RT | 1 | 1 | 2 |
| | | TOTALS= | 53 | 15 | 68 |
| | | | | FINAL PAY= | 68 |

DESCRIPTION | BRIDGE NO. | DATE PREPARED

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SUMMARY SHEET
SHEET 6 OF 11

REV.

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

FINAL PLANS

Drawn by: [illegible] 7/11/11

Checked by: Craig Pinckney 7-12-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 2B |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

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DATE

### TYPE II DITCH CHECKS

| SHEET | STA. | STA. | LOC. | SPACING | DITCH CHECKS EA | SEDIMENT REMOVAL CY |
|---|---|---|---|---|---|---|
| | | | | | | |

### TYPE II DITCH CHECKS, CONT'D

| SHEET | STA. | STA. | LOC. | SPACING | DITCH CHECKS EA | SEDIMENT REMOVAL CY |
|---|---|---|---|---|---|---|
| | | | | | | |

### TYPE II DITCH CHECKS, CONT'D

| SHEET | STA. | STA. | LOC. | SPACING | DITCH CHECKS EA | SEDIMENT REMOVAL CY |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | TOTAL= | 20 | 0 |

| DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|
| DATE | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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SUMMARY SHEET
SHEET 7 OF 11

REV.

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

FINAL PLANS

Drawn by: [illegible] 7/11/11

Checked by: [illegible] 7-12-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 28 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

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|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

### ROCK DITCH CHECKS

| SHEET | STA. | LOCATION | DITCH CHECKS EA | SEDIMENT REMOVAL CY |
|---|---|---|---|---|

### ROCK DITCH CHECKS (CONT)

| SHEET | STA. | LOCATION | DITCH CHECKS EA | SEDIMENT REMOVAL CY |
|---|---|---|---|---|

### ROCK DITCH CHECKS (CONT)

| SHEET | STA. | LOCATION | DITCH CHECKS EA | SEDIMENT REMOVAL CY |
|---|---|---|---|---|
| | | TOTALS= | 8 | 0 |

### FORCE ACCOUNT

| CONTINGENT LINE NO. | AMOUNT |
|---|---|
| 5125 | $15421.09 |

### PAVEMENT REPAIR SUMMARY

| | | | CONTINGENT LINE NO. | 5122 | 5119 | 5120 | 5121 |
|---|---|---|---|---|---|---|---|
| STA. | LOCATION | SIZE | | PAVEMENT REPAIR S.Y. | SAW CUT L.F. | DOWEL BARS EA. | TIE BARS EA. |
| 44+07 | NBL | 11X12 | | 14.7 | 46 | 22 | 10 |
| 158+33 | NBL | 6X12 | | 8 | 36 | 22 | 4 |
| 616+16 | NBL | 6X12 | | 8 | 36 | 22 | 4 |
| 634+45 | NBL | 6X12 | | 8 | 36 | 22 | 4 |
| 616+45 | SBL | 6X12 | | 8 | 30 | 22 | 4 |
| 634+45 | SBL | 6X12 | | 8 | 30 | 22 | 4 |
| | | | FINAL PAY TOTAL: | 54.7 | 214 | 132 | 30 |

SUMMARY SHEET
SHEET 8 OF 11

REV.

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

FINAL PLANS

Drawn by: [illegible] 7/11/11

Checked by: Craig Hacker 7-12-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 28 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

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DATE

### STRIPING AND RUMBLE STRIPS

| STA | STA | LOC | SHEET | TYPE | WET REFL SOLID 6 IN WHITE | CONTRAST STRIPE | SOLID 6 IN WHITE | WET REFL SOLID 4 IN YELLOW | WET REFL INT 4 IN YELLOW | SOLID 6 IN YELLOW | SOLID 24 IN HASH | CONCRETE CL RUMBLE STRIP | CONCRETE SH RUMBLE STRIP | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | L.F. | L.F. | L.F. | L.F. | L.F. | L.F. | L.F. | STA. | STA. | |
| 41+34.8 | 220+14.0 | LT | PM1-PM6 | SINGLE | | | 17879.2 | | | | | | 142.5 | |
| 41+34.8 | 262+76.0 | RT | PM1-PM8 | SINGLE | | | 22141.2 | | | | | | 185.1 | |
| 42+17.0 | 46+52.0 | LT | PM1 | SINGLE | 435.0 | | | | | | | | | |
| 42+17.0 | 48+66.0 | CL | PM1 | DOUBLE | | | | | | 1298.0 | | 6.0 | | * |
| 42+17.0 | 48+66.0 | CL | PM1 | DOUBLE | | | | | | 1298.0 | | | | * |
| 48+66.0 | 131+08.0 | CL | PM1-3 | DOUBLE | | | | | | 16484.0 | | 81.1 | | * |
| 48+66.0 | 131+08.0 | CL | PM1-3 | DOUBLE | | | | | | 16484.0 | | 81.1 | | * |
| 48+67.0 | 52+00.0 | CL | PM1 | | | | | | | | 72 | | | |
| 52+57.0 | 122+78.0 | RT | PM1-PM3 | SINGLE | 1755.3 | 1755.3 | | | | | | | | |
| 123+50.0 | 131+08.0 | CL | PM3 | | | | | | | | 170 | | | |
| 131+08.0 | 137+38.0 | CL | PM3-PM4 | DOUBLE | | | | | | 1260.0 | | 5.8 | | * |
| 131+08.0 | 137+38.0 | CL | PM3-PM4 | DOUBLE | | | | | | 1260.0 | | | | * |
| 133+03.0 | 137+38.0 | RT | PM4 | SINGLE | 435.0 | | | | | | | | | |
| 137+78.0 | 142+13.0 | LT | PM4 | SINGLE | 435.0 | | | | | | | | | |
| 137+78.0 | 144+00.0 | CL | PM4 | DOUBLE | | | | | | 1244.0 | | 5.7 | | * |
| 137+78.0 | 144+00.0 | CL | PM4 | DOUBLE | | | | | | 1244.0 | | | | * |
| 144+00.0 | 151+25.0 | CL | PM4 | | | | | | | | 175 | | | |
| 144+00.0 | 213+26.0 | CL | PM4-PM6 | DOUBLE | | | | | | 13852.0 | | 68 | | * |
| 144+00.0 | 213+26.0 | CL | PM4-PM6 | DOUBLE | | | | | | 13852.0 | | 68 | | * |
| 152+30.0 | 209+36.0 | LT | PM4-PM6 | SINGLE | 1426.5 | 1426.5 | | | | | | | | |
| 210+20.0 | 213+26.0 | CL | PM6 | | | | | | | | 82 | | | |
| 213+26.0 | 220+14.0 | CL | PM6 | DOUBLE | | | | | | 1376.0 | | 6.4 | | * |
| 213+26.0 | 220+14.0 | CL | PM6 | DOUBLE | | | | | | 1376.0 | | | | * |
| 215+79.0 | 220+14.0 | RT | PM6 | SINGLE | 435.0 | | | | | | | | | |
| 220+56.0 | 224+91.0 | LT | PM6-PM7 | SINGLE | 435.0 | | | | | | | | | |
| 220+56.0 | 226+87.0 | CL | PM6-PM7 | DOUBLE | | | | | | 1262.0 | | 5.8 | | * |
| 220+56.0 | 226+87.0 | CL | PM6-PM7 | DOUBLE | | | | | | 1262.0 | | | | * |
| 220+85.0 | 415+88.0 | LT | PM6-PM13 | SINGLE | | | 19503.0 | | | | | | 158.7 | |
| 226+87.0 | 230+00.0 | CL | PM7 | | | | | | | | 84 | | | |
| 226+87.0 | 242+59.0 | CL | PM7 | DOUBLE | | | | | | 3144.0 | | 14.4 | | * |
| 226+87.0 | 242+59.0 | CL | PM7 | DOUBLE | | | | | | 3144.0 | | 14.4 | | * |
| 240+00.0 | 242+59.0 | CL | PM7 | | | | | | | | 75 | | | |
| 242+59.0 | 249+10.0 | CL | PM7 | DOUBLE | | | | | | 1302.0 | | 6.0 | | * |
| 242+59.0 | 249+10.0 | CL | PM7 | DOUBLE | | | | | | 1302.0 | | | | * |
| 244+75.0 | 249+10.0 | RT | PM7 | SINGLE | 435.0 | | | | | | | | | |
| 249+36.0 | 253+50.0 | CL | PM7-PM8 | | | | | | | | 122 | | | |
| 249+36.0 | 262+62.0 | CL | PM7-PM8 | DOUBLE | | | | | | 2652.0 | | 12.3 | | * |
| 249+50.0 | 262+76.0 | CL | PM7-PM8 | DOUBLE | | | | | | 2652.0 | | 12.3 | | * |
| 259+20.0 | 262+76.0 | CL | PM8 | | | | | | | | 103 | | | |
| 260+33.0 | 262+76.0 | RT | PM8 | SINGLE | 243.0 | | | | | | | | | |
| 263+07.0 | 267+92.0 | LT | PM8 | SINGLE | 485.0 | | | | | | | | | |
| 263+07.0 | 270+08.0 | CL | PM8 | DOUBLE | | | | | | 1402.0 | | | | * |
| 263+07.0 | 270+48.0 | CL | PM8 | DOUBLE | | | | | | 1482.0 | | 6.5 | | * |
| 263+07.0 | 645+95.8 | RT | PM8-PM21 | SINGLE | | | | | | | | | 348.7 | |
| 263+07.0 | 657+48.2 | RT | PM8-PM21 | SINGLE | | | 39441.2 | | | | | | | |
| 270+08.0 | 270+48.0 | CL | PM8 | | | | | | | | 38 | | | |
| 270+08.0 | 276+90.0 | CL | PM8 | DOUBLE | | | | | | 1364.0 | | 3.6 | | * |
| 270+48.0 | 276+90.0 | CL | PM8 | DOUBLE | | | | | | 1284.0 | | | | * |
| 272+55.0 | 276+90.0 | RT | PM8 | SINGLE | 435.0 | | | | | | | | | |
| 277+18.0 | 281+00.0 | CL | PM8 | | | | | | | | 114 | | | |
| 277+18.0 | 351+02.0 | CL | PM8-PM11 | DOUBLE | | | | | | 14768.0 | | 72.8 | | * |
| 277+32.0 | 351+16.0 | CL | PM8-PM11 | DOUBLE | | | | | | 14768.0 | | 72.8 | | * |
| 281+52.0 | 343+10.0 | RT | PM8-PM11 | SINGLE | 1539.5 | 1539.5 | | | | | | | | |
| 344+45.0 | 351+16.0 | CL | PM11 | | | | | | | | 164 | | | |
| 351+61.0 | 355+96.0 | LT | PM11 | SINGLE | 435.0 | | | | | | | | | |
| 351+61.0 | 358+24.0 | CL | PM11 | DOUBLE | | | | | | 1326.0 | | 6.1 | | * |
| 351+61.0 | 358+24.0 | CL | PM11 | DOUBLE | | | | | | 1326.0 | | | | * |

* CENTERLINE DOUBLE YELLOW STRIPES ARE LISTED TWICE TO ACCOUNT FOR 2 SETS OF DOUBLE LINES IN THE MEDIAN

NOTE: SHOULDER RUMBLE STRIP SUBTOTAL AND TOTAL INCLUDES DEDUCTION FOR GAPS AT ENTRANCES AND INTERSECTIONS

DESCRIPTION | BRIDGE NO. | DATE PREPARED

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SUMMARY SHEET
SHEET 9 OF 11

REV.

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

FINAL PLANS

Drawn by: Neil A Cox 7/11/11

Checked by: Craig Hockaday 7-11-12

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 28 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

### STRIPING AND RUMBLE STRIPS CON'T.

| STA | STA | LOC | SHEET | TYPE | WET REFL SOLID 6 IN WHITE | CONTRAST STRIPE | SOLID 6 IN WHITE | WET REFL SOLID 4 IN YELLOW | WET REFL INT 4 IN YELLOW | SOLID 6 IN YELLOW | SOLID 24 IN HASH | CONCRETE CL RUMBLE STRIP | CONCRETE SH RUMBLE STRIP | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | L.F. | L.F. | L.F. | L.F. | L.F. | L.F. | L.F. | STA. | STA. | |
| 358+24.0 | 363+50.0 | CL | PM11 | | | | | | | | 164 | | | |
| 358+24.0 | 409+63.0 | CL | PM11-PM13 | DOUBLE | | | | | | 10278.0 | | 50.1 | | * |
| 358+24.0 | 409+63.0 | CL | PM11-PM13 | DOUBLE | | | | | | 10278.0 | | 50.1 | | * |
| 366+54.0 | 405+73.0 | LT | PM12-PM13 | SINGLE | 979.8 | 979.8 | | | | | | | | |
| 406+00.0 | 409+63.0 | CL | PM13 | | | | | | | | 69 | | | |
| 409+63.0 | 416+47.0 | CL | PM13 | DOUBLE | | | | | | 1368.0 | | 6.3 | | * |
| 409+63.0 | 416+47.0 | CL | PM13 | DOUBLE | | | | | | 1368.0 | | | | * |
| 411+62.0 | 416+47.0 | RT | PM13 | SINGLE | 485.0 | | | | | | | | | |
| 416+92.0 | 420+50.0 | CL | PM13 | | | | | | | | 96 | | | |
| 416+92.0 | 496+19.0 | CL | PM13-PM16 | DOUBLE | | | | | | 15854.0 | | 78.3 | | |
| 416+92.0 | 645+95.8 | LT | PM13-PM21 | SINGLE | | | | | | | | | 194.7 | |
| 416+92.0 | 657+48.2 | LT | PM13-PM21 | SINGLE | | | 24056.2 | | | | | | | |
| 417+06.0 | 496+33.0 | CL | PM13-PM16 | DOUBLE | | | | | | 15854.0 | | 78.3 | | |
| 421+16.0 | 487+58.0 | RT | PM13-PM15 | SINGLE | 1660.5 | 1660.5 | | | | | | | | |
| 488+00.0 | 496+33.0 | CL | PM15-PM16 | | | | | | | | 164 | | | |
| 496+60.0 | 500+95.0 | LT | PM16 | SINGLE | 435.0 | | | | | | | | | |
| 496+60.0 | 503+03.0 | CL | PM16 | DOUBLE | | | | | | 1286.0 | | 5.9 | | * |
| 496+60.0 | 503+03.0 | CL | PM16 | DOUBLE | | | | | | 1286.0 | | | | * |
| 503+03.0 | 510+75.0 | CL | PM16 | | | | | | | | 177 | | | |
| 503+03.0 | 569+94.0 | CL | PM16-PM18 | DOUBLE | | | | | | 13382.0 | | 66.4 | | * |
| 503+03.0 | 569+94.0 | CL | PM16-PM18 | DOUBLE | | | | | | 13382.0 | | 65.6 | | * |
| 511+33.0 | 566+04.0 | LT | PM16-PM18 | SINGLE | 1367.8 | 1367.8 | | | | | | | | |
| 566+50.0 | 569+94.0 | CL | PM18 | | | | | | | | 82 | | | |
| 569+94.0 | 576+46.0 | CL | PM18 | DOUBLE | | | | | | 1304.0 | | 6.0 | | * |
| 569+94.0 | 576+46.0 | CL | PM18 | DOUBLE | | | | | | 1304.0 | | | | * |
| 572+11.0 | 576+46.0 | RT | PM18 | SINGLE | 435.0 | | | | | | | | | |
| 576+73.0 | 589+37.0 | TWLTL | PM18-PM19 | DOUBLE | | | | 2528.0 | 632.0 | | | | | |
| 589+67.0 | 592+57.0 | LT | PM19 | SINGLE | 290.0 | | | | | | | | | |
| 589+67.0 | 595+00.0 | CL | PM19 | DOUBLE | | | | 1066.0 | | | | | | |
| 595+00.0 | 618+44.0 | TWLTL | PM19-PM20 | DOUBLE | | | | 4688.0 | 1172.0 | | | | | |
| 618+87.0 | 619+72.0 | LT | PM20 | SINGLE | 85.0 | | | | | | | | | |
| 618+87.0 | 620+98.0 | CL | PM20 | DOUBLE | | | | 422.0 | | | | | | |
| 620+72.0 | 622+83.0 | CL | PM20 | DOUBLE | | | | 422.0 | | | | | | |
| 621+98.0 | 622+83.0 | RT | PM20 | SINGLE | 85.0 | | | | | | | | | |
| 623+14.0 | 626+90.0 | TWLTL | PM20 | DOUBLE | | | | 752.0 | 188.0 | | | | | |
| 627+20.0 | 629+20.0 | LT | PM20 | SINGLE | 200.0 | | | | | | | | | |
| 627+20.0 | 630+20.0 | CL | PM20 | DOUBLE | | | | 600.0 | | | | | | |
| 630+20.0 | 657+48.2 | TWLTL | PM20-PM21 | DOUBLE | | | | 5456.3 | 1364.1 | | | | | |
| | | | | SUBTOTALS= | 14952.4 | 8729.4 | 123020.8 | 15934.3 | 3356.1 | 212412.0 | 1951 | 956.1 | 1029.7 | |
| | | | | TOTALS= | 14953 | 8730 | 123021 | 19291 | | 212412 | 1951 | 956.1 | 1029.7 | |

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NOTE: SHOULDER RUMBLE STRIP SUBTOTAL AND TOTAL INCLUDES DEDUCTION FOR GAPS AT ENTRANCES AND INTERSECTIONS

### GUARDRAIL

| SHEET | STA | STA | RTE | LOC | TYPE A GUARD RAIL | TRANSITION SECTION (6') | BRIDGE ANCHOR SECTION | TYPE A CRASHWORTHY TERMINAL | END ANCHOR | END SECTION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LF | EA | EA | EA | EA | EA | |
| 7 | 265+79.25 | 270+50.00 | 5 | RT | 400 | 1 | 1 | 1 | | | |
| 7 | 269+09.00 | 270+73.50 | 5 | LT | 159.25 | 1 | 1 | | | 1 | Includes guardrail wrap at field entrance |
| 7 | 272+79.50 | 281+06.50 | 5 | RT | 800 | 1 | 1 | 1 | | | |
| 7 | 273+00.50 | 277+00.00 | 5 | LT | 394.25 | 1 | 1 | | | 1 | Includes guardrail wrap at Knoll Road |
| | | | | TOTALS=1753.5 USE 1754 | | 4 | 4 | 2 | 0 | 2 | NOTE: NO DIRECT PAY FOR DELINEATORS OR END SECTIONS |

SUMMARY SHEET
SHEET 10 OF 11

| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-800-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

# MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

## SUMMARY OF QUANTITIES

FINAL PLANS

Drawn by: Keith Maddux 07-07-11

Checked by: CJS 7-12-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 2B |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2 (28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

### TYPE A3 SHOULDER

| SHEET | STA | STA | LOCATION | WIDTH LF | LENGTH LF | SY | REMARKS |
|---|---|---|---|---|---|---|---|
| 4 | 41+34.8 | 79+96.3 | LT | 6 | 3861.5 | 2574.3 | |
| 4 | 41+34.8 | 80+02.2 | RT | 6 | 3867.4 | 2578.3 | |
| 4-5 | 80+70.0 | 136+92.7 | RT | 6 | 5622.7 | 3748.5 | |
| 4-5 | 80+73.5 | 137+43.5 | LT | 6 | 5670.0 | 3780.0 | |
| 5-6 | 137+63.7 | 219+89.0 | RT | 6 | 8225.3 | 5483.5 | |
| 5-6 | 138+08.3 | 220+07.4 | LT | 6 | 8199.1 | 5466.1 | |
| 6-7 | 220+51.4 | 262+81.0 | RT | 6 | 4280.6 | 2853.7 | INCL. RADIUS |
| 6-7 | 220+81.9 | 270+73.5 | LT | 6 | 4991.6 | 3327.7 | |
| 7 | 263+11.9 | 270+73.5 | RT | 6 | 825.4 | 550.3 | INCL. RADIUS |
| 7 | 272+78.9 | 276+82.2 | LT | 6 | 403.3 | 268.9 | |
| 7-9 | 272+78.9 | 351+19.1 | RT | 6 | 7840.2 | 5226.8 | |
| 7-8 | 277+50.6 | 330+50.5 | LT | 6 | 5299.9 | 3533.3 | |
| 8-10 | 331+22.2 | 402+48.6 | LT | 6 | 7126.4 | 4750.9 | |
| 9 | 351+83.1 | 398+41.3 | RT | 6 | 4658.2 | 3105.5 | |
| 9-10 | 399+11.9 | 442+34.1 | RT | 6 | 4322.2 | 2881.5 | |
| 10 | 403+15.7 | 415+89.7 | LT | 6 | 1274.0 | 849.3 | |
| 10 | 417+86.4 | 442+48.9 | LT | 6 | 2462.5 | 1641.7 | |
| 10 | 443+01.6 | 496+00.5 | RT | 6 | 5298.9 | 3532.6 | |
| 10 | 443+17.0 | 511+53.9 | LT | 6 | 6836.9 | 4557.9 | |
| 11-12 | 496+68.3 | 549+72.4 | RT | 6 | 5304.1 | 3536.1 | |
| 11-12 | 512+23.5 | 576+24.6 | LT | 6 | 6401.1 | 4267.4 | |
| 12-13 | 550+40.4 | 585+41.5 | RT | 6 | 3501.1 | 2334.1 | |
| 12-13 | 576+24.6 | 585+41.5 | LT | 6 | 916.9 | 611.3 | |
| 13 | 596+61.5 | 618+26.6 | RT | 6 | 2165.1 | 1443.4 | |
| 13 | 606+69.5 | 612+59.3 | LT | 6 | 589.8 | 393.2 | |
| 13 | 613+19.9 | 622+74.3 | LT | 6 | 954.4 | 636.3 | |
| 13 | 619+07.2 | 626+83.3 | RT | 6 | 776.1 | 517.4 | |
| 13-14 | 623+22.1 | 652+10.6 | LT | 6 | 2888.5 | 1925.7 | |
| 13-14 | 627+29.5 | 652+10.6 | RT | 6 | 2481.1 | 1654.1 | |
| | 585+41.5 | 596+61.5 | LT | 3 | 1120.0 | 373.3 | |
| | 585+41.5 | 589+24 | RT | 3 | 382.5 | 127.5 | |
| | 589+77.7 | 596+61.5 | RT | 3 | 683.8 | 227.9 | |
| | 596+61.5 | 609+91 | LT | 6 | 929.5 | 619.7 | |
| | | | | | TOTAL= | 79378.2 | |

### STRIPE REMOVAL

| SHEET | STA | STA | LOCATION | 6" Yellow LF | 4" Yellow LF | 6" White SY | 24" Yellow LF | REMARKS |
|---|---|---|---|---|---|---|---|---|
| PM1 | +17 | +37 | Olathe Dr. | 80 | | 20 | | |
| PM4 | +23 | +38 | Olathe Dr. | 60 | | 15 | | |
| PM4 | +78 | +88 | Olathe Dr. | 40 | | 10 | | |
| PM6 | +04 | +14 | Route VV | 40 | | 10 | | |
| PM6 | +56 | +66 | Route VV | 40 | | 10 | | |
| PM7 | +92 | +10 | Olathe Rd. | 72 | | 18 | | |
| PM7 | +36 | +54 | Olathe Rd. | 72 | | | 18 | |
| PM8 | +61 | +76 | Route E | 60 | | | 18 | |
| PM8 | +07 | +22 | Route E | 60 | | 15 | | |
| PM8 | +80 | +90 | Knoll Rd. | 40 | | 10 | | |
| PM8 | +18 | +38 | Knoll Rd. | 80 | | | 20 | |
| PM11 | +61 | +76 | Old Rte. 5 Co. Rd. | 60 | | 15 | | |
| PM13 | +32 | +47 | Route BB | 60 | | 15 | | |
| PM16 | +18 | +33 | Independence Rd. | | | | | |
| PM16 | +60 | +75 | Independence Rd. | 60 | | 15 | | |
| PM18 | +30 | +46 | Hemlock Rd. | 64 | | 16 | | |
| PM18 | +73 | +57 | Hemlock Rd. | | 52 | | | |
| PM19 | +17 | +37 | Houston Rd. | | 60 | | | |
| PM19 | +67 | +77 | Houston Rd. | | 20 | 10 | | |
| PM20 | +36 | +44 | Grand Lake Cir. | | 16 | | | |
| PM20 | +87 | +95 | Grand Lake Cir. | | 16 | 8 | | |
| PM20 | +68 | +83 | CR 211 | | 30 | 15 | | |
| PM20 | +14 | +29 | CR 211 | | 50 | | | |
| PM20 | +75 | +90 | Lake Shore Rd. | | 50 | | | |
| PM20 | +20 | +35 | Lake Shore Rd. | | 30 | 15 | | |
| | 270+ | 272+ | Rte. 5 | | 455 | | | |
| | 610+ | 625+ | Grand Lake Cir. | | 3105 | | | |
| | 416+ | 650+ | Rte. 5 | | 22812 | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | Subtotals | 888 | 26696 | 217 | 56 | |
| | | | FINAL PAY TOTAL= | 27857 | | | | |

| DESCRIPTION | DATE | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SUMMARY SHEET
SHEET 11 OF 11

REV.

EFFECTIVE: 06-01-2009

Prepared by : Keith Maddux 07-11-11

Checked by : 7-12-11

FINAL PLANS

| SIGN | SIZE (IN.) | AREA (SQ. FT.) | QTY | TOTAL AREA | QTY RELOC | TOTAL RELOC AREA | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| **WARNING SIGNS** | | | | | | | |
| W01-1L | 48X48 | 16.00 | | | | | TURN (SYMBOL LEFT ARROW) WITH FLAGS |
| W01-1R | 48X48 | 16.00 | | | | | TURN (SYMBOL RIGHT ARROW) WITH FLAGS |
| W01-2L | 48X48 | 16.00 | | | | | CURVE (SYMBOL LEFT ARROW) WITH FLAGS |
| W01-2R | 48X48 | 16.00 | | | | | CURVE (SYMBOL RIGHT ARROW) WITH FLAGS |
| W01-3L | 48X48 | 16.00 | | | | | REVERSE TURN (SYMBOL LEFT ARROW) WITH FLAGS |
| W01-3R | 48X48 | 16.00 | | | | | REVERSE TURN (SYMBOL RIGHT ARROW) WITH FLAGS |
| **W01-4L** | **48X48** | **16.00** | **2** | **32.0** | | | **REVERSE CURVE (SYMBOL LEFT ARROW) WITH FLAGS** |
| **W01-4R** | **48X48** | **16.00** | **2** | **32.0** | | | **REVERSE CURVE (SYMBOL RIGHT ARROW) WITH FLAGS** |
| W01-4bL | 48X48 | 16.00 | | | | | DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT ARROWS) WITH FLAGS |
| W01-4bR | 48X48 | 16.00 | | | | | DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT ARROWS) WITH FLAGS |
| W01-4cL | 48X48 | 16.00 | | | | | TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT ARROWS) WITH FLAGS |
| W01-4cR | 48X48 | 16.00 | | | | | TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT ARROWS) WITH FLAGS |
| W01-6 | 48X24 | 8.00 | | | | | HORIZONTAL ARROW (SYMBOL) |
| W01-6a | 72X36 | 18.00 | | | | | HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE) |
| W01-7 | 48X24 | 8.00 | | | | | DOUBLE HEAD HORIZONTAL ARROW (SYMBOL) |
| W01-7a | 72X36 | 18.00 | | | | | DOUBLE HEAD HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE) |
| W01-8 | 18X24 | 3.00 | | | | | CHEVRON (SYMBOL) |
| W01-8a | 36X48 | 12.00 | | | | | CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS) |
| W03-1a | 48X48 | 16.00 | | | | | STOP AHEAD (SYMBOL) WITH FLAGS |
| W03-2a | 48X48 | 16.00 | | | | | YIELD AHEAD (SYMBOL) WITH FLAGS |
| W03-3 | 48X48 | 16.00 | | | | | SIGNAL AHEAD (SYMBOL) WITH FLAGS |
| W03-4 | 48X48 | 16.00 | 4 | 64.0 | | | BE PREPARED TO STOP WITH FLAGS |
| **W03-5** | **48X48** | **16.00** | | | | | **SPEED LIMIT 45 AHEAD (SYMBOL) WITH FLAGS** |
| W04-1L | 48X48 | 16.00 | | | | | MERGE (SYMBOL FROM LEFT) |
| W04-1R | 48X48 | 16.00 | | | | | MERGE (SYMBOL FROM RIGHT) |
| W05-1 | 48X48 | 16.00 | | | | | ROAD/BRIDGE/RAMP NARROWS WITH FLAGS |
| W05-3 | 48X48 | 16.00 | | | | | ONE LANE BRIDGE |
| W05-5 | 48X48 | 16.00 | | | | | NARROW LANES WITH FLAGS |
| W06-1 | 48X48 | 16.00 | | | | | DIVIDED HIGHWAY (SYMBOL) |
| W06-2 | 48X48 | 16.00 | | | | | DIVIDED HIGHWAY END (SYMBOL) |
| W06-3 | 48X48 | 16.00 | | | | | TWO WAY TRAFFIC (SYMBOL) WITH FLAGS |
| W07-3a | 30X24 | 5.00 | | | | | NEXT XX MILES (PLAQUE) |
| W08-1 | 48X48 | 16.00 | | | | | BUMP |
| W08-2 | 48X48 | 16.00 | | | | | DIP |
| W08-3 | 48X48 | 16.00 | | | | | PAVEMENT ENDS |
| W08-4 | 48X48 | 16.00 | | | | | SOFT SHOULDER |
| W08-5 | 48X48 | 16.00 | | | | | SLIPPERY WHEN WET (SYMBOL) WITH FLAGS |
| W08-6 | 48X48 | 16.00 | | | | | TRUCK CROSSING WITH FLAGS |
| W08-6c | 48X48 | 16.00 | | | | | TRUCK ENTRANCE WITH FLAGS |
| W08-7 | 36X36 | 9.00 | | | | | LOOSE GRAVEL |
| **W08-9** | **48X48** | **16.00** | **9** | **144.0** | | | **LOW SHOULDER** |
| **W08-9a** | **48X48** | **16.00** | | | | | **SHOULDER DROP-OFF** |
| W08-11 | 48X48 | 16.00 | | | | | UNEVEN LANES WITH FLAGS |
| **W08-12** | **36X36** | **9.00** | **19** | **171.0** | | | **NO CENTER STRIPE WITH FLAGS** |
| W10-1 | 42 RND. | 9.62 | | | | | RAILROAD CROSSING |
| W012-1 | 24X24 | 4.00 | | | | | DOUBLE DOWN ARROW (SYMBOL) |
| W012-2 | 48X48 | 16.00 | | | | | LOW CLEARANCE (SYMBOL) |
| W012-2x | 24X18 | 3.00 | | | | | LOW CLEARANCE (PLAQUE) |
| W012-3a,b | 144X24 | 24.00 | | | | | OVERHEAD LOW CLEARANCE (FEET AND INCHES) |
| SPECIAL | 120X60 | 50.00 | | | | | LOW CLEARANCE XX FT XX IN XX MILES AHEAD |
| SPECIAL | 120X60 | 50.00 | | | | | WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD |
| W013-1 | 30X30 | 6.25 | | | | | ADVISORY SPEED (PLAQUE) |
| W016-2 | 30X24 | 5.00 | | | | | XXX FEET (PLAQUE) |
| W016-3 | 30X24 | 5.00 | | | | | X MILE (PLAQUE) |
| **W020-1** | **48X48** | **16.00** | **40** | **640.0** | | | **ROAD/BRIDGE/RAMP WORK AHEAD WITH FLAGS** |
| W020-2 | 48X48 | 16.00 | | | | | DETOUR AHEAD |
| W020-3 | 48X48 | 16.00 | | | | | ROAD CLOSED AHEAD WITH FLAGS |
| **W020-4** | **48X48** | **16.00** | **4** | **64.0** | | | **ONE LANE ROAD AHEAD WITH FLAGS** |
| W020-5 | 48X48 | 16.00 | | | | | RIGHT/CENTER/LEFT LANE CLOSED AHEAD WITH FLAGS |
| W020-5a | 48X48 | 16.00 | | | | | RIGHT/CENTER/LEFT TWO LANES CLOSED AHEAD WITH FLAGS |
| W020-6a | 48X48 | 16.00 | | | | | RIGHT/CENTER/LEFT LANE CLOSED WITH FLAGS |
| **W020-7a** | **48X48** | **16.00** | **6** | **96.0** | | | **FLAGGER (SYMBOL) WITH FLAGS** |
| W021-2 | 36X36 | 9.00 | | | | | FRESH OIL |
| **W021-5b** | **48X48** | **16.00** | **2** | **32.0** | | | **SHOULDER WORK AHEAD** |
| W022-1 | 48X48 | 16.00 | | | | | BLASTING ZONE AHEAD |
| W022-2 | 42X36 | 10.50 | | | | | TURN OFF 2-WAY RADIO AND PHONE |
| W022-3 | 42X36 | 10.50 | | | | | END BLASTING ZONE |
| W022-6e | 21X15 | 2.19 | | | | | WET PAINT (ARROW PIVOTS) |
| **GUIDE SIGNS** | | | | | | | |
| SPECIAL | 36X36 | 9.00 | | | | | FRESH OIL/LOOSE GRAVEL |
| E05-1 | 36X48 | 12.00 | | | | | GORE EXIT |
| E05-2 | 48X36 | 12.00 | | | | | EXIT OPEN |
| E05-2a | 48X36 | 12.00 | | | | | EXIT CLOSED |
| **G020-1** | **60X24** | **10.00** | **2** | **20.0** | | | **ROAD WORK NEXT XX MILES WITH FLAGS** |
| **G020-2** | **48X24** | **8.00** | | | | | **END ROAD WORK** |
| G020-4 | 36X18 | 4.50 | | | | | PILOT CAR FOLLOW ME |
| SPECIAL | 42X30 | 8.75 | | | | | PLEASE WAIT FOR PILOT CAR WITH FLAGS |
| **G023-1** | **36X12** | **3.00** | **6** | **18.0** | | | **WORK ZONE (PLAQUE)** |
| M04-8a | 24X18 | 3.00 | | | | | END DETOUR |
| M04-9L | 48X36 | 12.00 | | | | | DETOUR (LEFT ARROW) |
| M04-9R | 48X36 | 12.00 | | | | | DETOUR (RIGHT ARROW) |
| M04-10L | 48X18 | 6.00 | | | | | DETOUR (ARROW LEFT) |
| M04-10R | 48X18 | 6.00 | | | | | DETOUR (ARROW RIGHT) |
| **REGULATORY SIGNS** | | | | | | | |
| R1-1 | 48X48 | 13.25 | | | | | STOP |
| R1-2 | 48 TRI. | 6.93 | | | | | YIELD |
| R1-2a | 36X36 | 9.00 | | | | | TO ONCOMING TRAFFIC (PLAQUE) |
| R1-3 | 20X9 | 1.25 | | | | | X-WAY (PLAQUE) |
| **R2-1** | **36X48** | **12.00** | **6.0** | **72.0** | | | **SPEED LIMIT XX WITH FLAGS** |
| R3-1 | 48X48 | 16.00 | | | | | NO RIGHT TURN (SYMBOL) |
| R3-2 | 48X48 | 16.00 | | | | | NO LEFT TURN (SYMBOL) |
| R3-3 | 36X36 | 9.00 | | | | | NO TURNS |
| R3-4 | 48X48 | 16.00 | | | | | NO U-TURN (SYMBOL) |
| R3-7L | 30X30 | 6.25 | | | | | LEFT LANE MUST TURN LEFT |
| R3-7R | 30X30 | 6.25 | | | | | RIGHT LANE MUST TURN RIGHT |
| R4-1 | 36X48 | 12.00 | | | | | DO NOT PASS |
| R4-2 | 36X48 | 12.00 | | | | | PASS WITH CARE |
| R4-7aL | 36X48 | 12.00 | | | | | KEEP LEFT (HORIZONTAL ARROW) |
| R4-7a | 36X48 | 12.00 | | | | | KEEP RIGHT (HORIZONTAL ARROW) |
| R5-1 | 30X30 | 6.25 | | | | | DO NOT ENTER |
| R5-1a | 36X24 | 6.00 | | | | | WRONG WAY |
| R6-1L | 48X18 | 6.00 | | | | | ONE WAY ARROW (LEFT) |
| R6-1R | 48X18 | 6.00 | | | | | ONE WAY ARROW (RIGHT) |
| R6-2L | 24X30 | 5.00 | | | | | ONE WAY (LEFT) |
| R6-2R | 24X30 | 5.00 | | | | | ONE WAY (RIGHT) |
| R10-6 | 24X36 | 6.00 | | | | | STOP HERE ON RED (45° ARROW) |
| R11-2 | 48X30 | 10.00 | 1 | 10.0 | | | ROAD CLOSED |
| R11-3a | 60X30 | 12.50 | | | | | ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY |
| R11-4 | 60X30 | 12.50 | 1 | 12.5 | | | ROAD CLOSED TO THRU TRAFFIC |
| S4-4 | 36X15 | 3.75 | | | | | WHEN FLASHING |
| **CONST-3A** | **60X48** | **20.00** | **4** | **80.0** | | | **FINE SIGN WITH FLAGS** |
| CONST-3X | 56X12 | 4.67 | | | | | SPEEDING/PASSING (PLATE) |
| **MISCELLANEOUS SIGNS** | | | | | | | |
| | | | | 1487.5 | | | |
| 616-10.05 CONSTRUCTION SIGNS TOTAL | | | | 1488 | | | |
| 616-10.10 RELOCATED SIGNS TOTAL | | | | | | | |

| ITEM NUMBER | TOTAL QTY | DESCRIPTION |
|---|---|---|
| 612-20.08 | | IMPACT ATTENUATOR (8 SAND BARRELS) |
| 612-20.09 | | IMPACT ATTENUATOR (9 SAND BARRELS) |
| 612-20.10 | | IMPACT ATTENUATOR (10 SAND BARRELS) |
| 612-20.12 | | IMPACT ATTENUATOR (12 SAND BARRELS) |
| 612-20.14 | | IMPACT ATTENUATOR (14 SAND BARRELS) |
| 612-20.17 | | IMPACT ATTENUATOR (17 SAND BARRELS) |
| 612-20.19 | | IMPACT ATTENUATOR (19 SAND BARRELS) |
| 612-20.20 | | REPLACEMENT SAND BARREL |
| 612-20.30 | | IMPACT ATTENUATOR ARRAY (RELOCATION) |
| **612-30.00A** | **2** | **TRUCK OR TRAILER MOUNTED ATTENUATOR (TMA)** |
| 616-10.07 | | SPEED LIMIT AND STROBE LIGHT ASSEMBLY |
| **616-10.08** | **5** | **ADVANCED WARNING RAIL SYSTEM** |
| 616-10.20 | | CHANNELIZER (DRUM-LIKE) |
| 616-10.22 | | CHANNELIZER (CONES) |
| 616-10.24 | | CHANNELIZER (TRIM LINE) WITH LIGHT |
| **616-10.25** | **1217** | **CHANNELIZER (TRIM LINE)** |
| 616-10.26 | | CHANNELIZER (VERTICAL PANEL) |
| 616-10.27 | | CHANNELIZER (VERTICAL PANEL) WITH LIGHT |
| 616-10.28 | | CHANNELIZER |
| 616-10.30 | 9 | TYPE III MOVEABLE BARRICADE |
| 616-10.31 | | TYPE III MOVEABLE BARRICADE WITH LIGHT |
| 616-10.33 | | DIRECTION INDICATOR BARRICADE |
| 616-10.34 | | DIRECTION INDICATOR BARRICADE. WITH LIGHT |
| 616-10.40 | | FLASHING ARROW PANEL |
| 616-10.47 | | TYPE III OBJECT MARKER |
| 616-10.51 | | WARNING LIGHT, TYPE A |
| 616-10.52 | | WARNING LIGHT, TYPE B |
| 616-10.53 | | WARNING LIGHT, TYPE C |
| 616-10.70 | | TUBULAR MARKER |
| 616-10.95 | | RADAR SPEED ADVISORY SYSTEM |
| 616-10.96 | | CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED |
| **616-10.98** | **2** | **CHANGEABLE MESSAGE SIGN, CONTRACTOR FURNISHED/RETAINED** |
| 616-11.00 | | CHANGEABLE MESSAGE SIGN, CONTRACTOR FURNISHED/COMMISSION RETAINED |
| **616-11.20** | **2** | **INSTALLING "DRIVE SMART", 48 IN. X 48 IN. SIGN** |
| **616-11.33A** | **2** | **INSTALLING "POINT OF PRESENCE", 96 IN. X 48 IN. SIGN** |
| 616-11.34 | | INSTALLING "POINT OF PRESENCE", 36 IN. X 48 IN. SIGN |
| 617-36.00D | | CONTRACTOR FURNISHED/RETAINED TEMPORARY TRAFFIC BARRIER |
| 617-36.02B | | CONTRACTOR FURNISHED/COMMISSION RETAINED TEMPORARY TRAFFIC BARRIER |
| 617-40.00A | | TEMPORARY TRAFFIC BARRIER HEIGHT TRANSITION |
| 617-50.10A | | RELOCATING TEMPORARY TRAFFIC BARRIER |
| 617-60.00B | | COMMISSION FURNISHED/RETAINED TEMPORARY TRAFFIC BARRIER |
| 617-70.00B | | COMMISSION FURNISHED/RETAINED TEMPORARY TRAFFIC BARRIER HEIGHT TRANSITION |
| 901-94.00 | | TEMPORARY LIGHTING |
| 902-94.00 | | TEMPORARY TRAFFIC SIGNALS |
| 902-94.01 | | TEMPORARY TRAFFIC SIGNALS AND LIGHTING |
| **620-80.65** | **1522** | **TEMPORARY RAISED PAVEMENT MARKER** |
| 616-10.09 | 30 | FLAG ASSEMBLIES |

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 7/11/2011

ROUTE 5 | STATE MO

DISTRICT 8 | SHEET NO. 2BS

COUNTY LACLEDE

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

BRIDGE NO.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 4 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

Drawn by: Keith Maddux 04-13-11

Checked by: [signature] 7-13-11

NW-NW SEC 9
T36 R16

NW-NW SEC 9
T36 R16

CURV1
PI 52+91.56
PC 47+19.46
PT 58+63.42
Δ 2° 53' 18.2" (LT)
D 0° 15' 09.0"
F 1,143.96'
T 572.10'
R 22,692.23'

POT STA 41+34.80
STA. 41+34.80
BEGIN PROJECT

PC STA 47+19.46

PT STA 58+63.42

‡ SECTION LINE

+00.24 OLATHE DR TO BE REPLACE W/ J8P0592F PROJECT

+00 (UIP)
EXIST 42"X178' PIPE
SK= 45° LA

+62+19.97 (UIP)
2-11'X 7'X'162' RCB
SK= 30° RA

SW-NW SEC 9
T36 R16

NW-SW SEC 9
T36 R16

SW-SW SEC 9
T36 R16

+36.35 LIVINGSTON RD
W= 22', Gr= -0.90%
ASPH SURF

+36.35 LIVINGSTON RD
W= 22', Gr= -0.60%
ASPH SURF

POT STA 84+99.15

PC STA 85+78.62

EQUATION:
Sta 85+00.00 BK =
Sta 84+99.15 AH

+50 (UIP)
EXIST 30"X120' PIPE

S.L.

ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL TO AND A PART OF THE CONSTRUCTION OF THIS PROJECT.

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

SCALE
0 100 200 300 400 500

| BENCHMARK | |
|---|---|
| STA 41+08 | ELEV.= 950.83 |
| "□" CUT SW CORNER IN HEADWALL W SIDE OF RTE 5 AT OLATHA DRIVE, 44' RT. | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

SHEET 1 OF 11

REV.

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FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 5 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

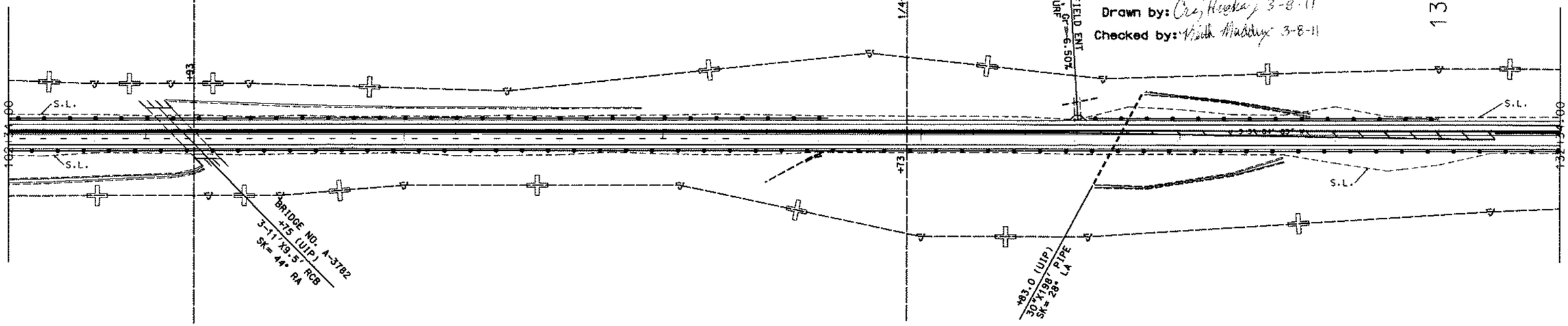
DATE

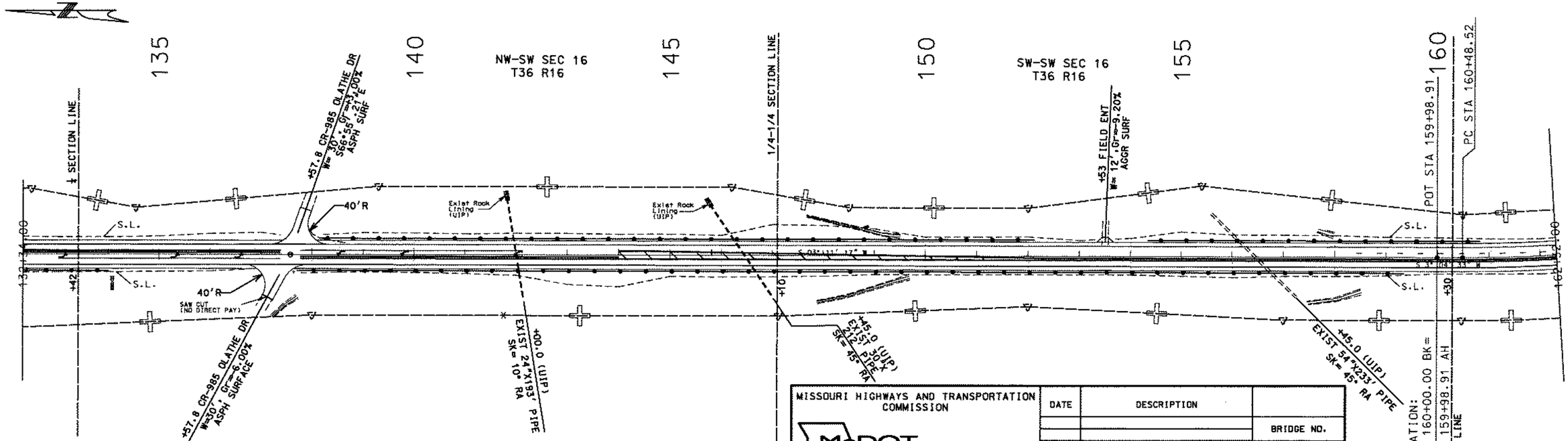
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Drawn by: Craig Hucka 3-8-11

Checked by: Keith Maddux 3-8-11




SCALE

0 100 200 300 400 500

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

REV.

SHEET 2 OF 11

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| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 6 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

Drawn by: Keith Maddux 04-13-11

Checked by: Casey Hunter 7-13-11

FINAL PLANS

| CURV3 | |
|---|---|
| PI | 168+45.11 |
| PC | 160+48.52 |
| PT | 176+02.45 |
| Δ | 31° 04' 43.0" (LT) |
| D | 2° 00' 00.0" |
| L | 1,553.93' |
| T | 796.59' |
| R | 2,864.79' |

NW-NW SEC 21
T36 R16

SE-NW SEC 21
T36 R16

SW-NW SEC 21
T36 R16

NE-SW SEC 21
T36 R16

SW-SE SEC 21
T36 R16

NE-SW SEC 21
T36 R16

SE-SW SEC 21
T36 R16

1/4-1/4 SECTION LINE

PT STA 176+02.45

162+32.00

192+32.00

222+32.00

S.L.

CURV3

S 28° 00' 11" E

+01

+45

+94

+73

+13.0 (UIP)
EXIST 24"X143' PIPE

+47 FIELD ENT
W= 22', Gr=-2.00%
AGGR SURF

+31.4 (UIP)
EXIST 6'X5' RCB

+01.72 PRIVATE ENT
W= 14', Gr=-1.70%
AGGR SURF

+30.6 RTE VV
W= 26.5', Gr=-0.085%
ASPH SURF

65'R

40'R

+40 J. BRYANT RD.
W= 21', Gr=-0.013%
ASPH SURF

+11.0 (UIP)
EXIST 12'X6' RCB
SK= 40° RA

+20.0 (UIP)
EXIST 54"X148' PIPE
SK= 10° RA

+26.0 (UIP)
EXIST 24"X111' PIPE
SK= 24° RA

SCALE
0 100 200 300 400 500

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

SHEET 3 OF 11

REV.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 7 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

FINAL PLANS

Drawn by: Keith Maddux 04-13-11

Checked by: CJ Meadows 7-13-11

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

225 230 235 240 245 250

1/4-1/4 SECTION LINE

NE-NE SEC 28
T36 R16

SE-NE SEC 28
T36 R16

NW-NE SEC 28
T36 R16

SW-NE SEC 28
T36 R16

POT STA 239+99.02

PC STA 240+80.14

EQUATION:
Sta 240+00.00 BK =
Sta 239+98.02 AH

+26.0 OLATHE RD
W= 22', Gr=+5.20%
ASPH SURF

+75.5 FIELD ENT
W= 18', Gr=+1.20%
AGGR SURF

+68.1 REMOVE EXIST
"S" MOWLL LT, EXTEND EXIST
PIPE W/ 24"X5' RCP LT
INCL 1-24" SSES

+15.0 PRIVATE ENT
W= 11', Gr=+1.40%
AGGR SURF

CURV4
PI 250+31.80
PC 240+80.14
PT 259+66.24
Δ 18° 51' 40.0" (RT)
D 1° 00' 00.0"
L 1,886.10'
T 951.66'
R 5,729.55'

S.L.

CURV4

255 260 265 270 275 280

NE-SE SEC 28
T36 R16

SW-SW SEC 27
T36 R16

NW-NW SEC 24
T36 R16

NE-SE SEC 28
T36 R16

SE-SE SEC 28
T36 R16

NE-NE SEC 33
T36 R16

SECTION LINE

1/4-1/4 SECTION LINE

PT STA 259+66.24

BARNETT BRANCH

OPTIONAL
PAVEMENT LIMITS

+46.0 FIELD ENT
W= 16', Gr=+2.20%
AGGR SURF

BRIDGE NO. A3784

EXCEPTION
PAV'T MARKING
ONLY

+03.6 KNOLL CO RD
W= 21', Gr=-4.20%
ASPH SURF

CREEK

GOODWIN HOLLOW

+00 EXIST BR #A3783
2-(8'x8') CONC BOXES
SK= 20° LA

+05.6 (UIP)
EXIST 24" PIPE
SK= 24° LA

+92.8 STATE ROUTE E
W= 24', Gr=+2.40%
ASPH SURF

Exist Rock Lining (UIP)

90°R

SCALE
0 100 200 300 400 500

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

SHEET 4 OF 11

REV.

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Drawn by: Keith Maddux 04-13-11

Checked by: Cea, Hacker 7-13-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 8 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

285 290 295 300 305 310

NW-NW SEC 34
T36 R16

SW-NW SEC 34
T36 R16

NW-SW SEC 34
T36 R16

1/4-1/4 SECTION LINE

1/4 SECTION LINE

+43

+21 SECTION LINE

+05

S.L.

S 5° 08' 31" E

+69.0 FIELD ENT
W= 10', Gr=-9.40%
AGGR SURF

+37.0 (UIP)
EXIST 18" PIPE
SK= 13' RA

+98.7 COMM ENT
W= 28', Gr=-8.60%
AGGR SURF

+37.0 (UIP)
EXIST 24" PIPE
SK= 6' LA

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

CURV5
PI 321+78.55
PC 316+59.21
PT 326+95.06
Δ 10° 21' 24.5" (LT)
D 0° 59' 59.4"
LT 1,035.85'
T 519.34'
R 5,730.52'

CURV6
PI 345+55.67
PC 340+40.73
PT 350+70.31
Δ 3° 25' 58.7" (LT)
D 0° 20' 00.4"
LT 1,029.58'
T 514.94'
R 17,183.54'

315 320 325 330 335 340

NW-SW SEC 34
T36 R16

NE-NW SEC 3
T36 R16

SW-SW SEC 34
T36 R16

NW-NW SEC 3
T36 R16

1/4-1/4 SECTION LINE

SECTION LINE

+24.6 FIELD ENT
W= 12', Gr=+6.20%
AGGR SURF

POT STA 315+98.48

PC STA 316+59.21

PT STA 326+95.06

POT STA 328+54.05

+93.8 OLD RD ODESSA
W= 21', Gr= +2.00%
ASPH SURF

PC STA 340+40.73

+23.6 COMM ENT
W= 27', Gr=+1.30%
AGGR SURF

+29.3 FIELD ENT
W= 23', Gr=+2.00%
AGGR SURF

EQUATION AGGR SURF
Sta 316+00.00 BK=
Sta 315+98.48 AH

Exist Rock Lining (UIP)

+37.0 (UIP)
EXIST 24" PIPE
SK= 27' LA

EQUATION:
Sta 328+50.00 BK=
Sta 328+54.05 AH

+92.8 PRIVATE ENT
W= 15', Gr=+0.80%
AGGR SURF

+48.3 (UIP)
EXIST 4'X2.5' RCB
SK= 9° LA

+23.3 COMM ENT
W= 16', Gr= +5.90%
AGGR SURF

+28.4 PRIVATE ENT
W= 16', Gr= +3.60%
AGGR SURF

T 36 N
T 35 N

S 19° 29' 56" E

CURV5

+00

SCALE

0 100 200 300 400 500

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

SHEET 5 OF 11

REV.

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FINAL PLANS

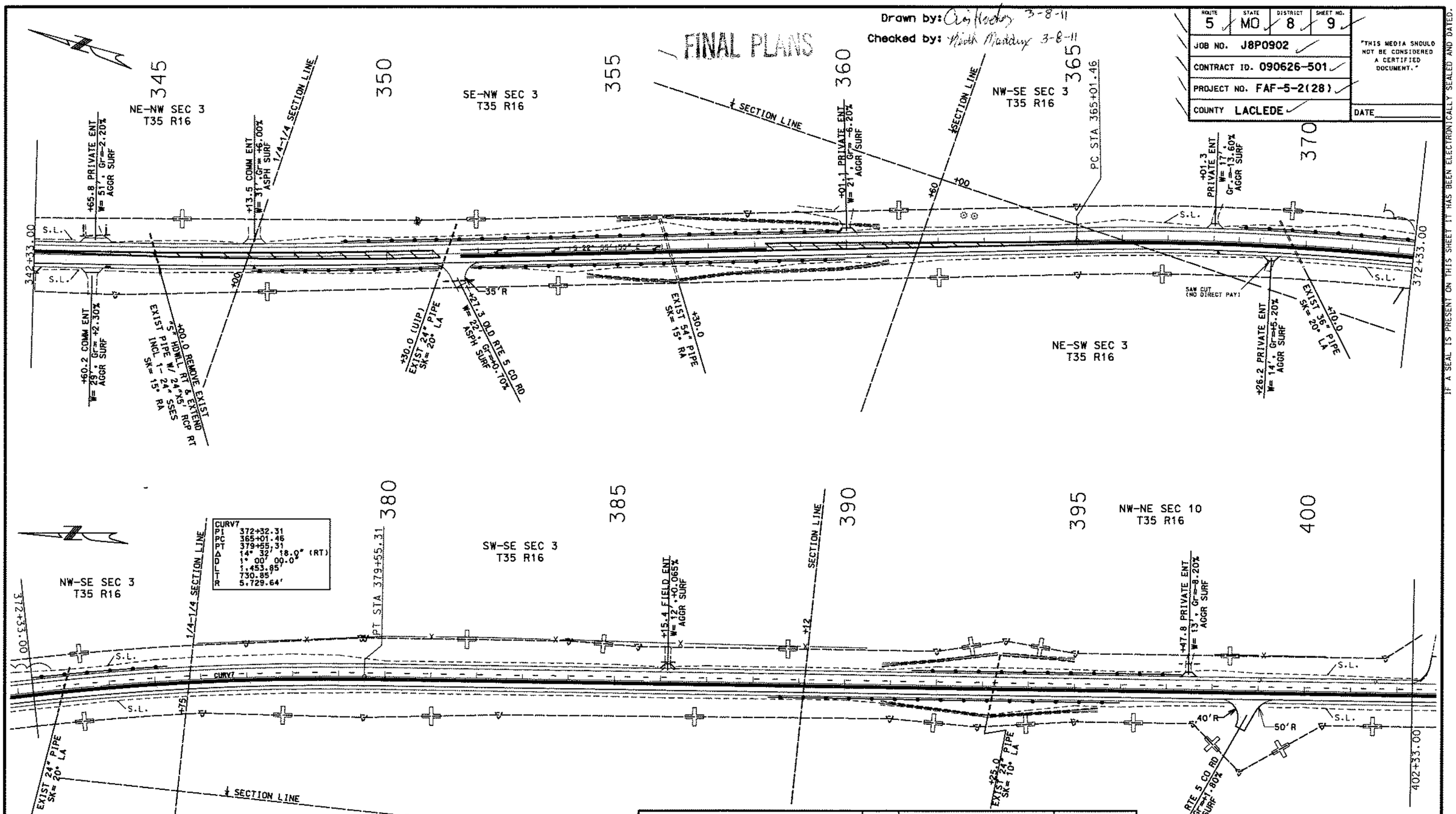
Drawn by: Cris Hedges 3-8-11
Checked by: Mitch Markley 3-8-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 9 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.







CURVY
PI 372+32.31
PC 365+01.46
PT 379+55.31
Δ 14° 32' 18.0" (RT)
D 1° 00' 00.0"
T 1,453.85'
L 730.85'
R 5,729.64'

SCALE
0 100 200 300 400 500

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

SHEET 6 OF 11

REV.

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FINAL PLANS

Drawn by: Keith Maddux 04-13-11
Checked by: Craig Hacker 7-13-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 10 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

405 410 415 420 425 430

SW-NE SEC 10
T35 R16

NE-SE SEC 10
T35 R16

+70.0 JASMINE CO RD — 1/4-1/4 SECTION LINE
W= 19', Gr= -5.67%
ASPH SURF

+95.5 PRIVATE ENT
W= 24', Gr=-5.60%
ASPH SURF

PC STA 415+49.53

+69.85 ROUTE BB
W= 42.3'
Gr=-1.60%
ASPH SURF

+70.9

+10.3

PT STA 426+02.10

1/4-1/4 SECTION LINE

S.L.

+69.4 PRIVATE ENT
W= 14.5', Gr= +2.80%
ASPH SURF

+27.5 COMM ENT
W= 32', Gr=+2.00%
CONC SURF

EXIST 12" PIPE INCL. 1-24" SSES
SK= 10° RA

+19.6 REMOVE EXIST 5" HMWL RT & EXTEND 24"X9.5' RCP RT

+73.6 COMM ENT
W= 27', Gr=+2.20%
CONC SURF

℄ SECTION LINE

+44.0 PRIVATE ENT
W= 16', Gr=+6.50%
AGGR SURF

593.47 sq'
+99.68
56.98'
97'R
+95.18
27.56'
+24.47
27.56'

+00.0
EXIST 24" PIPE

NW-SE SEC 10
T35 R16

+49.0 FIELD ENT
W= 21', Gr=+2.80%
AGGR SURF

EXIST 30" PIPE
SK= 10° RA
+60.0

1/4-1/4 SECTION LINE

CURV8
PI 420+75.98
PC 415+49.53
PT 426+02.10
Δ 3° 30' 27.1" (RT)
D 0° 19' 59.6"
L 1,052.57'
T 526.45'
R 17,193.85'

435 440 445 450 455 460

SE-SE SEC 10
T35 R16

NE-NE SEC 15
T35 R16

SE-NE SEC 15
T35 R16

1/4-1/4 SECTION LINE

+75.0 JONQUIL CO RD — SECTION LINE
W= 21.5', Gr=+4.80%
ASPH SURF

PC STA 445+16.32

+82.0 (UIP)
EXIST 30" PIPE

CURV9
PI 451+65.23
PC 445+16.32
PT 458+13.52
Δ 4° 19' 15.2" (LT)
D 0° 19' 59.1"
L 1,297.20'
T 648.91'
R 17,201.08'

+00

PT STA 458+13.52

1/4-1/4 SECTION LINE

S.L.

40'R

35'R

S 4° 53' 18" E

CURV9

+61

+20.2 FIELD ENT
W= 13', Gr=+1.10%
AGGR SURF

EXIST 42" PIPE
SK= 10° LA

SW-SE SEC 10
T35 R16

NW-NE SEC 15
T35 R16

SW-NE SEC 15
T35 R16

+75.0 JULIE RD
W= 21', Gr=+2.10%
ASPH SURFACE

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

SCALE
0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

SHEET 7 OF 11

REV.

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FINAL PLANS

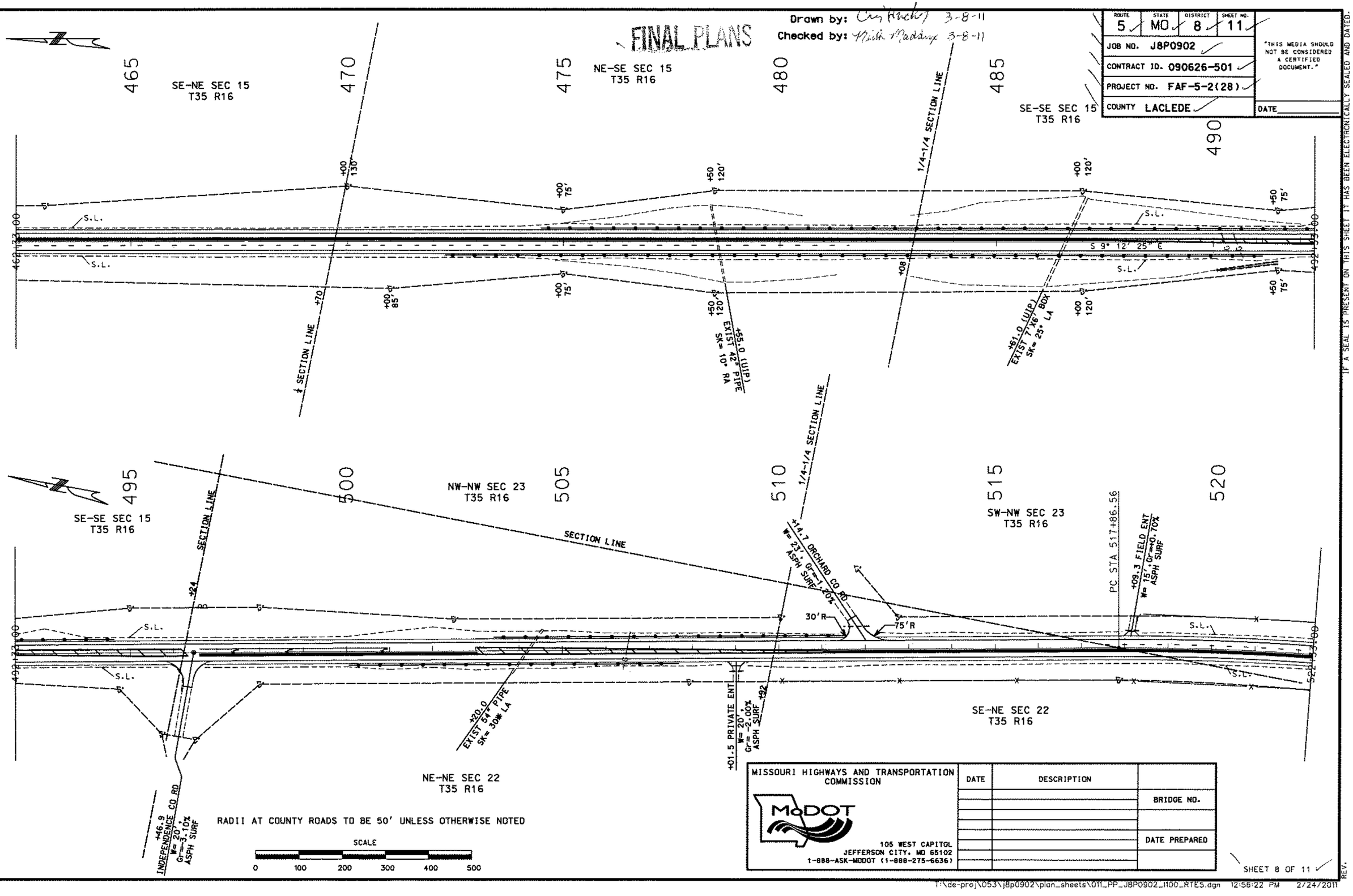
Drawn by: Cm (Rocky) 3-8-11
Checked by: Mitch Maddux 3-8-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 11 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

SHEET 8 OF 11

REV.

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Drawn by: Keith Maddux 04-13-11
Checked by: Cuy Hawley 7-13-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 12 |

JOB NO. J8P0902
CONTRACT ID. 090626-401
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

525 530 535 540 545 550

NW-SW SEC 23 T35 R16 | SW-SW SEC 23 T35 R16

PT STA 528+15.34

1/4-1/4 SECTION LINE

+45.0 COMM ENT W= 30' Gr=-1.90% ASPH SURF

+34.4 FIELD ENT W= 44', Gr=+2.90% ASPH SURF

+16.6 FIELD ENT W= 17', Gr=+2.30% ASPH SURF

+08.4 PRIVATE ENT W= 23', Gr=-12.50% ASPH SURFACE

+38.7 PRIVATE ENT W= 18', Gr=+5.50% ASPH SURF

+71.8 COMM ENT W= 17', Gr=-7.00% ASPH SURF

+95.0 PRIVATE ENT W= 16', Gr=+0.60% ASPH SURF

+71.8 IRONWOOD LN W= 28', Gr=-11.50% ASPH SURF

+96.0 COMM ENT W= 17', Gr=-10.10% ASPH SURF

+45.0 EXIST 42" PIPE

+88.8 PRIVATE ENT W= 16', Gr=+11.90% ASPH SURF

+03.4 PRIVATE ENT W= 16', Gr=+13.90% ASPH SURF

+06.0 HAZEL CO RD W= 22', Gr=-10.00% ASPH SURF

NE-SE SEC 22 T35 R16 | SE-SE SEC 22 T35 R16

CURV10
PI 523+02.33
PC 517+86.56
PT 528+15.34
Δ 10° 17' 06.9" (RT)
D 0° 59' 59.1"
LT 1,028.78'
T 515.78'
R 5,731.00'

555 560 565 570 575 580

NW-NW SEC 26 T35 R16 | SW-NW SEC 26 T35 R16 | NW-SW SEC 26 T35 R16

1/4-1/4 SECTION LINE

+97.0 COMM ENT W= 22', Gr=-10.10% ASPH SURF

+00.0 FIELD ENT W= 16', Gr=-9.00% ASPH SURF

23'X30" GROUP C PIPE (30") 3:1 BET UPSTREAM 6:1 SSES DOWNSTREAM 2'X10'X20' ROCK LINING

+98.9 PRIVATE ENT W= 22', Gr=-0.70% ASPH SURF

32'X36" GROUP C PIPE (36") 3:1 BET UPSTREAM 6:1 SSES DOWNSTREAM 1.5'X9'X18' ROCK LINING

+42.0 PRIVATE ENT W= 17', Gr=-6.10% ASPH SURF

36'X42" GROUP C PIPE (42") 3:1 BET UPSTREAM 6:1 SSES DOWNSTREAM

+08.2 COMM ENT W= 17', Gr=-4.70% ASPH SURF

+35.0 EXIST 7'x5' CONC. BOX

+58.8 HEMLOCK CO RD W= 22', Gr=-6.50% ASPH SURF

ROCK LEVEE ELEV=1192.92 SEE CROSS SECTIONS

ROCK LEVEE ELEV=1189.66 SEE CROSS-SECTIONS

EARTH LEVEE ELEV=1189.50 SEE CROSS-SECTIONS

8' F.B.L. SEE CROSS SECTIONS

4' CONC. DITCH LINER SEE CROSS SECTIONS

+35.7 COMM ENT W= 22', Gr=-5.60% ASPH SURF

+72.0 PRIVATE ENT W= 18', Gr=-7.60% ASPH SURF

+51.0 EXIST 24" PIPE SK= 40'± LA

+33.7 PRIVATE ENT W= 19', Gr=-7.70% ASPH SURF

+08.0 HULL LN W= 16', Gr=-2.00% ASPH SURF

+68.0 PRIVATE ENT W= 16', Gr=+1.50% ASPH SURF

+48.3 PRIVATE ENT W= 18', Gr=+5.80% ASPH SURF

+25.0 EXIST 66" PIPE

+06.0 FIELD ENT W= 17', Gr=-3.00% ASPH SURF

40' to 36' Pav't

Perm. Drainage Esm't

NE-NE SEC 27 T35 R16 | SE-NE SEC 27 T35 R16 | NE-SE SEC 27 T35 R16

SCALE
0 100 200 300 400 500

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

REV.

SHEET 9 OF 11

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Drawn by: Greg Hacker 3-8-11
Checked by: Mark Maddux 3-8-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 13 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

NW-SW SEC 26
T35 R16

SW-SW SEC 26
T35 R16

NW-NW SEC 35
T35 R16

NE-SE SEC 27
T35 R16

SE-SE SEC 27
T35 R16

NE-NE SEC 34
T35 R16

SW-NW SEC 35
T35 R16

NW-SW SEC 35
T35 R16

SE-NE SEC 34
T35 R16

585 590 595 600 605 610 615 620 625 630 635 640

1/4-1/4 SECTION LINE

SECTION LINE

OPTIONAL PAVEMENT LIMITS

+10.2 PRIVATE ENT
W= 26', Gr=-9.20%
ASPH SURF

+93.7 PRIVATE ENT
W= 26', Gr=+6.80%
ASPH SURF

+77.5 PRIVATE ENT
W= 33', Gr=-3.10%
ASPH SURF

+29.7 NW OAKWOOD DR
W= 33', Gr=-16.10%
ASPH SURF

+26.0 FIELD ENT
W= 16', Gr=-6.70%
ASPH SURF

+51.0 (UIP)
EXIST 48" PIPE
Sk= 45° RA

+52.0 HOUSTON RD
W= 23', Gr=0.00%
ASPH SURF

+00.0 (UIP)
EXIST 36" PIPE

+17.4 COMM ENT
W= 40', Gr=-6.00%
ASPH SURF

+09.6 COMM ENT
W= 16', Gr=+4.50%
ASPH SURF

+65.6 COMM ENT
W= 16', Gr=+7.40%
ASPH SURF

+68.6 PRIVATE ENT
W= 16', Gr=+1.00%
ASPH SURF

+88.0 SW OAKWOOD DR
W= 31', Gr=+5.20%
ASPH SURF

+90.0 (UIP)
EXIST 18" PIPE
EQUATION:
Sta 615+00.00 BK =
Sta 614+99.76 AH

+49.3 PRIVATE ENT
W= 16', Gr=-2.30%
ASPH SURF

+62.0 GRAND LAKE CIR
W= 40', Gr=-4.20%
ASPH SURF

+00.0 CO RD 211
W= 27', Gr=+0.40%
ASPH SURF

+70.0 (UIP)
EXIST 8" BOX CRVT

+06.0 LAKESHORE DR CO RD
W= 26', Gr=-5.20%
ASPH SURF

+49.3 PRIVATE ENT
W= 20', Gr=+4.50%
ASPH SURF

+27.5 PRIVATE ENT
W= 18', Gr=+2.80%
ASPH SURF

+16.5 FIELD ENT
W= 18', Gr=+5.00%
ASPH SURF

POT STA 614+99.76
TS STA 615+41.49
SC STA 617+91.49
CS STA 621+10.64
SC STA 623+60.64
PT STA 632+06.82

SPIRAL11B
PI 617+08.20
Ls 250.00'
Ys 6.36'
Xs 249.85'
LT 166.72'
ST 83.38'

SPIRAL11
PI 619+51.57
SC 617+91.49
CS 621+10.64
Δ 11° 10' 13.8" (LT)
D 3° 30' 00.0"
LT 319.16'
T 160.09'
R 1,637.02'

SPIRAL12
PI 627+84.51
SC 623+60.64
CS 632+06.82
Δ 8° 28' 00.5" (LT)
D 1° 00' 02.1"
LT 846.18'
T 423.86'
R 5,726.20'

80'R 30'R 40'R

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

SCALE
0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

| DATE | DESCRIPTION |
|---|---|
| | |

BRIDGE NO.

DATE PREPARED

SHEET 10 OF 11

REV.

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Drawn by: (Cw Hicks) 3-8-11

Checked by: Keith Maddux 3-8-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | 14 |

JOB NO. J8P0902

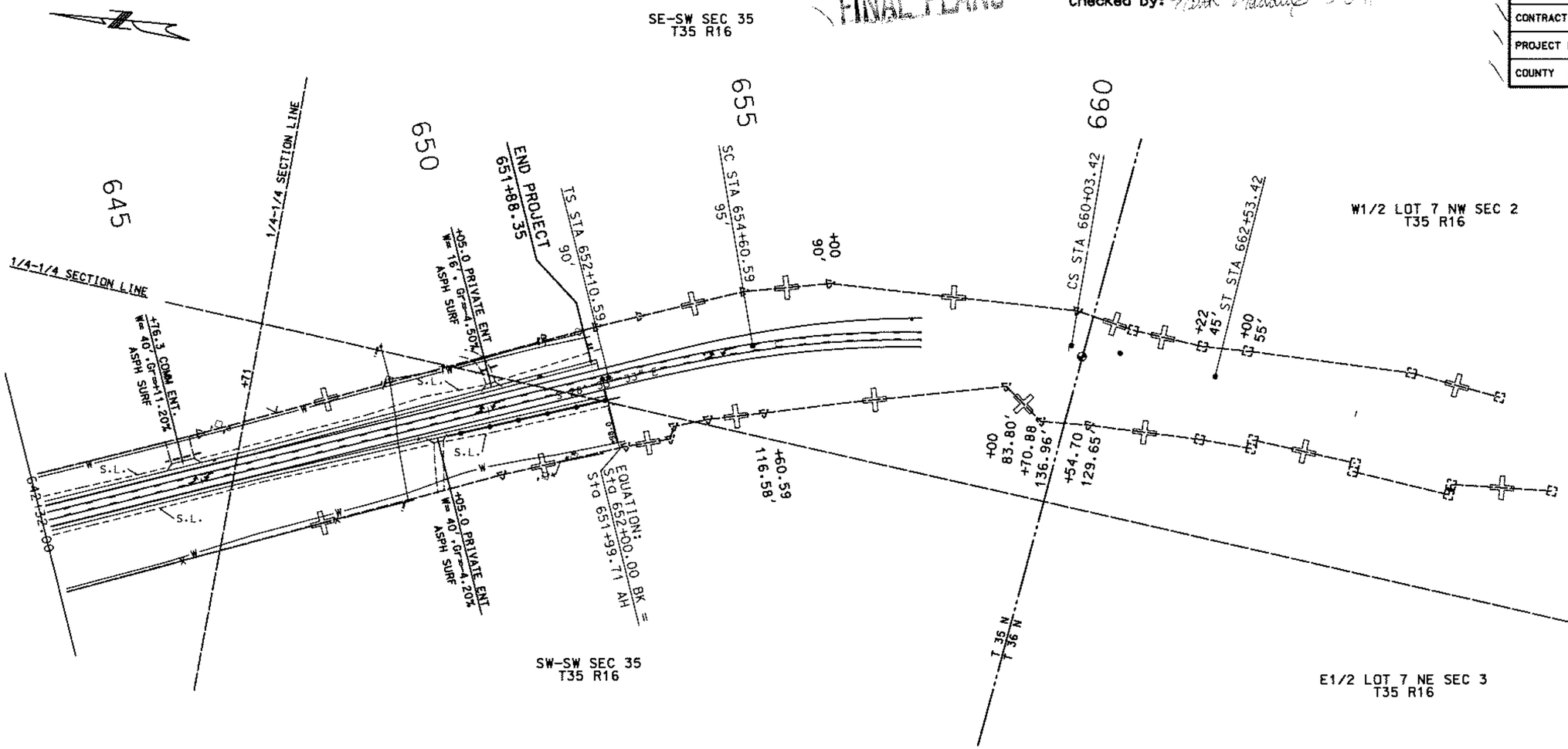
CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE




ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL TO AND A PART OF THE CONSTRUCTION OF THIS PROJECT.

RADII AT COUNTY ROADS TO BE 50' UNLESS OTHERWISE NOTED

SCALE

0 100 200 300 400 500

| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SHEET 11 OF 11

REV.

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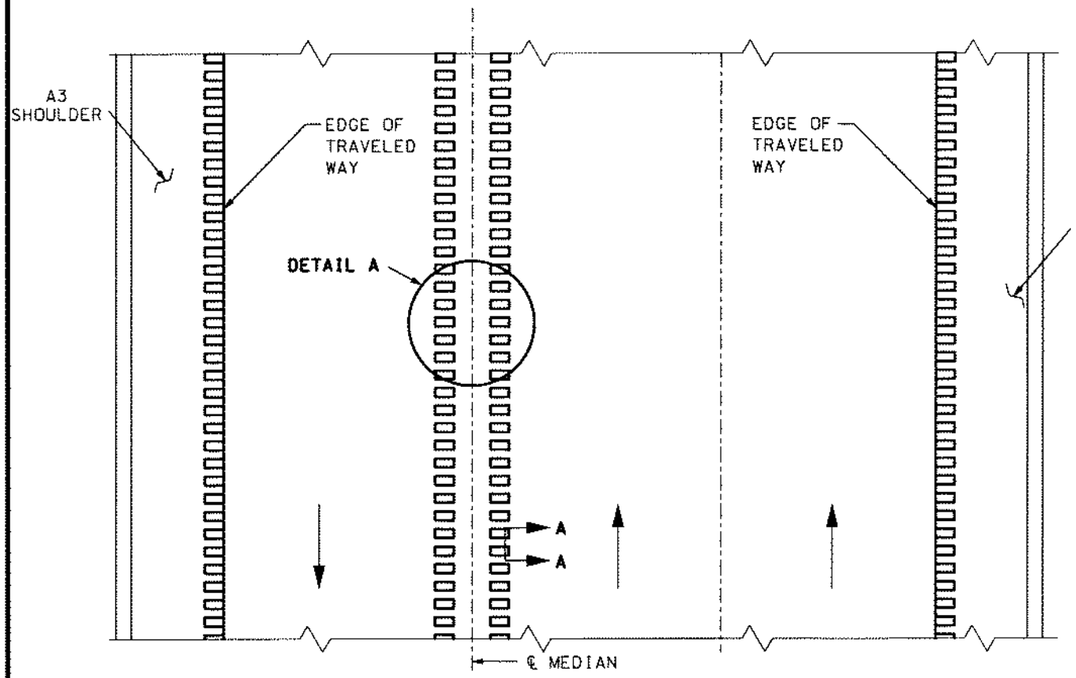
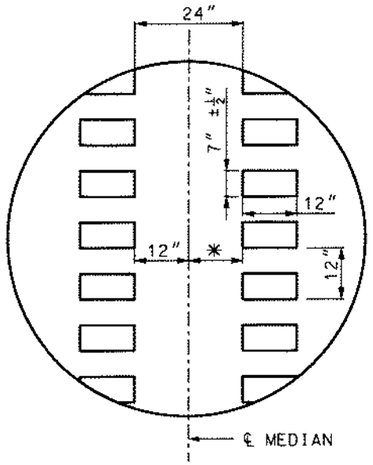
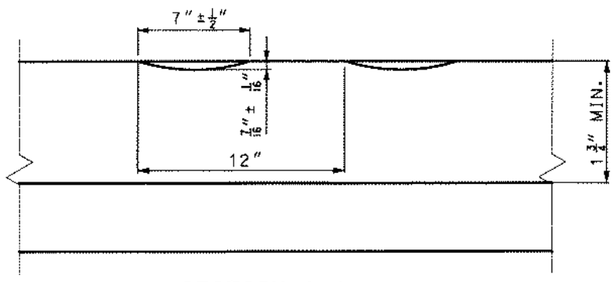


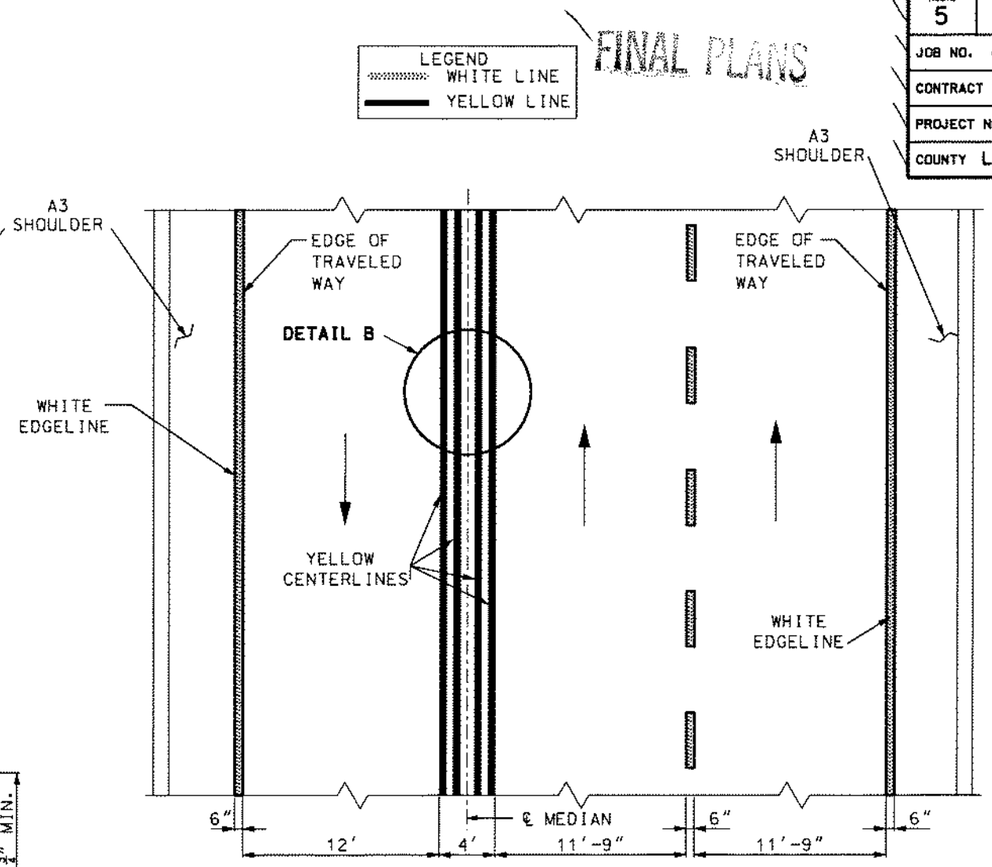



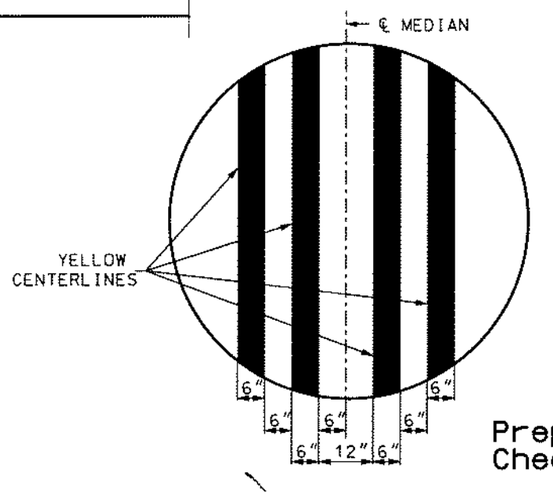

DETAIL A

* = LATERAL DEVIATION SHALL NOT EXCEED ONE INCH IN 100 FEET.




SECTION A-A




DETAIL B

LEGEND
WHITE LINE
YELLOW LINE

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | SS1 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

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| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

GENERAL NOTES:

CENTERLINE RUMBLE STRIPS ON PASSING ROADWAYS SHALL FOLLOW PAVEMENT STRIPING THROUGH TRANSITIONS. SEE CONTRACT PLANS FOR STRIPING DETAILS.

RUMBLE STRIPS SHALL NOT BE PLACED ON BRIDGES.

ALL RUMBLE STRIPS SHALL BE MILLED.

CENTERLINE RUMBLE STRIPS SHALL BE CONTINUOUS THROUGH CONNECTIONS OF SIDEROADS WITH NO LEFT TURN LANES.

CONTINUE RUMBLE STRIPS AND CENTERLINE PAV'T MARKING FOR THE TWO LANE SECTIONS.

**RUMBLE STRIP**

Prepared by: Craig Huckaby 7-13-11
Checked by: 7/22/11

# PASSING LANE RUMBLE STRIP AND PAVEMENT MARKING SPECIAL SHEET

SHEET 1 OF 6

Prepared by: Craig Huckaby
Checked by: [signature] FINAL PLANS
7/22/11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | SS2 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

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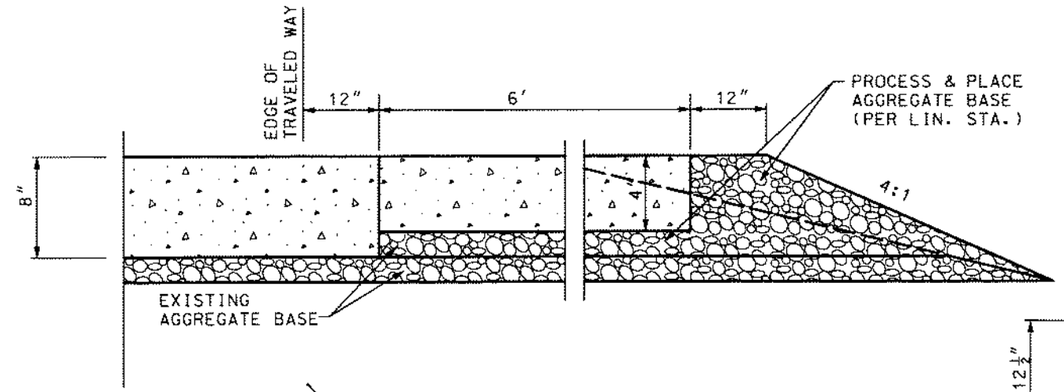
DATE

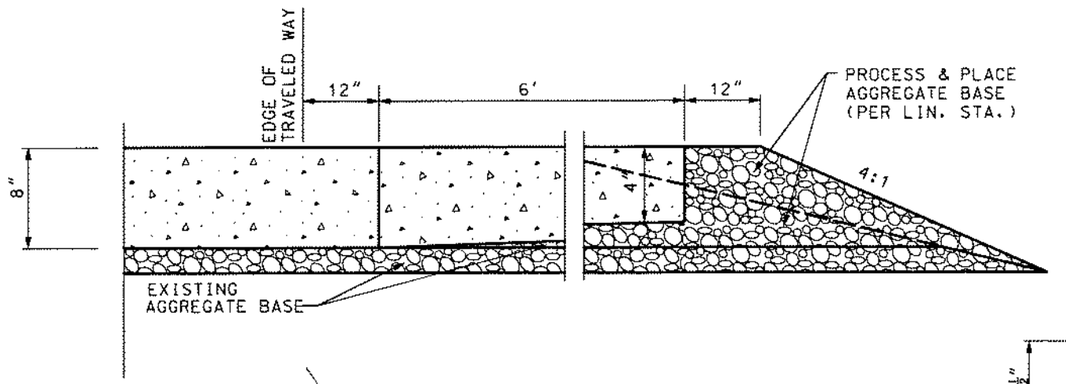
BRIDGE NO. | DATE PREPARED

DESCRIPTION | DATE

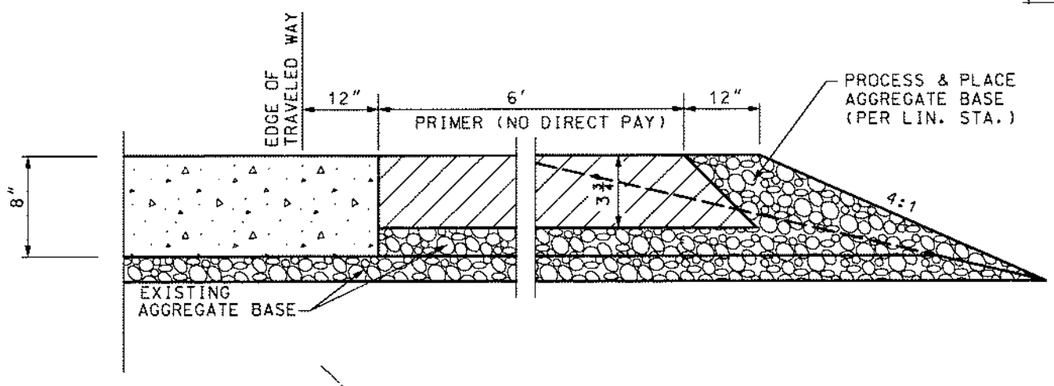
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




OPTION 1

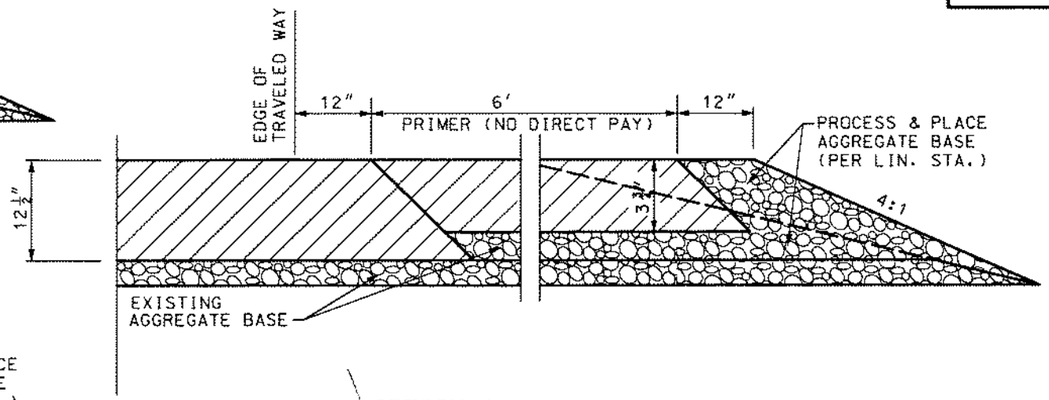



OPTION 2

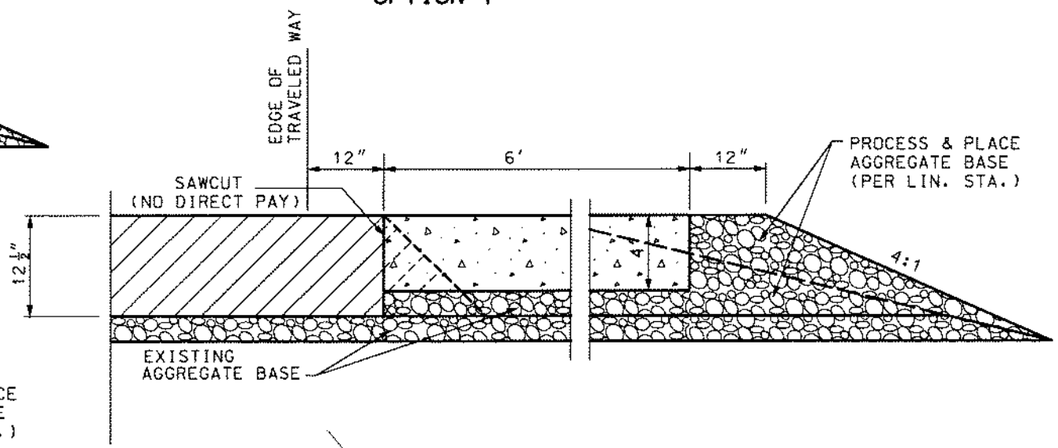



OPTION 3

## PCC PAVEMENT (ALT A)




OPTION 1




OPTION 2

## HMA PAVEMENT (ALT B)

PCC (PORTLAND CEMENT CONCRETE)

HMA (HOT MIX ASPHALT)

BASE

GENERAL NOTES:

1. THE A3 SHOULDER OPTIONS INDICATE EXISTING FULL DEPTH DAYLIGHTED AGGREGATE SHOULDERS. THE CONTRACTOR SHALL REFER TO TYPICAL SHEET 8 OF 9 FOR PROBABLE LIMITS OF EXISTING DAYLIGHTED BASE.
2. FOR 4" CONCRETE SHOULDER OPTION, USE 7.5' JOINT SPACING MATCHING EVERY OTHER JOINT TO THE JOINT IN THE MAINLINE PAVEMENT. T/3 JOINT MAY BE HAND TOOLED OR SAWN. SAWCUT JOINTS IN THE SHOULDER SHALL NOT BE OVERSAWN INTO THE MAINLINE PAVEMENT.
3. ANY AGGREGATE BELOW NEW MAINLINE PAVEMENT WIDENING AND WITHIN THE LIMITS OF THE SHOULDER (INCLUDING FORESLOPE OF THE ROADWAY), COMPLETE AND IN PLACE, SHALL BE PAID AT THE CONTRACT UNIT BID PRICE FOR PROCESS AND PLACE AGGREGATE BASE PER LINEAR STATION.

# TYPE A3 SHOULDERS SPECIAL SHEET

SHEET 2 OF 6


MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)


REV.

Prepared by: Craig Huckaby 7-13-11
Checked by: [signature] 7/22/11

FINAL PLANS

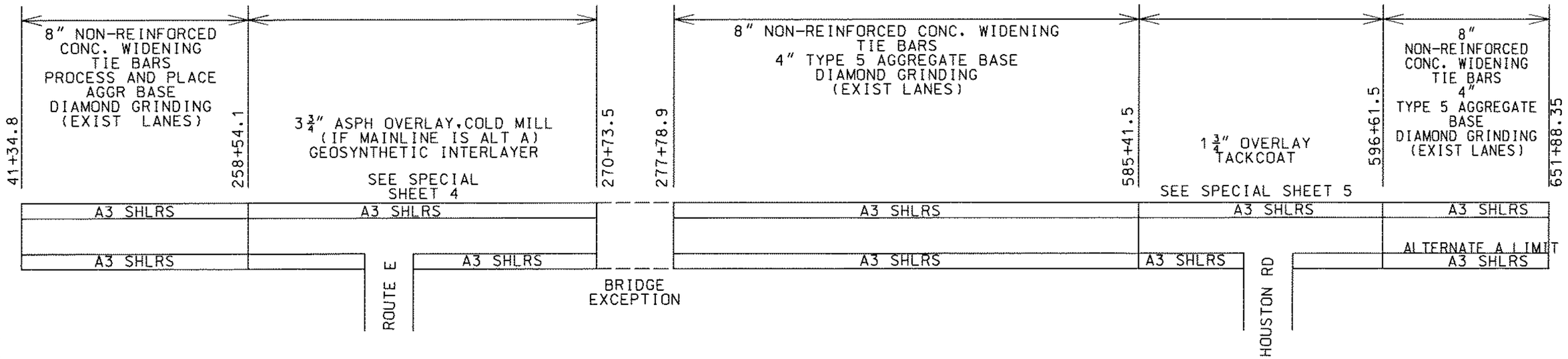
| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | SS3 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-1(28)
COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




NOT TO SCALE

# ALTERNATE PAVEMENT SPECIAL SHEET

SHEET 3 OF 6

REV.

T:\de-proj\053\j8p0902\plan_sheets\020_SS_04_J8P0902_150_ALTER_A_and_B.dgn 12:26:48 PM 7/13/2011

Prepared by: Craig Huckaby 7-13-11

Checked by: [signature] 7/22/11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | SS4 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

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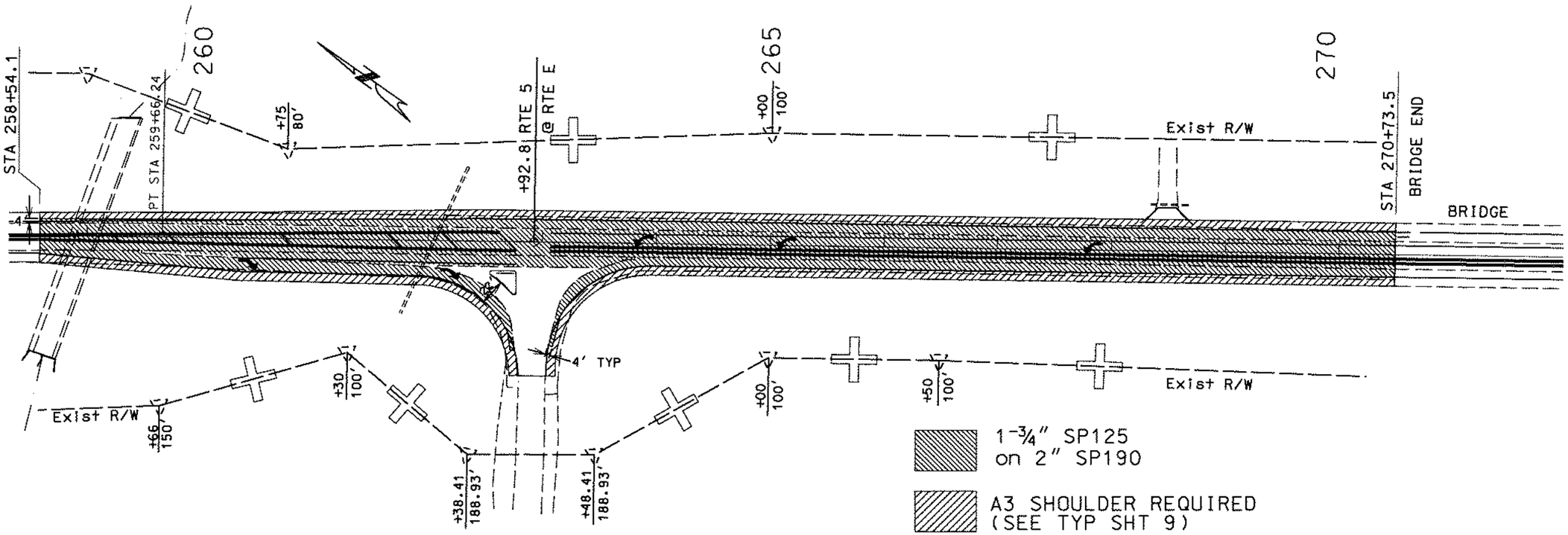
DATE




| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

# STATE RTE 5 AND RTE E INTERSECTION

## SPECIAL SHEET

SHEET 4 OF 6

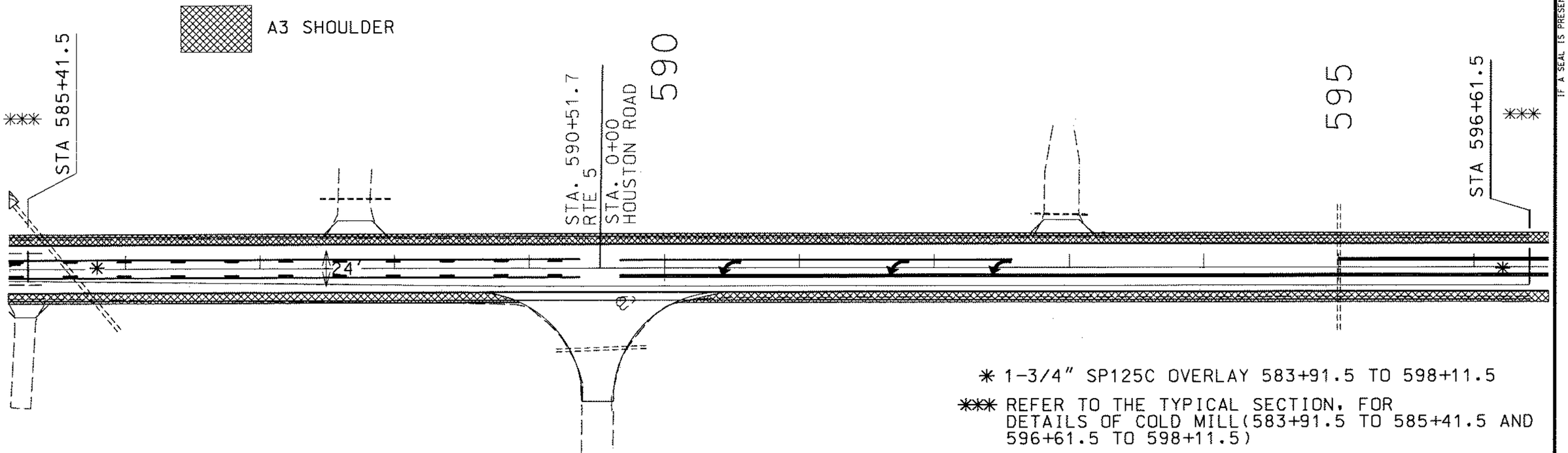
REV.

T:\de-proj\053\j8p0902\plan_sheets\021_SS_04_J8P0902_150_OPTION_A_AND_B.dgn 1:49:00 PM 7/13/2011

Prepared by: Craig Huckaby 7-13-11
Checked by: [signature] 7/22/11

| MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION | DATE | DESCRIPTION | | ROUTE 5 | STATE MO | DISTRICT 8 | SHEET NO. SS5 | "THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT." |
|---|---|---|---|---|---|---|---|---|
| MoDOT | | | BRIDGE NO. | JOB NO. J8P0902 ✓ | | | | |
| 105 WEST CAPITOL<br>JEFFERSON CITY, MO 65102<br>1-888-ASK-MODOT (1-888-275-6636) | | | | CONTRACT ID. 090626-501 ✓ | | | | |
| | | | DATE PREPARED | PROJECT NO. FAF-5-2(28) ✓ | | | | |
| | | | | COUNTY LACLEDE ✓ | | | | DATE |

FINAL PLANS




* 1-3/4" SP125C OVERLAY 583+91.5 TO 598+11.5

*** REFER TO THE TYPICAL SECTION, FOR DETAILS OF COLD MILL(583+91.5 TO 585+41.5 AND 596+61.5 TO 598+11.5)

ROUTE 5 AND HOUSTON ROAD INTERSECTION

NOT TO SCALE

SPECIAL SHEET

SHEET 5 OF 6

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

T:\de-proj\053\j8p0902\plan_sheets\022_SS_05_J8P0902_150_OPTION_A_AND_B.dgn 2:18:09 PM 7/13/2011

Prepared by: Craig Huckaby 7-13-11
Checked by: Chad A Lee 7/22/11

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

| DATE | DESCRIPTION |
|---|---|
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BRIDGE NO.

DATE PREPARED

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | SS6 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

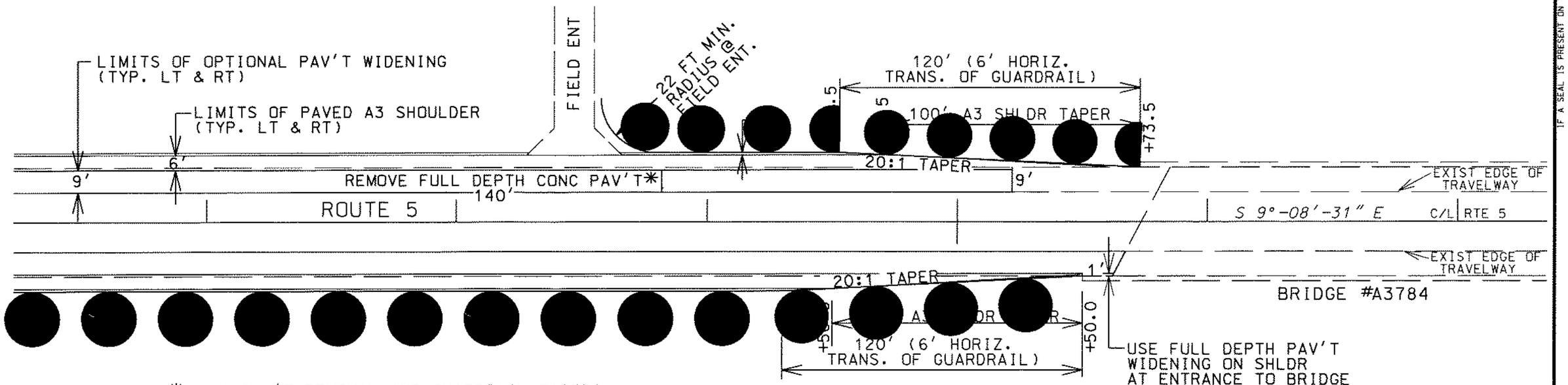
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

270

FINAL PLANS




* CONC PAV'T REMOVAL AND GUARDRAIL TAPERS ARE TYPICAL ON BOTH ENDS OF THE BRIDGE

SCALE
0 20 40 60

SPECIAL SHEET

SHEET 6 OF 6

REV.

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION |
|---|---|
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BRIDGE NO.

DATE PREPARED

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM1 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

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DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Prepared by: Craig Huckaby 7-13-11
Checked by: Keith Maddux 7-18-11

FINAL PLANS

45

55

60

65

70

FIELD ENT.

OLATHE DR.

41+35.00

56+35.00

6" SOLID WHITE

6" DOUBLE YELLOW

24" SOLID YELLOW HASH
PAV'T MARKING, 50' SPACING

6" SOLID WHITE

6" INT WHITE
9" CONTRAST

+17

+92

+17

+38
+52

+66

+57

+06

48+65

SPEED LIMIT 65
R2-1
(REPLACE AT STA 45+00)
1

PASSING LANE
W4-12A

W4-12

NEXT 1½ MILES
W07-3a
2

56+35.00

71+35.00

6" DOUBLE YELLOW

6" SOLID WHITE

6" INT. WHITE
9" CONTRAST

70+00

WATCH FOR LEFT-TURNING TRAFFIC IN PASSING LANE
W4-11
3

SCALE

0 100 200 300 400 500

# PAVEMENT MARKINGS & SIGNING

SHEET 1 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\047_PM_01_J8P0902_150_REVISED_093009.dgn 3:10:14 PM 7/13/2011

Prepared by: Craig Huckaby 7-14-11
Checked by: Keith Maddux 7-20-11

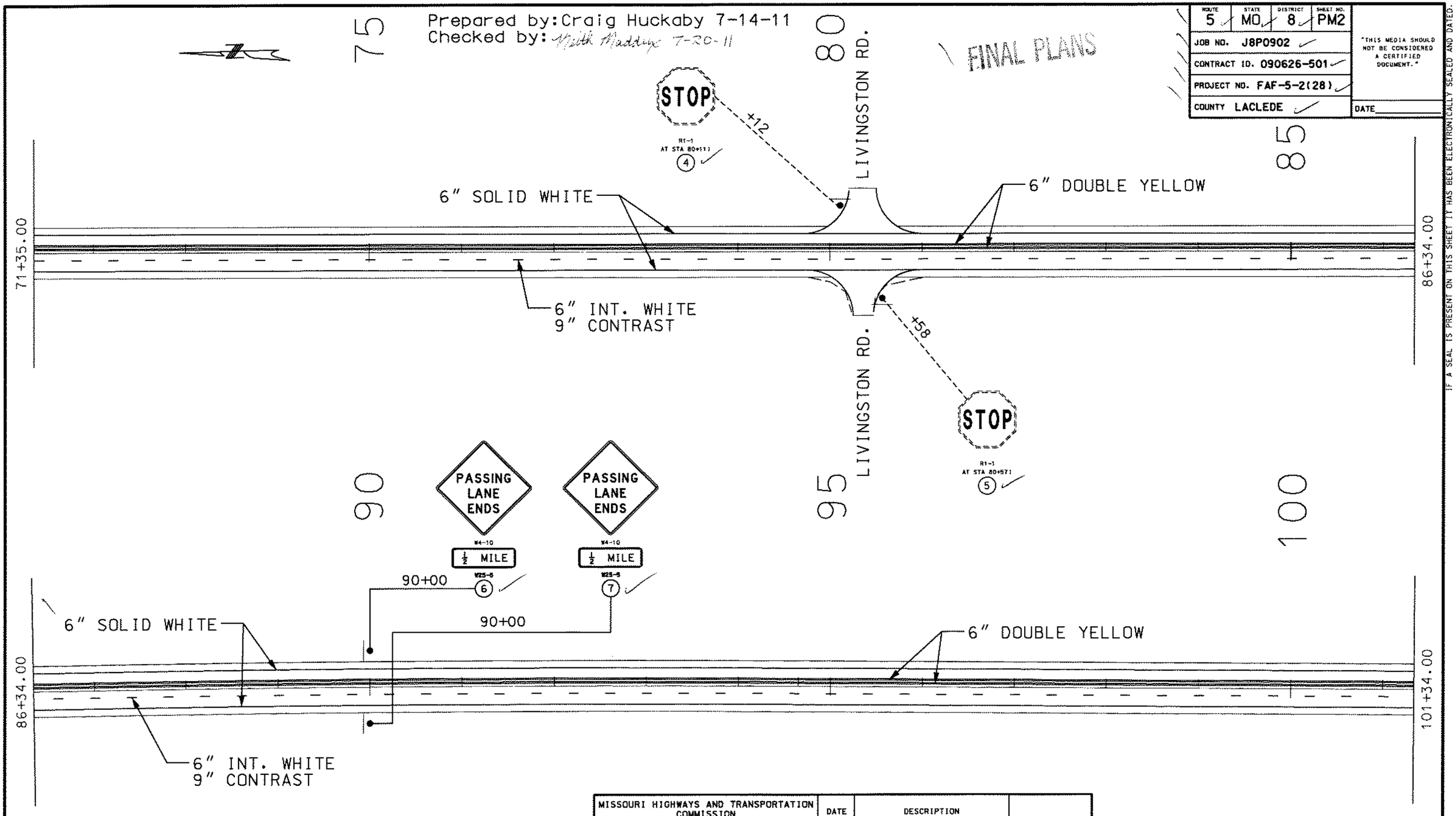
FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM2 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




SCALE

0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 2 OF 22

REV.

f:\de-proj\053\j8p0902\plan_sheets\048_PM_02_J8P0902_150_REVISED_093009.dgn 12:55:13 PM 7/19/2011

Prepared by: Craig Huckaby 7-14-11
Checked by: Matt Maddux 7-18-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM3 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

105 110 115

101+34.00

6" DOUBLE YELLOW

6" SOLID WHITE

6" INT. WHITE
9" CONTRAST

116+34.00

LANE ENDS MERGE RIGHT
W9-2R
¼ MILE
W25-5
9

103+50

103+50

LANE ENDS MERGE RIGHT
W9-2R
¼ MILE
W25-5
8

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

120 125 130

FIELD ENT.

6" SOLID WHITE

6" INT. WHITE
9" CONTRAST

6" DOUBLE YELLOW

116+34.00

131+34.00

+78

24" SOLID YELLOW HASH
PAV'T MARKING, 50' SPACING

NEXT PASSING LANE 3 MILES
R4-13
10

130+60

+58

+08

SCALE

0 100 200 300 400 500

# PAVEMENT MARKINGS & SIGNING

SHEET 3 OF 22

REV.

Prepared by: Craig Huckaby
Checked by: Keith Maddux 7-18-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM4 |
| JOB NO. J8P0902 | | | |
| CONTRACT ID. 090626-501 | | | |
| PROJECT NO. FAF-5-2(28) | | | |
| COUNTY LACLEDE | | | |

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DATE

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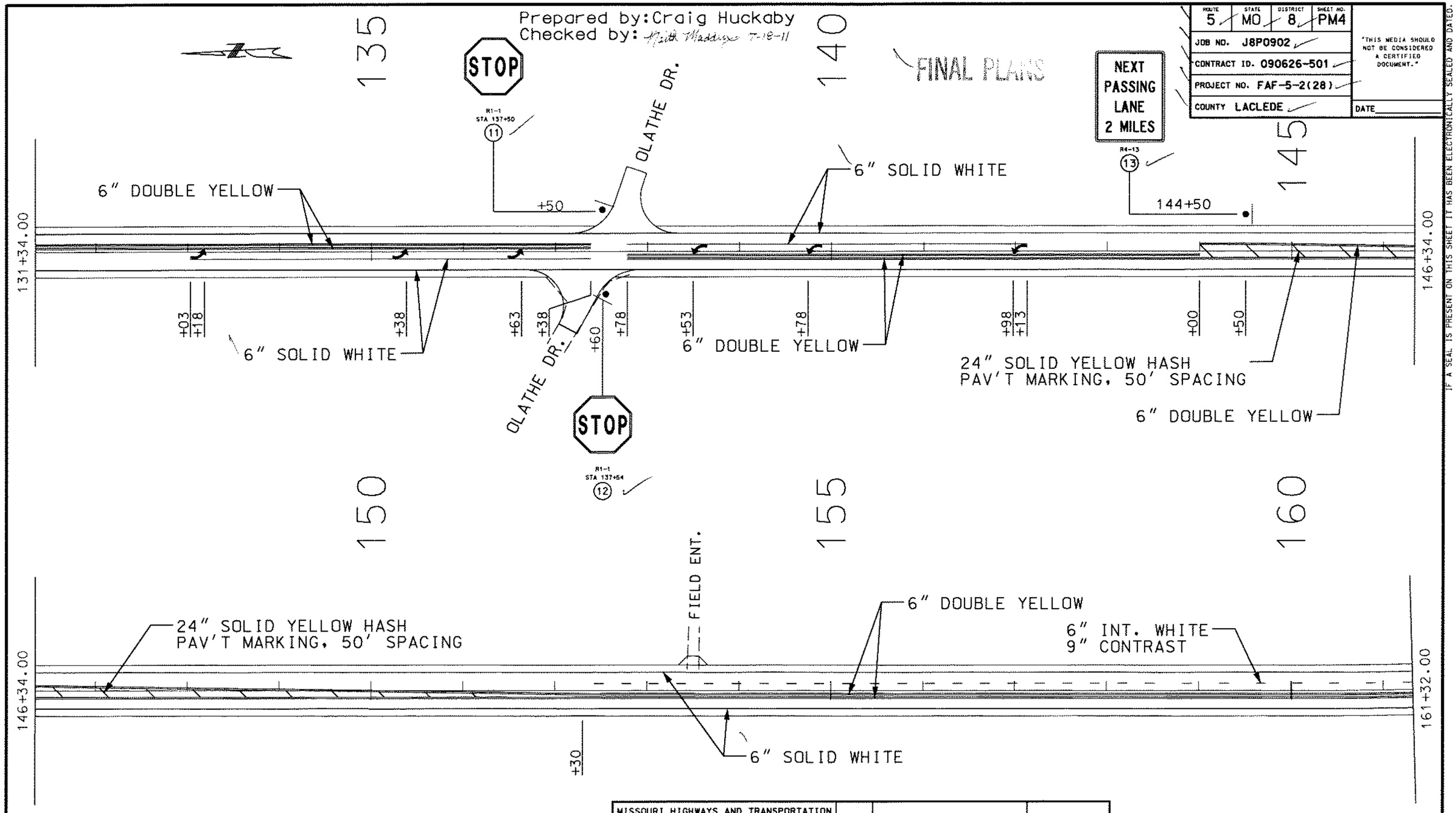


SCALE

0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 4 OF 22

REV.

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Prepared by: Craig Huckaby 7-14-11
Checked by: Keith Maddux 7-18-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM5 |
| JOB NO. J8P0902 | | | |
| CONTRACT ID. 090626-501 | | | |
| PROJECT NO. FAF-5-2(28) | | | |
| COUNTY LACLEDE | | | |

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DATE

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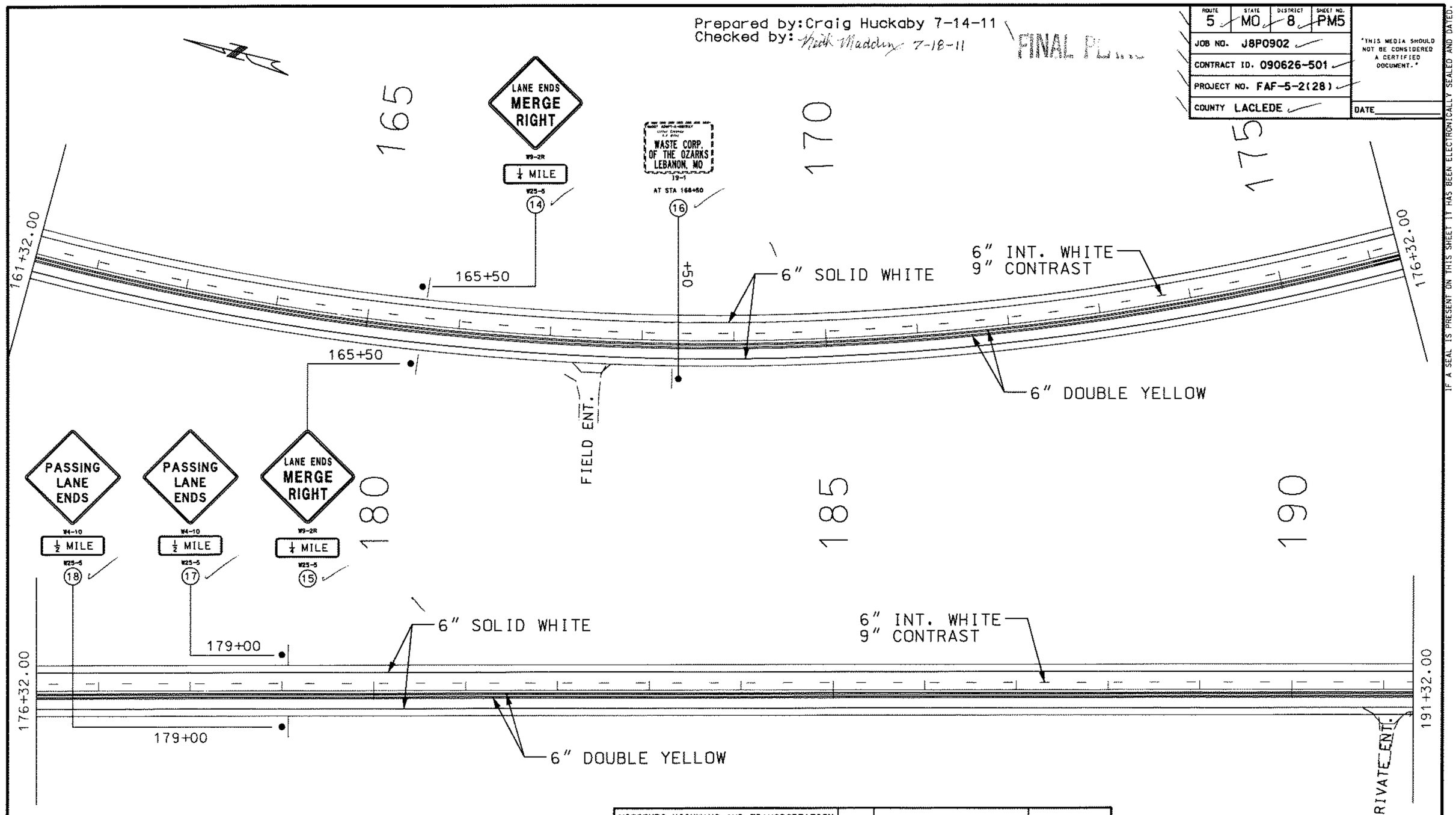


SCALE

0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 5 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\051_PM_05_J8P0902_150_REVISED_093009.dgn 9:31:25 AM 7/14/2011

Prepared by: Craig Huckaby 7-14-11
Checked by: Keith Maddux 7-18-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM6 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-29(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

195 200 205 210 215 220

191+32.00

206+32.00

6" SOLID WHITE

6" INT. WHITE
9" CONTRAST

6" DOUBLE YELLOW

WATCH FOR LEFT-TURNING TRAFFIC IN PASSING LANE
W4-11
(19)

201+00

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | |
| | | DATE PREPARED |
| | | |

PASSING LANE
W4-12A

SPEED LIMIT 65
R2-1
STA 211+00
(21)

211+00

W4-12

NEXT 1 MILE
W7-3a
(22)

213+25

6" DOUBLE YELLOW

6" SOLID WHITE

NORTH
M3-1

5
M1-6
(23)

218+00

STOP
R1-1
AT STA 220+47
(27)

STOP
R1-1
AT STA 220+19
(26)

6" SOLID WHITE
ROUTE VV

+19

+47

5 VV
M1-6 M1-7
M6-3 M6-1
(28)

+71

+75

221+32.00

6" DOUBLE YELLOW

6" INT. WHITE
9" CONTRAST

207+00

+36

+26

+79

+94

+14

+65

+39

+14

+93

+56

+85

+30

24" SOLID YELLOW HASH
PAV'T MARKING, 50' SPACING

VV
1/4 MILE
(20)

VV 5
M1-7 M1-6
M6-1 M6-3
(24)

5
M1-6
M6-4
(25)

KANSAS RD.
6" DOUBLE YELLOW

# PAVEMENT MARKINGS & SIGNING

SCALE

0 100 200 300 400 500

SHEET 6 OF 22

REV.

f:\de-proj\053\j8p0902\plan_sheets\052_PM_06_J8P0902_I50_REVISED_093009.dgn 10:10:17 AM 7/14/2011

Prepared by: Craig Huckaby 7-14-11
Checked by: Keith Madding 7-19-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM7 |
| JOB NO. J8P0902 | | | |
| CONTRACT ID. 090626-501 | | | |
| PROJECT NO. FAF-5-2(28) | | | |
| COUNTY LACLEDE | | | |

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

225 230 235 240 245 250

6" SOLID WHITE

6" DOUBLE YELLOW

24" SOLID YELLOW HASH PAV'T MARKING, 50' SPACING

VV 1/4 MILE (31)

221+32.00

222+50 +55

FIELD ENT.

+75 +91

226+00

+87

+77

234+00

236+32.00

SOUTH M3-3

5 M1-6 (29)

SPEED LIMIT 65 R2-1 (30)

24" SOLID YELLOW HASH PAV'T MARKING, 50' SPACING

6" DOUBLE YELLOW

6" SOLID WHITE

STOP R1-1 AT STA 249+00 (32)

+00

OLATHE RD.

6" DOUBLE YELLOW

236+32.00

+69

+59

+75 +90

+10

+35

+10 +36 +50

PRIVATE ENT. 250+00

251+31.00

24" SOLID YELLOW HASH PAV'T MARKING, 50' SPACING

E 1/4 MILE (33)

SCALE

0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 7 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\053_PM_07_J8P0902_I50.dgn 10:18:01 AM 7/14/2011

Prepared by: Craig Huckaby 7-14-11
Checked by: Keith Maddux 7-20-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM8 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

255 260 265 270 275 280

24" SOLID YELLOW HASH PAV'T MARKING

24" SOLID YELLOW HASH PAV'T MARKING 50' SPACING

SPEED LIMIT 65 R2-1 (34) STA 257+50

6" SOLID WHITE

6" DOUBLE YELLOW

Lebanon 11
Eldridge 4
D1-2a STA 258+00 (35)

NORTH M3-1 M1-6 STA 260+50 (36)

6" SOLID WHITE

6" DOUBLE YELLOW

YIELD R1-2 (37)

STOP R1-1 STA 263+35 (41)

STATE ROUTE E

SOUTH M3-3 M1-6 (42)

PASSING LANE W4-12A

KNOLL CO RD.

STOP R1-1 STA 276+95 (49)

NEXT 1 MILE W07-3a (50)

Camdenton 14
Eldridge 4
D1-2d STA 267+50 (43)

FIELD ENT.

GOODWIN HOLLOW CREEK I-3 (46)

WASTE CORP. OF THE OZARKS LEBANON, MO I9-1 STA 274+00 (47)

E 1/4 MILE (48)

SPEED LIMIT 65 R2-1 STA 267+50 (44)

6" SOLID WHITE

6" DOUBLE YELLOW

GOODWIN HOLLOW CREEK (45)

6" SOLID WHITE

6" DOUBLE YELLOW

24" SOLID YELLOW HASH PAV'T MARKING, 50' SPACING

SCALE

0 100 200 300 400 500

# PAVEMENT MARKINGS & SIGNING

SHEET 8 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\054_PM_08_J8P0902_150.dgn 1:01:21 PM 7/19/2011

Prepared by: Craig Huckaby 7-14-11
Checked by: Mitch Maddux 7-19-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM9 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

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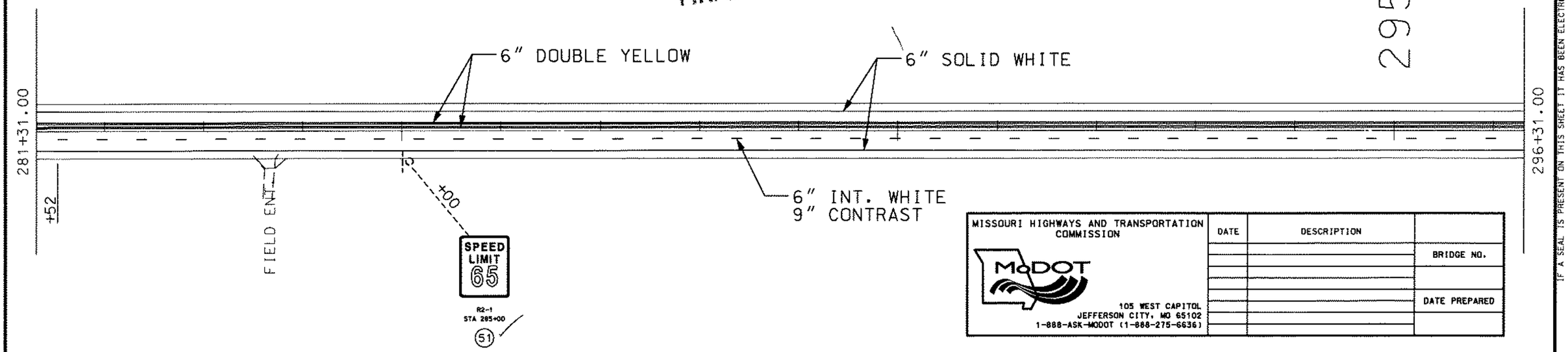
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

285 290 295



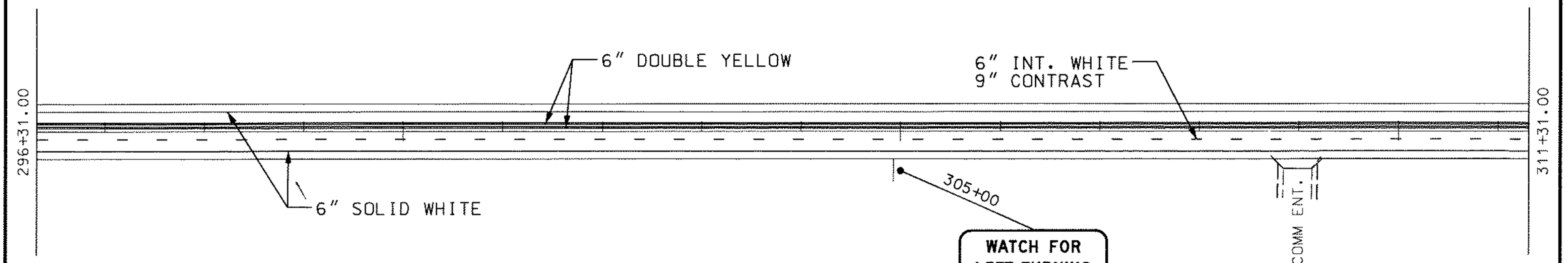

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

300 305 310




SCALE

0 100 200 300 400 500

# PAVEMENT MARKINGS & SIGNING

SHEET 9 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\055_PM_09_J8P0902_150_REVISED_093009.dgn 12:15:19 PM 7/14/2011

Prepared by: Craig Huckaby 7-14-11
Checked by: Keith Maddux 7-20-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO. | 8 | PM10 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

315 320 325 330 335 340

311+31.00 — 326+29.00 — 341+33.00

6" DOUBLE YELLOW
6" INT. WHITE
9" CONTRAST
6" SOLID WHITE
FIELD ENT.
FIELD ENT.
PRIVATE ENT.
ODESSA DR.
COMM ENT.
COMM ENT.

318+00 — PASSING LANE ENDS — W4-10 — ½ MILE — W25-5 — (53)
318+00 — PASSING LANE ENDS — W4-10 — ½ MILE — W25-5 — (54)
322+00 — WATCH FOR LEFT-TURNING TRAFFIC IN PASSING LANE — W4-11 — (55)
330+00 — LANE ENDS MERGE RIGHT — W9-2R — ¼ MILE — W25-5 — (56)
330+00 — LANE ENDS MERGE RIGHT — W9-2R — ¼ MILE — W25-5 — (57)
STOP — R1-1 — STA 330+65 — (58)
+65
+84

SCALE
0 100 200 300 400 500

| MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION | DATE | DESCRIPTION | |
|---|---|---|---|
| MoDOT | | | BRIDGE NO. |
| 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636) | | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 10 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\056_PM_10_J8P0902_150_REVISED_093009.dgn 2:46:36 PM 7/19/2011

Prepared by: Craig Huckaby 7-14-11
Checked by: Matt Maddux 7-19-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM11 |
| JOB NO. J8P0902 | | | |
| CONTRACT ID. 090626-501 | | | |
| PROJECT NO. FAF-5-2(28) | | | |
| COUNTY LACLEDE | | | |

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

345 350 355 360 365 370

341+33.00

6" INT. WHITE 9" CONTRAST

PRIVATE ENT.

6" DOUBLE YELLOW

COMM ENT.

6" SOLID WHITE

24" SOLID YELLOW HASH PAV'T MARKINGS 50' SPACING

PRIVATE ENT. +10 COMM ENT.

LARNCE & JOANN BERRY 19-1

STA 353+50 (61)

+61

6" DOUBLE YELLOW

356+33.00

6" SOLID WHITE

+02 +16 +61 +80 +36 +61 +81 +96

350+50

NEXT PASSING LANE 1 MILE R4-13 (59)

STOP

OLD RTE 5 CO RD.

R1-1 STA 351+75 (60)

NEXT PASSING LANE 3 MILES R4-13 (62)

358+75

PRIV. ENT.

6" SOLID WHITE

24" SOLID YELLOW HASH PAV'T MARKINGS, 50' SPACING

PRIVATE ENT.

356+33.00

371+33.00

+24 +74

6" DOUBLE YELLOW

+54

6" DOUBLE YELLOW

PRIV. ENT.

SCALE

0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 11 OF 22

REV.

I:\de-proj\053\j8p0902\plan_sheets\057_PM_11_J8P0902_150.dgn 1:43:39 PM 7/18/2011

Prepared by: Craig Huckaby 7-13-11
Checked by: Matt Maddux 7-19-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM12 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

375 380 385

LANE ENDS MERGE RIGHT W9-2R
½ MILE W25-5
63

6" DOUBLE YELLOW
371+33.00
380+00
6" INT. WHITE
9" CONTRAST
FIELD ENT.
386+33.00
6" SOLID WHITE

LANE ENDS MERGE RIGHT W9-2R
380+00
½ MILE W25-5
64

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

390 395 400

PASSING LANE ENDS W4-10
½ MILE W25-5
65
394+00
6" INT. WHITE
9" CONTRAST
PRIVATE ENT.
386+33.00
401+33.00

394+00
6" SOLID WHITE
+10
STOP R1-1
STA 399+10
67

PASSING LANE ENDS W4-10
½ MILE W25-5
66
6" DOUBLE YELLOW
OLD RTE 5 CO RD.

SCALE
0 100 200 300 400 500

# PAVEMENT MARKINGS & SIGNING

SHEET 12 OF 22

REV.

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM13 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

401+33.00

416+33.00

431+33.00

JASMINE CO RD.

STOP R1-1 STA 402+59 (68)

65+

404+00

WATCH FOR LEFT-TURNING TRAFFIC IN PASSING LANE W4-11 (69)

PASSING LANE W4-12A

W4-12

NEXT ¾ MILE W07-3a (71)

409+65

6" INT. WHITE
9" CONTRAST

6" DOUBLE YELLOW

PRIVATE ENT. 412+00

SPEED LIMIT 65 R2-1 (73)

NORTH M3-1

5 M1-6 (74)

CENTER LANE ONLY R3-9b (39)

414+00

+88

24" SOLID YELLOW
HASH PAV'T
MARKINGS
50' SPACING

404+00

BB 1/4 MILE (70)

+73

PRIVATE ENT.

+63

CENTER LANE ONLY R3-9b (38)

COMM ENT.

+71

6" SOLID WHITE

+27

+07

COMM ENT.

+47

+72

Lebanon 8
Sleeper 6
D1-2a STA 410+71 (72)

Prepared by: Craig Huckaby 7-18-11
Checked by: Keith Maddux 7-20-11

STOP R1-1 STA 416+38 (76)

YIELD R1-2 (79)

PASSING LANE W4-12A

W4-12

ROUTE BB

+38

+22

5 M1-6 M6-3

BB M1-7 M6-1

NEXT 1 MILE W07-3a (80)

+10 (78)

417+75

24" SOLID YELLOW HASH
PAV'T MARKINGS, 50' SPACING

6" DOUBLE YELLOW

+74

Camdenton 17
Sleeper 6
D1-2a STA 424+00 (83)

BB 1/4 MILE (84)

430+00

+47

+19

+92

+06

+27

+68

5 M1-6 M6-4 (77)

+28

SOUTH M3-3

5 M1-6 STA 419+50 (81)

+16

422+00

SPEED LIMIT 65 R2-1 (82)

6" INT. WHITE
9" CONTRAST

FIELD ENT.

6" SOLID WHITE

SCALE

0 100 200 300 400 500

(75)

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 13 OF 22

REV.

Prepared by: Craig Huckaby 7-18-11
Checked by: Nick Headrick 7-19-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM14 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

435 440 445

431+33.00

6" DOUBLE YELLOW

6" SOLID WHITE

6" INT. WHITE
9" CONTRAST

433+00

WATCH FOR LEFT-TURNING TRAFFIC IN PASSING LANE
W4-11
(85)

STOP
R1-1
STA 442+61
(86)
+61

JONQUIL CO RD.

JULIE RD.

+87
STOP
R1-1
STA 442+87
(87)

446+33.00

450 455 460

PASSING LANE ENDS
W4-10
½ MILE
W25-5
(88)

461+00

6" DOUBLE YELLOW

6" SOLID WHITE

6" INT. WHITE
9" CONTRAST

446+33.00

461+00

461+33.00

FIELD ENT

PASSING LANE ENDS
W4-10
½ MILE
W25-5
(89)

SCALE
0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 14 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\060_PM_14_J8P0902_150_REVISED_093009.dgn 3:15:45 PM 7/18/2011

Prepared by: Craig Huckaby 7-19-11
Checked by: Keith Maddux 7-19-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM15 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

465 470 475

HEADLIGHTS ON WHEN WIPERS ARE REQUIRED
R16-5
STA 467+00
90
+00

LANE ENDS MERGE RIGHT
W9-2R
½ MILE
W25-5
91
474+00

461+33.00

6" SOLID WHITE

6" DOUBLE YELLOW

6" INT. WHITE
9" CONTRAST

474+00

LANE ENDS MERGE RIGHT
W9-2R
½ MILE
W25-5
92

476+33.00

480 485 490

LARNCE & JOANN BERRY
(9-1)
STA 483+00
93
+00

476+33.00

6" DOUBLE YELLOW

6" SOLID WHITE

6" INT. WHITE
9" CONTRAST

+58

24" SOLID YELLOW
HASH PAV'T MARKINGS
50' SPACING

491+33.00

SCALE
0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 15 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\061_PM_15_J8P0902_150_REVISED_093009.dgn 7:36:05 AM 7/19/2011

Prepared by: Craig Huckaby 7-19-11
Checked by: Keith Maddux 7-19-11

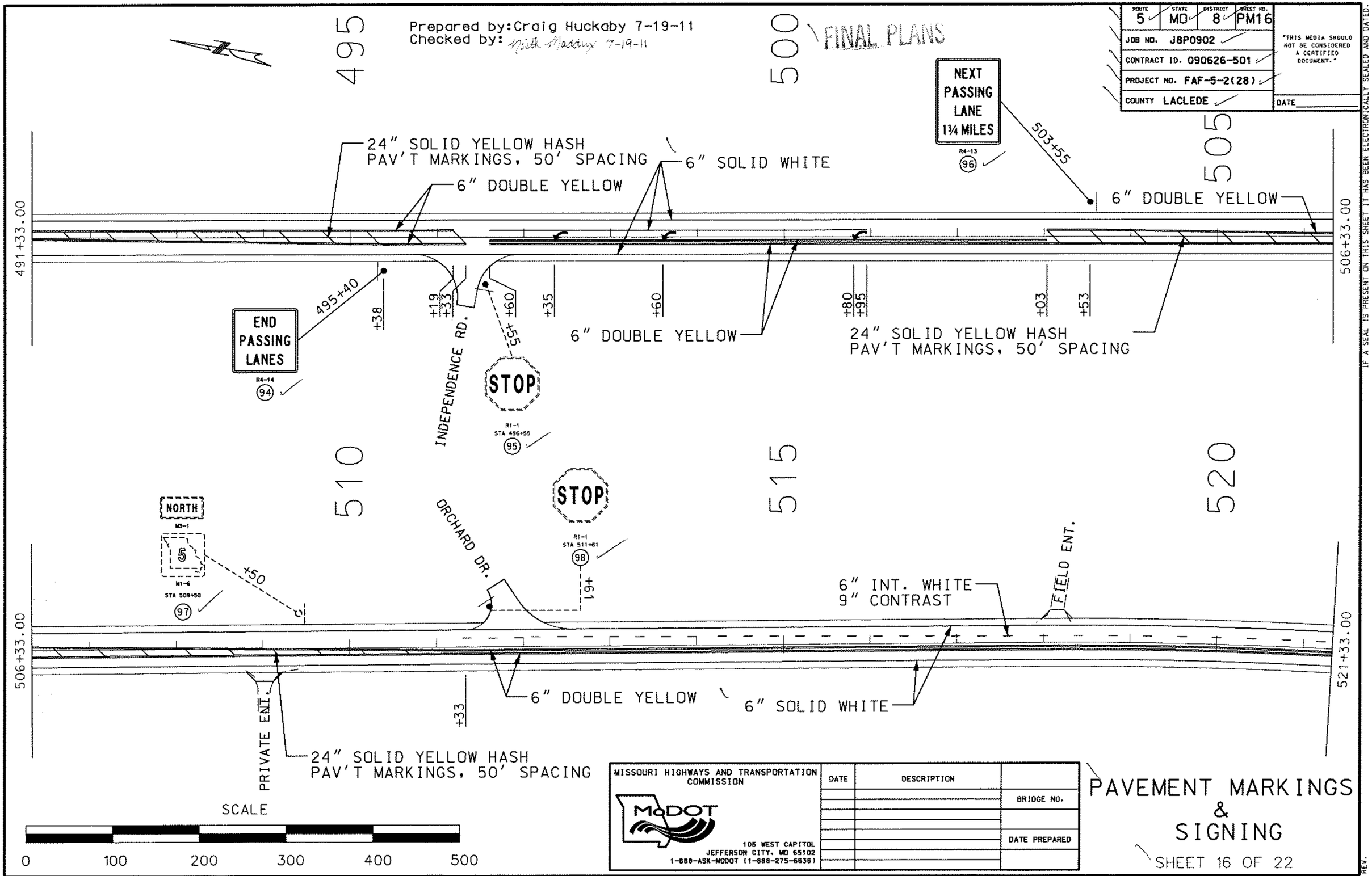
FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM16 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 16 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\062_PM_16_J8P0902_I50_REVISED_093009.dgn 10:07:07 AM 7/19/2011

Prepared by: Craig Huckaby 7-19-11
Checked by: Mitch Maddux 7-20-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM17 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

525 530 535 540 545 550

521+33.00 — 536+33.00 — 551+33.00

COMM ENT. — PRIVATE ENT. — COMM ENT. — PRIVATE ENT. — FIELD ENT. — IRONWOOD LN. — COMM ENT.

LANE ENDS MERGE RIGHT (W9-2R) — ¼ MILE (W25-5) (99) — 526+00

6" SOLID WHITE

6" DOUBLE YELLOW

6" INT. WHITE 9" CONTRAST

WATCH FOR LEFT-TURNING TRAFFIC IN PASSING LANE (W4-11) (102) — 533+00

68+ STOP (R1-1) STA 531+89 (101)

LANE ENDS MERGE RIGHT (W9-2R) — 526+00 — ¼ MILE (W25-5) (100)

PASSING LANE ENDS (W4-10) — ½ MILE (W25-5) (103) — 539+00

WATCH FOR LEFT-TURNING TRAFFIC IN PASSING LANE (W4-11) (105) — 543+00

FIELD ENT. — PRIVATE ENT. — PRIVATE ENT.

6" INT. WHITE 9" CONTRAST

6" DOUBLE YELLOW

6" SOLID WHITE

STOP (R1-1) STA 550+25 (106) — +25

HAZEL RD.

PASSING LANE ENDS (W4-10) — ½ MILE (W25-5) (104) — 539+00

SCALE

0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 17 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\063_PM_17_J8P0902_150_REVISED_093009.dgn 10:16:12 AM 7/19/2011

Prepared by: Craig Huckaby 7-19-11
Checked by: Keith Maddux 7-20-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM18 |
| JOB NO. J8P0902 | | | |
| CONTRACT ID. 090626-501 | | | |
| PROJECT NO. FAF-5-2(28) | | | |
| COUNTY LACLEDE | | | |

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

555 560 565

551+33.00 566+33.00

WATCH FOR LEFT-TURNING TRAFFIC IN PASSING LANE
W4-11 (107)
553+00
6" INT. WHITE
9" CONTRAST
PRIVATE ENT.
COMM ENT.
FIELD ENT.
PRIVATE ENT.
WATCH FOR LEFT-TURNING TRAFFIC IN PASSING LANE
W4-11 (108)
563+00
PRIV. ENT.
COMM ENT.
PRIVATE ENT.
HULL LANE
PRIVATE ENT.
PRIVATE ENT.
6" DOUBLE YELLOW
6" SOLID YELLOW
+04

PASSING LANE
W4-12A
W4-12
SPEED LIMIT 65
R2-1 (109)
567+00
NEXT 1 MILE
W07-3a (111)
569+95
6" DOUBLE YELLOW
570 575 580
COMM ENT.
STOP
R1-1 STA 576+39 (112)
+39
HEMLOCK RD.
6" SOLID WHITE
4" INT. YELLOW
566+33.00 581+33.00
567+00
SPEED LIMIT 55
R2-1 (110)
+94
+11
+26
FIELD ENT.
+46
+71
+46
+73
+09
+20
+00
4" SOLID YELLOW
24" SOLID YELLOW HASH
PAV'T MARKINGS
50' SPACING

SCALE
0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 18 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\064_PM_18_J8P0902_150_REVISED_093009.dgn 10:21:37 AM 7/19/2011

Prepared by: Craig Huckaby 7-19-11
Checked by: Heidi Maddux 7-20-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM19 |
| JOB NO. J8P0902 | | | |
| CONTRACT ID. 090626-501 | | | |
| PROJECT NO. FAF-5-2(28) | | | |
| COUNTY LACLEDE | | | |

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

585 590 595 605 610

FINAL PLANS

**ALTERNATING PASSING LANES NEXT 17 MILES**

113 585+00

581+33.00

4" INT. YELLOW

4" SOLID YELLOW

PRIVATE ENT. +00

FIELD ENT.

R.I.D.S. CHURCH +50

STA 587+50 114

R1-1 115 +11

HOUSTON RD. +37 +67

6" SOLID WHITE

PRIVATE ENT. +67

4" SOLID YELLOW

4" INT. YELLOW

596+33.00

YIELD +00 +42

4" DOUBLE YELLOW

+43 +57

595+00 +00

CENTER LANE ONLY R3-9b 117

PASSING LANE ENDS W4-10

½ MILE W25-5 118

R1-2 STA 590+00 116

STOP

CENTER LANE ONLY R3-9b 120

604+00

605+00

R1-1 STA 606+05 121

+05

NW OAKWOOD DR.

| MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION | DATE | DESCRIPTION | |
|---|---|---|---|
| MoDOT | | | BRIDGE NO. |
| 105 WEST CAPITOL<br>JEFFERSON CITY, MO 65102<br>1-888-ASK-MODOT (1-888-275-6636) | | | DATE PREPARED |

596+33.00

6" SOLID WHITE

PRIVATE ENT.

COMM ENT. +00

COMM ENT.

604+00

PASSING LANE ENDS W4-10 ½ MILE W25-5 119

COMM ENT. +00

PRIVATE ENT.

4" SOLID YELLOW

4" INT. YELLOW +00

611+33.00

SCALE

0 100 200 300 400 500

# PAVEMENT MARKINGS & SIGNING

SHEET 19 OF 22

REV.

T:\de-proj\053\j8p0902\plan_sheets\065_PM_19_J8P0902_150.dgn 10:52:18 AM 7/19/2011

Prepared by: Craig Huckaby 7-16-11
Checked by: Mitch Maddux 7-20-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM20 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

611+33.00
626+32.00
641+32.00
926+22.00

615 620 625 630 635 640

SW OAKWOOD DR.
CR 211
GRAND LAKE CIR.
PRIV. ENT.
PRIVATE ENT.
LAKE SHORE CO RD
FIELD ENT.

STOP — R1-1 — STA 612+65 — (122) — +65
STOP — R1-1 — STA 622+75 — (127) — +75
STOP — R1-1 — STA 627+25 — (128) — +20
STOP — R1-1 — (125)

LANE ENDS MERGE LEFT — W9-2L — ¼ MILE — W25-5 — (123)
LANE ENDS MERGE LEFT — W9-2L — ¼ MILE — W25-5 — (124)

CENTER LANE ONLY — R3-9b — (126)
CENTER LANE ONLY — R3-9b — (129)

617+00
618+92
620+00
628+00

4" SOLID YELLOW
4" INT. YELLOW
4" DOUBLE YELLOW
6" SOLID WHITE
4" INT. YELLOW
4" SOLID YELLOW

+00 +44 +87 +47 +72 +72 +98 +98 +22 +83 +14 +00 +90 +20 +79 +05 +20 +20 +00

SCALE

0 100 200 300 400 500

| MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION | DATE | DESCRIPTION | |
|---|---|---|---|
| MoDOT | | | BRIDGE NO. |
| 105 WEST CAPITOL<br>JEFFERSON CITY, MO 65102<br>1-888-ASK-MODOT (1-888-275-6636) | | | DATE PREPARED |

# PAVEMENT MARKINGS & SIGNING

SHEET 20 OF 22

REV.

f:\de-proj\053\j8p0902\plan_sheets\G66_PM_20_J8P0902_I50_REVISED_080309.dgn 11:19:08 AM 7/19/2011

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | DATE PREPARED |

Prepared by: Craig Huckaby 7-19-11
Checked by: Keith Maddux 7-20-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM21 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

645 650 655 665 670

NEXT PASSING LANE 1½ MILES
R4-13
131

643+50

COMM ENT.

PRIVATE ENT.

4" INT. YELLOW

CENTER LANE ONLY
R3-9b
133

654+00

641+32.00

656+31.00

4" SOLID YELLOW

6" SOLID WHITE

+00

CENTER LANE ONLY
R3-9b
132

+02.7

PRIVATE ENT.

+00

+88.35

+60.59

+00

656+31.00

4" INT. YELLOW

656+31.00

+48.15

4" SOLID YELLOW

+75

+00

SPEED LIMIT 55

CITY LIMIT
LEBANON
POP. 12,155

CENTER LANE ONLY

LANE ENDS MERGE LEFT

671+31.00

SCALE

0 100 200 300 400 500

# PAVEMENT MARKINGS & SIGNING

SHEET 21 OF 22

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| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM22 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

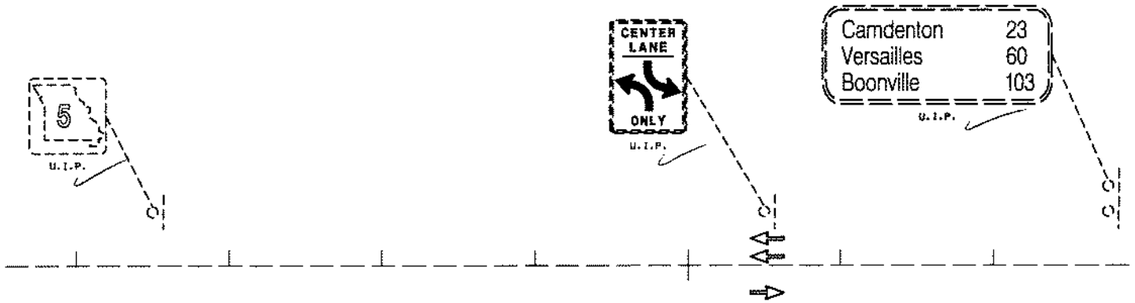
IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Prepared by: Craig Huckaby 7-19-11
Checked by: Keith Maddux 7-20-11

FINAL PLANS

675 680 685

671+31.00 686+31.00




SCALE

0 100 200 300 400 500

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION | |
|---|---|---|
| | | BRIDGE NO. |
| | | |
| | | DATE PREPARED |
| | | |

# PAVEMENT MARKINGS & SIGNING

SHEET 22 OF 22

REV.

I:\de-proj\053\J8p0902\plan_sheets\068_PM_22_J8P0902_150_REVISED_093009.dgn 12:51:53 PM 7/19/2011

Prepared by : Keith Maddux 06-01-11
Checked by : Craig Hucker 7-7-11

FINAL PLANS

* QTY. denotes number of posts, but post length pay item includes total for both posts together. Individual post lengths noted on signing cross-section sheets.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION |
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ROUTE 5 | STATE MO | DISTRICT 8 | SHEET NO. PM23

BRIDGE NO.

JOB NO. J8P0902

CONTRACT ID. 090626-501

DATE PREPARED

PROJECT NO. FAF-5-2 (28)

COUNTY LACLEDE

DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

| SIGN NO. | STA. | SIGN DTL. SHT. NO. | LOC. | SIGN SIZE | STRUCT. STEEL POSTS ITEM NO. 903-12.10 | | | | | BACKING BARS 2" X 1/4" BARS @ 2.55 LB/L.F. ITEM NO. 903-12.10 | | | | PERFORATED SQUARE STEEL TUBE | | | | | | BREAKAWAY ASSEMBLY ITEM NO. 903-12.40 | CONC FTG'S EMBEDDED ITEM NO. 903-10.10 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | POST DESIGN NO. | POST #1 L.F. | POST #2 L.F. | UNIT WT. LB/FT | TOTAL LBS | QTY EACH | LGTH IN. | LGTH L.F. | TOTAL LBS | QTY * EACH | 2" POST ITEM NO. 903-12.70 L.F. | 2.5" ANCHOR SLEEVE ITEM NO. 903-12.71 L.F. | 2.25" POST ITEM NO. 903-99.03 L.F. | 2.5" POST ITEM NO. 903-99.03 L.F. | 3" ANCHOR SLEEVE ITEM NO. 903-99.03 L.F. | | | |
| 1 | 45+00 | PM1 | RT | 36 X 48 | | | | | | | | | | 1 | | | | 14.50 | 3.50 | | 0.09 | |
| 2 | 48+65 | PM1 | RT | 36 X 36 | | | | | | | | | | 1 | | | 15.50 | 15.50 | 3.50 | 1 | 0.09 | 2.25'' INSIDE 2.5'' PSST POST |
| 3 | 70+00 | PM1 | RT | 72 X 48 | | | | | | | | | | 2 | | | | 26.75 | 6.50 | 2 | 0.18 | |
| 4 | 80+11 | PM2 | LT | 36 X 36 | | | | | | | | | | 1 | 15.00 | 3.50 | | | | | 0.09 | |
| 5 | 80+57 | PM2 | RT | 36 X 36 | | | | | | | | | | 1 | 14.25 | 3.50 | | | | | 0.09 | |
| 6 | 90+00 | PM2 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.25 | 3.50 | | 0.09 | |
| 7 | 90+00 | PM2 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.25 | 3.50 | | 0.09 | |
| 8 | 103+50 | PM3 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 9 | 103+50 | PM3 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 10 | 130+60 | PM3 | RT | 36 X 48 | | | | | | | | | | 1 | | | | 15.50 | 3.50 | | 0.09 | |
| 11 | 137+50 | PM4 | LT | 36 X 36 | | | | | | | | | | 1 | 14.75 | 3.50 | | | | | 0.09 | |
| 12 | 137+54 | PM4 | RT | 36 X 36 | | | | | | | | | | 1 | 12.75 | 3.50 | | | | | 0.09 | |
| 13 | 144+50 | PM4 | LT | 36 X 48 | | | | | | | | | | 1 | | | | 15.50 | 3.50 | | 0.09 | |
| 14 | 165+50 | PM5 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.50 | 3.50 | | 0.09 | |
| 15 | 165+50 | PM5 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 16 | 168+50 | PM5 | RT | 48 X 36 | | | | | | | | | | 2 | 32.50 | 6.50 | | | | | 0.18 | |
| 17 | 179+00 | PM5 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 18 | 179+00 | PM5 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 19 | 201+00 | PM6 | LT | 72 X 48 | | | | | | | | | | 2 | | | | 29.50 | 6.50 | 2 | 0.18 | |
| 20 | 207+00 | PM6 | RT | 84 X 72 | 1 | 18.25 | 19.50 | 9 | 340 | | | | | | | | | | | 2 | 0.34 | |
| 21 | 211+00 | PM6 | LT | 36 X 48 | | | | | | | | | | 1 | | | | 14.75 | 3.50 | | 0.09 | |
| 22 | 213+25 | PM6 | LT | 36 X 36 | | | | | | | | | | 1 | | | 15.75 | 15.75 | 3.50 | 1 | 0.09 | 2.25'' INSIDE 2.5'' PSST POST |
| 23 | 218+00 | PM6 | LT | 24 X 24 | | | | | | | | | | 1 | 14.00 | 3.50 | | | | | 0.09 | |
| 24 | 219+65 | PM6 | RT | 30 X 24 | | | | | | 4 | 50 | 4.17 | 43 | 1 | | | | 13.50 | 3.50 | | 0.09 | |
| 25 | 219+93 | PM6 | RT | 24 X 24 | | | | | | | | | | 1 | 13.00 | 3.50 | | | | | 0.09 | |
| 26 | 220+19 | PM6 | LT | 36 X 36 | | | | | | | | | | 1 | 13.00 | 3.50 | | | | | 0.09 | |
| 27 | 220+47 | PM6 | RT | 36 X 36 | | | | | | | | | | 1 | 12.75 | 3.50 | | | | | 0.09 | |
| 28 | 221+05 | PM6 | LT | 24 X 24 | | | | | | 4 | 50 | 4.17 | 43 | 1 | | | 12.25 | 12.25 | 3.50 | 1 | 0.09 | 2.25'' INSIDE 2.5'' PSST POST |
| 29 | 222+50 | PM7 | RT | 24 X 24 | | | | | | | | | | 1 | 14.25 | 3.50 | | | | | 0.09 | |
| 30 | 226+00 | PM7 | RT | 36 X 48 | | | | | | | | | | 1 | | | | 14.75 | 3.50 | | 0.09 | |
| 31 | 234+00 | PM7 | LT | 84 X 72 | 1 | 17.75 | 18.25 | 9 | 324 | | | | | | | | | | | 2 | 0.30 | |
| 32 | 249+00 | PM7 | LT | 36 X 36 | | | | | | | | | | 1 | 14.00 | 3.50 | | | | | 0.09 | |
| 33 | 250+00 | PM8 | RT | 84 X 72 | 1 | 18.25 | 19.25 | 9 | 338 | | | | | | | | | | | 2 | 0.34 | |
| 34 | 257+50 | PM8 | LT | 36 X 48 | | | | | | | | | | 1 | | | | 13.25 | 3.50 | | 0.09 | |
| 35 | 258+00 | PM8 | RT | 108 X 48 | 1 | 15.75 | 16.75 | 9 | 293 | | | | | | | | | | | 2 | 0.32 | |
| 36 | 260+50 | PM8 | LT | 24 X 24 | | | | | | | | | | 1 | 12.50 | 3.50 | | | | | 0.09 | |
| 37 | 262+47 | PM8 | RT | 48 X 48 | | | | | | | | | | 1 | 13.50 | 3.50 | | | | | 0.09 | |
| 38 | 262+74 | PM8 | RT | 24 X 24 | | | | | | 4 | 50 | 4.17 | 43 | 1 | 12.50 | 3.50 | | | | | 0.09 | LOCATED ON ISLAND |
| 39 | 262+98 | PM8 | LT | 24 X 24 | | | | | | | | | | 1 | 13.75 | 3.50 | | | | | 0.09 | |
| 40 | 263+03 | PM8 | LT | 24 X 24 | | | | | | 4 | 50 | 4.17 | 43 | 1 | | | 11.25 | 11.25 | 3.50 | 1 | 0.09 | 2.25'' INSIDE 2.5'' PSST POST |
| 41 | 263+35 | PM8 | RT | 36 X 36 | | | | | | | | | | 1 | 12.50 | 3.50 | | | | | 0.09 | |
| 42 | 265+50 | PM8 | RT | 24 X 24 | | | | | | | | | | 1 | 14.25 | 3.50 | | | | | 0.09 | |
| 43 | 267+50 | PM8 | LT | 120 X 48 | 1 | 16.25 | 15.50 | 9 | 286 | | | | | | | | | | | 2 | 0.30 | |
| 44 | 267+50 | PM8 | RT | 36 X 48 | | | | | | | | | | 1 | | | | 15.00 | 3.50 | | 0.09 | |
| 45 | 270+42 | PM8 | RT | 36 X 24 | | | | | | | | | | 1 | 13.00 | 3.50 | | | | | 0.09 | |
| 46 | 273+08 | PM8 | LT | 36 X 24 | | | | | | | | | | 1 | 12.75 | 3.50 | | | | | 0.09 | |
| 47 | 274+00 | PM8 | LT | 48 X 36 | | | | | | | | | | 2 | 27.75 | 6.50 | | | | | 0.18 | |
| 48 | 276+00 | PM8 | LT | 84 X 72 | 1 | 18.25 | 19.00 | 9 | 336 | | | | | | | | | | | 2 | 0.32 | |
| 49 | 276+95 | PM8 | LT | 36 X 36 | | | | | | | | | | 1 | 14.50 | 3.50 | | | | | 0.09 | |
| 50 | 277+65 | PM8 | RT | 36 X 36 | | | | | | | | | | 1 | | | 14.00 | 14.00 | 3.50 | 1 | 0.09 | 2.25'' INSIDE 2.5'' PSST POST |
| 51 | 285+00 | PM9 | RT | 36 X 48 | | | | | | | | | | 1 | | | | 15.00 | 3.50 | | 0.09 | |
| 52 | 305+00 | PM9 | RT | 72 X 48 | | | | | | | | | | 2 | | | | 26.50 | 6.50 | 2 | 0.18 | |
| 53 | 318+00 | PM10 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 54 | 318+00 | PM10 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 55 | 322+00 | PM10 | RT | 72 X 48 | | | | | | | | | | 2 | | | | 26.50 | 6.50 | 2 | 0.18 | |
| 56 | 330+00 | PM10 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.25 | 3.50 | | 0.09 | |
| 57 | 330+00 | PM10 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.50 | 3.50 | | 0.09 | |
| 58 | 330+65 | PM10 | LT | 36 X 36 | | | | | | | | | | 1 | 14.25 | 3.50 | | | | | 0.09 | |
| 59 | 350+50 | PM11 | RT | 36 X 48 | | | | | | | | | | 1 | | | | 15.50 | 3.50 | | 0.09 | |
| 60 | 351+75 | PM11 | RT | 36 X 36 | | | | | | | | | | 1 | 13.50 | 3.50 | | | | | 0.09 | |
| 61 | 353+50 | PM11 | RT | 48 X 36 | | | | | | | | | | 2 | 31.00 | 6.50 | | | | | 0.18 | |
| | | | | SUBTOTALS | | | | | 1917 | | | | 172 | | 376.00 | 93.00 | 68.75 | 524.25 | 120.50 | 25 | 7.50 | |

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Prepared by : Keith Maddux 06-02-11
Checked by : Chris Hardesty 7-12-11

FINAL PLANS

* QTY. denotes number of posts, but post length pay item includes total for both posts together. Individual post lengths noted on signing cross-section sheets.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

| DATE | DESCRIPTION |
|---|---|
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| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM24 |

BRIDGE NO.
JOB NO. J8P0902
CONTRACT ID. 090626-501
DATE PREPARED
PROJECT NO. FAF-5-2 (28)
COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

| SIGN NO. | STA. | SIGN DTL. SHT. NO. | LOC. | SIGN SIZE | STRUCT. STEEL POSTS ITEM NO. 903-12.10 | | | | | BACKING BARS 2" x ¾" BARS @ 2.55 LB/L.F. ITEM NO. 903-12.10 | | | | PERFORATED SQUARE STEEL TUBE | | | | | | BREAKAWAY ASSEMBLY ITEM NO. 903-12.40 | CONC FTG'S EMBEDDED ITEM NO. 903-10.10 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | POST DESIGN NO. | POST #1 | POST #2 | UNIT WT. | TOTAL | QTY | LGTH | LGTH | TOTAL | QTY. * | 2" POST ITEM NO. 903-12.70 | 2.5" ANCHOR SLEEVE ITEM NO. 903-12.71 | 2.25" POST ITEM NO. 903-99.03 | 2.5" POST ITEM NO. 903-99.03 | 3" ANCHOR SLEEVE ITEM NO. 903-99.03 | | | |
| | | | | IN x IN | | L.F. | L.F. | LB/FT | LBS | EACH | IN. | L.F. | LBS | EACH | L.F. | L.F. | L.F. | L.F. | L.F. | EACH | C.Y. | |
| 62 | 358+75 | PM11 | LT | 36 X 48 | | | | | | | | | | 1 | | | | 15.50 | 3.50 | | 0.09 | |
| 63 | 380+00 | PM12 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.50 | 3.50 | | 0.09 | |
| 64 | 380+00 | PM12 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.50 | 3.50 | | 0.09 | |
| 65 | 394+00 | PM12 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 17.00 | 3.50 | | 0.09 | |
| 66 | 394+00 | PM12 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 67 | 399+10 | PM12 | RT | 36 X 36 | | | | | | | | | | 1 | 13.50 | 3.50 | | | | | 0.09 | |
| 68 | 402+59 | PM13 | LT | 36 X 36 | | | | | | | | | | 1 | 14.75 | 3.50 | | | | | 0.09 | |
| 69 | 404+00 | PM13 | LT | 72 X 48 | | | | | | | | | | 2 | | | | 26.00 | 6.50 | 2 | 0.18 | |
| 70 | 404+00 | PM13 | RT | 84 X 72 | 1 | 18.25 | 18.75 | 9 | 333 | | | | | | | | | | | 2 | 0.30 | |
| 71 | 409+65 | PM13 | LT | 36 X 36 | | | | | | | | | | 1 | | | 15.75 | 15.75 | 3.50 | 1 | 0.09 | 2.25'' INSIDE 2.5'' PSST POST |
| 72 | 411+00 | PM13 | RT | 96 X 48 | 1 | 16.25 | 16.25 | 9 | 293 | | | | | | | | | | | 2 | 0.30 | |
| 73 | 412+00 | PM13 | LT | 36 X 48 | | | | | | | | | | 1 | | | | 15.00 | 3.50 | | 0.09 | |
| 74 | 414+00 | PM13 | LT | 24 X 24 | | | | | | | | | | 1 | 14.50 | 3.50 | | | | | 0.09 | |
| 75 | 416+00 | PM13 | RT | 30 X 24 | | | | | | 4 | 50 | 4.17 | 43 | 1 | | | 12.00 | 12.00 | 3.50 | 1 | 0.09 | 2.25'' INSIDE 2.5'' PSST POST |
| 76 | 416+38 | PM13 | LT | 36 X 36 | | | | | | | | | | 1 | 12.50 | 3.50 | | | | | 0.09 | |
| 77 | 416+68 | PM13 | RT | 24 X 24 | | | | | | | | | | 1 | 14.50 | 3.50 | | | | | 0.09 | |
| 78 | 417+10 | PM13 | LT | 24 X 24 | | | | | | 4 | 50 | 4.17 | 43 | 1 | | | | 12.50 | 3.50 | | 0.09 | LOCATED ON ISLAND |
| 79 | 417+22 | PM13 | LT | 48 X 48 | | | | | | | | | | 1 | 13.25 | 3.50 | | | | | 0.09 | |
| 80 | 417+75 | PM13 | RT | 36 X 36 | | | | | | | | | | 1 | | | 15.75 | 15.75 | 3.50 | 1 | 0.09 | 2.25'' INSIDE 2.5'' PSST POST |
| 81 | 419+50 | PM13 | RT | 24 X 24 | | | | | | | | | | 1 | 14.25 | 3.50 | | | | | 0.09 | |
| 82 | 422+00 | PM13 | RT | 36 X 48 | | | | | | | | | | 1 | | | | 15.00 | 3.50 | | 0.09 | |
| 83 | 424+00 | PM13 | LT | 120 X 48 | 1 | 16.25 | 17.75 | 9 | 306 | | | | | | | | | | | 2 | 0.32 | |
| 84 | 430+00 | PM13 | LT | 84 X 72 | 1 | 18.25 | 19.25 | 9 | 338 | | | | | | | | | | | 2 | 0.34 | |
| 85 | 433+00 | PM14 | RT | 72 X 48 | | | | | | | | | | 2 | | | | 24.50 | 6.50 | 2 | 0.18 | |
| 86 | 442+61 | PM14 | LT | 36 X 36 | | | | | | | | | | 1 | 12.75 | 3.50 | | | | | 0.09 | |
| 87 | 442+87 | PM14 | RT | 36 X 36 | | | | | | | | | | 1 | 13.75 | 3.50 | | | | | 0.09 | |
| 88 | 461+00 | PM14 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 89 | 461+00 | PM14 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.50 | 3.50 | | 0.09 | |
| 90 | 467+00 | PM15 | LT | 42 X 36 | | | | | | | | | | 1 | 15.00 | 3.50 | | | | | 0.09 | |
| 91 | 474+00 | PM15 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 92 | 474+00 | PM15 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 93 | 483+00 | PM15 | LT | 48 X 36 | | | | | | | | | | 2 | 30.75 | 6.50 | | | | | 0.18 | |
| 94 | 495+40 | PM16 | RT | 36 X 36 | | | | | | | | | | 1 | 14.00 | 3.50 | | | | | 0.09 | |
| 95 | 496+55 | PM16 | RT | 36 X 36 | | | | | | | | | | 1 | 14.00 | 3.50 | | | | | 0.09 | |
| 96 | 503+55 | PM16 | LT | 36 X 48 | | | | | | | | | | 1 | | | | 15.50 | 3.50 | | 0.09 | |
| 97 | 509+50 | PM16 | LT | 24 X 24 | | | | | | | | | | 1 | 14.50 | 3.50 | | | | | 0.09 | |
| 98 | 511+61 | PM16 | LT | 36 X 36 | | | | | | | | | | 1 | 13.50 | 3.50 | | | | | 0.09 | |
| 99 | 526+00 | PM17 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.00 | 3.50 | | 0.09 | |
| 100 | 526+00 | PM17 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.50 | 3.50 | | 0.09 | |
| 101 | 531+89 | PM17 | RT | 36 X 36 | | | | | | | | | | 1 | 15.00 | 3.50 | | | | | 0.09 | |
| 102 | 533+00 | PM17 | LT | 72 X 48 | | | | | | | | | | 2 | | | | 26.50 | 6.50 | 2 | 0.18 | |
| 103 | 539+00 | PM17 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 104 | 539+00 | PM17 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.75 | 3.50 | | 0.09 | |
| 105 | 543+00 | PM17 | LT | 72 X 48 | | | | | | | | | | 2 | | | | 25.75 | 6.50 | 2 | 0.18 | |
| 106 | 550+25 | PM17 | RT | 36 X 36 | | | | | | | | | | 1 | 13.75 | 3.50 | | | | | 0.09 | |
| 107 | 553+00 | PM18 | LT | 72 X 48 | | | | | | | | | | 2 | | | | 26.50 | 6.50 | 2 | 0.18 | |
| 108 | 563+00 | PM18 | LT | 72 X 48 | | | | | | | | | | 2 | | | | 25.00 | 6.50 | 2 | 0.18 | |
| 109 | 567+00 | PM18 | LT | 36 X 48 | | | | | | | | | | 1 | | | | 15.00 | 3.50 | | 0.09 | |
| 110 | 567+00 | PM18 | RT | 36 X 48 | | | | | | | | | | 1 | | | | 15.00 | 3.50 | | 0.09 | |
| 111 | 569+95 | PM18 | LT | 36 X 36 | | | | | | | | | | 1 | | | 16.00 | 16.00 | 3.50 | 1 | 0.09 | 2.25'' INSIDE 2.5'' PSST POST |
| 112 | 576+39 | PM18 | LT | 36 X 36 | | | | | | | | | | 1 | 14.75 | 3.50 | | | | | 0.09 | |
| 113 | 585+00 | PM19 | LT | 156 X 60 | 1 | 17.75 | 19.25 | 9 | 333 | | | | | | | | | | | 2 | .34 | |
| 114 | 587+50 | PM19 | RT | 48 X 36 | | | | | | | | | | 2 | 31.25 | 6.50 | | | | | 0.18 | |
| 115 | 589+85 | PM19 | RT | 36 X 36 | | | | | | | | | | 1 | 12.50 | 3.50 | | | | | 0.09 | |
| 116 | 590+00 | PM19 | RT | 48 X 48 | | | | | | | | | | 1 | 16.25 | 3.50 | | | | | 0.09 | |
| 117 | 595+00 | PM19 | RT | 24 X 36 | | | | | | | | | | 1 | 15.00 | 3.50 | | | | | 0.09 | |
| 118 | 604+00 | PM19 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 16.50 | 3.50 | | 0.09 | |
| 119 | 604+00 | PM19 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 16.25 | 3.50 | | 0.09 | |
| 120 | 605+00 | PM19 | LT | 24 X 36 | | | | | | | | | | 1 | 14.25 | 3.50 | | | | | 0.09 | |
| 121 | 605+05 | PM19 | LT | 36 X 36 | | | | | | | | | | 1 | 12.75 | 3.50 | | | | | 0.09 | |
| 122 | 612+65 | PM20 | LT | 36 X 36 | | | | | | | | | | 1 | 15.00 | 3.50 | | | | | 0.09 | |
| | | | | SUBTOTALS | | | | | 1603 | | | | 86 | | 386.00 | 93.50 | 59.50 | 549.50 | 126.50 | 26 | 7.36 | |



IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Prepared by : Keith Maddux 07-25-11
Checked by :

NOTE: SIGN #130 HAS BEEN REMOVED

* QTY. denotes number of posts, but post length pay item includes total for both posts together. Individual post lengths noted on signing cross-section sheets.

FINAL PLANS

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION |
|---|---|
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| | |

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM25 |

BRIDGE NO.

JOB NO. J8P0902

CONTRACT ID. 090626-501

DATE PREPARED

PROJECT NO. FAF-5-2 (28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

| SIGN NO. | STA. | SIGN DTL. SHT. NO. | LOC. | SIGN SIZE | STRUCT. STEEL POSTS ITEM NO. 903-12.10 | | | | | BACKING BARS 2" x 1/4" BARS @ 2.55 LB/L.F. ITEM NO. 903-12.10 | | | | PERFORATED SQUARE STEEL TUBE | | | | | | BREAKAWAY ASSEMBLY ITEM NO. 903-12.40 | CONC FTG'S EMBEDDED ITEM NO. 903-10.10 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | POST DESIGN | POST #1 | POST #2 | UNIT WT. | TOTAL | QTY | LGTH | LGTH | TOTAL | QTY. * | 2" POST ITEM NO. 903-12.70 | 2.5" ANCHOR SLEEVE ITEM NO. 903-12.71 | 2.25" POST ITEM NO. 903-99.03 | 2.5" POST ITEM NO. 903-99.03 | 3" ANCHOR SLEEVE ITEM NO. 903-99.03 | | | |
| | | | | IN x IN | NO. | L.F. | L.F. | LB/FT | LBS | EACH | IN. | L.F. | LBS | EACH | L.F. | L.F. | L.F. | L.F. | L.F. | EACH | C.Y. | |
| 123 | 617+00 | PM20 | LT | 36 X 36 | | | | | | | | | | 1 | | | | 17.00 | 3.50 | | 0.09 | |
| 124 | 617+00 | PM20 | RT | 36 X 36 | | | | | | | | | | 1 | | | | 17.50 | 3.50 | | 0.09 | |
| 125 | 618+92 | PM20 | RT | 36 X 36 | | | | | | | | | | 1 | 12.50 | 3.50 | | | | | 0.09 | |
| 126 | 620+00 | PM20 | RT | 24 X 36 | | | | | | | | | | 1 | 14.25 | 3.50 | | | | | 0.09 | |
| 127 | 622+75 | PM20 | LT | 36 X 36 | | | | | | | | | | 1 | 13.50 | 3.50 | | | | | 0.09 | |
| 128 | 627+25 | PM20 | RT | 36 X 36 | | | | | | | | | | 1 | 16.00 | 3.50 | | | | | 0.09 | |
| 129 | 628+00 | PM20 | LT | 24 X 36 | | | | | | | | | | 1 | 15.00 | 3.50 | | | | | 0.09 | |
| 131 | 643+50 | PM21 | LT | 36 X 48 | | | | | | | | | | 1 | | | | 15.50 | 3.50 | | 0.09 | |
| 132 | 645+00 | PM21 | RT | 24 X 36 | | | | | | | | | | 1 | 14.25 | 3.50 | | | | | 0.09 | |
| 133 | 654+00 | PM21 | LT | 24 X 36 | | | | | | | | | | 1 | 14.00 | 3.50 | | | | | 0.09 | |
| 138 | 409+63 | | RT | 24 X 36 | | | | | | | | | | 1 | 15.00 | 3.50 | | | | | 0.09 | |
| 139 | 413+07 | | LT | 24 X 36 | | | | | | | | | | 1 | 15.00 | 3.50 | | | | | 0.09 | |
| SUBTOTALS | | | | | 0 | | | | | | | | 0 | | 129.50 | 31.50 | 0.00 | 50.00 | 10.50 | 0 | 1.08 | |
| TOTALS | | | | | | | | | | | | | 3778 | | 892 | 218 | 128 | 1124 | 258 | 51 | 15.9 | |

NOTE: STRUCTURAL STEEL POSTS AND BACKING BARS TOTALED TOGETHER

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



T:\de-proj\053\j8p0902\plan_sheets\071_PM_25_J8P0902_i1_d29_REVISED_093009.dgn 12:12:24 PM 7/25/2011

REV

Prepared by: Craig Huckaby 7-20-11
Checked by: [illegible] 7-20-11

FINAL PLANS

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

| DATE | DESCRIPTION |
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| | |

BRIDGE NO.

DATE PREPARED

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM26 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

## STANDARD SIGN ASSEMBLIES

SIGN TYPE

| SIGN NUMBER | STATION | LOCATION | M1-6-S | M1-7-BB | M1-7-E | M1-7-VV | M3-1 | M3-3 | M6-1 | M6-3 | M6-4 | R1-1 | R1-2 | R2-1-55 | R2-1-65 | R3-9b | R4-13 1 MI | R4-13 1½ MI | R4-13 ¾ MI | R4-13 2 MI | R4-13 3 MI | R4-14 | R16-5 | W4-10 | W4-11 | W4-12 | W4-12a | W7-3a ¾ MI | W7-3a 1 MI | W7-3a 1½ MI | W9-2L | W9-2R | W25-5 ½ MI | W25-5 ½ MI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 24" x 24" | 30" x 24" | 24" x 24" | 30" x 24" | 24" x 12" | 24" x 12" | 21" x 15" | 21" x 15" | 21" x 15" | 36" x 36" | 48" x 48" | 36" x 48" | 36" x 48" | 24" x 36" | NEXT PASSING LANE MILES 24" x 48" | NEXT PASSING LANE MILES 24" x 48" | NEXT PASSING LANE MILES 24" x 48" | NEXT PASSING LANE MILES 24" x 48" | NEXT PASSING LANE MILES 24" x 48" | END PASSING LANES 24" x 36" | MARKING OF END WHERE ARE REQUIRED 48" x 36" | 24" x 36" | 24" x 36" | 24" x 36" | 24" x 12" | 24" x 18" | 24" x 18" | 24" x 18" | 36" x 36" | 36" x 36" | 36" x 12" | 36" x 12" |
| 1 | 45+00 | RT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 2 | 48+65 | RT | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | 1 | | | | |
| 3 | 70+00 | RT | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 4 | 80+00 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 80+65 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 90+00 | LT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 |
| 7 | 90+00 | RT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 |
| 8 | 103+50 | LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 9 | 103+50 | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 10 | 130+60 | RT | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| 11 | 137+45 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 137+60 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 144+50 | LT | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| 14 | 165+50 | LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 15 | 165+50 | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 17 | 179+00 | LT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 |
| 18 | 179+00 | RT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 |
| 19 | 201+00 | LT | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 21 | 211+00 | LT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 22 | 213+25 | LT | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | 1 | | | | |
| 23 | 218+00 | LT | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | 219+65 | RT | 1 | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 219+93 | RT | 1 | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | 220+10 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 27 | 220+50 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 28 | 221+05 | LT | 1 | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | 222+50 | RT | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 226+00 | RT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 |
| 32 | 248+90 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 |
| 34 | 257+50 | LT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 |
| 36 | 260+50 | LT | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 42 | |
| 37 | 262+47 | RT | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | 1 |
| 38 | 262+74 | RT | 1 | | 1 | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 39 | 262+98 | LT | 1 | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 42 | |
| 40 | 263+03 | LT | 1 | | 1 | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 41 | 263+35 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | 42 | |
| 42 | 265+50 | RT | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44 | 267+50 | RT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 |
| 49 | 276+85 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | 40 | |
| 50 | 277+65 | RT | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | 1 | | | | |
| 51 | 285+00 | RT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 52 | 305+00 | RT | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 53 | 318+00 | LT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 |
| 54 | 318+00 | RT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 |
| 55 | 322+00 | RT | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 |
| 56 | 330+00 | LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 |
| 57 | 330+00 | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 |
| 58 | 330+55 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 59 | 350+50 | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 351+81 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 62 | 358+75 | LT | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| 63 | 380+00 | LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 64 | 380+00 | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 65 | 394+00 | LT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 |
| 66 | 394+00 | RT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 |
| 67 | 399+10 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 68 | 402+55 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| | SUBTOTALS | | 10 | 0 | 2 | 2 | 2 | 2 | 4 | 4 | 2 | 13 | 1 | 0 | 6 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 8 | 4 | 3 | 3 | 0 | 2 | 1 | 0 | 8 | 8 | 8 |

## SIGN SUMMARY

| STANDARD SIGN OR SPECIAL NUMBER | SIGN DETAIL SHEET NO. | NO. EACH | SIZE, TYPE & SQUARE FEET SIZE IN x IN | SHR2L-1 ITEM NO. 903-50.04 S.F. | STR2L-1 ITEM NO. 903-50.64 S.F. | SHR2L-3 ITEM NO. 903-50.65 S.F. | STR2L-3 ITEM NO. 903-50.11 S.F. | 36" STOP EACH |
|---|---|---|---|---|---|---|---|---|
| M1-6 ROUTE MARKER MO-5 | | 10 | 24"x24" | 40.0 | | | | |
| M1-7 ROUTE MARKER MO-BB | | 0 | 30"x24" | 0.0 | | | | |
| M1-7 ROUTE MARKER MO-E | | 2 | 24"x24" | 8.0 | | | | |
| M1-7 ROUTE MARKER MO-VV | | 2 | 30"x24" | 10.0 | | | | |
| M3-1 NORTH | | 2 | 24"x12" | 4.0 | | | | |
| M3-3 SOUTH | | 2 | 24"x12" | 4.0 | | | | |
| M6-1 DIRECTIONAL ARROW | | 4 | 21"x15" | 8.8 | | | | |
| M6-3 STRAIGHT ARROW | | 4 | 21"x15" | 8.8 | | | | |
| M6-4 RIGHT/LEFT ARROW | | 2 | 21"x15" | 4.4 | | | | |
| R1-2 YIELD | | 1 | 48"x48" | 16.0 | | | | |
| R2-1 SPEED LIMIT 55 | | 0 | 36"x48" | 0.0 | | | | |
| R2-1 SPEED LIMIT 65 | | 6 | 36"x48" | 72.0 | | | | |
| R3-9b - CENTER LANE TURN | | 0 | 24"x36" | 0.0 | | | | |
| R4-13 - NEXT PASSING LANE | | 4 | 36"x48" | 48.0 | | | | |
| R4-14 - END PASSING LANES | | 0 | 36"x36" | 0.0 | | | | |
| R16-5 HEADLIGHTS ON | | 0 | 42"x36" | 0.0 | | | | |
| W4-10 - PASSING LANE ENDS | | 8 | 36"x36" | 72.0 | | | | |
| R4-11 - WATCH FOR LEFT TURN | | 4 | 72"x48" | 96.0 | | | | |
| W4-12 - PASSING LANES | | 3 | 36"x36" | 27.0 | | | | |
| W4-12a - PASSING LANE PLAQUE | | 3 | 36"x12" | 9.0 | | | | |
| W7-3a - NEXT X MILES | | 3 | 24"x18" | 9.0 | | | | |
| W9-2L - LANE ENDS MERGE LEFT | | 0 | 36"x36" | 0.0 | | | | |
| W9-2R - LANE ENDS MERGE RIGHT | | 8 | 36"x36" | 72.0 | | | | |
| W25-5 - MILE PLAQUE | | 16 | 36"x12" | 48.0 | | | | |
| 4 - STOP SIGN | PM2 | 1 | 36" | | | | | 1 |
| 5 - STOP SIGN | PM2 | 1 | 36" | | | | | 1 |
| 11 - STOP SIGN | PM4 | 1 | 36" | | | | | 1 |
| 12 - STOP SIGN | PM4 | 1 | 36" | | | | | 1 |
| 20 - RTE VV ¼ MILE | PM6 | 1 | 84" x 72" | | | | 42 | |
| 26 - STOP SIGN | PM6 | 1 | 36" | | | | | 1 |
| 27 - STOP SIGN | PM6 | 1 | 36" | | | | | 1 |
| 31 - RTE VV ¼ MILE | PM7 | 1 | 84" x 72" | | | | 42 | |
| 32 - STOP SIGN | PM7 | 1 | 36" | | | | | 1 |
| 33 - RTE E ¼ MILE | PM7 | 1 | 84" x 72" | | | | 42 | |
| 35 - LEBANON 11, ELDRIDGE 4 | PM8 | 1 | 108" x 48" | | | | 36 | |
| 41 - STOP SIGN | PM8 | 1 | 36" | | | | | 1 |
| 43 - CAMDENTON 15, ELDRIDGE 4 | PM8 | 1 | 120" x 48" | | | | 40 | |
| 45 - GOODWIN HOLLOW CREEK | PM8 | 1 | 36" x 24" | 6 | | | | |
| 46 - GOODWIN HOLLOW CREEK | PM8 | 1 | 36" x 24" | 6 | | | | |
| 48 - RTE E ¼ MILE | PM8 | 1 | 84" x 72" | | | | 42 | |
| 49 - STOP SIGN | PM8 | 1 | 36" | | | | | 1 |
| 58 - STOP SIGN | PM10 | 1 | 36" | | | | | 1 |
| 60 - STOP SIGN | PM11 | 1 | 36" | | | | | 1 |
| 67 - STOP SIGN | PM12 | 1 | 36" | | | | | 1 |
| 68 - STOP SIGN | PM13 | 1 | 36" | | | | | 1 |
| | | | | 568.9 | 0 | 0 | 244 | 13 |



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Prepared by: Craig Huckaby 7-20-11
Checked by: Matt Hadley 7-20-11

FINAL PLANS

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION |
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ROUTE 5 | STATE MO | DISTRICT 8 | SHEET NO. PM27

BRIDGE NO.

JOB NO. J8P0902

CONTRACT ID. 090626-501

DATE PREPARED

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

## STANDARD SIGN ASSEMBLIES

SIGN TYPE

| SIGN NUMBER | STATION | LOCATION | M1-6-S | M1-7-BB | M1-7-E | M1-7-VV | M3-1 | M3-3 | M6-1 | M6-3 | M6-4 | R1-1 | R1-2 | R2-1-55 | R2-1-65 | R3-9b | R4-13 1 MI | R4-13 ½ MI | R4-13 ¾ MI | R4-13 2 MI | R4-13 3 MI | R4-14 | R16-5 | W4-10 | W4-11 | W4-12 | W4-12a | W7-3a ADD ½ MI | W7-3a 1 MI | W7-3a 1½ MI | W9-2L | W9-2R | W25-5 ½ MI | W26-5 ½ MI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | 1 MI NEXT PASSING LANE MILES | ½ MI NEXT PASSING LANE MILES | ¾ MI NEXT PASSING LANE MILES | 2 MI NEXT PASSING LANE MILES | 3 MI NEXT PASSING LANE MILES | END PASSING LANES | HEADLIGHTS ON WHEN WIPERS ARE OPERATED | | | | | ADD ½ MI | 1 MI | 1½ MI | | | ½ MILE | ½ MILE |
| | | | 24" x 24" | 30" x 24" | 24" x 24" | 30" x 24" | 24" x 12" | 24" x 12" | 21" x 15" | 21" x 15" | 21" x 15" | 36" x 36" | 48" x 48" | 30" x 30" | 36" x 36" | 24" x 24" | 36" x 48" | 36" x 48" | 36" x 48" | 36" x 48" | 36" x 48" | 36" x 36" | 42" x 30" | 36" x 36" | 72" x 48" | 36" x 36" | 36" x 12" | 24" x 12" | 24" x 18" | 36" x 36" | 36" x 36" | 24" x 12" | 24" x 12" |
| 69 | 404+00 | LT | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | | | | | |
| 71 | 409+65 | LT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| 73 | 412+00 | LT | 1 | | | | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 74 | 414+00 | LT | 1 | 1 | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 75 | 416+00 | RT | 1 | 1 | | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | |
| 76 | 416+38 | LT | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| 77 | 416+68 | RT | 1 | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 78 | 417+10 | LT | 1 | 1 | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 79 | 4172+12 | LT | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| 80 | 417+75 | RT | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | 1 | | | | |
| 81 | 419+50 | RT | 1 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 82 | 422+00 | RT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| 85 | 433+00 | RT | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 86 | 442+61 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 87 | 442+87 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 88 | 461+00 | LT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | |
| 89 | 461+00 | RT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | |
| 90 | 467+00 | LT | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| 91 | 474+00 | LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 92 | 474+00 | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 94 | 495+40 | RT | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| 95 | 496+55 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 96 | 503+55 | LT | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| 97 | 509+50 | LT | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 98 | 511+61 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 99 | 526+00 | LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 100 | 526+00 | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 101 | 531+89 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 102 | 533+00 | LT | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 103 | 539+00 | LT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 104 | 539+00 | RT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 105 | 543+00 | LT | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 106 | 550+25 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 107 | 553+00 | LT | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 108 | 563+00 | LT | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 109 | 567+00 | LT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| 110 | 567+00 | RT | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| 111 | 569+95 | LT | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | 1 | | | | |
| 112 | 576+39 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 115 | 589+85 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 116 | 590+00 | RT | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| 117 | 595+00 | RT | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 118 | 604+00 | LT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | |
| 119 | 604+00 | RT | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | |
| 120 | 605+00 | LT | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 121 | 606+05 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 122 | 612+65 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 123 | 617+00 | LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 124 | 617+00 | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | |
| 125 | 618+92 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 126 | 620+00 | RT | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 127 | 622+75 | LT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 128 | 627+25 | RT | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| 129 | 628+00 | LT | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 131 | 643+50 | LT | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| | SUBTOTALS | | 6 | 2 | 0 | 0 | 2 | 1 | 2 | 2 | 1 | 14 | 2 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 6 | 6 | 3 | 3 | 1 | 2 | 0 | 2 | 4 | 6 | 6 |

## SIGN SUMMARY

| STANDARD SIGN OR SPECIAL NUMBER | SIGN DETAIL SHEET NO. | NO. EACH | SIZE, TYPE & SQUARE FEET SIZE IN x IN | SHR2L-1 ITEM NO. 903-50.04 S.F. | STR2L-1 ITEM NO. 903-50.64 S.F. | SHR2L-3 ITEM NO. 903-50.65 S.F. | STR2L-3 ITEM NO. 903-50.11 S.F. | 36" STOP EACH |
|---|---|---|---|---|---|---|---|---|
| M1-6 ROUTE MARKER MO-5 | | 6 | 24"x24" | 24.0 | | | | |
| M1-7 ROUTE MARKER MO-88 | | 2 | 30"x24" | 10.0 | | | | |
| M1-7 ROUTE MARKER MO-E | | 0 | 24"x24" | 0.0 | | | | |
| M1-7 ROUTE MARKER MO-VV | | 0 | 30"x24" | 0.0 | | | | |
| M3-1 NORTH | | 2 | 24"x12" | 4.0 | | | | |
| M3-3 SOUTH | | 1 | 24"x12" | 2.0 | | | | |
| M6-1 DIRECTIONAL ARROW | | 2 | 21"x15" | 4.4 | | | | |
| M6-3 STRAIGHT ARROW | | 2 | 21"x15" | 4.4 | | | | |
| M6-4 RIGHT/LEFT ARROW | | 1 | 21"x15" | 2.2 | | | | |
| R1-2 YIELD | | 2 | 48"x48" | 32.0 | | | | |
| R2-1 SPEED LIMIT 55 | | 1 | 36"x48" | 12.0 | | | | |
| R2-1 SPEED LIMIT 65 | | 3 | 36"x48" | 36.0 | | | | |
| R3-9b - CENTER LANE TURN | | 4 | 24"x36" | 24.0 | | | | |
| R4-13 - NEXT PASSING LANE | | 2 | 36"x48" | 24 | | | | |
| R4-14 - END PASSING LANES | | 1 | 36"x36" | 9.0 | | | | |
| R16-5 HEADLIGHTS ON | | 1 | 42"x36" | 10.5 | | | | |
| W4-10 - PASSING LANE ENDS | | 6 | 36"x36" | 54.0 | | | | |
| R4-11 - WATCH FOR LEFT TURN | | 6 | 72"x48" | 144.0 | | | | |
| W4-12 - PASSING LANES | | 3 | 36"x36" | 27 | | | | |
| W4-12a - PASSING LANE PLAQUE | | 3 | 36"x12" | 9 | | | | |
| W7-3a - NEXT X MILES | | 3 | 24"x18" | 9 | | | | |
| W9-2L - LANE ENDS MERGE LEFT | | 2 | 36"x36" | 18.0 | | | | |
| W9-2R - LANE ENDS MERGE RIGHT | | 4 | 36"x36" | 36.0 | | | | |
| W25-5 - MILE PLAQUE | | 12 | 36"x12" | 36.0 | | | | |
| 70 - BB ½ MILE | PM13 | 1 | 84" x 72" | | | | 42 | |
| 72 - LEBANON 8, SLEEPER 6 | PM13 | 1 | 96" x 48" | | | | 32 | |
| 76 - STOP SIGN | PM13 | 1 | 36" | | | | | 1 |
| 83 - CAMDENTON 18, SLEEPER 6 | PM13 | 1 | 120" x 48" | | | | 40 | |
| 84 - BB ½ MILE | PM13 | 1 | 84" x 72" | | | | 42 | |
| 86 - STOP SIGN | PM14 | 1 | 36" | | | | | 1 |
| 87 - STOP SIGN | PM14 | 1 | 36" | | | | | 1 |
| 95 - STOP SIGN | PM16 | 1 | 36" | | | | | 1 |
| 98 - STOP SIGN | PM16 | 1 | 36" | | | | | 1 |
| 101 - STOP SIGN | PM17 | 1 | 36" | | | | | 1 |
| 106 - STOP SIGN | PM17 | 1 | 36" | | | | | 1 |
| 112 - STOP SIGN | PM18 | 1 | 36" | | | | | 1 |
| 113 - ALTERNATE PASSING LANES | PM19 | 1 | 156" x 60" | | | | 65 | |
| 115 - STOP SIGN | PM19 | 1 | 36" | | | | | 1 |
| 121 - STOP SIGN | PM19 | 1 | 36" | | | | | 1 |
| 122 - STOP SIGN | PM20 | 1 | 36" | | | | | 1 |
| 125 - STOP SIGN | PM20 | 1 | 36" | | | | | 1 |
| 127 - STOP SIGN | PM20 | 1 | 36" | | | | | 1 |
| 128 - STOP SIGN | PM20 | 1 | 36" | | | | | 1 |
| | | | | 531.3 | 0 | 0 | 221 | 14 |

SHEET 2 OF 3

D-30

REV.

T:\de-proj\053\j8p0902\plan_sheets\073_PM_27_J8P0902_ti_d30_REVISED_093009.dgn 3:16:37 PM 7/20/2011

Prepared by: Craig Huckaby 7-20-11
Checked by: Keith Maddux 7-21-11

FINAL PLANS

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM28 |

BRIDGE NO.

JOB NO. J8P0902

CONTRACT ID. 090626-501

DATE PREPARED

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

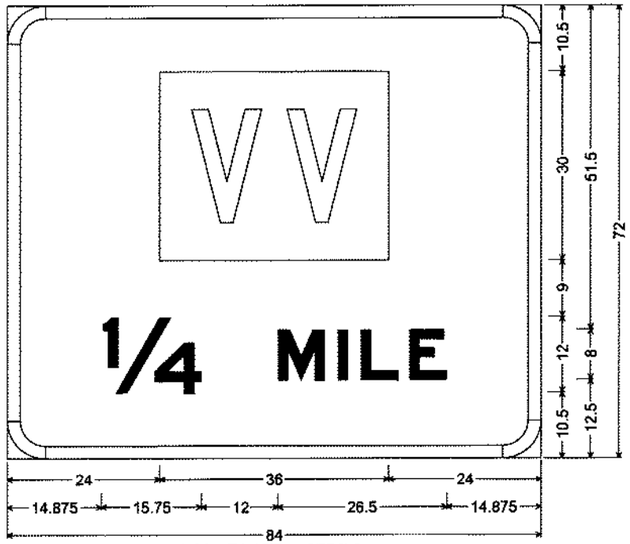
## STANDARD SIGN ASSEMBLIES

| SIGN NUMBER | STATION | LOCATION | SIGN TYPE: M1-6-S | M1-7-BB | M1-7-E | M1-7-W | M3-1 | M3-3 | M6-1 | M6-3 | M6-4 | R1-1 | R1-2 | R2-1-55 | R2-1-65 | R3-9b | R4-13 1 MI | R4-13 1½ MI | R4-13 ¾ MI | R4-13 2 MI | R4-13 3 MI | R4-14 | R16-5 | W4-10 | W4-11 | W4-12 | W4-12a | W7-3a ¾ MI | W7-3a 1 MI | W7-3a ½ MI | W9-2L | W9-2R | W25-5 ½ MI | W25-5 ¼ MI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 24" x 24" | 30" x 24" | 24" x 24" | 30" x 24" | 24" x 18" | 24" x 18" | 21" x 15" | 21" x 15" | 27" x 15" | 36" x 36" | 48" x 48" | 30" x 42" | 30" x 42" | 24" x 36" | 36" x 48" | 36" x 48" | 36" x 48" | 36" x 48" | 36" x 48" | 36" x 48" | 42" x 36" | 36" x 36" | 72" x 48" | 36" x 36" | 36" x 18" | 24" x 18" | 24" x 18" | 24" x 18" | 36" x 36" | 36" x 12" | 36" x 18" |
| 132 | 645+00 | RT | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| 133 | 654+00 | LT | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| 138 | 409+63 | RT | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| 139 | 413+07 | LT | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| SUBTOTALS | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | | | 16 | 2 | 2 | 2 | 4 | 3 | 6 | 6 | 3 | 27 | 3 | 1 | 9 | 8 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 14 | 10 | 6 | 6 | 1 | 4 | 1 | 2 | 12 | 14 | 14 |

## SIGN SUMMARY

| STANDARD SIGN OR SPECIAL NUMBER | SIGN DETAIL SHEET NO. | NO. EACH | SIZE. TYPE & SQUARE FEET: SIZE IN x IN | SHR2L-1 ITEM NO. 903-50.04 S.F. | STR2L-1 ITEM NO. 903-50.64 S.F. | SHR2L-3 ITEM NO. 903-50.65 S.F. | STR2L-3 ITEM NO. 903-50.11 S.F. | 36" STOP EACH |
|---|---|---|---|---|---|---|---|---|
| R3-9b - CENTER LANE TURN | | 4 | 24"x36" | 24 | | | | |
| | | | | 24 | 0 | 0 | 0 | 0 |
| | | | | 1124.2 | 0 | 0 | 465 | 27 |

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



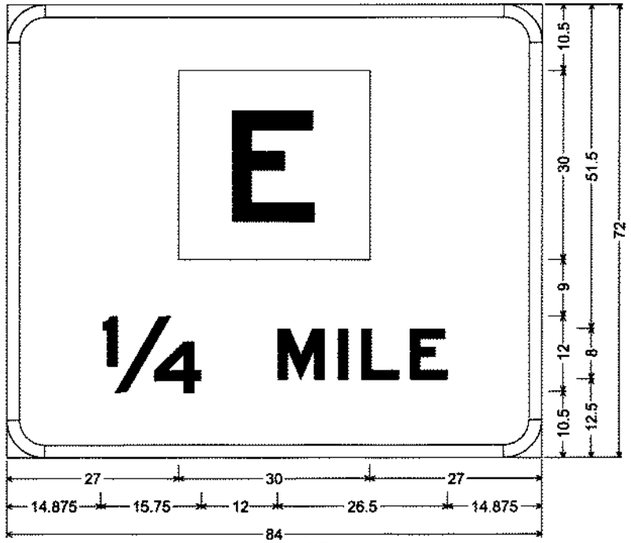

| SIGN NO. | 20 |
|---|---|
| STATION | 207+00.0 |
| ROADWAY | RTE 5 RT |

| SIGN NO. | 31 |
|---|---|
| STATION | 234+00.0 |
| ROADWAY | RTE 5 LT |

J8P0902 Signs 20 and 31 E1-1ST STR2L3;
6.000" Radius, 2.000" Border, White on Green;
State Highway VV M1-7b; [1/4] E Mod; [MILE] E Mod;
Table of letter and object lefts.

| VV | |
|---|---|
| 24.000 | |

| 1/4 | M | I | L | E |
|---|---|---|---|---|
| 14.875 | 42.625 | 52.000 | 55.625 | 63.250 |




| SIGN NO. | 33 |
|---|---|
| STATION | 250+00.0 |
| ROADWAY | RTE 5 RT |

| SIGN NO. | 48 |
|---|---|
| STATION | 276+00.0 |
| ROADWAY | RTE 5 LT |

J8P0902 Signs 33 and 48 E1-1ST STR2L3;
6.000" Radius, 2.000" Border, White on Green;
State Highway E M1-7b; [1/4] E Mod; [MILE] E Mod;
Table of letter and object lefts.

| E | |
|---|---|
| 27.000 | |

| 1/4 | M | I | L | E |
|---|---|---|---|---|
| 14.875 | 42.625 | 52.000 | 55.625 | 63.250 |

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM29 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

Prepared by Craig Huckaby 7-20-11
Checked by: Craig Huckaby 7-20-11

FINAL PLANS

| BRIDGE NO. | DATE PREPARED |
|---|---|
| | |

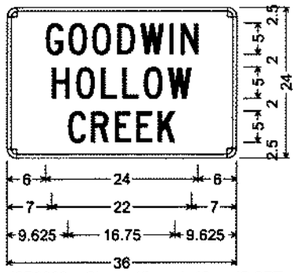
| DESCRIPTION | DATE |
|---|---|
| | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

| SIGN NO. | 45 |
|---|---|
| STATION | 270+41.7 |
| ROADWAY | RTE 5 RT |

| SIGN NO. | 46 |
|---|---|
| STATION | 273+08.3 |
| ROADWAY | RTE 5 LT |



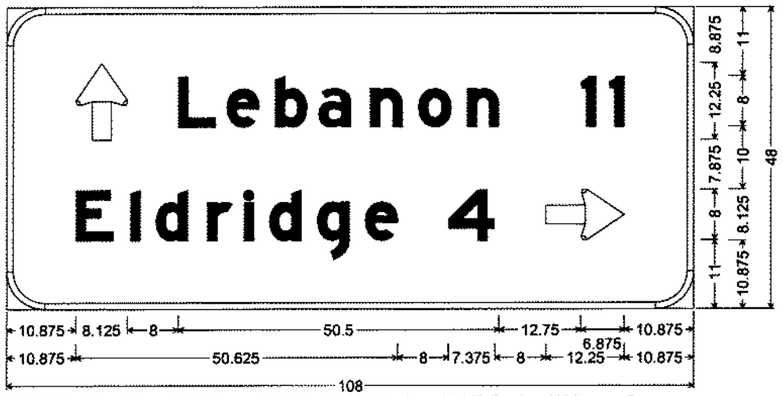

J8P0902 Signs 45 and 46 I3-3ST STR2L3;
1.500" Radius, 0.625" Border, White on Green;
[GOODWIN] C;
[HOLLOW] C; [CREEK] C;
Table of letter and object lefts.

| G | O | O | D | W | I | N |
|---|---|---|---|---|---|---|
| 6.000 | 9.625 | 13.375 | 17.250 | 20.875 | 25.500 | 27.250 |

| H | O | L | L | O | W |
|---|---|---|---|---|---|
| 7.000 | 10.875 | 14.750 | 18.125 | 21.500 | 25.250 |

| C | R | E | E | K |
|---|---|---|---|---|
| 9.625 | 13.125 | 17.000 | 20.375 | 23.625 |

| SIGN NO. | 35 |
|---|---|
| STATION | 258+00.0 |
| ROADWAY | RTE 5 RT |

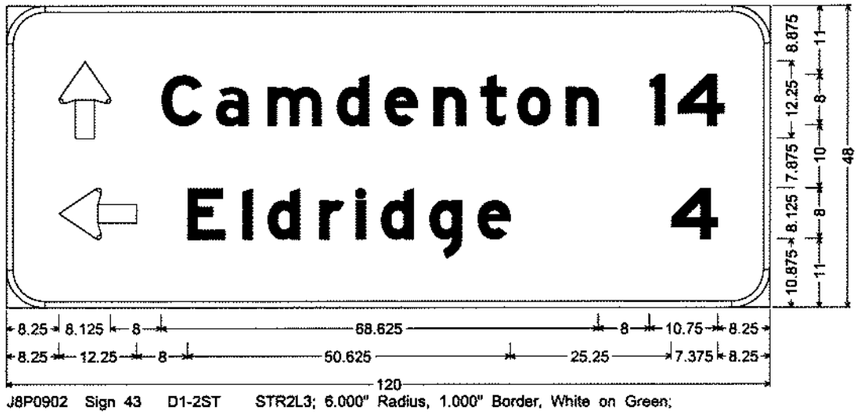



J8P0902 Sign 35 D1-2ST STR2L3; 6.000" Radius, 1.000" Border, White on Green;
Standard Arrow Custom 12.250" X 8.125" 90°; [Lebanon] E Mod; [11] E Mod;
[Eldridge] E Mod; [4] E Mod; Standard Arrow Custom 12.250" X 8.125" 0°;
Table of letter and object lefts.

| ⇧ | L | e | b | a | n | o | n | l | l |
|---|---|---|---|---|---|---|---|---|---|
| 10.875 | 27.000 | 34.625 | 42.125 | 49.000 | 57.125 | 64.750 | 72.375 | 90.250 | 94.750 |

| E | i | d | r | i | d | g | e | 4 | ⇨ |
|---|---|---|---|---|---|---|---|---|---|
| 10.875 | 19.500 | 23.375 | 31.625 | 37.375 | 41.250 | 48.875 | 56.375 | 69.500 | 84.875 |

| SIGN NO. | 43 |
|---|---|
| STATION | 267+50.0 |
| ROADWAY | RTE 5 LT |




J8P0902 Sign 43 D1-2ST STR2L3; 6.000" Radius, 1.000" Border, White on Green;
Standard Arrow Custom 12.250" X 8.125" 90°; [Camdenton] E Mod; [15] E Mod;
Standard Arrow Custom 12.250" X 8.125" 180°; [Eldridge] E Mod; [4] E Mod;
Table of letter and object lefts.

| ⇧ | C | a | m | d | e | n | t | o | n | l | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.250 | 24.375 | 32.875 | 41.000 | 51.875 | 59.375 | 67.000 | 74.375 | 80.125 | 87.875 | 101.000 | 105.375 |

| ⇦ | E | l | d | r | i | d | g | e | 4 |
|---|---|---|---|---|---|---|---|---|---|
| 8.250 | 28.500 | 37.000 | 41.000 | 49.125 | 54.875 | 58.875 | 66.375 | 74.000 | 104.375 |



REV.

T:\de-proj\053\j8p0902\plan_sheets\075_PM_29_J8P0902_11_031.dgn 10:44:54 AM 7/20/2011

Prepared by: Craig Huckaby 7-20-11
Checked by: Mark Maddux 7-20-11

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM30 |

JOB NO. J8P0902

CONTRACT ID. 090626-501

PROJECT NO. FAF-5-2(28)

COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

FINAL PLANS

| BRIDGE NO. | DESCRIPTION | DATE | DATE PREPARED |
|---|---|---|---|
| | | | |

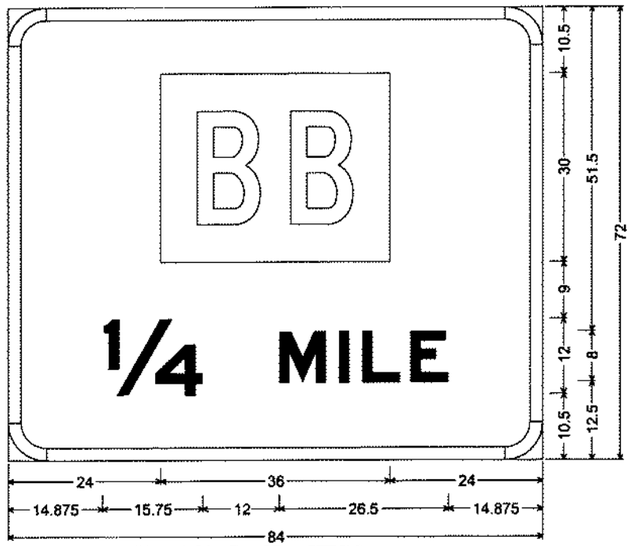

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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


IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

| SIGN NO. | 70 |
|---|---|
| STATION | 404+00.0 |
| ROADWAY | RTE 5 R1 |

| SIGN NO. | 84 |
|---|---|
| STATION | 430+00.0 |
| ROADWAY | RTE 5 LT |




J8P0902 Signs 70 and 84 E1-1ST STR2L3;
6.000" Radius, 2.000" Border, White on Green;
State Highway BB M1-7b; [1/4] E Mod; [MILE] E Mod;
Table of letter and object lefts.

| BB |
|---|
| 24.000 |

| 1/4 | M | I | L | E |
|---|---|---|---|---|
| 14.875 | 42.625 | 52.000 | 55.625 | 63.250 |

| SIGN NO. | 72 |
|---|---|
| STATION | 411+00.0 |
| ROADWAY | RTE 5 RT |

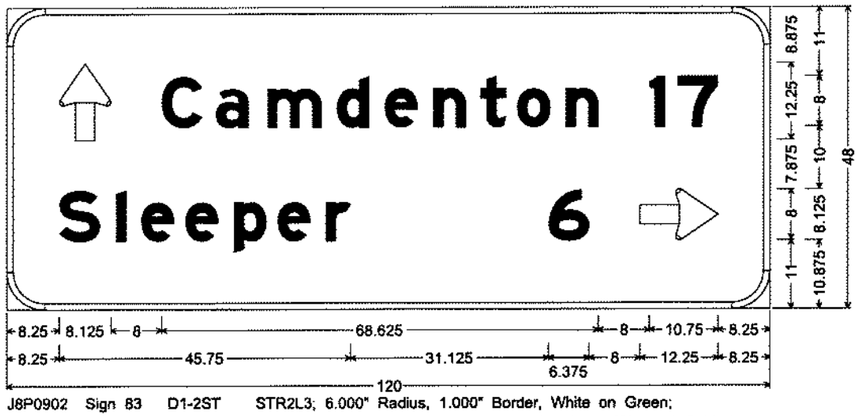

J8P0902 Sign 72 D1-2ST STR2L3;
6.000" Radius, 1.000" Border, White on Green;
Standard Arrow Custom 12.250" X 8.125" 90°; [Lebanon] E Mod; [8] E Mod;
Standard Arrow Custom 12.250" X 8.125" 180°; [Sleeper] E Mod; [6] E Mod;
Table of letter and object lefts.

| ⇧ | L | e | b | a | n | o | n | 8 |
|---|---|---|---|---|---|---|---|---|
| 7.500 | 23.625 | 31.125 | 38.750 | 45.625 | 53.750 | 61.375 | 69.000 | 82.125 |

| ⇦ | S | l | e | e | p | e | r | 6 |
|---|---|---|---|---|---|---|---|---|
| 7.500 | 27.750 | 36.750 | 40.625 | 47.625 | 55.250 | 62.000 | 69.625 | 82.125 |

| SIGN NO. | 113 |
|---|---|
| STATION | 585+00.0 |
| ROADWAY | RTE 5 LT |

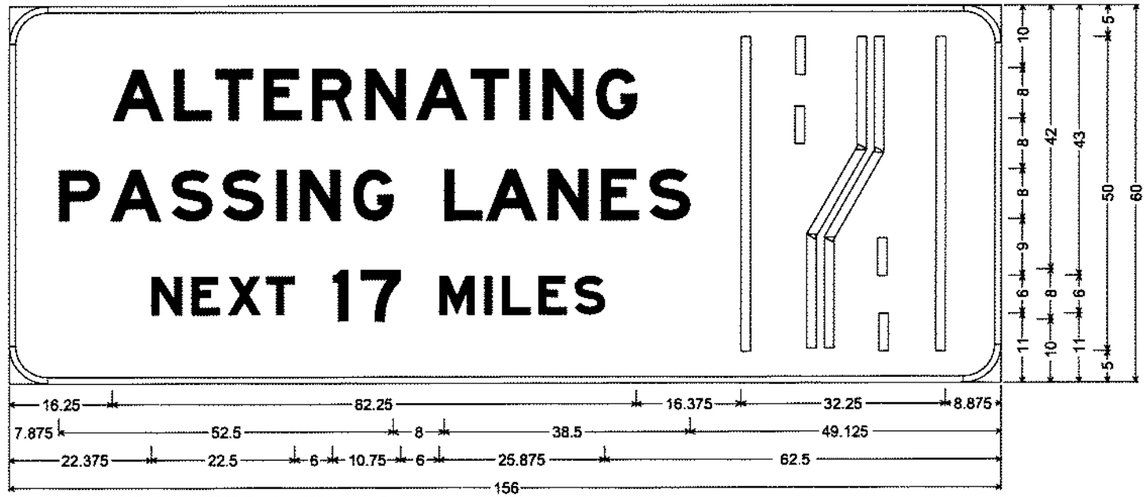
| SIGN NO. | 83 |
|---|---|
| STATION | 424+00.0 |
| ROADWAY | RTE 5 LT |




J8P0902 Sign 83 D1-2ST STR2L3; 6.000" Radius, 1.000" Border, White on Green;
Standard Arrow Custom 12.250" X 8.125" 90°; [Camdenton] E Mod; [18] E Mod; [Sleeper] E Mod;
[6] E Mod; Standard Arrow Custom 12.250" X 8.125" 0°;
Table of letter and object lefts.

| ⇧ | C | a | m | d | e | n | t | o | n | l | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.250 | 24.375 | 32.875 | 41.000 | 51.875 | 59.375 | 67.000 | 74.375 | 80.125 | 87.875 | 101.000 | 105.375 |

| S | l | e | e | p | e | r | 6 | ⇨ |
|---|---|---|---|---|---|---|---|---|
| 8.250 | 17.125 | 21.125 | 28.125 | 35.625 | 42.500 | 50.125 | 85.125 | 99.500 |




Sign 96; 6.000" Radius, 1.000" Border, White on Green;
[ALTERNATING] E Mod; [PASSING LANES] E Mod; [NEXT 7 MILES] E Mod;
Table of letter and object lefts.

| A | L | T | E | R | N | A | T | I | N | G | ▯ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16.250 | 25.875 | 32.375 | 39.875 | 47.500 | 56.000 | 64.000 | 72.500 | 80.125 | 83.750 | 92.125 | 114.875 |

| P | A | S | S | I | N | G | L | A | N | E | S |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.875 | 15.875 | 25.500 | 33.500 | 42.000 | 45.625 | 54.000 | 68.375 | 74.875 | 84.500 | 93.000 | 100.500 |

| N | E | X | T | 1 | 7 | M | I | L | E | S |
|---|---|---|---|---|---|---|---|---|---|---|
| 22.375 | 28.625 | 34.375 | 40.375 | 50.875 | 55.250 | 67.625 | 74.625 | 77.375 | 83.125 | 88.750 |



REV.

T:\de-proj\053\j8p0902\plan_sheets\076_PM_30_J8P0902_11_D31.dgn 10:46:47 AM 7/20/2011

FINAL PLANS

Prepared by: Craig Huckaby 7-20-11
Checked by: Matt Maddux 7-25-11

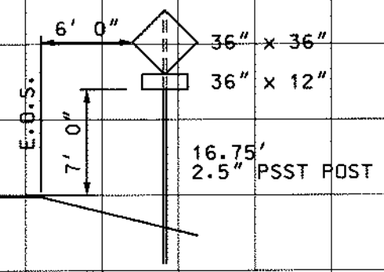
| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM31 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

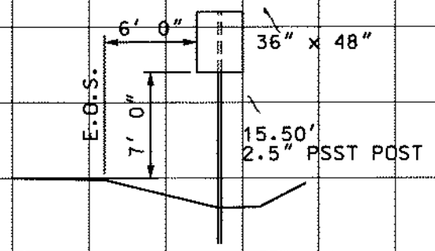
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(9) 103+50 MO 5-RT

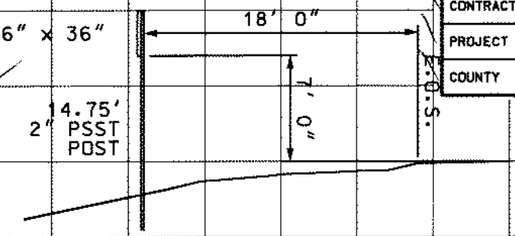



(10) 130+60 MO 5-RT

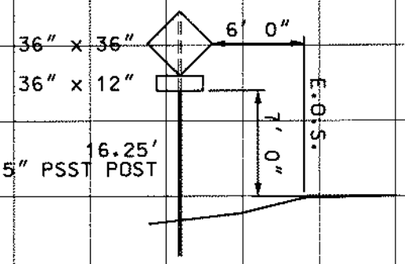



(11) 137+50 MO 5-LT

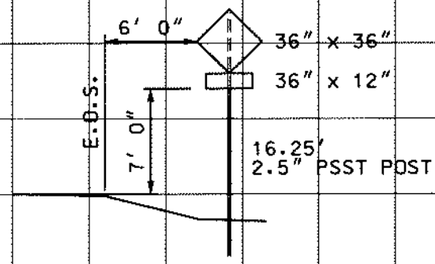
SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM CLATHE DR.



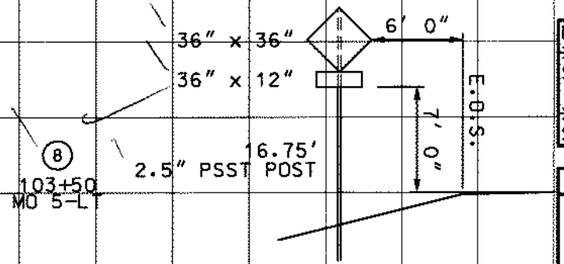

(6) 90+00 MO 5-LT




(7) 90+00 MO 5-RT



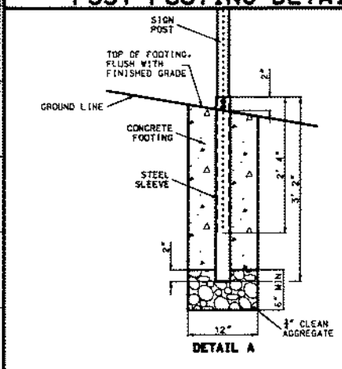

(8) 103+50 MO 5-LT




NOTES:
* Backing bar details shown in Standard Plan 903.02.

** Island detail shown in Standard Plan 203.50

## PSST FOOTING DETAIL



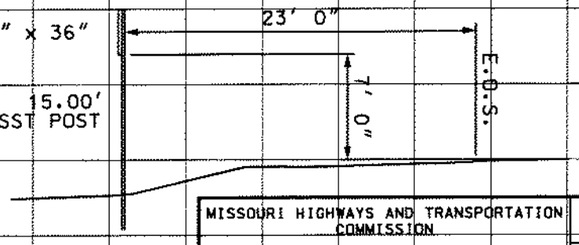

DETAIL A

CONCRETE FOOTING FOR PERFORATED STEEL SQUARE POST WITHOUT BREAKAWAY ASSEMBLY

NOTE: CONCRETE FOOTING (APPROX .09 CU YD) AND AGGREGATE (APPROX. .04 SQ YD) INCLUDED IN PAY ITEM 903-10.10 CONCRETE FOOTINGS , EMBEDDED.

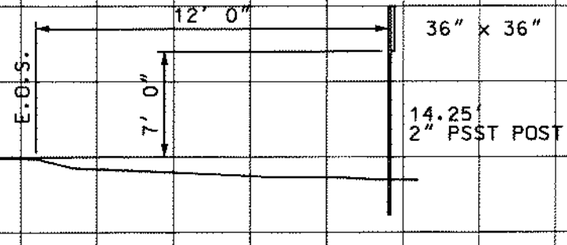
SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM LIVINGSTON RD.

(4) 80+11 MO 5-LT




SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM LIVINGSTON RD.

(5) 80+57 MO 5-RT




MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

| DATE | DESCRIPTION |
|---|---|
| | |

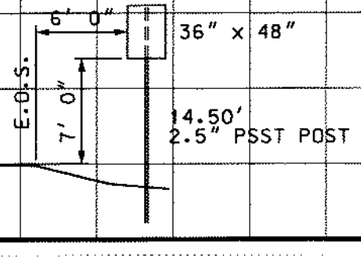
BRIDGE NO.

DATE PREPARED

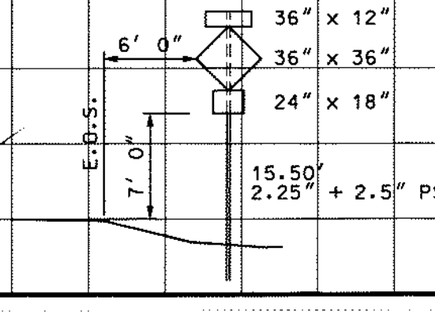
## STRUCTURAL STEEL POST FOOTING DETAIL

See Standard Plan 903.03 for footing details using Design Number 1. Slopes noted are for use with footing design table in standard plan and represent slope between posts. Diameter for all footings is 15".

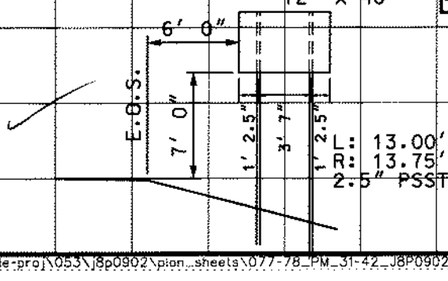
(1) 45+00 MO 5-RT




(2) 48+65 MO 5-RT




(3) 70+00 MO 5-RT




5'

SIGNING SECTIONS
SHEET 1 OF 12

REV.

J:\de-proj\053\j8p0902\plan_sheets\077-78_PM_31-42_J8P0902_I5_XS_REVISED_093009.dgn 12:07:29 PM 7/22/2011

FINAL PLANS

Prepared by: Craig Huckaby 7-20-11
Checked by: Matt Maddux 7-25-11

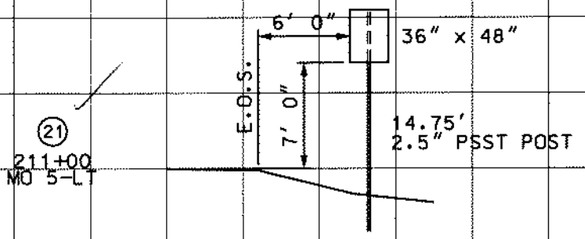
| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM32 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

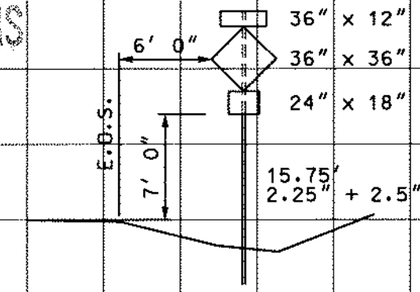
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

BRIDGE NO. | DATE PREPARED | DESCRIPTION | DATE

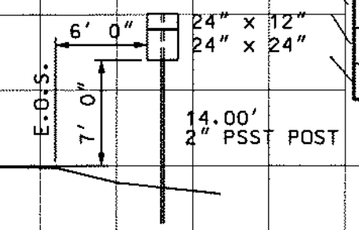
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



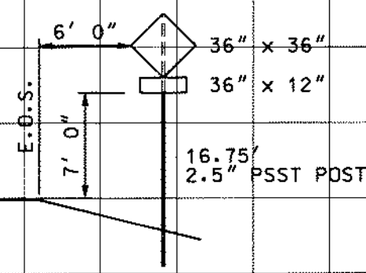

(21) 211+00 MO 5-LT



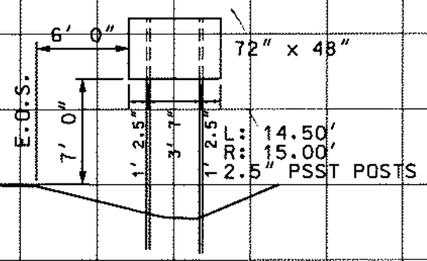

(22) 213+25 MO 5-LT



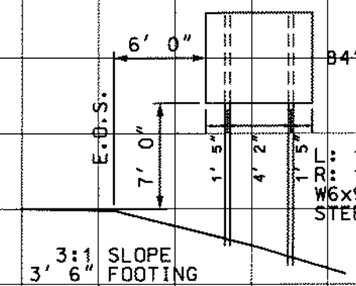

(23) 218+00 MO 5-LT



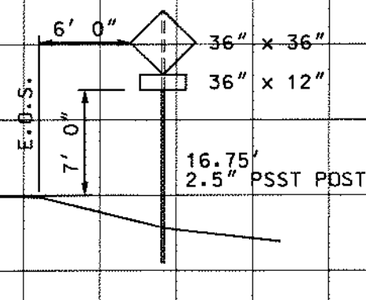

(18) 179+00 MO 5-RT



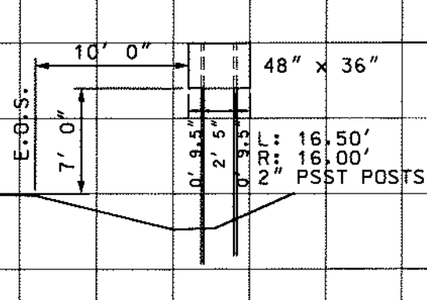

(19) 201+00 MO 5-LT



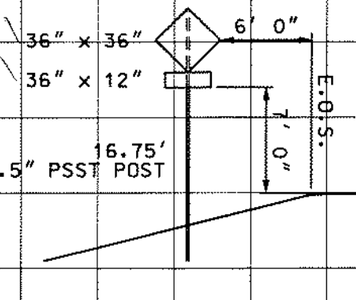

(20) 207+00 MO 5-RT




(15) 165+50 MO 5-RT

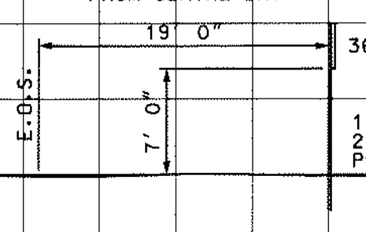



(16) 168+50 MO 5-RT

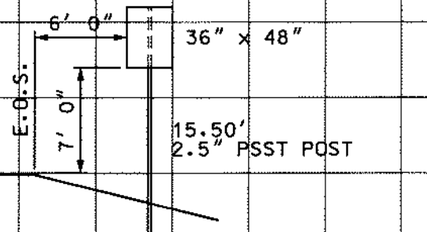



(17) 179+00 MO 5-L

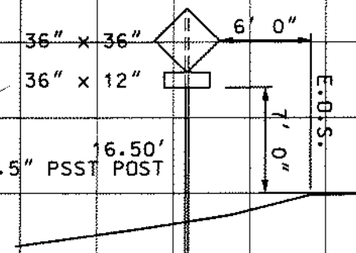
SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM OLATHE DR.




(12) 137+54 MO 5-RT




(13) 144+50 MO 5-LT




(14) 165+50 MO 5-L

5'

SIGNING SECTIONS
SHEET 2 OF 12

REV.

I:\de-proj\053\j8p0902\plan_sheets\077-78_PM_31-42_J8P0902_I5_XS_REVISED_093009.dgn 12:07:15 PM 7/22/2011

THE SEAL IS PRESENT ON THIS SHEET. IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Prepared by: Craig Huckaby 7-20-11
Checked by: Keith Medsker 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM33 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

BRIDGE NO. | DATE PREPARED

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



(33) 250+00 MO 5-RT
6' 0" | 84" x 72" | E.O.S. | 7' 0" | 1' 5" | 4' 2" | 1' 5"
L: 15.75'
R: 16.75'
W6x9 STRUCTURAL STEEL POSTS
3:1 SLOPE
3' 6" FOOTING

(34) 257+50 MO 5-LT
6' 0" | 30" x 48" | E.O.S. | 7' 0"
13.25'
2.5" PSST POST

(35) 258+00 MO 5-RT
6' 0" | 108" x 48" | E.O.S. | 7' 0" | 1' 10" | 5' 4" | 1' 10"
L: 13.25'
R: 14.25'
W6x9 STRUCTURAL STEEL POSTS
4:1 SLOPE
3' 3" FOOTING

(30) 226+00 MO 5-RT
6' 0" | 36" x 48" | E.O.S. | 7' 0"
14.75'
2.5" PSST POST

(31) 234+00 MO 5-LT
6' 0" | 84" x 72" | E.O.S. | 7' 0" | 1' 5" | 4' 2" | 1' 5"
L: 15.25'
R: 15.75'
W6x9 STRUCTURAL STEEL POSTS
6:1 SLOPE
3' 2" FOOTING

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM OLATHE RD.

(32) 249+00 MO 5-LT
36" x 36"
12' 0" | E.O.S. | 7' 0"
14.00'
2" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM KANSAS RD.

(27) 220+47 MO 5-RT
12' 0" | 36" x 36" | E.O.S. | 7' 0"
12.75'
2" PSST POST

(28) 221+05 MO 5-LT
6' 0" | 24" x 24" & 30" x 24" | 21" x 15" & 21" x 15" | E.O.S. | 7' 0"
12.25'
2.25" + 2.5" PSST POST
4 - 50" BACKING BARS*

(29) 222+50 MO 5-RT
6' 0" | 24" x 12" | 24" x 24" | E.O.S. | 7' 0"
14.25'
2" PSST POST

(24) 219+65 MO 5-RT
6' 0" | 30" x 24" & 24" x 24" | 21" x 15" & 21" x 15" | E.O.S. | 7' 0"
13.50'
2.25" + 2.5" PSST POST
4 - 50" BACKING BARS*

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM RTE VV

(25) 219+93 MO 5-RT
6' 0" | 24" x 24" | 21" x 15" | E.O.S. | 7' 0"
13.00'
2" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM RTE VV

(26) 220+19 MO 5-LT
36" x 36"
12' 0" | E.O.S. | 7' 0"
13.00'
2" PSST POST

5'

SIGNING SECTIONS
SHEET 3 OF 12

REV.

Prepared by: Craig Huckaby 7-20-11
Checked by: Keith Maddux 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM34 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

| REV. | DESCRIPTION | DATE | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|---|

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(45) 270+42 MO 5-RT
6' 0" | 7' 0" | E.O.S. | 36" x 24" | 13.00' 2" PSST POST

(46) 273+08 MO 5-LT
6' 0" | 7' 0" | E.O.S. | 36" x 24" | 12.75' 2" PSST POST

(47) 274+00 MO 5-LT
10' 0" | 7' 0" | E.O.S. | 48" x 36" | 0' 9.5" | 2' 5" | 0' 9.5" | L: 13.50' R: 14.25' 2" PSST POSTS

(42) 265+50 MO 5-RT
6' 0" | 7' 0" | E.O.S. | 24" x 12" 24" x 24" | 14.25' 2" PSST POST

(43) 267+50 MO 5-LT
6' 0" | 7' 0" | E.O.S. | 1' 10" | 5' 4" | 108" x 48" | L: 13.75' R: 13.00' 1" W6x9 STRUCTURAL STEEL POSTS
6:1 SLOPE
3' 2" FOOTING

(44) 267+50 MO 5-RT
6' 0" | 7' 0" | E.O.S. | 36" x 48" | 15.00' 2.5" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM RTE E.

(39) 262+98 MO 5-LT
6' 0" | 7' 0" | E.O.S. | 24" x 24" 21" x 15" | 13.75' 2" PSST POST

(40) 263+03 MO 5-LT
6' 0" | 7' 0" | E.O.S. | 24" x 24" 21" x 15" | 11.25' 2.25" + 2.5" PSST POST 4 - 50" BACKING BARS*

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM RTE E

(41) 263+35 MO 5-RT
37' 6" | 7' 0" | E.O.S. | 12.50' 2" PSST POST | 36" x 36"

(36) 260+50 MO 5-LT
6' 0" | 7' 0" | E.O.S. | 24" x 12" 24" x 24" | 12.50' 2" PSST POST

SIGN FACE WILL BE SKEWED TO FACE RIGHT-TURNING TRAFFIC FROM RTE 5 ONTO RTE E.

(37) 262+47 MO 5-RT
6' 0" | 7' 0" | E.O.S. | 48" x 48" | 13.50' 2" PSST POST

(38) 262+74 MO 5-RT
7' 0" | E.O.S. | 21" x 15" 30" x 24" | 12.50' 2.5" PSST POST

5'

SIGNING SECTIONS
SHEET 4 OF 12

Prepared by: Craig Huckaby 7-20-11
Checked by: Keith Maddux 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM35 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

BRIDGE NO. | DATE PREPARED | DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-800-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(57) 330+00 MO 5-RT
6' 0" | 36" x 36" | 36" x 12" | E.O.S. | 7' 0" | 16.50' 2.5" PSST POST

(58) 330+65 MO 5-LT
36" x 36" | 30' 0" | 7' 0" | 14.25' 2" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM ODESSA DR.

(54) 318+00 MO 5-RT
6' 0" | 36" x 36" | 36" x 12" | E.O.S. | 7' 0" | 16.75' 2.5" PSST POST

(55) 322+00 MO 5-RT
6' 0" | 72" x 48" | E.O.S. | 7' 0" | 1' 2.5" | 3' 7" | 1' 2.5" | L: 12.75' R: 13.75' 2.5" PSST POST

(56) 330+00 MO 5-LT
36" x 36" | 36" x 12" | 6' 0" | E.O.S. | 7' 0" | 16.25' 2.5" PSST POST

(51) 285+00 MO 5-RT
6' 0" | 36" x 48" | E.O.S. | 7' 0" | 15.00' 2.5" PSST POST

(52) 305+00 MO 5-RT
6' 0" | 72" x 48" | E.O.S. | 7' 0" | 1' 2.5" | 3' 7" | 1' 2.5" | L: 13.0' R: 13.5' 2.5" PSST POSTS

(53) 318+00 MO 5-LT
36" x 36" | 36" x 12" | 6' 0" | E.O.S. | 7' 0" | 16.75' 2.5" PSST POST

(48) 276+00 MO 5-LT
6' 0" | 84" x 72" | E.O.S. | 7' 0" | 1' 5" | 4' 2" | 1' 5" | L: 15.75' R: 16.50' W6x9 STRUCTURAL STEEL POSTS | 4:1 SLOPE 3' 3" FOOTING

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM KNOLL CO. RD.

(49) 276+95 MO 5-LT
36" x 36" | 29' 0" | E.O.S. | 7' 0" | 14.50' 2" PSST POST

(50) 277+65 MO 5-RT
36" x 12" | 36" x 36" | 24" x 18" | 6' 0" | E.O.S. | 7' 0" | 14.00' 2.25" + 2.5" PSST POST

5'

SIGNING SECTIONS
SHEET 5 OF 12

REV.

Prepared by: Craig Huckaby 7-20-11
Checked by: Matt Maddux 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM36 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM JASMINE CO. RD.

36" x 36"
19' 6"
7' 0"
14.75'
2" PSST POST

(68) 402+59 MO 5-LT

(69) 404+00 MO 5-LT

6' 0"
72" x 48"
E.O.S.
7' 0"
1' 2.5"
3' 7"
1' 2.5"
L: 12.25'
R: 13.75'
2.5" PSST POSTS

(70) 404+00 MO 5-RT

84" x 72"
6' 0"
E.O.S.
7' 0"
1' 5"
4' 2"
1' 5"
L: 15.75'
R: 16.25'
W6x9 STRUCTURAL STEEL POSTS
6:1 SLOPE
3' 2" FOOTING

(65) 394+00 MO 5-LT

36" x 36"
36" x 12"
6' 0"
E.O.S.
7' 0"
17.00'
2.5" PSST POST

(66) 394+00 MO 5-RT

6' 0"
36" x 36"
36" x 12"
E.O.S.
7' 0"
16.75'
2.5" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM OLD RTE 5 CO. RD.

(67) 399+10 MO 5-RT

14' 0"
36" x 36"
E.O.S.
7' 0"
13.50'
2" PSST POST

(62) 358+75 MO 5-LT

6' 0"
36" x 48"
E.O.S.
7' 0"
15.50'
2.5" PSST POST

(63) 380+00 MO 5-LT

36" x 36"
36" x 12"
6' 0"
E.O.S.
7' 0"
16.50'
2.5" PSST POST

(64) 380+00 MO 5-RT

6' 0"
36" x 36"
36" x 12"
E.O.S.
7' 0"
16.50'
2.5" PSST POST

(59) 350+50 MO 5-RT

6' 0"
36" x 48"
E.O.S.
7' 0"
15.50'
2.5" PSST POST

(60) 351+75 MO 5-RT

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM OLD RTE 5 CO. RD.

26' 0"
36" x 36"
E.O.S.
7' 0"
13.50'
2" PSST POST

(61) 353+50 MO 5-RT

10' 0"
48" x 36"
E.O.S.
7' 0"
0' 9.5"
2' 5"
0' 9.5"
L: 15.25'
R: 15.75'
2" PSST POSTS
5'

SIGNING SECTIONS
SHEET 6 OF 12

| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

"IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED."

REV:

T:\de-proj\053\j8p0902\plan_sheets\077-78_PM_31-42_J8P0902_15_XS_REVISED_093009.dgn 12:05:55 PM 7/22/2011

Prepared by: Craig Huckaby 7-20-11
Checked by: Matt Maddux 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO. | 8 | PM37 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

BRIDGE NO. | DESCRIPTION | DATE | DATE PREPARED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



(80) 417+75 MO 5-RT
6' 0" | E.O.S. | 7' 0"
36" x 12"
36" x 36"
24" x 18"
12.25'
2.25" + 2.5" POST

(81) 419+50 MO 5-RT
6' 0" | E.O.S. | 7' 0"
24" x 12"
24" x 24"
14.25'
2" PSST POST

(82) 422+00 MO 5-RT
6' 0" | E.O.S. | 7' 0"
36" x 48"
15.00'
2.5" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM RTE BB

(77) 416+68 MO 5-RT
6' 0" | E.O.S. | 7' 0"
30" x 24"
21" x 15"
14.50'
2" PSST POST

(78) 417+00 MO 5-LT
7' 0"
24" x 24" & 30" x 24"
21" x 15" & 21" x 15"
12.50'
2.5" PSST POST
4 - 50" BACKING BARS*

(79) 417+22 MO 5-LT
6' 0" | E.O.S. | 7' 0"
48" x 48"
13.25'
2" PSST POST

SIGN FACE WILL BE SKEWED TO FACE RIGHT-TURNING TRAFFIC FROM RTE 5 ONTO RTE BB

(74) 414+00 MO 5-LT
6' 0" | E.O.S. | 7' 0"
24" x 12"
24" x 24"
14.50'
2" PSST POST

(75) 416+00 MO 5-RT
6' 0" | E.O.S. | 7' 0"
30" x 24" & 24" x 24"
21" x 15" & 21" x 15"
12.00'
2.25" + 2.5" PSST POST
4 - 50" BACKING BARS*

(76) 416+38 MO 5-LT
6' 0" | E.O.S. | 7' 0"
23' 0"
36" x 36"
12.50'
2" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM RTE BB

(71) 409+65 MO 5-LT
6' 0" | E.O.S. | 7' 0"
36" x 12"
36" x 36"
24" x 18"
15.75'
2.5" + 2.5" PSST POST

(72) 411+00 MO 5-RT
6' 0" | E.O.S. | 7' 0"
96" x 48"
1' 7" | 4' 10" | 1' 7"
L: 14.75'
R: 14.75'
W6x9 STRUCTURAL STEEL POSTS
6:1 SLOPE
3' 2" FOOTING

(73) 412+00 MO 5-LT
6' 0" | E.O.S. | 7' 0"
36" x 48"
15.00'
2.5" PSST POST

5'

SIGNING SECTIONS
SHEET 7 OF 12

REV.

Prepared by: Craig Huckaby 7-20-11
Checked by: Gail Maddux 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM38 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

| REV. | DESCRIPTION | DATE | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|---|

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(92) 474+00 MO 5-RT
6' 0" | 36" x 36" | 36" x 12" | E.O.S. | 7' 0" | 16.75' 2.5" PSST POST

(93) 483+00 MO 5-LT
10' 0" | 48" x 36" | E.O.S. | 7' 0" | 0' 9.5" | 2' 5" | 0' 9.5" | L: 15.25' R: 15.50' 2" PSST POSTS

(94) 495+40 MO 5-RT
6' 0" | 36" x 36" | E.O.S. | 7' 0" | 14.00' 2.5" PSST POST

(89) 461+00 MO 5-RT
6' 0" | 36" x 36" | 36" x 12" | E.O.S. | 7' 0" | 16.50' 2.5" PSST POST

(90) 467+00 MO 5-LT
6' 0" | 42" x 36" | E.O.S. | 7' 0" | 15.00' 2" PSST POST

(91) 474+00 MO 5-LT
36" x 36" | 6' 0" | 36" x 12" | E.O.S. | 7' 0" | 16.75' 2.5" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM JONQUIL CO. RD.

(86) 442+50 MO 5-LT
36" x 36" | 17' 0" | E.O.S. | 7' 0" | 12.75' 2" PSST POST

(87) 443+00 MO 5-RT
SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM JULIE RD.
23' 0" | 36" x 36" | E.O.S. | 7' 0" | 13.75' 2" PSST POST

(88) 461+00 MO 5-LT
36" x 36" | 6' 0" | 36" x 12" | E.O.S. | 7' 0" | 16.75' 2.5" PSST POST

(83) 424+00 MO 5-LT
6' 0" | 120" x 48" | E.O.S. | 7' 0" | 2' 0" | 6' 0" | 2' 0" | L: 13.75' R: 15.25' W6x9 STRUCTURAL STEEL POSTS | 4:1 SLOPE 3' 3" FOOTING

(84) 430+00 MO 5-LT
6' 0" | 84" x 72" | E.O.S. | 7' 0" | 1' 5" | 4' 2" | 1' 5" | L: 15.75' R: 16.75' W6x9 STRUCTURAL STEEL POSTS | 3:1 SLOPE 3' 6" FOOTING

(85) 433+00 MO 5-RT
6' 0" | 72" x 48" | E.O.S. | 7' 0" | 1' 2.5" | 3' 7" | 1' 2.5" | L: 12.75' R: 11.75' 2.5" PSST POSTS

5'

SIGNING SECTIONS
SHEET 8 OF 12

Prepared by: Craig Huckaby 7-20-11
Checked by: Mike Meadows 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM39 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

*THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.*

DATE

(104) 539+00 MO 5-RT
6' 0" | 36" x 36" | 36" x 12" | E.O.S. | 7' 0" | 16.75' 2.5" PSST POST

(105) 543+00 MO 5-LT
6' 0" | 72" x 48" | E.O.S. | 7' 0" | 1' 2.5" | 3' 7" | 1' 2.5"
L: 13.00'
R: 12.75'
2.5" PSST POSTS

(106) 550+25 MO 5-RT
SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM HAZEL RD.
36" x 36" | 16' 6" | 7' 0" | 13.75' 2" PSST POSTS

(101) 532+00 MO 5-RT
SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM IRONWOOD LN.
17' 0" | 36" x 36" | 7' 0" | 15.00' 2" PSST POST

(102) 533+00 MO 5-LT
6' 0" | 72" x 48" | E.O.S. | 7' 0" | 1' 2.5" | 3' 7" | 1' 2.5"
L: 13.00'
R: 13.50'
2.5" PSST POSTS

(103) 539+00 MO 5-LT
36" x 36" | 36" x 12" | 6' 0" | E.O.S. | 7' 0" | 16.75' 2.5" PSST POST

(98) 511+61 MO 5-LT
SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM ORCHARD DR.
36" x 36" | 19' 0" | 7' 0" | 13.50' 2" PSST POST

(99) 526+00 MO 5-LT
36" x 36" | 36" x 12" | 6' 0" | E.O.S. | 7' 0" | 16.00' 2.5" PSST POST

(100) 526+00 MO 5-RT
6' 0" | 36" x 36" | 36" x 12" | E.O.S. | 7' 0" | 16.50' 2.5" PSST POST

(95) 496+65 MO 5-RT
SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM INDEPENDENCE RD.
27' 0" | 36" x 36" | E.O.S. | 7' 0" | 14.00' 2" PSST POST

(96) 503+55 MO 5-LT
6' 0" | 36" x 48" | E.O.S. | 7' 0" | 15.50' 2.5" PSST POST

(97) 509+50 MO 5-LT
6' 0" | 24" x 12" | 24" x 24" | E.O.S. | 7' 0" | 14.50' 2" PSST POST

5'

SIGNING SECTIONS
SHEET 9 OF 12

| DESCRIPTION | DATE | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

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Prepared by: Craig Huckaby 7-20-11
Checked by: Keith Madding 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM40 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

BRIDGE NO. | DESCRIPTION | DATE | DATE PREPARED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGN FACE WILL BE SKEWED TO FACE RIGHT-TURNING TRAFFIC FROM HOUSTON RD ONTO RTE 5.

(116) 590+00 MO 5-RT
16' 6" | 48" x 48" | E.O.S. | 7' 0" | 16.25' 2" PSST POST

(117) 595+00 MO 5-RT
6' 0" | 24" x 36" | E.O.S. | 7' 0" | 15.00' 2" PSST POST

(118) 604+00 MO 5-LT
36" x 36" | 36" x 12" | 6' 0" | E.O.S. | 7' 0" | 16.50' 2.5" PSST POST

(113) 585+00 MO 5-LT
6' 0" | 156" x 60" | E.O.S. | 8' 0" | 2' 7" | 7' 10" | 2' 7"
L: 14.50'
R: 15.50'
W6x9 STRUCTURAL STEEL POSTS

(114) 587+50 MO 5-RT
10' 0" | 48" x 36" | E.O.S. | 6' 0" | 0' 9.5" | 2' 5" | 0' 9.5"
L: 15.50'
R: 15.75'
2" PSST POSTS

SIGN FACE WILL BE SKEWED ON ISLAND TO FACE ON-COMING TRAFFIC FROM HOUSTON RD.

(115) 589+71 MO 5-RT
36" x 36" | 7' 0" | 12.50' 2" PSST POST

(110) 567+00 MO 5-RT
6' 0" | 36" x 48" | E.O.S. | 7' 0" | 15.00' 2.5" PSST POST

(111) 569+95 MO 5-LT
36" x 12" | 36" x 36" | 24" x 18" | 6' 0" | E.O.S. | 7' 0" | 16.00' 2.25" + 2.5" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM HEMLOCK RD.

(112) 576+39 MO 5-LT
36" x 36" | 26' 0" | 14.75' 2" PSST POST | 7' 0"

(107) 553+00 MO 5-LT
6' 0" | 72" x 48" | E.O.S. | 7' 0" | 1' 2.5" | 3' 7" | 1' 2.5"
L: 12.50'
R: 14.00'
2.5" PSST POSTS

(108) 563+00 MO 5-LT
6' 0" | 72" x 48" | E.O.S. | 7' 0" | 1' 2.5" | 3' 7" | 1' 2.5"
L: 12.50'
R: 12.50'
2.5" PSST POSTS

(109) 567+00 MO 5-LT
6' 0" | 36" x 48" | E.O.S. | 7' 0" | 15.00' 2.5" PSST POST

5'

SIGNING SECTIONS
SHEET 10 OF 12

REV.

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Prepared by: Craig Huckaby 7-20-11
Checked by: Keith Maddux 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM41 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM LAKE SHORE CO. RD.

(128) 627+25 MO 5-RT
23' 0" x 7' 0" — 36" x 36" — 16.00' 2" PSST POST

(129) 629+00 MO 5-LT
6' 0" x 7' 0" E.O.S. — 24" x 36" — 15.00' 2" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM GRAND LAKE CIR.

(125) 618+92 MO 5-RT
19' 6" x 7' 0" — 36" x 36" — 12.50' 2" PSST POST

(126) 620+00 MO 5-RT
6' 0" x 7' 0" E.O.S. — 24" x 36" — 14.25' 2" PSST POST

SIGN FACE WILL BE SKEWED TO FACEON-COMING TRAFFIC FROM CO. RD. 211

(127) 622+75 MO 5-LT
36" x 36" — 30' 0" x 7' 0" — 13.50' 2" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM SW OAKWOOD DR.

(122) 612+65 MO 5-LT
36" x 36" — 22' 0" x 7' 0" — 15.00' 2" PSST POST

(123) 617+00 MO 5-LT
36" x 36" / 36" x 12" — 6' 0" E.O.S. — 17.00' 2.5" PSST POST

(124) 617+00 MO 5-RT
6' 0" E.O.S. — 36" x 36" / 36" x 12" — 17.50' 2.5" PSST POST

(119) 604+00 MO 5-RT
6' 0" E.O.S. — 36" x 36" / 36" x 12" — 16.25' 2.5" PSST POST

(120) 605+00 MO 5-LT
6' 0" E.O.S. — 24" x 36" — 14.25' 2" PSST POST

SIGN FACE WILL BE SKEWED TO FACE ON-COMING TRAFFIC FROM NW OAKWOOD DR.

(121) 606+05 MO 5-LT
36" x 36" — 22' 0" x 7' 0" — 12.75' 2" PSST POST

| REV. | DESCRIPTION | DATE |
|---|---|---|

BRIDGE NO.
DATE PREPARED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

5'

SIGNING SECTIONS
SHEET 11 OF 12

Prepared by: Craig Huckaby 7-20-11
Checked by: Keith Maddux 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | PM42 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

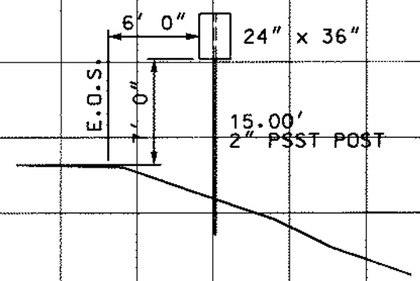
| DATE | DESCRIPTION | BRIDGE NO. | DATE PREPARED |
|---|---|---|---|
| | | | |

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

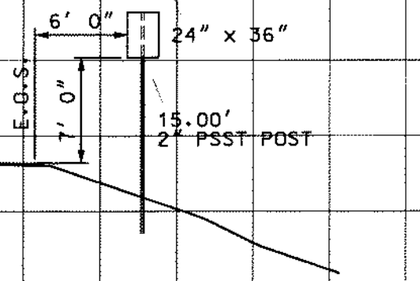
MoDOT

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

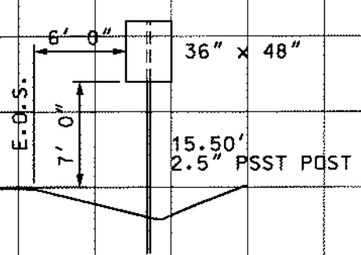
IF A SEAL IS PRESENT ON THIS SHEET, IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



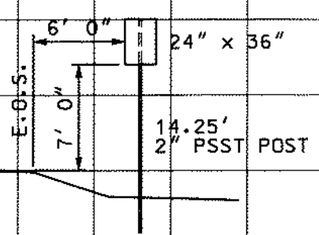

(138)
409+63
MO 5-RT



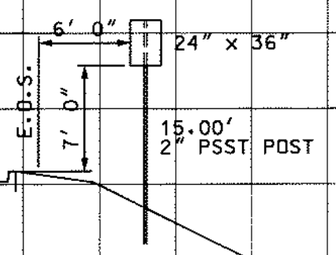

(139)
413+07
MO 5-LT




(131)
643+50
MO 5-LT




(132)
645+00
MO 5-RT




(133)
654+00
MO 5-LT

5'

SIGNING SECTIONS
SHEET 12 OF 12

REV.

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FINAL PLANS

Prepared by: Craig Huckaby 7-25-11
Checked by: Keith Haddix 7-25-11

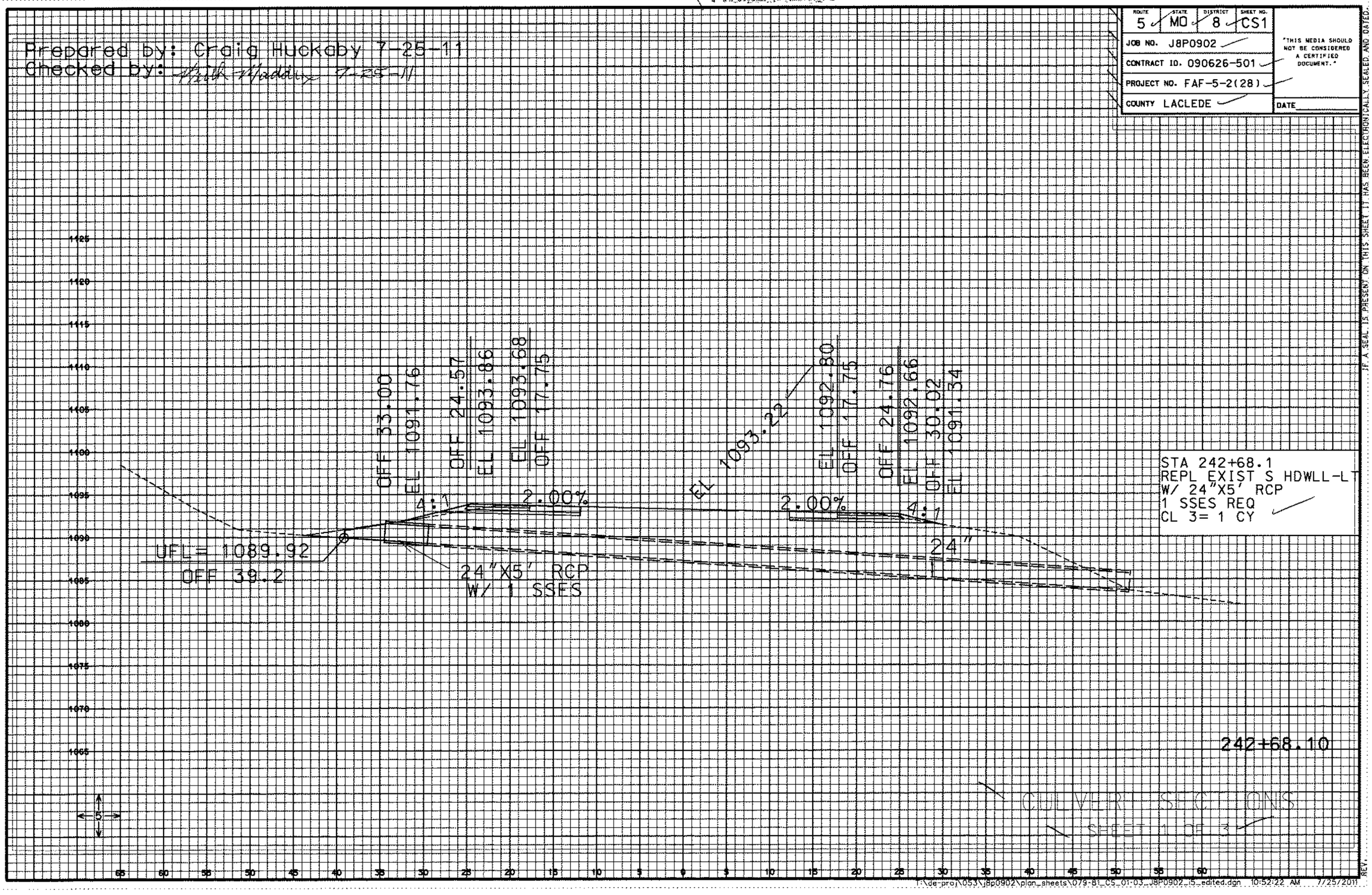
| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | CS1 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




CULVERT SECTIONS

SHEET 1 OF 3

REV.

Prepared by: Craiig Huckaby 7-25-11
Checked by: Matt Maddux 7-25-11

FINAL PLANS

| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | CS2 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

STA 344+99.76
REPL EXIST S HDWLL-RT
W/ 24"X5' RCP
1 SSES REQ
CL 3= 1 CY

OFF 35.10
EL 1132.27
OFF 29.12
EL 1133.76
EL 1133.90
OFF 21.84
EL 1134.35
EL 1131.74
OFF 21.31
OFF 29.11
EL 1133.75
OFF 33.31
EL 1132.70

2.00%
2.00%
4:1
4:1
24"
24"X5' RCP
W/ 1 SSES

UHL= 1130.67
OFF 38.61

344+99.76

CULVERT SECTIONS
SHEET 2 OF 3

1160
1155
1150
1145
1140
1135
1130
1125
1120
1115

65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60

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Prepared by: Craig Huckaby 7-25-11
Checked by: Craig Huckaby 7-25-11

FINAL PLANS

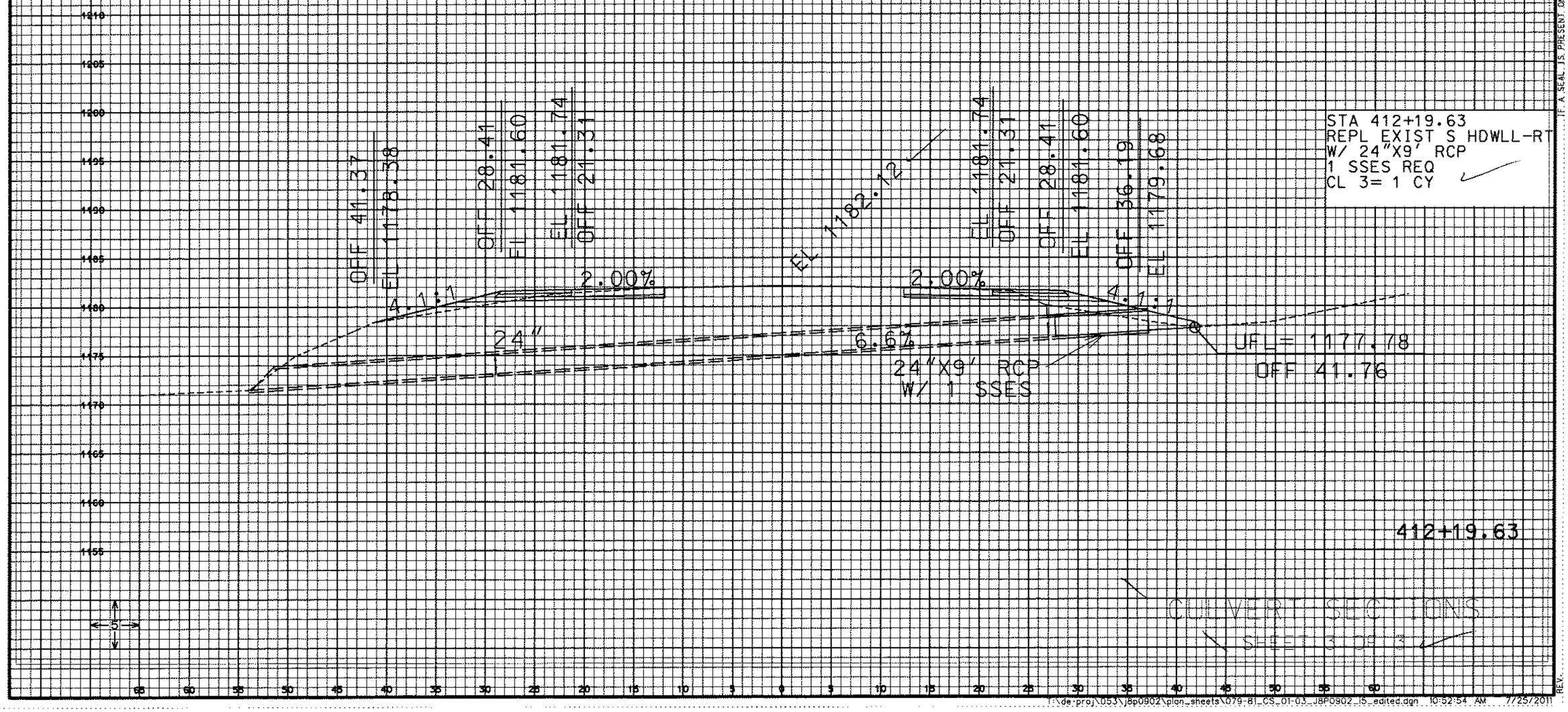
| ROUTE | STATE | DISTRICT | SHEET NO. |
|---|---|---|---|
| 5 | MO | 8 | CS3 |

JOB NO. J8P0902
CONTRACT ID. 090626-501
PROJECT NO. FAF-5-2(28)
COUNTY LACLEDE
DATE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

STA 412+19.63
REPL EXIST S HDWLL-RT
W/ 24"X9' RCP
1 SSES REQ
CL 3= 1 CY




CULVERT SECTIONS
SHEET 3 OF 3

REV.