MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION'S ANNUAL REPORT FOR 2015

REGARDING UNITED STATES OF AMERICA VS. MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

REPORT FOR JULY 20, 2015 THROUGH DECEMBER 31, 2015

MARCH 30, 2016

Missouri Highways and Transportation Commission's 2015 Annual Report
Report for July 20, 2015, through December 31, 2015
United States of America vs. Missouri Highways and Transportation Commission
Consent Decree

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1.0 Introduction

In accordance with the Consent Decree between the United States of America and Missouri Highways and Transportation Commission (MHTC) operating by and through the Missouri Department of Transportation (MoDOT), an annual report shall be submitted to the Environmental Protection Agency (EPA) by March 30 of each year for civil action number 15-4069. Measures MoDOT has taken throughout the 2015 calendar year to comply with Section V, Paragraphs 13 through 34, of the Consent Decree are described in detail for this report.

2.0 Stormwater Compliance and Environmental Specialist

In accordance with Section V, Paragraph 13, MoDOT designated Eric Kopinski as its Stormwater Compliance and Environmental Specialist. As detailed in the initial submittal to EPA on August 19, 2015, and illustrated in Appendix A, Mr. Kopinski meets all of the requirements of Section V, Paragraph 13. Mr. Kopinski is an employee of MoDOT, is a Certified Professional in Erosion and Sediment Control (CPESC) (see Appendix B), and has worked with the National Pollutant Discharge Elimination System (NPDES) and Stormwater Pollution Prevention Plans (SWPPP) since June 2009. As the central office point of contact he provided support to MoDOT district staff. He developed and conducted all the formal training and reviewed all the deficiencies within the compliance database as required. He has the authority to order the taking of measures up $100,000 to ensure cessation, correction, prevention or minimization of the consequences of non-compliance with Stormwater Requirements and the Consent Decree (Appendix C). Mr. Kopinski has also been the point of contact for the EPA.

3.0 Stormwater Compliance and Environmental Specialist Delegate

In accordance with Section V, Paragraph 14, MoDOT has additional employees who qualify to function as the Stormwater Compliance and Environmental Specialist as of August 19, 2015. During 2015, Mr. Kopinski did not need to delegate responsibilities to Randy Swanigan, Senior Roadside Management Specialist, who also holds a CPESC.

4.0 Designation of Stormwater Resident Engineers

In accordance with Section V, Paragraph 15 and 16, MoDOT has designated Stormwater Resident Engineers and their respective delegates. The original submittal to the EPA on August 19, 2015, has been updated to include projects added since the initial submittal as documented in Appendix D.

5.0 Designation of Environmental Construction Inspectors

In accordance with Section V, Paragraph 17 and 18, MoDOT has designated Environmental Construction Inspectors and their respective delegates. The original submittal to the EPA on August 19, 2015, has been updated to include projects added since the initial submittal as documented in Appendix E.

6.0 Stormwater Training

In accordance with Section V, Paragraph 19, MoDOT implemented a Stormwater Training Program meeting all of the requirements of the Consent Decree as detailed by MoDOTs submittal to the EPA on August 19, 2015. Eric Kopinski performed all training of employees and contractors. Stormwater training, as required in Section V, Paragraph 20, was implemented by May 12, 2015, before the Consent Decree Effective Date. MoDOT trained Resident Engineers and Environmental Inspectors from May 12, 2015, to June 20, 2015, which was prior to the Effective Date. Additionally, in accordance with Section V, Paragraph 21, training for Contractors and Water Pollution Control Managers (WPCM) was performed from June 8, 2015, to July 1, 2015, within ninety days of the Effective Date as detailed in a previous submittal to the EPA on October 15, 2015. In total, 44 formal stormwater trainings were conducted in 2015 (Appendix F). A total of 1,012 MoDOT employees attended the training. Further, a total of 397 WPCMs attended the training in 2015. Appendices G and H provide listings of individuals who became certified. Attendance was up significantly from the previous high in calendar year 2013 when MoDOT trained 524 employees and 113 contractor's employees. MoDOT provided training that included all elements as outlined in the Consent Decree. Appendix I includes the training material covered at each of the trainings in accordance with Section V, Paragraph 22. Records of the training of employees and contractors are retained by the Stormwater Compliance and Environmental Specialist in accordance with Section V, Paragraph 23, and are available upon request.

7.0 Water Pollution Control Managers

In accordance with Section V, Paragraph 24, WPCMs have been designated, meeting the requirements of the Consent Decree. The original submittal to the EPA on October 14, 2015, has been updated to include WPCMs added since the initial submittal as listed in Appendix J.

8.0 SWPPP Requirements and Reviews

In accordance with Section V, Paragraphs 25 and 26, a Project-specific Stormwater Pollution Prevention Plan (SWPPP) form has been developed to meet the requirements of the Consent Decree. Project specific SWPPPs are available upon request due to the size of these documents, some hundreds of pages in length. Provided in Appendix K is a copy of an example SWPPP used for a project falling under the Consent Decree.

9.0 Stormwater Preconstruction Conference

In accordance with Section V, Paragraph 27, a stormwater preconstruction conference form has been developed to meet the requirements of the Consent Decree. Appendix L provides an example of the form used to document the summary of the on-site conference for every Consent Decree project.

10.0 Inspection Compliance

In accordance with Section V, Paragraphs 28, 29, 30 and 31, the inspection sheet provided by the EPA within the Consent Decree (Appendix M) has been used as the standard form within the new stormwater database.

11.0 Inspection Protocol

In accordance with Section V, Paragraph 29 and 30, MoDOT memorialized an Inspection Protocol as indicated in a submittal to the EPA on August 19, 2015 (Appendix N). The Inspection Protocol is compliant with the terms of the National Pollution Discharge Elimination System (NPDES) and the Consent Decree. Provided in Appendix O is the distribution e-mail to all Contractors indicating where the current Inspection Protocol can be found.

12.0 Oversight Inspection in Environmentally Sensitive Areas

In accordance with Section V, Paragraph 31, MoDOT has had no projects in environmentally sensitive locations since the August 19, 2015, report until years end. The three previously identified projects at Route Y, Route 364, and Route 60 in the August 19, 2015, report have all achieved final stabilization.

To assist with compliance of this requirement a statewide map was created that identifies locations of federally designated critical habitat for threatened or endangered species and listed 303(d) streams impaired by sediment as recognized by the Missouri Department of Natural Resources (MDNR). Appendix P is the statewide map with an example of a more detailed regional map shown in Appendix Q. Moreover, MoDOT has an environmental review process in place that identifies any potential environmentally sensitive areas for a project during the planning process (Appendix R) so design engineers can plan erosion control accordingly.

13.0 Stormwater Database

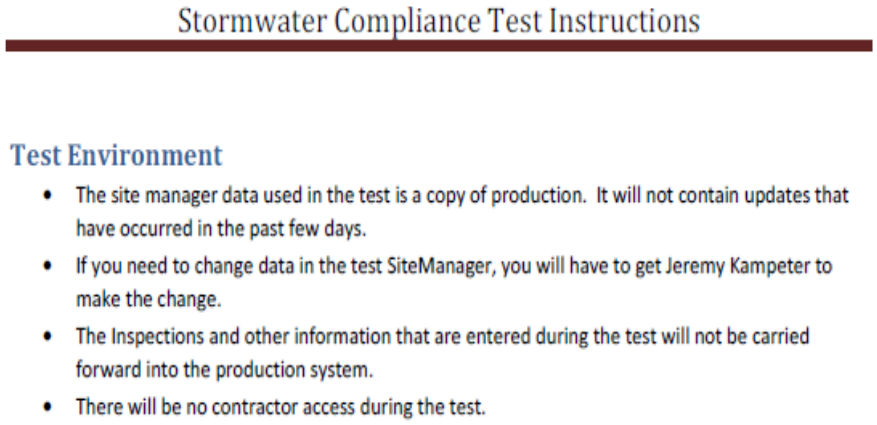
In accordance with Section V, Paragraph 32 MoDOT has implemented an online stormwater database on November 17, 2015, which was within 120 days of July 20, 2015, the Effective Date. Detailed below is an explanation of the ways the database meets the requirements of the Consent Decree.

Database Development: When EPA informed MoDOT leadership in 2013 that the Consent Decree would include a stipulation requiring a compliance database, the department worked diligently to develop a stormwater reporting database. The department evaluated the use of various consultant stormwater applications. After assessment of that consultant software and other software used within the department, it was determined that internal information systems staff would have the best success at understanding the Consent Decree requirements and MoDOT workings. By creating a compliant stormwater program for MoDOT's needs, MoDOT created a tool to assist with stormwater compliance for years to come.

Software Platform: An external website was selected as the most suitable operating system. This resulted in a database with an easily understood system, required minimal maintenance, and most

importantly, allowed for a comprehensive notification system. In meetings between programmers and inspectors, it was concluded that a necessary feature to ensure compliance with the Consent Decree was a system where automatic notifications were given to anyone inspecting or reporting for the project.

Database Testing: The stormwater database underwent two detailed testing periods. This testing allowed developers and the Stormwater Compliance Specialist to ensure all requirements were met while providing sufficient time to monitor the performance of the system. The first test phase, alpha test, was performed between March 16, 2015, and April 16, 2015. This closed system testing allowed basic features to be monitored for performance. A total of eight projects were selected for the alpha test period. Program adjustments and software programming changes were made to improve the system. A second beta test phase was performed between July 15, 2015, and November 16, 2015. Beta testing used actual projects and some artificial scenarios to see how the system would perform. Multiple adjustments throughout this period were made, in particular to the notification alert system to help users receive timely notifications about upcoming required action items.



Stormwater Compliance Test Instructions

Test Environment

- The site manager data used in the test is a copy of production. It will not contain updates that have occurred in the past few days.
- If you need to change data in the test SiteManager, you will have to get Jeremy Kampeter to make the change.
- The Inspections and other information that are entered during the test will not be carried forward into the production system.
- There will be no contractor access during the test.

Figure 1 - Alpha Testing Handout

Security and Performance: System stability is a critical aspect to the success of this system. The first measure of security was to only provide users access upon their successful completion of the stormwater training. By only allowing those who have been trained on how the system performs it ensures that MoDOT remains in compliance with Section V Paragraphs 20 and 21, of the Consent Decree. Different levels of user interfaces are programmed into the database. Five different interfaces allow the Stormwater Compliance Specialist to assign roles based on qualifications, upon certification. This provides each user the ability to only perform their intended and required role.

Another measure programmed to allow for maximum security of the system is a robust user log in requirement. Internal users must have a password composed of eight characters with capital and lower case letters, numbers and/or characters. After five incorrect attempts the user's account is temporarily locked. If an employee separates from the department their account would be disabled by the Information Systems department. Contractor's WPCMs are provided a unique user identification consisting of ten characters with a password of six characters.

Another measure taken for system security is the ability of the program developer to access users' activity. The developer can access information such as the type of device a user is utilizing to access the database, enabling tremendous flexibility to troubleshoot solutions if users are experiencing difficulties.

Another key goal of the database was efficiency. To maximize performance within the system, developers utilized a basic programming code structure. Personnel made the system user friendly for mobile devices. Programming allowed for better reporting compliance, and documentation. Efforts

were made to keep service outages to a minimum and have been vital to the success of the system. The department's information service staff created a 24/7/365 help phone line for the Stormwater Compliance Specialist to call and discuss any performance issue with live technical support staff. The stormwater database has been identified by the department as a high priority. Any unforeseen outage will take top priority to be resolved. The system has two servers maintained to allow for any software patches to be developed and tested quickly without taking the live server offline.

Training Compliance Verification: The database is programmed to allow the Stormwater Compliance Specialist to enter new users, either internal or external, upon successful completion of training. A training date is entered into the database to allow MoDOT and the database user to know when the user's next training is required. Notifications are sent to users as their certifications are approaching expiration. In the instance when a certification is no longer valid, the user's status would be automatically changed from active to inactive. This feature allows inactive users to be able to log into the system to view previous reports; however, the ability to perform any action in the database would not be allowed until the user completes the required training. The combination of the login process and training compliance feature within the database guarantees all users remain properly trained in stormwater compliance.

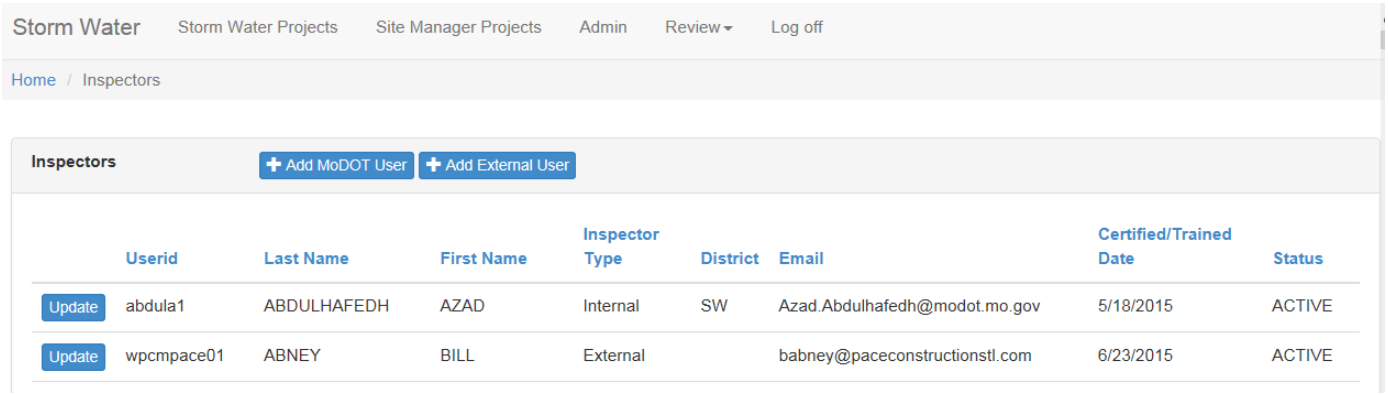


Figure 2 - Training Verification Screen

Project Notification: In an effort to assure absolute compliance with the Consent Decree, a notification system was created for everyone assigned to a project. At 7:00 AM CT every morning any user assigned to a project where action is needed within three days receives an e-mail. This one summary e-mail at the start of the work day has greatly assisted each user by providing a list of erosion control requirements that need to be addressed for that day and upcoming dates.

A second notification system was created to send an e-mail directly to the Resident Engineer and/or WPCM assigned to a specific project immediately after any inspection report is certified by either the project Environmental Inspector or the Oversight Environmentally Sensitive Inspector. The immediate e-mail provides two functions: first, it allows both groups the opportunity to review and certify the inspector's report as quickly as possible, and it allows both Resident Engineers and WPCMs to observe what deficiencies, if any, need to be corrected.

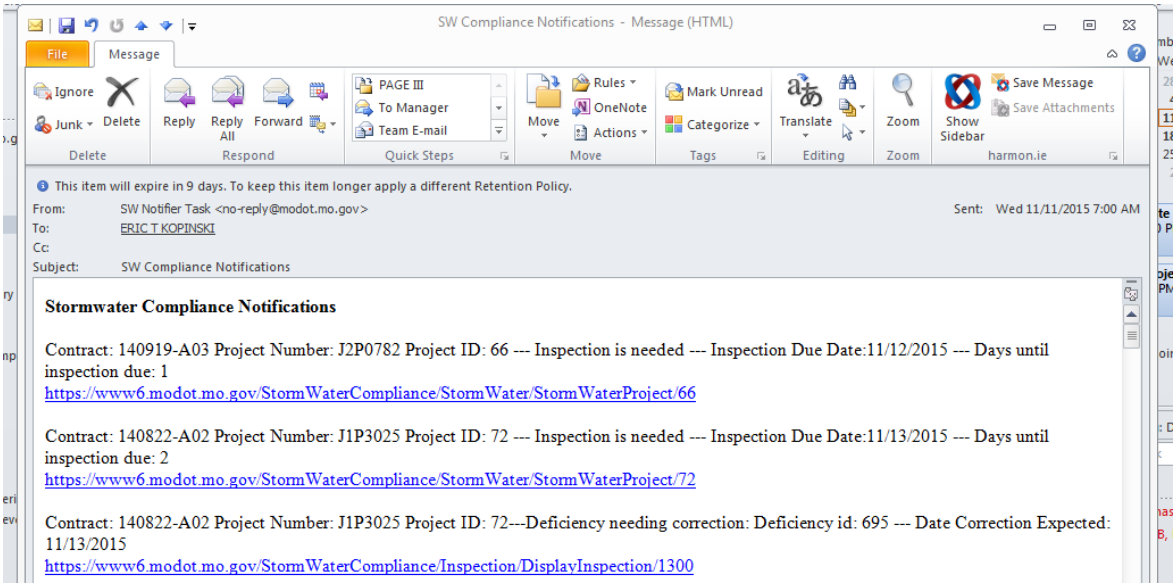


Figure 3 - Daily E-mail Notification

Conclusion about Database System Development, Testing and Improvements: Having been through a formal product development review, testing, and application improvement process, the database application requires minimal upgrades or service patches. Key features of this system include having all projects in one online system, daily e-mail notification to all users, mobile friendly navigation capabilities, the ability to easily attach pictures, and robust security features.

Project Establishments: It was anticipated that a majority of the Consent Decree projects would be MoDOT's traditional design and construction projects. Therefore, the stormwater database was programmed to pull projects from MoDOT's SiteManager Program. SiteManager is a highway documentation program, which allows MoDOT to closely track and document projects from the time they are awarded until the project is accepted for completion. SiteManager is utilized by transportation employees in all fifty states, as well as Washington DC and Puerto Rico, and has become a trusted tool by the Federal Highway Administration (FHWA). Once a project is populated from SiteManager into the stormwater database, it will remain in the database until the Resident Engineer determines final stabilization has occurred, at which point it becomes a retained file.

Project Inspections: Once the project is populated in the stormwater database, the project Environmental Inspectors and Environmental Oversight Inspectors have the responsibility of entering weekly and post-run off inspections. The standard inspection form includes each of the questions listed in the Consent Decree. If any inspection question is inadvertently skipped, the program will prompt the user to respond to the question. The system will not allow an inspection report to be entered unless all questions are answered. Upon completion of every inspection, the Environmental Inspector must certify the inspection report prior to distribution to both the MoDOT Resident Engineer and the Contractor's WPCM.

Inspection Deficiencies: Assuring that erosion control deficiencies are addressed and corrected in a timely manner is of paramount importance. The new stormwater database provides all individuals involved in the erosion control process a comprehensive real-time summary of any items in need of

correction. Individually listing each deficiency allows the department and its contractors to maintain full compliance with the Clean Water Act and Consent Decree.

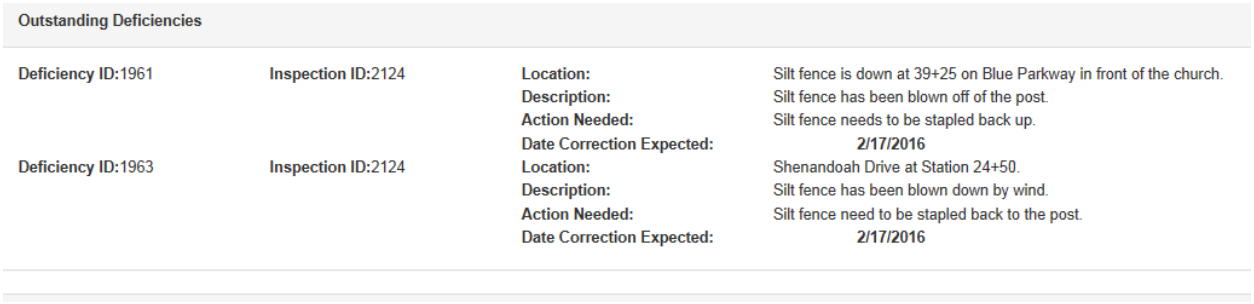


Figure 4 – Project Deficiency Summary

Stormwater Deficiency Review: In accordance with the Consent Decree Section V, Paragraphs 32 (c) and (d), the Resident Engineer is required to review deficiencies, which have not been corrected within the seven day period, at least once every seven days. This is performed in the database under the Resident Engineer seven day review section, to which only the MoDOT Resident Engineers have access. Similarly, the Stormwater Compliance Specialist is required to review outstanding deficiencies, which have not been completed in 30 days, every 14 days. This is performed in the database under the review section, and the database is programmed to send a reminder and project notification to the appropriate user three days prior to the deadline.

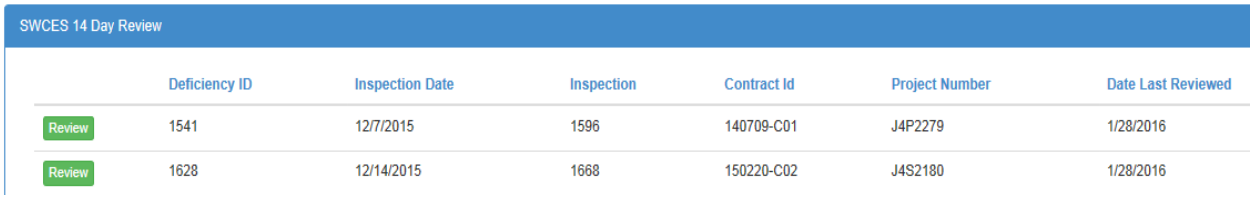


Figure 5 – Stormwater Compliance Specialist Review

Penalty Calculator: The Stormwater Database penalty calculator is programmed to meet the requirements set forth in the Consent Decree. Beta testing was performed on multiple projects over several months to ensure the potential penalty amount would be automatic and correct.

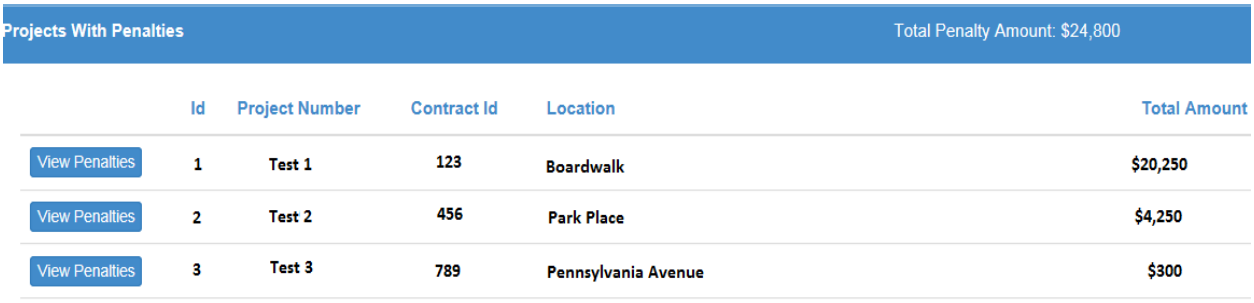


Figure 6 – The Beta Testing Penalty Page

14.0 Major Storm Event of 2015

MoDOT notified EPA on December 31, 2015, of a potential force majeure event in accordance with Section VIII of the Consent Decree. Having experienced significant flooding in four of the seven MoDOT districts the impacts to stormwater features throughout the state were not fully known at the time of initial contact. Days after the initial contact rapidly decreasing water levels provided MoDOT an opportunity to quickly ascertain that all terms of the Consent Decree would be met. Appendix R includes the Governor of Missouri's declaration of the state of emergency from December 27, 2015. The President of the United States declaration for a federal emergency on January 2, 2016, is provided in Appendix S.

15.0 Non-Compliance Occurrences

The year end 2015 report includes projects from July 20, 2015, through December 31, 2015, with the database coming online beginning November 17, 2015. The Missouri Department of Transportation had no violations for any of its projects since the Effective Date. Primary factors for the department's results are the directives from senior management to staff and MoDOT's decreased funding. Although the department had approximately $1.2 billion of construction work in 2010, its current funding situation only allowed for approximately $700 million of construction in 2015. The reduction in funds forced priorities to shift from large-scale construction projects to predominantly preservation of the system projects. With the vast majority of the statewide projects consisting of asphalt overlays, bridge replacements and safety improvements, both the number of land disturbance projects and the magnitude of land disturbance have decreased significantly. Irrespective of the funding situation, the directive from the department's top leadership has remained clear: the expectation is that MoDOT work to achieve complete compliance with the NPDES permit and the Consent Decree. Various leaders within the department have repeatedly delivered this expectation. Examples of MoDOT's internal communication efforts are provided below where the importance of remaining in compliance was stressed:

DOMInno – April 28-29, 2015: DOMInno (Deliver, Operate, Maintain and Innovate) is an annual department meeting for the top 400 leaders within the department. At this meeting the important topics for the upcoming years are discussed to set the direction for the department. At the 2015 meeting, the State Design Engineer and the Environmental and Historic Preservation Manager spoke to all attendees regarding the history of the department's Consent Decree and importance to remain fully in compliance with the Decree requirements. The Stormwater Compliance Specialist also held a breakout session and spoke in greater detail about the future of the Consent Decree to program delivery, utilities and construction personal.

Statewide Tracker – May 19, August 20, and November 18, 2015: Tracker is a quarterly meeting for department and district leadership. This meeting is used as a tool to assess how well the department performed in the past quarter driving performance improvements for many MoDOT functions. At each of these three meetings MoDOT senior managers reinforced their expectations that, "There will be no violations of the Consent Decree."

Communication efforts – Over the past year, various approaches were utilized to further emphasize the importance of the Clean Water Act and Consent Decree compliance. From a video conference led by division leadership to all construction Resident Engineers, e-mail notification from the Chief Engineer to all district leadership, and District Engineer's notification to their respective personnel, the message of remaining in compliance was delivered numerous times.

16.0 Certification Statement

In accordance with Section VI, Paragraph 38, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Eric Kopinski
Stormwater Compliance Coordinator MoDOT

Appendix A – Stormwater Compliance and Environmental Specialist Job Description

Missouri Department of Transportation

Code: R04132 **Title: Stormwater Compliance Coordinator**

Exemption Status: Exempt **Grade: 17**

Job Description

Effective Date	12-01-2014
Replaces (Effective Date)	
General Summary	The stormwater compliance coordinator is responsible for the department's regulatory compliance under various stormwater management and environmental protection rules, regulations, and programs.
Minimum/Required Qualifications	Bachelor's Degree: Biology, Soil Science, Hydrology, Civil Engineering or related field Six years of experience in aspects related to stormwater management and/or environmental programs. Certification in Erosion and Sediment Control (CPESC) within six months of hire.
Supervisory Responsibilities	Lead Worker Only
Location	Central Office - Design
Special Working Conditions/Job Characteristics	Job requires regular, statewide overnight travel. Job requires exposure to moderately adverse and undesirable environmental conditions.

Examples of Work

(1) Serves as the primary resource for department projects through design, construction and post-construction for all stormwater permitting requirements and serves as the main point of contact between the department and the stormwater regulatory agencies.

(2) Coordinates the development, delivery, maintenance, and annual reporting requirements of the stormwater training program for applicable department employees and contractors.

(3) Oversees department employees and contractors to provide guidance to ensure compliance with stormwater requirements.

(4) Maintains and reviews stormwater permit(s) and associated stormwater pollution prevention plans.

(5) Coordinates regular compliance inspections, identifies deficiencies, provides oversight, and recommends corrective action; and supervises the oversight inspection process in environmentally sensitive areas.

(6) Prepares and submits periodic written reports of non-compliance with stormwater requirements to the appropriate stormwater regulatory agency, and prepares and submits an annual report summarizing all actions taken within the previous year.

(7) Creates, implements, and maintains an electronic database to track all stormwater deficiencies noted in any stormwater inspection or oversight inspection and the actions taken to address each.

(8) Orders the taking of measures to cease, correct, prevent, or minimize the consequences of non-compliance with stormwater requirements.

(9) Issues stop work orders on a project, if necessary, to ensure compliance with stormwater requirements.

(10) May perform lead worker responsibilities, which may include providing general instruction, assigning and reviewing work, coaching and training, providing guidance and instruction in the proper and most efficient methods of accomplishing tasks, and providing input to the direct supervisor on staffing decisions and performance management.

(11) Performs other responsibilities as required or assigned.

The Missouri Department of Transportation promotes an equal opportunity workplace that includes reasonable accommodation of otherwise disabled applicants and employees. Please see your manager should you have any questions about this policy or these job duties.

Appendix B – Stormwater Compliance and Environmental Specialist Certification

EnviroCert International, Inc.®

certifies that

Eric Thoams Kopinski

Subscribes to the Code of Conduct and Ethics and has met the requirements established for the CPESC® Program as a

Certified Professional in Erosion and Sediment Control™

CPESC Number: 8247

Certificate Date: September 8, 2015

Alan Black, Director, Technical Committee Chair

Robert Anderson, EnviroCert Board President

The CPESC Certification was established in 1982

APPENDIX B

Appendix C – Stormwater Compliance and Environmental Specialist Change Order Authority

109.12 Change Orders (for Sec 109.12 (http://www.modot.org/business/standards_and_specs/Sec0109.pdf))

A change order is a supplement to the contract. It is prepared to provide authority to pay for revisions in quantities and to authorize changes in scope of work, design concept or specifications. Changes in scope should be limited to the original intent, purpose and limits (length and width) of the job. In instances where proposed changes in scope go beyond these original job parameters the change order shall be considered a major change order and Construction and Materials will discuss the proposed change with the Asst. Chief Engineer. Change orders must have approval before the work is done. Exceptions are granted for routine or minor changes, or emergency revisions for which verbal approval has been granted. In rare cases it may be necessary to proceed with emergency measures without prior approval. In such cases verbal approval should be sought as soon as practicable. Indicate in the diary or letter of transmittal the name of the individual who provided that verbal approval. Change orders providing for additional payment should be processed in sufficient time to allow payment on the next estimate following the period in which the work was performed.

When a major change order is received in Construction and Materials (http://wwwi/intranet/cm/) , it must first be reviewed and approved by one of the Construction and Materials liaison engineers. Often the liaison may ask for more information on change orders than the resident engineer feels is necessary since the resident engineer is on the job and the answer appears quite simple and obvious. However, it is difficult for reviewers away from the construction site, such as the District Construction and Materials Engineer, to get a clear understanding unless a detailed explanation is provided on the change order. A clear description or drawing can expedite processing the change order.

Change Order Approval. There are four levels of change orders; non-major change orders that can be approved by the resident engineer (Change Order Level 1), non-major change orders that must have district approval (Change Order Level 2), major change orders that must have division approval (Change Order Level 3) and change orders that require Chief Engineer/ Chief Financial Officer approval (Change Order Level 4). Level 2, 3 and 4 change orders on projects designated for federal involvement for change orders on the PODI Matrix require require approval by the Federal Highway Administration. The change order approval level rules are as follows (and available in table form):

Non-major change orders (Change Order Level 1) approved by the resident engineer are:

1. Any no-cost change orders (used when the direct substitution of a particular line item with a contingent item does not generate an additional cost or cost reduction).
2. Any change in a contract or contingency item less than $50,000.

Examples of a Resident Engineer Change Order Report (http://epg.modot.mo.gov/files/a/a2/137.2_Resident_Engineer.jpg) are available.

Non-major change orders (Change Order level 2) requiring approval by the district office, and FHWA on projects designated for federal involvement on change orders on the PODI Matrix require, are:

1. Final change orders, if one is necessary.
2. Any change in a contract item or contingency item from $50,000 to $100,000.
3. Any new contingency item from $50,000 to $100,000.

Examples of a District Change Order Report are available.

Erosion Control Change Orders requiring approval from the Stormwater Compliance and Environmental Specialist, are:

1. Any change in a contract or contingency item under $100,000.
2. Any new contingency item under $100,000.

Change Order Approval Level Determination Chart

Change Order approval levels are automatically set by the construction management system. All change orders must be approved at Level 1 (Resident Engineer). If a given change order exceeds the criteria from this chart, it would also need to be approved at the additional Level(s) shown. The chart values are absolute values. The criteria that requires the highest level approval always prevails over other criteria. The approval level for a change order marked "Combination" is determined by the various independent components of the change order.

806.7.6 Basis of Payment

The primary objective is to control soil erosion during construction with reasonable and economical construction practices. While the contract documents indicate locations of erosion control devices (silt fence, ditch checks, and silt basins), the actual quantity and locations of the items should be determined in the field in order to fit existing conditions.

The erosion control devices should not be limited to those included in the contract documents. The project engineer should authorize additional devices that will be most effective in controlling erosion. Approval of alternate erosion control devices can be submitted and approved through the resident engineer. Payment for approved alternate measures can be made as additional work. If the work is not due to the contractor's carelessness, or failure to install permanent controls, additional work should be authorized by the resident engineer using the weekly Land Distribution Inspection Record (http://ghepg01/forms/CO/Land%20Disturbance%20Inspection%20Record%20-%20Electronic%20Version.dotx) with payment made at contract unit prices, agreed unit prices, or by force account.

For projects performed by MoDOT's internal staff that fall under the Consent Decree as well as for utility projects and permit jobs that fall under the Consent Decree, erosion control change orders requiring approval from the district utility engineer, district maintenance engineer or district permit specialist are:

1. Any change in a contract or contingency item up $50,000,
2. Any new contingency item under $50,000.

Appendix D – Designation of Stormwater Resident Engineers

Designation of Stormwater Resident Engineer (RE)

Active Project as of December 31, 2015

District	Contract ID	Route	Project	Contractor	Project RE	Training Date	Backup RE	Training Date
NW	140221-A04	59/116	Grading & Pavement	Phillips Hardy	Greg Stervinous	5/26/2015	Austin Hibler	5/26/2015
NW	141017-A01	29	Grading	Widel	Larry Jacobson	5/26/2015	Austin Hibler	5/26/2015
NW	141121-A03	36	Grading	Lehman	Larry Jacobson	5/26/2015	Austin Hibler	5/26/2015
NW	MT1115BLD01	King	Building	MoDOT	Greg Stervinous	5/26/2015	Austin Hibler	5/26/2015
NW	MT1115RTTV	Tuscany	Grading	MoDOT	Greg Stervinous	5/26/2015	Austin Hibler	5/26/2015
NE	150320-B04	19	Pavement & Bridge	Lehman	Richard Domzalski	6/1/2015	Macy Rodenbaugh	6/1/2015
KC	140709-C01	69	Fairfax DB	AB	Lisa Stupp	5/20/2015	Matt Daulton	5/28/2015
KC	140523-C06	49	New Interchange	Lehman	Jon Voss	5/20/2015	Lynelle Luther	5/20/2015
KC	140919-C01	40	New Bridge and Lanes	Radmacher	Jon Voss	5/20/2015	Lynelle Luther	5/20/2015
KC	150123-C04	10	Bridge Replacement	Phillips Hardy	Tom Markway	5/28/2015	James Pflum	5/20/2015
KC	141121-C01	35	Grading & Bridge	Miles	Zachary Walker	5/20/2015	Reid Riley	5/20/2015
KC	150220-C02	Y	Shoulder Project	Bowen	Jon Voss	5/20/2015	Lynelle Luther	5/20/2015
KC	150320-C07	50	New Roadway	Bross	Tom Markway	5/28/2015	James Pflum	5/20/2015
KC	150515-C05	49	Grading & Pavement	ESS	Jon Voss	5/20/2015	Lynelle Luther	5/20/2015
KC	150320-C01	M	Shoulder Project	Bross	Brian Iles	5/20/2015	Brian Burger	5/20/2015
KC	150320-C08	69	Grading	Barcus & Sons	Zachary Walker	5/20/2015	Reid Riley	5/20/2015
KC	150417-C01	50	Roadway	Bross	Tom Markway	5/28/2015	James Pflum	5/20/2015
KC	CM1215RT36	35	Bridge	Ideker	Zachary Walker	5/20/2015	Reid Riley	5/20/2015
CD	140919-D01	50	New Interchange	ESS	Terry Imhoff	6/2/2015	Patty Lemongelli	6/10/2015
CD	150603-D01	70	Bridge Replacement	ESS	Christopher Graham	6/10/2015	Patty Lemongelli	6/10/2015
CD	MT1115RT501	5	Grading	MoDOT	Terry Imhoff	6/2/2015	Patty Lemongelli	6/10/2015
SL	120710-F01	64	Bridge	Walsh	Tim Hellebusch	5/12/2015	Jim Gremaud	6/11/2015
SL	140124-F04	A	Shoulder Project	NB West	Christine Redhage	5/12/2015	Mike Castro	5/12/2015
SL	140321-F08	115	Street Enhancements	NB West	Niall Jansson	5/12/2015	Chris Kelly	5/12/2015
SL	150220-F09	47	Bridge	Kozeny-Wagner	Christine Redhage	5/12/2015	Mike Castro	5/12/2015
SL	140822-F01	64	New Lane Addition	Gershenson	John Grana	5/12/2015	Chris Morgan	5/12/2015
SL	150123-F05	Y	Shoulder Project	NB West	Christine Redhage	5/12/2015	Mike Castro	5/12/2015
SL	150417-F03	D	Shoulder Project	NB West	Niall Jansson	5/12/2015	Chris Kelly	5/12/2015
SL	150220-F08	94	Grading	Magruder	John Lewis	6/11/2015	Mike Castro	5/12/2015
SW	140611-G01	60	Grading & Pavement	Radmacher	Greg Chapman	5/18/2015	Sean Matlock	6/18/2015
SW	150123-G03	125	Grading & Pavement	Phillips Hardy	Brad Gripka	5/18/2015	Jim Blackburn	6/18/2015
SW	150320-G02	60	Grading & Pavement	ESS	Brad Gripka	5/18/2015	Jim Blackburn	6/18/2015
SW	150515-G08	CCJ	New Interchange	APAC	Johnny Teegardin	5/18/2015	Cindy Dunnaway	5/18/2015
SE	140124-H02	34	Grading & Pavement	APEX	Brian Holt	5/27/2015	Darius Dowdy	5/27/2015
SE	150123-H03	CR 19	Grading & Bridge	Robertson	Tammy Hefner	5/27/2015	Andy Meyer	5/27/2015
SE	141121-H03	412	Grading & Pavement	Bross	Tammy Hefner	5/27/2015	Donald Hills	5/27/2015
SE	150123-H02	55	Grading & Pavement	Bross	Brian Holt	5/27/2015	Darius Dowdy	5/27/2015
SE	140523-H03	160	Grading & Pavement	HR Quadri	Tammy Hefner	5/27/2015	Darius Dowdy	5/27/2015
SE	141017-H05	55	Grading	Bross	Brian Holt	5/27/2015	Darius Dowdy	5/27/2015
SE	150220-H02	34	Grading	Pace	Tammy Hefner	5/27/2015	Donald Hills	5/27/2015
SE	150320-H17	34	Shoulder Project	APEX	Brian Holt	5/27/2015	Darius Dowdy	5/27/2015

Project Final Stabilized in 2015

District	Contract ID	Route	Project	Contractor	Project RE	Training Date	Backup RE	Training Date
NW	141017-A03	F	Deck Replacement	Bross	Larry Jacobson	5/26/2015	Austin Hibler	5/26/2015
NW	150515-C08	E	Grading & Pavement	Boone	Greg Stervinous	5/26/2015	Austin Hibler	5/26/2015
NE	150320-B03	U	Shoulder & Turn Lane	Mid Rivers	Richard Domzalski	6/1/2015	Macy Rodenbaugh	6/1/2015
KC	130709-C01	70	Manchester DB	Clarkson	Lisa Stupp	5/20/2015	Brian Burger	5/20/2015
KC	KC-15-027492	273	Permit Project	Hoy Develop	Vernon Koch	5/28/2015	Brian Burger	5/20/2015
KC	150123-C01	35	Grading & Bridge	Ideker	Zachary Walker	5/20/2015	Reid Riley	5/20/2015
KC	KC-15-029263	K	Permit Project	PC Homes LLC	Vernon Koch	5/28/2015	Brian Burger	5/20/2015
CD	141121-D02	8	New Bridge Alignment	Robertson	Dennis Krenning	6/2/2015	Eric Abbott	6/10/2015
CD	141017-D05	5/135	Shoulder Project	Magruder	John Sanders	6/2/2015	Patty Lemongelli	6/10/2015
CD	150320-D04	Y	Shoulder Project	APAC	John Sanders	6/2/2015	Patty Lemongelli	6/10/2015
SL	130206-F01	364	Grading & Pavement	MillstoneWeber	David Simmons	6/4/2015	Mike Castro	5/12/2015
SL	130517-F04	109	Pavement	Marschuetz	John Grana	5/15/2015	Chris Morgan	5/12/2015
SL	140321-F07	N	Shoulder & Turn Lane	Magruder	John Lewis	6/11/2015	Mike Castro	5/12/2015
SL	140321-F01	64	Bridge	MillstoneWeber	Scott Washausen	6/11/2015	Mike Castro	5/12/2015
SL	140523-F06	141	Pavement	MillstoneWeber	John Grana	5/12/2015	Chris Morgan	5/12/2015
SL	140523-F07	100	Grading & Pavement	Krupp	John Grana	5/12/2015	Chris Morgan	5/12/2015
SW	140822-G03	65	Resurfacing & Grading	Leo Journagan	Brad Gripka	5/18/2015	Jim Blackburn	6/18/2015
SW	140822-G07	N	Bridge Replacement	APAC	Brad Gripka	5/15/2015	Jim Blackburn	6/18/2015
SW	140919-G01	44	New Interchange	ESS	Jason Evenden	6/18/2015	Marvin Marris	6/18/2015
SW	140822-G08	65	New Interchange	Hartman	Brad Gripka	5/18/2015	Jim Blackburn	6/18/2015
SW	140919-G02	49	Grading & Pavement	APAC	Shannon Kellner	5/18/2015	Cindy Dunnaway	5/18/2015
SW	150123-G01	60	Grading & Pavement	APAC	Brad Gripka	5/18/2015	Jim Blackburn	6/18/2015
SE	150123-H04	62	Grading & Pavement	Joes Bridge	Audie Pulliam	5/27/2015	Donald Hills	5/27/2015
SE	150320-H05	67	Grading & ADA	Lappe	Audie Pulliam	5/27/2015	Donald Hills	5/27/2015

Appendix E – Designation of Environmental Construction Inspectors

Designation of Environmental Construction Inspectors

Active Project as of December 31, 2015

District	Contract ID	Route	Project	Contractor	Project Inspector	Training Date	Backup Inspector	Training Date
NW	140221-A04	59/116	Grading & Pavement	Phillips Hardy	Jeff Dennis	5/26/2015	Heath Hartman	5/26/2015
NW	141017-A01	29	Grading	Widel	Jason White	5/26/2015	Lynn Anderson	5/26/2015
NW	141121-A03	36	Grading	Lehman	Tim Zona	5/26/2015	Lynn Anderson	5/26/2015
NW	MT1115BLD01	King	Building	MoDOT	Austin Hibler	5/26/2015	Tim Zona	5/26/2015
NW	MT1115RTTV	Tuscany	Grading	MoDOT	Austin Hibler	5/26/2015	Lynn Anderson	5/26/2015
NE	150320-B04	19	Pavement & Bridge	Lehman	Robert Davidson	6/1/2015	Andrew Long	6/1/2015
KC	140709-C01	69	Fairfax DB	AB	Chris Teel	5/28/2015	Stephen Collyott	5/20/2015
KC	140523-C06	49	New Interchange	Lehman	Brady Watson	5/28/2015	Albert Janssens	5/28/2015
KC	140919-C01	40	New Bridge and Lanes	Radmacher	Russell Brooks	5/20/2015	Chad Baldwin	5/20/2015
KC	150123-C04	10	Bridge Replacement	Phillips Hardy	Russell Penner	5/28/2015	Randon Green	5/28/2015
KC	141121-C01	35	Grading & Bridge	Miles	Rebecca Wilson	5/28/2015	Greg Van Patten	5/28/2015
KC	150220-C02	Y	Shoulder Project	Bowen	Lisa Raybourn	5/28/2015	Ryan Kneib	6/3/2015
KC	150320-C07	50	New Roadway	Bross	Mike Warren	5/28/2015	Randon Green	5/28/2015
KC	150515-C05	49	Grading & Pavement	ESS	Will Chappell	5/28/2015	Josh Motti	5/28/2015
KC	150320-C01	M	Shoulder Project	Bross	Robert Hargrave	6/10/2015	Tim Sims	5/28/2015
KC	150320-C08	69	Grading	Barcus & Sons	Travis Rowe	6/3/2015	Eric Reents	5/20/2015
KC	150417-C01	50	Roadway	Bross	Randon Green	5/28/2015	Mike Warren	5/28/2015
KC	CM1215RT36	35	Bridge	Ideker	Brady Watkins	5/20/2015	Becky Wheatley	5/28/2015
CD	140919-D01	50	New Interchange	ESS	Cary Armour	6/2/2015	Derek Lepper	6/10/2015
CD	150603-D01	70	Bridge Replacement	ESS	Daniel Roegers	6/2/2015	Jamie Johnson	6/10/2015
CD	MT1115RT501	5	Grading	MoDOT	Cayce Rogers	6/2/2015	Page Morgan	6/10/2015
SL	120710-F01	64	Bridge	Walsh	Heather Copeland	6/11/2015	Mitchell Shaneberge	6/4/2015
SL	140124-F04	A	Shoulder Project	NB West	Roger Brink	5/12/2015	Kevin Koch	6/11/2015
SL	140321-F08	115	Street Enhancements	NB West	Loraine Bedard	6/11/2015	Dave Bauer	5/12/2015
SL	150220-F09	47	Bridge	Kozeny-Wagner	Bruce Wright	6/11/2015	Kevin Koch	6/11/2015
SL	140822-F01	64	New Lane Addition	Gershenson	Eric Ingrum	5/12/2015	Cynthia Farrar	6/11/2015
SL	150123-F05	Y	Shoulder Project	NB West	Tom Reed	6/11/2015	Eric Burlbaw	6/11/2015
SL	150417-F03	D	Shoulder Project	NB West	Tabitha Locke	5/12/2015	Jason Aubuchon	6/11/2015
SL	150220-F08	94	Grading	Magruder	Todd Strong	5/12/2015	Stephen Amburn	6/2/2015
SW	140611-G01	60	Grading & Pavement	Radmacher	Shane Adams	5/18/2015	Garen Mcelroy	5/18/2015
SW	150123-G03	125	Grading & Pavement	Phillips Hardy	Bernie Mac	5/18/2015	Kirsty Little	5/18/2015
SW	150320-G02	60	Grading & Pavement	ESS	Matthew Willard	6/18/2015	Brian Dye	6/18/2015
SW	150515-G08	CCJ	New Interchange	APAC	Brian Todd	5/18/2015	Matthew Franklin	6/18/2015
SE	140124-H02	34	Grading & Pavement	APEX	Bret Swan	5/27/2015	Seth Bollinger	6/17/2015
SE	150123-H03	CR 19	Grading & Bridge	Robertson	Tim Cox	5/27/2015	Chris Crocker	5/27/2015
SE	141121-H03	412	Grading & Pavement	Bross	Lynn Smith	5/27/2015	Erin Collins	5/27/2015
SE	150123-H02	55	Grading & Pavement	Bross	Nathan Conner	5/27/2015	Corey Massey	5/27/2015
SE	140523-H03	160	Grading & Pavement	HR Quadri	Matt Wilkerson	5/27/2015	Marion Cora	5/27/2015
SE	141017-H05	55	Grading	Bross	Corey Massey	5/27/2015	Nathan Conner	5/27/2015
SE	150220-H02	34	Grading	Pace	Nathan Reed	5/27/2015	Melissa Rose	5/27/2015
SE	150320-H17	34	Shoulder Project	APEX	Jerry Lewis	5/27/2015	Cody Snow	5/27/2015

Project Final Stabilized in 2015

District	Contract ID	Route	Project	Contractor	Project Inspector	Training Date	Backup Inspector	Training Date
NW	141017-A03	F	Deck Replacement	Bross	Gary Hart	5/26/2015	Craig Curnutt	5/26/2015
NW	150515-C08	E	Grading & Pavement	Boone	Gina Orozco	5/26/2015	Heath Hartman	5/26/2015
NE	150320-B03	U	Shoulder & Turn Lane	Mid Rivers	Joseph Haggard	6/1/2015	Nicholas Gibbons	6/1/2015
KC	130709-C01	70	Manchester DB	Clarkson	Derek Anderson	5/20/2015	James Martin	5/20/2015
KC	KC-15-027492	273	Permit Project	Hoy Develop	Nathan Juliana	5/28/2015	Mike Sanders	5/28/2015
KC	150123-C01	35	Grading & Bridge	Ideker	Eric Reents	5/20/2015	Travis Rowe	6/3/2015
KC	KC-15-029263	K	Permit Project	PC Homes LLC	Nathan Juliana	5/28/2015	Mike Sanders	5/28/2015
CD	141121-D02	8	New Bridge Alignment	Robertson	Dennis Brady	6/29/2015	Susan Summers	6/10/2015
CD	141017-D05	5/135	Shoulder Project	Magruder	Rick Simmons	6/2/2015	Thomas Powers	6/10/2015
CD	150320-D04	Y	Shoulder Project	APAC	Doug Jones	6/2/2015	Dan Weaver	6/10/2015
SL	130206-F01	364	Grading & Pavement	MillstoneWeber	Eric Trupiano	5/12/2015	Jason Balestreri	5/12/2015
SL	130517-F04	109	Pavement	Marschuetz	Jim Susnic	5/12/2015	Katherine Anderson	5/12/2015
SL	140321-F07	N	Shoulder & Turn Lane	Magruder	Beth Bittick	7/22/2015	Todd Strong	5/12/2015
SL	140321-F01	64	Bridge	MillstoneWeber	Gary Schlater	5/12/2015	Grant Manula	6/11/2015
SL	140523-F06	141	Pavement	MillstoneWeber	Jeff Chambers	5/12/2015	Dave Heck	5/12/2015
SL	140523-F07	100	Grading & Pavement	Krupp	Leah Murphy	5/12/2015	Tyler Wolk	5/12/2015
SW	140822-G03	65	Resurfacing & Grading	Leo Journagan	Bradley Mullings	6/18/2015	Jennifer Smith	6/30/2015
SW	140822-G07	N	Bridge Replacement	APAC	Christopher Carsten	5/18/2015	Jennifer Smith	6/30/2015
SW	140919-G01	44	New Interchange	ESS	Aaron Rieder	5/18/2015	Patrick Tuter	6/18/2015
SW	140822-G08	65	New Interchange	Hartman	Russel Huckaby	6/30/2015	Jacob Capeder	6/18/2015
SW	140919-G02	49	Grading & Pavement	APAC	Brian Dewey	6/18/2015	Aydogan Girgin	6/18/2015
SW	150123-G01	60	Grading & Pavement	APAC	Ryan Dingman	5/18/2015	Patrick Tuter	6/18/2015
SE	150123-H04	62	Grading & Pavement	Joes Bridge	Jerrod Jernigan	5/27/2015	Chris Barnfield	5/27/2015
SE	150320-H05	67	Grading & ADA	Lappe	Melissa Rose	5/27/2015	Juli Smith	5/27/2015

Appendix F – Training Summary

Training Summary			
Number	**Date**	**District**	**Attendance**
1	5/12	SL #1	63
2	5/14	CO #1	11
3	5/18	SW #1	89
4	5/20	KC #1	62
5	5/26	NW #1	49
6	5/27	SE #1	77
7	5/28	KC #2	68
8	6/1	NE #1	62
9	6/2	CD #1	63
10	6/3	NW #2	66
11	6/4	SL #2	24
12	6/8	SL #3	30
13	6/9	KC #3	43
14	6/10	CD #2	44
15	6/11	SL #4	64
16	6/12	SE #2	19
17	6/15	SW #2	12
18	6/16	NW #3	23
19	6/17	SE #3	39
20	6/18	SW #3	55
21	6/19	SL #5	7
22	6/22	NE #2	30
23	6/23	SL #6	30
24	6/24	KC #4	44
25	6/29	CD #3	50
26	6/30	SW #4	43
27	7/1	CD #4	19
28	7/8	NW #4	35
29	7/14	KC #5	28
30	7/15	NE #3	77
31	7/22	SL #7	9
32	7/29	KC #6	3
33	8/4	SE #4	2
34	8/5	CD #5	5
35	8/12	SW #5	12
36	8/18 AM	NE #4	4
37	8/18 PM	NE #5	14
38	8/19	NW #5	2
39	9/8	SL #8	10
40	9/15	SW #6	11
41	11/16	CD #6	1
42	11/23	SL #9	3
43	11/24	KC#7	3
44	11/30	SW #7	4
		Total	**1409**

District Legend

NW - Northwest - St. Joseph
NE - Northeast - Hannibal
KC - Kansas City - Kansas City
CD - Central District - Jefferson City
SL - St. Louis - St. Louis
SW - Southwest - Springfield
SE - Southeast - Sikeston

Internal Training Breakdown				
Date	**Day**	**Location**	**Room**	**Attendance**
5/12	Tuesday	STL	TMC 209	63
5/14	Monday	CO	CO Blue	11
5/18	Monday	SW	Ramada Osis	89
5/20	Wednesday	KC	CR 156 and CR 252	62
5/26	Tuesday	NW	NW Conference Center	49
5/27	Wednesday	SE	SE SK District Conf Room	77
5/28	Thursday	KC	CR 156 and CR 252	68
6/1	Monday	NE	Mississippi River Room	62
6/2	Tuesday	CD	Muri Room	63
6/3	Wednesday	NW	NW Conference Center	66
6/4	Thursday	STL	District 160	24
6/10	Wednesday	CD	Muri Room	44
6/11	Thursday	STL	TMC 209	64
6/17	Wednesday	SE	District - External	4
6/18	Thursday	SW	CR 1 and CR2	55
6/19	Friday	STL	TMC 209 - Permits	7
6/22	Monday	NE	District - External	2
6/23	Tuesday	STL	TMC - External	3
6/29	Monday	CD	District - External	7
6/30	Tuesday	SW	District - External	6
7/1	Wednesday	CD	Muri Room	1
7/8	Wednesday	NW	District - MT	35
7/14	Tuesday	KC	District - MT	28
7/15	Wednesday	NE	District - MT	77
7/22	Wednesday	SL	District	3
8/12	Wednesday	SW	District	1
8/18	Tuesday	NE	District	17
8/19	Wednesday	NW	District	1
9/8	Tuesday	SL	District - MT	10
9/15	Tuesday	SW	District MT	11
11/16	Monday	CD	District	1
11/24	Tuesday	KC	District	1
			Total	**1012**

External Training Breakdown				
Date	**Day**	**Location**	**Room**	**Attendance**
6/8	Monday	STL	TMC 209	30
6/9	Tuesday	KC	CR 156 and CR 253	43
6/12	Friday	SE	Van Buren	19
6/15	Monday	SW	CR1 and CR2	12
6/16	Tuesday	NW	NW Conference Center	23
6/17	Wednesday	SE	SE SK District Conf Room	35
6/22	Monday	NE	Mississippi River Room	28
6/23	Tuesday	STL	TMC 209	27
6/24	Wednesday	KC	CR 156 and CR 253	44
6/29	Monday	CD	Muri Room	43
6/30	Tuesday	SW	CR 1 and CR 2	37
7/1	Wednesday	CD	Muri Room	18
7/22	Wednesday	STL	TMC 209	6
7/29	Wednesday	KC	District Office	3
8/4	Tuesday	SE	District Office	2
8/5	Wednesday	CD	District Office	5
8/12	Wednesday	SW	District Office	11
8/18	Tuesday	NE	District Office	1
8/19	Wednesday	NW	District Office	1
11/23	Monday	SL	District Office	3
11/24	Tuesday	KC	District Office	2
11/30	Monday	SW	District Office	4
			Total	**397**

Appendix G – Training Certification MoDOT

Internal Training Breakdown				
Date	**Day**	**Location**	**Room**	**Attendance**
5/12	Tuesday	STL	TMC 209	63
5/14	Monday	CO	CO Blue	11
5/18	Monday	SW	Ramada Osis	89
5/20	Wednesday	KC	CR 156 and CR 252	62
5/26	Tuesday	NW	NW Conference Center	49
5/27	Wednesday	SE	SE SK District Conf Room	77
5/28	Thursday	KC	CR 156 and CR 252	68
6/1	Monday	NE	Mississippi River Room	62
6/2	Tuesday	CD	Muri Room	63
6/3	Wednesday	NW	NW Conference Center	66
6/4	Thursday	STL	District 160	24
6/10	Wednesday	CD	Muri Room	44
6/11	Thursday	STL	TMC 209	64
6/17	Wednesday	SE	District - External	4
6/18	Thursday	SW	CR 1 and CR2	55
6/19	Friday	STL	TMC 209 - Permits	7
6/22	Monday	NE	District - External	2
6/23	Tuesday	STL	TMC - External	3
6/29	Monday	CD	District - External	7
6/30	Tuesday	SW	District - External	6
7/1	Wednesday	CD	Muri Room	1
7/8	Wednesday	NW	District - MT	35
7/14	Tuesday	KC	District - MT	28
7/15	Wednesday	NE	District - MT	77
7/22	Wednesday	SL	District	3
8/12	Wednesday	SW	District	1
8/18	Tuesday	NE	District	17
8/19	Wednesday	NW	District	1
9/8	Tuesday	SL	District - MT	10
9/15	Tuesday	SW	District MT	11
11/16	Monday	CD	District	1
11/24	Tuesday	KC	District	1
			Total	**1012**

5/12/2015 - St. Louis - TMC 209				
Name	**E-mail**	**Department**	**District**	**Training Date**
Aaron Groff	Aaron.groff@modot.mo.gov	Design	SL	5/12/2015
Andy Tuerck	andrew.tuerck@modot.mo.gov	Construction	SL	5/12/2015
Ben Gedris	bentley.gedris@modot.mo.gov	Design	SL	5/12/2015
Bill McLaughlin	william.mclaughlin@modot.mo.gov	Design	SL	5/12/2015
Chris Kelly	christopher.kelly@modot.mo.gov	Construction	SL	5/12/2015
Chris Morgan	christopher.morgan@modot.mo.gov	Construction	SL	5/12/2015
Chris Ward	christopher.ward@modot.mo.gov	Construction	SL	5/12/2015
Christine Redhage	christine.redhage@modot.mo.gov	Construction	SL	5/12/2015
Christopher Neporadny	christopher.neporadny@modot.mo.gov	Construction	SL	5/12/2015
Chunlei Wang	chunlei.wang@modot.mo.gov	Design	SL	5/12/2015
Dan Savageau	daniel.savageau@modot.mo.gov	Design	SL	5/12/2015
Dana Edmondson	dana.edmondson@modot.mo.gov	Design	SL	5/12/2015
Daniel Arnold	daniel.arnold@modot.mo.gov	Construction	SL	5/12/2015
Dave Heck	david.heck@modot.mo.gov	Construction	SL	5/12/2015
Mike Castro	Michael.castro@modot.mo.gov	Construction	SL	5/12/2015
David Bauer	David.Bauer@modot.mo.gov	Construction	SL	5/12/2015
David Wiles	david.wiles@modot.mo.gov	Construction	SL	5/12/2015
Dean Fry	dean.fry@modot.mo.gov	Construction	SL	5/12/2015
Deborah Gallagher	deborah.gallagher@modot.mo.gov	Construction	SL	5/12/2015
Ed Muehlenkamp	edward.muehlenkamp@modot.mo.gov	Design	SL	5/12/2015
Eric Trupiano	eric.trupiano@modot.mo.gov	Construction	SL	5/12/2015
Franklin Vance	franklin.vance@modot.mo.gov	Construction	SL	5/12/2015
Gary Schlater	gary.schlater@modot.mo.gov	Construction	SL	5/12/2015
Gary Warren	gary.warren@modot.mo.gov	Design	SL	5/12/2015
Jason Balestreri	jason.balestreri@modot.mo.gov	Design	SL	5/12/2015
Jeff Chambers	jeffrey.chambers@modot.mo.gov	Construction	SL	5/12/2015
Jenn Becker	jennifer.becker@modot.mo.gov	Design	SL	5/12/2015
Jennifer Riegel	jennifer.riegel@modot.mo.gov	Design	SL	5/12/2015
Jermyn Johnson	jermyn.johnson@modot.mo.gov	Construction	SL	5/12/2015
Jim Susnic	jim.susnic@modot.mo.gov	Construction	SL	5/12/2015
John Grana	john.grana@modot.mo.gov	Construction	SL	5/12/2015
John McGrath	john.mcgrath@modot.mo.gov	Construction	SL	5/12/2015
Jonathan Silver	johathan.silver@modot.mo.gov	Construction	SL	5/12/2015
Katherine Anderson	katherine.anderson@modot.mo.gov	Construction	SL	5/12/2015
Keith Harangozo	keith.harangozo@modot.mo.gov	Construction	SL	5/12/2015
Kevin Steiner	kevin.steiner@modot.mo.gov	Construction	SL	5/12/2015
Lance Livesay	lance.livesay@modot.mo.gov	Construction	SL	5/12/2015
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5/12/2015 - St. Louis - TMC 209 - Continued				
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5/14/2015 - CO Training - Blue Room				
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5/18/2015 - SW Training - Ramada Oasis				
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5/18/2015 - SW Training - Ramada Oasis - Continued				
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5/18/2015 - SW Training - Ramada Oasis - Continued				
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5/20/2015 - KC Training - District Office				
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5/20/2015 - KC Training - District Office - Continued				
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5/20/2015 - KC Training - District Office - Continued				
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5/26/2015 - NW Training - District Office				
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5/26/2015 - NW Training - District Office - Continued				
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5/27/2015 - SE Training - District Office				
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5/27/2015 - SE Training - District Office - Continued				
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5/27/2015 - SE Training - District Office - Continued				
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5/28/2015 - KC Training - District Office - Continued				
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6/1/2015 - NE Training - District Office				
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6/1/2015 - NE Training - District Office - Continued				
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6/1/2015 - NE Training - District Office - Continued				
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6/2/2015 - CD Training - District Office - Continued				
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6/3/2015 - NW Training - District Office - Continued				
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6/3/2015 - NW Training - District Office - Continued				
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6/4/2015 - SL Training - District Office				
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6/10/2015 - CD Training - District Office				
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6/11/2015 - SL Training - TMC				
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6/11/2015 - SL Training - TMC				
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6/17/2015 - SE Contractor Training - District				
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6/18/2015 - SW Training - District				
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6/18/2015 - SW Training - District - Continued				
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6/19/2015 - SL Permit Training - TMC				
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6/22/2015 - NE Contractor Training - District				
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6/23/2015 - SL Contractor Training - TMC				
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6/29/2015 - CD Contractor Training - District				
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6/30/2015 - SW Contractor Training - District				
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Steve Howell	steven.howell@modot.mo.gov	Construction	SW	6/30/2015
Gary McLarry	gary.mclarry@modot.mo.gov	Saftey	SW	6/30/2015
Chad Mays	chad.mays@modot.mo.gov	Construction	SW	6/30/2015
Jennifer Smith	jennifer.smith@modot.mo.gov	Construction	SW	6/30/2015

7/1/2015 - CD Contractor Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Myles McWhorter	myles.mcwhorter@modot.mo.gov	Construction	CD	7/1/2015

7/8/2015 - NW MT Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Eric Ramsey	eric.ramsey@modot.mo.gov	Maintenance	NW	7/8/2015
Curtis Prussman	curtis.prussman@modot.mo.gov	Maintenance	NW	7/8/2015
Kelly Kurtz	kelly.kurtz@modot.mo.gov	Maintenance	NW	7/8/2015
Johnnie Minear	johnnie.minear@modot.mo.gov	Maintenance	NW	7/8/2015
Nevin Hamilton	nevin.hamilton@modot.mo.gov	Maintenance	NW	7/8/2015
Darin Lunsford	darin.lunsford@modot.mo.gov	Maintenance	NW	7/8/2015
Rodney Milford	rodney.milford@modot.mo.gov	Maintenance	NW	7/8/2015
Mark Corbin	mark.corbin@modot.mo.gov	Maintenance	NW	7/8/2015
Donald Asher	donald.asher@modot.mo.gov	Maintenance	NW	7/8/2015
Jason Teel	jason.teel@modot.mo.gov	Maintenance	NW	7/8/2015
Leonard Wilmes	leonard.wilmes@modot.mo.gov	Maintenance	NW	7/8/2015
Eddy Oswalt	eddy.oswalt@modot.mo.gov	Maintenance	NW	7/8/2015
Bryce Anderson	bryce.anderson@modot.mo.gov	Maintenance	NW	7/8/2015
Frank Allen	Frank.allen@modot.mo.gov	Maintenance	NW	7/8/2015
Roddy Bartz	roddy.bartz@modot.mo.gov	Maintenance	NW	7/8/2015
Tim Drew	timothy.drew@modot.mo.gov	Maintenance	NW	7/8/2015
Brian Bottcher	brian.bottcher@modot.mo.gov	Maintenance	NW	7/8/2015
Sam Stockdall	samuel.stockdall@modot.mo.gov	Maintenance	NW	7/8/2015
Todd King	todd.king@modot.mo.gov	Maintenance	NW	7/8/2015
Trent Shineman	stephen.shineman@modot.mo.gov	Maintenance	NW	7/8/2015
Mike Lewis	michael.lewis@modot.mo.gov	Maintenance	NW	7/8/2015
Colby Devaul	colby.devaul@modot.mo.gov	Maintenance	NW	7/8/2015
Dan Ragan	daniel.ragan@modot.mo.gov	Maintenance	NW	7/8/2015
Tim Porter	timmy.porter@modot.mo.gov	Maintenance	NW	7/8/2015
Nicole Smith	nicole.smith@modot.mo.gov	Maintenance	NW	7/8/2015
Mike Bozarth	mike.bozarth@modot.mo.gov	Maintenance	NW	7/8/2015
Curtis Schleicher	john.schledicher@modot.mo.gov	Maintenance	NW	7/8/2015
Scott Clark	scott.clark@modot.mo.gov	Maintenance	NW	7/8/2015
Bill Luther	william.luther@modot.mo.gov	Maintenance	NW	7/8/2015
James Eivins	james.eivins@modot.mo.gov	Maintenance	NW	7/8/2015
Tim Williams	timothy.williams@modot.mo.gov	Maintenance	NW	7/8/2015
Roger Fitzpatrick	roger.fitzpatrick@modot.mo.gov	Maintenance	NW	7/8/2015
Eugene Oser	Eugene.Oser@modot.mo.gov	Maintenance	NW	7/8/2015
Mark Pickering	mark.pickering@modot.mo.gov	Maintenance	NW	7/8/2015
Donald Standley	donald.standley@modot.mo.gov	Maintenance	NW	7/8/2015

7/14/2015 - KC MT Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Clem Anderson	clem.andersIII@modot.mo.gov	Maintenance	KC	7/14/2015
Greg McDowell	gregory.mcdowellSr@modot.mo.gov	Maintenance	KC	7/14/2015
David Eppright	david.eppright@modot.mo.gov	Maintenance	KC	7/14/2015
T.J Williams	t.williams@modot.mo.gov	Maintenance	KC	7/14/2015
Chris Sholl	christopher.sholl@modot.mo.gov	Maintenance	KC	7/14/2015
Scott Townsend	gary.townsend@modot.mo.gov	Maintenance	KC	7/14/2015
Keith Rush	keith.rush@modot.mo.gov	Maintenance	KC	7/14/2015
Paul Valadez	paul.valadez@modot.mo.gov	Maintenance	KC	7/14/2015
Claude Malott	claude.malott@modot.mo.gov	Maintenance	KC	7/14/2015
Doug Patton	douglas.patton@modot.mo.gov	Maintenance	KC	7/14/2015
David Johnson	david.l.johnson@modot.mo.gov	Maintenance	KC	7/14/2015
John Arnold	john.arnold@modot.mo.gov	Maintenance	KC	7/14/2015
Deborah Naylor	deborah.naylor@modot.mo.gov	Maintenance	KC	7/14/2015
William Joe Sims	william.sims@modot.mo.gov	Maintenance	KC	7/14/2015
Robert Davis	robert.r.davis@modot.mo.gov	Maintenance	KC	7/14/2015
Chris Williams	christopher.williams@modot.mo.gov	Maintenance	KC	7/14/2015
Marcus Slaughter	marcus.slaughter@modot.mo.gov	Maintenance	KC	7/14/2015
Scott Banes	scott.banes@modot.mo.gov	Maintenance	KC	7/14/2015
Jeffrey Mays	jeffrey.mays@modot.mo.gov	Maintenance	KC	7/14/2015
Jerry Smith	jerry.smith@modot.mo.gov	Maintenance	KC	7/14/2015
Douglas Mullins	Douglas.mullins@modot.mo.gov	Maintenance	KC	7/14/2015
Robbie Simmons	robert.simmonsjr@modot.mo.gov	Maintenance	KC	7/14/2015
Clark Thomas	clark.thomas@modot.mo.gov	Maintenance	KC	7/14/2015
Justin Anderson	justin.anderson@modot.mo.gov	Maintenance	KC	7/14/2015
Tim Koch	timothy.koch@modot.mo.gov	Maintenance	KC	7/14/2015
George Duncan	george.duncan@modot.mo.gov	Maintenance	KC	7/14/2015
Griffin Smith	griffin.smith@modot.mo.gov	Maintenance	KC	7/14/2015
Richard Kingery	richard.kingery@modot.mo.gov	Maintenance	KC	7/14/2015

7/15/2015 - NE MT Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Gregory Price	gregory.price@modot.mo.gov	Maintenance	NE	7/15/2015
Keith Golian	keight.golian@modot.mo.gov	Maintenance	NE	7/15/2015
Richard Sanders	richard.w.sanders@modot.mo.gov	Maintenance	NE	7/15/2015
Mark Wortmann	mark.wortmann@modot.mo.gov	Maintenance	NE	7/15/2015
Monte Basinger	monte.basinger@modot.mo.gov	Maintenance	NE	7/15/2015
Ed Pyatt	edward.pyatt@modot.mo.gov	Maintenance	NE	7/15/2015
Dan Schwartz	daniel.schwartz@modot.mo.gov	Maintenance	NE	7/15/2015
Jason Walton	jason.walton@modot.mo.gov	Maintenance	NE	7/15/2015
Dion Thurman	marion.thurman@modot.mo.gov	Maintenance	NE	7/15/2015
Ron Freese	ronald.freese@modot.mo.gov	Maintenance	NE	7/15/2015
Michael Flake	michael.flake@modot.mo.gov	Maintenance	NE	7/15/2015
Carla Gosemeyer	carla.glosemeyer@modot.mo.gov	Maintenance	NE	7/15/2015

7/15/2015 - NE MT Training - District - Continued				
Name	**E-mail**	**Department**	**District**	**Training Date**
Dawn Miller	dawn.miller@modot.mo.gov	Maintenance	NE	7/15/2015
Scott Wasson	scott.wasson@modot.mo.gov	Maintenance	NE	7/15/2015
Doug Goins	douglas.goins@modot.mo.gov	Maintenance	NE	7/15/2015
Clint Ford	clinton.ford@modot.mo.gov	Maintenance	NE	7/15/2015
Shannon Thompson	david.thompson@modot.mo.gov	Maintenance	NE	7/15/2015
Danny Duke	danny.duke@modot.mo.gov	Maintenance	NE	7/15/2015
Montine Fisher	monte.fisher@modot.mo.gov	Maintenance	NE	7/15/2015
Hal Moore	hal.moore@modot.mo.gov	Maintenance	NE	7/15/2015
Kevin Brawner	kevin.brawner@modot.mo.gov	Maintenance	NE	7/15/2015
Allen Cassmeyer	allen.cassmeyerjr@modot.mo.gov	Maintenance	NE	7/15/2015
Becky Novinger	becky.novinger@modot.mo.gov	Maintenance	NE	7/15/2015
Bruce Bryson	bruce.bryson@modot.mo.gov	Maintenance	NE	7/15/2015
Mark Morris	mark.morris@modot.mo.gov	Maintenance	NE	7/15/2015
Tyler Friedli	tyler.friedli@modot.mo.gov	Maintenance	NE	7/15/2015
T.K Brenner	thomas.brenner@modot.mo.gov	Maintenance	NE	7/15/2015
Jason Smith	jason.a.smith@modot.mo.gov	Maintenance	NE	7/15/2015
Jason Sears	jason.sears@modot.mo.gov	Maintenance	NE	7/15/2015
Chuck Fuemmeler	charles.fuemmeler@modot.mo.gov	Maintenance	NE	7/15/2015
Jon Knickerbocker	jon.knickerbocker@modot.mo.gov	Maintenance	NE	7/15/2015
David Taylor	david.e.taylor@modot.mo.gov	Maintenance	NE	7/15/2015
Stacy Thomas	stacy.thomas@modot.mo.gov	Maintenance	NE	7/15/2015
Leslie Thrasher	leslie.thrasher@modot.mo.gov	Maintenance	NE	7/15/2015
Jim Carriker	jim.carriker@modot.mo.gov	Maintenance	NE	7/15/2015
Deron Livingston	deron.livingston@modot.mo.gov	Maintenance	NE	7/15/2015
Neal Ross	neal.ross@modot.mo.gov	Maintenance	NE	7/15/2015
Donald Williams	donald.williams@modot.mo.gov	Maintenance	NE	7/15/2015
Stan Weber	stanley.weber@modot.mo.gov	Maintenance	NE	7/15/2015
Robbie Teter	robert.teter@modot.mo.gov	Maintenance	NE	7/15/2015
Ty Middleton	nicholas.middleton@modot.mo.gov	Maintenance	NE	7/15/2015
Joe Kiser	jeffery.kiser@modot.mo.gov	Maintenance	NE	7/15/2015
Chris Switzer	christopher.switzer@modot.mo.gov	Maintenance	NE	7/15/2015
Scott McLaughlin	scott.mclaughlin@modot.mo.gov	Maintenance	NE	7/15/2015
Lanny Roberts	lonny.roberts@modot.mo.gov	Maintenance	NE	7/15/2015
Jeff Leake	jeffrey.leake@modot.mo.gov	Maintenance	NE	7/15/2015
Michael Wood	michael.wood@modot.mo.gov	Maintenance	NE	7/15/2015
Danny Behl	danny.behl@modot.mo.gov	Maintenance	NE	7/15/2015
Brett Snow	von.snow@modot.mo.gov	Maintenance	NE	7/15/2015
John Resa	john.resa@modot.mo.gov	Maintenance	NE	7/15/2015
Kevin Ross	kevin.ross@modot.mo.gov	Maintenance	NE	7/15/2015
Joseph Mason	joseph.mason@modot.mo.gov	Maintenance	NE	7/15/2015
Trent Young	trent.young@modot.mo.gov	Maintenance	NE	7/15/2015
Jeff Stewart	jeff.stewart@modot.mo.gov	Maintenance	NE	7/15/2015
Robby Hendricks	robert.hendricks@modot.mo.gov	Maintenance	NE	7/15/2015
Jamie Gottman	james.gottman@modot.mo.gov	Maintenance	NE	7/15/2015
Robert Deters	robert.deters@modot.mo.gov	Maintenance	NE	7/15/2015

7/15/2015 - NE MT Training - District - Continued				
Name	**E-mail**	**Department**	**District**	**Training Date**
Ferdie Dames	alphonse.dames@modot.mo.gov	Maintenance	NE	7/15/2015
Ronald Calvin	ronald.calvin@modot.mo.gov	Maintenance	NE	7/15/2015
Heath Otte	heath.otte@modot.mo.gov	Maintenance	NE	7/15/2015
Rondy Welch	rodney.welch@modot.mo.gov	Maintenance	NE	7/15/2015
Jennifer Hinson	jennifer.hinson@modot.mo.gov	Maintenance	NE	7/15/2015
Travis Wombwell	travis.wombwell@modot.mo.gov	Maintenance	NE	7/15/2015
Andy Dittmer	andrew.dittmer@modot.mo.gov	Maintenance	NE	7/15/2015
Arron Burbridge	arron.burbridge@modot.mo.gov	Maintenance	NE	7/15/2015
James Schaefer	james.schaefer@modot.mo.gov	Maintenance	NE	7/15/2015
Adam Thompson	adam.thompson@modot.mo.gov	Maintenance	NE	7/15/2015
Tate Tuley	tate.tuley@modot.mo.gov	Maintenance	NE	7/15/2015
Harvey Lewis	harvey.lewis@modot.mo.gov	Maintenance	NE	7/15/2015
Dana Robinson	dana.robinson@modot.mo.gov	Maintenance	NE	7/15/2015
David McGoldrick	david.mcgoldrick@modot.mo.gov	Maintenance	NE	7/15/2015
Cory March	cory.march@modot.mo.gov	Maintenance	NE	7/15/2015
Todd Greenstreet	todd.greenstreet@modot.mo.gov	Maintenance	NE	7/15/2015
Richard Hyde	richard.hyde@modot.mo.gov	Maintenance	NE	7/15/2015
Shannon Partin	shannon.partin@modot.mo.gov	Maintenance	NE	7/15/2015
Billie Noble	billie.noble@modot.mo.gov	Maintenance	NE	7/15/2015
Kelly Hall	kelly.hall@modot.mo.gov	Maintenance	NE	7/15/2015

7/22/2015 - SL Training - TMC 209				
Name	**E-mail**	**Department**	**District**	**Training Date**
Brian Lange	brian.lange@modot.mo.gov	Construction	SL	7/22/2015
Angela Donahue	angela.donahue@modot.mo.gov	Construction	SL	7/22/2015
Beth Bittick	beth.bittick@modot.mo.gov	Construction	SL	7/22/2015

8/12/2015 - SW Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Beth Schaller	beth.schaller@modot.mo.gov	DMT	SW	8/12/2015

8/18/2015 - NE Training District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Brian Untiedt	brian.untiedt@modot.mo.gov	Traffic	NE	8/18/2015
Jody Geisendorfer	jody.geisendorfer@modot.mo.gov	Maintenance	NE	8/18/2015
Eric Maassen	eric.maassen@modot.mo.gov	Construction	NE	8/18/2015
Jennifer Hison	jennifer.hinson@modot.mo.gov	Traffic/MT	NE	8/18/2015
Stephen Garrett	stephen.garrett@modot.mo.gov	Maintenance	NE	8/18/2015
Mark Moellering	mark.moellering@modot.mo.gov	Maintenance	NE	8/18/2015
Corey Burton	corey.burton@modot.mo.gov	Maintenance	NE	8/18/2015
Kirk Youngblood	kirk.youngblood@modot.mo.gov	Maintenance	NE	8/18/2015
Todd Smith	todd.smith@modot.mo.gov	Maintenance	NE	8/18/2015

8/18/2015 - NE Training District - Continued				
Name	**E-mail**	**Department**	**District**	**Training Date**
Chad Arment	chad.arment@modot.mo.gov	Maintenance	NE	8/18/2015
Rick Brokes	rick.brokes@modot.mo.gov	Maintenance	NE	8/18/2015
Roger Walker	roger.walker@modot.mo.gov	Maintenance	NE	8/18/2015
Roy Niemeyer	roy.neimeyer@modot.mo.gov	Maintenance	NE	8/18/2015
Tony Grote	anthony.grote@modot.mo.gov	Maintenance	NE	8/18/2015
Joe Collins	joseph.collins@modot.mo.gov	Maintenance	NE	8/18/2015
Jim Huber	james.huber@modot.mo.gov	Maintenance	NE	8/18/2015
Jeff Stewert	jeff.stewart@modot.mo.gov	Maintenance	NE	8/18/2015

8/19/2015 - NW Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Anthony McGaughy	anthony.mcgaughy@modot.mo.gov	DMT	NW	8/19/2015

9/8/2015 - SL MT Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Mark Croarkin	mark.croarkin@modot.mo.gov	MT	SL	9/8/2015
Daniel Wilson	daniel.wilson@modot.mo.gov	MT	SL	9/8/2015
Arisa Prapaisilp	arisa.prapaisilp@modot.mo.gov	MT	SL	9/8/2015
Robert Hawkins	robert.hawkins@modot.mo.gov	MT	SL	9/8/2015
Chuck Wills	charles.wills@modot.mo.gov	MT	SL	9/8/2015
Rick Schneider	richard.schneider@modot.mo.gov	MT	SL	9/8/2015
Jason Bell	jason.bell@modot.mo.gov	MT	SL	9/8/2015
Garry Goss	garry.goss@modot.mo.gov	MT	SL	9/8/2015
Ken Warbritton	kenyon.warbritton@modot.mo.gov	MT	SL	9/8/2015
Vince Reel	vincent.reel@modot.mo.gov	MT	SL	9/8/2015

9/15/2015 - SW MT Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Jason Shafer	jason.m.shafter@modot.mo.ogv	MT	SW	9/15/2015
Steve Smith	stephen.smith@modot.mo.gov	MT	SW	9/15/2015
Tim Bundgard	timothy.bundgard@modot.mo.gov	MT	SW	9/15/2015
Bret Hicks	bret.hicks@modot.mo.gov	MT	SW	9/15/2015
Josh Burks	joshua.burks@modot.mo.gov	MT	SW	9/15/2015
Johnny Mathews	johnny.mathewsjr@modot.mo.gov	MT	SW	9/15/2015
Travis Mace	travis.mace@modot.mo.gov	MT	SW	9/15/2015
Michael Middleton	michael.middleton@modot.mo.gov	MT	SW	9/15/2015
Ryan West	ryan.west@modot.mo.gov	MT	SW	9/15/2015
Mike Shea	michael.shea@modot.mo.gov	MT	SW	9/15/2015
Richard Arnall	richard.arnall@modot.mo.gov	MT	SW	9/15/2015

11/16/2015 - CD Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
Brian Mottaz	brian.mottaz@modot.mo.gov	CM	CD	11/16/2015

11/24/2015 - CD Training - District				
Name	**E-mail**	**Department**	**District**	**Training Date**
John Casey	john.casey@modot.mo.gov	CM	KC	11/24/2015

Appendix H – Training Certification WPCM

External Training Breakdown				
Date	**Day**	**Location**	**Room**	**Attendance**
6/8	Monday	STL	TMC 209	30
6/9	Tuesday	KC	CR 156 and CR 253	43
6/12	Friday	SE	Van Buren	19
6/15	Monday	SW	CR1 and CR2	12
6/16	Tuesday	NW	NW Conference Center	23
6/17	Wednesday	SE	SE SK District Conf Room	35
6/22	Monday	NE	Mississippi River Room	28
6/23	Tuesday	STL	TMC 209	27
6/24	Wednesday	KC	CR 156 and CR 253	44
6/29	Monday	CD	Muri Room	43
6/30	Tuesday	SW	CR 1 and CR 2	37
7/1	Wednesday	CD	Muri Room	18
7/22	Wednesday	STL	TMC 209	6
7/29	Wednesday	KC	District Office	3
8/4	Tuesday	SE	District Office	2
8/5	Wednesday	CD	District Office	5
8/12	Wednesday	SW	District Office	11
8/18	Tuesday	NE	District Office	1
8/19	Wednesday	NW	District Office	1
11/23	Monday	SL	District Office	3
11/24	Tuesday	KC	District Office	2
11/30	Monday	SW	District Office	4
			Total	**397**

6/8/2015 - St. Louis - TMC 209			
Name	**E-mail**	**Company**	**Training Date**
Keith Denney	Kdenney@NBWest.com	NB West	6/8/2015
Cindy Thurme	Crtmwconstruction@yahoo.com	Midwest	6/8/2015
Emily Thurme	mwconstruction@yahoo.com	Midwest	6/8/2015
Brandy Broeckling	brandy.broeckling@millstoneweber.com	Millstone Weber	6/8/2015
Steve Jackson	sjackson@nbwest.com	NB West	6/8/2015
Bryan Fleer	bfleer@nbwest.com	NB West	6/8/2015
Sam Snider	scsnider71@gmail.com	Boone Construction	6/8/2015
Tim Schulte	tschulte@nbwest.com	NB West	6/8/2015
Jd Causey	jdcausey@excite.com	NB West	6/8/2015
Bill Smith	bsmith@byrneandjones.com	MicroSurfacing Contractors	6/8/2015
Rick Crain	rick.crain@millstoneweber.com	Millstone Weber	6/8/2015
Brandon Bates	brandon.bates@millstoneweber.com	Millstone Weber	6/8/2015
Loren Cahill	cahill.loren@yahoo.com	NB West	6/8/2015
Sam Wagner	sawagner@walshgroup.com	Walsh	6/8/2015
Tom Scanlon	tom.scanlon@millstoneweber.com	Millstone Weber	6/8/2015
Eric Waterkotte	eric.waterkotte@millstoneweber.com	Millstone Weber	6/8/2015
Jeff Stephens	jeff.stephens@emerysapp.com	Emery Sapp	6/8/2015
Dudley Gough	-	Boone Construction	6/8/2015
John Byrd	john.byrd@millstoneweber.com	Millstone Weber	6/8/2015
Dennis Byrd	dennis.byrd@millstoneweber.com	Millstone Weber	6/8/2015
Justin Zimpfer	jzimpfer@nbwest.com	NB West	6/8/2015
Bob Hofer	bob.hofer@millstoneweber.com	Millstone Weber	6/8/2015
Jason Highley	jason.highley@milstoneweber.com	Millstone Weber	6/8/2015
Ben Sanchez	ben.sanchez@millstoneweber.com	Millstone Weber	6/8/2015
Joe Simon	jsimon@tramarcontracting.com	Tramar	6/8/2015
Steve Groene	sgroene@tramarcontracting.com	Tramar	6/8/2015
Henry Burkemper	hburkemper@magrudercompanies.com	Magruder Paving	6/8/2015
Tim Gasser	tgasser@gerstner.com	Gerstner	6/8/2015
Larry Epstein	lepstein@paceconstructionstl.com	Pace	6/8/2015
Jared England	jengland@gerstner.com	Gerstner	6/8/2015

6/9/2015 - Kansas City - CR 156			
Name	**E-mail**	**Company**	**Training Date**
Andy Wichite	andy.wichite@capitalelectric.com	Capital Electric Construction	6/9/2015
Mike Smith	msmith@americanbridge.com	American Bridge	6/9/2015
Ron Wagner	ron@lexeco.com	Lexeco	6/9/2015
Cody Noll	66coder@gmail.com	KAA2	6/9/2015
Alan Million	alan.million@emerysapp.com	Emery Sapp	6/9/2015
David Taggart	david.taggart@emerysapp.com	Emery Sapp	6/9/2015
Diane Tucker	diane.tucker@apac.com	APAC	6/9/2015
Ryan Turnell	tyanturnell08@gmail.com	Welch Silt Fence	6/9/2015
Pat Dinaes	pdinges@radbroex.com	Radmacher	6/9/2015
Paige Stang	pstang@pciroads.com	PCI	6/9/2015
Randy Smith	rsmith@clarksonconstruction.com	Clarkson Construction	6/9/2015

6/9/2015 - Kansas City - CR 156 - Continued			
Name	**E-mail**	**Company**	**Training Date**
Dorsey Embrey	embrey.dorsey@gmail.com	Radmacher	6/9/2015
Roberto Varela	roberto.varela@barcus.com	Barcus and Sons	6/9/2015
Tyler Myers	tmyers@emerysapp.com	Emery Sapp	6/9/2015
Scott Eason	scott.eason@emerysapp.com	Emery Sapp	6/9/2015
Sean Geer	sean.geer@emerysapp.com	Emery Sapp	6/9/2015
Vince Dill	vince.dill@capitalelectric.com	Capital Electric Construction	6/9/2015
Byron Hernung	bph@comanche-kc.com	Comanche Construction	6/9/2015
Robert Taylor	robert@realmconstructioninc.com	Realm Construction	6/9/2015
Jeff Bollin	jeffbollin@lexco.com	Lexeco	6/9/2015
George Goodman	george.goodman@emerysapp.com	Emery Sapp	6/9/2015
Randall Wood	-	Emery Sapp	6/9/2015
Shawn Woodsmall	shawn.woodsmall@emerysapp.com	Emery Sapp	6/9/2015
Clint Edwards	clint.edwards@emerysapp.com	Emery Sapp	6/9/2015
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Bruce Ponder	bpond40@gmail.com	Radmacher	6/9/2015
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6/12/2015 - SE - Van Burned Center			
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6/12/2015 - SE - Van Burnen Center - Continued			
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6/16/2015 - NW - District Office - Continued			
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Nick Seyer	-	Lappe Cement	6/17/2015
Daniel Schuchart	-	Lappe Cement	6/17/2015
Mike Hawkins	-	Lappe Cement	6/17/2015
Matt Schurchart	-	Lappe Cement	6/17/2015
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6/17/2015 - SE - District Office - Continued			
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6/23/2015 - SL - TMC Room 209 - Continued			
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6/24/2015 - KC - District Office - Continued			
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Kenny Lehman	kenny@lehmanconstructionllc.com	Lehman	7/1/2015
Ryan Porter	ryan@lehmanconstructionllc.com	Lehman	7/1/2015
Jeremy Burger	jburger1023@gmail.com	Lehman	7/1/2015
Andrew Owenby	andrew.owenby@apac.com	APAC	7/1/2015
Chris Quinn	cquinn@phillipshardy.com	Phillips Hardy	7/1/2015
Kevin Jones	kjones@phillipshardy.com	Phillips Hardy	7/1/2015
Diane Heckemeyer	diane.heckemeyer@statetechmo.edu	State Technical College of MO	7/1/2015
James Sutton	jsutton@greatriv.com	Great River Engineering	7/1/2015

7/22/2015 - SL - TMC 209			
Name	**E-mail**	**Company**	**Training Date**
Fred Wilson	f.wilson@ica-onramp.com	HDR/ICA	7/22/2015
Steve Gerstner	sgerstner@gerstnerelectric.com	GEI	7/22/2015
Ryan Conrath	rconrath@gerstnerelectric.com	GEI	7/22/2015
Tom Dieckmann	tdieckmann@gerstnerelectric.com	GEI	7/22/2015
Brian Schanuel	bschanuel@gerstnerelectric.com	GEI	7/22/2015
Steve Helmholt	shelmholt@gerstnerelectric.com	GEI	7/22/2015

7/29/2015 - KC - District			
Name	**E-mail**	**Company**	**Training Date**
John Szturo	jsztuvo@hntb.com	HNTB	7/29/2015
Wayne Duryee	wduryee@hntb.com	HNTB	7/29/2015
Adam Goins	adam.goins@emerysapp.com	Emery Sapp	7/29/2015

8/4/2015 - SE - District			
Name	**E-mail**	**Company**	**Training Date**
Neal Chilton	nchilton@rlpersons.com	RL Persons Construction	8/4/2015
Justin Stotts	Justins@robertsoncontractors.com	Robertson Contractors	8/4/2015

8/5/2015 - CD - District			
3	**E-mail**	**Company**	**Training Date**
David Fennewald	dave.fennewald@apac.com	APAC	8/5/2015
Ryan Lazier	drlazier@gershenson.com	Gershenson	8/5/2015
Carl Pendergrass	carl.pendergrass@apac.com	APAC	8/5/2015
Ed Evers	ed.evers@apac.com	APAC	8/5/2015
Bruce Loesch	Roberts.Locsch@apac.com	APAC	8/5/2015

8/12/2015 - SW - District			
Name	**E-mail**	**Company**	**Training Date**
Darrell Ross		JLA Construction	8/12/2015
Bill Helkler		JLA Construction	8/12/2015
Troy Anderson		JLA Construction	8/12/2015
Alan Wraner		JLA Construction	8/12/2015
Sheri McWilliams	bandkexcavation@sbcglobal.net	Bennett Inc	8/12/2015
Bryan Moorn		JLA Construction	8/12/2015
Jason Hurk		JLA Construction	8/12/2015
Josh Sanders		JLA Construction	8/12/2015
Jannifer Arnot		JLA Construction	8/12/2015
Keith Roberts	keith@jlaconstruction.com	JLA Construction	8/12/2015
Terry Fox	triad@triad-es.com	Triad	8/12/2015

8/18/2015 - NE - District			
Name	**E-mail**	**Company**	**Training Date**
Bruce Weishanpt	wysop10bruce@aol.com	Kozeny Wagner	8/18/2015

8/19/2015 - NW - District			
Name	**E-mail**	**Company**	**Training Date**
Jaimie Loch	jloch@chkc.net	Collins and Hermann	8/19/2015

11/23/2015 - SL - TMC			
Name	**E-mail**	**Company**	**Training Date**
Kurt Kutter	kkutter@cochraneng.com	Cochran	11/23/2015
Ray Allen	-	Cochran	11/23/2015
Jeff Henry	-	Cochran	11/23/2015

11/24/2015 - KC - District			
Name	**E-mail**	**Company**	**Training Date**
Drew Walkenbach	drew.walkenbach@apac.com	APAC	11/23/2015
Van Wiskur	vwiskur.se3.us	SE3	11/24/2015

11/30/2015 - SW - District			
Name	**E-mail**	**Company**	**Training Date**
Doug Stokes	drstokes@blevinsasphalt.com	Blevins Asphalt	11/30/2015
Kevin Durbin	kdurbin@blevinsasphalt.com	Blevins Asphalt	11/30/2015
Rick Berkemeier	rbekemeier@aol.com	Blevins Asphalt	11/30/2015
Alan Reinkemeyer	areinkemeyer@agc.org	AGC	11/30/2015

Appendix I – Training Certification Program

Consent Decree & Land Disturbance Training

MoDOT 2015

Training Schedule

- Consent Decree Overview
- New Stormwater Compliance Site
- General Permit Update
- Erosion/Sediment Control Overview
- Quiz

Training Rules

- **SIGN IN!**
- Cell Phones on Vibrate
- Ask Questions
- Share Lessons Learned

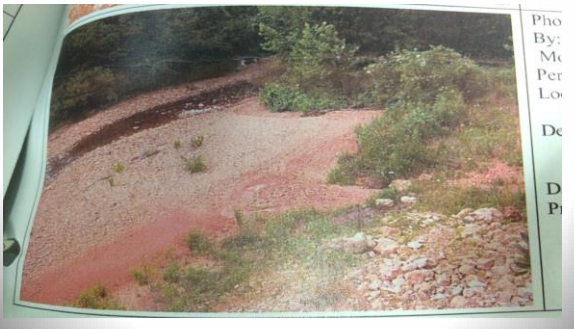
Consent Decree – What does it even mean?

- Consent Decree – "An agreement or settlement to resolve a dispute between two parties without admission of guilt (criminal) or liability (civil)"
- Frequent Occurrences:
  - Antitrust Laws
  - Employment Discrimination
  - Environmental Regulation

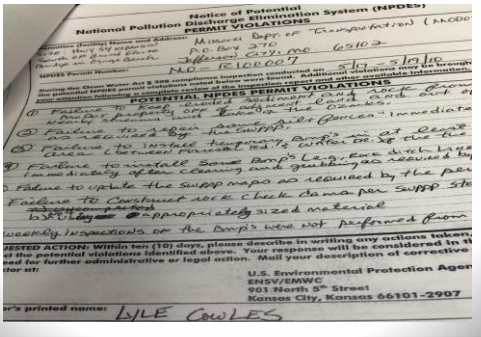
Consent Decree – Why MoDOT?

- Previous NOV's
- Route 67
- Route 54

Route 67 – Wayne County (2010)



Route 54 – Camden County (2010-2011)



Why EPA Why?

- The Clean Water Act (1972) has always had the requirements of the Consent Decree!
- Maximum Civil Penalty is $37,500 per violation per day without administrate order
- MoDOT is "Chronic Violator"?

Why EPA Why?

- Stormwater Compliance = “National Enforcement Priority”
- Contaminated Stormwater – EPA Top national priority list
- 2009: Head of EPA “vowed” to congress that stronger action for CWA violation would be taken

Not Just DOTs!

- $3.1 Million + National Compliance System

- $1.3 Million + National Compliance System

United States of America vs MoDOT

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MISSOURI

UNITED STATES OF AMERICA,
Plaintiff,
v.
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION,
Defendant.

Civil Action No.
CONSENT DECREE

CONSENT DECREE

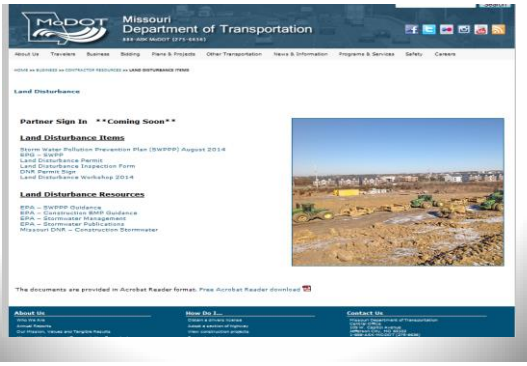
Consent Decree – MoDOT - Basics

- Any project > 1 acre on ROW SHALL comply
- Required to self report using online database
- Subjected to 15 stipulated penalties
- Duration of at least 3 years
- MoDOT Pays civil penalty of $750,000

CD and LD Resource Center

- http://modot.gov/ld
- Kopinski 573-751-2790
- MoDOT District Experts

Modot.gov/LD



Decree Schedule

- 30 Day Public Notice – Completed
- July 1st – Target Date for Starting Database
- July 1ish – August 1ish: Documented Signed by Everyone
- 120 Days after Federal Judge Signs: Penalty Count Begins for ALL Projects!

Stipulated Penalty #1

- Designate and Maintain Stormwater Compliance and Environmental Specialist:
  - Employee of MoDOT
  - Competent
  - Develops and Updates Stormwater Training
  - Prepares Written Annual Report to EPA
  - Oversee Statewide Projects
  - Coordinates Environmentally Sensitive Areas
  - Reviews Outstanding Deficiencies Every 14 Days
  - Serves at Point of Contacts for EPA
  - Hold Authority to Issue Stop Work for Erosion Issues
  - Holds Authority to Approve Change Orders up to $100,000

Stipulated Penalty #1

Failure to Comply:

$1000 – Initial Violation

$750 – Every 14 Days

Stipulated Penalty #2a

- Appoint and Maintain Environmental Inspector for Every Project (MoDOT):
  - Assigned by July 1st for Active Projects
  - Assigned Before Starting Any New Project
  - Complete This Training Before August 1
  - Attend The Land Disturbance Pre-Activity Meeting
  - Be on-site 3 Days per Week until Project Seeded
  - After Seeded Be on-site 1 Day per Week until 70% Established Vegetation
  - Perform All Weekly and Post-Runoff Inspections Reports
  - Create and Distribute Reports in New Database
  - Update Project SWPPP to Reflect Site Conditions

Stipulated Penalty #2b

- Appoint and Maintain Water Pollution Control Manger for Every Project (Contractor):
  - Be Knowledgeable with NPDES Permit
  - Be Knowledgeable with SWPPP
  - Be Knowledgeable with MoDOT's Consent Decree
  - Complete this Training by July 1st
  - Attend the Land Disturbance Pre-Activity Meeting
  - Review and Sign the Project Specific SWPPP
  - Visit Project at Least Once Per Week Until Project has Final Stabilization
  - Be Authorized by Prime to Make Decisions Regarding Erosion Control
  - Review and Sign Every Inspection Report Within 4 Days
  - Point of Contact for All Erosion Control Between Prime and Subs

Stipulated Penalty #2

Failure to Comply:

$750 – Initial Violation

$750 – Every 14 Days

Stipulated Penalty #3a

- Individuals Shall Properly Trained:
  - MoDOT - July 1st Deadline for Everyone
    - All REs
    - All Environmental Construction Inspectors
    - All Oversight Inspectors
    - Any Employee "Routinely" in SWPPP Development
    - All Employees with Stop Work Authority for Environmental Reasons
  - Re-Certification Every Other Year (Winter 2016)

Stipulated Penalty #3b

- Individuals Shall Properly Trained:
  - External – July 1st Deadline for Everyone
    - Projects Managers or Superintendents
    - Water Pollution Control Managers
    - Environmental Construction Inspectors
    - All Employees with Stop Work Authority for Environmental Reasons
  - Re-Certification Every Other Year (Winter 2016)

Stipulated Penalty #3

Failure to Comply:

$750 – Initial Violation

$750 – Every 14 Days

Stipulated Penalty #4

- Pre-Activity Land Disturbance Meeting is Required
  - Shall Occur Prior to ANY Land Disturbance
  - Held on the Physical Project Site
  - Record Meeting Minutes – Save to V Drive or SharePoint
  - All Parties Shall be at On-Site Meeting:
    - MoDOT RE
    - MoDOT Inspector
    - Contractor Project Manager
    - Contractor WPCM
    - All Primes and Subs Project Managers Taking Part in Land Disturbance and/or Erosion Control Activities

Stipulated Penalty #4

Failure to Comply:

$750 – Initial Violation

$250 – Every Day After

Stipulated Penalty #5

- Inspection Protocol Needs to be Created
  - Before July 1st Kopinski Shall Create "New" Inspection Protocol
  - Everyone Shall be Provided a Copy of Protocol
    - Inspections Occur Every Week or After Runoff Event
    - All BMP Need to be Checked During an Inspection
    - All Outfalls Checked 50 Feet Downstream
    - Inspections Entered Within Time Requirements
    - REs and WPCM Need to Approve within Requirements
  - Check www.modot.gov/ld for Protocol

Stipulated Penalty #5

Failure to Comply:

$750 – Per Day

Stipulated Penalty #6

- Weekly Inspections and Run-off Inspections Shall Be **Performed** Per the Consent Decree
  - Inspectors Shall Document Any and All Deficiencies
  - Document Date Each Deficiency is Addressed
  - List Any Deficiency Not Corrected on Previous Inspection
  - "Signed" By Person Performing Inspection
  - By Signing Agreeing Project SWPPP is Up-to-Date
  - RE and WPCM (Contractor) Need to "Sign" Within 3 Days

Stipulated Penalty #6

Failure to Comply:

$500 – Initial Missed Inspection

$100 – Per Day Until Performed

Stipulated Penalty #7

- Weekly Inspections and Run-off Inspections Shall Be **Documented** Per the Consent Decree
  - 24 Hours to Enter Reports if you have Wireless Internet
  - 48 Hours to Enter Reports if No Wireless Internet
  - "Day" = Calendar Day
  - If and Only If Last Day Falls on Saturday, Sunday or Federal Holiday Allowed Until Next Business Day

Stipulated Penalty #7

Failure to Comply:

$100 per Day

Stipulated Penalty #8

- The RE from MoDOT and the WPCM from the Contractor Shall "Sign" Inspections
  - The RE has 3 Days to "Sign" Each Inspection Report
  - The WPCM has 3 Days to "Sign" Each Inspection Report

Stipulated Penalty #8

Failure to Comply:

$250 per Report

Stipulated Penalty #9

- Environmentally Oversight Inspections, When Required Shall Be Performed Per the Consent Decree
  - If in a Environmentally Sensitive Area
  - If Project is > 5 Acres of Disturbance
  - Oversight Inspections Shall be Performed Every 90 Days

Stipulated Penalty #9

Failure to Comply:

$1000 per Initial Violation

$250 per Day Until Performed

Stipulated Penalty #10

- Any Violation of the Statewide Land Disturbance Permit OR SWPPP Requirement
  - Our Self Reporting System does NOT Record Any of These
  - Example: Diamond Grinding and Discharging into Creek or Inlet
  - Example #2: No Dewatering Plan and Pumping into River

Stipulated Penalty #10

Failure to Comply:

- **$1000 Per Initial Violation**
- **$2500 for Days 11-20**
- **$3500 for Days 21+**

Stipulated Penalty #11

- Failure to Correct ANY Deficiency on an Inspection
  - Any Deficient or Failed BMP Must Be Corrected Within 7 Days

Stipulated Penalty #11

Failure to Comply:

$1000 per Deficiency Day 1-10

$2500 for Days 11-20

$3500 for Days 21+

Stipulated Penalty #11

BMP Discussion!

Stipulated Penalty #12

- Failure to Enter an Item into the Database
  - Inspectors Shall Enter Every Deficiencies into Database
    - Provide Location
    - Provide Description
    - Provide Type of BMP

Stipulated Penalty #12

Failure to Comply:

$200 per Day per Deficiency

Stipulated Penalty #13

- Failure of RE or Kopinski to Perform Compliance Review
  - REs: Every 7 Days
  - Kopinski: Every 14 Days
  - E-mail Reminders are in Place if you are Assigned to Project

Stipulated Penalty #13

Failure to Comply:

$200 per Day

Stipulated Penalty #14

- Failure to Submit a Spill Report
  - Anytime the Spill or Emergency Reporting Provision of our Permit is Triggered
  - 3 Days to Submit Written Report to EPA
  - Current Permit: Hazardous Substance or Soil Contamination Discovered or Oil Spill
  - New Permit: DNR/EPA Requesting More Effort
  - Look for Additional Guidance on www.modot.gov/ld

Stipulated Penalty #14

Failure to Comply:

$750 per Report Initial Violation

$750 Every 14 Days

Stipulated Penalty #15

- Any Other Violation of the Decree Not Specified
  - Catch All for if EPA Visits/Audits Projects

Stipulated Penalty #15

Failure to Comply:

$100 per Violation per Day

Questions – Stipulated Penalties

Break Time!

Any Questions Over Penalties

Other Consent Decree Items

- Documentation
- Land Disturbance Pre-Activity Meetings
- Environmentally Sensitive Areas
- On-Site Visits

Documentation

- Must Keep All Documents until 3 Years After Decree is Terminated (October 2018 or longer)
- We Need to Provide EPA/DNR Any Requested Information
- Start Taking More Pictures!

After Picture

After Picture

Before Picture

Pre-Activity Meeting

- Pre-Activity Land Disturbance Meeting is Required
  - Shall Occur Prior to ANY Land Disturbance
  - Held on the Physical Project Site
  - Record Meeting Minutes – Save to V Drive or SharePoint
  - All Parties Shall be at On-Site Meeting:
    - MoDOT RE
    - MoDOT Inspector
    - Contractor Project Manager
    - Contractor WPCM
    - All Primes and Subs Project Managers Taking Part in Land Disturbance and/or Erosion Control Activities
- If Needed Hold Another Meeting!

Environmentally Sensitive Areas

Environmentally Sensitive Areas

- Additional inspections if > 5 Acres
- 5 Acres < X < 25 Acres Same District
- 25 Acres < X < 300 Acres Another District
- X > 300 Acres Central Office

Environmentally Sensitive Areas

• Any area which would be directly impacted by Stormwater discharges:

1. Federally Listed Threatened or Endangered Species
2. Sediment Impaired Body of Water (303d)

1. Federally Listed Threatened or Endangered Species

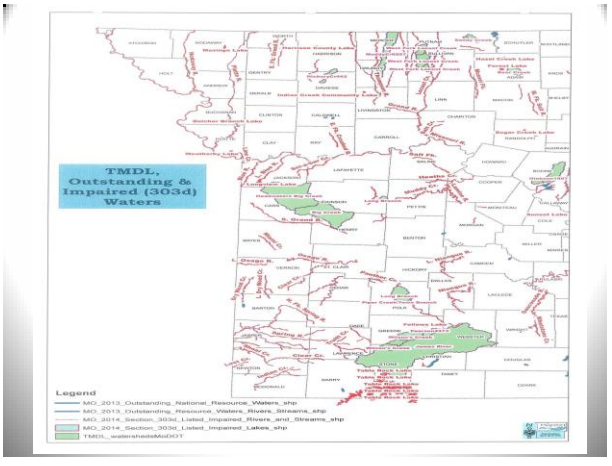
• Only 5 “Critical Habits” Caves/Counties where Indian Bats are Designated

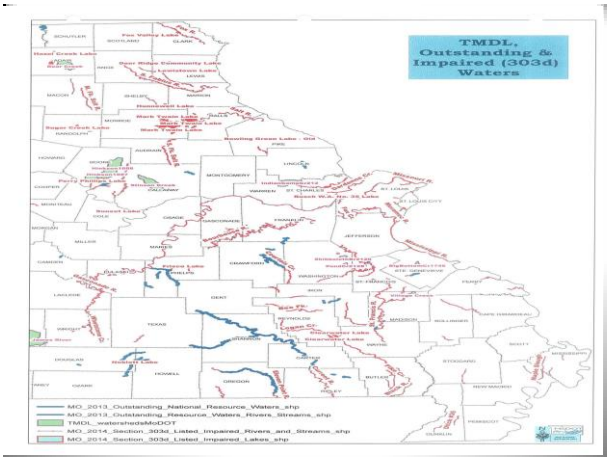
• USFWS Identifies Species and MoDOT Working to Ensure Every Project is Covered

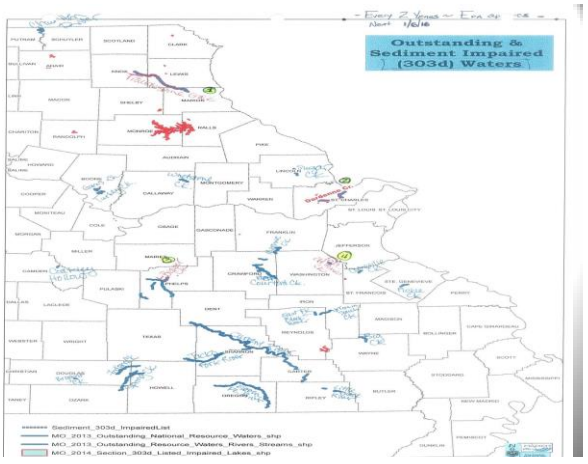
2. Impaired Body of Water (303d)

• Issued every 2 years by DNR and approved by EPA

• Expect next update to be out soon for January 2016







303D – Systems Works

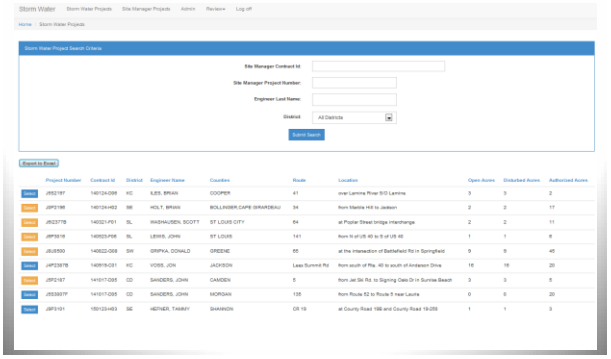
On-Site Project Visits - Quiz

- MoDOT Inspectors Shall Visit?
  - At least 3 days per week!
- MoDOT RE Shall Visit?
  - At least once per every 30 Days!
- Contractor's WPCM Shall Visit?
  - At least once per week!
- When does everyone need to stop visiting?
  - When Project has Achieved Final Stabilization!

Consent Decree Projects

- Any project > 1 acre on ROW SHALL comply
  - MoDOT Project with IP – YES
  - Design Build - YES
  - Maintenance Projects - YES
  - Permit Projects - YES
  - LPA Project - YES
  - Utilities Project – YES

Database Time ☺



Database

- Developed by MoDOT for MoDOT
- This is NOT SiteManager
- Daily E-mail at 7am
- Improvements: Wants vs Needs
- Any Outages Call Kopinski

How are Projects Pulled Into System?

- Only Pulled into System if Authorized Acres > 1
- If Project Needs Pulled in Immediately Call
- Once Disturbed > 1 Acres = Penalties Begin

Challenge #1

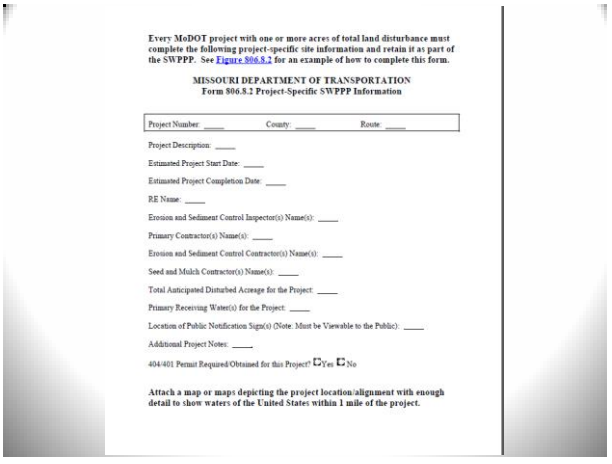
- Everyone needs to Update in SiteManger
- QRG on how to Update Acreage
- Lets check out the QRG – WWW.GOOGLE.COM

Challenge #2

- What about All the Other Projects!!
- Currently Working with IS to Develop
- Let me Know if your Project Needs in the System

What does Database NOT do?

- Project Specific SWPPP
- Red Line Drawings to Plan Sheets
- Keep Inspection Reports



Every MoDOT project with one or more acres of total land disturbance must complete the following project-specific site information and retain it as part of the SWPPP. See Figure 806.8.2 for an example of how to complete this form.

MISSOURI DEPARTMENT OF TRANSPORTATION
Form 806.8.2 Project-Specific SWPPP Information

Project Number: ____ County: ____ Route: ____

Project Description: ____

Estimated Project Start Date: ____

Estimated Project Completion Date: ____

RE Name: ____

Erosion and Sediment Control Inspector(s) Name(s): ____

Primary Contractor(s) Name(s): ____

Erosion and Sediment Control Contractor(s) Name(s): ____

Seed and Mulch Contractor(s) Name(s): ____

Total Anticipated Disturbed Acreage for the Project: ____

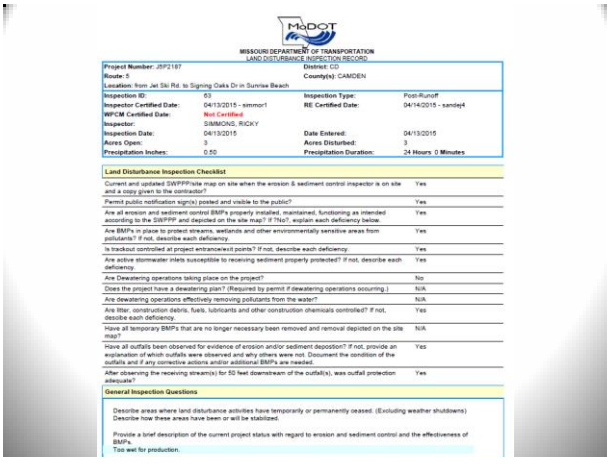
Primary Receiving Water(s) for the Project: ____

Location of Public Notification Sign(s) (Note: Must be Viewable to the Public): ____

Additional Project Notes: ____

404/401 Permit Required/Obtained for this Project? ☐ Yes ☐ No

Attach a map or maps depicting the project location/alignment with enough detail to show waters of the United States within 1 mile of the project.



MISSOURI DEPARTMENT OF TRANSPORTATION
LAND DISTURBANCE INSPECTION RECORD

Project Number: J5P2187		**District:** CD	
Route: 5		**County(s):** CAMDEN	
Location: from Jet Ski Rd. to Signing Oaks Dr in Sunrise Beach			
Inspection ID:	53	**Inspection Type:**	Post-Runoff
Inspector Certified Date:	04/13/2015 - simmor1	**RE Certified Date:**	04/14/2015 - sandej4
MPCM Certified Date:	Not Certified		
Inspector:	SIMMONS, RICKY		
Inspection Date:	04/13/2015	**Date Entered:**	04/13/2015
Acres Open:	3	**Acres Disturbed:**	3
Precipitation Inches:	0.50	**Precipitation Duration:**	24 Hours 0 Minutes

Land Disturbance Inspection Checklist

Current and updated SWPPP/site map on site when the erosion & sediment control inspector is on site and a copy given to the contractor?	Yes
Permit public notification sign(s) posted and visible to the public?	Yes
Are all erosion and sediment control BMPs properly installed, maintained, functioning as intended according to the SWPPP and depicted on the site map? If 'No', explain each deficiency below.	Yes
Are BMPs in place to protect streams, wetlands and other environmentally sensitive areas from pollutants? If not, describe each deficiency.	Yes
Is trackout controlled at project entrance/exit points? If not, describe each deficiency.	Yes
Are active stormwater inlets susceptible to receiving sediment properly protected? If not, describe each deficiency.	Yes
Are Dewatering operations taking place on the project?	No
Does the project have a dewatering plan? (Required by permit if dewatering operations occurring.)	N/A
Are dewatering operations effectively removing pollutants from the water?	N/A
Are litter, construction debris, fuels, lubricants and other construction chemicals controlled? If not, describe each deficiency.	Yes
Have all temporary BMPs that are no longer necessary been removed and removal depicted on the site map?	N/A
Have all outfalls been observed for evidence of erosion and/or sediment deposition? If not, provide an explanation of which outfalls were observed and why others were not. Document the condition of the outfalls and if any corrective actions and/or additional BMPs are needed.	Yes
After observing the receiving stream(s) for 50 feet downstream of the outfall(s), was outfall protection adequate?	Yes

General Inspection Questions

Describe areas where land disturbance activities have temporarily or permanently ceased. (Excluding weather shutdowns) Describe how these areas have been or will be stabilized.

Provide a brief description of the current project status with regard to erosion and sediment control and the effectiveness of BMPs.
Too wet for production.

Let Go Live

Consent Decree – Contract Administration

- Construction Projects – New JSP
- Permits – Working to Add Language to Permits
- LPA – Incorporate into JSP
- Cost Shares – Need to Write it into Agreements
- Utilities – Good Luck (Permits, MUAs, etc)

Consent Decree – Off MoDOT ROW

Any Location off of MoDOT ROW needs to obtain their own Permit!!!

- Contractor's Borrow Site
- Contractor's Storage Site
- LPA Projects
- Permit Project

Contract Administration – Best Practices

- Keep All Project Under 1 Acre of Disturbance if at All Possible

When We Do Break 1 Acre Set Up Good Erosion Control in Design Such that Life Will be Easier Implementing

- Be Sure BMPs are Best Selection and Properly Installed!

Break

- https://www.youtube.com/watch?v=A3yYN5N8wkM

Land Disturbance Training

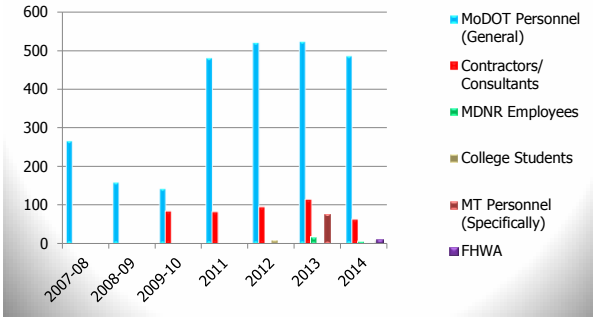
Why is Land Disturbance Important

- Erosion and Sediment loss leads to poor water quality
- Public Expectations
- It is the Law
- Fines and Penalties can and will be imposed

Education and Awareness

- Everyone needs to do their part
- To make this happen we need to train and educate everyone
- Make the effort to stay knowledgeable. Keep up with changes!
- Contractors and other Departments are Looking for YOUR Leadership!

MoDOT's Training History



Land Disturbance Regulation History

- 1972 Clean Water Act
  - Permit Required to Discharge
  - Missouri – Missouri State Operating Permit
  - National System – National Pollutant Discharge Elimination System (NPDES)
- Point Sources (72) Non-Point Sources (87)
- Phase II Effect > 1 Acre

Permit – Prohibited Acts

Permit – Prohibited Acts

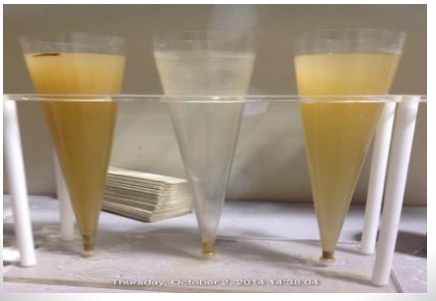
- To Exceed General or Specific Water Quality Criteria
  - Free from: Oil, Scum, Floating Debris, Unsightly Turbidity, Harmful Effect on Human or Aquatic Life

Permit – Prohibited Acts

- To Exceed Permit Limits
  - 2.5 ml/L/hr for Settleable Solids

October 2, 2014 1:03pm

October 2, 2014 2:38pm



Imhoff Cone Test

E. SAMPLING REQUIREMENTS AND EFFLUENT LIMITATIONS

1. Settleable Solids discharging from a stormwater outfall shall not exceed 2.5 ml/L per Standard Method 2540 F for storm events up to but not exceeding the local 2-year, 24-hour storm. The Settleable Solids limit does not apply during storm events that exceed the local 2-year, 24-hour storm.

2. The Department may require sampling and reporting as a result of illegal discharges, compliance issues, complaint investigations, or other such evidence of contamination from activities at the site. If such an action is needed, the Department will specify in writing any sampling requirements, including such information as location, extent and parameters.

Disturbed Areas

- Erodible Areas – Areas Exposed or Inadequately Protected Soil or Surface

- Disturbed Areas – Areas that Have Not Reached Final Stabilization in Accordance with the Permit

- For Example Seed and Mulch may Make your Area Non-Erodible, but still Disturbed Until 70% Vegetative Cover is Established!

Inspections

- Inspection Ever 7 Days

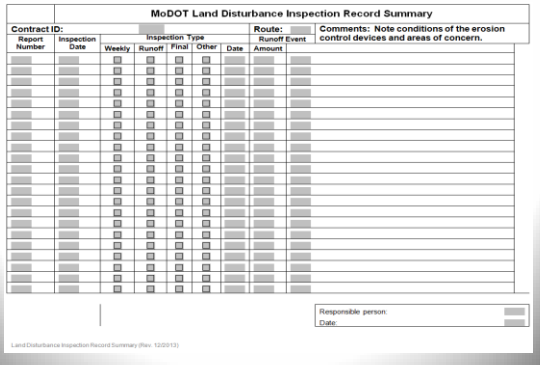
- Runoff Event Needs to be Performed within 48 Hours

- Step by Step Guide as you Fill Out


MISSOURI DEPARTMENT OF TRANSPORTATION
LAND DISTURBANCE INSPECTION RECORD

Land Disturbance Inspection Checklist

Inspection Report Log


MoDOT Land Disturbance Inspection Record Summary

Contract ID:							Route:	Comments: Note conditions of the erosion control devices and areas of concern.
Report Number	Inspection Date	Inspection Type					Runoff Event	
		Weekly	Runoff	Final	Other	Date	Amount	

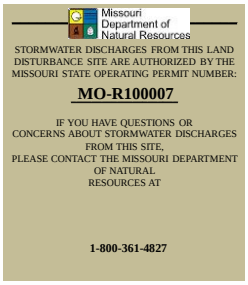
Responsible person:
Date:

Land Disturbance Inspection Record Summary (Rev. 12/2013)

Inspection

- Inspect Receiving Streams and Make Adjustments
- Permit Says Look 50’ Downstream of Last BMP
- Take Pictures!

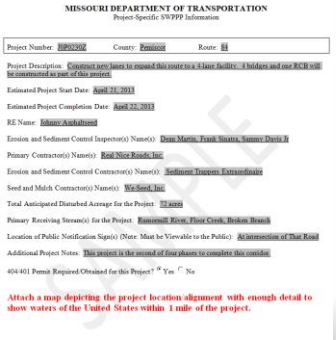

Public Notification



Storm Water Pollution Prevention Plan (SWPPP)

- Each Site Shall Have One
- Prepared Before Dirt is Moved
- Dynamic – Changes with Project
- Document All Changes – Written and Plans
- Includes Weekly Inspections – Every 7 Days
- Includes Post-Runoff Inspections – In 48 Hours
- Includes BMP Maintenance Plan (Construction)
- Includes Removal of BMPs and Restoration

Storm Water Pollution Prevention Plan (SWPPP) – Site Specific



MISSOURI DEPARTMENT OF TRANSPORTATION
Project-Specific SWPPP Information

Project Number: BP0230Z County: Pemiscot Route: 84

Project Description: Construct new lanes to expand this route to a 4-lane facility. 4 bridges and one RCB will be constructed as part of this project.

Estimated Project Start Date: April 21, 2013

Estimated Project Completion Date: April 22, 2013

RE Name: Johnny Asshaltseed

Erosion and Sediment Control Inspector(s) Name(s): Dean Martin, Frank Sinatra, Sammy Davis Jr

Primary Contractor(s) Name(s): Real Nice Roads, Inc.

Erosion and Sediment Control Contractor(s) Name(s): Sediment Trappers Extraordinaire

Seed and Mulch Contractor(s) Name(s): We Seed, Inc.

Total Anticipated Disturbed Acreage for the Project: 72 acres

Primary Receiving Stream(s) for the Project: Ramsenill River, Flour Creek, Broken Branch

Location of Public Notification Sign(s) (Note: Must be Viewable to the Public): At intersection of That Road

Additional Project Notes: This project is the second of four phases to complete this corridor.

404/401 Permit Required/Obtained for this Project? (•) Yes ( ) No

Attach a map depicting the project location/alignment with enough detail to show waters of the United States within 1 mile of the project.

Lessons Learned – SWPPP Violations

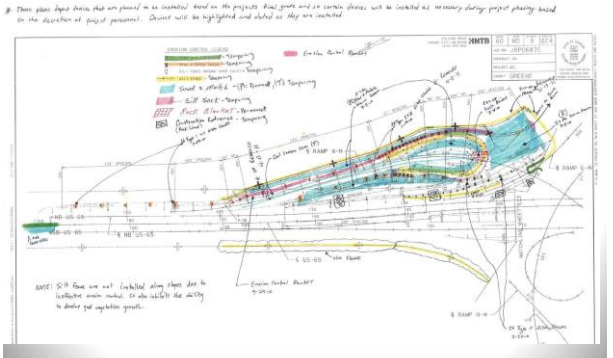
- "Failure to Develop" an adequate SWPPP
- "Failure to Properly Implement" an adequate SWPPP
- "Failure to Update or Amend" the SWPPP
- "Failure to Properly Operate & Maintain BMPs" in Accordance with the SWPPP
- Historically Focused on SWPPP for Enforcement.
- MoDOT Must Improve in this Area!

SWPPP – Site Maps

- Identify Site Boundaries and Outfall Locations
- Directions of Stormwater Flow and Approximate Slopes After Grading Activities
- Areas of Soil Disturbance and Areas Not to be Disturbed
- Locations of Major Structural and Non-Structural BMPs
- Locations of Stabilization Expected
- Locations of Waste, Borrow, or Stored Dirt
- Locations of All Waters of the US
- Locations of Stormwater Discharge to Surface Water
- Areas of Final Stabilization

Site Map – Information Needed

- Structural BMPs (More Info in Next Slides)
- Non-Structural BMPs (More Info in Next Slides)
- Where BMP is to be Located
- When BMP was Installed and Removed
- Operation and Maintenance Procedure
- Installation and Construction Procedures
- Conditions Necessary for BMP Effectiveness



BMP Guidance/Review

Limit Clearing if Possible

- Factors that Should be Considered
  - Site Conditions
  - Resources of the Contractor
  - Contractor's Plan for E&S
  - Response to Deficiencies
  - Contractor's History of Compliance

Vegetation Buffer

- Mark Out Buffer & Preservation Areas Prior to Disturbance
- Great Topic for the Pre-Activity Meeting

Grass BMP = Good

Disturbed Area – Temporary Stabilization

- "Steep Slopes" have Stricter Requirements
  - Greater than 3:1 Slopes
  - Greater than 150 in Length
- Within 7 Days of Ceasing Operations
- "Normal Slopes" 14 Days of Ceasing Operations
- Push to Cover Up Areas ASAP!

Do Not Delay, Seed and Mulch Today!

Disturbed Areas – Final Stabilization

- Final Stabilization Shall be Initiated Immediately after Activities Have Ceased
- 7 Day Window to Begin Stabilization, However Must be Documented
- 7 Day Exemption Allows for Weather or Equipment Issues

Final Stabilization - Seed

Vulnerable Slopes

Erosion Control Blankets

Fiber Reinforce Matrix & Flexible Growth Medium

Channel Slope Armoring

Ditch Checks

- One of the Most Visible Items on a Project
- Toe to Top Installation
- Extend Across Entire Ditch. Now Paid by LF
- Pick Type Based on Drainage Area and Expected Flow Volumes/Velocities

Ditch Checks

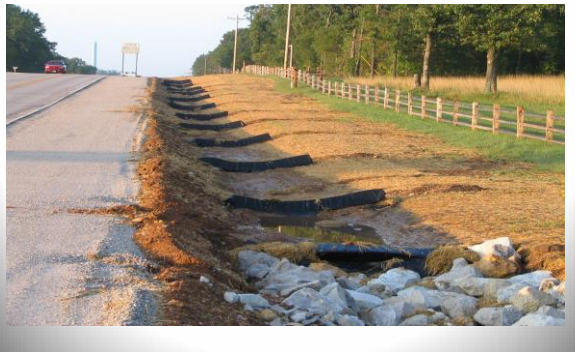
Ditch Checks – For CONCENTRATED Flow (Evaluate Carefully For Conditions)

Rock Ditch Check (New – 18" Eff. Hght)

Alternate Ditch Checks (New – 9" Eff. Hght)

- **Tri-Dikes**
- **Socks/Logs**
- **Compost or Mulch with ECB Covering**
- **Sandbags**
- **Etc.**

Triangular Silt Dike



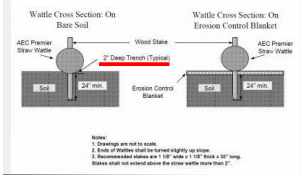
Triangular Silt Dike

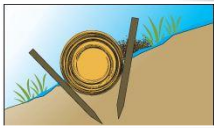
Wattles/Socks/Logs

Wattles/Socks/Logs

How are Contour Straw Wattles Installed?

- Layout a contour line on the slope with a hand level and wire flags.
- Dig a shallow depression (about 3 to 5 inches deep) and lay the wattleinto it.
- Drive a 1x2 or 2x2 wooden stake through the center of the wattle at leastó inches into the ground, stopping about two inches above the wattle.
- Put 5 stakes in each wattle, installing them end to end in the trench.
- Seat the wattle with foot tamped backfill on the upstream side such thatwater flowing down the slope will not run under it.



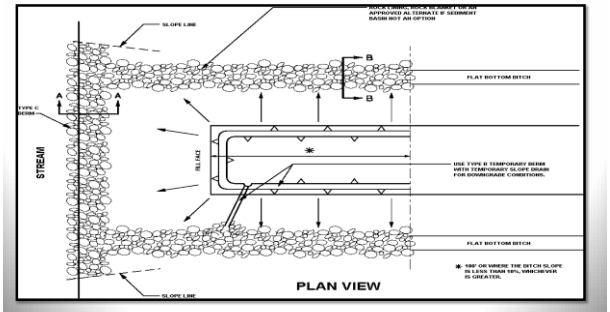


Temporary Stream Crossings

- 404 Permit Allows MoDOT to use Crossings
- Sized Sufficiently – Don't Want to Create Backwater in 2 Year 24 Hour Storm Event
- Fill Shall be Clean Rock

Temporary Stream Crossing

Type C Berm - Bridges



Area of Improvement - Dewatering

- Think Pump = Plan
- Need Documented Plan
- Include Anticipate Volumes and Flows

Concrete Washout

- Concrete Washout and Diamond Grinding Shall be Controlled
- Do NOT Allow Either to Reach Groundwater

Flocculants

- Flocculants can Help Drop the Colloids Out of Suspension and Decrease Turbidity
- Goes Above and Beyond What is Required!

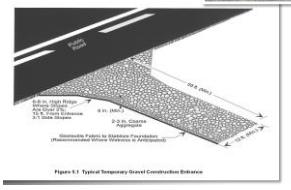
Soil Amendments (Pilot Project?)

- Preserve Topsoil for Reuse when Possible
- In Areas of Poor Soils, This may be Necessary to Get Needed Growth


Sediment Basins


Sediment Traps


High Risk - Entrances


Lesson Learned - Inlets

Lesson Learned - Inlets

Inlet Protection

Silt Fence

- Highly Visible
- Over-Installed at Point Flow Perimeter Locations
- Designed for Sheet Flow

Avoid/Limit - In Stream BMPs

Mulch – Perimeter Control

BMP Inspect & Maintain

- All Devices Shall be Maintain for All Devices Until Final Stabilization
- Any BMP Should be Cleaned Out When They Reach 50% Full
- Keep Site Looking Clean and Neat!

BMP Inspect & Maintain

- All BMPs Shall be Maintained throughout Project
  - If Half Full, Clean It
  - If Broke, Fix It
  - If Leaks, Plug It
  - If No Longer Needed, Remove It



Temporary BMPs Removal

- Any BMP that is not Biodegradable Needs to be Removed
- Remove Temporary BMP when area has Established Growth
- Don't Remove until YOU are Comfortable

Last Chance for Questions

Appendix J – Designation of Water Pollution Control Managers

Designation of Water Pollution Control Manager (WPCM)

Active Project as of December 31, 2015

District	Contract ID	Route	Project	Contractor	Project WPCM	Training Date	Backup WPCM	Training Date
KC	150220-C02	Y	Shoulder Project	Bowen	Jeff Bollin	6/9/2015	Shane Rumpf	6/24/2015
KC	150417-C01	50	Roadway	Bross	Robert Smith	5/18/2015	Kevin Leahr	6/22/2015
KC	150515-C05	49	New Interchange	ESS	Kyle Frye	6/24/2015	Jesse Hinton	7/9/2015
CD	150603-D01	70	Bridge Replacement	ESS	Josh Doerhoff	6/29/2015	Shawn Woodsmall	6/9/2015
SL	140124-F04	A	Shoulder Project	NB West	Bryan Fleer	6/8/2015	Dan Ritter	6/23/2015
SL	140321-F08	115	Street Enhancement	NB West	Dan Ritter	6/23/2015	Bryan Fleer	6/8/2015
SL	150123-F05	Y	Shoulder Project	NB West	Justin Zimpfer	6/8/2015	Bryan Fleer	6/8/2015
SL	150220-F09	47	Bridge Replacement	Kozeny-Wagner	Sean Kilian	6/23/2015	Shane Willims	6/23/2015
SL	150417-F03	D	Shoulder Project	NB West	Justin Zimpfer	6/8/2015	Dan Ritter	6/23/2015
SW	140611-G01	60	Grading & Pavement	Radmacher	Ben Cummings	6/30/2015	Jason Divine	6/24/2015
SW	150320-G02	60	Grading & Pavement	ESS	Ron Antonini	6/30/2015	David Tag	6/15/2015
SW	150515-G08	CCJ	New Interchange	APAC	Scot Lawson	6/30/2015	Justin Cobb	6/30/2015
SE	140124-H02	34	Grading & Pavement	APEX	Howard Hermmann	6/17/2015	Cecilia Walker	6/17/2105
SE	140523-H03	160	Grading & Pavement	HR Quadri	Steve Bubanovich	6/17/2015	Robert Sullivan	6/12/2015
SE	141121-H03	412	Grading & Pavement	Bross	Bob Lowery	6/17/2015	Jim Moore	6/17/2015
SE	150123-H03	CR 19	Grading & New Bridge	Robertson	Travis Slayton	6/29/2015	Todd Richmond	6/17/2015
SE	150220-H02	34	Shoulder Project	Pace	Brent Whitwell	6/12/2015	Robert Needels	6/12/2015

Project Final Stabilized in 2015

District	Contract ID	Route	Project	Contractor	Project WPCM	Training Date	Backup WPCM	Training Date
NW	150515-C08	E	Grading & Pavement	Boone	Sam Snider	6/8/2015	Dudley Gough	6/8/2015
KC	150123-C01	35	Grading & Bridges	Ideker	Ryan Wilson	6/16/2015	Jack Neel	6/16/2015
CD	141121-D02	8	New Bridge	Robertson	Ty Milner	6/17/2015	Todd Richmond	6/17/2015
SL	130206-F01	364	Grading & Pavement	MillstoneWeber	Brian Carlson	6/23/2015	Bob Scanlon	6/23/2015
SL	140321-F01	64	Bridge	MillstoneWeber	Brandon Bates	6/8/2015	Brandy Broeckling	6/8/2015
SL	140523-F06	141	Pavement	MillstoneWeber	Bob Scanlon	6/23/2015	Brian Carlson	6/23/2015
SW	140822-G07	N	Bridge Replacement	APAC	Craig Nilges	6/29/2015	Jim Jacomb	6/30/2015
SW	140822-G03	65	Resurfacing & Grading	Leo Journagan	Tim Killer	6/30/2015	Perry Schneider	6/30/2015
SW	140822-G08	65	New Interchange	Hartman	Jim Fisher	6/30/2015	Jack Bvown	6/30/2015
SW	140919-G01	44	New Interchange	ESS	David Tag	6/15/2015	Ron Antonini	6/30/2015
SW	150123-G01	60	Grading & Pavement	APAC	Tyson Collins	6/30/2015	Scott Lawson	6/30/2015
SW	140919-G02	49	Grading & Pavement	APAC	Scott Lawson	6/30/2015	Tyson Collins	6/30/2015
SE	150123-H04	62	Grading & Pavement	Joes Bridge	Rocky Robertson	6/17/2015	Karen Robertson	6/17/2015
SE	150320-H05	67	Grading & ADA	Lappe	Randy Lappe	6/17/2015	Daniel Schuchart	6/17/2015

Appendix K – Project Specific SWPPP

MISSOURI DEPARTMENT OF TRANSPORTATION

Project-Specific SWPPP Information Form 806.8.2

Project Number: J8P2356 County: CHRISTIAN Route: CCJ

Project Description: NEW INTERCHAGE at CCJ

Estimated Project Start Date: 9/16/2015

Estimated Project Completion Date: NOVEMBER 2016

RE Name: JOHNNY TEEGARDIN

Erosion and Sediment Control Inspector(s) Name(s): BRIAN TODD AND MATTHEW FRANKLIN

Primary Contractor(s) Name(s): APAC

Erosion and Sediment Control Contractor(s) Name(s): JLA

Seed and Mulch Contractor(s) Name(s): JLA

Total Anticipated Disturbed Acreage for the Project: 8

Primary Receiving Water(s) for the Project: JAMES RIVER

Location of Public Notification Sign(s) (Note: Must be Viewable to the Public): BOARD LOCATED IN YARD

Describe the BMP selection (if it differs from design), implementation and maintenance plan for the project (i.e., Why were selected BMPs chosen over those designed, what is the intended sequence and timing for installing BMPs and how will BMP deficiencies be addressed?):

BMPS INSTALLED PER SWPPP GUIDANCE AND SHOWN ON RED LINE DRAWINGS

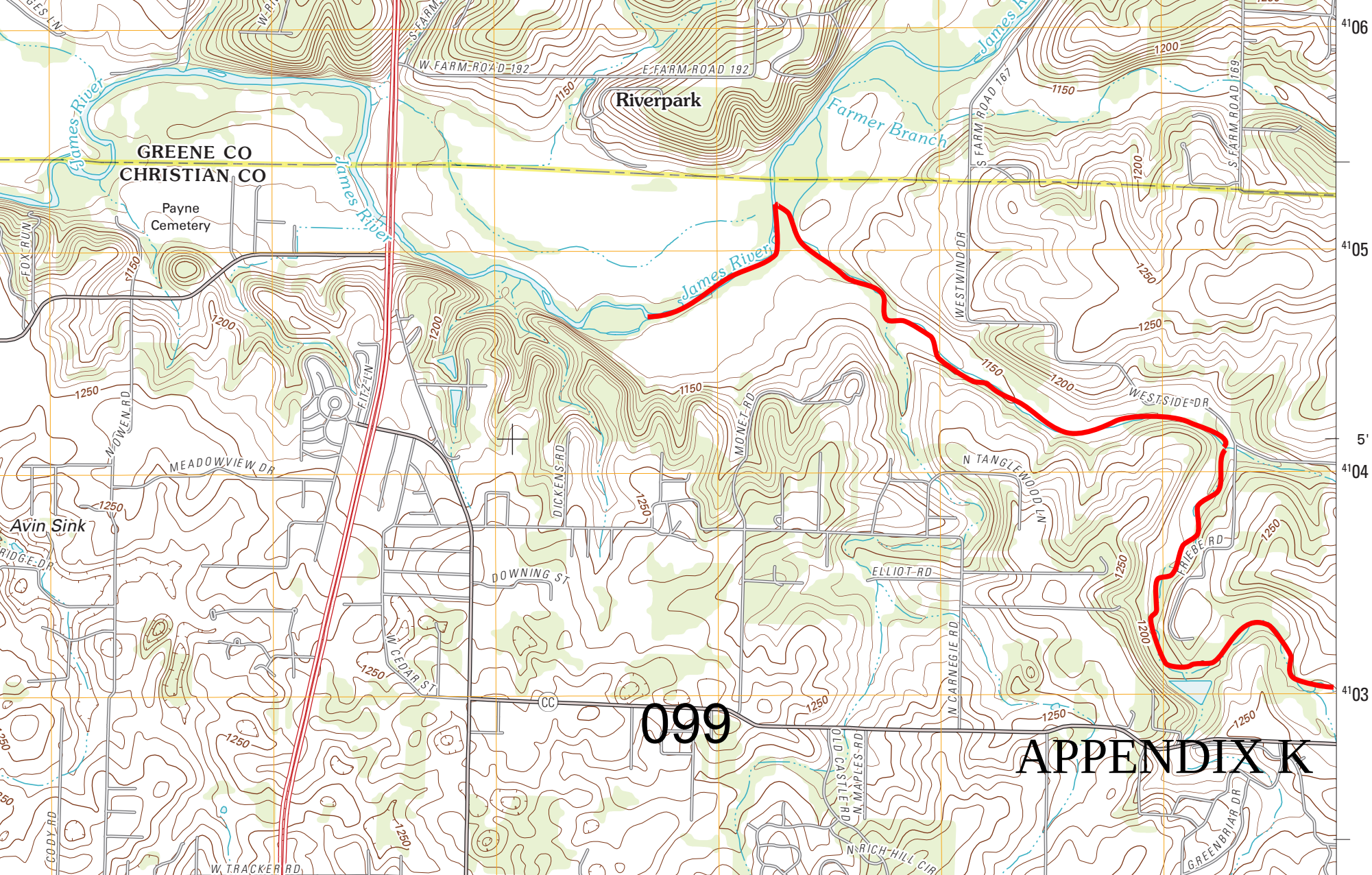
Additional Project Notes: DNR VISIT for COMPLAINT 9/30/2015

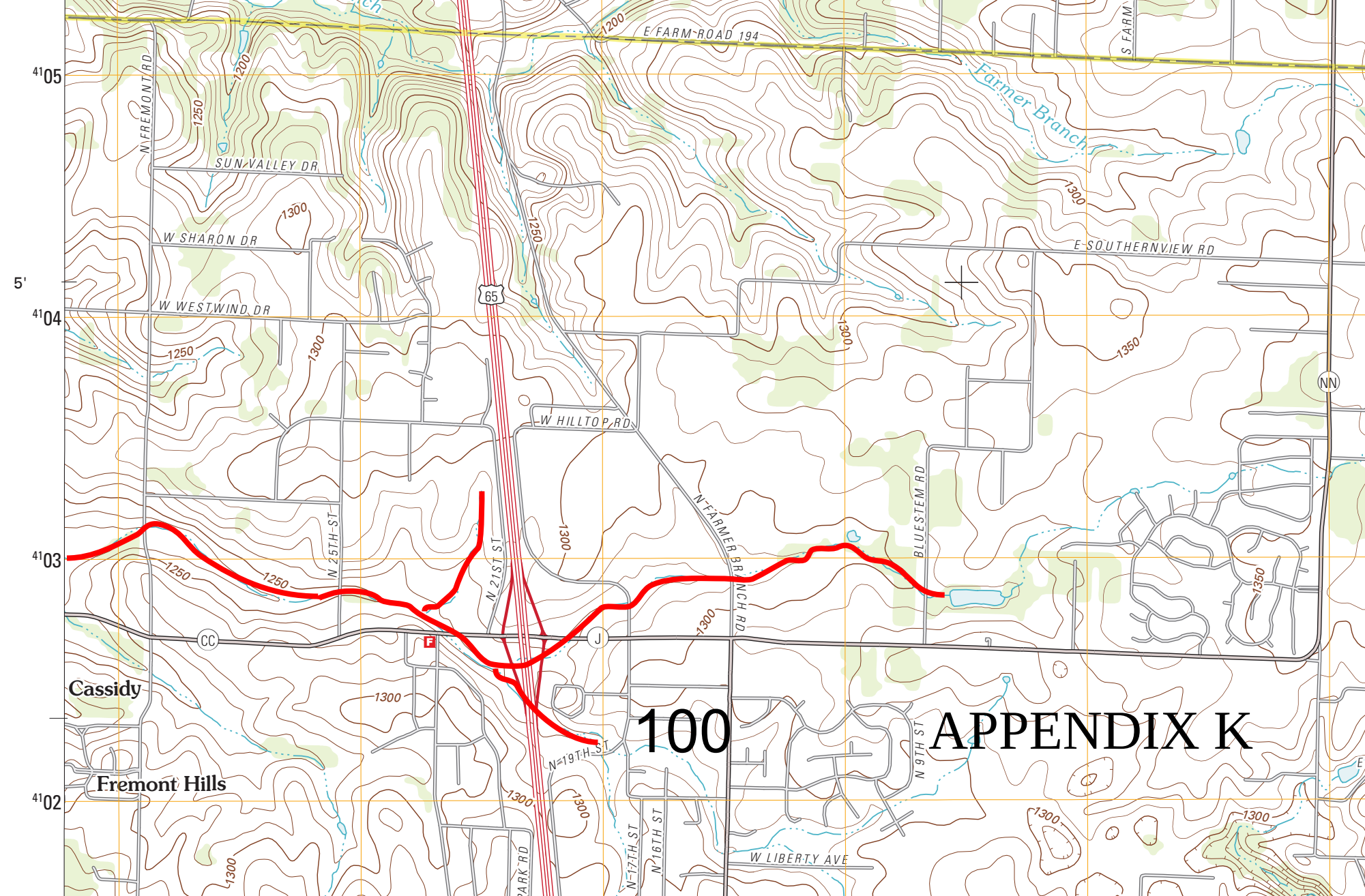
RE Signature: JOHNNY TEEGARDIN Date: _____

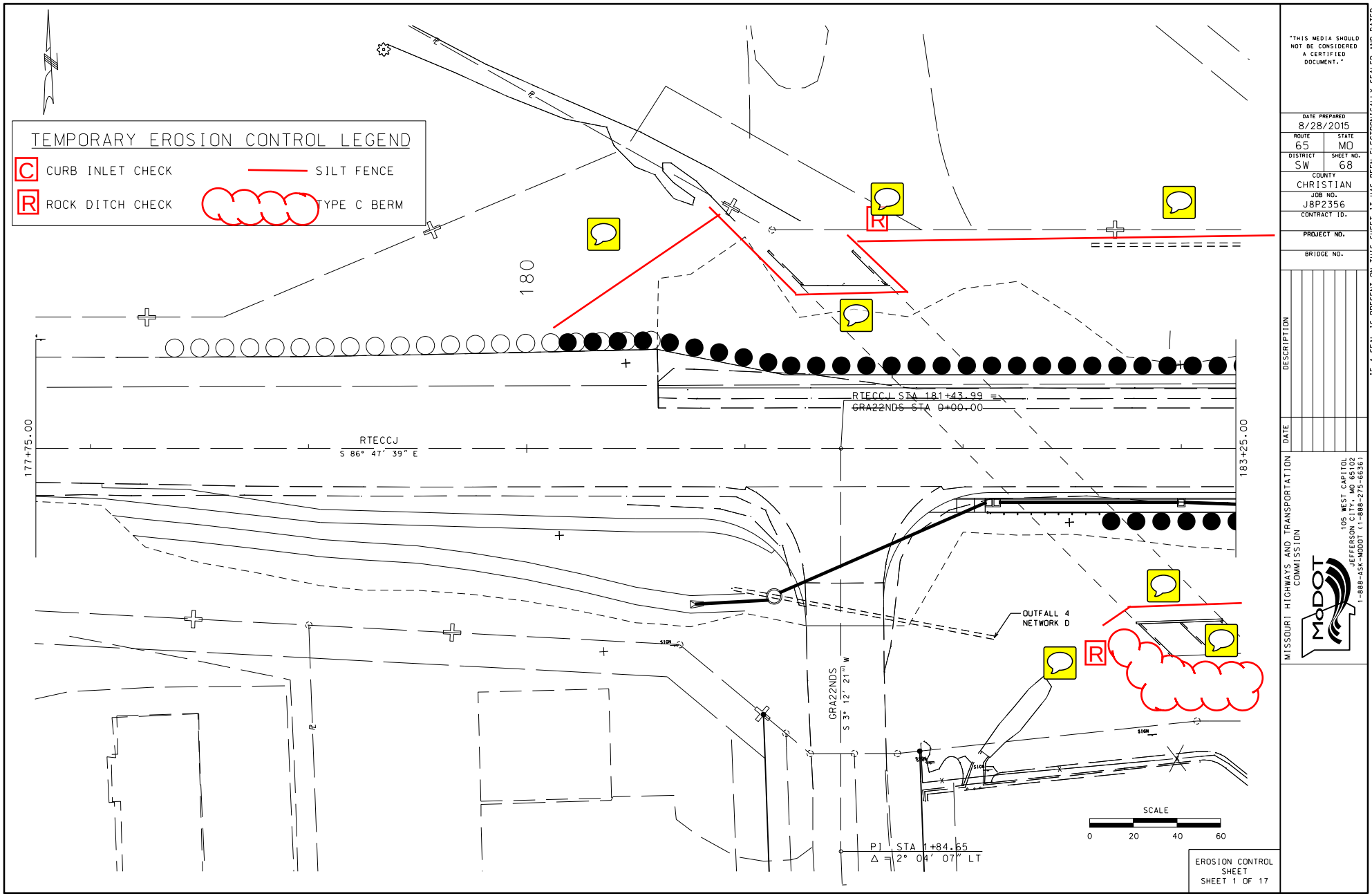
WPCM Signature: SCOT LAWSON Date: _____

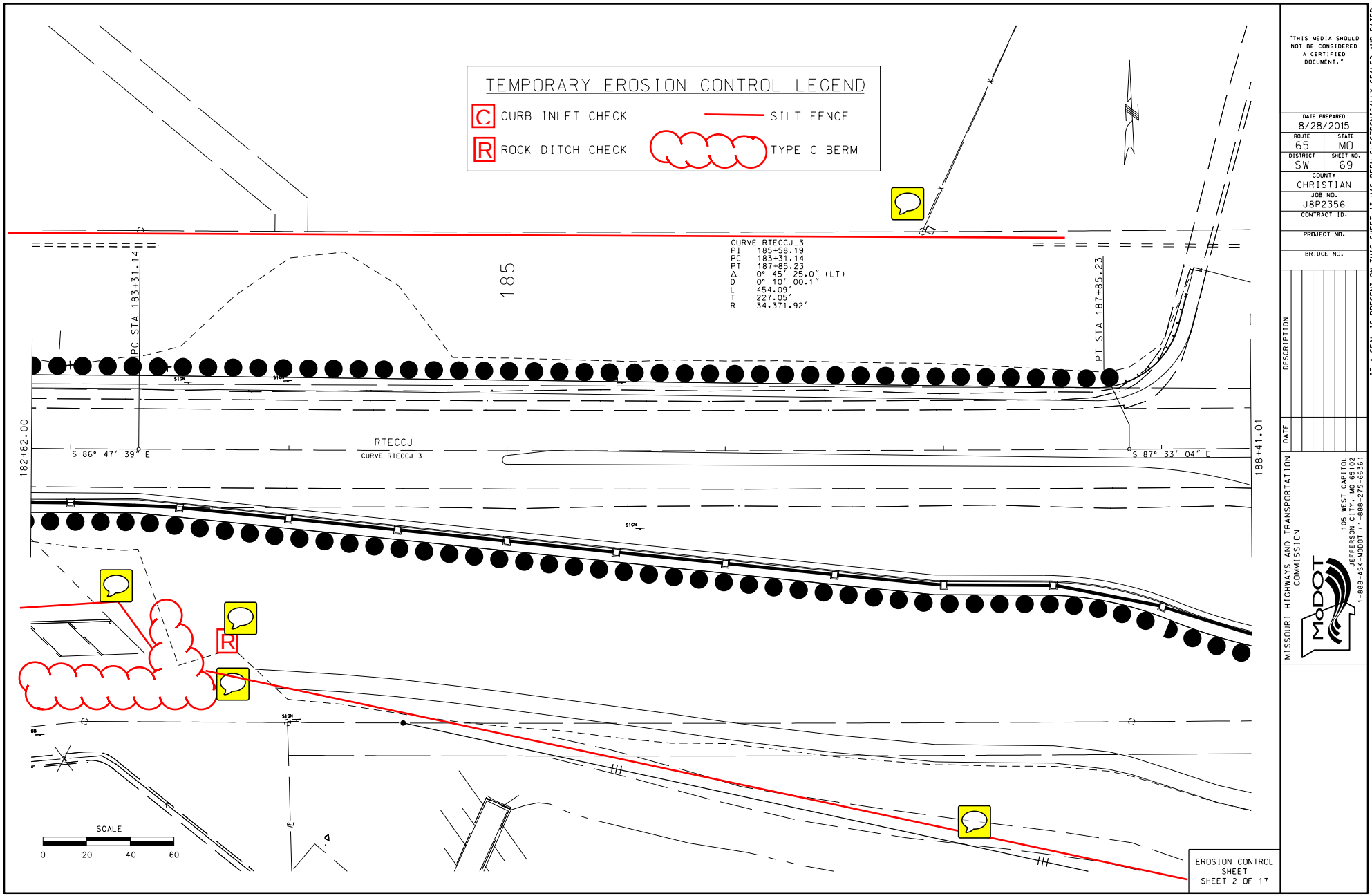
404/401 Permit Required/Obtained for this Project? ☐ Yes ☑ No

Attach a map or maps depicting the project location/alignment with enough detail to show waters of the United States within 1 mile of the project.


GREENE CO
CHRISTIAN CO
Riverpark
Payne Cemetery
Avin Sink
James River
Farmer Branch
W FARM ROAD 192
E FARM ROAD 192
S FARM ROAD 167
S FARM ROAD 169
WESTWIND DR
WESTSIDE DR
N TANGLEWOOD LN
TRIEBE RD
ELLIOT RD
MONET RD
DICKENS RD
DOWNING ST
W CEDAR ST
N CARNEGIE RD
OLD CASTLE RD
N MAPLES RD
N RICH HILL CIR
GREENBRIAR DR
N OWEN RD
MEADOWVIEW DR
FOX RUN
RIDGE DR
CODY RD
W TRACKER RD
ETZEL
CC
1150
1200
1250
4106
4105
4104
4103
5'
099
APPENDIX K


E FARM ROAD 194
Farmer Branch
N FREMONT RD
SUN VALLEY DR
W SHARON DR
W WESTWIND DR
E SOUTHERNVIEW RD
W HILLTOP RD
N 25TH ST
N 21ST ST
N FARMER BRANCH RD
BLUESTEM RD
N 19TH ST
N 17TH ST
N 16TH ST
N 9TH ST
W LIBERTY AVE
65
CC
J
NN
Cassidy
Fremont Hills
1200
1250
1300
1350
41°05
41°04
41°03
41°02
5'


TEMPORARY EROSION CONTROL LEGEND
C CURB INLET CHECK
R ROCK DITCH CHECK
SILT FENCE
TYPE C BERM
180
177+75.00
183+25.00
RTECCJ
S 86° 47' 39" E
RTECCJ STA 181+43.99 =
GRA22NDS STA 0+00.00
OUTFALL 4
NETWORK D
GRA22NDS
S 3° 12' 21" W
PI STA 1+84.65
Δ = 2° 04' 07" LT
SCALE
0 20 40 60
EROSION CONTROL SHEET
SHEET 1 OF 17
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."
DATE PREPARED
8/28/2015
ROUTE 65
STATE MO
DISTRICT SW
SHEET NO. 68
COUNTY CHRISTIAN
JOB NO. J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
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.



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

DATE PREPARED 8/28/2015

ROUTE 65 | STATE MO

DISTRICT SW | SHEET NO. 69

COUNTY CHRISTIAN

JOB NO. J8P2356

CONTRACT ID.

PROJECT NO.

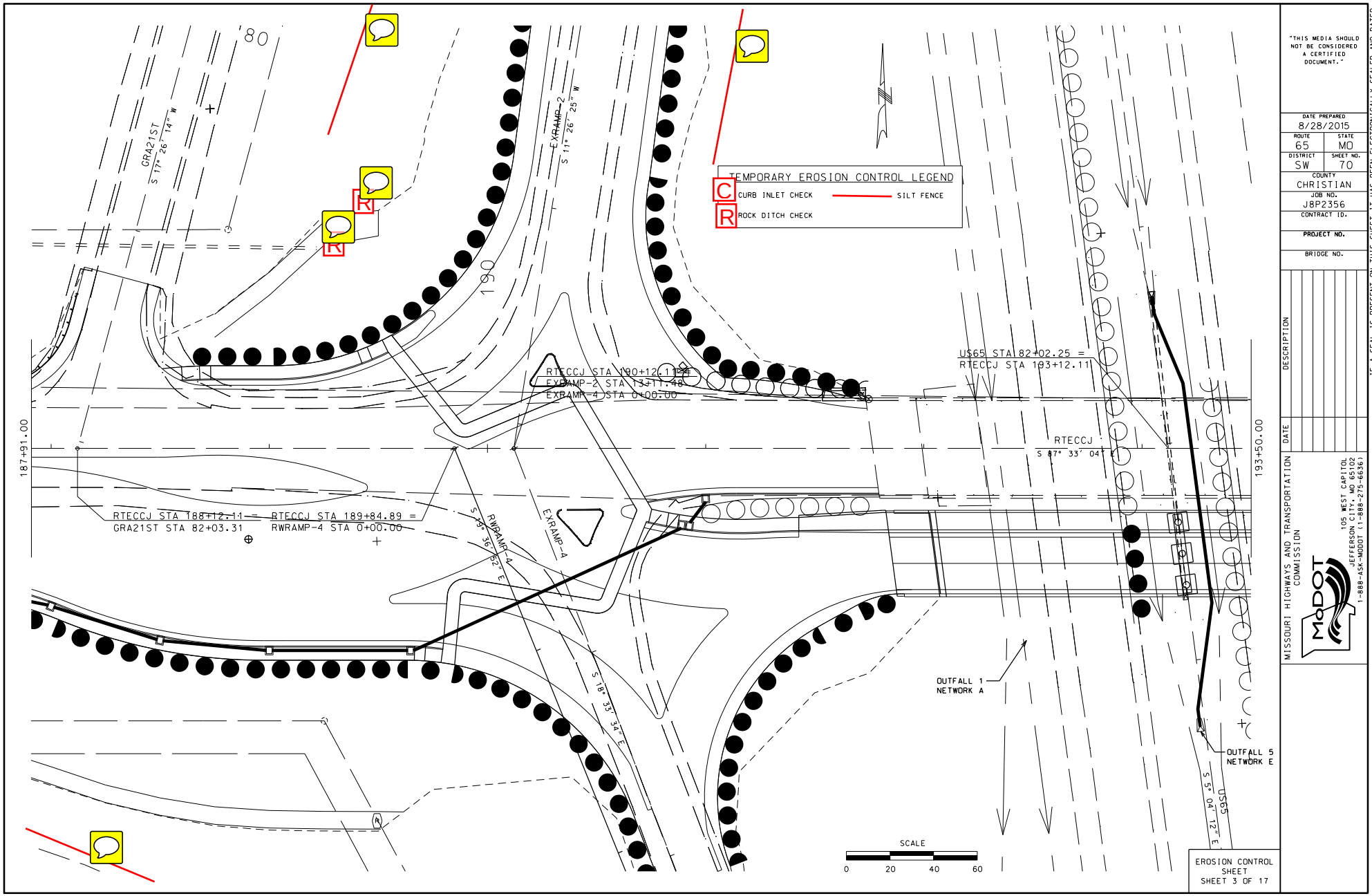
BRIDGE NO.

DESCRIPTION | 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.



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

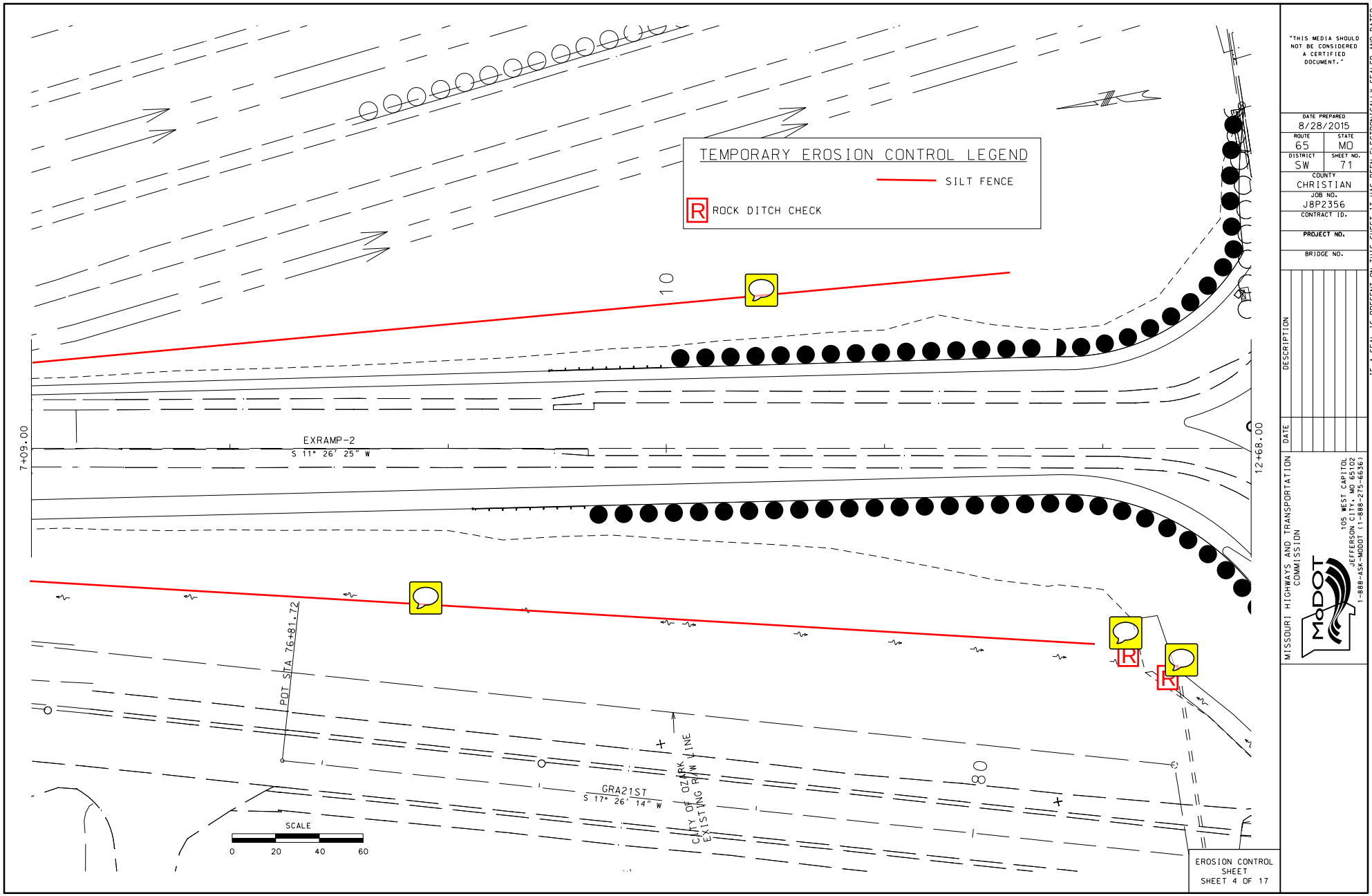
DATE PREPARED	8/28/2015
ROUTE	65
STATE	MO
DISTRICT	SW
SHEET NO.	70
COUNTY	CHRISTIAN
JOB NO.	J8P2356
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

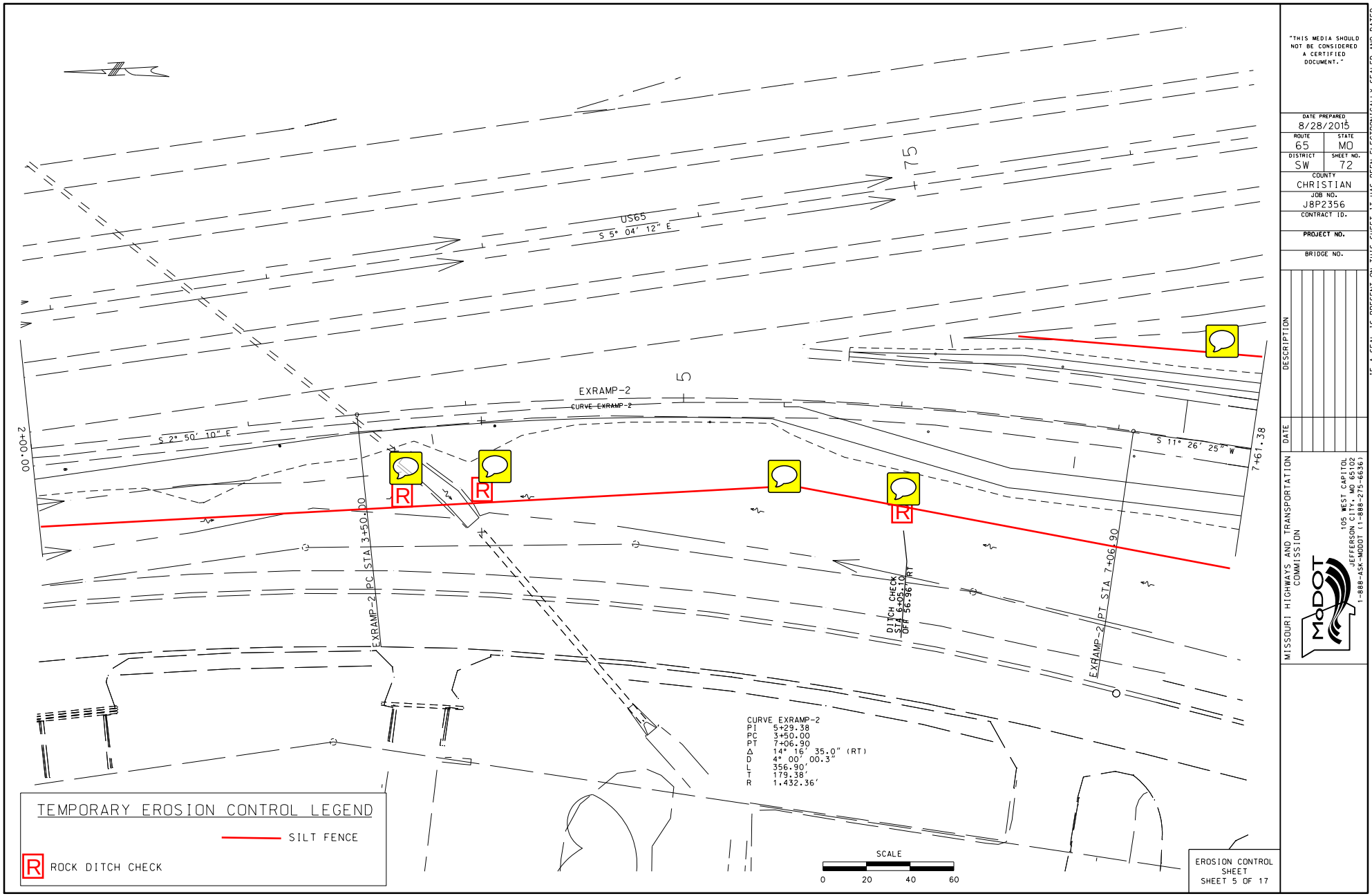
DESCRIPTION | DATE

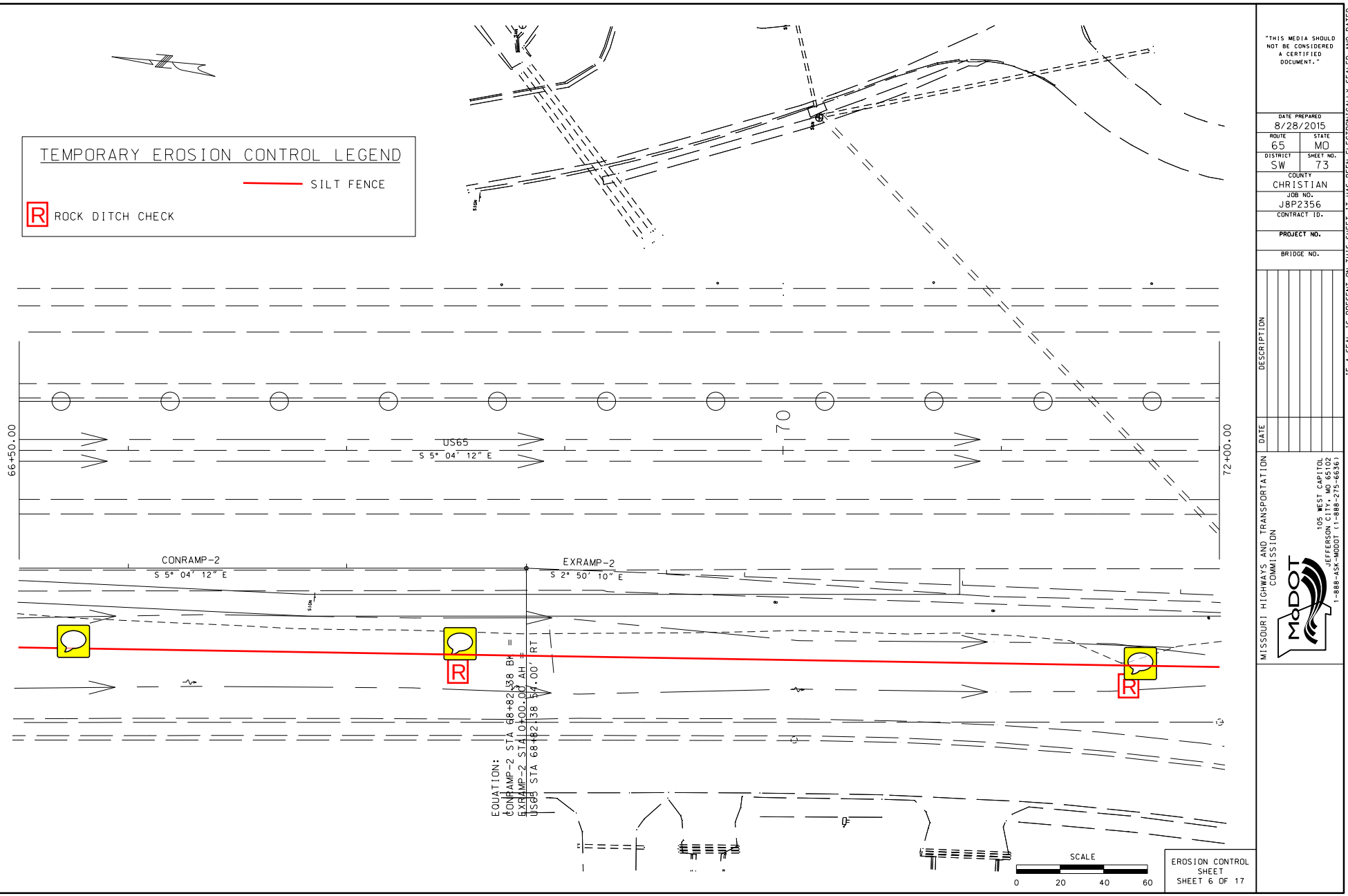
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

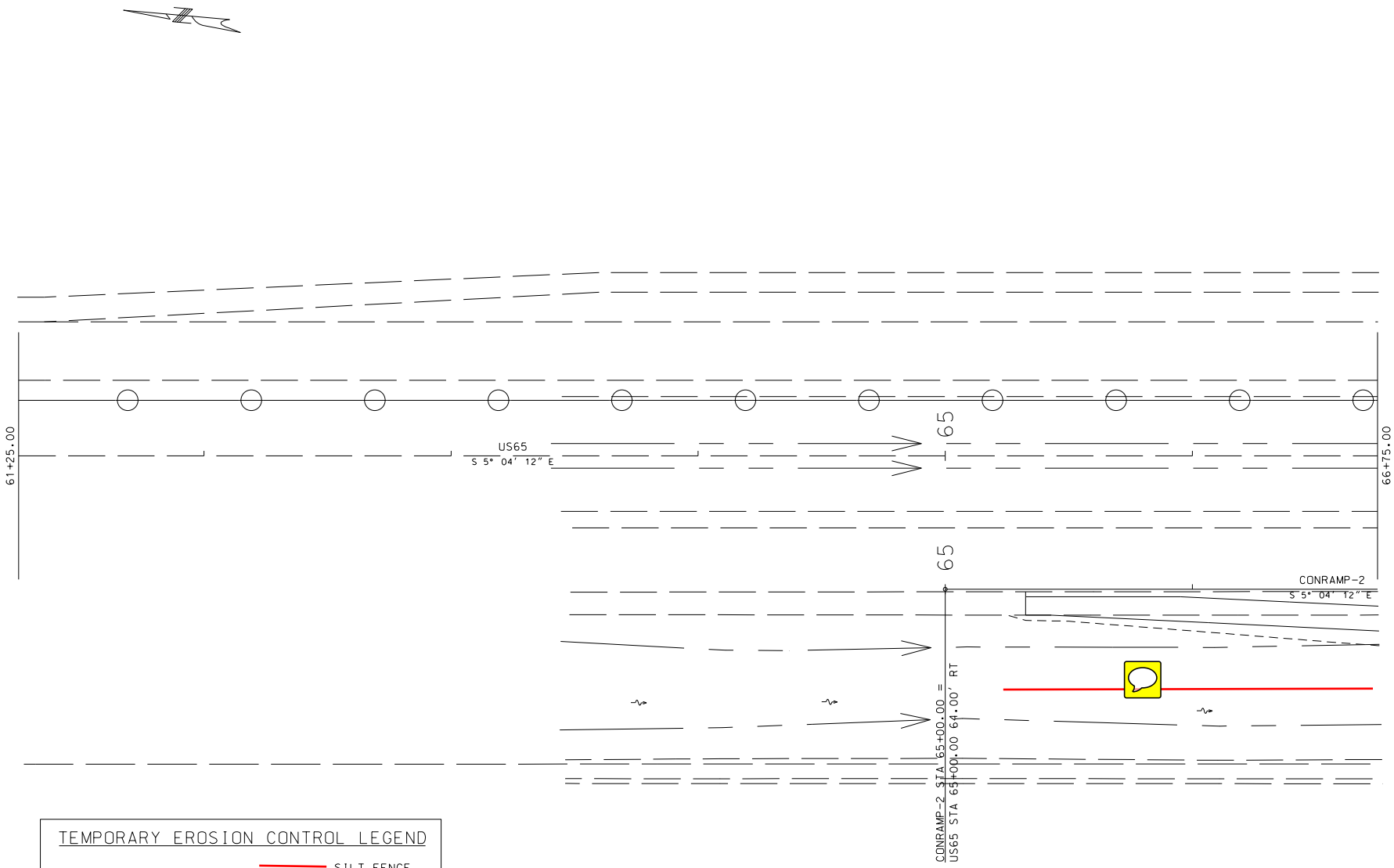
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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


TEMPORARY EROSION CONTROL LEGEND
SILT FENCE
R ROCK DITCH CHECK
EXRAMP-2
S 11° 26' 25" W
7+09.00
12+68.00
POT STA 76+81.72
GRA21ST
S 17° 26' 14" W
CITY OF OZARK
EXISTING R/W LINE
SCALE
0 20 40 60
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."
DATE PREPARED
8/28/2015
ROUTE
65
STATE
MO
DISTRICT
SW
SHEET NO.
71
COUNTY
CHRISTIAN
JOB NO.
J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
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.
EROSION CONTROL SHEET
SHEET 4 OF 17


US65
S 5° 04' 12" E
EXRAMP-2
CURVE EXRAMP-2
S 2° 50' 10" E
S 11° 26' 25" W
EXRAMP-2 PC STA 3+50.00
DITCH CHECK STA 6+05.10 OFF 56.96' RT
EXRAMP-2 PT STA 7+06.90
2+00.00
7+61.38
CURVE EXRAMP-2
PI 5+29.38
PC 3+50.00
PT 7+06.90
Δ 14° 16' 35.0" (RT)
D 4° 00' 00.3"
L 356.90'
T 179.38'
R 1,432.36'
SCALE
0 20 40 60
TEMPORARY EROSION CONTROL LEGEND
SILT FENCE
ROCK DITCH CHECK
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."
DATE PREPARED 8/28/2015
ROUTE 65
STATE MO
DISTRICT SW
SHEET NO. 72
COUNTY CHRISTIAN
JOB NO. J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
DATE
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
EROSION CONTROL SHEET
SHEET 5 OF 17
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.


TEMPORARY EROSION CONTROL LEGEND
SILT FENCE
R ROCK DITCH CHECK
66+50.00
US65
S 5° 04' 12" E
70
72+00.00
CONRAMP-2
S 5° 04' 12" E
EXRAMP-2
S 2° 50' 10" E
R
R
R
EQUATION:
CONRAMP-2 STA 68+82.38 BK =
EXRAMP-2 STA 0+00.00 AH
US65 STA 68+82.38 57.00' RT
SCALE
0 20 40 60
EROSION CONTROL SHEET
SHEET 6 OF 17
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."
DATE PREPARED
8/28/2015
ROUTE
65
STATE
MO
DISTRICT
SW
SHEET NO.
73
COUNTY
CHRISTIAN
JOB NO.
J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
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.



TEMPORARY EROSION CONTROL LEGEND

SILT FENCE

SCALE

0 20 40 60

EROSION CONTROL SHEET
SHEET 7 OF 17

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

DATE PREPARED
8/28/2015

ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
SW	74

COUNTY
CHRISTIAN

JOB NO.
J8P2356

CONTRACT ID.

PROJECT NO.

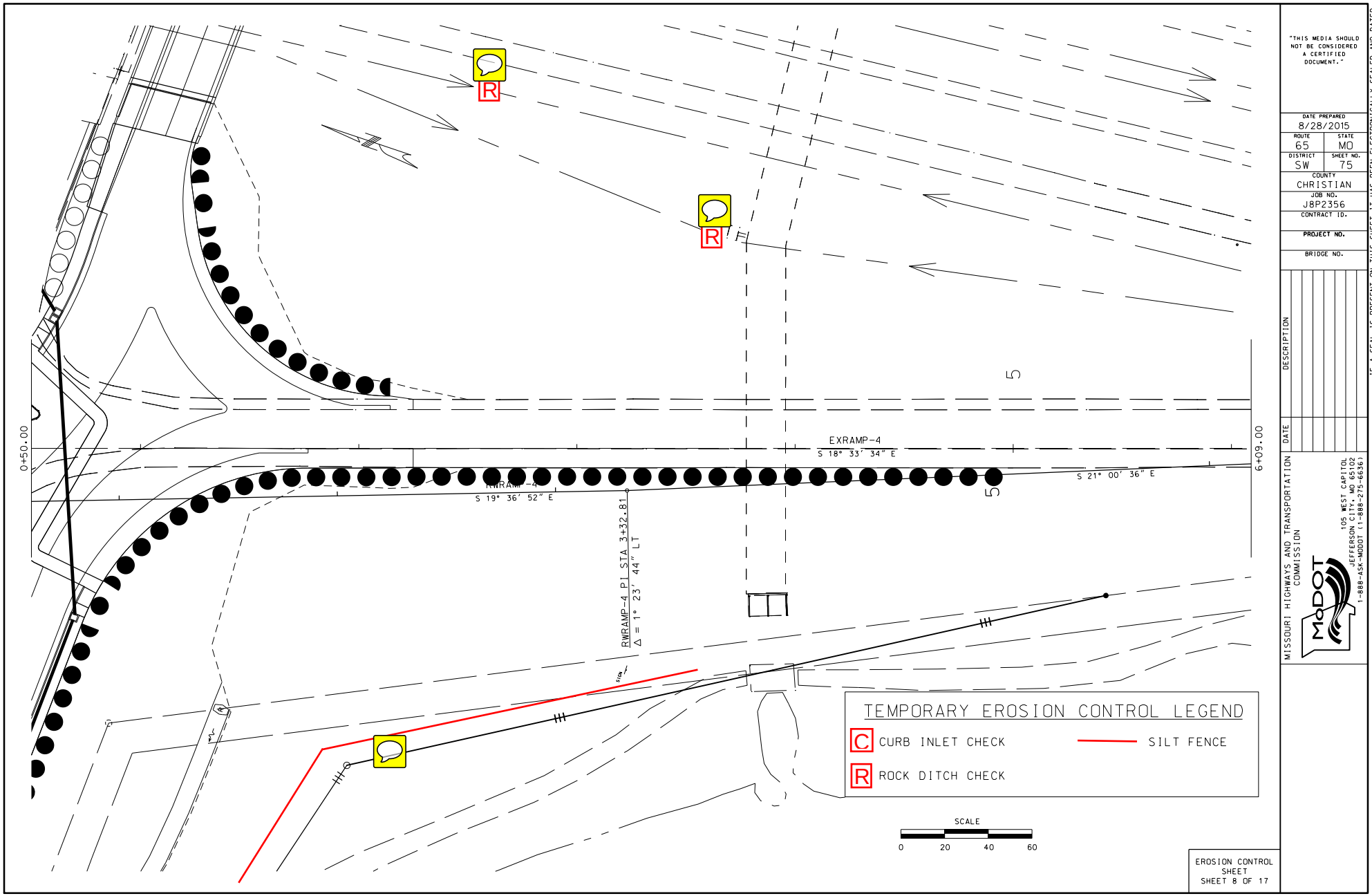
BRIDGE NO.

DESCRIPTION	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.


R
R
0+50.00
6+09.00
EXRAMP-4
S 18° 33' 34" E
S 19° 36' 52" E
S 21° 00' 36" E
RWRAMP-4 PI STA 3+32.81
Δ = 1° 23' 44" LT
TEMPORARY EROSION CONTROL LEGEND
C CURB INLET CHECK
SILT FENCE
R ROCK DITCH CHECK
SCALE
0 20 40 60
EROSION CONTROL SHEET
SHEET 8 OF 17
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."
DATE PREPARED
8/28/2015
ROUTE
65
STATE
MO
DISTRICT
SW
SHEET NO.
75
COUNTY
CHRISTIAN
JOB NO.
J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
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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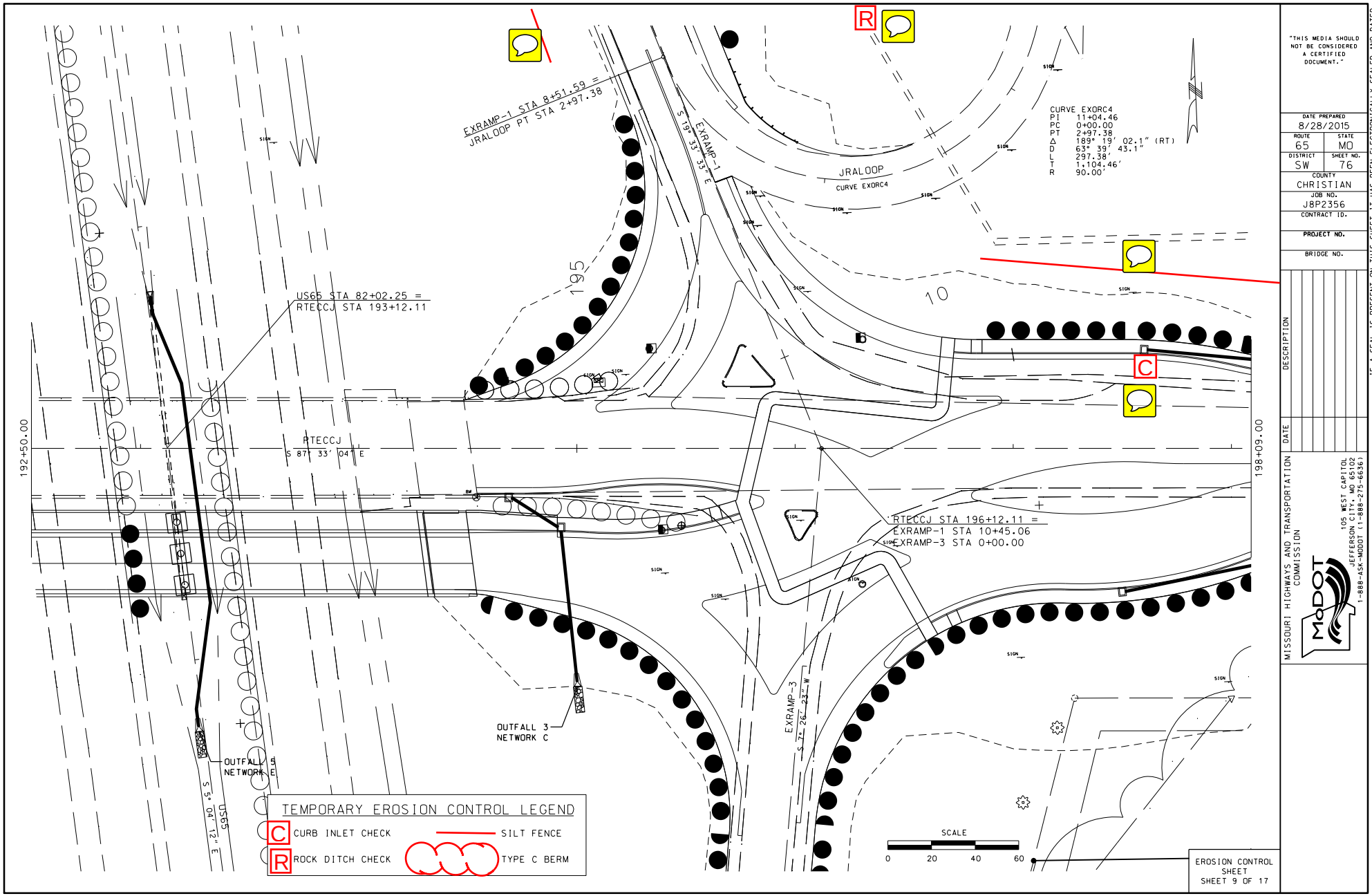
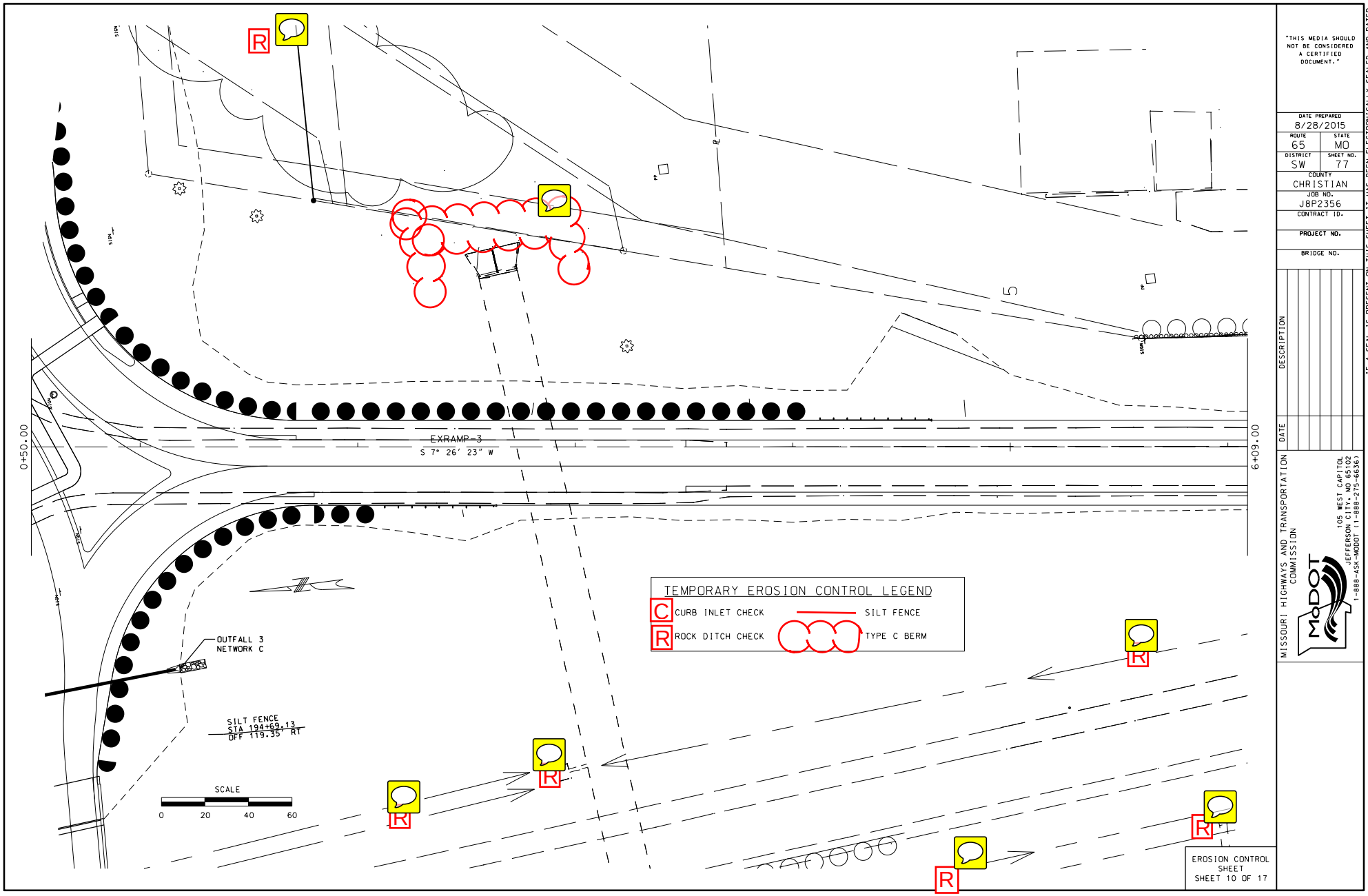

EXRAMP-1 STA 8+51.59 =
JRALOOP PT STA 2+97.38
S 19° 33' 35" E
EXRAMP-1
JRALOOP
CURVE EXORC4
CURVE EXORC4
PI 11+04.46
PC 0+00.00
PT 2+97.38
Δ 189° 19' 02.1" (RT)
D 63° 39' 43.1"
L 297.38'
T 1,104.46'
R 90.00'
US65 STA 82+02.25 =
RTECCJ STA 193+12.11
195
10
RTECCJ
S 87° 33' 04" E
192+50.00
198+09.00
RTECCJ STA 196+12.11 =
EXRAMP-1 STA 10+45.06
EXRAMP-3 STA 0+00.00
OUTFALL 3
NETWORK C
EXRAMP-3
S 72° 26' 23" W
OUTFALL 5
NETWORK E
S 5° 04' 12" E
US65
TEMPORARY EROSION CONTROL LEGEND
CURB INLET CHECK
ROCK DITCH CHECK
SILT FENCE
TYPE C BERM
SCALE
0 20 40 60
EROSION CONTROL SHEET
SHEET 9 OF 17
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."
DATE PREPARED
8/28/2015
ROUTE
65
STATE
MO
DISTRICT
SW
SHEET NO.
76
COUNTY
CHRISTIAN
JOB NO.
J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
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.



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

DATE PREPARED 8/28/2015

ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
SW	77

COUNTY CHRISTIAN

JOB NO. J8P2356

CONTRACT ID.

PROJECT NO.

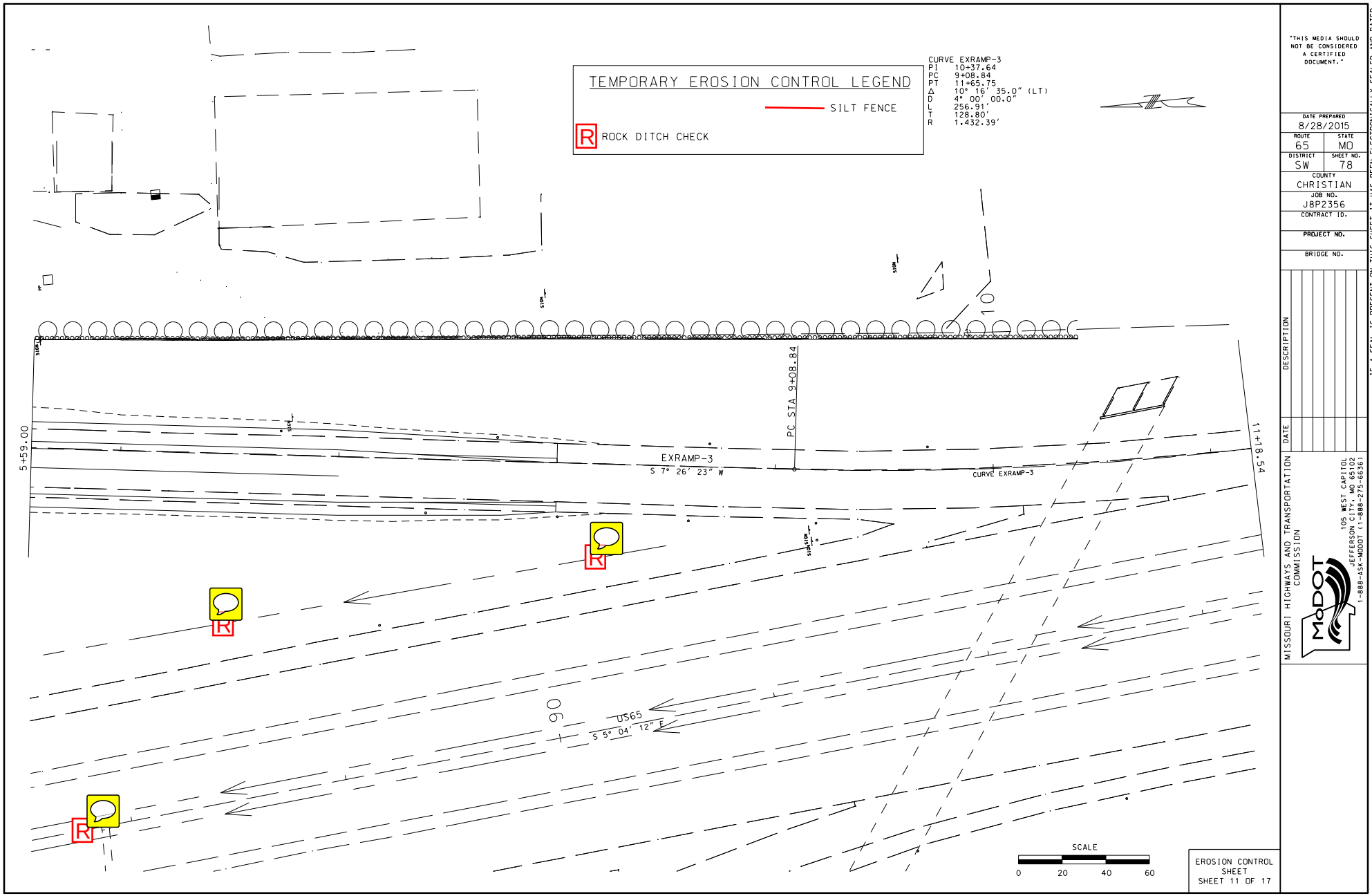
BRIDGE NO.

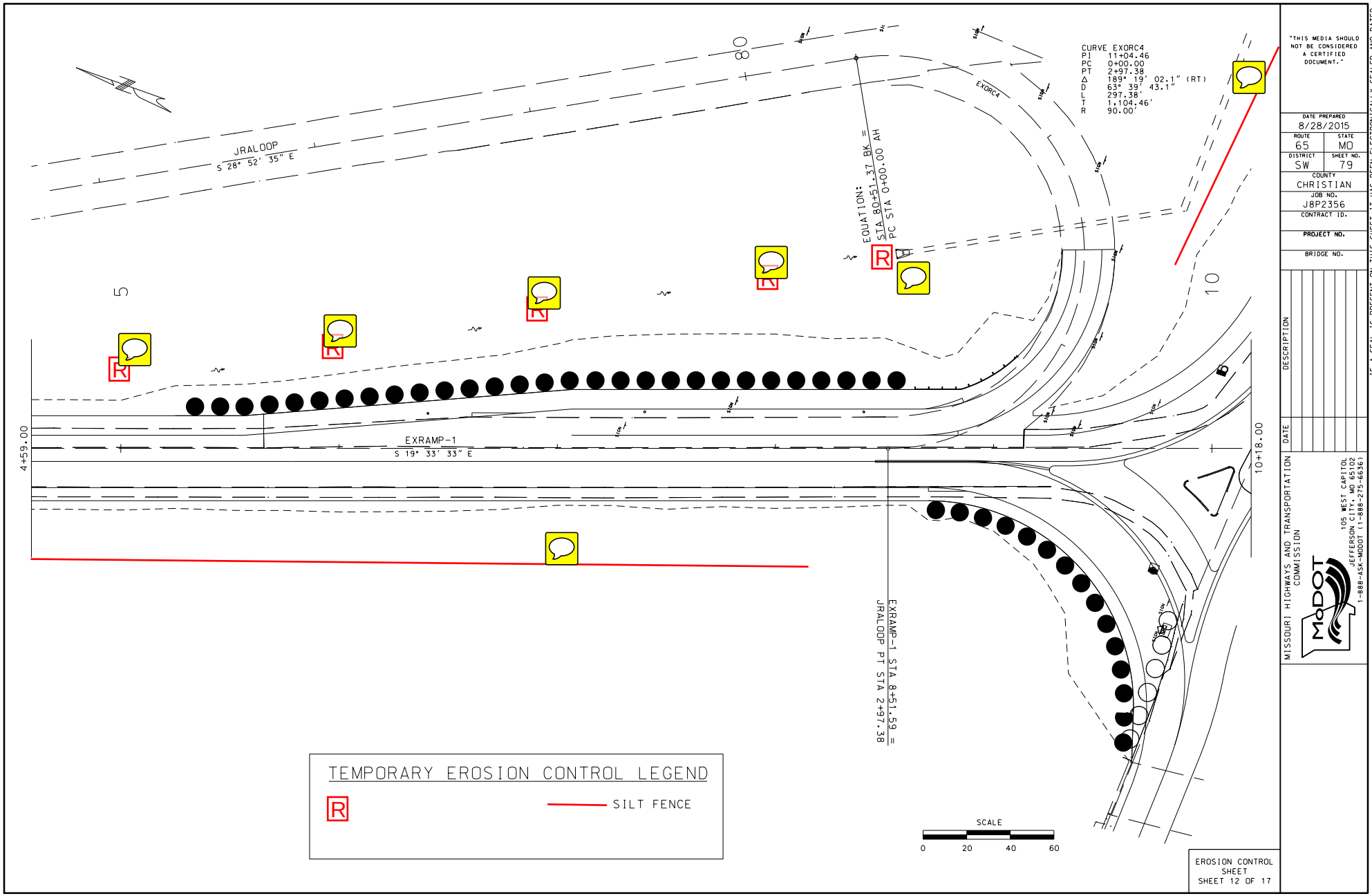
DESCRIPTION | DATE

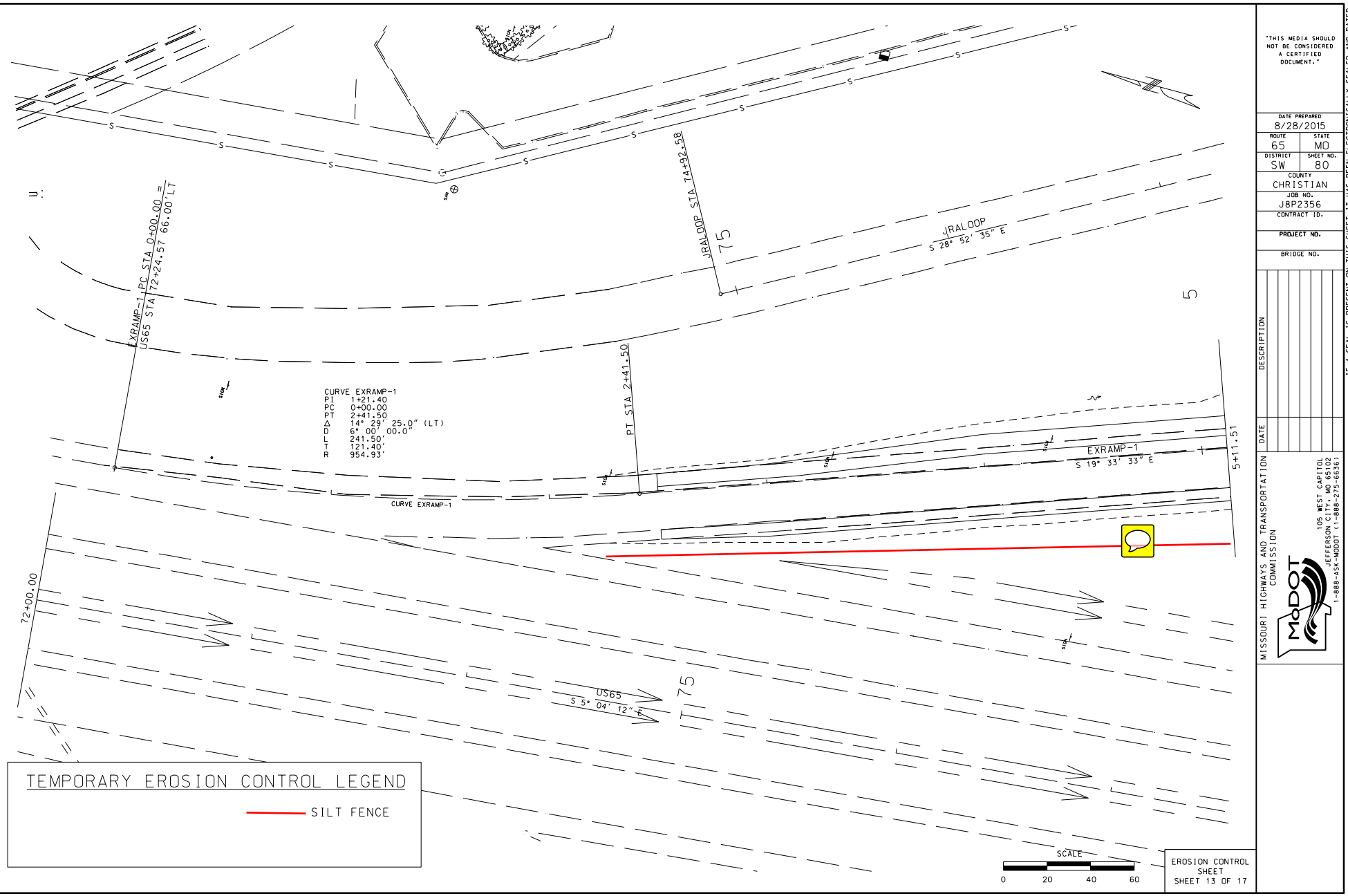
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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.


TEMPORARY EROSION CONTROL LEGEND
SILT FENCE
ROCK DITCH CHECK
CURVE EXRAMP-3
PI 10+37.64
PC 9+08.84
PT 11+65.75
Δ 10° 16' 35.0" (LT)
D 4° 00' 00.0"
L 256.91'
T 128.80'
R 1,432.39'
5+59.00
PC STA 9+08.84
EXRAMP-3
S 7° 26' 23" W
CURVE EXRAMP-3
11+18.54
US65
S 5° 04' 12" E
SCALE
0 20 40 60
EROSION CONTROL SHEET
SHEET 11 OF 17
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."
DATE PREPARED 8/28/2015
ROUTE 65
STATE MO
DISTRICT SW
SHEET NO. 78
COUNTY CHRISTIAN
JOB NO. J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
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.


JRALOOP
S 28° 52' 35" E
EXRAMP-1
S 19° 33' 33" E
4+59.00
10+18.00
CURVE EXORC4
PI 11+04.46
PC 0+00.00
PT 2+97.38
Δ 189° 19' 02.1" (RT)
D 63° 39' 43.1"
L 297.38'
T 1,104.46'
R 90.00'
EXORC4
EQUATION:
STA 80+51.37 BK =
PC STA 0+00.00 AH
EXRAMP-1 STA 8+51.59 =
JRALOOP PT STA 2+97.38
TEMPORARY EROSION CONTROL LEGEND
SILT FENCE
SCALE
0 20 40 60
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."
DATE PREPARED
8/28/2015
ROUTE 65
STATE MO
DISTRICT SW
SHEET NO. 79
COUNTY CHRISTIAN
JOB NO. J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
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.
EROSION CONTROL SHEET
SHEET 12 OF 17



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

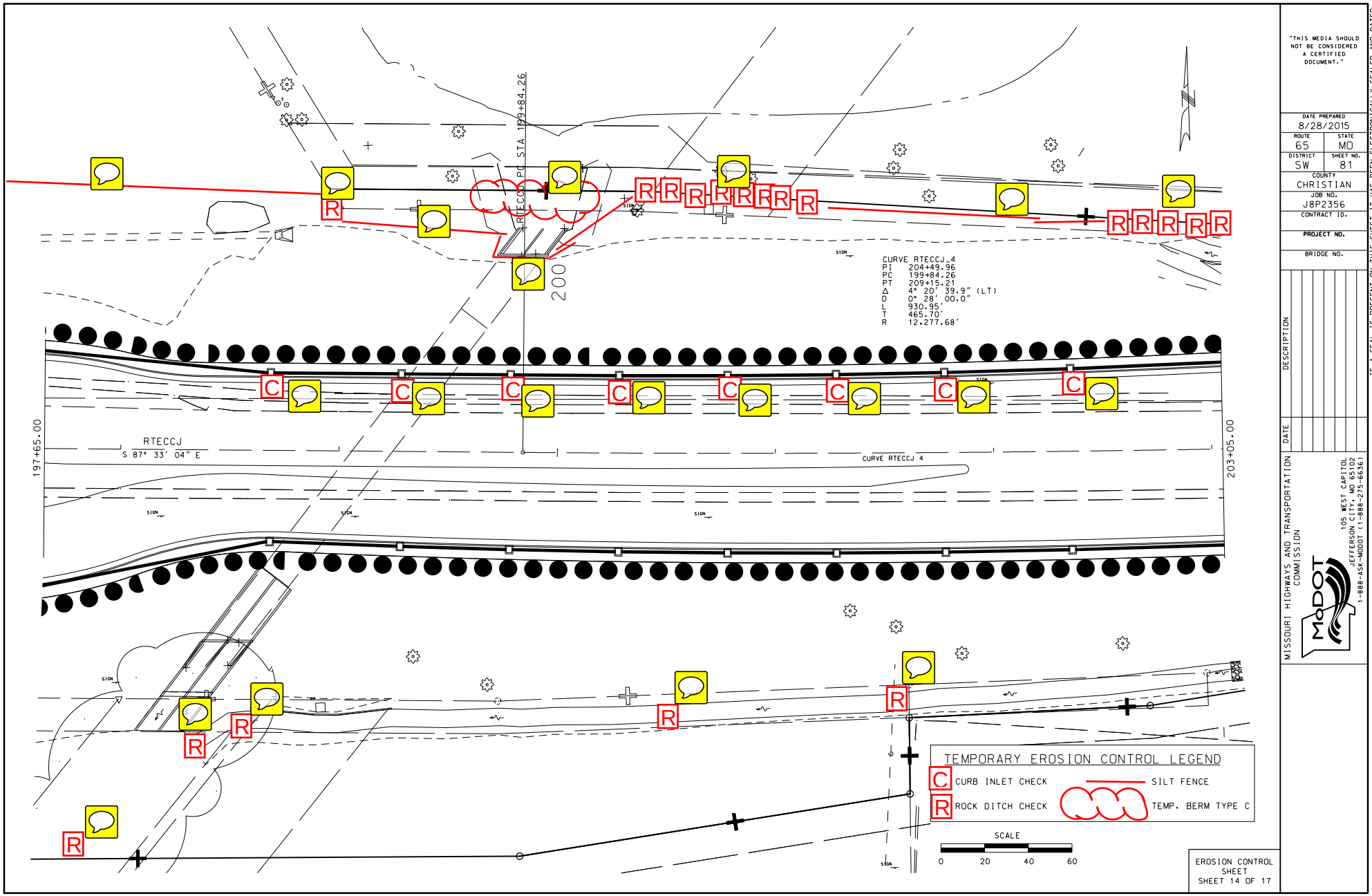
DATE PREPARED 8/28/2015
ROUTE 65 | STATE MO
DISTRICT SW | SHEET NO. 80
COUNTY CHRISTIAN
JOB NO. J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

EROSION CONTROL SHEET
SHEET 13 OF 17

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



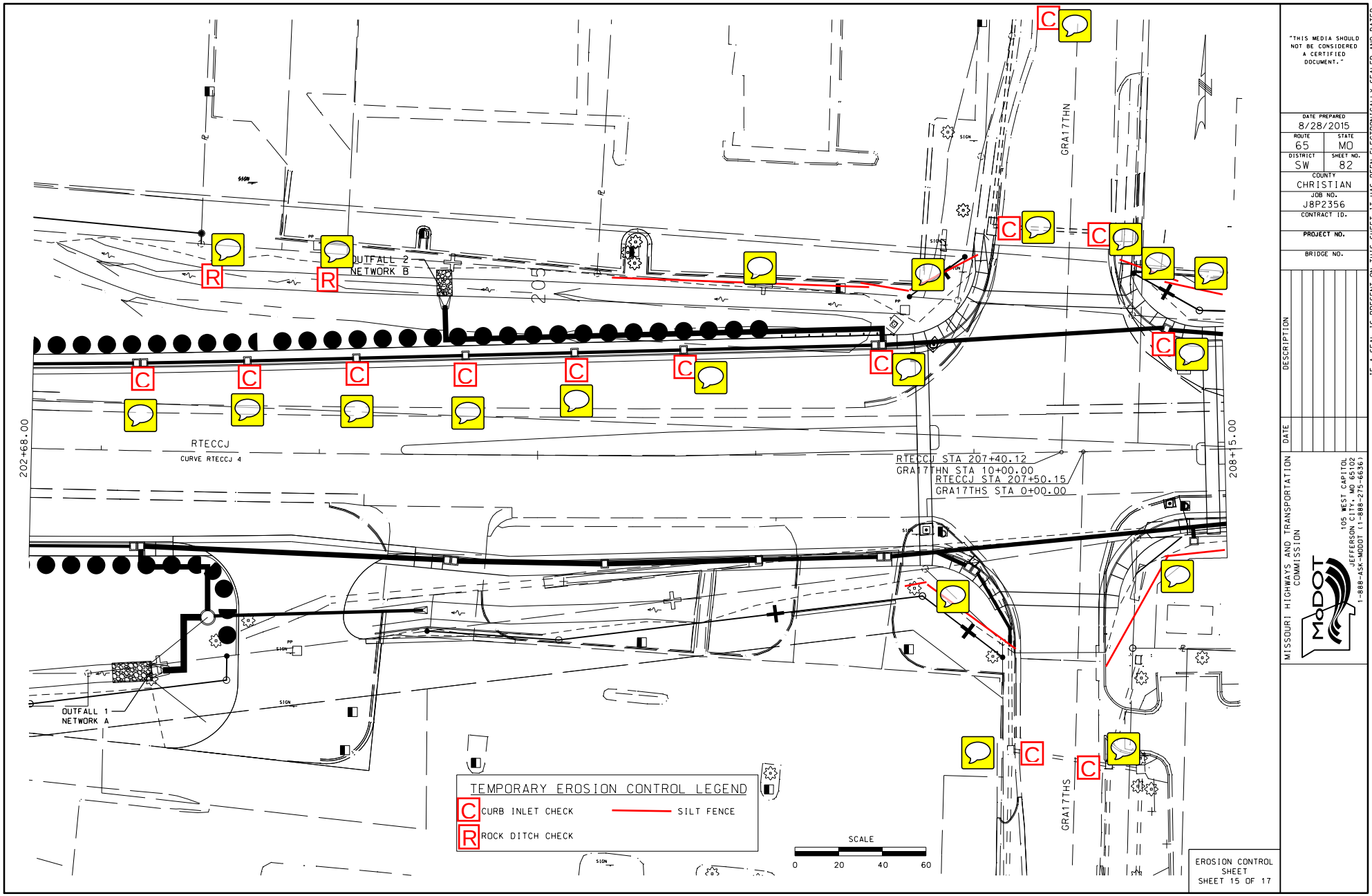
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/28/2015
ROUTE 65 | STATE MO
DISTRICT SW | SHEET NO. 81
COUNTY CHRISTIAN
JOB NO. J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | 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.



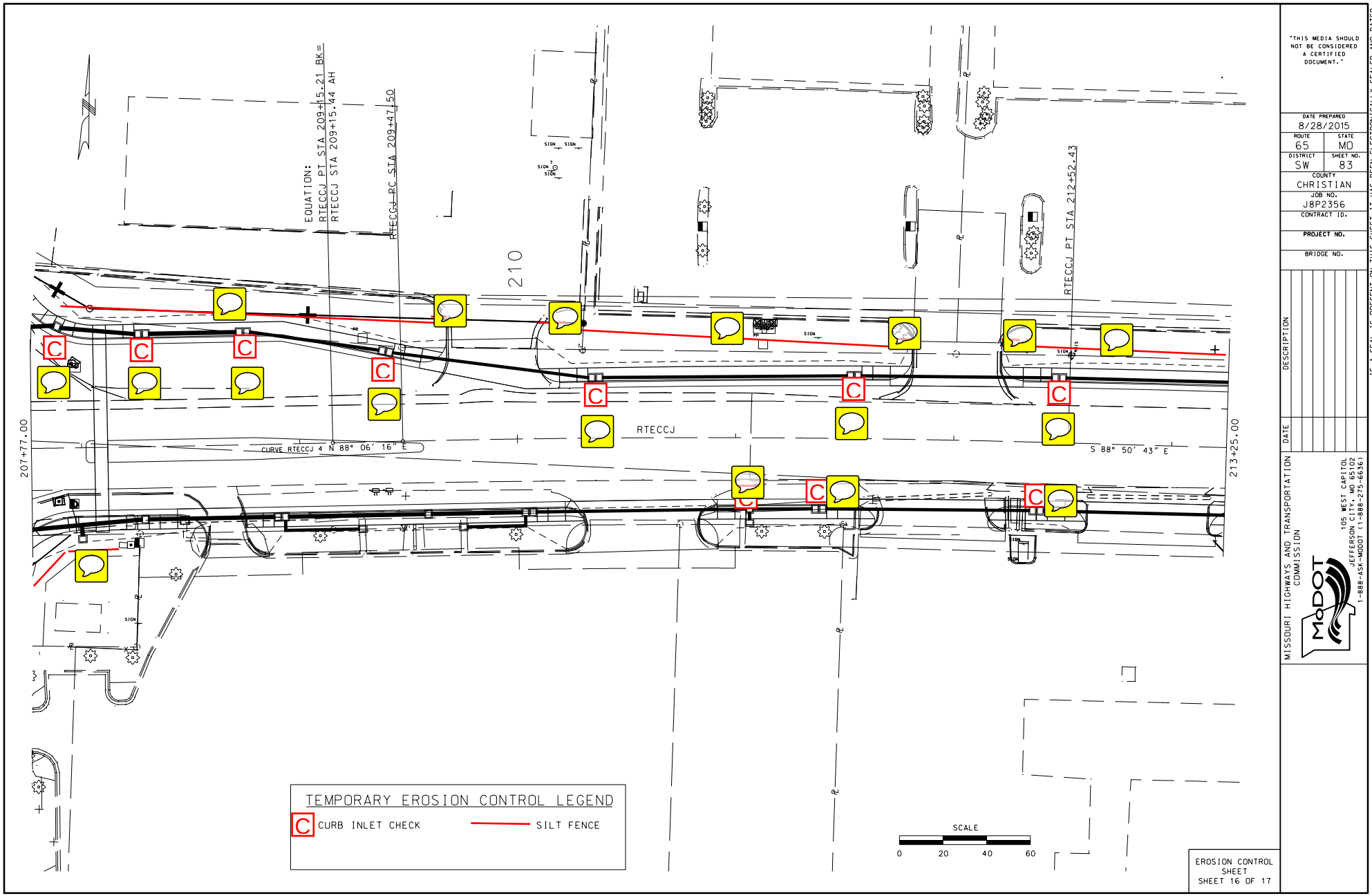
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

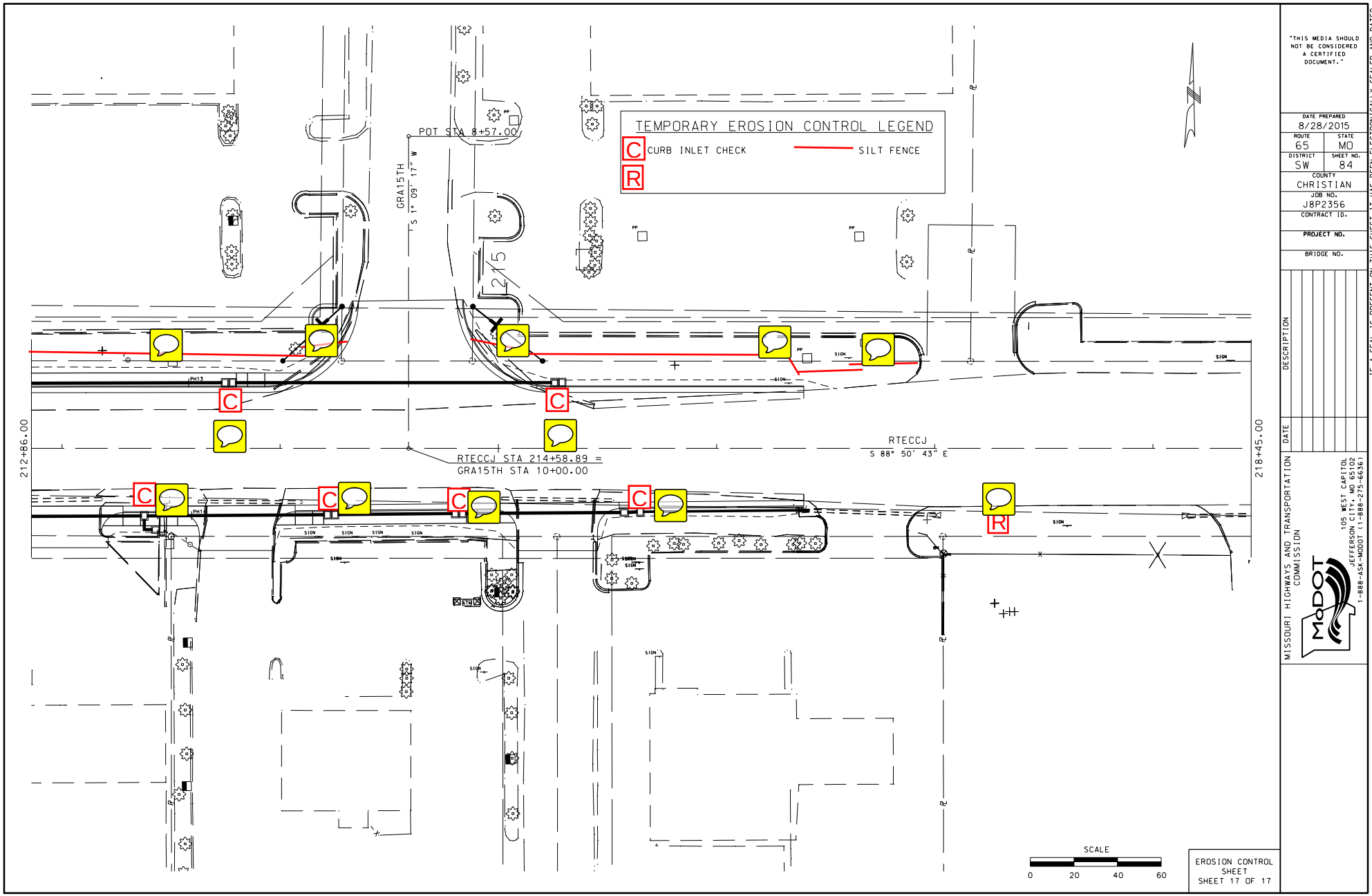
DATE PREPARED 8/28/2015
ROUTE 65 | STATE MO
DISTRICT SW | SHEET NO. 82
COUNTY CHRISTIAN
JOB NO. J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | 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.


EQUATION:
RTECCJ PT STA 209+15.21 BK=
RTECCJ STA 209+15.44 AH
RTECCJ PC STA 209+47.50
210
RTECCJ PT STA 212+52.43
207+77.00
213+25.00
CURVE RTECCJ 4 N 88° 06' 16" E
RTECCJ
S 88° 50' 43" E
TEMPORARY EROSION CONTROL LEGEND
C CURB INLET CHECK
SILT FENCE
SCALE
0 20 40 60
EROSION CONTROL SHEET
SHEET 16 OF 17
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."
DATE PREPARED
8/28/2015
ROUTE
65
STATE
MO
DISTRICT
SW
SHEET NO.
83
COUNTY
CHRISTIAN
JOB NO.
J8P2356
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
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.



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

DATE PREPARED 8/28/2015

ROUTE 65 | STATE MO

DISTRICT SW | SHEET NO. 84

COUNTY CHRISTIAN

JOB NO. J8P2356

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

EROSION CONTROL SHEET
SHEET 17 OF 17

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

STORMWATER POLLUTION PREVENTION PLAN

August 2014

806.8.1 INTRODUCTION TO THE STORMWATER PERMIT AND SWPPP

Provisions of the federal Clean Water Act and related state rules and regulations require stormwater permits where construction activities disturb one acre or more over the life of a project as part of a common plan or sale. MoDOT has a general State Operating Permit, obtained from the Missouri Department of Natural Resources (DNR), which allows for land disturbance activities associated with highway, bridge and compensatory mitigation construction as well as maintenance activities related to the upkeep of these features. The permit stipulates that MoDOT will develop a project stormwater pollution prevention plan (SWPPP) describing erosion and sediment control guidelines and install temporary and permanent erosion and sediment control measures.

Locally sponsored federal aid projects involving an acre or more of land disturbance will need to obtain their own permits and develop effective SWPPPs. In some instances cities, counties and other government entities may already possess their own State Operating Permit and, in that case, must comply with their own SWPPP.

There are instances where contractors may have to obtain their own permits for work involving borrow and excess (waste) disposal areas, and in some instances when portable plants are used. (See Fig. 806.8.1 for details about the permitting requirements of these scenarios.) Also, in a few rare cases, MoDOT may require contractors to obtain their own individual State Operating Permit for land disturbance activities even though the project is being constructed on MoDOT right of way. These unique situations will normally be Design/Build projects that are funded by MoDOT, but totally managed by the contractor.

The purpose of the SWPPP is to ensure the design, implementation, management and maintenance of Best Management Practices (BMPs) reduce the amount of sediment and other pollutants in stormwater discharges associated with the land disturbance activities, comply with the Missouri Water Quality Standards, and ensure compliance with the terms and conditions of the general permit.

The following documents were used in the preparation of this SWPPP:

- **Best Management Practices for Erosion and Sediment Control, (**Report No. FHWA-FLP-94-005) published by the United States Department of Transportation (1995)
- **Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices**, (Document number EPA 832-R-92-005) published by the United States Environmental Protection Agency (1992).
- **Protecting Water Quality: A field guide to erosion, sediment and stormwater best management practices for development sites in Missouri.**
- **Missouri Standard Specifications for Highway Construction (most recent edition)**
- **Missouri Department of Transportation Engineering Policy Guide**
- **Menu of BMPs – United States Environmental Protection Agency –** (http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=min_measure&min_measure_id=4)

A typical MoDOT project involves the implementation of many documents, processes, and standard operating procedures. These various processes and procedures are of such detail that it is impossible to include in this brief summary of BMPs. Pollution from stormwater can be reduced by the implementation of the BMPs, construction techniques, and site management measures that are articulated in this document. However, pollution from stormwater will also be reduced by the

issuance of *Change Orders, Letters/Memos of Notification, Order Records* and *Contractor Performance Reports.* Changes that occur as a result of directives to contractors will usually be documented by *Document Records* and other various products and reports produced by a computer program called *Site Manager.* Lastly, a *Semi-Final Inspection Report* can serve to identify post-construction measures that will ensure permit compliance and water quality protection.

In addition to these contract management tools, MoDOT conducts annual stormwater permit compliance training for construction site inspectors, resident engineers, designers and other personnel, including contractors and consultants. The information distributed in this class goes above and beyond the scope of this Statewide SWPPP document. Many effective BMPs and construction techniques are discussed during this training, but may not yet appear in this document.

These and other unique MoDOT tools must be considered elements of a SWPPP because they all result in implementation of measures that cause or caused a resultant action to occur on a construction project.

806.8.2 SITE DESCRIPTION & PROJECT-SPECIFIC INFORMATION

MoDOT Form 806.8.2 outlines project-specific information that is required to be completed for all MoDOT projects involving land disturbance of one acre or more. Also required, and denoted at the bottom of Form 806.8.2, is the development of a project overview map, or maps, depicting the project location/alignment with enough detail to show waters of the United States within 1 mile of the project. These named waters of the U.S. are typically illustrated on U.S.G.S. topographic maps, and some county or city maps, as blue line streams or named impoundments, such as lakes and reservoirs, as well as tributaries to these bodies of water. Along with this information, MoDOT develops project-specific erosion and sediment control plan sheets (site maps) based on first-hand knowledge of site conditions and guidance described within this narrative SWPPP. Development of project-specific erosion and sediment control plans is described within EPG 806.8.3 Developing/Amending Project-Specific Project Plans.

Every MoDOT project with one or more acres of total land disturbance must complete the following project-specific site information and retain it as part of the SWPPP. See Figure 806.8.2 for an example of how to complete this form.

MISSOURI DEPARTMENT OF TRANSPORTATION
Form 806.8.2 Project-Specific SWPPP Information

Project Number: _____	County: _____	Route: _____

Project Description: _____

Estimated Project Start Date: _____

Estimated Project Completion Date: _____

RE Name: _____

Erosion and Sediment Control Inspector(s) Name(s): _____

Primary Contractor(s) Name(s): _____

Erosion and Sediment Control Contractor(s) Name(s): _____

Seed and Mulch Contractor(s) Name(s): _____

Total Anticipated Disturbed Acreage for the Project: _____

Primary Receiving Water(s) for the Project: _____

Location of Public Notification Sign(s) (Note: Must be Viewable to the Public): _____

Additional Project Notes: _____

404/401 Permit Required/Obtained for this Project? ☐ Yes ☐ No

Attach a map or maps depicting the project location/alignment with enough detail to show waters of the United States within 1 mile of the project.

806.8.3 DEVELOPING/AMENDING PROJECT-SPECIFIC PROJECT PLANS

EPG 237.1 Plan Details describes the information that is to be included in all plans used by contractors to construct MoDOT projects. All projects are constructed from a set of project-specific design plans that are generated by MoDOT designers or consultants. The plans show all existing topographic features, buildings, roadways and drainages, as well as right of way limits. Within a project's design plans are erosion and sediment control plans which serve as the site maps for projects involving one acre or more of land disturbance. These site maps are to be used in combination with this narrative SWPPP to manage erosion and sediment control on MoDOT projects. These plans contain sufficient information to be of practical use to contractors and site construction workers to guide the installation of BMPs in the beginning, interim and final stages of construction. Up-to-date site maps are to be on location or electronically accessible at active MoDOT job sites when MoDOT's construction inspector or the contractor superintendent is on site. In lieu of paper copies, site maps can be maintained in digital format and accessed by electronic devices.

Though erosion and sediment control plans are developed by MoDOT designers and/or consultants, it is highly recommended that design and construction personnel work collaboratively to develop a strategy to control erosion, sediment and stormwater for applicable projects. There should generally be two sets of erosion and sediment control plans developed for projects with one acre or more of land disturbance. One set should be developed to depict existing site topography with outfall and perimeter protection BMPs, such as sediment basins, sediment traps, Type C berms, silt fence, etc., that will need to be installed prior to starting land disturbance of the site. The second set will generally show final project grade and BMPs that are envisioned during project construction and upon completion of final grading. The location of designed BMPs will be illustrated on the plan sheets; however, the exact location of BMPs will be determined in the field by the engineer or inspector.

Contract plans shall include erosion and sediment control measures that are sufficient to protect rivers, streams, lakes, ponds, wetlands and private land adjacent to MoDOT right of way.

MoDOT site maps (erosion and sediment control plans) are to include:

- Direction(s) of stormwater flow and approximate slopes anticipated after grading activities
- Areas of soil disturbance and areas that will not be disturbed
- Location of major structural and non-structural BMPs
- Locations where stabilization practices are expected to occur
- Locations of on and/or off-site material, waste, borrow or equipment storage areas
- Locations of all waters of the U.S.
- Locations where stormwater discharges to a surface water
- Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply

Due to project phasing, all erosion and sediment control BMPs shown on project plans will not be installed until needed, based on site conditions. Therefore, for protection against regulatory scrutiny, designers or inspectors should note on erosion and sediment control sheets that all devices will be installed as necessary based on the discretion of project personnel. Inspectors can also create a clean set of plans, with no BMPs depicted, as the working copy for SWPPP purposes and add/remove only installed devices. A legend should be created for installation and removal of BMPs. BMPs should be highlighted and dated as they are installed or removed. It is important that site maps reflect BMPs that are actually on the ground at any given time, so plan sheets shall be properly updated each time

BMP additions and/or removals take place on the project. Example erosion and sediment control site plans can be found in Fig. 806.8.3.

The engineer shall require modifications to the erosion and sediment controls whenever the:

- Design of the construction project has changed in a fashion that could impact the quality of stormwater discharges;
- MoDOT inspections indicate deficiencies in individual BMPs;
- MDNR/EPA notifies MoDOT of erosion and sediment control deficiencies on site;
- Erosion and sediment controls are determined to be ineffective in significantly minimizing or controlling erosion and sedimentation;
- MDNR determines violations of Water Quality Standards have occurred.

806.8.3.1 Shoulder Addition Project Plan Development and Implementation

Shoulder addition projects involving land disturbance of an acre or more can be particularly challenging to design, bid and implement BMPs. Design and construction personnel should collaborate to establish typical, desired BMP layouts for outfall and perimeter protection. These layouts should then be illustrated on a "Typical" erosion and sediment control plan as detailed plan sheets are not usually developed for these projects (There are a few exceptions to this when right of way acquisition or extensive grading is required). Designers will then estimate a quantity of BMPs necessary to construct the project. The estimated quantity of each type of BMP can be expressed in a table on the quantity sheet to be included in the contract plans for contractors.

In addition, like other land disturbance projects of an acre or more, shoulder addition projects are required by permit to have a site map depicting the location of all installed BMPs. If a full set of plan sheets is not developed, an acceptable practice for shoulder addition project site maps is to develop aerial photography sheets of the project corridor at a scale of 1"=200', labeling named bodies of water, intersecting routes and county roads, and labeling log miles every 0.5 mile for the project (depicting tick marks every 0.1 mile is recommended for better accuracy). If full survey data was collected for the project, the log mile stationing may be set up precise based on survey data. Full surveys are not typical for shoulder addition projects, so a "rough" log mile stationing may be set up for the simple purpose of identifying approximate BMP locations to enhance communication, illustration and documentation for inspectors and contractors. The aerial sheets will not be included as part of the contract documents, but will be given directly to the Resident Engineer along with other supplemental project documents.

It is important to be aware that all designed BMP quantities may have to be adjusted depending on the contractor's selected method of shoulder construction. Any expected adjustment in BMP quantities or implementation should be expressed to the prime and subcontractor, if applicable, during the erosion and sediment control discussion at the project preconstruction conference.

806.8.4 SITE INSPECTIONS AND REPORTS

The resident engineer or inspector is responsible for environmental matters on MoDOT projects. As such, the engineer or inspector shall routinely inspect the installation, condition and functionality of erosion and sediment controls. If allowable due to right-of-way constraints, receiving streams shall be inspected for off-site sediment deposits for 50 feet downstream of project outfalls. Routine inspections are to be conducted at a minimum frequency of once every 7 calendar days. Additional, post-runoff inspections must occur within 48 hours if the runoff event ceases during a normal work day and within 72 hours, on the next business day, if the runoff event ceases during a non-work day

such as weekends or state recognized holidays. A runoff event is defined as an event that causes runoff to occur on the job site and could result from rainfall or snow or ice melt. If there are consecutive days of measurable rainfall and/or runoff, these can be considered one event and precipitation totals should be tracked on a daily basis and an event total recorded. Since these consecutive days are considered to be one event, a post-runoff inspection should be done after the rain/runoff ceases; however, general observations should be made daily, especially with regard to outfall BMPs, to ensure BMPs are performing to the desired level. If rainfall or snow/ice melt is not sufficient to cause runoff, inspection reports do not need to be completed until the next required 7-day inspection.

MoDOT Form 806.8.4, MoDOT Land Disturbance Inspection Record, will be used for weekly and post-runoff inspections. This form has been developed as a guide to assist the inspector with permit compliance, while also requiring a general narrative description of current site conditions observed by the inspector at the time of inspection. The inspection reports shall be signed by the inspector and the engineer. The engineer or inspector will keep a log of all inspections made on the project.

The engineer or inspector will ensure that rainfall measurements are made for the job site and routinely monitor weather forecasts to recognize when predicted weather may threaten the construction site and when runoff has occurred. If the weather forecasts indicate storms may impact the project site, project personnel should evaluate whether or not the site has adequate BMP protection and is prepared to receive runoff and sediment.

Areas of the project that meet the final stabilization requirements (i.e., 70% permanent vegetative cover over 100% of the area, rock covered, paved, etc.) no longer require inspection, but casual observations should be made to ensure erosion problems don't arise.

The engineer or inspector shall notify the contractor within 24 hours if any controls are found to be improperly installed, in disrepair, or are not functioning at the desired level of effectiveness. **Any deficiencies noted shall be corrected within 7 calendar days**; however, the engineer and inspectors may require immediate attention and issue various directives by other means discussed in EPG 806.8.1 Introduction to the Stormwater Permit and SWPPP. Directives to the contractor shall be noted in project records, which shall be available for review by DNR upon request. **In instances where weather conditions make it impossible to correct deficiencies within 7 days, the engineer or inspector will document site conditions in the inspection reports. This documentation will include a written description and pictures illustrating the adverse conditions. Brief documentation of adverse conditions should take place daily until conditions improve. As soon as weather and site conditions become favorable, corrections to deficient BMPs shall be made.**

MoDOT performs environmental compliance training for construction site inspectors, resident engineers, designers and other personnel, including contractors and consultants, to ensure that erosion and sediment control inspections are being conducted in a consistent fashion statewide. The individual who performs the training is organizationally located in MoDOT's Environmental and Historic Preservation Section and does not have supervisory authority over the construction personnel who perform inspections. However, the same individual who performs training has the responsibility of performing statewide audits of construction sites to ensure that SWPPPs are being followed to the extent that off-site contamination does not occur. This individual will usually visit every construction site involving an acre or more of land disturbance at least once per year and meet with MoDOT resident engineers, inspectors and contractors to evaluate the land disturbance elements of the project and to ensure consistency of inspections. In cases where deficiencies are identified, the resident engineer or inspector has the responsibility to see that the deficiencies are corrected.

As part of the project inspection and compliance management process, the project's current authorized, open-erodible and disturbed acreage totals shall be recorded in Sitemanager when contractor pay estimates are run. These acreage totals are used to fulfill MoDOT's permit requirement to provide a list of statewide active land disturbance sites, one acre or more, to MDNR on a quarterly basis, every January, April, July and October. Also included within each report is the project name, location, description, primary receiving water(s), number of acres disturbed, percent completion and projected date of completion.

Primary receiving waters are named rivers, streams, lakes, etc. (e.g., Black River, Skull Lick Creek, Flat Branch, Longview Lake). If the project doesn't drain directly to named bodies of water, the inspector should list "Unnamed Tributary to" and then the named body (bodies) of water the project runoff would eventually end up within. Some urban projects will discharge to city stormwater systems. In this case, if the body of water the storm drain discharges to is unknown, simply list "Municipal Storm Sewers" and identify the entity if possible (e.g., MSD Municipal Storm Sewers).

(*Note: There are scenarios associated with the use of borrow and excess (waste) disposal areas, as well as portable plants, when the contractor may be responsible for site inspections. Please refer to Fig. 806.8.1 for inspection responsibilities in these scenarios.*)

806.8.5 DRAINAGE AREAS & HOUSEKEEPING

In compliance with the Missouri Clean Water Law (Section 644.051), neither MoDOT nor MoDOT's contractors shall pollute any waters of the state, or place, cause, or permit to be placed, any water contaminant in a location where it is reasonably certain to cause pollution of any waters of the state. To comply with this law, proper preventive measures and good housekeeping shall be maintained on job sites. Job site litter, construction debris and sanitary waste should be controlled. All litter shall be placed in appropriate containment receptacles. The use of portable toilets may be necessary to control sanitary waste in some situations. If used, these facilities shall be adequately placed and maintained so as not to cause a safety or environmental concern. If hazardous waste is generated or encountered on a job site, the MoDOT Environmental Section, (573) 526-4778, should be informed immediately to assure proper handling and compliance with environmental regulations. Also, neither MoDOT nor MoDOT's contractors shall discharge water contaminants into any waters of the state, which reduce the quality of these waters below the state's water quality standards. These water quality standards include the following (MO 10 CSR 20-7):

(a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.

(b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses.

(c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

(d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life.

(e) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

(f) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, Section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to Section 260.200–260.247.

MoDOT personnel or contractors hired by MoDOT shall comply with these and any other federal, state, and local laws and regulations controlling pollution of the environment. To ensure that these general criteria are met, the following guidelines will be observed:

1) Machinery shall be kept out of the waterway as much as possible.

2) Fuel, lubricants, debris and other water contaminants shall not be stored in areas that are subject to contact with water (such as adjacent to stream banks) or where contaminated runoff from the storage areas can enter waters.

3) Refueling and maintenance (e.g., oil changing) of machinery shall not take place in, or directly alongside, any water body.

4) Clearing of vegetation/trees shall be kept to the minimum required to accomplish the activity.

5) Riparian areas and banks shall be restored to a stable condition through recontouring and revegetation of the area, as necessary, as soon as possible (normally within three working days of final contouring).

6) Work shall be conducted during low flow whenever possible.

7) Wetland areas shall be avoided to the extent practical.

8) Work shall conform to all conditions that are part of the USACOE Section 404 permit and the ancillary MDNR Section 401 Water Quality Certification.

EPG 127.19 Section 404 Clean Water Act for Bridge Demolitions provides a detailed explanation of the process that is followed whenever a stream or drainage channel may fall into USACE jurisdiction.

806.8.6 EROSION AND SEDIMENT CONTROL

(MO Specifications Division 800)

Water pollution control measures shall be required of all contractors MoDOT hires. The contractor shall exercise best management practices throughout the project to control water pollution. Construction of permanent drainage facilities and other activities, which may contribute to the control of siltation, shall be accomplished at the earliest practicable time. This work shall also consist of furnishing, installing, maintaining, and removing temporary control measures as shown on the plans (see *MoDOT* Standard Plan 806.10) or as directed by the engineer. The control of water pollution will be accomplished through the use of berms, slope drains, ditch checks, sediment basins, energy dissipaters, seeding and mulching, silt fences, and other erosion and sediment control devices or methods. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, or other harmful materials shall not be discharged from the project. No work shall be started until the erosion and sediment control timetable and methods of operation have been approved.

Temporary control measures shall be coordinated with permanent control measures to assure economical, effective and continuous erosion and sediment control. Temporary erosion and sediment controls must be kept in place, inspected and maintained until revegetation, rock blanketing, paving, or another form of stabilization has occurred to an extent sufficient to minimize sediment loss from the project and comply with MoDOT's State Operating Permit.

Materials required for erosion and sediment control measures shall meet the standards of the *Missouri Standard Specifications for Highway Construction.*

806.8.6.1 Construction Requirements

The goal for MoDOT land disturbance operations is to deliver the planned final product (e.g., roadway, bridge, etc.) while ensuring effective erosion, sediment and stormwater management throughout the design, construction and maintenance process to minimize sediment loss from the project.

Permanent erosion control measures (e.g., permanent vegetation) shall be implemented into the project at the earliest practicable time in order to control erosion, reduce sediment control maintenance and improve the overall appearance of the project. Temporary erosion and sediment control measures shall be used to correct conditions that develop during construction which were not foreseen during the design stage. Temporary controls shall also be used when needed prior to installation of permanent erosion control measures or to control erosion that develops during normal construction practices.

When practical, clearing and grubbing operations shall be scheduled and performed so that border, perimeter, or outfall BMPs to control runoff from disturbed areas will be installed or marked for preservation before general site clearing. A limited amount of clearing (enough to gain access to the area) may be permissible to enable the installation of outfall and perimeter controls. Stormwater discharges from disturbed areas, which leave the site, shall pass through an appropriate impediment (BMP) prior to leaving the site. The surface area of erodible earth material exposed at one time by clearing and grubbing, by excavating, by fill, or by borrow, shall be minimized to limit vulnerability of erosion and potential sediment loss from the project. The engineer may limit the total acreage of erodible earth material to be exposed at one time as determined by an analysis of project conditions. In such cases the engineer will identify specific BMPs and controls that have been, or will be installed in order to exceed the specified maximum disturbed acreage threshold.

The engineer will limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress commensurate with the contractor's ability to keep the finish grading, mulching, seeding, and other erosion control measures current. Should seasonal limitations make such coordination unrealistic, temporary erosion and sediment control measures shall be implemented as directed by the engineer.

Unless otherwise approved, construction operations in rivers, streams, wetlands, and impoundments shall be restricted to those areas which must be entered for the construction of temporary or permanent structures. Rivers, streams, wetlands, and impoundments shall be promptly cleared of all falsework, piling, debris or other obstructions placed therein or caused by the construction operations.

Frequent fording of live streams or wetlands with construction equipment is not permitted. Temporary bridges or other structures shall be used wherever stream crossings are necessary. All temporary fills and structures placed in streams, wetlands, or impoundments will be removed and the

site returned to natural or intended contours prior to completion of construction. Unless otherwise approved, mechanized equipment shall not be operated in live streams except as may be required to construct channel changes and temporary or permanent structures. If a Section 404 permit is applicable for a project, its requirements and/or conditions shall be followed.

Site-specific BMPs above and beyond those identified within the contract plans or MoDOT standard specifications shall be discussed with the contractor at a preconstruction conference, if known, or as necessary to control erosion and minimize sediment loss throughout the life of the project. The use of alternate BMPs or methods may be acceptable, but approval of alternate practices will need to be approved by the engineer. Also, special conditions may be developed which can include limitations on the amount of surface area that can remain unprotected at one time or could include special water quality or stream protections requirements.

The location of all local material pits (other than commercially operated sources) and all excess material areas shall be subject to the approval of the engineer (*material in this case refers to soil and rock).* Construction operations shall be conducted and pollution control measures implemented so that erosion will not result in water pollution.

Portable concrete and asphalt plants located on MoDOT right of way can be covered under the MoDOT State Operating Permit. Any discharges from these operations must be managed by appropriate BMPs. The plant and BMPs must be depicted on the project site map and appropriately accounted for in the project SWPPP. Operators of portable plants that are located off of MoDOT right of way will be responsible for obtaining all appropriate permits directly from the DNR. The contractor is responsible for all costs associated with erosion and sediment control to protect plant locations, regardless if the plant is located on or off of MoDOT right of way or easements.

Borrow and excess (waste) disposal sites located on MoDOT right of way or owned by MoDOT can be covered by the MoDOT permit and SWPPP. For borrow and excess disposal activities not located on MoDOT right of way, the borrow or excess disposal operator will be responsible for obtaining all appropriate permits, including a land disturbance permit directly from the DNR for sites greater than or equal to one acre.

In the event of a conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations may apply.

806.8.6.2 Non-Structural Control Measures

Protection of existing vegetation is an important and sometimes overlooked component of erosion and sediment control. Preserving natural vegetation in certain areas during construction serves to slow the flow of water, protect against erosion and reduce sediment transport from sheet flow. Vegetated filter strips (i.e., buffers) located along the shoulder, within the median, in MoDOT ditches, or adjacent to a body of water or wetland, serve as excellent sediment capture devices. They can be particularly effective in areas where the density of grass and other herbaceous vegetation can filter the water. In most cases, vegetative buffers are used in concert with other BMPs; however, there may be situations where vegetative filter strips can suffice as independent features. Depending on site characteristics, these areas of undisturbed right-of-way can potentially provide the same benefit to water quality as would many types of structural controls, such as silt fences, ditch checks, and sediment traps or basins. If natural or created vegetated filter strips are used, they must be located within MoDOT right of way or easement and inspected and maintained like other BMPs. Vegetation on an adjacent property cannot be used as a MoDOT BMP. During project design, site conditions and stormwater runoff analysis will determine the selection of appropriate BMPs, which

may include non-structural BMPs and vegetated buffers. If during inspections, BMPs, including vegetated buffers, are determined to be ineffective or insufficient at controlling erosion or sediment transport, additional BMPs will need to be installed to effectively manage the stormwater runoff.

Preserving natural vegetative filter strips is especially important when working in proximity to surface waters, which may include, but are not limited to, rivers, streams, lakes, ponds and wetlands. When working along or adjacent to these features, MoDOT is required by its statewide land disturbance permit with MDNR to retain a minimum of a 25-foot buffer of undisturbed natural vegetation between land disturbance operations and the body of water, unless site conditions and/or limitations make the use of such a buffer infeasible. To comply with this permit requirement, when working adjacent to these waters, MoDOT should determine on a case by case basis whether preserving an existing buffer is feasible, or whether contractor or maintenance operations will require complete use of the area to facilitate work activities. Preserving natural vegetative buffers must be considered for all MoDOT projects working in proximity to surface waters; however, factors like limited right-of-way, contractor/maintenance access, and the nature of work activity (e.g., bridge and culvert installation, maintenance and repairs) are often going to make MoDOT's use of this BMP infeasible. In these cases contractor/maintenance activities would make use of most or all areas of right-of-way or easement, which could include work up to the edge of, or even within waters of the state. If a vegetative buffer can be preserved, it must be incorporated as a non-structural BMP and denoted on plan sheets to remain undisturbed. If use of a buffer is determined to be infeasible or not effective at managing stormwater runoff, as previously mentioned, MoDOT will install other appropriate alternative BMPs to minimize sediment loss from the project. The choice of an alternative BMP, or combination of BMPs, will depend on site variables, but could include the use of Type C Berms, sediment basins, sediment traps, ditch checks, perimeter silt fence (including mulch berms) and the effective use of temporary or permanent seed and mulch or erosion control blankets, all described within this SWPPP, to limit erosion and any subsequent sediment transport. All BMPs, including any vegetated filter strip(s), will need to be identified, inspected and managed within the project SWPPP.

Like other BMPs, vegetated buffers should be inspected for effectiveness and maintained accordingly. Sediment deposits within vegetated buffers may be left in place or removed post construction depending on MoDOT's future plans for the area and consideration of whether there is a potential to affect water quality in adjacent surface waters. Inspectors should also consider whether it would be more destructive to the buffer to retrieve sediment deposits than to leave them. If leaving sediment deposits within vegetated buffers, it may sometimes be necessary to seed and mulch over the area, depending on the amount of sediment deposited.

Other Non-Structural BMPs such as seeding, mulching, stabilized construction entrances, flocculants and other chemical additives are discussed elsewhere in this document.

806.8.6.3 Erosion Control Measures

The emphasis on MoDOT projects should be erosion control, focusing on covering up exposed soil, preferably with permanent vegetation, rock, pavement, etc., as soon as practical in order to protect the soil surface and keep soil particles from dislodging and entering stormwater. Focusing on controlling stormwater velocity and volume is also an important consideration. Best management practices (BMPs) shall be used by contractors to minimize sediment loss from MoDOT right of way onto adjacent land or into streams, lakes, ponds, wetlands, drainage channels, etc.

The following described practices are commonly used erosion control BMPs that may be used individually or in combination with other practices, such as the sediment control devices discussed in

EPG 806.8.4.4 Sediment Control Measures, to assure effective erosion control and minimize off site delivery of pollutants. Other practices that are not listed here, or have not been identified or invented at the time of the preparation of this SWPPP, may be used if their performance is equivalent or better than the practices listed below.

806.8.6.3.1 Soil Surface Roughening

Surface roughening is a temporary erosion control BMP that will reduce runoff velocity and erosion potential by increasing infiltration and sediment trapping. This practice is intended for areas which have been cleared and grubbed and are awaiting application of temporary or permanent seed, or installation of other structural controls such as ditch checks, sediment traps, or sediment basins. The practice is NOT intended to serve as a stand-alone best management practice and is only to be used as a short-term, sequential practice as the grading and seeding proceeds.

Where backslopes are unlikely to be mowed or maintained due to steepness and lack of access, surface roughening can be a permanent measure. In these situations seed and mulch may be applied directly to the roughened seed bed. This will aid in the establishment of vegetative cover and will minimize destructive compaction by heavy equipment. There are three common methods of surface roughening (tracking, grooving, stair stepping) that can be employed depending on the soil type, slope and potential maintenance concerns for the project.

A. **Tracking** involves the use of tracked construction equipment (dozer, high lift, etc.) vertically tracking up and down slopes in order to create horizontal depressions, perpendicular to the runoff path, on the soil surface. These depressions reduce stormwater velocity and the potential for concentrated runoff, which typically leads to rill formation. Tracking can lead to significant soil compaction, which does help lock soil particles in place; however, it is also undesirable for root production and grass growth. Due to this fact, care should be taken in deciding which slopes to track. Tracking is typically recommended for sandy soils, where risk of excessive compaction is reduced.

B. **Grooving** involves the creation of a series of ridges and depressions that run along the contour of a slope. The grooves can be created using a variety of implements such as a disks, harrows, chisel plows, loader teeth, etc. The grooves should be no more than 3 inches deep and no more than 15 inches apart.

C. **Stair-stepping** involves creating stair steps to reduce runoff velocity and encourage sedimentation on steeper slopes that will not be mowed. The stairs should be cut such that the vertical step does not exceed 1 foot. The horizontal step should be longer than the vertical step and sloped inward toward the vertical step face to promote sedimentation.

806.8.6.3.2 Mulching and Crimping

Application of mulch without seed may be used as a temporary best management practice if approved by the engineer. This temporary stabilization practice is most applicable in late fall or early winter when grass seed would have little or no opportunity to germinate. Straw mulch should be applied with a mulch blower, or by hand, and must be anchored (crimped or otherwise tackified) immediately after spreading to prevent windblow. Application rates will vary based on the percent slope. Bark mulch and/or wood chips do not require crimping. The engineer will determine whether or not the wood chip mulch may remain in place, be cultivated or be modified for permanent seeding.

806.8.6.3.3 Temporary Berms — Erosion Control

A temporary berm is a temporary ridge of compacted soil, with or without a shallow ditch, constructed at the top of slopes or transverse to centerline on fills. The purpose of these ridges is to divert storm runoff from small areas away from steep slopes and direct this water to temporary, stabilized outlets where the water can be discharged with minimum slope erosion. These ridges are used temporarily at the top of newly constructed slopes to prevent excessive erosion of the slopes until permanent controls are installed and/or the slopes are stabilized. They are also used transverse to grade to divert runoff to stabilized slope drains. Weekly (and post-runoff) inspections will be necessary to identify breeches in all temporary berms used as BMPs.

Type B Berms are constructed on the top of slopes and are intended to direct runoff water away from project slopes and toward stabilized drop down structures/pipes or stormwater detention areas, sediment capture devices, etc. They will be constructed to specified dimensions (see *MoDOT* Standard Plan 806.10) and machine compacted with a minimum of three passes over the entire width of the berm with a dozer tread, grader wheel, etc. These temporary diversion structures are specified when embankment operations are shut down over extended periods of time. The top width of these berms may be wider and the side slopes flatter on transverse berms to allow equipment to pass over these berms with minimal disruption. Operation and maintenance concerns are limited to ensuring that the majority of runoff water is directed into the inlet of the slope drain. Removal of Type B Berms will normally occur when base rock is installed, prior to paving, but may be used longer if necessary.

806.8.6.3.4 Temporary Pipe Slope Drains

A temporary pipe slope drain (see *MoDOT* Standard Plan 806.10) is used to carry water down slopes to reduce erosion and may consist of half-round pipe, metal pipe, plastic pipe, or flexible rubber pipe. Temporary slope drains are usually required on fill and some cut slopes at approximately 500-foot intervals or as directed by the engineer. These structures are installed after the slope has reached its intended elevation and final grade.

All temporary slope drains will be adequately anchored to the slope to prevent disruption by the force of the water flowing in these drains. The inlet end will be properly constructed to channel water into the temporary drain. The outlet ends will usually have some means of dissipating the energy of the water to reduce erosion downstream and will have a sediment control BMP or a system of sediment control BMPs to capture sediment carried within the stormwater. Where scour at the outlet is of lesser concern due to the physical characteristics of the ditch, there shall still be sediment capture devices in the ditch or drainage outlet downgrade from the slope drain outlet. Unless otherwise specified, all temporary slope drains will be removed when no longer necessary due to the slopes being stabilized or the routing of runoff down permanent letdown structures. Upon removal of temporary slope drains, the site will be restored to match the surroundings.

806.8.6.3.5 Interception Ditches & Letdown Structures (Including Roadside & Median Ditches)

Interception ditches and letdown structures are typically permanent erosion control BMPs that capture stormwater run-on or runoff and transport it down slopes through stabilized channels. These constructed channels are meant to reduce the likelihood of gully formation and allow for the establishment of permanent vegetative cover on the face of the slope. Interception ditches and letdown structures are typically constructed in a “V”, “U”, or trapezoidal shape to concentrate water flow down the center of the structure in order to minimize the risk of break over points and flanking. They are typically lined with stone (riprap), erosion control blankets, turf reinforcement mats, or

other product which is self-adjusting and capable of withstanding concentrated, erosive flows. In some instances, these ditches and letdowns may be constructed as concrete or asphalt gutters; however, these types of rigid channel liners do not allow for water infiltration and more often than not, do not have built-in energy dissipation, which can exacerbate erosion at their outlets. In addition, due to their rigid nature, concrete and asphalt-lined drainage courses often undermine and experience section loss, which leads to system failure. There are alternative BMP technologies available (e.g., ShoreMax™, ScourStop™, Flexamat™, etc.) that give a degree of rigidity, if desired, to help armor the channel, or a portion of the channel more susceptible to erosion, while still allowing permeability for vegetative growth and water infiltration, as well as self-adjustment to prevent system failure.

When designing and implementing interception ditches and letdowns, as well as roadside and median ditches, it is important to take into consideration drainage area, soil type, slope and ditch shape in order to determine if the shear stresses within the ditch will be of a high enough value to warrant a liner beyond just vegetative cover. Depending on the location of the ditch, driver safety must also be taken into consideration when choosing an appropriate ditch liner.

Refer to 806.8.4.2 Non-Structural Control Measures for the benefits of existing or reestablished vegetation within ditches, swales and other areas of right of way.

806.8.6.3.6 Temporary Pipes & Temporary Construction Crossings

A temporary pipe is a conduit used temporarily to carry water under a haul road, silt fence, etc. Temporary pipes should be installed in the same manner as permanent pipe is installed on the project to assure that the water does not cause erosion around the pipe. If applicable, material to backfill the pipe should be placed in six-inch lifts and mechanically compacted, although a compaction test is not required. As additional erosion protection, temporary pipes can also be used to collect site run-on and covey it across disturbed areas on the job. Care should be taken to ensure the outlet of the temporary pipe is stabilized and adequate energy dissipation is available so as to not cause erosion of the receiving area.

Temporary pipes can also be used to convey normal and expected high flows at temporary stream crossings, preventing the contractor's equipment from coming into direct contact with the water when crossing active streams as discussed in EPG 806.8.4.1 (Construction Requirements). Any temporary structures used to facilitate construction (e.g. temporary crossings, temporary work pads) will be constructed of clean rock fill that is of sufficient size to be non-erodible under normal stream flow and also easily recoverable upon project completion. Temporary stream crossings will be sufficiently piped to allow for continuous and relatively unimpounded stream flow. The pipes will be placed to match the existing stream grade, which will allow for unimpeded aquatic life passage through the project area. Upon project completion, any temporary structure(s), including pipes and other materials, shall be completely removed and the area will be restored and stabilized.

(*Note: Temporary stream crossings can act as conduits for sediment to make its way to streams, because they usually cause a gap in perimeter BMPs along streambanks. If possible, stormwater runoff should be diverted away from these structures; otherwise other BMPs must be employed to adequately protect the waterbody*.)

806.8.6.3.7 Energy Dissipaters

An energy dissipater is a physical structure that is intended to reduce the erosive energy that is typically encountered down grade from a pipe or culvert. As such, these BMPs are normally

permanent. Erosive energy from intense flows may also be encountered in median ditches or road ditches. Energy dissipation may be accomplished by the installation of large boulders, wood pilings, engineered concrete structures or other means approved by the engineer, following construction of the ultimate drainage channel or device. Unlike ditch checks and sediment traps, energy dissipaters are NOT intended to impound water and sediment. Energy dissipaters must be constructed in a fashion such that the water that flows through, over or around the structure is equally distributed in the discharge channel and does not exacerbate or cause a resultant erosion problem.

806.8.6.3.8.1 Temporary Seeding and Mulching
(MO Specifications **Sections 802** *&* **805***)*

This work shall consist of preparing and fertilizing a seedbed, furnishing and sowing of seed, and mulching. The purpose of temporary seeding and mulching is to produce a quick ground cover of annual grasses to reduce erosion in disturbed areas that are expected to be either re-disturbed or permanently seeded at a later date. It should be used as necessary to prevent erosion and decrease reliance on and potential costly maintenance of sediment control BMPs. For project planning purposes, it is important to understand that temporary vegetative cover will begin to lose its effectiveness within 6 to 12 months depending on site conditions.

Seeding and/or mulching will be a continuous operation on all cut and fill slopes, waste sites, and borrow areas during the construction process. Disturbed areas shall be seeded and mulched when and where necessary to eliminate erosion. In designated areas seeding and/or mulching shall be done as soon as possible after completion of the earthwork, not to exceed 14 days (7 days on slopes steeper than 3:1), weather permitting. Most disturbed areas, with the exception of the road grade itself, shall be seeded and mulched during the fall to establish vegetative cover prior to winter shutdown. If final grade has been achieved, this operation should consist of establishing permanent vegetation, not temporary.

Temporary mulch placed over temporary seed mixtures shall be applied in accordance with the provisions of Sec 802.2.1 of the *Missouri Standard Specifications.* Fertilizer shall be applied at the rate specified for permanent seeding. Lime will usually not be required for temporary seeding but will be applied according to governing specifications when a permanent seed mixture is used.

806.8.6.3.8.2 Permanent Seeding and Mulching
(*MO Specifications Sec* **805**)

Permanent seeding and mulching following the temporary seeding will be performed according to the *Missouri Standard Specifications Sec* 805 and should typically be permitted during favorable seeding seasons only. It is important to remember that temporary seeding and mulching can be used to cover up bare soil during times that are not conducive to applying permanent seeding. Then, when conditions are more suitable for permanent seeding, it can be applied over/through the temporary seeding stubble. Or, in some cases, it may be necessary to mow the temporary seeding stubble and then apply permanent seeding.

Any revisions or deviations from contract seed mixtures and applications must be approved by MoDOT's Roadside Section within the Maintenance Division.

806.8.6.3.9 Fiber Reinforced Matrix (FRM)

Fiber Reinforced Matrix (FRM) is a hydraulically applied (spray-on) erosion control product that bonds to, and blankets bare soil. It is typically applied with a truck or trailer mounted sprayer or by

walking the affected areas with a hose sprayer. According to manufacturers, FRMs lock in moisture and nutrients to promote seed germination. Since these products are applied through spray-on application, they can conform to the contours of a slope and therefore can be applied to rough seedbeds. These products can be applied to all soil types on any slope and can be used in place of any of the erosion control blankets (ECBs) discussed in EPG 806.8.4.3.10 below. However, these products are only to be used as slope protection, and are not designed to withstand concentrated flows within ditches, drainages or streams. It is important when using these products to apply them according manufacturer's specifications and to assure there is complete surface coverage on the affected area to prevent potential failure due to improper application. In order to accomplish this it is important to spray slopes from multiple, varying directions. In some instances, especially on longer and/or steeper slopes, it may be necessary to install slope disruptors (wattles/socks/logs/etc.) perpendicular to the sheet flow to decrease runoff velocities down the face of the slope and protect the FRM application from concentrated flows. Manufacturer recommended application rates are summarized in the table below. Examples of FRMs include products such as Flexterra® Flexible Growth Medium™, EcoFlex™ and Flex Guard®.

Slope Condition	Application Rate (lbs/Acre)
≤ 3H:1V	3000
> 3H:1V and ≤ 2H:1V	3500
>2H:1V and ≤ 1H:1V	4000
>1H:1V	4500

To ensure product quality and performance, all FRMs must meet the following specifications:

Table 1: Minimum FRM Performance and Physical Requirements Property		**Required Value**
Thermally Processed Fiber by Weight		75% ± 10%
100% bio-degradable Interlocking Fibers		5% ± 2%
Organic Tackifiers and Activators		10% ± 2%
Moisture Content		10% ± 3%
Organic Matter		90% minimum
Color		Colored to contrast application area, shall not stain concrete or painted surfaces.
FRM Property	**Test Method**	**Required Value**
Physical		
Mass Per Unit Area	ASTM D6566*	12.0 oz/yd2 minimum
Thickness	ASTM D6525*	0.22 inch minimum
Ground Cover	ASTM D6567*	99% minimum
Wet Bond Strength	ASTM D6818*	9 lb/ft
Water Holding Capacity	ASTM D7367	1500 % minimum
Flexural Rigidity (wet)	ASTM D6575*	5 oz-yd maximum
Endurance		
Functional Longevity	ASTM D5338	Minimum of 12 months
Performance		
Cover Factor	MoDOT Approved Large Scale Testing	0.01 maximum
% Effectiveness	MoDOT Approved Large Scale Testing	99% minimum
Cure time	MoDOT Approved Large Scale Testing	98% Effective 2 hours after application
Vegetation Establishment	ASTM D7322*	800% minimum
Environmental		
Ecotoxicity	EPA 2021.0	96-hr LC50 > 100%
Effluent Turbidity	MoDOT Approved Large Scale Testing**	100 NTU Maximum
Biodegradability	ASTM D5338	100% Minimum

806.8.6.3.10 Erosion Control Blankets & Turf Reinforcement Mats

Erosion control blankets (ECBs) and turf reinforcement mats (TRMs) are designed to protect and reinforce vegetation from erosive forces until it can become established, or in the case of TRMs, in perpetuity. ECBs and TRMs are typically manufactured with straw, wood fiber (excelsior), jute, coconut coir fiber and synthetic materials or combinations of these materials.

ECBs are typically used to prevent sheet, rill, or gully erosion on slopes and some lower flow channels. TRMs may be used on steep slopes or slope areas with concentrated flow, but are typically used in channels. Since ECBs have a limited life expectancy (longevity) they are considered to be "temporary" erosion control measures; however, most TRMs are composed of interwoven layers of geosynthetic materials such as polypropylene, nylon and PVC netting, which protects from both bio and photodegradation and allows for permanent vegetative reinforcement. At culvert outlets, overflow structures or transition areas, it may be necessary to use a transition mat (e.g., ScourStop™, ShoreMax™, etc.) directly over the TRM in order to add additional scour protection in these highly erosive areas.

Slopes should be stabilized as soon as possible after grading work is completed. **ECBs, TRMs, or an equivalent erosion control practice is recommended for most slopes steeper than 3:1, depending on soil type.** Protecting slopes from erosion requires several actions that must be taken together. No single approach will be successful, especially if the slope is long, steep, or has highly erodible soils. Even when using blankets or mats, it may be necessary to incorporate temporary berms and slope drains, slope disruptors and other BMPs to ensure slope stabilization.

All ECBs and TRMs shall be installed according to the manufacturer's recommendations, including overlap and stapling guidelines. Prior to installation of blankets or mats the ground should be smooth, with no large rocks, vegetation or rills on the surface. Areas where blankets are to be used shall be properly prepared with topsoil or soil conditioning, fertilized (if required), and seeded before blankets are placed. The blankets shall be placed smoothly, but loosely, on the soil surface without stretching. Blankets at the top of the slope should be trenched in beyond the crest of the slope to avoid undercutting. Any overlap joints shall be lapped in the direction of water flow.

Blankets and mats should be inspected at the same frequency as all other erosion and sediment control items. Malfunctions must be repaired in a timely manner or else slope shaping, grading and reinstallation will be required. Removal is not necessary or required because the material will decay and break down on its own or, in the case of TRMs, permanently reinforce the vegetation.

Product requirements for ECBs and TRMs can be found within *MO Specifications* *Section 1011* . ECBs and TRMs meeting MoDOT specification requirements each have their own physical description that can be obtained from the manufacturer. Providing the physical description of all ECBs or TRMs would be unnecessary and redundant for the purposes of the SWPPP.

806.8.6.4 Sediment Control Measures

As previously stated, the emphasis on MoDOT projects should be erosion control, focusing on covering up exposed soil, preferably with permanent vegetation, rock, pavement, etc., as soon as practicable in order to protect the soil surface and keep soil particles from dislodging and entering stormwater. While erosion control should be the primary focus, it is important to back up erosion control efforts with appropriate and effective sediment control. Sediment control is most effective when incorporating a system of structural BMPs (treatment train) and focusing efforts on combatting sediment as close to its source as possible.

Understanding soil types is important when designing and implementing sediment control BMPs. Sand and silt consist of larger particle sizes that will fall out of suspension in stormwater more readily than clays. Clay particles are very fine and tend to stay in suspension for significant periods of time. Traditional sediment control BMPs, such as silt fence and ditch checks, are most effective at removing sand and silt from suspension. Larger impounding BMPs, such as sediment basins and sediment traps, are also effective at removing sand and silt, but can be effective at removing clay, due to prolonged impoundment. Even these impoundments may not successfully remove clay particles from suspension. In these situations, it may be necessary to include flocculants within a BMP system to remove excessive clay from stormwater prior to discharge from the project site. Flocculants are discussed in more detail in EPG 806.8.13 Turbidity Reduction and Advanced Treatment Systems.

The following sediment control measures should be used in combination with erosion control practices to treat stormwater and minimize sediment loss from MoDOT projects.

806.8.6.4.1 Sediment Basin

A sediment basin is a large sediment capturing device that can be constructed through excavation, or by constructing a dam across a low drainage swale to trap and store water and sediment that may not be caught by upgrade erosion and sediment control measures. Sediment basins can be temporary or permanent. Both permanent and temporary basins should be constructed with defined side slopes and rock riprap placed in inlet and outlet areas. (see *MoDOT* Standard Plan 806.10). Sediment basins shall always have stabilized outlets designed to discharge water from the surface of the basin. The stabilized outlets typically consist of one, or a combination of the following: rock, a riser pipe, or a surface skimmer (e.g., Faircloth Skimmer®). As a general rule, basins should be designed and constructed twice (minimum) as long as wide in order to maximize time of concentration within the structure. To add additional sediment removal capability to basins, baffles can be designed within the basin to slow stormwater flow and increase treatment time within the basin. Basically, the longer the water takes to get from the inlet of the basin to its outlet, the more effective the treatment and the better the water quality at the outfall.

Sediment basins are required (unless infeasible due to site constraints) when large disturbed areas ($\geq$10 acres) concentrate flow to one discharge point, but they should be considered for any disturbed area, 5 acres or greater, which drains to one discharge point. The inlets of these sediment basins shall be constructed with a wide cross-section and minimum grade to prevent turbulence and allow deposition of the soil particles. Upon construction of the basin, the side slopes of the basin should be seeded down with either annual or perennial vegetation or otherwise stabilized to protect the slopes from erosion. Discharges from the basin shall not cause scouring of the receiving area or stream.

The location of sediment basins will be shown on the plans. Sediment basins should be designed to a sufficient size to contain a volume of at least a 2-year, 24-hour storm for the area draining to the basin, or, if this calculation has not been performed, then a basin should be designed to contain a volume of 3,600 cubic feet per each acre of disturbed area which drains to the basin. Where the use of a sediment basin of sufficient size as described above is impractical it should be documented in the SWPPP and other similarly effective BMPs must be employed to minimize sediment loss from MoDOT right of way. These similarly effective BMPs or BMP systems could include, but are not limited to sediment traps, ditch checks, type C berms, etc., and the use of appropriate erosion control items to cover up exposed soil. An explanation for selecting these similarly effective BMPs instead of a basin will be documented in the project SWPPP.

Sediment basins should be installed at the time of clearing and grubbing, and will normally remain in service until all disturbed areas draining into the structure have been satisfactorily stabilized. Once vegetative or other stabilization is achieved, the engineer will determine whether a sediment basin is to remain as a permanent feature. If a sediment basin is to be permanent, its slopes shall be stabilized with rock riprap or equivalent (see *MoDOT* Standard Plan 806.10). If use of a sediment basin is to be discontinued, all excavations are to be backfilled and properly compacted, fill material removed, and the existing ground restored to its natural or intended condition.

Accumulated sediment shall be removed from the basin when the basin is no more than half full. Accumulated sediment removed from sediment basins shall be disposed of in locations where it will not erode into construction areas or waters of the state.

806.8.6.4.2 Sediment Trap

A sediment trap is a temporary sediment collection structure that is used for sediment control purposes. If properly maintained, the life expectancy of these structures can be approximately 2 years. Sediment traps will be in place prior to clearing and grubbing operations and shall remain in place until adequate stabilization to prevent erosion (vegetative cover, rock, concrete, etc.) is established upgrade of the structures. In situations where long-term maintenance issues are absent, and permanent vegetation has established, sediment traps may be left in place as a permanent structure as long as there is no threat to the natural or human environment.

Sediment traps may be constructed of rock (as per the MoDOT Standard Plans) or other non-erodible material sufficient to temporarily impound water, or may be a simple excavated pit. The length and height of the sediment trap depends on the volume of water that flows through the drainage structure and the width of the drainage channel. Sediment traps may be placed downgrade of a drainage structure outlet to prevent sediment from leaving MoDOT right of way. When a ditch drains into a stream, the sediment trap will be placed at the drainage ditch outlet. Sediment traps are not appropriate where impounded sediment and gravel could accumulate inside of the culvert. Sediment traps may also be constructed by placing a rigid, blocking structure (wood, steel, concrete) across the inlet or upstream opening of a pipe or culvert. This device can be referred to as a culvert block sediment trap (CBST). When using this device, heavy sediment particles will settle in front of the structure and clearer water will pass over the device and through the pipe.

Sediment traps are not typically appropriate in streams that are regulated by the US Army Corps of Engineers under Section 404 of the Clean Water Act. However, certain construction within the regulated channel may necessitate their use. The design of a sediment trap in this situation must be approved by the Design Division's Environmental and Historic Preservation section prior to inclusion in the plans.

Sediment traps may be dewatered through a single riser pipe, over a stabilized spillway (rock-lined, lined with erosion control blanket or turf reinforcement matting, vegetated), or, where applicable, allowed to filter through the interstices of a constructed rock barrier.

The location of sediment traps will be shown on the site plans. Accumulated sediment shall be removed from the trap when sediment has accumulated to 1/2 the height of the structure, or if an excavated pit, 1/2 of the original depth. Accumulated sediment removed from the sediment traps shall be disposed of in locations where sediment will not erode into construction areas or waters of the state. Discharges from the sediment trap shall not cause scouring of the receiving area or banks or bottom of the receiving stream.

Rock sediment traps will be constructed in accordance with Standard Plan 806.10 and Standard Specification 806.60. Estimated quantities for each trap located on the project will be shown to the nearest cubic yard.

806.8.6.4.3 Ditch Checks
(Ditch checks are also considered erosion control measures.)

MoDOT has two categories of ditch checks – rock and alternate ditch checks. These erosion and sediment control structures are typically used when the road ditch has been "cut" or “rough cut” to its final or near final dimensions, before the application of seed and mulch; however, they may also be installed prior to achieving final ditch grade in order to prevent erosion and protect from sediment loss.

Rock Ditch Checks are the predominant ditch check to be used on MoDOT projects. Rock ditch checks can be specified in most drainage areas where ditch slopes are 10 percent or less, and where expected ditch flow volumes and velocities are high. For scenarios that exceed the criteria established above, a combination of rock ditch checks and erosion control blankets (ECBs) or turf reinforcement mats (TRMs) should be used. (*Note: ECBs or TRMs may be designed into and used in any ditch or drainage regardless of the criteria outlined in this article*.)

Rock ditch checks will typically be constructed of rock with a predominant size between 4 and 12 inches, but this size may be adjusted to incorporate larger sizes if site conditions warrant. They will have a minimum effective height of 18 inches as measured in the field (see *MoDOT* Standard Plan 806.10). In areas of clay soils, where additional filtration may be needed, the upgrade face of the check can be capped with smaller stone, filter fabric or another approved filtering media. In some cases, it may also be necessary to place a section of ECB or geotextile beneath the rock ditch check and extending downgrade of the structure to prevent the rock from settling into the soil beneath and/or protect from downstream scour within the ditch line.

Experience and history have shown that well-constructed rock ditch checks can withstand more intense ditch flows than alternate ditch checks. For this reason rock ditch checks or sediment traps should be used at project points of concentrated discharge (i.e., outfalls). The last two ditch checks, in any ditch check system should be rock ditch checks or one rock ditch check followed by a sediment trap.

Alternate Ditch Checks should be considered as an alternate to rock ditch checks in areas where there are safety concerns for the traveling public or other constraints where there would be concern with installing rock. These devices can typically be used in smaller drainage areas (generally 3 acres or less), with ditch slopes of 4 percent or less, and where expected ditch flow volumes and velocities are small (see *MoDOT* Standard Plan 806.10). These thresholds may be exceeded at the approval of the engineer. If the total number of alternate ditch checks needed on a project is minimal, it is advisable to just specify all ditch checks as rock for simplicity of contract administration.

Alternate ditch checks should have an effective height of at least 9 inches as measured in the field and should be installed in accordance with the manufacturer’s recommendations or as outlined in this SWPPP.

Alternate Ditch Checks can include the following or other engineer approved devices:

Triangular Silt Dike®
EnviroBerm® Porous Sediment Control System (In combo with ECB or TRM)
GeoRidge/GeoRidge Biodegradable (Nilex) (In combo with ECB or TRM)
Compost Filter Berms (1'(H) x 2'(W)) (Covered with biodegradable ECB/TRM)
Sand Bags

Fiber Rolls, Sediment Logs, Compost Filter Socks – staked & ≥ 9" effective height and must be used in combination with ECBs or TRMs as a channel liner beneath, unless used in a ditch with sufficient existing vegetative cover to prevent erosion.

(IMPORTANT: Straw wattles, straw bales and geotextile silt fence are no longer acceptable as a ditch check BMPs.)

Each type of ditch check (particularly the tubular/cylindrical/triangular products) will have specific directions for installation. In all cases care shall be exercised so as to install the device according to manufacturer specifications. Effectiveness may be compromised if not installed correctly.

Ditch checks shall be placed and constructed according to *MoDOT* Standard Plan 806.10, which shows the spacing for ditch checks. The estimate of the required number of ditch checks is based on an effective height of 9 or 18 inches. In some cases local conditions may dictate some deviation from the dimensions and shape that are shown in the Standard Plans; however, deviations from Standard Plans must still ensure that sediment capture and erosion control is occurring.

Ditch checks shall be checked for sediment accumulation after each runoff event. Sediment shall be removed when it reaches 1/2 of the original height, or before. Sediment removal will include removal and disposition in a location where it will not erode into construction areas or waters of the state. Inspections shall be made to ensure that the center of the check is lower than the edges. This will ensure that water overflow will be directed into the middle of the roadway ditch. Erosion caused by high flows around the edges of the ditch check shall be identified in routine inspections and shall be corrected to protect backslopes and inslopes, as well as the integrity of the BMP.

Ditch checks shall remain in place until the engineer directs that they be removed once adequate stabilization (vegetative cover, rock, concrete, etc.) upgrade of the structures has been achieved in accordance with the permit. Upon removal, the contractor shall remove and dispose of any excess silt accumulations, grade and dress the area to the satisfaction of the engineer, and establish stabilization on all bare areas. As a general rule for rock ditch checks, once the area has reached final stabilization, any collected sediment should be removed and rock ditch checks can be graded out within the ditch line, serving a similar purpose as a liner. In rare cases, rock ditch checks may remain in place permanently, and resultant accumulated sediment shall be allowed to develop vegetative cover as a permanent feature of the right of way. Similarly, biodegradable structures and their accumulated sediment may be allowed to remain in place if the engineer determines that removal will destabilize the ditch. In cases of compost, mulch, etc. filled checks, the wooden stakes should be pulled and the biodegradable netting cut to encourage more rapid degradation. If the netting is non-biodegradable, the netting shall be cut and removed along with the stakes, but the biodegradable filling may be left to decompose.

806.8.6.4.4 Silt Fence
(MO Specifications **Sections 624 & 1011***)*

Use of a silt fence consists of furnishing, installing, maintaining, and removing a geotextile barrier fence designed to remove suspended particles from water passing through the fence. Silt fence is a temporary sediment control measure to control sheet flow along the edge of the right of way where runoff attempts to leave the project onto an adjacent property or into an adjacent body of water or wetland. Silt fence must never be used in concentrated flow to cross a ditch, stream or drainage channel, and in no case installed downgrade from a pipe or culvert.

There are several construction requirements for silt fences. Where possible, silt fencing should be installed in existing vegetation, outside of, or at the edge of project clearing limits, so that a buffer of undisturbed soil and vegetation remains on both sides of the fence. Fence construction shall be adequate to handle the stress from hydraulic and sediment loading. Geotextile at the bottom of the fence shall be entrenched. The trench shall be backfilled and the soil compacted over the geotextile. When two sections of geotextile silt fence come together or if a new run must be started, the fence shall be overlapped as indicated on the standard drawings (see *MoDOT* Standard Plan 806.10).

As a general rule, geotextile silt fence, especially non-wire reinforced geotextile silt fence, should not be used as inlet protection, particularly around culvert and drop inlets where high volume, concentrated flows are expected, except in the instance described in 806.8.4.4.6 Inlet Controls. Geotextile silt fence is also not appropriate for use as ditch checks.

Post spacing shall not exceed 8 feet for wire-backed fence installations or 5 feet for self-supported installations. Posts shall be driven a minimum of 24 inches into the ground. Where rock is encountered, posts shall be installed in a manner approved by the engineer, or an alternative BMP may be selected. Closer spacing, greater embedment depth and/or wider posts shall be used as necessary in low areas and soft or swampy ground to ensure adequate resistance to applied loads. In low swales, where concentrated flows may form, consider using a ditch check or sediment trap in lieu of silt fence. If heavy sediment or runoff loading is expected against the silt fence, the use of metal “T” posts should be considered in lieu of wooden post stakes.

When wire support fence is used, the support wire shall be fastened securely to the up-slope side of the post. The support wire shall extend into the trench a minimum of 2 inches and extend a maximum of 36 inches above the original ground surface. When self-supported fence is used, the geotextile shall be securely fastened to fence posts.

When silt fence is used as a perimeter sediment control device it will generally be installed at the time of clearing and grubbing, and must be maintained for as long as necessary to contain sediment from runoff. Silt fence should be installed on the contour when possible, perpendicular to sheet flow, to prevent overtopping or overloading at single points. If silt fence is run down a grade, not perpendicular to sheet flow, J-hooks should be installed into the silt fence system to dissipate energy and capture runoff so as not to undermine the fence or overwhelm the system at a low point. J-hooks should be installed toe to top, similar to ditch checks, with the tail of the downgrade J-hook terminating behind the leading edge of the previous (see *MoDOT* Standard Plan 806.10). All silt fences shall be inspected as part of MODOT’s routine inspections. It is also recommended that casual daily inspections be made during periods of prolonged rainfall. Common deficiencies to watch for during silt fence inspections include tearing, undermining, and collapsing.

In addition, review of the location of silt fences should be made in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly

located for effectiveness. Where deficiencies exist, additional silt fences, or another appropriate BMP shall be installed as approved or directed by the engineer. If silt fence is no longer necessary in an area, it should be removed to negate maintenance and liability.

Sediment deposits shall be removed and disposed of when the deposit approaches 1/2 the height of the fence or sooner. If required by heavy sediment loading, a second silt fence shall be installed as directed by the engineer. Installation of a second silt fence will sometimes preclude sediment cleanout or repair to the original silt fence. In such cases the damaged silt fence will be removed at project close out when other temporary BMPs are removed.

The silt fence shall remain in place until areas that drain to the fencing are stabilized in accordance with the permit and the engineer directs that it be removed. Upon removal, the contractor shall remove and dispose of any excess silt accumulations, grade and dress the area to the satisfaction of the engineer, and establish vegetation on all bare areas. Biodegradable silt fence (such as some of the example products listed below) need not be removed unless directed by the engineer. If the engineer determines that silt fence shall remain in place for a period of time after the job is closed out, arrangements will be made by MoDOT Construction personnel for the contractor or MoDOT Maintenance personnel to remove the fence once the area is sufficiently stabilized in accordance with the permit.

At the discretion of the engineer the following list of product examples or other approved BMPs, like mulch berms, may be substituted for perimeter geotextile silt fence. These devices should be installed in accordance with manufacturer recommendations. In the case of the wattles, socks and log devices, if practical and possible, a cradle trench should be created to lay the product in to ensure proper contact with the ground surface. This may not be appropriate if installing these devices in areas with existing grass cover, such as yards, or in areas with shallow utilities or bedrock beneath; regardless, care should be taken to ensure flush contact with the ground surface. Thought should also be put into product choice based on expected longevity, as some devices listed below will decompose or break down more quickly than others, and may require replacement or multiple replacements during the life of a job. In general, perimeter silt fence installations should have a minimum 9” in effective height, as measured in the field, unless site conditions warrant a higher or lower effective height.

Example products:

- Sediment STOP
- Terra-Tubes
- Sediment Logs, Wattles
- Compost Filter Socks/Berms
- Triangular Silt Dike

806.8.6.4.5 Rock/Mesh Sediment Control Fence and Inlet Protection Device

In situations when higher velocity stormwater flows are expected around the perimeter of a construction site, a rock/mesh sediment control fence should be installed in lieu of geotextile or other silt fence applications. This device is constructed using a 4 ft. wire mesh (hardware cloth – 24 gauge, ¼ in. openings) folded in half to form a 90^{o} angle. This mesh is then wired to, and supported by 5 ft. metal “T” posts spaced 3 ft. apart and driven approximately 2 ft. into the ground. Lastly, a layer of grade 4 or grade 5 aggregate for drainage (*Missouri Standard Specifications Sec 1009*) is placed against the mesh, with a minimum height of 12 in., but preferably 18 in. (see *MoDOT Standard Plan 806.10*)

Use this device in lieu of other silt fence applications at the toe of fill sections, especially along streams and wetlands and in other areas where there is insufficient right of way to construct better impoundment devices, such as sediment basins or sediment traps. As with silt fence applications, the sediment control fence should be placed perpendicular to stormwater flow, allowing the water to pass either over or through the rock/mesh sediment control fence, never around it.

This same device can be modified for use around drop inlets, creating a closed ring or box around the inlet opening using the same installation guidelines outlined above.

Rock/mesh sediment control fences shall be inspected during weekly and post-runoff inspections for structural damage, undercutting, sediment buildup, or lack of drainage due to sediment clogged stone. Sediment deposits shall be removed and disposed of when the deposit approaches 1/2 the height of the fence or sooner. Accumulated sediment removed from the fence shall be disposed of in locations where sediment will not erode into construction areas or into waters of the state. Also, if the filter stone (aggregate for drainage) becomes sediment-clogged and no longer serves as a filter, it may be appropriate to replace it with new stone.

The rock/mesh sediment control fence shall remain in place until areas that drain to the fencing are stabilized and the engineer directs that it be removed. Upon removal, the contractor shall remove and dispose of any excess sediment accumulations, grade and dress the area to the satisfaction of the engineer, and establish vegetation on all bare areas. If the engineer determines that sediment control fence shall remain in place for a period of time after the job is closed out, arrangements will be made by MoDOT Construction personnel for the contractor or MoDOT Maintenance personnel to remove the fence once the area is sufficiently stabilized.

806.8.6.4.6 Inlet Controls

Storm drain (culvert, drop or curb) inlet protection measures prevent soil and debris from entering storm drain inlets. Temporary inlet protection is implemented at existing inlets prior to land disturbance, and new inlets are to be protected as they are put into service. Effective storm drain inlet protection must be provided throughout the project, for all inlets susceptible to receiving sediment, until all sources with potential for discharging to an inlet have been stabilized. At that time inlet controls can be removed.

As the conditions or operations change during a project, the sediment control BMP protecting the storm drain inlet may need to be modified to ensure proper effectiveness for sediment filtration and capture. Also, limiting the amount of sediment entering a storm sewer will reduce the need to clean out pipes at the end of the project.

The following types of items are generally considered for use as inlet protection:

Curb Inlet Protection:

- Sand Bags/Rock Socks
- Wattles/Compost Filter Socks/Fiber Rolls/Sediment Logs, etc.
- Various Filter Devices and Inserts (e.g., but not limited to, FLEXSTORM Inlet Filters, Silt Saver Inlet Filter, Big Red Curb Inlet Protector & Dandy Products)
- Wood, Steel or Other Barricades

Drop or Pipe/Box Inlet Protection (Shall have a minimum 9” effective height):

- Rock/Mesh Inlet Check (NEW – see 806.8.4.4.5)
- Rock Ditch Checks
- Triangular Silt Dike®
- Sand Bags
- Various Filter Devices (e.g., but not limited to, Silt Saver Inlet Filter, Big Red Area Inlet Protector & Dandy Products)
- Wood (CBST, as discussed in 806.8.4.4.2), Steel or Other Barricades

(*Note: Item selection may vary depending on the type and design of inlet to be protected and careful consideration should be made with inlet protection to ensure any impounded water will not flood streets, buildings, homes, etc.*)

As a general rule, geotextile silt fence, especially non-reinforced geotextile silt fence, should not be used as inlet protection, particularly around culvert and drop inlets where high volume, concentrated flows are expected. An exception to this is if a constructed wood or steel frame is erected around the inlet and this frame is then wrapped with geotextile material. In this application, it is recommended for additional support and protection that wire reinforcement be wrapped around the frame and then the geotextile applied over the wire.

Each type of inlet control device (particularly the tubular/cylindrical/triangular products) will have specific directions for installation. In all cases care shall be exercised so as to install the device according to *MoDOT* Standard Plan 806.10 or manufacturer specifications. Effectiveness may be compromised if not installed correctly.

During construction, elevated curb inlets and median inlets, as well as excavations around inlets, may serve as "riser pipes" as long as they are sufficiently higher (approx. 9” or more) than the existing grade. Sediment that accumulates at the base of the riser pipe following stormwater events shall be removed when it reaches 1/2 of the original height of the riser pipe. Once the desired grade has been achieved and the inlet becomes flush to that grade, subsequent inlet protection is required.

806.8.6.4.7 Temporary Berms — Sediment Control

Type C berms are typically specified at the toes of spill slopes around bridge construction operations and will usually be constructed to the specified dimension (see *MoDOT* Standard Plan 806.10). However, dimensions may deviate from those shown on the standard drawings based on site limitations. A straw layer, erosion control blanket, or geotextile is typically required on the upgrade side of the Type C berm to improve stormwater filtration. This additional filtration layer may be removed if the character of the rock material is sufficient to minimize sediment loss from the project. In certain construction operations, Type C berms may be used as perimeter protection where significant stormwater flows and/or sediment loading is expected, which would overwhelm silt fence applications. Installation will generally precede land disturbance activities, unless some clearing is necessary in order to gain access to the site. Type C Berms must be installed above the regulatory "ordinary high water mark". Type C berms are typically temporary, but may be permanent depending on the ultimate desired use of the right of way beneath the bridge. If the Type C Berm is removed, material may be used for bank stabilization, or other construction use. Bank stabilization will be in accordance with the Section 404 permit. Type C Berms shall be checked for sediment accumulation after each runoff event. Sediment shall be removed when it reaches 1/2 of the original height or before. Sediment removal will include removal and disposition in a location where it will not erode into construction areas or waters of the state.

Contract plans will show the general location of the Type C berm, but the precise location of the structure can only be determined at the time of installation and shall be field fit at the direction of the engineer to provide maximum protection, yet enable the installation of piers, bents and other improvement, as well as accommodate for movement of equipment.

(*Note: Oftentimes temporary stream crossings are used in proximity to Type C berms. These crossings can cause gaps in the berm for equipment passage, which could potentially be a conduit for sediment delivery to the waterbody. Use caution when using these two practices in the same location and assure adequate protection of the waterbody. Refer to EPG 806.8.4.3.6 (Temporary Pipes & Temporary Construction Crossings) for more information.*)

Type B Berms may be used as a temporary perimeter control structure where slopes are less than 2% and permanent vegetation is present on the downgrade side of the structure. They will be constructed to specified dimensions (see *MoDOT* Standard Plan 806.10) and will be machine compacted with a minimum of three passes over the entire width of the berm with a dozer tread, grader wheel, etc. When using a Type B berm for perimeter protection, it should be seeded and mulched with temporary, or, if desired, permanent vegetative cover. Weekly and post-runoff inspections will be necessary to identify berm erosion or breeches. Removal of Type B Berms will occur when grading operations cease and final contours are achieved or when other BMPs have been installed negating the need for the berm. Removal will usually occur just before the application of seed and mulch or other soil stabilization measures.

806.8.6.4.8 Compost Filter Devices

Two categories of compost filter devices are used as erosion and sediment control BMPs on MoDOT projects: compost filter socks/ logs and compost filter berms. (*Note: Compost can also be used as a soil amendment and sometimes as a mulch to enhance vegetative establishment.*)

Compost Filter Socks consist of compost filter media (compost, or non-treated wood) encased within a three-dimensional fabric tube for purposes of erosion, sediment and pollution control. Compost filter socks are typically used for perimeter protection and are an acceptable alternative to geotextile and other silt fence applications described in EPG 806.8.6.4.4 Silt Fence. Compost filter socks are also acceptable alternate ditch checks as described in EPG 806.8.4.4.3 Ditch Checks. Specified effective height, as measured in the field, shall apply for both silt fence and ditch check applications. Compost filter socks shall be installed according to the manufacturer's specifications or MoDOT Standard Plan 806.10, including ground preparation and staking requirements. Though compost filter socks are commonly used for perimeter protection and alternate ditch checks, other uses may include: curb and drain inlet protection; slope interruption; protection along the toe of stream and channel banks; on compacted and frozen soils, or pavement where trenching is difficult or impossible; and around sensitive resources where trenching may disturb the resource.

Sediment shall be removed once it has accumulated to one-half the original height of the sock. Compost filter sock shall be replaced whenever it has deteriorated to such an extent that the effectiveness of sock is reduced. Compost filter socks shall remain in place until disturbed areas draining to the devices have been permanently stabilized in accordance with the permit. Upon removal of compost filter socks, the wooden stakes should be pulled and the biodegradable netting cut to encourage more rapid degradation. If the netting is non-biodegradable, the netting shall be cut and removed along with the stakes, but the compost filling may be left to further decompose and act as a soil amendment.

Compost or non-treated wood used for compost filter sock filter media (filler material) shall be weed, disease, and pathogen free and derived from a clean source of woody organic matter. Compost shall be produced using an aerobic composting process meeting CFR 503 regulations including time and temperature data. The filler material shall be free of any refuse, contaminants or other materials toxic to plant growth. Test methods for the items below should follow U.S. Composting Council Test Methods for the Examination of Composting and Compost guidelines for laboratory procedures:

- pH – 5.0-8.0 in accordance with TMECC 04.11-A, "Electrometric pH Determinations for Compost"
- Particle size – 99% passing a 2 in (50mm) sieve and a maximum of 40% passing a 3/8 in (9.5mm) sieve, in accordance with TMECC 02.02-B, "Sample Sieving for Aggregate Size Classification". *(Note- In the field, product commonly is between ½ in [12.5mm] and 2 in [50mm] particle size.)*
- Moisture content of less than 60% in accordance with standardized test methods for moisture determination.
- Bulk density shall be a minimum of 14 lbs/cu ft (dry weight)
- Material shall be relatively free (<1% by dry weight) of inert or foreign man made materials.
- The engineer may request a sample for approval prior to being used and must comply with all local, state and federal regulations.

Compost Filter Sock Fabric Specifications

Material Type	**5 mil HDPE**	**5 mil HDPE**	**Multi-Filament Polypropylene (MFPP)**	**Heavy Duty Multi-Filament Polypropylene (HDMFPP)**
Material Characteristics	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	8" 12" 18" 24" 32"	8" 12" 18" 24" 32"	8" 12" 18" 24" 32"	8" 12" 18" 24" 32"
Mesh Opening	1/8" - 3/8"	1/8" - 3/8"	1/8" - 3/8"	1/8" - 3/8"
Tensile Strength	26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	9 months	6 months	1 year	2 years

(*NOTE: all materials must be knitted. Extruded materials not permitted.*)

Compost Filter Berms are temporary barriers of compost placed along the perimeter of a site, or at intervals along a slope, to control erosion and capture sediment from sheet flow. A filter berm can also be used as a check dam in small drainage ditches as described in EPG **806.8.4.4.3** Ditch Checks. Loose applied compost berms (i.e., mounded compost) should be anchored in place (covered) with ECB for stability. To anchor the compost effectively, place the ECB first and then install the

compost along and atop the downgrade edge of the ECB and wrap the ECB over the compost in the direction of flow and anchor with staples or an equivalent.
Composts used in filter berms are made from a variety of feedstocks, including municipal yard trimmings, food residuals, separated municipal solid waste, biosolids, wood chips, and manure.

Compost filter berms can be used in place of traditional sediment and erosion control tools such as geotextile silt fence. As such these berms can be installed at the time of clearing and grubbing, or as needed throughout the construction process, and will remain in place until the site is stabilized. Weekly and post-runoff inspections will be necessary to identify berm erosion or breeches. Sediment shall be removed once it has accumulated to one-half the original height of the berm.

Post-construction removal is not required because the compost and ECB are biodegradable. However, unvegetated berms are often broken down once construction is complete and the compost is sometimes spread around the site as a soil amendment or mulch.

806.8.6.4.9 Mulch Berms

The use of shredded or chipped mulch for berms or temporary groundcover is an acceptable reuse of cleared trees and brush from MoDOT projects. Mulch berms are used for perimeter protection and are an acceptable alternative to geotextile and other silt fence applications described in EPG 806.8.6.4.4 Silt Fence. As such, these devices are used to filter sheet flow and are not appropriate in ditches, drainage channels or other areas of concentrated flow.

Mulch berms are most effective when piled to a height of at least two feet, preferably installed in existing vegetation, outside of, or at the edge of project clearing limits, so that a buffer of undisturbed soil and vegetation remains on both sides of the berm. Mulch berms will generally be installed at the time of clearing and grubbing, and must be maintained for as long as necessary to contain sediment from runoff. Mulch berms should be installed on the contour when possible to prevent overtopping or overloading at single points.

Mulch berms shall be inspected as part of MODOT's routine inspections. It is also recommended that casual daily inspections be made during periods of prolonged rainfall. Where deficiencies exist, additional mulch, or another appropriate BMP shall be installed as approved or directed by the engineer.

Sediment deposits shall be removed and disposed of when the deposit approaches 1/2 the height of the berm or sooner. A mulch berm shall remain in place until areas that drain to the structure are stabilized in accordance with the permit and the engineer directs that it be removed. Upon removal, the contractor shall remove and dispose of any excess silt accumulations, grade and dress the area to the satisfaction of the engineer, and establish vegetation on all bare areas.

Mulch is biodegradable and need not be removed, unless directed by the engineer. Though not required to be removed, piled mulch should be knocked down and dispersed into a thin layer of ground cover, which will aide in the breakdown of the material.

806.8.6.4.10 Brush Pile Checks/Barriers

Brush pile checks or barriers are considered to be temporary BMPs that can be effective during clearing and grubbing operations. Piled and compressed tree tops, limbs, stumps and other vegetation, when placed in a **non-jurisdictional** drainage swale or around the perimeter of a land disturbance site, can effectively impound gravel, soil and other eroded materials that otherwise may

be carried off of MoDOT right of way during runoff events. Brush pile checks are not appropriate for use in jurisdictional (Section 404 of the Clean Water Act) bodies of water.

To be effective, brush piles should be compressed tight to the ground by clearing equipment at the time of installation so there is no void beneath. Brush checks and barriers are only intended to operate as stand-alone BMPs for a very short time period during initial clearing and grubbing, and should be bolstered by the installation of additional supportive measures upgrade or downgrade of the structures, such as sediment basins, sediment traps, ditch checks, etc., as soon as practicable. When these other devices are installed, the brush check/barrier may be left in place as additional filtration, if permissible, or removed.

Like other BMPs, brush piles should be inspected during required inspections to ensure that they are functioning as intended. Initial inspections following rainfall will determine their ability to impound water and sediment. If the brush pile is intended to serve as a longer term sediment control structure for an extended period of time beyond the clearing and grubbing stage, clean out and maintenance equivalent to that required for ditch checks is required.

After land disturbance has been completed, removal should be discussed before heavy equipment leaves the site. In rural situations, and where maintenance issues are absent, the brush pile may be abandoned and left to decompose on its own.

806.8.6.4.11 Straw Bales

(MO Specifications **Sec 802***)*

Bales of straw are no longer acceptable sediment control BMPs on MoDOT projects and will not be used as such. Straw is acceptable as mulch when applying temporary ground cover or establishing permanent vegetative cover. Straw used as ground cover is required to be embedded or tackified per Section 802 of the Missouri Standard Specification for Highway Construction.

Straw bales are an acceptable practice used to control concrete diamond grinding residue that is discharged onto MoDOT right of way due solely to the short duration of the discharge as described in EPG 806.8.11. During concrete diamond grinding operations, the straw bales are typically used in concert with other BMPs, including non-structural BMPs such as existing vegetation.

In these situations, bales of straw can be installed as ditch checks and used as a temporary means of controlling pollution by obstructing the flow of the slurry and allowing deposition of the fine cement particles. The bales should be properly staked and extend far enough up the inslope and backslope to sufficiently impound the discharge slurry. The integrity of straw bales must be maintained for as long as they are necessary to contain the slurry. When no longer necessary to control pollution, the bales and other temporary BMPs associated with diamond grinding operations should be removed.

806.8.7 DISTURBED AREAS

Project plans that are discussed in EPG 806.8.2 Site Description and EPG 806.8.9 Developing/Amending/Updating the Project Plans will identify those areas that will be cleared and graded as part of the highway development project. The plans will also identify areas that are not to be disturbed. Both disturbance and do not disturb areas are generally staked in the field.

On areas of the site where soil disturbing activities will cease and are not planned to resume for a period exceeding 14 calendar days, temporary stabilization must be initiated immediately upon knowing of the 14-day cessation, and must be completed with 7 calendar days. On portions of the

project where slopes are greater than 3:1, or greater than 3% and greater than 150 feet in length, all temporary stabilization must be completed within 7 days of ceasing operations. Temporary stabilization may include, but is not limited to the installation of sediment basins, sediment traps, ditch checks, sediment fences, and mulch; however, the preferred method of stabilization is seed and mulch.

Seeding and/or mulching will be a continuous operation on all cut and fill slopes, excess material (waste), and borrow areas during the construction process. All disturbed areas should be seeded and mulched or otherwise stabilized when and where necessary to eliminate erosion. Seeding and/or mulching shall be done as soon as possible after completion of the earthwork and preparation of the seedbed, weather permitting.

Whenever clearing, grading, excavating or other earth disturbing activities have permanently ceased on a portion of the site, final stabilization must be initiated immediately and completed within 7 calendar days. Final stabilization can be achieved by covering disturbed areas with pavement, buildings or other structures, perennial vegetation or non-erodible materials such as adequately sized rock. With respect to areas that have been seeded, vegetation cover must be at least 70% plant density with uniform coverage over 100% of the disturbed area.

For the purposes of this section, allowances to the 7 day completion period for temporary and permanent stabilization may be made due to inclement weather or adverse site conditions. If used, these allowances must be properly documented in the project SWPPP, and shall include pictures.

The following types of activities will constitute initiation of stabilization (this list is not exhaustive):

- Prepping the soil for vegetative or non-vegetative stabilization
- Applying mulch or other non-vegetative product to the exposed area
- Seeding or planting the exposed area
- Starting any of the above activities on a portion of the area to be stabilized, but not on the entire area
- Finalizing arrangements to have stabilization product fully installed in compliance with the applicable deadline for completing stabilization

Note: the term “immediately” in this section means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

806.8.8 INSTALLATION & REMOVAL

The contractor shall be required to incorporate all permanent erosion control measures into the project at the earliest practicable time. As stated in EPG 806.8.4.1 Construction Requirements, when practical, border, perimeter, or outfall BMPs to control runoff from disturbed areas shall be installed or marked for preservation before general site clearing. A limited amount of clearing may be permissible to enable the installation of outfall and perimeter controls. Stormwater discharges from disturbed areas, which leave the site, shall pass through and appropriate impediment prior to leaving the site. It may be necessary to install additional control measures during construction which were not foreseen during the design stage. Temporary controls shall also be used when needed prior to installation of permanent erosion control measures to control erosion that develops during normal construction practices.

Temporary BMPs should be removed from the project when areas they are protecting have achieved final stabilization in accordance with the permit. Oftentimes engineers and/or contractors may desire to leave all temporary BMPs in place until project completion and then have one mass removal. Though this practice is not ideal due to increased vulnerability, it is acceptable if the BMPs are continuously inspected and maintained in accordance with the permit until their removal. Also, if the engineer determines that some BMPs shall remain in place for a period of time after the job is closed out, arrangements will be made by MoDOT Construction personnel for the contractor or MoDOT Maintenance personnel to remove the BMPs once the area(s) they are protecting are sufficiently stabilized.

806.8.9 DEWATERING

Dewatering of ponds, lakes, coffer dams, pits or excavations associated with construction shall be discussed at the preconstruction conference, and articulated in a written plan, which will outline a method for properly treating the water before it can re-enter a river, stream, pond, lake, wetland, etc. This plan may be amended at any time if changes are necessary.

Sec 107.10.2 requires a dike or appropriate barrier to be placed between the excavation and the stream to prevent sediment from reaching the watercourse. The structural BMPs that are identified in EPG 806.8.4.4 Sediment Control Measures are usually sufficient to remove sediment and similar pollutants prior to discharge of return water. Land application of the discharge water is a viable option when percolation into the subsurface results; however, caution shall be used to ensure that water discharge does not cause the formation of gullies in cases where pumping exceeds percolation.

With the possible exception of drilled shafts in large rivers such as the Missouri or Mississippi, return water shall not be discharged without treatment by BMPs that are approved by the engineer. The amount of return water that is pumped and subsequently discharged should be recorded in the project records and expressed as gallons per minute for the duration of the pumping activity.

806.8.10 ROADWAYS

In order to ensure that sediment is not transported into a situation where it can be delivered off-site, stabilized construction entrances should be used when construction equipment is frequently crossing or entering paved roadways. Stabilized construction entrances are typically built with rock of sufficient size to cause mud and dirt to fall off of the tires of the construction equipment. Geotextile fabric may be necessary for placement below the stabilized entrance in some soil conditions to prevent the rock from subsiding into the soil. In muddy situations, the voids between the rocks will always fill up with soil particles and, as such, additional stone will need to be applied periodically and when repair is required.

The purpose of the stabilized entrance is to reduce the amount of sediment that will be transported onto the driving surface. However, the driving surface at the point of the active crossing cannot remain clean without additional measures such as sweeping or grading.

Because it is impossible to eliminate all trackout of sediment, inspections should ensure that sediment control measures downgrade from the area of trackout are in good operating condition, especially inlet controls.

On projects where there is one primary construction entrance/exit and a large volume of equipment is expected to pass through this point, a more structural BMP may be appropriate to handle the volume

of sediment. If this is the case, rumble strips, cattle guards, or wheel wash stations may be employed to effectively remove sediment. In these situations, routine maintenance will be needed to remove accumulated sediment from beneath and/or around these structures. If a wheel wash system is used, wash water should be channeled to a constructed sediment trap for treatment, unless the system has the capability to recycle the wash water. Just as with other sediment traps, once installed, the location of the trap will be shown on the inspector's site plans. Accumulated sediment shall be removed from the trap when the accumulation reaches 1/2 the height of the structure, or if an excavated pit is used, 1/2 of the original depth.

When accumulated sediment is removed from these BMPs, the material shall be disposed of in locations where sediment will not erode into construction areas or waters of the state.

806.8.11 DIAMOND GRINDING & OTHER SURFACE TREATMENTS

Although diamond grinding, grooving, and other pavement surface and bridge deck treatments are not land disturbance activities, the fine material that is removed from the driving surface will become suspended in discharge water and has the potential to contaminate nearby streams if not sufficiently managed. The following shall be considered the minimum requirements for performing this work within the project limits in addition to Sec 622of the *Missouri Standard Specifications for Highway Construction* and EPG 622.2.1 Construction Inspection for Diamond Grinding of Existing Portland Cement Concrete Pavement.

The contractor shall submit to the engineer for approval in writing prior to the pre-construction conference, the best management practices (BMP's) to be used to protect the environment, including the method of disposal whether on right of way or off-site. Dispersal of diamond grinding residue on the right of way, where allowed, is the contractor's choice versus tanking and disposal, therefore, all straw bales and other BMPs shall be at the contractor's expense. See 806.8.6.4.11 for more information on the use of straw bales as BMPs.

The preferred BMP for concrete diamond grinding slurry management is land application on MoDOT right of way. When concrete slurry is dispersed on the right of way, BMP's shall be installed to keep slurry residue from entering drainage structures, waters of the state, and from leaving the right of way. At no time should asphalt diamond grinding slurry be discharged directly onto MoDOT right of way. Asphalt grinding residue must be tanked and disposed of properly.

Prior to starting work, concrete slurry or residue "no discharge zones" will be identified by the engineer with respect to the contractor's approved BMP and residue disposal plan. Special provisions and restrictions will apply when operating in proximity to streams, wetlands, sensitive species habitat and in karst (landscapes with caves) and groundwater recharge areas.

The engineer may suspend operations during periods of rainfall or during freezing temperatures.

806.8.12 CONCRETE WASHOUT

Concrete washout BMPs should be established in designated areas for all projects where concrete production or delivery is occurring. Inspectors should ensure that concrete washout is not occurring in non-designated areas of the project site. These washouts are used to contain residual concrete, concrete associated liquids and the wash water from cleaning trucks, hoppers and chutes, which typically have a high pH and could contain other chemical additives. Washout BMPs can be non-leaking plastic or clay/bentonite lined pits, a straw bale enclosure lined with plastic, a storage tank or

prefabricated BMP or other structure approved by the engineer or inspector. In karst regions of the state, such as the Ozarks, extra care should be taken to ensure proper lining of earthen pits, as cracks and fissures within the bedrock could allow for direct pollution of ground water. Designated washout areas should be located at least 50 feet away from storm drains, ditches, streams or other water bodies. Washouts should be monitored like other BMPs to ensure there are no leaks and that they are operating effectively. They should be cleaned out when they reach 75% of their design capacity. Care should be taken to ensure these structures do not overflow during storm events.

Upon completion of concrete washout on the project, the engineer or inspector should ensure proper disposal of washout materials. Washout liquids can be allowed to evaporate or be pumped out and properly disposed of. They cannot be discharged into storm drains, ditches, streams or other bodies of water. Dried concrete can be broken up and used as clean fill on the project, recycled, or properly disposed of by other means.

806.8.13 TURBIDITY REDUCTION & ADVANCED TREATMENT SYSTEMS

Water clarification and the removal of turbidity will usually require the addition of flocculants, polymers, polyacrylamides (PAM), chitosan and other chemicals that cause soil particles to bind together, become heavy and settle to the bottom of a sediment trap or sediment basin.

Since settling of flocculated soil particles requires very slow moving (still) water, natural and chemical additives should never be introduced into an outfall BMP where water leaves MODOT right of way. In all cases where flocculants are used to reduce turbidity it is essential to include a sediment basin or sediment trap and a ditch liner or ditch check apron that prohibits additional erosion on the downgrade side of the ditch check.

The following Advanced Treatment Systems are options for use in MODOT projects where turbidity removal is required:

Flocculant logs and flocculant flats that are installed directly in a ditch, pipe or culvert upgrade from a sediment basin or sediment trap.

Flocculant treated ditch checks (i.e. fiber rolls, or compost socks/logs) that have been installed upgrade from a sediment basin or sediment trap.

Flocculant treated rock ditch checks installed upgrade from a sediment basin or sediment trap.

Geo ridge ditch checks with attached flocculant bags, installed upgrade from a sediment basin or sediment trap.

Addition of granular flocculants directly into a ditch, upgrade from a sediment basin or sediment trap.

Erosion control blankets and turf reinforcement mats that have been inoculated with flocculants, and installed upgrade from a sediment basin or sediment trap.

Chemical Stabilizers

Chemical stabilizers, also known as soil binders or soil palliatives, provide temporary soil stabilization. Various products are sprayed onto the surface of exposed soils to hold the soil in place and minimize erosion from runoff and wind. These materials are easily applied to the surface of the soil, can stabilize areas where vegetation cannot be established, and provide immediate protection.

Use chemical stabilizers alone in areas where other methods of stabilization are not effective because of environmental constraints, or use them in combination with vegetative or perimeter practices to enhance erosion and sediment control.

Closely follow the manufacturer's recommended application procedures to prevent the products from pooling and creating impervious areas where stormwater cannot infiltrate.

Inspect chemically stabilized areas regularly for signs of erosion, and if necessary, reapply the stabilizer.

FORM 806.8.4

MoDOT Land Disturbance Inspection Record

MISSOURI DEPARTMENT OF TRANSPORTATION

LAND DISTURBANCE INSPECTION RECORD

Inspection Date: _____ Inspection Record No.: _____

Project Number: _____ County: _____ Route: _____

Inspection Type: Weekly ____ Post-Runoff ____ (Total Precip (in.) ____/Precip Duration (hrs) ____)
Final ____ Other ____

Total Disturbed Acreage on the Project ____ Total Authorized Acreage on the Project ____

Are there BMP deficiencies/other matters requiring corrective action, modification or installation within this report? ☐Yes ☐ No

Land Disturbance Inspection Checklist

		Yes	No	N/A
1	Current and updated SWPPP/site map on site when the erosion & sediment control inspector is on site and a copy given to the contractor?			
2	Permit public notification sign(s) posted and visible to the public?			
3	Are all erosion and sediment control BMPs properly installed, maintained, functioning as intended according to the SWPPP and depicted on the site map? If "No", explain deficiencies below (use add. pages if needed)			
4	Are BMPs in place to protect streams, wetlands and other environmentally sensitive areas from pollutants?			
5	Is trackout controlled at project entrance/exit points?			
6	Are active stormwater inlets susceptible to receiving sediment properly protected?			
7	Does the project have a dewatering plan?			
8	Are dewatering operations effectively removing pollutants from the water?			
9	Are litter, construction debris, fuels, lubricants and other construction chemicals controlled?			
10	Have all temporary BMPs that are no longer necessary been removed and removal depicted on the site map?			
11	Have all deficiencies from the last report been corrected in 7 days? If not, provide an explanation of adverse site conditions and attach photo evidence.			
12	Other:			

Explanation of checklist items identified above (use additional pages if needed): _____

Describe areas where land disturbance activities have temporarily or permanently ceased. (Excluding weather shutdowns) Describe how these areas have been or will be stabilized. _____

Provide a brief description of the current project status with regard to erosion and sediment control and the effectiveness of BMPs (use additional pages if needed): _____

Has the job reached final stabilization in accordance with the permit? ☐Yes ☐ No

Inspector Name: _____ Inspector Signature: _____ Date: _____

RE Name: _____ RE Signature: _____ Date: _____

Distribution: Contractor (Hard Copy ☐ or Electronic ☐)
Save to V:\Contract Information Archive & keep hard copy with inspector

APPENDIX K

FIG. 806.8.1

MoDOT/Contractor Permitting & Inspection Responsibility Guidance Associated with MoDOT Construction Projects

Land Disturbance Permitting & Inspection Responsibility Guidance Associated with MoDOT Construction Projects

Land Disturbance (LD) on MoDOT Right-of-Way (ROW) or Easements, Including on ROW Borrow & Excess (Waste) Disposal Areas

- All LD on MoDOT ROW equaling 1 acre or more is permitted by, and must comply with the MoDOT state operating permit for LD and the MoDOT SWPPP
- Weekly and post-runoff inspections are performed by MoDOT inspectors
- BMP maintenance is done by the contractor as directed by the MoDOT engineer and/or inspector

Borrow & Excess (Waste) Disposal Areas *Not* Located On MoDOT ROW or Easements

- Contractor must obtain their own operating permit for LD, their own SWPPP and develop their own erosion control plan (site maps)
- Weekly and post-runoff inspections and maintenance of BMPs are performed by the contractor
- MoDOT personnel are encouraged to offer advice on BMP recommendations and placement if the contractor needs support.
- Contractor is responsible for all costs associated with erosion and sediment control.

Reference Notes for this sheet:

1. MoDOT's state operating permit number for LD is MO-R100007

2. Only projects equaling or exceeding 1 acre of LD over the life of the project must comply with permit requirements and the SWPPP. However, regardless of disturbed acreage totals, no project can cause pollution to waters of the state or violate Missouri Water Quality Standards and BMPs will be necessary on all LD projects.

3. The MoDOT SWPPP is comprised of a statewide general narrative document, supplemental site-specific information sheet, project-specific plans (site maps) and all project documentation and correspondence regarding compliance with the MoDOT state operating permit and SWPPP.

4. If the project is operating under the MoDOT permit and SWPPP, MoDOT must provide the contractor with a copy of the permit and MoDOT SWPPP, which will include updated site maps as BMPs are added, removed, or modified.

5. A copy of the MDNR permit public notification sign must be posted at the job's main entrance if possible and must be viewable from the public roadway. An alternate location is acceptable provided the public can see it and it is noted in the SWPPP.

Permit Requirements for Concrete and Asphalt Plants

Portable Concrete and/or Asphalt Plants *Not* Located On MoDOT ROW/Easements

- Contractor must obtain MO-G490000 state operating permit to cover this industrial activity and generate their own SWPPP for LD, industrial runoff and wastewater treatment as outlined in the permit.
- Contractor is responsible for all costs associated with pollution control, including erosion and sediment control.

  Note: The MO-G490000 permits both the industrial activity (concrete/asphalt production) and any LD associated with that activity

Portable Concrete and/or Asphalt Plants Located On MoDOT ROW/Easements

- Since MO-R100007 permits both LD and associated industrial support activities, the contractor can utilize the MoDOT SWPPP to account for the facility; however, amendments will need to be made to the MoDOT SWPPP to cover the industrial activities as outlined in and required by the permit. These amendments may need to include identifying the features of the plant and process specific BMPs on site maps.
- Contractor will be responsible for all required inspections and maintenance of the facility as required in the permit, with quality assurance oversight from the MoDOT engineer and/or inspector
- Contractor is responsible for all costs associated with pollution control, including erosion and sediment control.

Note: If applicable, the contractor will need to provide MoDOT with a copy of all appropriate permits and/or environmental clearances that have been obtained by the contractor for borrow areas, excess disposal areas and portable plants located on MoDOT right-of-way.

Questions regarding this guidance document can be directed to:

Nate Muenks
Senior Environmental Specialist
MoDOT Environmental & Historic Preservation Section
601 West Main Street
Jefferson City, MO 65101
Phone: (573) 751-2790
Fax: (573) 522-1973
nathan.muenks@modot.mo.gov

FIG. 806.8.2

Example Project-Specific SWPPP Information Form

MISSOURI DEPARTMENT OF TRANSPORTATION
Project-Specific SWPPP Information

Project Number: J0P0230Z County: Pemiscot Route: 84

Project Description: Construct new lanes to expand this route to a 4-lane facility. 4 bridges and one RCB will be constructed as part of this project.

Estimated Project Start Date: April 21, 2013

Estimated Project Completion Date: April 22, 2013

RE Name: Johnny Asphaltseed

Erosion and Sediment Control Inspector(s) Name(s): Dean Martin, Frank Sinatra, Sammy Davis Jr

Primary Contractor(s) Name(s): Real Nice Roads, Inc.

Erosion and Sediment Control Contractor(s) Name(s): Sediment Trappers Extraordinaire

Seed and Mulch Contractor(s) Name(s): We-Seed, Inc.

Total Anticipated Disturbed Acreage for the Project: 72 acres

Primary Receiving Stream(s) for the Project: Rumormill River, Floor Creek, Broken Branch

Location of Public Notification Sign(s) (Note: Must be Viewable to the Public): At intersection of That Road

Additional Project Notes: This project is the second of four phases to complete this corridor.

404/401 Permit Required/Obtained for this Project? (•) Yes ( ) No

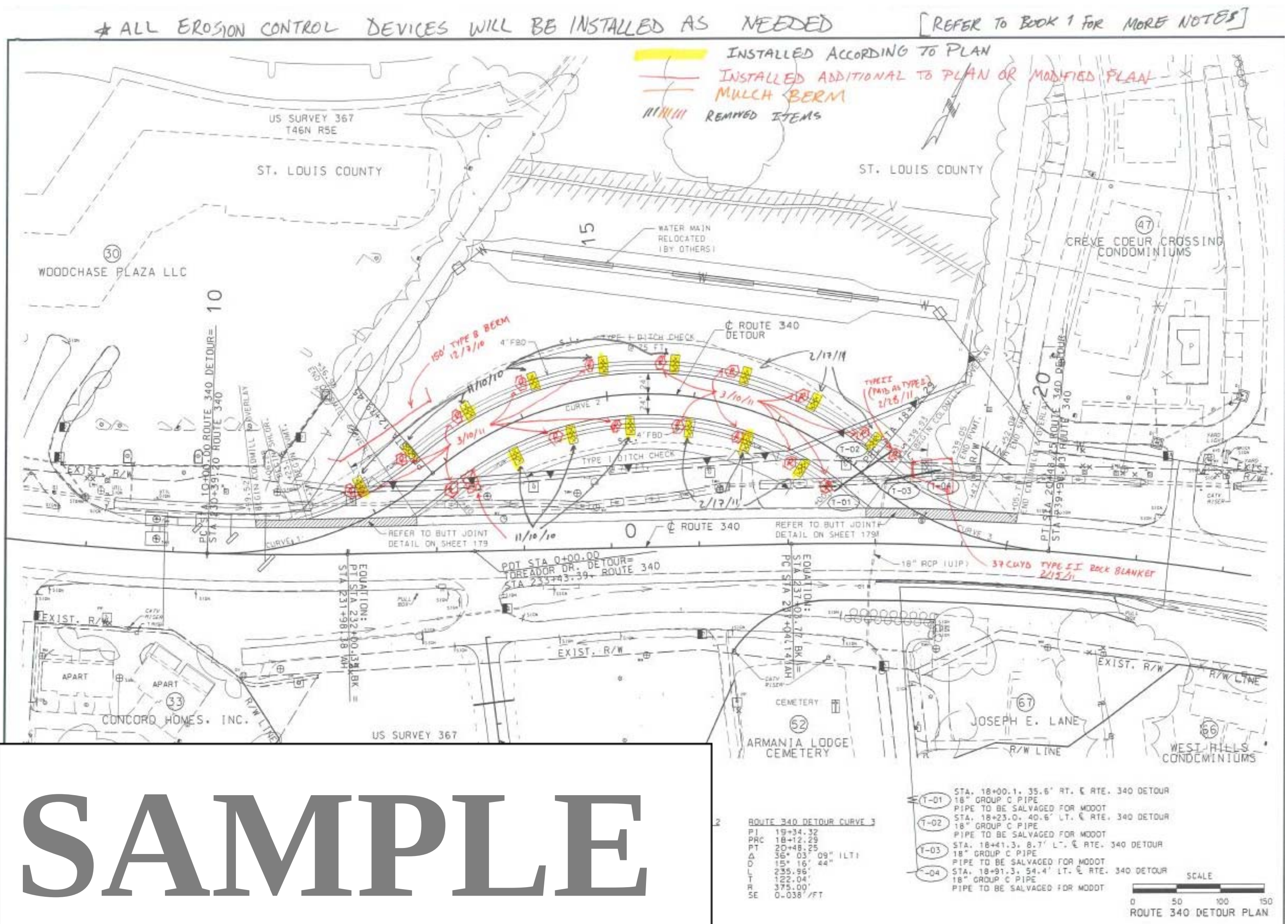
Attach a map depicting the project location/alignment with enough detail to show waters of the United States within 1 mile of the project.

FIG. 806.8.3

Example Erosion/Sediment Control Site Plans

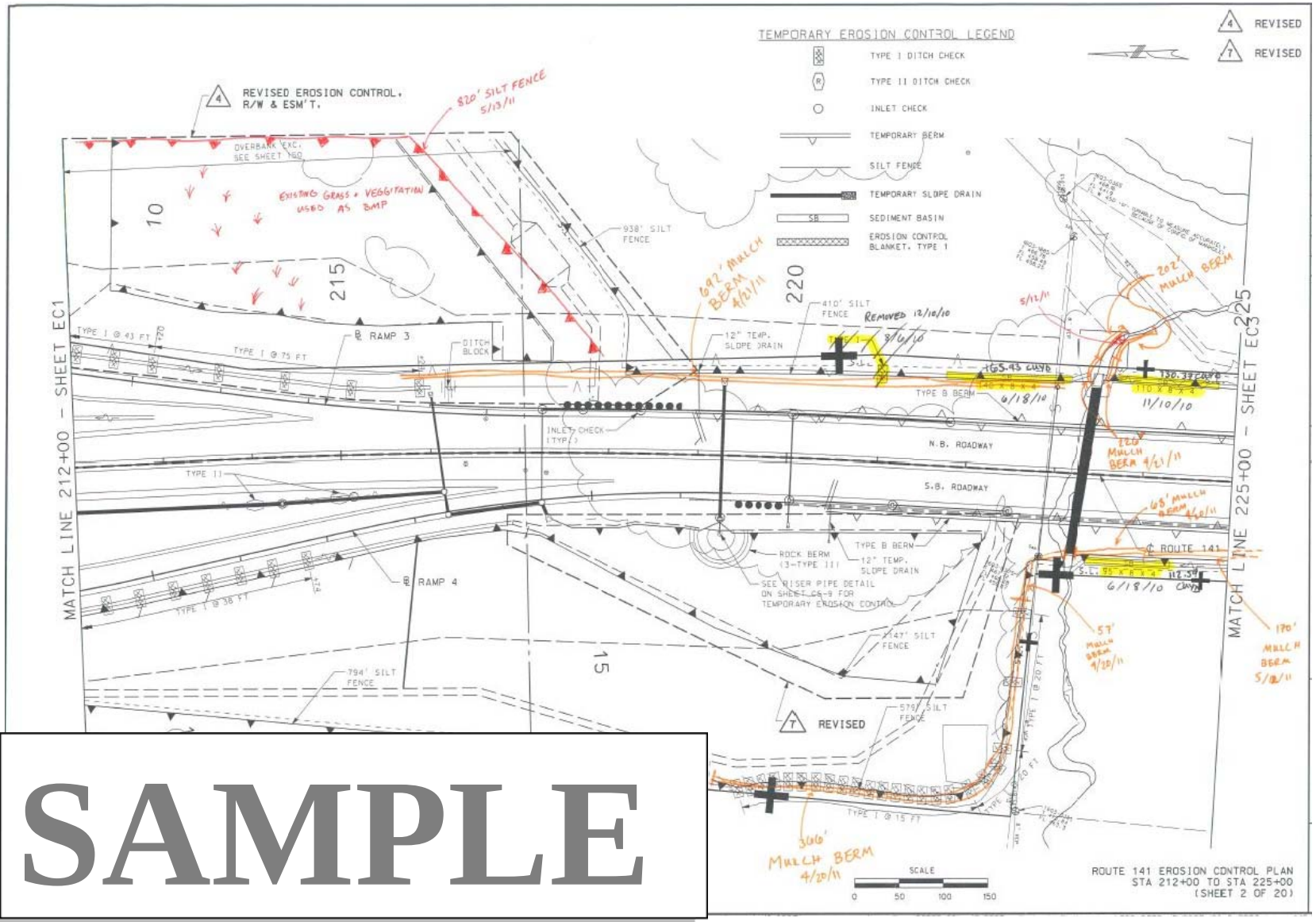
(Note: Notice the legend, color coding, indemnifying statement and the date of installation and removal of BMPs. Don't forget to label outfalls!)

APPENDIX K



* ALL EROSION CONTROL DEVICES WILL BE INSTALLED AS NEEDED
[REFER TO BOOK 1 FOR MORE NOTES]
INSTALLED ACCORDING TO PLAN
INSTALLED ADDITIONAL TO PLAN OR MODIFIED PLAN
MULCH BERM
REMOVED ITEMS
US SURVEY 367
T46N R5E
ST. LOUIS COUNTY
ST. LOUIS COUNTY
WATER MAIN RELOCATED (BY OTHERS)
WOODCHASE PLAZA LLC
CREVE COEUR CROSSING CONDOMINIUMS
℄ ROUTE 340 DETOUR
TYPE I DITCH CHECK
℄ ROUTE 340
REFER TO BUTT JOINT DETAIL ON SHEET 179
POT STA 0+00.00 TOREADOR DR. DETOUR= STA 233+43.39 ROUTE 340
37 CUYD TYPE II ROCK BLANKET
EXIST. R/W
CONCORD HOMES, INC.
US SURVEY 367
CEMETERY
ARMANIA LODGE CEMETERY
JOSEPH E. LANE
R/W LINE
WEST HILLS CONDOMINIUMS
ROUTE 340 DETOUR CURVE 3
PI 19+34.32
PRC 18+12.29
PT 20+48.25
Δ 36° 03' 09" (LT)
D 15° 16' 44"
L 235.96'
T 122.04'
R 375.00'
SE 0.038'/FT
T-01 STA. 18+00.1, 35.6' RT. ℄ RTE. 340 DETOUR 18" GROUP C PIPE PIPE TO BE SALVAGED FOR MODOT
T-02 STA. 18+23.0, 40.6' LT. ℄ RTE. 340 DETOUR 18" GROUP C PIPE PIPE TO BE SALVAGED FOR MODOT
T-03 STA. 18+41.3, 8.7' LT. ℄ RTE. 340 DETOUR 18" GROUP C PIPE PIPE TO BE SALVAGED FOR MODOT
T-04 STA. 18+91.3, 54.4' LT. ℄ RTE. 340 DETOUR 18" GROUP C PIPE PIPE TO BE SALVAGED FOR MODOT
SCALE
0 50 100 150
ROUTE 340 DETOUR PLAN

SAMPLE


TEMPORARY EROSION CONTROL LEGEND
TYPE I DITCH CHECK
TYPE II DITCH CHECK
INLET CHECK
TEMPORARY BERM
SILT FENCE
TEMPORARY SLOPE DRAIN
SEDIMENT BASIN
EROSION CONTROL BLANKET, TYPE 1
REVISED
REVISED
REVISED EROSION CONTROL, R/W & ESM'T.
820' SILT FENCE 5/13/11
EXISTING GRASS + VEGGITATION USED AS BMP
938' SILT FENCE
692' MULCH BERM 4/21/11
410' SILT FENCE
REMOVED 12/10/10
12" TEMP. SLOPE DRAIN
TYPE B BERM
6/18/10
202' MULCH BERM
11/10/10
120' MULCH BERM 4/21/11
68' MULCH BERM 4/20/11
57' MULCH BERM 4/20/11
170' MULCH BERM 5/2/11
RAMP 3
RAMP 4
DITCH BLOCK
INLET CHECK (TYP.)
N.B. ROADWAY
S.B. ROADWAY
ROCK BERM (3-TYPE III)
SEE RISER PIPE DETAIL ON SHEET CS-9 FOR TEMPORARY EROSION CONTROL
ROUTE 141
147' SILT FENCE
794' SILT FENCE
579' SILT FENCE
306' MULCH BERM 4/20/11
MATCH LINE 212+00 - SHEET EC1
MATCH LINE 225+00 - SHEET EC3
SCALE
0 50 100 150
ROUTE 141 EROSION CONTROL PLAN
STA 212+00 TO STA 225+00
(SHEET 2 OF 20)

* These plans depict devices that are planned to be installed based on the project's final grade and so certain devices will be installed as necessary during project phasing based on the discretion of project personnel. Devices will be highlighted and dated as they are installed.

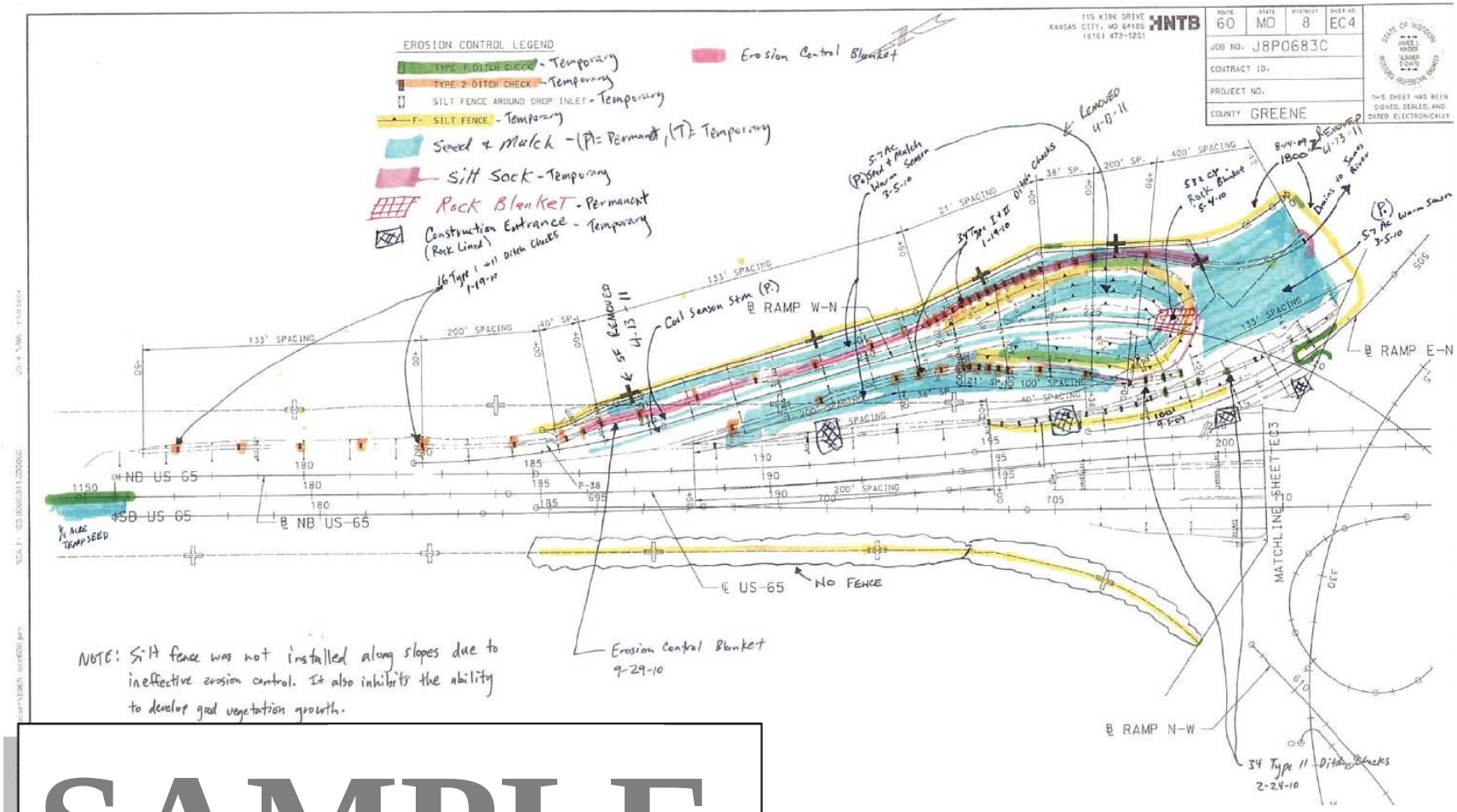


FIG. 806.8.14

Example of a MDNR SWPPP Evaluation Form

(Note: The following form is used by MDNR to evaluate project SWPPPs, including MoDOT projects. Notice in the "Comment" section it has been identified whether the items they are looking for are located within this written statewide SWPPP, need to be covered on the project specific erosion and sediment control plans (a.k.a., the site maps), or they should be found in both.)

SWPPP Evaluation
Missouri Department of Natural Resources

FACILITY INFORMATION	**PREPARED BY:**
Name of Facility: _____ MO #: MO-R10_____ _____ COUNTY	_____ (Name) _____ (Date)

SWPPP Component	Yes	No	Comments
Facility identified.			Site Map
All outfalls identified			Site Map
All pollutant sources, storm water and non-storm water identified. (porta-pottys, fuel tanks, staging areas, waste containers, chemical storage areas, concrete cure, paints, solvents, other hazardous waste, storage of construction materials, etc.)			Site Map
Contains a physical description of the best management practices (BMP's) both temporary and permanent. This should include how off site vehicle tracking will be addressed.			Narrative SWPPP
Explains site and physical conditions that must be addressed for effective use of the BMP's			Narrative SWPPP
Describes BMP installation/construction procedures, including typical drawings.			Narrative SWPPP/Standard Drawings
Describes operation and maintenance procedures for the BMP's chosen. Include a schedule for maintenance.			Narrative SWPPP
States whether the BMP is temporary or permanent.			Narrative SWPPP
Describes or shows where, in relation to other site features, the BMP's are to be located.			Site Map
Details when the BMP will be installed in relation to each phase of the land disturbance procedures to complete the project and what site conditions must be met before the removal of the BMP's if the BMP's are not permanent. Includes a time schedule for this implementation.			Narrative SWPPP & Contractor Communications
States temporary stabilization details should areas be left undisturbed for more than 14 days.			Narrative SWPPP
States bench marks to be referenced for proper installation, as well as operation and maintenance of drainage course changes. Work in defined drainages or watercourses and their associated wetlands may require a permit from the U.S. Army Corps of Engineers pursuant to Section 404 of the federal Clean Water Act.			Narrative SWPPP
Discusses solid and hazardous waste management including trash containers.			Narrative SWPPP
Discusses proper sanitation methods (i.e. portable toilets).			Narrative SWPPP
Explains how the storage of construction materials will be kept away from drainage areas.			Narrative SWPPP
Describes the outlet control devices to be used.			Narrative SWPPP/Site Map
The SWPPP shall require a sedimentation basin for each drainage area with 10 or more acres disturbed at one time. The sediment basin shall be sized to contain a volume of at least 3600 cubic feet per each disturbed acre draining thereto. Accumulated sediment shall be removed from the basin as needed to ensure the minimum volume of 3600 cubic feet is maintained. Discharges from the basin shall not cause scouring of the banks or bottom of the receiving stream. The SWPPP shall require the basin be maintained until final stabilization of the disturbed area served by the basin.			Narrative SWPPP

SWPPP Component	Yes	No	Comments
Where use of a sediment basin of this size is impractical, the SWPPP shall evaluate and specify other similarly effective BMPs to be employed to control erosion and sediment delivery. These similarly effective BMPs shall be selected from appropriate BMP guidance documents authorized by this permit. The BMPs must provide equivalent protection. The SWPPP shall require both temporary and permanent sedimentation basins to have a stabilized spillway to minimize the potential for erosion of the spillway or basin embankment.			Narrative SWPPP, Basins to be Shown on Site Map
The SWPPP shall be amended when appropriate. Field implementation shall match narrative and illustrated depictions.			Update Narrative SWPPP & Site Maps
The SWPPP shall contain a site inspection form and inspection log for use during weekly inspections or during storm water events. Inspections shall be performed once every 7 days or within 48 hours after a storm event that causes storm water runoff to occur **on site**. Qualified personnel shall perform inspections and authorized persons shall sign reports. The site inspection shall include (at a minimum): inspector's name, date of inspection, observations relative to the effectiveness of the BMPs, actions taken or necessary to correct the observed problem, and listing of areas where land disturbance operations have permanently or temporarily stopped. The inspection report shall be signed by the permittee or by the person performing the inspection if duly authorized to do so. Copies of inspection reports shall be maintained for three years from the date permit coverage expires.			Narrative SWPPP EPG Form 806.8.10 (MoDOT Land Disturbance Inspection Record) & Inspection Records
The SWPPP shall indicate the portions of the project for which each operator has control over day-to day activities.			Site Map
Contractors shall be notified of the provision of the SWPPP and a copy shall be provided to all contractors or sub-contractors involved with pre-stabilization activities. A provision must be included to notify all applicable contractors of changes made to the SWPPP.			Narrative SWPPP/Cover at PreCon
The owner as well as all relevant contractors and sub-contractors shall sign the SWPPP.			Contracts/Specs Say Environmental Laws will be Followed
SITE MAP			
In addition to the narrative portion of the SWPPP, a site map shall be included. The site map shall be a maximum of 1"= 200 feet. Applicable topographic lines shall be shown. The site map shall include:			
Drainage patterns and slopes anticipated before and after major grading activities are completed.			Site Map
Show offsite materials, waste, borrow or equipment storage area, surface waters.			Site Map (Only if Possible)
Boundary lines for land disturbance activities.			Site Map (Typically Slope Limits)
Existing and planned streets, buildings, lots, utilities, geographic features, buffer strips and waterways.			Site Map (Always on Plans)
All outfalls labeled.			Site Map
All BMP's both temporary and permanent.			Site Map
All sedimentation basins.			Site Map
The map shall include a legend, which describes all symbols used. Whenever symbols fail to satisfactorily convey the requisite information, notes shall be used.			Site Map (See Fig. 806.8.9 Maps)
Comments:			

FIG. 806.8.15

Imhoff Cone & Turbidity Tube Testing Procedures

(Note: The current MoDOT state operating permit for land disturbance does not require sampling of either settleable solids or turbidity.)

APPENDIX K

Imhoff Cone Testing Procedure for Settleable Solids

(Developed by the Nebraska WEA, http://www.ne-wea.org/LabManual/settleable_solids.htm)

Procedure

1. Fill an Imhoff cone to the one-liter mark with a well mixed sample.
2. Allow sample to settle in the Imhoff cone for 45 minutes.
3. Gently stir the sample with a glass rod to release the suspended matter clinging to the sides of the Imhoff cone.
4. Let sample settle for an additional 15 minutes.
5. At this point, one hour has passed. Record the volume of settleable solids (in milliliters/Liter/hour) in the Imhoff cone.

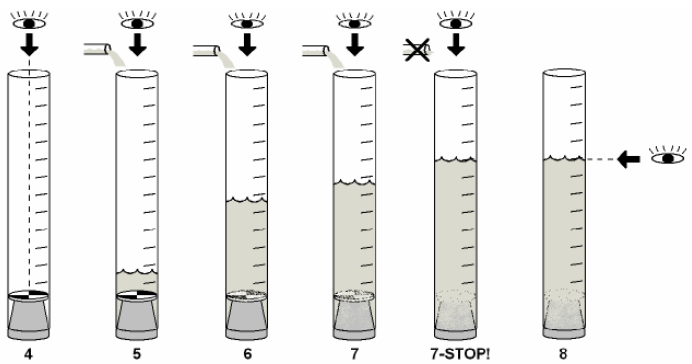
   Note: Do not include any floating solids or any voids in the settled solids as settleable matter.

Turbidity Tube Testing Procedure for Turbidity

(Developed from the SOP for Turbidity Measurements Using Turbidity Tube, Rev. 1, Utah DEQ, DWQ, 2011, as well as Myre, E., & Shaw, R. (2006): The Turbidity Tube: Simple and Accurate Measurement of Turbidity in the Field, Michigan Technology University, Michigan)

Procedure:

1. Collect a water sample in a large, clean container (bucket/jug/jar). Be careful not to include sediment from the bottom of the body of water.
2. Rinse the tube with the water that is going to be tested and pour it out.
3. Stir or swirl the water sample in the container vigorously until it is homogenous, introducing as little air as possible.
4. Place your head 10 to 20 centimeters directly over the tube so that you can see the viewing disk while the sample is being poured into the tube.
5. Slowly pour water into the tube. Try not to form bubbles as you pour. *If bubbles do form*: Stop pouring and allow any bubbles to rise and the surface of the water to become still.
6. Keep slowly adding water until the pattern on the disc becomes hard to see.
7. Watch the viewing disk closely and add water even more slowly. Stop pouring as soon as the pattern on the disk can no longer be seen. *If you can still see the viewing disk pattern when the tube is full:* Record the turbidity value as less than the final measuring mark. (Example: If your tube is full and your highest mark is 5 NTU, write down that the turbidity is "<5 NTU".)
8. Read the turbidity from the scale on the side of the tube. *Remember*: If your turbidity tube does not have turbidity values marked on the tube side, simply measure the water level with a ruler or tape measure and find the corresponding turbidity value in the table on the following page. Clean the tube and disk.



Schematic of turbidity measurement using a Turbidity tube (Myre and Shaw, 2006)

Length-to-Turbidity Conversion Chart

The following table provides the turbidity values (in NTU) that correspond to different lengths measured above the viewing disk. These values can be used to mark the turbidity tube directly or to convert measured values to turbidity units.

Table 1: Conversion chart converting centimeters (cm) to turbidity units (NTU's). Table and equation 1 from Wyoming Stream Team, 2011.

Distance from bottom of tube (cm)	NTU's
<6.25	>240
6.25 to 7	240
7 to 8	185
8 to 9.5	150
9.5 to 10.5	120
10.5 to12	100
12 to 13.75	90
13.75 to 16.25	65
16.25 to 18.75	50
18.75 to 21.25	40
21.25 to 23.75	35
23.75 to 26.25	30
26.25 to 28.75	27
28.75 to 31.25	24
31.25 to 33.75	21
33.75 to 36.25	19
36.25 to 38.75	17
38.75 to 41.25	15
41.25 to 43.75	14
43.75 to 46.25	13
46.25 to 48.75	12
48.75 to 51.25	11
51.25 to 53.75	10
53.75 to 57.5	9
57.5 to 60	8
Over 60	<8

$$\text{Depth in Centimeters} = 244.13 * (\text{Turbidity in NTU})^{-0.662} \quad (1)$$

Appendix L – Stormwater Preconstruction Conference Example Form

STORMWATER EROSION REQUIRED PRECONSTRUCTION CONFERENCE

MoDOT

Contract ID: ______________________	**Job Noόǎύφ:** ______________________
Prime Contractor: ______________________	**Location of Meeting:** ______________________ (The meeting MUST physically take place on-site)

Sub-Contractors InvolvedϝF:

[illegible]

Initial BMP installation Date(s): ______________________

Pre-Con Meeting Date: ______________________

Anticipated Commencement of Construction Activity Date: ______________________

Handouts / Provide copies to share: **Site Specific SWPPP needs to be filled out and signed by RE and WPCM**

aŜŜŭṅƴƎ Agenda:

1. Sign-in sheet / Introductions / Definition of Roles / General Safety Topics & PPE Requirements.
2. Quality Management / QC Inspections & Material Certifications / Documentation & Communication.
3. Review SWPPP & Consent Decree Requirements and Deadlines / Look at specific Examples of Erosion Control Documents.
4. Review Erosion Control Sheets & discuss Efficiency, Workability, & Phasing/Scheduling as it pertains to the Contractor.
5. Physically inspect the project site & discuss Contractor's Work Plan & approach for providing efficient Erosion Control/Storm Water Compliance. Discussion of Hold Points.
6. Review location of all BMP's for appropriateness and correct installation(if installed).
7. Discuss any other questions, issues, or concerns related to the compliance with Storm Water Requirements, NPDES SW Permits, SWPPP, Federal/State Laws, Consent Decree, General Practices, BMP specifics, etc.
8. Open Discussion / Assign Action Items

Excerpt from Consent Decree – Section V: Paragraph 27: Stormwater Erosion Preconstruction Conference. At each Project, Defendant shall conduct an on-site Stormwater Erosion Control Preconstruction Conference before the commencement of Construction Activities.

a. For purposes of this Paragraph, the commencement of Construction Activity does not include geotechnical investigations, surveying, environmental testing, plant (vegetation) salvage, or the initial installation of BMPs that are not sediment basins, provided none of these activities involve significant soil disturbance or require a federal, state, or local permit.

b. This preconstruction conference shall be attended in person by the Stormwater Resident Engineer(s), Environmental Construction Inspector(s); and Water Pollution Control Manager for the Project and any project manager for any Contractors expected to be involved in land disturbance or erosion control activities. Parties at the conference shall physically inspect the Project site, review the SWPPP, ensure all initial BMPs required by the SWPPP are appropriate, in place and installed correctly, and discuss issues relating to compliance with Stormwater Requirements that could arise in the course of Construction Activity at the Project. Minutes of the conference shall be recorded and kept at the Project office. Where a Project involves Construction Activity at multiple locations in a widespread area, the Preconstruction Conference need not be held at each location where Construction Activity will occur, but may be held at one or a subset of such locations.

STORMWATER EROSION REQUIRED PRECONSTRUCTION CONFERENCE

ATTENDEE SIGN-IN SHEET

Contract ID:			
Name	**Organization**	**Title**	**Phone #**

STORMWATER EROSION REQUIRED PRECONSTRUCTION CONFERENCE

MEETING MINUTES: **DATE OF MEETING:** _____

Appendix M – Inspection Form for Stormwater Database

MISSOURI DEPARTMENT OF TRANSPORTATION
LAND DISTURBANCE INSPECTION RECORD

Project Number: J4S1940	**District:** KC
Route: 291 OR	**County(s):** JACKSON
Location: 291 E. OR Between Courtney & Kentucky Rd, Sugar Creek, MO	

Inspection ID:	1221	**Inspection Type:**	Post-Runoff
Inspector Certified Date:	11/02/2015 - mottij1	**RE Certified Date:**	11/03/2015 - vossj
WPCM Certified Date:	11/04/2015 - wpcmburgeb1		
Inspector:	MOTTI, JOSHUA		
Inspection Date:	11/02/2015	**Date Entered:**	11/02/2015
Acres Open:	0	**Acres Disturbed:**	2
Precipitation Inches:	0.37	**Precipitation Duration:**	36 **Hours** 0 **Minutes**

Land Disturbance Inspection Checklist	
Current and updated SWPPP/site map on site when the erosion & sediment control inspector is on site and a copy given to the contractor?	Yes
Permit public notification sign(s) posted and visible to the public?	Yes
Are all erosion and sediment control BMPs properly installed, maintained, functioning as intended according to the SWPPP and depicted on the site map? If ?No?, explain each deficiency below.	Yes
Are BMPs in place to protect streams, wetlands and other environmentally sensitive areas from pollutants? If not, describe each deficiency.	Yes
Is trackout controlled at project entrance/exit points? If not, describe each deficiency.	N/A
Are active stormwater inlets susceptible to receiving sediment properly protected? If not, describe each deficiency.	Yes
Are Dewatering operations taking place on the project?	No
Does the project have a dewatering plan? (Required by permit if dewatering operations occurring.)	N/A
Are dewatering operations effectively removing pollutants from the water?	N/A
Are litter, construction debris, fuels, lubricants and other construction chemicals controlled? If not, descibe each deficiency.	Yes
Have all temporary BMPs that are no longer necessary been removed and removal depicted on the site map?	Yes
Have all outfalls been observed for evidence of erosion and/or sediment depostion? If not, provide an explanation of which outfalls were observed and why others were not. Document the condition of the outfalls and if any corrective actions and/or additional BMPs are needed.	Yes
After observing the receiving stream(s) for 50 feet downstream of the outfall(s), was outfall protection adequate?	Yes

General Inspection Questions

Describe areas where land disturbance activities have temporarily or permanently ceased. (Excluding weather shutdowns) Describe how these areas have been or will be stabilized.

BMP's have been removed/uninstalled in areas that have been seeded and covered with the Erosion Control Blanket. All BMP removals were completed by June 19th. 60 Day Review for growth stabilization and Final Acceptance of the areas seeded 6/19/15, occurred Thursday 8/20/15. The remaining seeded areas are being reviewed for Growth Stabilization at this time. Contractor has hydro seeded throughout the project to promote growth for final acceptance.

Provide a brief description of the current project status with regard to erosion and sediment control and the effectiveness of BMPs.

The Erosion Control Blanket is functioning properly and effectively. The Courtney Rd. Shoulder Washout has been addressed using a concrete slab for shoulder repair and erosion prevention. Rock was installed for rock blanket/slope protection along the slope above the RCB. There has been no significant erosion in this location since the repair has taken place. The majority of the project was seeded and blanketed by 6/19/15. The remaining Southwest portion was seeded and covered on 7/13/15. Hydro seeding took place on 9/25/15 and is currently being evaluated for Final Acceptance.

Inspection Attachments

Appendix N – Inspection Protocol

MoDOT Consent Decree

Inspection Protocol

August 2015

Consent Decree - Inspection Process

For any project that MoDOT engages in and includes land disturbance activities of greater than one acre the requirements of the Consent Decree shall be followed. For these projects MoDOT shall assign at least one trained inspector to perform inspections as required by the National Pollutant Discharge Elimination System (NPDES) stormwater permit. The permit requirements specify that inspections shall take place at least once per seven calendar days. In addition, if rainfall or snow melt causes stormwater runoff to occur onsite, inspections must occur within 48 hours after the rain event has ceased. If the runoff event ceases during a non-work day, such as a weekend or holiday, then the inspector has 72 hours to perform a site inspection of the Best Management Practices (BMPs).

Each inspection performed by MoDOT's trained inspector will answer all of the questions on the standard MoDOT Land Disturbance Inspection Checklist. The standard checklist is intended to be a comprehensive guide for the inspector to ensure all BMPs and other pollution control measures are installed and maintained within the requirements established in the NPDES permit and the Stormwater Pollution Prevention Plan (SWPPP). The inspector will perform this visual site inspection for evidence of erosion or sediment deposition throughout the project limits where any disturbance has occurred and where BMPs have been installed. All receiving streams shall be inspected 50 feet downstream of the outfall when practicable.

Upon completion of every inspection MoDOT's inspector conducting the inspection shall enter the report into the MoDOT Stormwater Database (Database). Each inspector should strive to enter the report into the Database as quickly as possible. Up to twenty-four hours to enter the electronic report will be allowed when wireless internet is available. In instances where wireless internet is not provided up to forty-eight hours will be permitted from when the inspection was performed to when it is entered into the online database.

All questions on the Inspection Checklist must be answered by the inspector before the Database will allow the inspector to certify the inspection report. If any deficiencies are found in the inspection process these should be clearly entered into the database individually. Detailed information about the deficiency should include but is not limited to: a detailed description of the deficiency, the location of the deficient item, actions needed to correct the noted stormwater deficiency, the dates actions will be taken to make the required correction deficiencies from a prior inspection were uncorrected and the reason it was uncorrected and whether proposed actions will require any changes to the site map/ SWPPP. Each item will remain in the database until corrective measures have been taken. Once the item is addressed the inspector shall indicate the date of the correction. Any changes required to the site map should also be made at this time. Inspections are not considered completed until the inspector certifies the report.

Consent Decree – Inspection Review and Approval Process

After MoDOT's trained inspector enters and certifies an inspection report it will simultaneously be available to both the MoDOT's Resident Engineer (RE) and the Contractor's Water Pollution Control Manager (WPCM). The RE and WPCM have up to three days to review the inspection report and certify

the report individually in MoDOT's Stormwater Database. After both MoDOT's RE and the Contractor's WPCM have individually reviewed and approved the report, the inspection process will be completed.

MoDOT Oversight of Environmentally Sensitive Areas

For any project that disturbs more than five acres of soil and is located in an environmentally sensitive area an independent oversight inspection shall occur. These inspections will be identified by MoDOT's Stormwater Compliance Coordinator. The Stormwater Compliance Coordinator will assign the respective trained oversight inspectors from MoDOT who will perform this inspection. This oversight inspection will follow the same process as weekly or post-run off inspections. The unannounced oversight inspection shall occur at least once every 90 days where there is active construction on the site. Upon completion of the site inspection the inspection report shall be completed by the oversight inspector. The inspector should strive to enter the report into the database as quickly as possible. Up to 24 hours to enter the electronic report will be allowed when wireless internet is available. In instances where wireless internet is not provided up to 48 hours will be permitted from when the inspection was performed to when it was entered into the online database.

Environmentally sensitive areas are any area that would be directly impacted by stormwater discharges from the project and that federally designed critical habitat for any federally listed threatened or endangered species or that contains an immediate downstream water body that is listed as impaired for sediment by the Missouri Department of Natural Resources (MDNR) under Section 303(d) of the Clean Water Act.

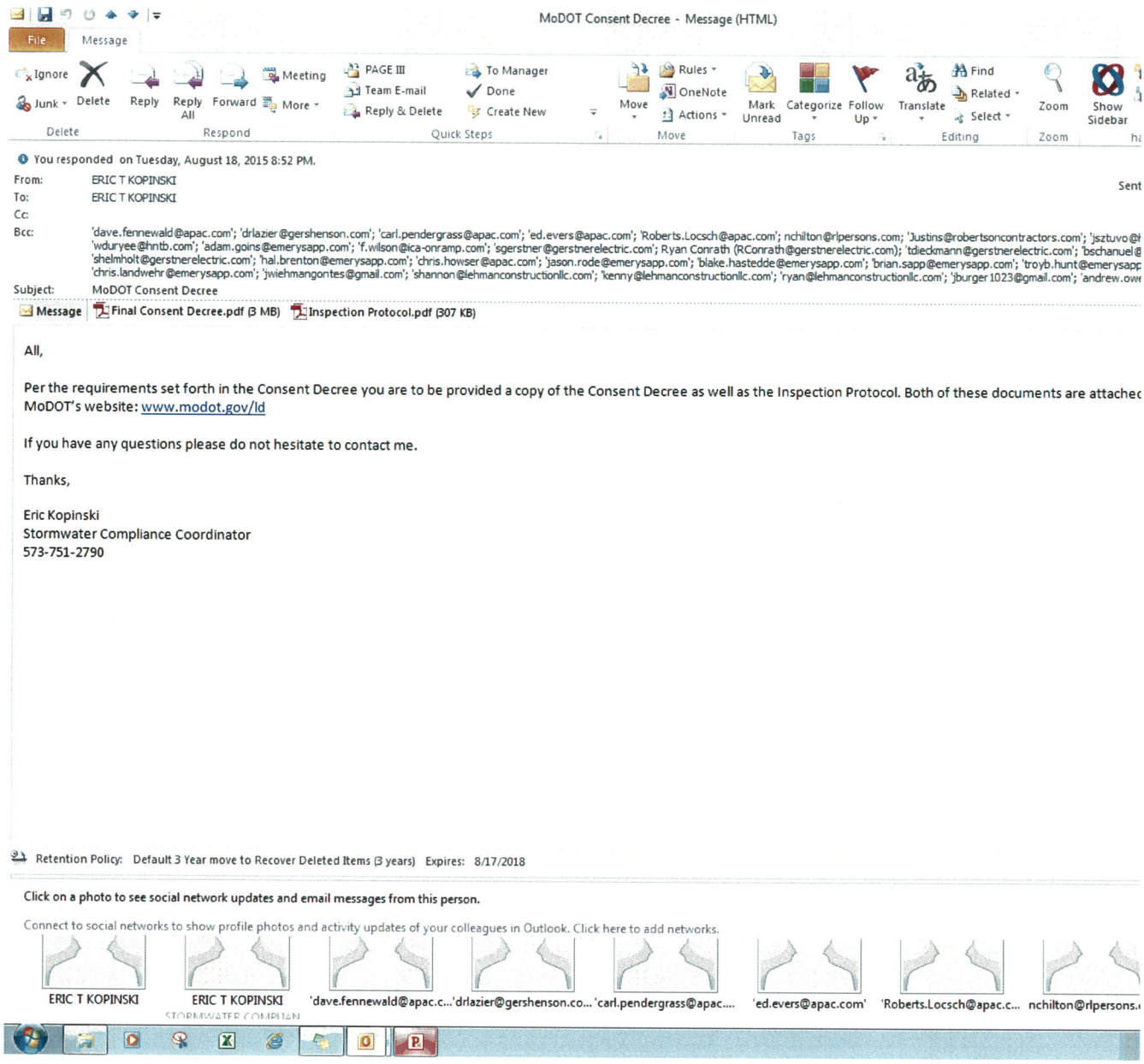
Stipulated Penalties – The Consent Decree Rules

Penalty	Penalty Amount	MoDOT	Contractor
#1. MoDOT shall assign a statewide stormwater compliance specialist	$1000 initial violation $750 every 14 days	Central Office Design will assign this person	N/A
#2. MoDOT shall assign one environmental inspector per project. The Contractor shall assign one WPCM per project	$750 initial violation $750 every 14 days (for each role)	Every project needs one inspector and a backup assigned	Every project needs one WPCM and a backup assigned
#3. All Individuals shall have up-to-date MoDOT stormwater training certification	$750 initial violation $750 every 14 days (for each role)	All REs, inspectors, employees with stop work authority or that work in SWPPP development must attend	WPCM and Contractor's on-site Project Manager. Any subcontractor with full project manager authority shall also attend training

Stipulated Penalties (Continued) - Summary

Penalty	Penalty Amount	MoDOT	Contractor
#4. Pre-activity stormwater meeting shall be held prior to any land disturbance	$750 initial violation $250 every day after	RE and Inspector must attend	WPCM must attend.
#5. MoDOT shall create and distribute an Inspection Protocol	$750 per day	Central Office Design will create, update and distribute this document	N/A
#6. Inspections shall be performed per MoDOT's Permit and SWPPP	$500 Initial Violation $100 Every day after	Project inspector needs to perform weekly and post – runoff inspections	N/A
#7. Inspections shall be documented per MoDOT's Permit and SWPPP	$100 per day	Inspection shall be entered 24 or 48 hours after performed, based on availability of wireless connection	N/A
#8. MoDOT's Resident Engineer and the Contractor's WPCM shall review and approve the inspection reports within 3 days	$250 per day	RE shall review and approve each inspection report within 3 days	WPCM shall review and approve each inspection report within 3 days
#9. MoDOT oversight inspections shall be performed when required	$1500 Initial Violation $250 per day	Stormwater Compliance Specialist will assign. MoDOT Oversight will perform	WPCM will follow the same process used for weekly inspections
#10. Failure to comply with any NPDES permit or SWPPP requirement	$1000 first 10 days $2500 days 11-20 $3500 days 21 +	Ensure project complies with the permit and SWPPP	Ensure project complies with the permit and SWPPP
#11.Failure to correct deficiency within 7 day per the SWPPP and Permit	$1000 first 10 days $2500 days 11-20 $3500 days 21 +	Ensure deficiencies are all corrected with 7 days	Ensure deficiencies are all corrected with 7 days
#12. Enter deficiencies into database	$200 per deficiency per day	Inspectors shall enter all deficiencies individually into the database	N/A
#13 Review Compliance	$200 per day	REs review deficiencies for their projects every 7 days. Stormwater Compliance Coordinator reviews deficiencies for entire state every 14 day	N/A
#14. Submit a Spill Report	$750 every late report $750 every 14 days	Contact MoDOT Environmental if spill occurs on project	Contact MoDOT Environmental if spill occurs on project
#15. Any violation of the Consent Decree not listed in penalty #1 - #14	$100 per day	Ensure Consent Decree is followed.	Ensure Consent Decree is followed

Appendix O – Notification of Inspection Protocol to Certified Individuals


MoDOT Consent Decree - Message (HTML)
File
Message
Ignore
Junk
Delete
Reply
Reply All
Forward
Meeting
More
PAGE III
Team E-mail
Reply & Delete
To Manager
Done
Create New
Move
Rules
OneNote
Actions
Mark Unread
Categorize
Follow Up
Translate
Find
Related
Select
Zoom
Show Sidebar
Delete
Respond
Quick Steps
Move
Tags
Editing
Zoom
You responded on Tuesday, August 18, 2015 8:52 PM.
From: ERIC T KOPINSKI
To: ERIC T KOPINSKI
Cc:
Bcc: 'dave.fennewald@apac.com'; 'drlazier@gershenson.com'; 'carl.pendergrass@apac.com'; 'ed.evers@apac.com'; 'Roberts.Locsch@apac.com'; nchilton@rlpersons.com; 'Justins@robertsoncontractors.com'; 'wduryee@hntb.com'; 'adam.goins@emerysapp.com'; 'f.wilson@ica-onramp.com'; 'sgerstner@gerstnerelectric.com'; Ryan Conrath (RConrath@gerstnerelectric.com); 'tdieckmann@gerstnerelectric.com'; 'shelmholt@gerstnerelectric.com'; 'hal.brenton@emerysapp.com'; 'chris.howser@apac.com'; 'jason.rode@emerysapp.com'; 'blake.hastedde@emerysapp.com'; 'brian.sapp@emerysapp.com'; 'troyb.hunt@emerysapp 'chris.landwehr@emerysapp.com'; 'jwiehmangontes@gmail.com'; 'shannon@lehmanconstructionllc.com'; 'kenny@lehmanconstructionllc.com'; 'ryan@lehmanconstructionllc.com'; 'jburger1023@gmail.com'; 'andrew.owe
Sent
Subject: MoDOT Consent Decree
Message
Final Consent Decree.pdf (3 MB)
Inspection Protocol.pdf (307 KB)
All,
Per the requirements set forth in the Consent Decree you are to be provided a copy of the Consent Decree as well as the Inspection Protocol. Both of these documents are attachec MoDOT's website: www.modot.gov/ld
If you have any questions please do not hesitate to contact me.
Thanks,
Eric Kopinski
Stormwater Compliance Coordinator
573-751-2790
Retention Policy: Default 3 Year move to Recover Deleted Items (3 years) Expires: 8/17/2018
Click on a photo to see social network updates and email messages from this person.
Connect to social networks to show profile photos and activity updates of your colleagues in Outlook. Click here to add networks.
ERIC T KOPINSKI
ERIC T KOPINSKI
'dave.fennewald@apac.c...
'drlazier@gershenson.co...
'carl.pendergrass@apac....
'ed.evers@apac.com'
'Roberts.Locsch@apac.c...
nchilton@rlpersons.

Appendix P – Statewide Environmentally Sensitive Oversight Map

Endangered Species Critical Habitat

Federal Critical Habitat

- Niangua_darter_fedcritialhab
- FCH_NianguaDarter_June2015
- FCH_TumblingCreekCavesnail_June2015
- FCH_HineEmeraldDragonfly_June2015
- FCH_Rabbitsfoot_June2015
- PCH_NeoshoMucket_June2015
- Sediment2014_303d

Envir. Sensitive FYI

- HED_FenBuffers
- NeoMucket_Rabbitsfoot_Nov2014

NODAWAY, GENTRY, HARRISON, GRUNDY, SULLIVAN, ADAIR, KNOX, LEWIS, HOLT, ANDREW, DAVIESS, DEKALB, LINN, MACON, SHELBY, MARION, LIVINGSTON, BUCHANAN, CALDWELL, CLINTON, CHARITON, RANDOLPH, MONROE, RALLS, PLATTE, CLAY, RAY, CARROLL, PIKE, AUDRAIN, SALINE, HOWARD, LAFAYETTE, BOONE, LINCOLN, JACKSON, MONTGOMERY, COOPER, CALLAWAY, WARREN, ST. CHARLES, ST. LOUIS CITY, JOHNSON, PETTIS, CASS, MONITEAU, ST. LOUIS, COLE, OSAGE, GASCONADE, FRANKLIN, HENRY, MORGAN, BENTON, JEFFERSON, BATES, MILLER, MARIES, ST. CLAIR, CAMDEN, CRAWFORD, WASHINGTON, HICKORY, PULASKI, PHELPS, STE. GENEVIEVE, VERNON, CEDAR, DALLAS, LACLEDE, IRON, ST. FRANCOIS, PERRY, POLK, DENT, BARTON, DADE, MADISON, CAPE GIRARDEAU, REYNOLDS, GREENE, WEBSTER, WRIGHT, TEXAS, BOLLINGER, JASPER, SHANNON, WAYNE, SCOTT, LAWRENCE, CHRISTIAN, DOUGLAS, CARTER, STODDARD, NEWTON, STONE, HOWELL, MISSISSIPPI, BARRY, TANEY, OZARK, OREGON, RIPLEY, BUTLER, MCDONALD, DUNKLIN, NEW MADRID

APPENDIX P

Map Created: August 2015 (VH)

Appendix Q – Regional Environmentally Sensitive Oversight Example Map

Jasper County = West side - Endangered Species Critical Habitat

Federal Critical Habitat

- Niangua_darter_fedcritialhab
- FCH_NianguaDarter_June2015
- FCH_TumblingCreekCavesnail_June2015
- FCH_HineEmeraldDragonfly_June2015
- FCH_Rabbitsfoot_June2015
- PCH_NeoshoMucket_June2015
- Sediment2014_303d

Envir. Sensitive FYI

- HED_FenBuffers
- NeoMucket_Rabbitsfoot_Nov2014

M
N
O
D
NEVADA SUB
HEAVENER SUB
43
JASPER
96
MM
YY
WEBB CITY BRANCH
Z
JJ
171
UNKNOWN SPUR
71
49
49
V
AURORA SUB
571
571
UNKNOWN
E
HH
249
249
VV
AA
SYSTEM SUB
SYSTEM SUB
Loop 49
198
TT
P
APPENDIX Q
N
MoDOT
Map Created: August 2015 (VH)

Appendix R – Environmental Review Process (RES) Form

Request for Environmental Services

Project Information

Stage:

Previous RES(s): No RES Selected

Job Number (w/o 'J'):

District:

County:

TIP Number:

Rte/Street:

Letting Date:

PS&E Due Date:

Location:

TMS Project Description - termini (no stations):

Describe RES project improvements in full detail:

These users will receive a notification when Environmental Services completes the current stage, the person who created this form as well as the person who submits it will also receive notification.

Project Manager:

TP Designer:

District Contact:

District Contact:

Date Desired: 03/11/2016

Submit Date: Unsubmitted

Request Env. and Historic Preservation Core Team Members? ○ Yes ◉ No

Program Year:

Preliminary Engineering: N/A

Right of Way: N/A

Construction: N/A

Explain the purpose of the request:

Changes to project since last RES submittal? If yes, explain: ○ Yes ◉ No

☐ Design/Build ☐ Alternate Technical Concepts

☐ Project breakout from previous or larger project? *If checked explain:*

Acres - From all sources (e.g. donated from public or private entities): Click if Acres Unknown

Additional R/W: **Temp Easement:** **Permanent Easement:**

Is there a possibility that MoDOT will purchase any uneconomic remnants? ◉ Unknown ○ Yes ○ No

Land Disturbance:

Will project involve 1 acre but less than 5 acres of land disturbance: ○ Yes ◉ No ○ Unknown

Will project involve 5 acres or more of land disturbance: ○ Yes ◉ No ○ Unknown

Acres of Tree Clearing:

Number of Displacements(do not include partial takes that do not displace):

Residential: ○ Yes ◉ No

Commercial: ○ Yes ◉ No

No. of People: Residences:

No. of Employees: Businesses:

Average Daily Traffic:

ADT Construction Year:

ADT Design Year:

Bicycle / Pedestrian Consideration

Pedestrian facilities considered: Choose One...

Bicycle facilities considered: Choose One...

National Flood Insurance Program (NFIP) and Hydraulic Design Data:

☐ Project is in a FEMA-identified zone "subject to 100-year flooding": *If so, what zone?:*

Project is in a FEMA-defined "floodway" Choose One...

☐ Project involves land purchased through FEMA Hazard Mitigation Grant Program (Flood buyout property)

If checked, give details:

☐ Is highway improvement located within 2 miles of an existing airport?

Known Concerns: Provide information you have about these resources that you have observed in the area.

Parkland:

Wetland/404 Permit:	
Stormwater/Water Quality:	
Farmland:	
Threatened & Endangered Species:	
Migratory Birds: Are there birds nesting on the structure?	◉ Unknown ○ Yes ○ No
Hazardous Waste:	
Cultural Resources:	
District Comments:	

Project Attachments:

***NOTE: If making updates to an attachment, please use a different filename than the original.**

Upload Attachments: *Attachments will be uploaded when you click the Save button*

Attachments:

Browse...

Required Information to be attached for each RES stage:

- ***Loc/Concp.:*** *Location map (county map) & topographic map or aerial photo showing project limits – pre-plan sheets or other preliminary maps showing alternatives, if available*
- ***Prel. Plan:*** *Prel. Plan sheets*
- ***R/W:*** *R/W Plan sheets*
- ***Final Design:*** *Final Plans [Location map (county map) & topographic map or aerial photo showing project limits if this is first RES submittal*

Appendix S – State of Emergency Declaration

Gov. Nixon declares state of emergency in response to widespread and deadly flooding impacting much of Missouri

December 27, 2015

Governor urges Missourians in flood-affected areas to avoid travel if possible, never drive into flooded roadways

Jefferson City, MO - **Gov. Jay Nixon** today declared a state of emergency in Missouri as heavy rain, flooding and flash flooding continue to impact much of the state. Heavy rains have led to widespread flooding and at least eight fatalities have been reported. More heavy rain and additional flooding is expected through Monday, and river levels are forecast to continue to rise over the next several days.

Since the latest round of severe weather began, the **Missouri State Highway Patrol** has conducted dozens of water rescues, and assisted in the evacuation of residents from flooded areas. Multiple roadways have been closed due to floods and the Governor urged Missourians in flood-affected areas to avoid travel if possible.

"Widespread flooding and continued rainfall are causing very dangerous conditions across much of central and southern Missouri," said **Gov. Nixon**. "Multiple fatalities due to flash flooding have already been reported, and I urge Missourians in flood-affected areas to stay alert, avoid travel if possible and never drive into a flooded roadway. With more heavy rain expected tonight and tomorrow, state emergency management personnel will be working around the clock to keep Missourians safe."

The Governor also urged residents to use caution in northern Missouri, where snow and freezing rain are expected as temperatures drop and wind gusts increase.

The **State Emergency Operations Center** has been actively monitoring the storm system, and Gov. Nixon has been receiving updates from his emergency management team to assess the current weather situation and address local needs. The team includes senior officials from the **Missouri Department of Public Safety**, **Missouri National Guard**, **Missouri State Highway Patrol** and the **State Emergency Management Agency**. The **Missouri State Emergency Operations Plan** also has been activated, allowing state agencies to coordinate directly with local jurisdictions to provide emergency services.

The Governor urged residents of flood-affected areas of Missouri to pay close attention to weather warnings and follow the safety instructions of local officials as the potential for additional dangerous flooding continues. Missourians, especially motorists, are encouraged to remember these important safety tips on flooding and high water:

- Do not walk through moving water. Six inches of moving water can make you fall. If you have to walk in water, walk where the water is not moving. Use a stick to check the firmness of the ground in front of you.
- Do not drive into flooded areas. If floodwaters rise around your car, abandon the car and move to higher ground if you can do so safely. You and the vehicle can be quickly swept away. Six inches of water will reach the bottom of most passenger cars, causing loss of control and possible stalling.

- A foot of water will float many vehicles. Two feet of rushing water can carry away most vehicles, including sport utility vehicles and pick-ups. Even if the water appears shallow enough to cross, don't try it. Water hides dips in the road. Worse yet, there may be no road at all under the water. Flooding can scour away the entire road surface and a significant amount of ground beneath.

Missourians who need disaster information, shelter information, and referrals are urged to call 211. The 211 service is now available throughout Missouri.

For more information on road closures, visit the Missouri Department of Transportation's traveler information map.

###

Appendix T – Federal Emergency Declaration

FEMA.gov

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Missouri Severe Storms, Tornadoes, Straight-line Winds, and Flooding (DR-4250) (/disaster/4250)

Designated Areas (/disaster/4250/designated-areas)

Disaster Federal Register Notices (/disaster/4250/notices)

FOIA Statistics (/disaster/4250/foia)

News (/disaster/4250/updates-blog-and-news)

Initial Notice

Date of Notice:
Thursday, January 21, 2016
Billing Code 9111-23-P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

[Internal Agency Docket No. FEMA-4250-DR]

Docket ID FEMA-2016-0001

Missouri; Major Disaster and Related Determinations

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Notice.

SUMMARY: This is a notice of the Presidential declaration of a major disaster for the State of Missouri (FEMA-4250-DR), dated January 21, 2016, and related determinations.

EFFECTIVE DATE: January 21, 2016.

FOR FURTHER INFORMATION CONTACT: Dean Webster, Office of Response and Recovery, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, (202) 646-2833.

SUPPLEMENTARY INFORMATION: Notice is hereby given that, in a letter dated January 21, 2016, the President issued a major disaster declaration under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 *et seq.* (the "Stafford Act"), as follows:

> I have determined that the damage in certain areas of the State of Missouri resulting from severe storms, tornadoes, straight-line winds, and flooding during the period of December 23, 2015 to January 9, 2016, is of sufficient severity and magnitude to warrant a major disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 *et seq.* (the "Stafford Act"). Therefore, I declare that such a major disaster exists in the State of Missouri.
>
> In order to provide Federal assistance, you are hereby authorized to allocate from funds available for these purposes such amounts as you find necessary for Federal disaster assistance and administrative expenses.
>
> You are authorized to provide Individual Assistance in the designated areas and Hazard Mitigation throughout the State. Consistent with the requirement that Federal assistance be supplemental, any Federal funds provided under the Stafford Act for Hazard Mitigation and Other Needs Assistance will be limited to 75 percent of the total eligible costs.
>
> Further, you are authorized to make changes to this declaration for the approved assistance to the extent allowable under the Stafford Act.

The time period prescribed for the implementation of section 310(a), Priority to Certain Applications for Public Facility and Public Housing Assistance, 42 U.S.C. 5153, shall be for a period not to exceed six months after the date of this declaration.

The Federal Emergency Management Agency (FEMA) hereby gives notice that pursuant to the authority vested in the Administrator, under Executive Order 12148, as amended, Michael L. Parker, of FEMA is appointed to act as the Federal Coordinating Officer for this major disaster.

The following areas of the State of Missouri have been designated as adversely affected by this

major disaster:

Barry, Barton, Camden, Cape Girardeau, Cole, Crawford, Franklin, Gasconade, Greene, Hickory, Jasper, Jefferson, Laclede, Lawrence, Lincoln, Maries, McDonald, Morgan, Newton, Osage, Phelps, Polk, Pulaski, Scott, St. Charles, St. Francois, St. Louis, Ste. Genevieve, Stone, Taney, Texas, Webster, and Wright Counties for Individual Assistance.

All areas within the State of Missouri are eligible for assistance under the Hazard Mitigation Grant Program.

The following Catalog of Federal Domestic Assistance Numbers (CFDA) are to be used for reporting and drawing funds: 97.030, Community Disaster Loans; 97.031, Cora Brown Fund; 97.032, Crisis Counseling; 97.033, Disaster Legal Services; 97.034, Disaster Unemployment Assistance (DUA); 97.046, Fire Management Assistance Grant; 97.048, Disaster Housing Assistance to Individuals and Households In Presidentially Declared Disaster Areas; 97.049, Presidentially Declared Disaster Assistance - Disaster Housing Operations for Individuals and Households; 97.050, Presidentially Declared Disaster Assistance to Individuals and Households - Other Needs; 97.036, Disaster Grants - Public Assistance (Presidentially Declared Disasters); 97.039, Hazard Mitigation Grant.

/s/

_____

W. Craig Fugate,

Administrator,

Federal Emergency Management Agency.

Last Updated: 02/29/2016 - 09:47

FEMA.gov

Navigation

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Missouri Severe Storms, Tornadoes, Straight-line Winds, and Flooding (DR-4250) (/disaster/4250)

Designated Areas (/disaster/4250/designated-areas)

Disaster Federal Register Notices (/disaster/4250/notices)

FOIA Statistics (/disaster/4250/foia)

News (/disaster/4250/updates-blog-and-news)

Amendment No. 1

Date of Notice:
Wednesday, February 10, 2016
Billing Code 9111-23-P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

[Internal Agency Docket No. FEMA-4250-DR]

Docket ID FEMA-2016-0001

Missouri; Amendment No. 1 to Notice of a Major Disaster Declaration

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Notice.

SUMMARY: This notice amends the notice of a major disaster declaration for the State of Missouri (FEMA-4250-DR), dated January 21, 2016, and related determinations.

EFFECTIVE DATE: February 10, 2016.

FOR FURTHER INFORMATION CONTACT: Dean Webster, Office of Response and Recovery, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, (202) 646-2833.

SUPPLEMENTARY INFORMATION: The notice of a major disaster declaration for the State of Missouri is hereby amended to include the Public Assistance program for the following areas among those areas determined to have been adversely affected by the event declared a major disaster by the President in his declaration of January 21, 2016.

Bollinger, Cedar, Dade, Dallas, Douglas, Dunklin, Howell, Iron, Ozark, Perry, Reynolds, St. Clair, Stoddard, Washington, and the Independent City of St. Louis for Public Assistance.

Barry, Camden, Cape Girardeau, Crawford, Franklin, Gasconade, Greene, Jasper, Jefferson, Lawrence, Lincoln, McDonald, Newton, Phelps, Pulaski, Scott, St. Charles, Ste. Genevieve, St. Louis, Stone, Taney, Texas, and Webster Counties for Public Assistance (already designated for Individual Assistance).

The following Catalog of Federal Domestic Assistance Numbers (CFDA) are to be used for reporting and drawing funds: 97.030, Community Disaster Loans; 97.031, Cora Brown Fund; 97.032, Crisis Counseling; 97.033, Disaster Legal Services; 97.034, Disaster Unemployment Assistance (DUA); 97.046, Fire Management Assistance Grant; 97.048, Disaster Housing Assistance to Individuals and Households In Presidentially Declared Disaster Areas; 97.049, Presidentially Declared Disaster Assistance - Disaster Housing Operations for Individuals and Households; 97.050 Presidentially Declared Disaster Assistance to Individuals and Households - Other Needs; 97.036, Disaster Grants - Public Assistance (Presidentially Declared Disasters); 97.039, Hazard Mitigation Grant.

/s/

W. Craig Fugate,

Administrator,

Federal Emergency Management Agency.

Last Updated: 02/29/2016 - 09:46

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