

## CHECKLIST TO DESIGNATE AREAS OF EVALUATION FOR REQUESTS FOR PROPOSAL (RFP)

MDOT PROJECT MANAGER Kenneth Tiffany			JOB NUMBER (JN) 109737, 751-2, 755, 838, 839	CONTROL SECTION (CS) 41029, 41063, 64015, 70024
DESCRIPTION IF NO JN/CS Bridge design services for 8 bridges in four counties within the Grand Region				
<b>MDOT PROJECT MANAGER:</b> Check all items to be included in RFP.  WHITE = REQUIRED GRAY SHADING = OPTIONAL			<b>CONSULTANT:</b> Provide only checked items below in proposal.	
Check the appropriate Tier in the box below				
<input type="checkbox"/> <b>TIER I</b> (\$25,000-\$99,999)	<input type="checkbox"/> <b>TIER II</b> (\$100,000-\$250,000)	<input checked="" type="checkbox"/> <b>TIER III</b> (>\$250,000)		
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Understanding of Service	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>Innovations</i>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Safety Program</i>	
N/A	<input type="checkbox"/>	<input type="checkbox"/>	Organization Chart	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Qualifications of Team	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Past Performance	
Not required as part of official RFP	Not required as part of official RFP	<input type="checkbox"/>	Quality Assurance/Quality Control	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<b>Location:</b> The percentage of work performed in Michigan will be used for all selections unless the project is for on-site inspection or survey activities, then location should be scored using the distance from the consultant office to the on-site inspection or survey activity.	
N/A	N/A	<input type="checkbox"/>	Presentation	
N/A	N/A	<input type="checkbox"/>	Technical Proposal (if Presentation is required)	
3 pages (MDOT forms not counted) <b>(No Resumes)</b>	7 pages (MDOT forms not counted)	19 pages (MDOT forms not counted)	Total maximum pages for RFP <b>not including key personnel resumes</b>	

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is interested in providing services, please indicate your interest by submitting a Proposal, Proposal/Bid Sheet or Bid Sheet as indicated below. The documents must be submitted in accordance with the latest "Consultant/Vendor Selection Guidelines for Service Contracts" and "Guideline for Completing a Low Bid Sheet(s)", if a low bid is involved as part of the selection process. **Referenced Guidelines are available on MDOT's website under Doing Business > Vendor/Consultant Services > Vendor/Consultant Selections.**

## RFP SPECIFIC INFORMATION

BUREAU OF HIGHWAYS       BUREAU OF TRANSPORTATION PLANNING \*\*       OTHER

THE SERVICE WAS POSTED ON THE ANTICIPATED QUARTERLY REQUESTS FOR PROPOSALS

NO       YES      DATED 7/1/10      THROUGH 9/30/10

<input checked="" type="checkbox"/> <b>Prequalified Services</b> – See page <u>2</u> of the attached Scope of Services for required Prequalification Classifications.	<input type="checkbox"/> <b>Non-Prequalified Services</b> - If selected, the vendor must make sure that current financial information, including labor rates, overhead computations, and financial statements, if overhead is not audited, is on file with MDOT's Office of Commission Audits. This information must be on file for the prime vendor and all sub vendors so that the contract will not be delayed. <b>(Form 5100J Required with Proposal)</b>
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**Qualifications Based Selection** – Use Consultant/Vendor Selection Guidelines

**For all Qualifications Based Selections**, the section team will review the information submitted and will select the firm considered most qualified to perform the services based on the proposals. The selected vendor will be contacted to confirm capacity. Upon confirmation, that firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

**\*\*For RFP's that originate in Bureau of Transportation Planning only**, a priced proposal must be submitted at the same time as, but separate from, the proposal. Submit directly to the Contract Administrator/Selection Specialist, Bureau of Transportation Planning (see address list, page 2). The priced proposal must be submitted in a sealed envelope, clearly marked "**PRICE PROPOSAL.**" The vendor's name and return address **MUST** be on the front of the envelope. The priced proposal will only be opened for the highest scoring proposal. Unopened priced proposals will be returned to the unselected vendor(s). Failure to comply with this procedure may result in your priced proposal being opened erroneously by the mail room.

**For a cost plus fixed fee contract**, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job number so that costs may be segregated and accumulated in the vendor's job-order accounting system.

**Qualifications Review / Low Bid** - Use Consultant/Vendor Selection Guidelines. See Bid Sheet Instructions for additional information.

For Qualification Review/Low Bid selections, the selection team will review the proposals submitted and post the date of the bid opening on the MDOT website. The notification will be posted at least two business days prior to the bid opening. Only bids from vendors that meet proposal requirements will be opened. The vendor with the lowest bid will be selected. The selected vendor may be contacted to confirm capacity.

**Best Value** - Use Consultant/Vendor Selection Guidelines. See Bid Sheet Instructions below for additional information. The bid amount is a component of the total proposal score, not the determining factor of the selection.

**Low Bid** (no qualifications review required - no proposal required.) See Bid Sheet Instructions below for additional instructions.

## BID SHEET INSTRUCTIONS

A bid sheet(s) must be submitted in accordance with the "Guideline for Completing a Low Bid Sheet(s)" (available on MDOT's website). The Bid Sheet(s) is located at the end of the Scope of Services. Submit bid sheet(s) separate from the proposal, to the address indicated below. The bid sheet(s) must be submitted in a sealed manila envelope, clearly marked "**SEALED BID.**" The vendor's name and return address **MUST** be on the front of the envelope. Failure to comply with this procedure may result in your bid being opened erroneously by the mail room and the bid being rejected from consideration.

**PROPOSAL SUBMITTAL INFORMATION**

REQUIRED NUMBER OF COPIES FOR PROJECT MANAGER 4	PROPOSAL/BID DUE DATE 10/6/10	TIME DUE 3:30
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**PROPOSAL AND BID SHEET MAILING ADDRESSES**

Mail the multiple proposal bundle to the MDOT Project Manager or Other indicated below.

- MDOT Project Manager  MDOT Other

Ken Tiffany  
425 West Ottawa St.  
P.O. Box 30050  
Lansing, MI 48909

Mail one additional stapled copy of the proposal to the Lansing Office indicated below.

**Lansing Regular Mail****OR****Lansing Overnight Mail**

- Secretary, Contract Services Div - B470  
Michigan Department of Transportation  
PO Box 30050  
Lansing, MI 48909

Secretary, Contract Services Div - B470  
Michigan Department of Transportation  
425 W. Ottawa  
Lansing, MI 48933

- Contract Administrator/Selection Specialist  
Bureau of Transportation Planning B470  
Michigan Department of Transportation  
PO Box 30050  
Lansing, MI 48909

Contract Administrator/Selection Specialist  
Bureau of Transportation Planning B470  
Michigan Department of Transportation  
425 W. Ottawa  
Lansing, MI 48933

**GENERAL INFORMATION**

Any questions relative to the scope of services must be submitted by e-mail to the MDOT Project Manager. Questions must be received by the Project Manager at least four (4) working days prior to the due date and time specified above. All questions and answers will be placed on the MDOT website as soon as possible after receipt of the questions, and at least three (3) days prior to the RFP due date deadline. The names of vendors submitting questions will not be disclosed.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal

The following two American Recovery and Reinvestment Act of 2009 (ARRA) notifications, **ARRA MONTHLY EMPLOYMENT REPORTS** and **REQUIRED CONTRACT PROVISIONS TO IMPLEMENT AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA) SECTIONS 902 AND 1515**, are attached to this Request For Proposal for your understanding. These two notifications are only applicable for those projects/contracts funded with ARRA funds and will be included in contract Exhibits.

**MDOT FORMS REQUIRED AS PART OF PROPOSAL SUBMISSION**

- 5100D** – Request for Proposal Cover Sheet  
**5100G** – Certification of Availability of Key Personnel  
**5100I** – Conflict of Interest Statement  
**5100J** - Consultant Data and Signature Sheet (Required only for Non-Prequalified Work)

**(These forms are not included in the proposal maximum page count.)**

**Michigan Department of Transportation**

**SCOPE OF SERVICE  
FOR  
DESIGN SERVICE  
Revised as of 9.20.10  
(Add'l prequalification classification and ppms task)**

**PART I**

**CONTROL SECTION(S):** 70024

**JOB NUMBER(S):** 109737D

**PROJECT LOCATION:** S02 & S14 of 70024; I-196 Avenue over US-131, Zeeland/Holland Townships

**PROJECT DESCRIPTION:**

The work is epoxy overlay, deck patching, beam end repair, end diaphragms replacement, zone and fascia painting, beam repairs, approach work, and MOT.

**PART II**

**CONTROL SECTION(S):** 70024

**JOB NUMBER(S):** 109751D

**PROJECT LOCATION:** S13 of 70024; I-196 under 8<sup>th</sup> Ave, Georgetown Township

**PROJECT DESCRIPTION:**

The work is epoxy overlay, deck patching, joint replacements, pin and hanger replacements, substructure patching, zone and fascia painting, and MOT.

**PART III**

**CONTROL SECTION(S):** 64015

**JOB NUMBER(S):** 109752D

**PROJECT LOCATION:** S01, S02 of 64015; Hayes Rd over US-31, Shelby Township

**PROJECT DESCRIPTION:**

The work is epoxy overlay, deck patching, pin and hangers, joint replacement, substructure patching and zone-fascia painting and MOT.

**PART IV**

**CONTROL SECTION(S)** 41029

**JOB NUMBER(S):** 109755D

**PROJECT LOCATION:** S20 of 41029; I-196 over Kenowa, Georgetown Township, City of Grandville, Ottawa County and City of Wyoming, Kent County

**PROJECT DESCRIPTION:** The work shall include an epoxy overlay, deck patching, pin and hangers, joint replacement, zone and fascia paint, and MOT.

## **PART V**

**CONTROL SECTION(S):** 62031

**JOB NUMBER(S):** 109838D

**PROJECT LOCATION:** B02 of 62031; M-37 over the White River. Everett Township

**PROJECT DESCRIPTION:** The work shall include scour countermeasures, deck patching, flood coat, substructure repairs, approach work, hydraulic survey, soil borings consisting of one core & a 5 foot deep hand auger on each approach, and MOT.

## **PART VI**

**CONTROL SECTION(S):** 41063

**JOB NUMBER(S):** 109839D

**PROJECT LOCATION:** M-11 over Plaster Creek, City of Grand Rapids

**PROJECT DESCRIPTION:** The work shall include hydraulic survey, soil borings consisting of one core & a 5 foot deep hand auger on each approach, scour countermeasures, flood coat, substructure repairs and MOT

**Maintaining traffic plans will be required for all structures. Deck treatments proposed are preliminary.**

**ANTICIPATED SERVICE START DATE:** November 1, 2010

**ANTICIPATED SERVICE COMPLETION DATE:** December 1, 2011

**PRIMARY PREQUALIFICATION CLASSIFICATION(S):**

Short and Medium Span Bridge

**SECONDARY PREQUALIFICATION CLASSIFICATION(S):**

Roads and Streets (for approach work)

Geotechnical Engineering Services

Maintaining Traffic Plans & Provisions

Hydraulic Surveys

Traffic Signal Design

**DBE PARTICIPATION:** 10%

**MDOT PROJECT ENGINEER MANAGER:**

Ken Tiffany  
Design Division  
Van Wagoner Building  
425 West Ottawa St.  
P.O. Box 30050  
Lansing, MI 48909  
Phone: 517-373-2625  
Fax: 517-335-2731  
E-mail tiffanyk@mi.gov

**CONSTRUCTION COST:**

A. The estimated cost of construction is:

<b>Job #</b>	<b>Construction Estimate</b>
<b>109737</b>	<b>\$862,000</b>
<b>109751</b>	<b>\$694,000</b>
<b>109752</b>	<b>\$903,000</b>
<b>109755</b>	<b>\$825,000</b>
<b>109838</b>	<b>\$189,000</b>
<b>109839</b>	<b>\$210,000</b>

**The estimated cost of construction is: \$ 3,683,000**

**B. The estimated cost of real estate is: \$0**

The above construction total is the amount of funding programmed for this project. The Consultant is expected to design the project within the programmed amount.

**If at any time the estimated cost of construction varies by more than 5% of the current programmed amount, then the Consultant will be required to submit a letter to the MDOT Project Manager justifying the changes in the construction cost estimate.**

**REQUIRED MDOT GUIDELINES AND STANDARDS:**

Work shall conform to current MDOT, FHWA, and AASHTO practices, guidelines, policies, and standards (i.e., Road Design Manual, Bridge Design Manual, Bridge Design Guides, Standard Plans, Drainage Manual, Roadside Design Guide, A Policy on Geometric Design of Highways and Streets, Michigan Manual of Uniform Traffic Control Devices, etc.).

NOTE: A process change mandated by federal audit of MDOT's design process puts the Omissions and Errors Check Meeting after the Plan Completion. Please keep this in mind when preparing your schedule. See MDOT Road Design Manual, Chapter 14 – Procedures – Section 14.54 for corroboration. See “For Your Information” contacts at the end of this document for more info or questions.

Consultant is required to use MDOT's current version of Bentley MicroStation for CADD applications and Bentley GEOPAK for road design. Consultant shall comply with all MDOT CADD standards and file naming conventions.

**CONSULTANT RESPONSIBILITIES:**

The Consultant must adhere to all applicable OSHA and MIOSHA safety standards, including the appropriate traffic signs for the activities and conditions for this job and perform field operations in accordance with the Department's Personal Protective Equipment (PPE) policy as stated in the MDOT Guidance Document #10118.

Meet with the MDOT Project Manager and Grand Region Bridge Engineer to review project, location of data sources and contact persons, and review relevant MDOT operations. The Consultant shall review and clarify project issues, data needs and availability, and the sequence of events and team meetings that are essential to complete the design by the project plan completion date. Attention shall be given to critical target dates that may require a large lead time, such as geotechnical requirements, ROW submittal dates, Railroad coordination requirements, utility conflict resolution, local agency meetings, etc.

- A. Prepare required plans, typical cross-sections, details, and specifications required for design and construction for the above listed structures including bridge approach work.
- B. Compute and verify all plan quantities.
- C. Prepare staging plans, detour plans, staging typicals and special provisions for maintaining traffic during construction for the bridges. The TSC Traffic and Safety Engineer will review and approve the consultant's Maintaining Traffic Special Provision.
- D. Provide solutions to any unique problems that may arise during the design of this project.

- E. The Consultant may be required to provide Design Services during the construction phase of this project. If Construction Assistance is required, then a separate authorization for those services will be issued.
- F. Maintain a Design Project Record which includes a history of significant events (changes, comments, etc.) which influenced the development of the plans, dates of submittals and receipt of information.
- G. If excavation is required, submit the excavation locations which may contain contamination. Project Manager then can proceed in requesting a Preliminary Project Assessment (PPA).
- H. The Consultant shall be required to prepare and submit a CPM network for the construction of this project.
- I. The Consultant representative shall record and submit type-written minutes for all project related meetings to the MDOT Project Manager within two weeks of the meeting. The Consultant shall also distribute the minutes to all meeting attendees. MDOT will provide and distribute official meeting minutes for the Plan Review Meeting.
- J. The Consultant will provide to MDOT at the scheduled submittal dates, copies of the required specifications and plan set materials for distribution by MDOT for all reviews for this project with the exception of The Plan Review.
- K. Prepare and submit electronically (native format or Adobe PDF) any information, calculations, hydraulic studies, or drawings required by MDOT for acquiring any permit (i.e. NPDES, DEQ, etc), approvals (i.e. county drain commission) and related mitigation. MDOT will submit permit requests. Jim Fortney, Grand Region Resource Specialist, will coordinate the permit applications.
- L. Attend any project-related meetings as directed by the MDOT Project Manager.
- M. Attend information meetings (i.e., public hearings, open houses, etc.) with the public and public officials to assist in responding to concerns and questions. May require the preparation of displays such as maps, marked-up plans, etc.
- N. The Consultant shall assist in the review of utility permit requests, incorporate the information in the design plans, and respond within 2 weeks from receipt of the permit.
- O. The MDOT Project Manager shall be the official MDOT contact person for the Consultant **and shall be made aware of all communications regarding**

**this project.** The Consultant must either address or send a copy of all correspondence to the MDOT Project Manager. This includes all Subcontractor correspondence and verbal contact records.

- P. The Consultant shall contact the MDOT Project Manager whenever discoveries or design alternatives have the potential to require changes in the scope, limits, quantities, costs, or right-of-way of the project.
- Q. Preparation of any specifications required to supplement MDOT's Standard Specifications for Construction.
- R. Any pickup survey for field measurements required to supplement the data provided by MDOT.
- S. Necessary contracts with concerned agencies: e.g. MDNR, MDEQ, municipalities, utilities, State Historic Commission.
- T. Participation in meetings and field reviews at the site.
- U. Solutions to any unique problems. E.g. utility interference, staging for part width construction.
- V. Inspect the existing bridge and job site to determine the extent and complexity of rehabilitation work and to determine the need for any additional work not included in the Description of the Project.
- W. Coordinate Note Sheet quantities and pay items with the Grand Region.
- X. The Consultant shall submit SAPW files for each of the job numbers.
- Y. The Consultant shall obtain the necessary soil borings for the designated structure(s).
- Z. The Consultant shall coordinate any information that may be necessary for the Value Engineering review and meetings.
- AA. The Consultant shall provide hydraulic survey information as stipulated in Attachments A and B.



## **UTILITIES**

The Consultant shall be responsible for obtaining and showing on the plans the location and names of all existing utilities within the limits of the project. In the course of resolving utility conflicts, the Consultant shall make modifications to the plans or design details and provide assistance as directed by the MDOT TSC Utility Permits Engineer and/or Project Manager. The Consultant shall attend any utility meetings called to ensure that the concerns are addressed on the plans involving utilities. The Consultant shall assist in the review of utility permit requests to ensure compatibility with the project. The Consultant will be responsible for miscellaneous staking of utilities.

### **MDOT PERMITS:**

The Consultant shall be responsible for obtaining up to date access permits and pertinent information for tasks in MDOT Right of Way (ROW). This information can be obtained through the Utility Permits Engineers, Mike Lamincusa, Grand Rapids TSC, at 616-464-1616 for JNs 109738,839,751,755 or Timothy Terry, Muskegon TSC, at 231-777-7956 for JN 109752/838.

### **MONTHLY PROGRESS REPORT:**

On the first of each month, the Consultant Project Manager shall submit a monthly project progress report to the Project Manager.

### **MDOT RESPONSIBILITIES:**

- . Schedule and/or conduct the following:
  1. Project related meetings.
  2. The Plan Review
  3. Utility Meetings.
  4. Packaging of plans and proposal.
- . Furnish Special Details and pertinent reference materials.
- . Furnish prints of an example of a similar project and old plans of the area, if available.
- . Obtain all permits for the project as outlined in previous section.
- . Obtain the Consultant and hold the Value Engineering meeting.
- . Coordinate any necessary utility relocation.
- . Furnish FTP site for software download and instructions for the MDOT Stand Alone Proposal Estimator's Worksheet (SAPW).

Provide hydraulic analysis.

**DELIVERABLES:**

The Consultant shall deliver all computer files associated with the project in their native format (spreadsheets, CADD files, GEOPAK files, etc.) on DVD, CD or uploaded to ProjectWise, as directed by the MDOT Project Manager. All CADD/GEOPAK files shall be created and identified with standard MDOT file names as shown in Appendix A of the Road Design Manual.

It is the Consultant's responsibility to obtain up to date MicroStation and GEOPAK seed/configuration files necessary to comply with MDOT's CADD standards which are posted to the bulletin board system. When the use of GEOPAK road design software is necessary to develop plans all pay items shall be placed into the CADD file using GEOPAK's Design and Computation Manager so that Quantity Manager can be used to transfer pay item information to SAPW/Trns\*port. Any CADD/GEOPAK files that do not conform to MDOT standards will be returned to the Consultant for correction at the Consultant's expense.

Proposal documents shall be submitted in their native format with standard naming conventions as well as combined into one Adobe PDF file in the sequence specified by MDOT. To provide text search capabilities the combined proposal shall be created by converting native electronic files to PDF. Scanning to PDF is discouraged except in instances where it is necessary to capturing a legally signed document or a hard copy version of a document is all that exists.

Plan files shall be submitted in their native dgn format with standard naming conventions as well as plotted into a combined Adobe PDF file. Plan sheets shall be plotted to Adobe PDF with full text search and level on/off capabilities in half size (11" x 17") formats. A full size title sheet shall be plotted stamped and signed then scanned for inclusion with the Adobe PDF set. The original title sheet will be sent to the MDOT Project Manager.

Stand Alone Proposal Estimator's Worksheet (SAPW) shall be used to generate the txt and csv files necessary for import into the Trns\*port bid letting software. The SAPW files shall be transmitted electronically by the method specified by the MDOT Project Manager.

The project construction, removal and profile sheets will require a ratio (scale) of **1:40 (English Units)**.

Other plan sheets that are required for this project shall be completed by the Consultant. These include, but are not limited to the following plan sheets:

- A. The title sheet. MDOT will provide a map of the area on a disk in our workstation format. If the map is not available, MDOT will provide a map that

could be used. The Consultant shall be responsible for any revisions to the title sheet and the title sheet and map shall meet MDOT format and layout guidelines.

- B. Note Sheet.
- C. Project specific Special Details.
- D. Construction staging and traffic control plans.
- E. Structure plan(s).

All plans, special provisions, estimates, and other project related items shall meet all MDOT requirements and detailing practices (i.e., format, materials, symbols, patterns, and layout) or as otherwise directed by the Project Manager. All plans, specifications, and other project related items are subject to review and approval by MDOT.

**PROJECT SCHEDULE:**

The Consultant shall use the following events to prepare the proposed implementation schedule as required in the Guidelines for the Preparation of Responses on Assigned Design Services Contracts. These dates shall be used in preparing the Consultant’s Monthly Progress Reports.

	<b>MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST</b>	
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Please indicate with a check in the box next to each task number whether you believe that task will require consultant involvement on the job. Milestones (a specific event at a point in time) are italicized and underlined. See the [P/PMS Task Manual](#) for more details.

**STUDY (EARLY PRELIMINARY ENGINEERING)**

		P/PMS TASK NUMBER AND DESCRIPTION	DATE TO BE COMPLETED BY
YES	NO		(mm/dd/yyyy)
		<b><u>EPE SCOPING ANALYSIS</u></b>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2120 Prepare Traffic Analysis Report	_/_/_
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2130 Prepare Project Justification	_/_/_
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i><u>213M Concurrency by Regulatory Agencies with the Purpose and Need</u></i>	_/_/_
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2140 Develop and Review Illustrative Alternatives	_/_/_
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2155 Request/Perform Safety Analysis	_/_/_
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2160 Prepare and Review EIS Scoping Document	_/_/_
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i><u>211M Public Information Meeting</u></i>	_/_/_
		<b><u>EPE DRAFT ANALYSIS</u></b>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2310 Conduct Technical SEE Studies	_/_/_

<input type="checkbox"/>	<input checked="" type="checkbox"/>	2321	Prepare for Aerial Photography	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2322	Finish/Print Aerial Photography	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2330	Collect EPE Geotechnical Data	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2340	Develop and Review Practical Alternatives	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>233M</u>	<u>Aerial Photography Flight</u>	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2360	Prepare and Review EA or DEIS	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>231M</u>	<u>Draft Submission to FHWA</u>	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2380	Circulate EA or DEIS	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>232M</u>	<u>Public Hearing</u>	__/__/__
			<b><u>EPE FINAL ANALYSIS</u></b>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2510	Determine and Review Recommended Alternative	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>250M</u>	<u>Concurrence by Regulatory Agencies with Recommended Alternatives</u>	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2525	Prepare and Review Engineering Report	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2530	Prepare and Review Request for FONSI or FEIS	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>252M</u>	<u>Final Submission to FHWA</u>	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2550	Obtain FONSI or ROD	__/__/__
			<b><u>CONTAMINATION INVESTIGATION</u></b>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2810	Project Area Contamination Survey (PCS)	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2820	Preliminary Site Investigation (PSI) for Contamination	__/__/__

<b>MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST</b>
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**PRELIMINARY ENGINEERING - DESIGN**

		<b>P/PMS TASK NUMBER AND DESCRIPTION</b>	<b>DATE TO BE COMPLETED BY</b>
<b>YES</b>	<b>NO</b>		(mm/dd/yyyy)
		<b><u>DESIGN SCOPE VERIFICATION AND BASE PLAN PREPARATION</u></b>	
<input type="checkbox"/>	<b>X</b>	3130 Verify Design Scope of Work and Cost	__/__/__
	<input checked="" type="checkbox"/>	3310 Prepare Aerial Topographic Mapping	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3320 Conduct Photogrammetric Control Survey	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3321 Set Aerial Photo Targets	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3330 Conduct Design Survey	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3340 Conduct Structure Survey	__/__/__
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3350 Conduct Hydraulics Survey	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3360 Prepare Base Plans	__/__/__
<b>X</b>		<u>331M</u> <u>Utility Notification</u>	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3361 Review and Submit Preliminary ROW Plans	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>331M</u> <u>Preliminary ROW Plans Distributed</u>	__/__/__

<input checked="" type="checkbox"/>	<input type="checkbox"/>	3370	Prepare Structure Study	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3375	Conduct Value Engineering Study	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3380	Review Base Plans	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	332M	<i>Base Plan Review (Pre-GI Inspection)</i>	__/__/__
<b>X</b>	<input type="checkbox"/>	3390	Develop the Maintaining Traffic Concepts	__/__/__
		<b><u>PRELIMINARY PLANS PREPARATION</u></b>		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3510	Perform Roadway Geotechnical Investigation	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3520	Conduct Hydraulic/Hydrologic and Scour Analysis	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3522	Conduct Drainage Study, Storm Sewer Design, and use Structural Best Management Practices	__/__/__
<b>X</b>	<input type="checkbox"/>	3530	Conduct Structure Foundation Investigation	04/30/2011
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3535	Conduct Structure Review for Architectural and Aesthetic Improvements	__/__/__
<b>X</b>	<input type="checkbox"/>	3540	Develop the Maintaining Traffic Plan	__/__/__
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3551	Prepare/Review Preliminary Traffic Signal Design Plan	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3552	Develop Preliminary Pavement Marking Plan	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3553	Develop Preliminary Non-Freeway Signing Plan	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3554	Develop Preliminary Freeway Signing Plan	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3555	Prepare/Review Preliminary Traffic Signal Operations	__/__/__
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3570	Prepare Preliminary Structure Plans	4/30/2011
<b>X</b>	<input type="checkbox"/>	3580	Develop Preliminary Plans	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3581	Review and Submit Final ROW Plans	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	351M	<i>Final ROW Plans Distributed</i>	__/__/__
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3590	Review Preliminary Plans (Hold Plan Review Meeting)	05/20/2011
<input checked="" type="checkbox"/>	<input type="checkbox"/>	352M	<i>THE Plan Review (Grade Inspection)</i>	05/20/2011

<b>MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST</b>
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**PRELIMINARY ENGINEERING - DESIGN (cont'd)**

		<b>P/PMS TASK NUMBER AND DESCRIPTION</b>	<b>DATE TO BE COMPLETED BY</b>
<b>YES</b>	<b>NO</b>		(mm/dd/yyyy)
		<b>UTILITIES</b>	
X	<input type="checkbox"/>	3610 Compile Utility Information	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3650 Coordinate RR Involvement for Grade Separations	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3655 Coordinate RR Involvement for At-Grade Crossings	__/__/__
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3660 Resolve Utility Issues	05/13/2011
X	<input type="checkbox"/>	<i>360M Utility Conflict Resolution Plan Distribution</i>	__/__/__
X	<input type="checkbox"/>	<i>361M Utility Meeting</i>	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3670 Develop Municipal Utility Plans	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3672 Develop Special Drainage Structures Plans	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3675 Develop Electrical Plans	__/__/__
		<b>MITIGATION/PERMITS</b>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3710 Develop Required Mitigation	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3720 Submit Environmental Permit Applications	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3730 Obtain Environmental Permit	__/__/__
		<b>FINAL PLAN PREPARATION</b>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3821 Prepare/Review Final Traffic Signal Design Plan	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3822 Complete Permanent Pavement Marking Plan	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3823 Complete Non-Freeway Signing Plan	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3824 Complete Freeway Signing Plan	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3825 Prepare/Review Final Traffic Signal Operations	__/__/__
X	<input type="checkbox"/>	3830 Complete the Maintaining Traffic Plan	__/__/__
X	<input type="checkbox"/>	3840 Develop Final Plans and Specifications	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>380M Plan Completion</i>	__/__/__
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3850 Develop Structure Final Plans and Specifications	09/15//2011
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3870 Hold Omissions/Errors Check (OEC) Meeting	10/10/2011
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>387M Omissions/Errors Checks Meeting</i>	10/10/2011
X	<input type="checkbox"/>	<i>389M Plan Turn-In</i>	11/22/2011
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3880 CPM Quality Assurance Review	__/__/__

**MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST**

**PRELIMINARY ENGINEERING – RIGHT OF WAY**

		<b>P/PMS TASK NUMBER AND DESCRIPTION</b>	<b>DATE TO BE COMPLETED BY</b>
<b>YES</b>	<b>NO</b>		(mm/dd/yyyy)
		<b>EARLY RIGHT OF WAY WORK</b>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4120 Obtain Preliminary Title Commitments	__/__/__

<input type="checkbox"/>	<input checked="" type="checkbox"/>	4130 Prepare Marked Final Right Of Way Plans	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>413M Approved Marked Final ROW</i>	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4140 Prepare Property Legal Instruments	__/__/__
		<b><u>ROW ACQUISITION</u></b>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4411 Preliminary Interviews	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>441M Post-Decision Meeting</i>	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4412 Real Estate Services Assignment Proposal and Fee Estimate (Form 633s) for Appraisal Work Authorization	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4413 Appraisal Reports	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4420 Appraisal Review Reports	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4430 Acquire Right Of Way Parcels	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4510 Conduct Right Of Way Survey & Staking	__/__/__
		<b><u>ROW RELOCATION</u></b>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4710 Relocation Assistance	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4720 Prepare Improvement Removal Plan	__/__/__
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>442M ROW Certification</i>	__/__/__

### **FOR YOUR INFORMATION**

For questions on specific tasks, refer to the P/PMS Task Manual located on the MDOT Bulletin Board System.

For assistance in accessing this manual, please contact one of following:

**Dennis Kelley: (517) 373-4614**

**Tonya Nobach: (517) 335-1927**

### **CONSULTANT PAYMENT – Actual Cost Plus Fixed Fee:**

Compensation for this project shall be on an **actual cost plus fixed fee** basis. This basis of payment typically includes an estimate of labor hours by classification or employee, hourly labor rates, applied overhead, other direct costs, subconsultant costs, and applied fixed fee.

All billings for services must be directed to the Department and follow the current guidelines. The latest copy of the "Professional Engineering Service Reimbursement Guidelines for Bureau of Highways" is available on MDOT's website. This document contains instructions and forms that must be followed and used for billing. Payment may be delayed or decreased if the instructions are not followed.

Payment to the Consultant for services rendered shall not exceed the maximum amount unless an increase is approved in accordance with the contract with the Consultant. Typically, billings must be submitted within 60 days after the completion of services for the current billing. The final billing

must be received within 60 days of the completion of services. Refer to your contract for your specific contract terms.

Direct expenses, if applicable, will not be paid in excess of that allowed by the Department for its own employees in accordance with the State of Michigan's Standardized Travel Regulations. Supporting documentation must be submitted with the billing for all eligible expenses on the project in accordance with the Reimbursement Guidelines. The only hours that will be considered allowable charges for this contract are those that are directly attributable to the activities of this project.

The use of overtime hours is not acceptable unless prior written approval is granted by the MDOT Region Engineer/Bureau Director and the MDOT Project Manager. Reimbursement for overtime hours that are allowed will be limited to time spent on this project in excess of forty hours per person per week. Any variations to this rule should be included in the priced proposal submitted by the Consultant and must have prior written approval by the MDOT Region Engineer/Bureau Director and the MDOT Project Manager.

The fixed fee for profit allowed for this project is 11.0% of the cost of direct labor and overhead.

**ATTACHMENT A**  
**SCOPE FOR HYDRAULIC SURVEY**  
**MDOT ANALYSIS**  
**PPMS Task 3350**

**B02 of 62031 Job No. 109838**  
**M-37 over the White River**  
**Newaygo County**

The Consultant shall perform a hydraulic survey, which provides geometric data on the stream channel upstream and downstream of the structure. **Two weeks** prior to starting the hydraulic survey, the Consultant surveyor shall schedule a site visit with an MDOT Hydraulics engineer by contacting the Design Engineer-Hydraulics Chris Potvin at 517-335-1919 or Assistant Design Engineer-Hydraulics Larry Wiggins at 517-373-1713. The purpose of the site visit is to discuss details of the survey and to clarify the intent of the survey. The Consultant must take notes at the site visit and submit them promptly to the MDOT Survey Coordinator and MDOT Hydraulics engineer.

Prior to performing the survey, the Consultant must contact all landowners upon whose lands they will enter. The contact may be personal, phone or letter, but must be documented. This notice must include the reasons for the survey on private land, the approximate time the survey is to take place, the extent of the survey including potential brush cutting, and an MDOT contact person (the MDOT Project Manager or Consultant Survey Coordinator or Region Surveyor).

The Consultant must make every effort to minimize brush cutting on private property. The use of paint on private property is prohibited.

**Cross-sections shall be taken at the limits and intervals specified by the MDOT Hydraulics Engineer as shown in Attachment A.** Channel cross-sections shall be taken normal to the direction of *flood* flow and tied to the project coordinate system so they can be accurately plotted. The sections shall be extended to the edge of the floodplain, to the elevation of the top of the road at the structure, or to a distance beyond the river bank agreed upon with the MDOT Hydraulics engineer at the site visit. Shots must be taken at approximately six foot intervals through the stream, and at significant break points. Any high water marks and date of occurrence (if available) shall be noted.

**Since the hydraulic analysis is to be performed by MDOT staff,** the Consultant shall meet the following requirements for hydraulic cross-sections:

1. Cross-sections shall be submitted electronically in a CAiCE software file, or in a format acceptable to the Design Engineer-Hydraulics/Hydrology.
2. Each cross-section shall be a separate chain in CAiCE labeled "HYDRO9, HYDRO2", etc. These **HYDRO** chain numbers need not be in sequence, but each HYDRO chain must have a description of 10, 20, 30, etc., in sequence, starting with 10 at the downstream end.

3. The centerline of all berms such as roads, railroads, or driveways that cross the stream must be included as a separate chain in CAiCE, with a Feature Code of “CL” and labeled as “CL3, CL1”, etc. These CL chain numbers need not be in sequence, but each CL chain must have a description of 10, 20, 30, etc., in sequence, starting with 10 at the downstream end. Each CL chain must also have a comment that identifies the type of centerline, such as “railroad berm” or “farm drive.” CL chains must be sequenced separately from the HYDRO Chains.
4. Each HYDRO and CL cross-section shall be submitted with the points in the chain running all left to right, looking downstream.
5. The cross-sections generally must extend a minimum of 100 feet into the flood plain from the stream top of bank.
6. For each cross-section, the vegetation break point (the “friction point” between the natural channel and the surrounding vegetation) shall be shot with a Feature Code of “RBK” or “LBK” on the right or left side of the waterway, looking downstream. It should have a comment or description of “break point.”
7. Subsequent vegetation break points, if applicable, shall be shot with a Feature Code of “VEGE” with a comment or description such as “friction point – grass to shrub,” or “friction point – shrub to trees” as appropriate.
8. The water surface elevations at each cross section shall have a Feature Code of “LWS” and “RWS”, taken at the left edge of water and right edge of water looking downstream. The Consultant must note if any stream bed cross sections were dry, and LWS/RWS shots were unavailable. The note should be shown on the MicroStation drawing.

The project surveyor must ensure that all required information is legible and in a form which is easily accessible to the Hydraulics/Hydrology Unit. A CAiCE software file (Version 10.6 or newer) or a HEC-RAS file in MDOT format is acceptable. Other formats must be discussed in advance with the MDOT Survey Project Manager or Region Surveyor. Only one CAiCE file per project is desired. The Consultant should not submit separate CAiCE files for Hydraulics and Road/Structure, unless the Hydraulics Survey is required to be delivered first, in which case the Road/Structure Survey CAiCE file would be continued/appended to the Hydraulics Survey CAiCE file.

All elevations shall be referenced to the North American Vertical Datum of 1988 (NAVD88), or project datum, if established and different. If a project datum is used, the MDOT Hydraulics Engineer may require a reference to NAVD88 or National Geodetic Vertical Datum of 1929 (NGVD29). Two benchmarks must be established at the stream crossing, one on each side of the stream. All benchmarks must be accurately described. Benchmark leveling shall be a closed loop of at least third-order accuracy, which requires an error of closure between known benchmarks of not more than 0.06 feet times the square root of the distance in Miles.

Note: It is not necessary to provide least squares analyses for horizontal and vertical control for a Hydraulics Survey upstream and downstream from the structure. Electronic evidence of horizontal and vertical closure is required. The surveyor must use professional judgment to determine whether the closures are acceptable for use on a Hydraulics Survey. It is necessary to provide accurate elevations for underclearances, road profiles, weirs, and anything that controls flow. It is not necessary to provide extremely accurate closures for vertical and horizontal control used for hydraulics cross-sections.

It is not necessary to provide a witness list of horizontal control points set for hydraulics cross-sections.

A list containing at least two benchmarks, one on either side of the bridge, with descriptions, elevations and datum, must be provided. Since these benchmarks will be used for road/bridge design and construction, least squares analysis is required.

**THE NOTES FOR THE HYDRAULIC SURVEY MUST BE PACKAGED IN A SEPARATE PORTFOLIO.** All field measurements, notes, sketches, and calculations must be included in the final transmission. Two separate, identical, and complete portfolios must be provided.

**ATTACHMENT B**  
**SCOPE FOR HYDRAULIC SURVEY**  
**CONSULTANT ANALYSIS**  
**PPMS Task 3350**

**C.S. 41063 Job No. 109838**  
**M-11 over Plaster Creek**  
**Kent County**

The Consultant shall perform a hydraulic survey, which provides geometric data on the stream channel upstream and downstream of the structure. **Two weeks** prior to starting the hydraulic survey, the Consultant surveyor shall schedule a site visit with an MDOT Hydraulics engineer by contacting the Design Engineer-Hydraulics Chris Potvin at 517-335-1919 or Assistant Design Engineer-Hydraulics Larry Wiggins at 517-373-1713. The purpose of the site visit is to discuss details of the survey and to clarify the intent of the survey. Notes must be taken at the site visit and submitted promptly to the MDOT Project Manager, and MDOT Survey Coordinator or Region Surveyor.

Prior to performing the survey, the Consultant must contact all landowners upon whose lands they will enter. The contact may be personal, phone or letter, but must be documented. This notice must include the reasons for the survey on private land, the approximate time the survey is to take place, the extent of the survey including potential brush cutting, and an MDOT contact person (the MDOT Project Manager or Consultant Survey Coordinator or Region Surveyor).

The Consultant must make every effort to minimize brush cutting on private property. The use of paint on private property is prohibited.

**Cross-sections shall be taken at the limits and intervals specified by the MDOT Design Engineer-Hydraulics/Hydrology as shown in Attachment A.** Channel cross-sections shall be taken normal to the direction of *flood* flow and tied to the project coordinate system so they can be accurately plotted. The sections shall be extended to the edge of the floodplain, to the elevation of the top of the road at the structure, or to a distance beyond the river bank agreed upon with the MDOT Hydraulics engineer at the site visit. Shots must be taken at approximately six foot intervals through the stream, and at significant break points. Any high water marks and date of occurrence (if available) shall be noted.

**Since the hydraulic analysis is to be performed by Consultant staff,** the Consultant shall meet the following requirements for hydraulic cross-sections:

1. Cross-sections shall be submitted electronically in a format acceptable to the Design Engineer-Hydraulics/Hydrology.
2. The centerline of all berms such as roads, railroads, or driveways that cross the stream must be included as a separate chain. Each centerline chain must also have a description or comment that identifies the type of centerline, such as “railroad berm” or “farm drive.”

3. Each cross-section shall be submitted with the points in the chain running all left to right, looking downstream.
4. The cross-sections generally must extend a minimum of 100 feet into the flood plain from the stream top of bank.
5. For each cross-section, the vegetation break point (the “friction point” between the natural channel and the surrounding vegetation) shall be shot. It should have a comment or description of “break point.”
6. Subsequent vegetation break points, if applicable, shall be shot with a comment or description such as “friction point – grass to shrub,” or “friction point – shrub to trees” as appropriate.
7. The water surface elevations at each cross section shall be taken at the left edge of water and right edge of water looking downstream. The Consultant must note if any stream bed cross sections were dry, and water surface elevation shots were unavailable.

The project surveyor must ensure that all required information is legible and in a form which is easily accessible to the Hydraulics/Hydrology Unit. A HEC-RAS file is acceptable. Other formats must be discussed in advance with the Survey Project Manager or MDOT Hydraulics Engineer.

All elevations shall be referenced to the North American Vertical Datum of 1988 (NAVD88), or project datum, if established and different. If a project datum is used, the MDOT Hydraulics Engineer may require a reference to NAVD88 or National Geodetic Vertical Datum of 1929 (NGVD29). Two benchmarks must be established at the stream crossing, one on each side of the stream. All benchmarks must be accurately described. Benchmark leveling shall be a closed loop of at least third-order accuracy, which requires an error of closure between known benchmarks of not more than 0.06 feet times the square root of the distance in Miles.

Note: It is not necessary to provide least squares analyses for horizontal and vertical control for a Hydraulics Survey upstream and downstream from the structure. Electronic evidence of horizontal and vertical closure is required. The surveyor must use professional judgment to determine whether the closures are acceptable for use on a Hydraulics Survey. It is necessary to provide accurate elevations for underclearances, road profiles, weirs, and anything that controls flow. It is not necessary to provide extremely accurate closures for vertical and horizontal control used for hydraulics cross-sections.

It is not necessary to provide a witness list of horizontal control points set for hydraulics cross-sections.

A list containing at least two benchmarks, one on either side of the bridge, with descriptions, elevations and datum, must be provided. Since these benchmarks will be used for road/bridge design and construction, least squares analysis is required.

**THE NOTES FOR THE HYDRAULIC SURVEY MUST BE PACKAGED IN A SEPARATE PORTFOLIO.** All field measurements, notes, sketches, and calculations must be included in the final transmission. Two separate, identical, and complete portfolios must be provided.

**C.S. 41063 Job No. 109838**

**M-11 over Plaster Creek:** Section 7, T6N, R11W

**Kent County**

**FINAL REPORT: DELIVERABLES FOR HYDRAULICS SURVEY**

1. The **riparian owners and addresses** in the four quadrants of the structure and stream, clearly shown. It may be necessary to draw the stream on an Equalization map.
2. **First floor elevations** of all buildings within the survey limits. Note if basement is present or not.
3. All **pertinent structure data** including water surface elevations, flow lines, invert or footing elevations, opening widths, length, pier thickness and underclearance elevations, both upstream and downstream, at the stream structure. Include an elevation view sketch of both sides of the structure showing this information.
4. All **pertinent structure data** including water surface elevations, flow lines, invert or footing elevations, opening widths, length, and underclearance elevations, both upstream and downstream, at **any other structures** encountered within the reach of the survey. Include an elevation view sketch of both sides of all such structures showing this information.
5. Water surface elevations at each section must be provided, with the date taken. The water surface elevations at each cross section shall be taken at the left edge of water and right edge of water. **All water surface elevations should be taken on the same day if possible.** If not, note the date taken and any event which may affect the evaluation.
6. One road profile for a minimum of 600 feet along the crown or highpoints of the state trunkline, as determined by the MDOT Hydraulics Engineer, with a comment or description or “**M-xx centerline.**” Shots must be taken at the approximate reference points of the structure with an appropriate description or comment. In the case of a culvert, a shot must be taken on the crown at the approximate center of the culvert, with a comment or description of “centerline culvert.”
7. A **point list in ASCII format** must be provided, containing columns for point number, North (or Y), East (or X), elevation, Feature Code, and description. The shots for each cross section must be grouped together in the same order that they are in the chain, and the cross section designation noted.
8. A MicroStation V8 drawing showing the relationship of the cross sections to the structure

and the road, and noting the distance between cross sections. The stream footprint must be shown, as well as any first floor locations and elevations.

0. A paper plot with scale of the area at the stream crossing, showing a basic map of the bridge including abutments, the road(s) and cross section shots at the upstream and downstream faces of the structure (elevations in small text).
0. **Benchmark list** with descriptions, elevations, and datum; and least squares analysis for benchmarks at the structure.
0. Two cross sections, one at the upstream and one at the downstream face of the structure excluding roadway embankment.
0. Streambed point taken along both abutments every two feet for full width of structure.