Michigan Department of Transportation 5100B (07/07)

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

Exhibit B

Clear Form

MDOT PROJECT MANAGER	JOB NUMBER (JN)	CONTROL SECTION (CS)
Christopher Van Norwick	103244D	70114

DESCRIPTION IF NO JN/CS

Design Services for roadway rehabilitation including interchange work in Crocker Township, Ottawa County

MDOT PROJECT MANAGER: Check all items to be included in RFP.

WHITE = REQUIRED
GRAY SHADING = OPTIONAL

Check the appropriate Tier in the box below

CONSULTANT: Provide only checked items below in proposal.

☐ **TIER I ($25,000-$99,999)**	☐ **TIER II ($100,000-$250,000)**	☒ **TIER III (>$250,000)**	
☐	☐	☒	Understanding of Service
☐	☐	☒	*Innovations*
☐	☐	☒	*Safety Program*
N/A	☐	☒	Organization Chart
☐	☐	☒	Qualifications of Team
☐	☐	☒	Past Performance
Not required as part of official RFP	Not required as part of official RFP	☒	Quality Assurance/Quality Control
☐	☐	☒	**Location:** 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	☐	Presentation
N/A	N/A	☐	Technical Proposal (if Presentation is required)
3 pages (MDOT forms not counted) **(No Resumes)**	7 pages (MDOT forms not counted)	19 pages (MDOT forms not counted)	Total maximum pages for RFP **not including key personnel resumes**

REQUEST FOR PROPOSAL

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 _____ THROUGH _____

☑ **Prequalified Services** – See page ___ of the attached Scope of Services for required Prequalification Classifications.

☐ **Non-Prequalified Services** - 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. (**Form 5100J Required with Proposal**)

☑ **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	PROPOSAL/BID DUE DATE	TIME DUE
4	6/4/10	4:00 PM

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

Christopher Van Norwick, P.E.
Grand Region Cost & Scheduling Engineer
1420 Front Avenue
Grand Rapids, MI 49504

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.)

Notification
ARRA MONTHLY EMPLOYMENT REPORTS
Note: This Notification is only applicable for those projects/contracts funded with ARRA funds. If you have questions, please contact MDOT Contract Services Division at (517) 335-0071.

The American Recovery and Reinvestment Act of 2009 (ARRA), requires states receiving stimulus funds for highway projects to provide monthly reports to the Federal Highway Administration (FHWA) regarding the number of employees of the prime contractors, all-tier subcontractors and consultants on ARRA funded projects.

The cost for complying with this Notification must be borne by the prime contractor, and all-tiers of subcontractors and consultants, as part of their overhead and is deemed to be included in the payments made under this contract.

Within 10 days after the end of each month in which work is performed on this contract, all prime contractors and consultants must provide the Engineer a monthly report on MERS at https://sso.state.mi.us/ providing employment information on each ARRA project, which will include, for work performed in that preceding month:

- The total number of employees who performed work on this contract.
- The total number of hours worked by employees who performed work on this contract.
- The total wages of employees who performed work on this contract.

Prime Consultants are responsible for reporting on all subconsultants' employment information in MERS, as the sub consultants will not have access to do so.

In addition, the prime contractor must provide a total payment amount made to any subcontractor who is a certified DBE in that preceding month.

This Notification shall be included as a part of each subcontract executed by the prime contractor, and all-tiers of subcontractors and consultants.

If necessary to conform to guidance provided by FHWA concerning the ARRA reporting requirements, the prime contractor, and all-tiers of subcontractors and consultants will revise their reporting as directed by the Engineer.

Failure to comply with the reporting requirements under ARRA would jeopardize the Department's continued receipt of ARRA funding.

Accordingly, if a contractor or any-tier of subcontractor or consultant fails to comply with this Notification, the Department may withhold contract payments until compliance is achieved. If the Department is compelled to incur costs because of such a breach, the amount of those costs may be deducted from payments otherwise to be made under this contract. Additional sanctions may include reduction or elimination of prequalification ratings and removal of bidding privileges.

NOTIFICATION
REQUIRED CONTRACT PROVISIONS TO IMPLEMENT AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA) SECTIONS 902 AND 1515

Note: This notification is only applicable for those projects/contracts funded with ARRA funds. If you have questions, please contact MDOT Contract Services Division at (517) 335-0071.

In accordance with requirements under section 902 of the American Recovery and Reinvestment Act of 2009 (ARRA), the following language is made a part of this contract and is to be made a part of all tier subcontracts or consultant contracts:

The U.S. Comptroller General and his representatives have the authority:

(1) To examine any records of the contractor or any of its subcontractors, or any State or local agency administering such contract, that directly pertain to, and involve transactions relating to, the contract or subcontract; and

(2) To interview any officer or employee of the contractor or any of its subcontractors, or of any State or local government agency administering the contract, regarding such transactions.

The Comptroller General and his representatives have the authority and rights provided under Section 902 of the ARRA with respect to this contract. As provided in section 902, nothing in section 902 shall be interpreted to limit or restrict in any way any existing authority of the Comptroller General.

In accordance with the requirements of section 1515(a) of the ARRA any representatives of the Inspector General have the authority:

(1) To examine any records of the contractor or grantee, any of its subcontractors or sub-grantees, or any State or local agency administering such contract, that pertain to, and involve transactions relating to the contract, subcontract, grant, or sub-grant; and

(2) To interview any officer or employee of the contractor, grantee, sub-grantee or agency regarding such transactions.

Nothing set forth in section 1515 of the ARRA shall be interpreted to limit or restrict in any way any existing authority of an inspector general.

Michigan Department of Transportation

SCOPE OF SERVICE
FOR
DESIGN SERVICES

CONTROL SECTION: 70063 & 70064

JOB NUMBER: 103244 D & 102972 C, D

PROJECT LOCATION:
The project is located at 112th Avenue from north of Cleveland Street to south of I-96 and on I-96 from east of M-104 west to 112th Avenue in Crockery Township. The total project length of all work is approximately 1.5 miles.

PROJECT DESCRIPTION:
Work involved in design of the project consists of all design work (including survey, geotech, & hydraulics) necessary for construction of:

- All interchange work at 112th Avenue including: two new ramps for I-96 (eastbound off and westbound on), the reconstruction and/or realigning of the two existing 112th Avenue ramps (eastbound on and westbound off), the replacement and widening of the 112th Avenue Structure to accommodate two through lanes and opposing left turn lanes, and all additional road and approach work on 112th Avenue proper.

- The removal of 2 existing structures on I-96 over the abandoned GTW railroad (just west of the I-96/M-104 interchange), and replacement with fill.

- The extension of the I-96 eastbound on-ramp at M-104 to the new eastbound off ramp at 112th Avenue to create a new weave/merge lane.

- Removal of existing I-96 ramps at Cleveland Road (eastbound off and westbound on).

NOTE: Project displays and additional information on this project and all other projects associated with the US-31 Bypass Final Environmental Impact Statement and Record of Decision (Holland to Grand Haven) can be found at http://www.michigan.gov/mdot/0,1607,7-151-9621_11058---,00.html

MDOT reserves the right to terminate this contract work at any point during the design.

ANTICIPATED SERVICE START DATE: 08-17-2010

ANTICIPATED SERVICE COMPLETION DATE: 10-02-2011

PRIMARY PREQUALIFICATION CLASSIFICATION(S):
Roadway Rehabilitation and Rural Freeways
Short and Medium Span Bridges

SECONDARY PREQUALIFICATION CLASSIFICATION(S):
Road Design Surveys
Structure Surveys
Right of Way Surveys
Geotechnical Engineering Services
Municipal Utilities
Maintaining Traffic Plans & Provisions
Pavement Marking Plans
Permanent Non-Freeway Traffic Signing Plans
Permanent Freeway Signing Plans
Traffic Signal Design
Complex Traffic Signal Operations

DBE REQUIREMENT: 5%

MDOT PROJECT STAFF:
Project Manager
Christopher Van Norwick, PE
Cost & Scheduling Engineer
Grand Region Office
1420 Front Ave.
Grand Rapids, MI
616.451.3096
Email: vannorwickc@michigan.gov

Road Design Coordinator:
LeighAnn Mikesell, PE
Development Engineer
Muskegon TSC
2225 Olthoff Dr.
Muskegon, MI 49444
231.777.7764

Bridge Design Coordinator:
Pablo Rojas, PE
Bridge Project Manger
Lansing Design Division
Van Wagoner Building
425 W. Ottawa St.
P.O. Box 30050
Lansing, MI 48909
517.373.2232

CONSTRUCTION COST:

A. The estimated cost of construction is:

1.	**Mainline Pavement**	**$1,200,000**
2.	**Geometric Improvement**	**$**
3.	**Environmental**	**$**
4.	**Drainage**	**$**
5.	**Safety**	**$**
6.	**Non-Motorized**	**$**
7.	**Maintaining Traffic**	**$**
8.	**Miscellaneous Bridge Cost**	**$5,158,000**
9.	**Detours and Maintaining Traffic**	**$**
10.	**Permanent Pavement Markings/Signs/Signals**	**$**
11.	**Miscellaneous**	**$**
	CONSTRUCTION TOTAL	**$6,358,000**

B. The estimated cost of real estate is: $250,000

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 more than 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, 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:

Complete the design of this project including, but not limited to the following:

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.

The Consultant must meet with the MDOT Project Manager 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. Perform Design Survey as outlined in **Attachment A.** The consultant will be responsible for all topographic mapping, ROW staking, etc.

B. Perform and prepare roadway pavement and soils investigation for all proposed road and bridge work. See additional information listed below in the Geotechnical section.

C. Prepare required plans, typical cross-sections, details, alignments, and specifications required for design and construction. Through the FEIS process a significant amount of information has been gathered. Vertical and horizontal alignments have been developed. The consultant is responsible for verifying these alignments. This information and work to date will be provided to the consultant following authorization.

D. Perform all work necessary to complete design of one new bridge over 112th Avenue. The structure shall be designed with LRFD specifications, HL93 loading.

E. Prepare plans for the removal of the two existing abandoned railroad structures and replacement with fill.

F. Compute and verify all plan quantities.

G. The consultant shall prepare staging plans and special provisions for Maintaining Traffic. As part of the Maintaining Traffic, conduct a comprehensive mobility analysis and investigate alternative maintenance of traffic schemes. If the threshold criteria contained in MDOT's Work Zone Safety and Mobility Policy are exceeded, mitigation measures shall be analyzed and recommended. The consultant shall prepare a Transportation Management Plan per the Work Zone Safety and Mobility

Manual which shall include a Temporary Traffic Control Plan, a Transportation Operations Plan and a Public Information Plan.

H. The Consultant will be required to coordinate work in this project with work on other projects being designed either by MDOT or other consulting firms.

I. Perform a drainage study. This will include design plans, specifications and related hydraulic analysis for design of this project, including backwater calculations and design of any stormwater detention facilities (if required).

J. Prepare and submit electronically (native format or Adobe PDF) any information, calculations, hydraulic studies, or drawings required by MDOT for acquiring any permit (ie. NPDES, DEQ, etc), approvals (i.e. county drain commission) and related mitigation. MDOT will submit permit requests.

K. Identify all utility conflicts and provide design plans for any municipal utility relocations required as a result of the project, including any permits required by the municipality. It is also anticipated Crockery Township may participate in the installation of a new water main to the south side of I-96 at 112th.

L. Prepare pavement marking plans and special provisions.

M. Prepare traffic signal plans and special provisions.

N. Prepare permanent signing plans and special provisions for freeway and non-freeway sign upgrading and/or relocation or replacement where necessary.

O. Prepare all required overhead sign truss and cantilever plan sheets, details and specifications.

P. Prepare Preliminary and Final ROW Plans, as well as final description detail sheet. Purchasing and obtaining all permits and/or permanent Right-of-Way along with marked Final ROW Plans will be done by MDOT's Grand Region Real Estate Division. The Consultant shall provide all submittals in electronic files and information to MDOT's Grand Region Real Estate Division.

Q. The Consultant will be required to submit final OEC plans to the Grand Region Office for a two week QA review prior to the scheduling of the OEC. The consultant will be required to perform all changes required from the Region's QA review and then re-submit the package to the Project Manager for distribution to the final OEC attendees for their 2

week review prior to the OEC meeting. The Consultant shall incorporate this time into their design schedule.

R. Incorporate aesthetic treatments on all proposed bridges and wall structures, as approved by MDOT.

S. Prepare Design Exception Requests if necessary for road and/or bridge issues (ie: transition rates, SSD, shoulder widths, under clearance, etc.) a list of possible design exceptions will be required at the Base Plan Review, with final drafts being submitted at the Plan Review Meeting

T. Provide solutions to any unique problems that may arise during the design of this project.

U. 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.

V. 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.

W. If excavation is required, submit the excavation locations which may contain contamination. Project Manager then can proceed in requesting a Preliminary Project Assessment (PPA).

X. The Consultant shall be required to prepare and submit a CPM network for the construction of this project.

Y. 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.

Z. 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. <u>TRNS-PORT estimates will be required with all milestone meetings from (and including) The Plan Review to the end of the project.</u> The Consultant shall contact the Project Manager prior to the submittal dates for the exact number of copies that will be required for submittal. The following is an estimate of the number of copies that will be needed; 6 sets – Pre-OEC, 6 sets - OEC Review. Some or all of the hard copy sets may be required to be mailed.

AA. Attend any project-related meetings as directed by the MDOT Project Manager.

BB. Consultant will be responsible for holding regular status meetings with the project team (schedule to be determined by MDOT).

CC. 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.

DD. Attend, prepare and compile information to be used in the Value Engineering Study that will be required for this project.

EE. Attend, prepare, and present necessary presentations for public and/or high-level stakeholder information meetings, such as any context sensitive aesthetic issues.

FF. 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.

GG. The MDOT Project Manager shall be the official MDOT contact person for the Consultant **and shall be made aware, and authorize, 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.

HH. 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.

GEOTECHNICAL

In addition to requirements for the Roadway Geotechnical Investigation (P/PMS Task 3510), this work shall be performed in two phases. The first phase shall provide general site conditions to a level such that the investigation is approximately 30 % complete. The remaining 70%, which will be conducted in the second phase, shall be focused based on findings in the first phase. Provide subsurface investigation and geotechnical analysis necessary to develop the construction plans and quantities. The proposed subsurface investigation plans shall be approved by the MDOT region Soils and Materials Engineer prior to beginning work in either phase. Provide interim report after phase I and final report after phase II.

Roadway geotechnical boring shall be drilled every 200’ on alignment to a depth of ten feet. Where unsuitable soils are encountered, boring frequency shall be shall be drilled on a 50 foot by

50 foot grid in the area influenced by the proposed roadway (or fill) to a depth of either 10 feet or 5 feet into suitable soils, whichever is greater.

The Structure Foundation Investigation, in addition to the requirements of (P/PMS Task 3530) and the current AASHTO LRFD code, shall be performed in two phases. The first phase shall define the soil profile and bedrock strata to a level such that the investigation is approximately 30 % complete. The remaining 70%, which will be conducted in the second phase, shall be focused based on findings in the first phase. Provide subsurface investigation and geotechnical analysis necessary to develop the construction plans and quantities. The proposed subsurface investigation plans shall be approved by the MDOT Foundation Analysis Engineer prior to beginning work in either phase. Provide interim report after phase I and final geotechnical report after phase II. The geotechnical report shall provide the subsurface investigation and geotechnical analysis necessary for design using the current AASHTO LRFD bridge code. If driven pile foundations are recommended, subsurface investigation depth shall be sufficient, to estimate pile length, for piles driven using the FHWA modified Gates Formula, with a resistance factor of 0.4.

UTILITIES

The Consultant shall be responsible for obtaining existing utility plans from MDOT and showing on the proposed design 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 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 and provide minutes and action item lists from those meetings. The Consultant shall assist in the review of utility permit requests to ensure compatibility with the project. The Consultant shall provide for the survey staking of various proposed facilities, and existing ROW so as to locate potential utility conflicts and aid in the completion of utility relocation plans for all municipal and private utility companies. The consultant shall verify any utility information (location, size, type, etc.) through researching historical as-built information for the project area.

TRAFFIC CONTROL

The Consultant shall be responsible for all traffic control or TMP's required to perform the tasks as outlined in this Scope of Design Services. All traffic control must be coordinated with and approved by the Traffic & Safety Engineer prior to implementation.

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).

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:
    0. Project related meetings
    0. The Base Plan Review
    0. The Plan Review
    0. The OEC Meeting
    0. Utility Meetings
    0. ROW negotiations
    0. Quantity summary sheets and final item cost estimates
    0. Packaging of plans and proposal
    0. Stakeholder engagement meetings

. Furnish location maps and other available information from the FEIS.

. Furnish design work and files completed to date with the EPE process.

. Furnish Survey Control Information, if available.

. Furnish Special and Standard 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.

. Coordinate any necessary utility relocation.

. Safety Reviews for any required design exceptions.

. Final QA Review and Approval of plans prior to submittal for OEC review and plan completion.

. Furnish FTP site for software download and instructions for the MDOT Stand Alone Proposal Estimator's Worksheet (SAPW).

. Review and approve all external communications.

. Review and approve all budget, schedule, and final design aspects.

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. Typical Cross-Sections.

D. Project specific Special Details.

E. Construction staging and traffic control plans.

F. Detail grade sheets for major intersections, ramp gores and critical areas.

G. Paving details.

H. Pavement marking plan(s).

I. Culvert detail sheet(s).

J. Vicinity and drainage map sheet.

K. Alignment sheet.

L. Witness and benchmark sheet(s).

A. Soil boring log sheet(s).

B. Bridge Plans and details.

C. Right of Way - Required details.

D. Detention sheet(s)

E. Wetland sheet(s), if required.

F. Signal sheet(s)

G. Municipal utility design sheet(s)

H. Signing sheet(s)

I. Guardrail sheet(s)

J. Non-motorized sheet(s), if required.

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.

MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST

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)

YES	NO	P/PMS TASK NUMBER AND DESCRIPTION	DATE TO BE COMPLETED BY (mm/dd/yyyy)
		EPE SCOPING ANALYSIS	
☐	☒	2120 Prepare Traffic Analysis Report	__/__/____
☐	☒	2130 Prepare Project Justification	__/__/____
☐	☒	*213M Concurrence by Regulatory Agencies with the Purpose and Need*	__/__/____
☐	☒	2140 Develop and Review Illustrative Alternatives	__/__/____
☐	☒	2155 Request/Perform Safety Analysis	__/__/____
☐	☒	2160 Prepare and Review EIS Scoping Document	__/__/____
☐	☒	*211M Public Information Meeting*	__/__/____
		EPE DRAFT ANALYSIS	
☐	☒	2310 Conduct Technical SEE Studies	__/__/____
☐	☒	2321 Prepare for Aerial Photography	__/__/____
☐	☒	2322 Finish/Print Aerial Photography	__/__/____
☐	☒	2330 Collect EPE Geotechnical Data	__/__/____
☐	☒	2340 Develop and Review Practical Alternatives	__/__/____
☐	☒	*233M Aerial Photography Flight*	__/__/____
☐	☒	2360 Prepare and Review EA or DEIS	__/__/____
☐	☒	*231M Draft Submission to FHWA*	__/__/____
☐	☒	2380 Circulate EA or DEIS	__/__/____
☐	☒	*232M Public Hearing*	__/__/____
		EPE FINAL ANALYSIS	
☐	☒	2510 Determine and Review Recommended Alternative	__/__/____
☐	☒	*250M Concurrence by Regulatory Agencies with Recommended Alternatives*	__/__/____
☐	☒	2525 Prepare and Review Engineering Report	__/__/____
☐	☒	2530 Prepare and Review Request for FONSI or FEIS	__/__/____
☐	☒	*252M Final Submission to FHWA*	__/__/____
☐	☒	2550 Obtain FONSI or ROD	__/__/____
		CONTAMINATION INVESTIGATION	
☐	☒	2810 Project Area Contamination Survey (PCS)	__/__/____
☐	☒	2820 Preliminary Site Investigation (PSI) for Contamination	__/__/____

MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST

PRELIMINARY ENGINEERING - DESIGN

		P/PMS TASK NUMBER AND DESCRIPTION	DATE TO BE COMPLETED BY
YES	NO		(mm/dd/yyyy)
		DESIGN SCOPE VERIFICATION AND BASE PLAN PREPARATION	
☒	☐	3130 Verify Design Scope of Work and Cost	07/07/2010
☐	☒	3310 Prepare Aerial Topographic Mapping	__/__/____
☐	☒	3320 Conduct Photogrammetric Control Survey	__/__/____
☐	☒	3321 Set Aerial Photo Targets	__/__/____
☒	☐	3330 Conduct Design Survey	11/01/2010
☒	☐	3340 Conduct Structure Survey	__/__/____
☐	☒	3350 Conduct Hydraulics Survey	__/__/____
☐	☒	3360 Prepare Base Plans	__/__/____
☐	☒	*331M Utility Notification*	__/__/____
☒	☐	3361 Review and Submit Preliminary ROW Plans	__/__/____
☒	☐	*331M Preliminary ROW Plans Distributed*	__/__/____
☒	☐	3370 Prepare Structure Study	__/__/____
☐	☒	3375 Conduct Value Engineering Study	__/__/____
☐	☒	3380 Review Base Plans	__/__/____
☐	☒	*332M Base Plan Review (Pre-GI Inspection)*	__/__/____
☒	☐	3390 Develop the Maintaining Traffic Concepts	__/__/____
		PRELIMINARY PLANS PREPARATION	
☒	☐	3510 Perform Roadway Geotechnical Investigation	10/14/2010
☐	☒	3520 Conduct Hydraulic/Hydrologic and Scour Analysis	__/__/____
☐	☒	3522 Conduct Drainage Study, Storm Sewer Design, and use Structural Best Management Practices	__/__/____
☒	☐	3530 Conduct Structure Foundation Investigation	10/14/2010
☐	☒	3535 Conduct Structure Review for Architectural and Aesthetic Improvements	__/__/____
☒	☐	3540 Develop the Maintaining Traffic Plan	01/05/2011
☒	☐	3551 Prepare/Review Preliminary Traffic Signal Design Plan	__/__/____
☒	☐	3552 Develop Preliminary Pavement Marking Plan	__/__/____
☒	☐	3553 Develop Preliminary Non-Freeway Signing Plan	__/__/____
☒	☐	3554 Develop Preliminary Freeway Signing Plan	__/__/____
☒	☐	3555 Prepare/Review Preliminary Traffic Signal Operations	__/__/____
☒	☐	3570 Prepare Preliminary Structure Plans	__/__/____
☒	☐	3580 Develop Preliminary Plans	01/31/2011
☒	☐	3581 Review and Submit Final ROW Plans	__/__/____
☐	☒	*351M Final ROW Plans Distributed*	__/__/____
☐	☒	3590 Review Preliminary Plans (Hold Plan Review Meeting)	__/__/____
☐	☒	*352M THE Plan Review (Grade Inspection)*	02/15/2011

MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST

PRELIMINARY ENGINEERING - DESIGN (cont'd)

		P/PMS TASK NUMBER AND DESCRIPTION	DATE TO BE COMPLETED BY
YES	NO		(mm/dd/yyyy)
		UTILITIES	
☒	☐	3610 Compile Utility Information	__/__/____
☐	☒	3650 Coordinate RR Involvement for Grade Separations	__/__/____
☐	☒	3655 Coordinate RR Involvement for At-Grade Crossings	__/__/____
☒	☐	3660 Resolve Utility Issues	__/__/____
☐	☒	*360M Utility Conflict Resolution Plan Distribution*	__/__/____
☐	☒	*361M Utility Meeting*	__/__/____
☒	☐	3670 Develop Municipal Utility Plans	__/__/____
☐	☒	3672 Develop Special Drainage Structures Plans	__/__/____
☐	☒	3675 Develop Electrical Plans	__/__/____
		MITIGATION/PERMITS	
☐	☒	3710 Develop Required Mitigation	__/__/____
☐	☒	3720 Assemble Environmental Permit Applications	__/__/____
☐	☒	3730 Obtain Environmental Permit	__/__/____
		FINAL PLAN PREPARATION	
☒	☐	3821 Prepare/Review Final Traffic Signal Design Plan	__/__/____
☒	☐	3822 Complete Permanent Pavement Marking Plan	__/__/____
☒	☐	3823 Complete Non-Freeway Signing Plan	__/__/____
☒	☐	3824 Complete Freeway Signing Plan	__/__/____
☒	☐	3825 Prepare/Review Final Traffic Signal Operations	__/__/____
☒	☐	3830 Complete the Maintaining Traffic Plan	__/__/____
☒	☐	3840 Develop Final Plans and Specifications	05/16/2011
☐	☒	*380M Plan Completion*	06/02/2011
☒	☐	3850 Develop Structure Final Plans and Specifications	__/__/____
☐	☒	3870 Hold Omissions/Errors Check (OEC) Meeting	__/__/____
☐	☒	*387M Omissions/Errors Checks Meeting*	06/15/2011
☐	☒	*389M Plan Turn-In*	07/09/2011
☐	☒	3880 CPM Quality Assurance Review	__/__/____

MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST

PRELIMINARY ENGINEERING – RIGHT OF WAY

		P/PMS TASK NUMBER AND DESCRIPTION	DATE TO BE COMPLETED BY
YES	NO		(mm/dd/yyyy)
		EARLY RIGHT OF WAY WORK	
☐	☒	4120 Obtain Preliminary Title Commitments	__/__/____
☐	☒	4130 Prepare Marked Final Right Of Way Plans	__/__/____
☐	☒	*413M Approved Marked Final ROW*	__/__/____
☒	☐	4140 Prepare Property Legal Instruments	__/__/____
		ROW ACQUISITION	
☐	☒	4411 Preliminary Interviews	__/__/____
☐	☒	*441M Post-Decision Meeting*	__/__/____
☐	☒	4412 Real Estate Services Assignment Proposal and Fee Estimate (Form 633s) for Appraisal Work Authorization	__/__/____
☐	☒	4413 Appraisal Reports	__/__/____
☐	☒	4420 Appraisal Review Reports	__/__/____
☐	☒	4430 Acquire Right Of Way Parcels	__/__/____
☒	☐	4510 Conduct Right Of Way Survey & Staking	__/__/____
		ROW RELOCATION	
☐	☒	4710 Relocation Assistance	__/__/____
☐	☒	4720 Prepare Improvement Removal Plan	__/__/____
☐	☒	*442M ROW Certification*	__/__/____

PAYMENT SCHEDULE

Compensation for this Scope of Services shall be on an **actual cost plus fixed fee** basis.

CONSULTANT PAYMENT:

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.

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

ATTACHMENT A

SURVEY SCOPE OF WORK

Survey Limits: As needed for Design, Right of Way, and Construction. A description of survey limits detailing length, width and cross roads must be included in the Survey Work Plan.

NOTES: The Selected Consultant shall discuss the scope of this survey with the Grand Region Development Manager – Bart Franklin at 616-451-3091 before submitting a priced proposal.

The Selected Consultant surveyor must contact the MDOT Traffic and Safety Engineer- Tim Terry at 231-777-3451 with the MDOT Muskegon TSC for work restrictions in the project area prior to submitting a priced proposal.

A **detailed Survey Work Plan** **must** be included in the project proposal. A **spreadsheet estimate** of hours by specific survey task such as traversing, leveling, mapping, etc., **must** be included in the **priced proposal**.

This design survey is an attachment to the original design scope of work but serves and will be submitted as a stand alone MDOT Professional Design Survey, as outlined in this scope and the Design Survey *Standards of Practice* dated March 2009. Design survey man and task hours for this project must be reviewed and discussed with the Region Surveyor through the MDOT Project Manager prior to finalizing the cost proposal. A copy of the design survey portfolio, in digital and hard copy format, must be submitted to the Region Surveyor when the survey is complete according to the project timelines set forth in the original design scope of work. Early submittals of the project control, horizontal and vertical least squares adjustments are encouraged as soon as the consultant surveyor finishes the task.

This project will require the use of previously established horizontal and vertical control by MDOT (fall 2007) for the basis of this projects coordinate system. MDOT set a number of primary monuments throughout the proposed new M-231 bypass route that are tied to the MSRN and being NAD83 (CORS)/NAVD88 state plane coordinates. The Consultant should plan on densifying the MDOT control, as needed, to conform to the March 2009 Survey *Standards of Practice* and needed for the design/construction of this project. A previous MDOT Consultant survey project (JN: 88887 & 88888) was conducted in the summer of 2008 and contains intermediate project control from Sleeper St. to Cypress St. and will be made available for use on this project.

A Survey Check Shot Report is to be supplied in the mapping portion of the final project portfolio detailing the date, time, coordinates, and differences between the check shot and the adjusted project control coordinates for each day survey takes place. These check shots should be coded as "CHK" and left in the final CAiCE deliverable file. The intent of this is for the check shot to serve as a record check on that days survey data.

This project will require the computation of the existing MDOT ROW/Property through the project limits. The Consultant shall contact the MDOT Grand Region Real Estate Agent- Peter Loftis at 616-451-7073 to discuss any real estate transactions that may have occurred on this project and also obtain copies of any deed or easement descriptions that may be available.

This project may require additional survey pickup and utility/right-of-way staking to supplement the original design survey if the MDOT Project Manager deems necessary. This miscellaneous survey pickup may or may not be needed and is contingent on the design needs for this project. Miscellaneous staking of utilities and right-of-ways may be needed to resolve conflicts or otherwise bring to light a potential conflict. The intent of this miscellaneous survey pickup and staking is to supplement the original design survey, as needed, to clarify questionable areas during the design process. A total of 120 man hours should be included in the cost proposal and designated as "miscellaneous pickup".

This project will require the Consultant surveyor to review MDOT plans for their prime Consultant for survey specific information like, but not limited to, the standard plan note G-28 state plane coordinates (with the appropriate project scale factor) is shown on the note sheet; control, benchmarks, and alignment point coordinates are properly shown and listed on the plans sheets; PLSS, property controlling, alignment, and any other survey corners located in this survey are shown on the plans with the appropriate "protect or preserve" designation; project alignments are shown and dimensioned correctly and tied to near PLSS corners; section lines are labeled and dimensioned properly; existing ROW lines are depicted and referenced to the appropriate alignment (ex. legal survey alignment). This task is to be completed by the Survey Consultant QA/QC officer at each stage of the plan submittals to MDOT, ex. base plans, preliminary plans, and OEC plans with a total of 15 man hours allocated for this task in the cost proposal and designated as "Plan Review".

It is the responsibility of the Professional Surveyor to safeguard all corners of the United States Public Land Survey System, published Geodetic Control and any other Property Controlling corners that may be in danger of being destroyed by the proposed construction project.

GENERAL REQUIREMENTS:

1. Surveys must comply with **all Michigan law** relative to land surveying.

2. Surveys must be done under the **direct supervision** of a Professional Surveyor licensed to practice in the State of Michigan.

3. Work in any of the following categories of survey: Road Design, Structure, Hydraulic, Right-of-Way, and/or Ground Control (Photogrammetric) must be completed by a survey firm which is pre-qualified by MDOT for that category.

4. Surveys must meet all requirements of the Michigan Department of Transportation (MDOT) Design Surveys *Standards of Practice* dated March 2009, the MDOT Design Survey Manual on-line, and the MDOT RTK guidelines. Please contact the Design Survey office to clarify any specific questions regarding these standards.

5. Consultants must obtain all necessary permits required to perform this survey on any public and/or private property, including an up-to-date permit from the MDOT Utilities

   Coordination and Permits Section.

6. 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 (which must be minimized), and an MDOT contact person (the MDOT Project Manager or designate).

7 The Consultant must contact any and all Railroads prior to commencing field survey on railroad property. The cost for any permit, flaggers and/or training that is required by the Railroad will be considered as a direct cost, but only if included in the Consultant's priced proposal.

8. 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.

9. Consultants are responsible for a comprehensive and conscientious research of all records, including MDOT records, essential for the completion of this project.

10. Measurements, stationing, recorded data, and computations must be in **International Feet**, unless specified otherwise by the MDOT Project Manager.

11. Coordinate values shall be based upon the Michigan State Plane coordinate system NAD83 (CORS). All elevations must be based upon the North American Vertical Datum of 1988 (NAVD88). The datums must be clearly stated in the Survey Work Plan. A

preliminary submittal of the adjusted Horizontal and Vertical control for the project may be submitted to the MDOT Survey Consultant Coordinator or Region Surveyor for review and acceptance as soon as it is available.

12. The survey notes must be submitted to the Design Survey Unit in 10" by 12" divided portfolios with flap covers. As many portfolios should be used as are needed to contain all of the required documents and Compact Discs (CD's) or DVD's. **Duplicate CD's must be included in the portfolio, with one set labeled "Region Surveyor".**

13. Each portfolio must be labeled on the outside as in the following example:

    Survey Notes for:
    Route, Location and Project Limits [I-94 under Beaubien Street]
    Control Section [S06 of 82024] Job Number [45197D] Date [*of submittal*]
    By [*Name of Firm*]
    Michigan Professional Surveyor [ ] License # [ ]

14. Each submittal is to be divided into six sections. These sections are to be labeled as follows: **Administrative, Alignment, Control**, **Property**, **Mapping**, and **Miscellaneous**.

15. **All data**, whether electronic or paper, **must be recorded on non-rewritable Compact Discs (CD's) or DVD's**. <u>All</u> paper files, including MicroStation files, must be scanned and/or converted to Adobe Acrobat .PDF format. CD's must be organized in the same manner as the portfolio, such as by Administrative section, Control section, etc. A Table of Contents in Adobe Acrobat format is required that has all .PDF pages of the CD bookmarked/linked so each place in the .PDF archive can be accessed with a single click of the computer mouse. Specified format files such as ASCII text, CAiCE and MicroStation must have separate access in native format outside of the .PDF file. CD's must be labeled with the control section, job number, data type and file names. It is not necessary to label each individual paper page in the portfolio.

16. Each category of survey must be packaged separately (i.e., Structure surveys separate from Road surveys and Hydraulic surveys). CD's must be labeled with the Control Section, Job Number, data type and file names.

17. The Consultant representative shall record and submit typewritten 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.

18. The MDOT Project Manager is the official contact for the Consultant. The Consultant must send a copy of all project correspondence to the MDOT Project Manager. The MDOT Project Manager shall be made aware of all communications regarding this project. Any survey related questions regarding this project should be directed to a

Survey Consultant Project Manager or MDOT Region Surveyor.

At the completion of this survey for this project, legible copies of all field survey notes, all electronic data, and all research records obtained for this project will be considered the property of MDOT and **must be sent to** the MDOT, Design Support Area, Supervising Land Surveyor, P.O. Box 30050, Lansing, MI 48909. Please use MDOT's Form 222(5/01) entitled "SURVEY NOTES: RECEIPT AND TRANSMITTAL" for all transmittals. A copy of this transmittal form must also be sent to the MDOT Project Manager for Design.

Acceptance of this survey by the MDOT Supervising Land Surveyor and/or the MDOT Project Manager does not relieve the Consultant of any liability for the content of the survey.

WORK RESTRICTIONS

The Selected Consultant, and the Selected Consultant only, is advised to discuss Traffic Control scenarios with the MDOT Traffic and Safety Engineer at the closest MDOT TSC prior to submitting a priced proposal.

No work shall be performed or lane closures allowed during the Memorial Day, July 4th, or Labor Day holiday periods, as defined by the MDOT Project Manager or representative specifically designated by the Project Manager.

The Consultant must call the MDOT Region or TSC Traffic and Safety Engineer before beginning work to inform him or her of surveying activity in the area. The MDOT Region or TSC must be notified at least two weeks prior to lane closures so advance notice can be posted on the Web site.

Traffic shall be maintained by the Consultant throughout the project in accordance with Sections 812, 922, 103.05 and 103.06 of the *Standard Specifications for Construction,* 2003 edition, www.mdot.state.mi.us/specbook/, and Supplemental Specification 03SS001(2) Errata to the 2003 Standard Specifications and all other supplemental specifications currently in effect against the Standard Specifications for Construction. All traffic control devices shall conform to the current edition, as revised, of the *Michigan Manual of Uniform Traffic Control Devices* (MMUTCD). All warning signs for maintenance of traffic used on this project shall be fabricated with prismatic retro-reflective sheeting, and shall be set up five feet above ground.

The Consultant shall use MDOT standard "maintaining traffic" typicals for any and all closures.

Typical MDOT traffic control diagrams are available on line at
www.mdot.state.mi.us/tands/plans.cfm

COORDINATION WITH OTHER CONTRACTS IN THE VICINITY

The Consultant shall coordinate his operations with contractors performing work on other projects within or adjacent to the Construction Influence Area (CIA).

The Consultant's attention is called to the requirements of cooperation with others as covered in Article 104.07 of the 2003 Standard Specifications for Construction. Other contracts or maintenance operations may occur during the life of the project.

No claim for extra compensation or adjustment in contract unit prices will be allowed on account of delay or failure of others to complete work unit scheduled.

FIELD SURVEY

The purpose of the field survey is to obtain all information and data required by the project design engineer, to leave control in the field for future construction staking, and to provide a sufficient history of the area to enable the MDOT Design Survey Unit to perform dependable surveys in the future. The Consultant surveyor must discuss the scope of this survey with the project design engineer before initiating any work on this project. Notes of this meeting and a detailed Survey Work Plan with an estimate of hours broken down by specific survey task must be submitted to the MDOT Project Manager and Survey Consultant Project Manager within two weeks of this meeting.

CONTROL

A three dimensional control system must be established throughout the project area. This control shall be based on the Michigan State Plane Coordinate System NAD1983 (CORS) horizontal datum and NAVD 1988 vertical datum. All subsequent control must be based on the established control. Any traverse points or bench marks established must adhere to the Michigan Department of Transportation (MDOT) Design Surveys *Standards of Practice* dated March 2009 and be listed in the Control pocket of the portfolio. Contact the MDOT Survey Consultant Coordinator for existing control in the area.

OPUS positioning may be used as a check, and for positioning Primary Control as defined in the MDOT *Standards of Practice* for Design Survey March 2009. For any and all OPUS solutions, a RINEX format file with a minimum of two hours of GPS data must be included, as well as the OPUS solution (extended version) from NGS. All OPUS solutions must be verified within 0.20 foot, either by a separate OPUS solution from an independent occupation, or by a NGS/CORS adjustment.

If GPS-derived elevations are used, the Surveyor's Report and the Witness List and Witness Sheet for the project must clearly state that the vertical datum is "NAVD 1988 GPS-derived from Geoid 03."

A mapping control point that is a rebar in the ground should not be considered a benchmark. The elevation of a rebar that is a control point should be verified or re-established prior to use as

a benchmark.

The Witness list sheet for this project must have a formula for grid to ground conversion, and a statement that a mapping control point that is a rebar in the ground should not be considered a benchmark, and its elevation should be verified or re-established prior to use.

All Witness lists, for horizontal control, benchmarks, government corners, and alignment points, must use all capital letters exclusively. Capital letters are easier to read on half-size plan sheets.

GOVERNMENT CORNERS

Any PLSS corners within the project limits must be recovered or established and tied to the project coordinate system. Any PLSS corners necessary for legal alignment determination and/or property ties for Right of Way issues must be recovered or established and tied to the project coordinate system.

All PLSS corners must be recorded in accordance with PA 74 of 1970, as amended, and all applicable administrative rules. A copy of each recorded Land Corner Recordation Certificate must be submitted to the MDOT Design Survey Office as part of the final report. All PLSS corners located in hard surface roads must be protected by a monument box, regardless of impending construction. The Consultant shall provide to the Survey Consultant Project Manager a list of any affected Government or Property Controlling Corners in the detailed work plan for discussion or approval.

The Consultant surveyor must contact the County Remonumentation Representative prior to beginning work on the project to inform him of proposed corner perpetuation activities, and to obtain information pertinent to PLSS corners and/or property controlling corners affected by project construction.

All **monument boxes** through the project area must be accounted for by the Consultant surveyor, shown on the project mapping, and have a recorded LCRC submitted in the survey portfolio.

ALIGNMENT

Since most existing alignment points locate and define the boundary between the public Right of Way and private ownership, legal alignment points are considered Property Controlling Corners and must be recovered and recorded in accordance with PA 74 of 1970, as amended, and all applicable administrative rules. A copy of each recorded Land Corner Recordation Certificate must be submitted in the Property Section of the final portfolio.

The Consultant must clearly define in the Work Plan what type of alignment(s) is proposed, Legal or As Constructed, how the stationing will be established, and whether or not the

alignment(s) will be staked in the field.

An **alignment sheet** must be prepared and submitted that shows the alignment(s) with stationing and coordinates, and the source of stationing, curve data, and the alignment definition (As Constructed or Legal). All alignments must be **annotated** as in the following examples: As Constructed alignment for CS 45011 as surveyed in 2006, or Legal Alignment of 1952 for CS 38016 as surveyed in 2007. Showing government corners with distances along government lines to the alignment are also appropriate for this CADD drawing. MicroStation is the recommended format. Some tangents may be graphically shortened to "shrink" the drawing to fit paper size.

The Consultant must provide an **alignment control point list with witnesses** in ASCII format for all alignment points found or set. This list must include include datum, point designations, descriptions, coordinates, combined Scale Factor, and witnesses. This list may be appended to the witness list for horizontal and vertical control points. Witness lists must use only uppercase letters.

All **monument boxes** through the project area must be accounted for by the Consultant surveyor, shown on the project mapping, and have a recorded LCRC submitted with the survey portfolio.

MAPPING

The Consultant must submit a **CAiCE software file, named MDOTjob#.zip**, utilizing CAiCE's built-in archive feature, of all survey mapping points and data files for the mapping area. If a Digital Terrain Model is needed for the project, it must be created in CAiCE and named EXRD. **The CAiCE software used must be Version 10.6 or newer.**

The Consultant is responsible for using the latest MDOT CAiCE Feature Codes, files and Plans Production tugboat (macro), available on the MDOT Design Survey File Transfer Protocol (FTP) site at **ftp://ftp.michtrans.net**/. The consultant Username is "survcons." The consultant Password is $urvcon$. The tugboat can also be used to convert CAiCE files into Geopak and MicroStation formats.

The Consultant must provide an electronic **MicroStation Intergraph Version 8 format file** of the mapping area. This must be named MDOTjob#pl.dgn, for example **79023Cpl.dgn,** and must be submitted **in a sub-directory outside of the CAiCE archive file** named "MicroStation." The MicroStation file will be a 2-D file of the planimetric features including contours. This file must be sized appropriately, utilize the seed file **seedrd_c.dgn** with working units of 1000, 1, and be compiled in standard MDOT format. The Consultant is responsible for using the latest MDOT Resource files, color table, and cell files, available on the MDOT File Library site under CAD_V8. Go to http://mdotwas1.mdot.state.mi.us/public/bbs/

For a comprehensive list of MicroStation level designations, contents and line attributes, refer to the "MDOTV8LEVEL.pdf" table located on the MDOT Design Survey File Transfer Protocol

web site. This table replaces the former Attachments AA, C & D. Also in the ftp site, the Consultant should refer to the V8GROUP&ALPHA LIST.pdf file for Data Collection Codes.

The Consultant must also submit **files created from CAiCE that are formatted for design in Geopak** software. This can be accomplished by using the MDOT Plans Production CAiCE Tugboat available on the MDOT Design Survey FTP site. The Consultant must submit a 3D MicroStation Triangle file, a Survey Chain (TIN Boundary) around the edited Triangle file with the name and Feature "CLIP", a Job#.OBS file, a Job#.KCP file, a Job#.XYZ file and a Job#.ALI file. Each alignment must be computed separately and uniquely named to include the JN and a description, such as 79585_AsC_Wbd.ALI. These files must be submitted electronically **in a subdirectory outside of the CAiCE archive file** named "Geopak."

DRAINAGE

GENERAL SCOPE OF SURVEY FOR CULVERT WITH UNDER 2 SQ. MI. DRAINAGE AREA

1. Four cross sections of the stream:
    - One at the upstream face of the culvert,
    - One at the downstream face of the culvert,
    - One cross section downstream where the channel returns to its natural state (outside the influence of the road embankment and ditch line),
    - One cross section upstream where the channel returns to its natural state.
    - If the culvert is to be extended beyond these limits, take a section at the location of the proposed upstream and downstream face of the culvert.
    - Take sections left and right approximately 50 feet outside the top of bank.

2. Ten water surface elevation and stream flow line (bottom) elevations:
    - 5 at 50-foot intervals upstream of the most upstream cross section, starting 50 feet from the cross section.
    - 5 at 50-foot intervals downstream of the most downstream cross section, starting 50 feet from the cross section.

3. A sketch of the structure with length, dimensions, and type (RCP, CMP, etc.) of culvert, as well as invert elevations, crown elevations, channel flow line elevations, and footing elevations (if applicable) at both ends.

4. A road profile along the crown of the highway
1.
5. Top width of roadway, shoulder to shoulder.

6. Pictures looking upstream and downstream of the culvert, pictures of the upstream and downstream face, and pictures looking up and down the road.

7. Names and addresses of the riparian owners in the four quadrants of the structure.

POST SURVEY CLEAN-UP

Once the survey is complete, all stakes must be removed to aid the maintenance crews and adjacent property owners. All benchmarks and control points and their witnesses must remain in place.

FINAL REPORT: DELIVERABLES

The final report for this project shall include:

1. In the first pocket of the portfolio, labeled **ADMINISTRATIVE**, the following will appear:
   - MDOT's Form 222(5/01) entitled "SURVEY NOTES: RECEIPT AND TRANSMITTAL"
   - The project's Professional Surveyor's Report on company letterhead consisting of:
     - A comprehensive synopsis of the work performed on this project, signed **and sealed** by the project's Professional Surveyor.
     - The source and methods used to establish the project horizontal and vertical control and alignment(s) for this project.
     - A detailed explanation of anything discovered during the survey of this project that may create a problem for the designer or another surveyor.
   - CD or DVD with all documents scanned or converted into PDF files. Each page must be inserted in a master PDF file and bookmarked for easy retrieval. An example can be provided upon request.
   - MDOT QA/QC Checklist.

2. In the second pocket of the portfolio, labeled **ALIGNMENT**, the following will appear:
   - An annotated CADD drawing of the alignment(s), showing:
     - A statement defining the alignment(s) as **legal or as constructed**
     - Stationing, source of stationing, and station equation to existing stationing
     - Horizontal coordinates of P.I.'s, at a minimum
     - Curve data
     - Alignment points found or set
     - Control points
     - Reference lines and angles of crossing (if appropriate)
     - Government corners and ties to government lines
   - Witness list for the alignment points found or set, which shows coordinates, stationing and four witnesses for each alignment point. Witness lists must use only uppercase letters.
   - LCRC's for alignment points found.

3. In the third pocket of the portfolio, labeled **CONTROL**, the following will appear:
   - Documentation of horizontal and vertical datum sources.

- OPUS documentation
- Least squares adjustments for the horizontal and vertical control.
- Text files in ASCII format, hard copy and on CD, which contain the witness lists for the horizontal alignment ties, horizontal control points, benchmarks and government corners. All witness lists must note the datum(s), a combined scale factor for state plane grid-to-ground conversion, and an example thereof. Witness lists must use only uppercase letters.
- A MicroStation V8 file showing the data in d. above.

4. In the fourth pocket of the portfolio, labeled **PROPERTY**, the following will appear:
   - Tax maps and descriptions with owner names, addresses and phone numbers, if Right of Way is to be acquired.
   - Maps, plats, and recorded surveys.
   - Documents such as plats, Act 132 Certificates and/or tax maps marked with point numbers as property ties, if Right of Way is to be acquired.
   - Legible **recorded** copies of all Land Corner Recordation Certificates (LCRC) filed for the government corners (PLSS corners and Property Controlling Corners) used for computations and/or in danger of obliteration by impending construction.

5. In the fifth pocket of the portfolio, labeled **MAPPING**, the following will appear:
   - Mapping file in MicroStation V8 format, and also converted to .PDF format. Hardcopy signed and sealed. All point and line descriptions must use only upper case letters.
   - An archived CAiCE software file.
   - Geopak files.
   - All field survey notes and electronic mapping data used for the project. It is not necessary to submit electronic raw survey data in hardcopy form.
   - All supporting and supplemental information or data, such as drainage and utilities, electronically only if possible.

6. In the sixth pocket of the portfolio, labeled **MISCELLANEOUS**, the following will appear:
   - Any photographs taken for clarity of an area
   - Any newspaper clippings related to the project
   - Any information not covered in this scope that will be of benefit to the designer or another surveyor

General Notes

a. is the responsibility of the Consultant to insure that all electronic files submitted to MDOT conform to the required format and that all documents are legible.

a. The Consultant must organize and label the various sections of the portfolio as required by the *Standards of Practice* for MDOT Design Surveys dated March 2009.

b. All research documents are required to be scanned and placed on the CD.

c. It is desirable to limit paper and to include as much electronic data as possible on Compact Disc or DVD, including scanned items, to facilitate future electronic storage

and transmission of survey data. **Duplicate CD's must be included in the portfolio, with one set labeled "Region Surveyor".**

ATTACHMENT C

CONSTRUCTION CRITICAL PATH NETWORKS

CONTROL SECTION: 70114

JOB NUMBER: 88889A

I. INTRODUCTION

The Consultant is required to submit a Construction Critical Path Network at various points in the design process. Refer to the following:

P/PMS TASK 3580 - DEVELOP PRELIMINARY PLANS

P/PMS TASK 3830 - COMPLETE THE CONSTRUCTION ZONE TRAFFIC CONTROL PLAN

P/PMS TASK 3840 - DEVELOP FINAL PLANS AND SPECIFICATIONS

Construction Critical Path Networks are often needed to develop the progress schedule for a project**.** **They are required on any project designated to include an Incentive/Disincentive or Special Liquidated Damages clause.** Construction Critical Path Networks are also recommended for projects with the following characteristics:

1. New construction.
2. Major reconstruction or rehabilitation on an existing roadway that will severely disrupt traffic.
3. Unique or experimental work.
4. More than one construction season.
5. Complex staging (multiple stages with traffic shifts).

As noted in MDOT's Construction and Technology Instructional Memorandum 1997-7, Progress Schedule Determinations/Critical Path Rates,

> *preparation of a Critical Path is a requirement on all Consultant-designed projects, regardless of the project type or complexity*

The MDOT Resident Engineer assigned to the project should be consulted when developing Construction Critical Path Networks.

MDOT requires the precedence diagramming method. The Consultant will submit this network in MPX version 4.0.

II. NETWORK DEVELOPMENT

The network will be defined using the following steps.

1. Activity definition.
2. Activity sequencing.
3. Duration estimation.
4. Schedule development.

1. ACTIVITY DEFINITION

The Consultant will define the specific activities in enough detail so that the proper objectives will be met. The Consultant must identify assumptions (those factors considered true, real or certain). Supporting detail for the activities should be documented and organized as needed to simplify the review of the activities by MDOT personnel.

The Construction Critical Path Network must start with the **Letting Date** as the first activity and terminate with the **End of Project** as the finish activity.

A sufficient number of activities will be required with sufficient detail so that the controlling construction operation(s) may be identified. Notation on each activity shall include a brief work description and activity time duration.

2. ACTIVITY SEQUENCING

Activity sequencing involves identifying and documenting interactivity dependencies. The Consultant must sequence activities accurately to support later development of a realistic and achievable construction schedule. Two types of dependencies should be considered. Mandatory dependencies are inherent in the nature of the work being done, such as construction sequencing. Discretionary dependencies are based on a knowledge of the work to be done. Constraints are used to show how the activities relate to each. The Consultant must include documentation supporting all discretionary dependencies used in the project. All activities must lead to another activity. Only Start to Start, Finish to Finish and Finish to Start relationships will be allowed. All logic shall show how the given activity is dependent on its preceding activities.

3. DURATION ESTIMATION

After the Consultant has sequenced the activities, the Consultant should determine the activity duration. Activity duration estimating involves assessing the number of work periods likely to be needed to accomplish each activity. Duration (working days): No activity will have a duration greater than 20 working days unless approved by the Engineer.

Activities that will be allowed to exceed 20 working days include, but are not limited to, working drawing approvals or other activities not under the control of the Contractor. If requested by the Engineer, the Consultant shall explain the reasonableness of activity time durations. The approved MDOT production rates will be used in estimating activity duration. These are available in the Supplemental Information section of this attachment. The Consultant must document and submit all assumptions made during the duration estimation to MDOT.

4. SCHEDULE DEVELOPMENT

The activity sequencing, duration estimations and the calendars are combined to create the construction schedule. During the development of the schedule the Consultant will verify:

1. The required schedule to build the project.
2. The constructability of the project.
3. If the maintaining traffic scheme will work.
4. If seasonal limitations will affect the construction.
5. Any other project specific considerations.

The MDOT Calendars will be used by the Consultant in developing the network. The calendars are based on a 4, 5 or 6 day work week. The MDOT Calendars are included in the Supplemental Information section of this attachment.

At this point there should be no negative float in the network. If there is, there is an error in the network and the error must be corrected before network submittal.

All summary tasks shall be removed prior to submittal to MDOT Project Manager

III. DELIVERABLES

After this final step the design Consultant will submit the finished CPM schedule to MDOT

1. Documents

A. 11" x 17" PDF plot of the network. The critical path shall be clearly identified on the plot. A larger plot may be required for complex networks.

B. Work Day / Completion Date Determination Worksheet.

C. List of any other assumptions or controlling factors used in creating the network. For example, permit or maintaining traffic restrictions.

2. Electronic Format

This section sets the requirements for the electronic submittal of the Consultant's Construction Network. All networks shall be submitted on a 3.5 inch floppy disk (or via E-mail) using one of the following formats:

A. **Standard Electronic Media Format:** This is a standard ASCII text file containing the data elements below, in the order specified. This file can be created using any text editor or word processing application (i.e., MS-Word, WordPerfect, Notepad, Write) but must be saved as an ASCII file.

The **first line** will provide a descriptive header describing the submittal and containing:

Control Section
Job Number
Route
Consultant name
Date of Submittal

The next line will be **blank**, followed by multiple data lines.

Each **data line** will contain one record pertaining to one task of the job. Separate data fields by a comma. Fields within each task line are as follows:

(Note that the term "task" is synonymous with "activity." Leave fields that are not required blank)

(1) Task # (Job # followed by a hyphen followed by this task's unique 4 digit task number. This is the Preceding Event Activity Code)
(2) Description of Task, Milestone or Hammock, blank if this record is a constraint
(3) Calendar (see attached list)
(4) Duration of task, blank for constraints
(5) Task # of the next task (Succeeding Event) - leave blank if this record is not a constraint or hammock
(6) Type of constraint (FS, SS, FF) - leave blank if this record is not a constraint.
(7) Delay, if required
(8) Original "Baseline" Start Date
(9) Original "Baseline" Finish Date
(10) Current (forecast) Start Date (early start)
(11) Current (forecast) Finish Date (early finish)
(12) Estimated completion date (if different from early start + current duration)
(13) Late Start Date
(14) Late Finish Date
(15) Actual Start Date
(16) Actual Finish Date

Example - each line contains the following:

Task # (preceding event), Description, Calendar, Duration, Next Task # (succeeding event), Constraint Type, Delay, Baseline Start, Baseline Finish, Early Start, Early Finish, Estimated Completion Date, Late Start, Late Finish, Actual Start, Actual Finish, Total Float.

B. **Primavera Project Planner(P3) 2.0 Export Procedure:** Users who have Primavera Project Planner(P3) version 2.0 can automatically create an export file by following the export procedure below. **Users having an older version of Primavera may use the applications export feature only if they are able to include all the data elements listed in the version 2.0 format.**

1. Choose Tools, Project Utilities, **EXPORT**
2. Click **ADD**, then click **OK** to accept the next sequential ID number, or type a unique number to identify the specifications and click **OK**
3. Enter a description for the specification in the Title field
4. Specify data items to export

Activities
- Select **Contents of List**
- Use the Description column to specify which data items to export
- To add items, click the right mouse button in the Description column and choose from the list. Suggested Items include: **Activity ID, Activity Description, Actual Start, Actual Finish, Calendar ID, Early Start, Early Finish, Late Start, Late Finish, Original Duration.**
- Select **All Current, All Target**, or **All Target2**
- Set Description Length to 48

OR

Constraints
- Select **Successor relationships** - Choose this option to export Activity IDs and their corresponding successors only. Lags and relationship types will also be displayed in this output file.

5. Click **FORMAT** in Export Dialog Box
6. In the Output file section, enter a new name and path (ex. A:\actexp or A:\conexp). Do not include a file extension.
7. In the type field, click the minimize button and choose the **[.PRN] - ASCII** file format for the output file.
8. Select **CALENDAR** for Date Format
9. Set ASCII Output Field Separation to **1** and Blank column width to **0**

10. Click **RUN**
11. In the Output Options dialog box, click on **OK**

NOTE: A COMPLETED FILE EXPORT WILL CONSIST OF 2 EXPORT FILES (ACTIVITIES & CONSTRAINTS)

C. **Microsoft Project Export Procedure:** Users of Microsoft Project Version 4.0 and above can create a Microsoft Project Exchange (MPX) file by following the procedure below.

1. Choose File, Save As from the main menu
2. In the Save File as Type box Select **MPX 4.0**
3. On the drive box select a: or whichever drive is the 3.5" Floppy drive
4. Click on **OK**
This saves the file in MPX format.

D. **Primavera Sure Track:** Users of Sure Track Version 2.0 and above can create a Microsoft Project Exchange (MPX) file by following the procedure below.

1. Choose File, Save As from the main menu
2. In the filename box input a filename
3. In the Save File as Type box Select **MPX**
4. On the drive box select a: or whichever drive is the 3.5" Floppy drive
5. Click on **OK**
This saves the file in MPX format

E. **Scitor Project Scheduler 7 Export Procedure:** Users of Scitor Project Scheduler Version 7 and above can create a Microsoft Project Exchange (MPX) file by following the procedure below.

1. Choose File, Save As from the main menu
2. In filename box select a filename
3. In the Save File as Type box Select MPX
4. On the drive box select a: or whichever drive is the 3.5" Floppy drive
5. Click on **OK**
This saves the file in MPX format

F. **Export Files with Other Scheduling Applications:** Most scheduling packages have export functions similar to those described above. If the Consultant chooses to use packages with export capabilities, they shall include all items listed in the Standard Media Format in a text or ASCII type file.

IV. SUPPLEMENTAL INFORMATION

A. MDOT CRITICAL PATH-CONSTRUCTION TIME ESTIMATES

Drainage

Cross Culverts	
Rural Highways	44 yd./day
Expressways	55 yd./day
Large Headwalls	5 days/unit
Slab or Box Culverts	5 days/pour
Plowed in Edge Drain (production type project)	4921 yd./day
Open Graded Underdrain (production type project)	1312 yd./day
Sewers	
0m-5m(up to 60 in. (1500mm))	44 yd./day
0m-5m(over 60 in. (1500mm))	27 yd./day
5m-over(up to 60 in. (1500mm))	27 yd./day
5m-over(over 60 in. (1500mm))	22 yd./day
Jacked-in-place	14 yd./day
including excavation pit & set up	min. 5 days
Tunnels	
hand mining	9 yd./day
machine mining	22 yd./day
including excavation pit & set up	min. 5 days
Manholes	3 units/day
Catch Basin	4 units/day

Utilities

Water Main(up to 16 in. (400mm))	109 yd./day
Flushing, Testing & Chlorination	4 days
Water Main(20 in. (500mm) – 40 in. (1050mm))	27 yd./day
Flushing, Testing & Chlorination	5 days
Order & Deliver 24 in. (600 mm) HP Water Main	50 days/order
Gas Lines	109 yd./day

Earthwork and Grading	**Metro Exp**	**Rural**

Embankment(CIP)	1962 yd.^{3}/day	6932 yd.^{3}/day
Excavation and/or Embankment(Freeway)	1962 yd.^{3}/day	12033 yd.^{3}/day
Excavation and/or Embankment(Reconstruction)	981 yd.^{3}/day	4970 yd.^{3}/day
Embankment(Lightweight Fill)	392 yd.^{3}/day	785 yd.^{3}/day
Muck(Excavated Waste & Backfill)	1962 yd.^{3}/day	
Excavation(Widening)	656 yd./day	
Grading(G & DS)	820 yd./day	
Subbase and Selected Subbase(up to 8 yd. (7.4m))	656 yd./day	
Subbase and Selected Subbase(8 yd. (7.4 m) & over)	492 yd./day	
Subgrade Undercut & Backfill	1962 yd.^{3}/day	
Subbase & Open-Graded Drainage Course	492 yd./day	
Surfacing		
Concrete Pavement (8 ft. (7.3m))	492 yd./day	
Including Forming & Curing	min. 7 days	
Bituminous Pavement (8 ft. (7.3m))	1312 yd./day/course	
Concrete Ramps(5.6 yd. (4.9m))	328 yd./day	
Including Forming & Curing	min. 7 days	
Curb(1 side)	820 yd./day	
Concrete Shoulder-Median	1435 yd.^{2}/day	
Bituminous Shoulders(1 side per course)	820 yd./day	
Sidewalk	215 yd.^{2}/day	
Sidewalk(Patching)	78 yd.^{2}/day	
Structures		
Sheeting(Shallow)	33 yd./day	
General Excavation at Bridge Site	981 yd.^{3}/day	
Excavation for Substructure(Footings)	1 unit/day	
Piles(12m)	15 piles/day	
Substructure(Piers & Abutments)	5 days/unit	
Order and Delivery of Beams		
Plate Girders	100-120 days/order	
Rolled Beams	90-120 days/order	
Concrete Beams	50 days/order	

Erection of Structural Steel	3 days/span
Bridge Decks	
Form & Place Reinforcement(66 yd. (60m) Structure)	15 days
Pour Deck Slab(1 1/5 days/pour)	2 days/span
Cure	14 days
2 Course Bridge Decks	
Add 9 days for Second Course Latex	
Add 12 days for Second Course Low Slump	
Sidewalks and Railings	
Sidewalks and Parapets	5 days/span
Slip Formed Barriers	2 days/span
Clean Up	10 days
Pedestrian Fencing	
Shop Plan Approval & Fabrication	1-2 months
Erection	1 week/bridge
Rip Rap Placement	
Bucket Dumped	504 yd.^{3}/day
Bucket Dumped and Hand Finished	171 - 684 yd.^{3}/day
Retaining Walls	1 Panel/day min. 10 days
Railroad Structures	
Grade Temporary Runaround	981 yd.^{3}/day
Ballast, Ties & Track	55 yd./day
Place Deck Plates	5 days/span
Waterproof, Shotcrete & Mastic	5 days/span
Railroad Crossing Reconstruction	10-15 work days
(depends on whether concrete base is involved)	
Temporary Railroad Structures	
Order & Deliver Steel	55 days/order
Erect Steel	1 day/span
Ties and Track	3 days/span
Pumphouse	
Structure	30

	days/structure
Order & Deliver Electrical & Mechanical Equipment	90 days
Install Electrical & Mechanical Equipment	30 days
Miscellaneous	
Removing Old Pavement	66 yd./day
Removing Old Pavement for Recycling(8 yd. (7.3m))	492 yd./day
Crushing Old Concrete for 6A or OGDC	1485 tons/day
Removing Trees(Urban)	15 units/day
Removing Trees(Rural)	30 units/day
Removing Concrete Pavement	538 $yd.^2$/day
Removing Sidewalk	299 $yd.^2$/day
Removing Curb & Gutter	492 yd./day
Removing Bituminous Surface	1914 $yd.^2$/day
Conditioning Aggregate	984 yd./day
Bituminous Base Stabilizing	2990 $yd.^2$/day
Ditching	656 yd./day
Trenching for Shoulders	820 yd./day
Station Grading	667 yd./day
Clearing	9568 $yd.^2$/day
Restoration(Topsoil, Seeding, Fertilizer & Mulch)	1973 $yd.^2$/day
Sodding	2512 $yd.^2$/day
Seeding	47840 $yd.^2$/day
Guard Rail	252 yd./day
Fence(Woven Wire)	394 yd./day
Fence(Chain Link)	164 yd./day
Clean Up	656 yd./day
Concrete Median Barrier	328 yd./day
Cure	min. 7 days
Reroute Traffic(Add 4 days if 1st item)	1 day/move
Concrete Glare Screen	492 yd./day
Light Foundations	6 units/day
Order & Delivery	6-8 week/order
Remove Railing & Replace with Barrier(1 or 2	4 days/side

decks at a time)	
Longitudinal Joint Repair	1750 yd./day
Crack Sealing	5249 yd./day
Joint and Crack Sealing	547 yd./day
Repairing Pavement Joints - Detail 7 or 8	219 yd./day
Seal Coat	6999 lane yd./day
Diamond Grinding/Profile Texturing Concrete	3947 yd.^{2}/day
Rest Area Building	
Order Material	3 months
Construct Building	9 months
Tower Lights	
Order and Deliver Towers	100 days
Weigh-In-Motion	
Order and Deliver Materials	1 month-6weeks
O & D with Installation	3 months
Raised Pavement Markers	300 each/day
Attenuators	2 each/day
Shoulder Corrugations, Ground or Cut	5 - 6 mi./side/day
Aggregate Base	3468 yd.^{2}/day
Aggregate Shoulders	458 yd.^{3}/day
Freeway Signing - 3# Post Type	50 signs/day
Concrete Joint Repair (High Production-Projects with > 1000 patches)	
Average(2 yd. (1.8m))	50 patches/day
Large(>2 yd. (1.8m))	598 yd.^{2}/day
Bridge Painting	108 yd.^{2}/day
Pin and Hanger Replacement	3 beams/day
Order Pin & Hanger	60 days
Bridge Repair	
Scarifying(Including Clean up)	11960 yd.^{2}/day
Joint Removal(Including Clean up)	4 yd./day
Forming & Placement	3.8 yd./day
Hydro-Demolishing	328 yd./day

Barrier Removal	16 yd./day
Placement	49 yd./day
Hand Chipping (Other than Deck)	0.31 yd.$^{3/}$person/day
Shoulder Corrugations, Ground or Cut	5 - 6 mi./side/day
Casting Latex Overlay	273 yd./day
Curing Overlay	
Regular	4 days
High Early	1 day
Thrie Beam Retrofit	33 yd./day
Beam End Repairs	
Welded Repairs	.75 days/repair
Bolted Repairs	.50 days/repair
Bolted Stiffeners (Pair)	.25 days/repair
Grind Beam Ends	.25 days/repair
Welded Stiffeners (Pair)	.25 days/repair
H-Pedestal Repairs:	
Welded Repair	.50 days/each
Replacement	1 day/each
Deck Removal	281 yd.^{2}/day

Surfacing-Bituminous

Metro-Primary(<(19800 tons (18000mtons))	
Paving	594 tons/day
Joints	164 yd./day
Cold Milling	4066 yd.^{2}/day
Aggregate Shoulders	990 tons/day
Metro Primary(>(19800 tons (18000mtons))	
Paving	594 tons/day
Joints	219 yd./day
Cold Milling	8970 yd.^{2}/day
Metro Interstate(>(19800 tons (18000mtons))	
Paving	1210 tons/day
Joints	394 yd./day
Aggregate Shoulders	990 tons/day
Urban Primary(<(19800 tons (18000mtons))	
Paving	704 tons/day

Joints	109 yd./day
Cold Milling	2033 yd.^{2}/day
Rubblizing	2033 yd.^{2}/day
Aggregate Shoulders	495 tons/day
Urban Primary(>(19800 tons (18000mtons))	
Paving	1100 tons/day
Joints	131 yd./day
Cold Milling	2033 yd.^{2}/day
Aggregate Shoulders	550 tons/day
Urban Interstate(>(19800 tons (18000mtons))	
Paving	1320 tons/day
Joints	241 yd./day
Cold Milling	2033 yd.^{2}/day
Rubblizing	6937 yd.^{2}/day
Aggregate Shoulders	704 tons/day
Rural Primary(<(19800 tons (18000mtons))	
Paving	704 tons/day
Joints	131 yd./day
Cold Milling	649 tons/day
Crush & Shape	11960 yd.^{2}/day
Aggregate Shoulders	704 tons/day
Rural Primary(>(19800 tons (18000mtons))	
Paving	1210 tons/day
Joints	164 yd./day
Cold Milling	880 tons/day
Crush & Shape	11960 yd.^{2}/day
Rural Interstate(>(19800 tons (18000mtons))	
Paving	1329 tons/day
Joints	214 yd./day

B. WORKSHEET

WORK DAY/COMPLETION DATE DETERMINATION

CS: JN:

DESCRIPTION OF WORK: _____

MAJOR

PRODUCTION ESTIMATED

WORK ITEM	QUANTITY	RATE	TIME

TOTAL ESTIMATED TIME:

COMPLETION DATE: _____ (Calendar Days or Work Days)

COMMENTS:

_____

_____

_____

_____

_____

C. MDOT CALENDARS

The following are the MDOT 4, 5 and 6 day calendars:

CALENDAR	DESCRIPTION	START	FINISH
1	Std - Apr 16 - Nov 15 - 4 day	APR 16	N0V 15
2	LP - Bit Stab - 4 day	MAY 15	OCT 15
3	UP - Bit Stab - 4 day	JUN 01	OCT 01
4	LP S of M-46 - Bit Pave - 4 day	MAY 05	NOV 15
5	LP N of M-46 - Bit Pave - 4 day	MAY 15	NOV 01
6	UP - Bit Pave - 4 day	JUN 01	OCT 15
7	LP - Bit Seal Coat - 4 day	JUN 01	SEP 15
8	UP - Bit Seal Coat - 4 day	JUN 15	SEP 01
9	Tree Planting - Deciduous - 4 day	MAR 01 OCT 01	MAY 15 NOV 15
10	Tree Planting - Evergreen - 4 day	MAR 01	JUN 01
11	South LP - Restoration - 4 day	MAY 01	OCT 10
12	North LP - Restoration - 4 day	MAY 01	OCT 01
13	UP - Restoration - 4 day	MAY 01	SEP 20
14	Full Year - Winter Work - 4 day	JAN 01	DEC 31
21	Std - Apr 16 - Nov 15 - 5 day	APR 16	NOV 15
22	LP - Bit Stab - 5 day	MAY 15	OCT 15
23	UP - Bit Stab - 5 day	JUN 01	OCT 01
24	LP S of M-46 - Bit Pave - 5 day	MAY 05	NOV 15
25	LP N of M-46 - Bit Pave - 5 day	MAY 15	NOV 01
26	UP - Bit Pave - 5 day	JUN 01	OCT 15
27	LP - Bit Seal Coat - 5 day	JUN 01	SEP 15
28	UP - Bit Seal Coat - 5 day	JUN 15	SEP 01
29	Tree Planting - Deciduous - 5 day	MAR 01 OCT 01	MAY 01 NOV 15
30	Tree Planting - Evergreen - 5 day	MAR 01	JUN 01

31	South LP - Restoration - 5 day	MAY 01	OCT 10
32	North LP - Restoration - 5 day	MAY 01	OCT 01
33	UP - Restoration - 5 day	MAY 01	SEP 20
34	Full Year - Winter Work - 5 day	JAN 01	DEC 31
35	Full Year - Expedited - 6 day	JAN 01	DEC 31

ATTACHMENT D

CONTROL SECTION: **70114**

JOB NUMBER: **88887A & 88888A**

MONTHLY PROGRESS REPORTS

The first two pages of this attachment are the necessary layout of the Monthly progress reports and the last three pages are a completed example.

Control Section 00000
Job Number 00000C
Structure Number S00
Date 00/00/00

MONTHLY PROGRESS REPORT

A. Work accomplished during the previous month.

B. Anticipated work items for the upcoming month.

C. Real or anticipated problems on the project.

D. Update of previously approved detailed project schedule (attached), including explanations for any delays or changes.

E. Items needed from MDOT.

F. Copy of Verbal Contact Records for the period (attached).

Structure Number - Control Section - Job Number
Route, Location Description
Design Schedule as of 00/00/00

LIST TASKS, SUBMITTALS, APPROVALS AND MEETINGS AS OUTLINED IN SCOPE OF DESIGN SERVICES AS NEEDED. THIS LIST IS JUST AN EXAMPLE.

Original Authorized Start Date	Original Authorized Finish Date	(Anticipated) or **Actual** Start Dates	(Anticipated) or **Actual** Finish Dates	Task	Task Description
00/00/00	**00/00/00**	00/00/00	**00/00/00**	??	Initial project meeting.
00/00/00	**00/00/00**	00/00/00	**00/00/00**	3330	Conduct Design Survey
00/00/00	**00/00/00**	00/00/00	**00/00/00**	3360	Prepare Base Plans
00/00/00	**00/00/00**	00/00/00	**00/00/00**		Submit Base Plans
00/00/00	**00/00/00**	00/00/00	**00/00/00**	3580	Develop Preliminary Plans
00/00/00	**00/00/00**	00/00/00	**00/00/00**	3390	Develop Construction Zone Traffic Control Concepts
00/00/00	**00/00/00**	00/00/00	**00/00/00**	3540	Develop Construction Zone Traffic Control Plan
00/00/00	(00/00/00)	00/00/00	**00/00/00**	3550	Develop Preliminary Traffic Operations Plan
00/00/00	(00/00/00)	00/00/00	**00/00/00**	3351	Review & Submit of Preliminary Right-Of-Way Plans
00/00/00	(00/00/00)	00/00/00	**00/00/00**		Submittal of The Plan Review Package
00/00/00	(00/00/00)	00/00/00	**00/00/00**		Completion of the Plan Review Meeting
00/00/00	(00/00/00)	00/00/00	**00/00/00**	3840	Develop Final Plans and Specifications
00/00/00	(00/00/00)	00/00/00	**00/00/00**		Submittal of final plans/proposal package to MDOT for final review.
00/00/00	**00/00/00**	00/00/00	**00/00/00**	3870	Omissions/Errors Check (OEC) Meeting
00/00/00	**00/00/00**	00/00/00	**00/00/00**		Consultant's Plan Completion: Final Construction Plan/Proposal package with recommendations incorporated to MDOT (two weeks after OEC Meeting)
00/00/00	**00/00/00**	00/00/00	**00/00/00**		Final Deliverables to MDOT

SAMPLE

Control Section 12345

Job Number 11111C
Structure Number S02
Date:

MONTHLY PROGRESS REPORT

A. Work accomplished during the previous month.

1. During the last month we completed the Final Right of Way plans and submitted them to Mr. Project Manager on 00/00/00.

B. Anticipated work items for the upcoming month.

1. Submit the Preliminary Plans and related material on 00/00/00.

2. Attend the meeting regarding the Ameritech lines on the bridge, scheduled for 00/00/00.

C. Real or anticipated problems on the project.

1. We foresee no problems at this time.

D. Update of previously approved detailed project schedule (attached), including explanations for any delays or changes.

1. The design is falling behind schedule because we had problems resolving the geometries of the ramps in relation to the bridge. The Preliminary Plan submittal will be the only task affected by this delay because we will make up the lost time prior to submitting the Final Plans and Specifications.

E. Items needed from MDOT.

1. Prior to final Plan submittal we will need the latest Special provision and Supplemental Specification checklist.

F. Copy of Verbal Contact Records for the period (attached).

1. Discussed bridge and ramp geometries with Traffic Safety Eng. of MDOT Traffic and Safety Division on 00-00-00.

SN: S02 - CS: 12345 - JN: 11111C
M-111, from There Village Limits to north of That Road
Design Schedule as of 00/00/00

Original Authorized Start Date	Original Authorized Finish Date	(Anticipated) or **Actual** Start Dates	Anticipated) or **Actual** Finish Dates	Task	Task Description
01/12/95	01/12/95	**01/12/95**	**01/12/95**??		Initial project meeting.
01/29/95	01/29/95	**01/30/95**	**01/30/95**3330		Conduct Design Survey.
02/17/95	04/10/95	**02/17/95**	**04/20/95**3360		Prepare Base Plans.
02/29/95	02/29/95	**02/29/95**	**02/29/95**3390		Develop the Construction Zone Traffic Control Concepts
03/12/95	03/13/95	**03/12/95**	(03/30/95)	3540	Develop Construction Zone Traffic Control Plan
03/20/95	03/19/95	**03/25/95**	(03/30/95)	3551	Develop/Review Preliminary Traffic Signal Plan
07/01/95	07/01/95	(07/01/95)	(07/01/95)	3590	The Plan Review Meeting
07/11/95	08/11/95	(07/11/95)	(08/11/95)	3821	Complete/Review Traffic Signal Plan
09/15/95	09/15/95	(09/15/95)	(09/15/95)	3830	Complete Construction Zone Traffic Control Plan.
09/16/95	09/16/95	(09/16/95)	(09/16/95)	3840	Develop Final Plans and Specifications
09/25/95	09/23/95	(09/25/95)	(09/25/95)	3870	Omissions/Errors Check (OEC) Meeting

VERBAL CONTACT RECORD

Control Section 12345
Job Number 11111C
Structure Number S02
Date 00/00/00

Joe Engineer talked to Mr. Traffic and decided to use a 0.05'/ft super on ramp A leading into the bridge.