

**ODOT**

**DESIGN BUILD**

**SCOPE OF SERVICES**

**PID:** \_\_\_\_\_ **State Project Number:** \_\_\_\_\_

**County:** \_\_\_\_\_ **Route:** \_\_\_\_\_ **Section:** \_\_\_\_\_

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## 1. PROJECT IDENTIFICATION

PID: \_\_\_\_\_ State Project Number: \_\_\_\_\_  
County: \_\_\_\_\_ Route: \_\_\_\_\_ Section: \_\_\_\_\_  
Local Route Name: \_\_\_\_\_  
Highway Functional Classification & Federal Aid System: \_\_\_\_\_  
Structure Identification: Bridge Number: \_\_\_\_\_ Over: \_\_\_\_\_  
Structure File Number: \_\_\_\_\_

### 1.1 Design Designation:

Location: \_\_\_\_\_  
Current ADT: \_\_\_\_\_  
Design Year ADT: \_\_\_\_\_  
Design Hourly Volume: \_\_\_\_\_  
Directional Distribution: \_\_\_\_\_  
Trucks: \_\_\_\_\_  
Design Speed: \_\_\_\_\_  
Legal Speed: \_\_\_\_\_  
Design Functional Classification: \_\_\_\_\_  
NHS Project: Yes \_\_\_\_\_ No \_\_\_\_\_

### 1.2 Existing plans: The following existing plans are available for review at the District Office.

Please contact \_\_\_\_\_.

These are **NOT** as-built plans. The Design-Build Team (DBT) is advised to verify the preceding referenced plans to determine if they accurately depict existing field conditions.

### 1A PRIMA FACIE SPEED LIMIT

Under authority of section 4511.21, Division (h) of the Ohio Revised Code, the revised prima facie speed limits as indicated herein are determined to be reasonable and safe, and are hereby established for the duration of this project. The prima facie speed limit or limits hereby established shall become effective when appropriate signs giving notice thereof are erected.

District Deputy Director \_\_\_\_\_ Date \_\_\_\_\_

### 614 WORK ZONE SPEED LIMIT SIGN

The Contractor shall furnish, install, maintain, cover during suspension of work, and subsequently remove Work Zone Speed Limit (R2-1) (\_\_\_\_\_ speed limit) signs and supports within the work limits in accordance with the following requirements:

The Contractor shall cover or remove any existing Speed Limit signs within the reduced Speed Zone. These signs shall be restored during suspension or termination of the reduced speed limit. The Work Zone Speed Limit signs may be erected or uncovered no more than four hours before the actual start of work. The signs shall be removed or covered no later than four hours following restoration of all lanes to traffic with no restrictions, or sooner as directed by the Engineer. Temporary sign covering and uncovering due to temporary lane restorations shall be guided by the four-hour limitations stated above. Such lane restorations should be expected to remain in effect for 30 or more days, such as during winter shut-downs. Cleanup work and other work beyond the shoulder such as seeding, to be performed after restoration of all full-width lanes and shoulders to traffic, does not constitute a condition warranting a speed reduction. Therefore, when activity is limited to such work, the speed limit in effect shall be the normal speed limit for the site.

Construction and Material Specifications, Item 614, Paragraph 614.02(B) indicates that the two directions of a divided highway are considered separate highway sections. Therefore, if the work on a multi-lane divided highway is limited to only one direction, speed reduction in the direction of the work does not automatically constitute speed reduction in the opposite direction. Speed limit reduction in the opposite direction, in such case, is appropriate only if conditions are expected to have an impact on the directional traffic flow, as directed by the Engineer.

The Contractor shall erect a Work Zone Speed Limit sign in advance of any lane restriction expected to last at least 30 consecutive calendar days, or as directed by the Engineer. The sign shall be mounted on both sides of a directional roadway of divided highways. The first Work Zone Speed Limit sign shall be placed approximately 500 feet (150 meters) in advance of the lane reduction or shift taper or other roadway or shoulder restriction. On undivided highways the sign shall be mounted on the right side, approximately 250 feet (75 meters) in advance of such restrictions. The sign shall be repeated every 1 mile (1.6 kilometers) for 55 mph zones and every one-half mile (0.8 kilometers) for 50 mph and 45 mph zones. These signs shall also be erected immediately after each open entrance ramp within the zone.

On projects for which the activity or roadway restriction is limited to one section of the project for at least thirty days and then is moved to another section of the project upon completion of work in the first section, the speed limit reduction shall be limited to only the active portion of the project at the given time. Signing for a speed limit reduction, as well as all other advance construction signing, shall be relocated when the concentration of activity is relocated.

On projects for which speed reduction is called for on more than one roadway, the display of reduced speed limit signing on a given roadway shall be dependent on the scheduling of work activity on the given roadway.

Speed Reduction signs (W3-5) shall be erected in advance of the speed reduction, approximately 1250 feet (375 meters) on multi-lane highways and 500 feet (150 meters) on 2-lane highways.

A sign(s) to indicate the resumption of the statutory speed limit shall be erected at the end of any reduced Speed Zone, typically at the point where roadway and shoulder widths return to normal. On undivided roadways, the R2-1 (Speed Limit) sign shall be used. On divided highways where the speed limit varies by vehicle type, the R2-1 (Speed Limit) sign and the R2-H2a (Truck Speed Limit) signs shall be mounted side-by-side on separate supports. The Contractor may use signs and supports in used, but good condition, provided the signs meet current ODOT specifications. Sign faces shall be retroreflectorized with Type G sheeting complying with the requirements of CMS 730.19.

Work Zone Speed Limit signs shall be mounted on two Item 630, Ground Mounted Supports, No. 3 posts.

### **Work Zone Increased Penalties Sign**

R11-H5a-48 signs shall be furnished, erected, and maintained in good condition and/or replaced as necessary and subsequently removed by the Contractor. Signs shall be mounted at the appropriate offsets and elevations as prescribed by the Ohio Manual of Uniform Traffic Control Devices. They shall be maintained on supports meeting current safety criteria.

The signs may be erected or uncovered no more than four hours before the actual start of work. The signs shall be removed or covered no later than four hours following restoration of all lanes to traffic with no restrictions, or sooner as directed by the Engineer. Temporary sign covering and uncovering due to temporary lane restorations shall be guided by the four-hour limitations stated above. Such lane restorations should be expected to remain in effect for 30 or more consecutive calendar days, such as during winter shut-downs.

The signs on the mainline shall be dual mounted unless not physically possible. The first sign shall be placed between the ROAD WORK AHEAD (W20-1) sign and the next sign in the sequence. Signs shall be erected on each entrance ramp and every 2 miles (3 kilometers) through the construction work limits. Signs on the mainline shall be R11-H5a-48. Signs used on the ramps shall be R11-H5a-24. R11-H5a-24 signs may be used in the median in lieu of R11-H5a-48 signs if it is not physically possible to provide R11-H5a-48 signs in the median.

The Contractor may use signs and supports in used, but good, condition provided the signs meet current ODOT specifications. Sign faces shall be retroreflectorized with Type G sheeting complying with the requirements of CMS 730.19.

## **1B RAILROAD COORDINATION**

Railroad Coordination, including the processing and execution of Railroad Agreements, is handled through the State Rail Coordinator at Central Office. Technical coordination is handled through the District Railroad Coordinator.

Coordinate with the State Rail Coordinator prior to contacting the railroad(s) to verify the line(s) in question, necessary clearances for rail operations (both permanent and temporary), and/or to acquire the milepost and line identification information, etc.

Questions regarding requests by the railroad for future track accommodations within their Right-of-Way should be directed to the State Rail Coordinator.

## **1C AIRWAY/HIGHWAY CLEARANCE**

### **2 PRE-BID MEETING**

This meeting is to discuss and clarify all issues that the project may have.

Location: \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

### **3 ADDENDA PROCESS**

All questions prior to the letting date shall be directed to:

Name: PREBID

Phone number: 614-387-0739 Fax: 614-887-4444

Web submittal form: [http://www2.dot.state.oh.us/contract/prebid/prebid\\_questions.htm](http://www2.dot.state.oh.us/contract/prebid/prebid_questions.htm)

### **4 PRE-QUALIFICATION**

It is required that the bidder be an ODOT pre-qualified Contractor who has engaged the services of an ODOT pre-qualified Consultant to perform *all* the design and construction work required in these Conceptual Documents. If the Consultant and/or the Sub-Consultant(s) submitted do not meet all the required qualifications, the Office of Contracts may reject the bid.

### **5 CONTRACTOR'S CONSULTANT**

The Contractor must name the Consultant and all Sub-Consultant(s) in the space(s) provided below. If the Contractor is going to submit an electronic bid, then the Consultant and all Sub-Consultant(s) must be listed on the following web-page: <http://www.dot.state.oh.us/DIVISIONS/PRODMGT/CONSULTANT/Pages/default.aspx>. The Contractor must list relevant prequalification categories for prime and sub-consultants to show that the prequalification requirements listed below are satisfied. All Consultant names and addresses must be the same as that on file with the Department.

The following work types must be performed by members of the Consultant Team (combination of Consultant and Sub-Consultant(s)):

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**Consultant**

Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_

List work types the Consultant will perform:

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**Sub-Consultant**

Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_

List work types the Sub-Consultant will perform:

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**Sub-Consultant**

Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_

List work types the Sub-Consultant will perform:

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**Restrictions on Participation in Design-Build Contracts:**

Any Consultant who provided services to the Department that have been directly utilized in this design-build proposal or Scope of Services document will NOT be eligible to participate in this design-build contract for this project, either as a prime consultant or as a sub-consultant.

**6 SCOPE OF WORK**

Project Limits: From \_\_\_\_\_ To \_\_\_\_\_.

Project Length: \_\_\_\_\_ . Work Length shall be determined by the DBT.

The Consultant shall provide for the engineering services, design, and preparation of detail construction plans for the construction of the proposed project.

The Contractor shall provide for the furnishing of materials, construction and completion in every detail of all the work described in the Conceptual Documents in order to fulfill the intent of the contract.

Project Description: \_\_\_\_\_  
Completion date: \_\_\_\_\_  
Warranties: \_\_\_\_\_

## **7      FIELD OFFICE**

Field office Type \_\_\_\_\_, as required by Construction and Material Specification Item 619, shall be available and completely functional no later than 1 week prior to the start of construction work.

## **8      GENERAL PROVISIONS FOR THE WORK**

### **8.1      Governing Regulations:** All services, including but not limited to survey, design and construction work, performed by the DBT and all subcontractors (including sub-consultants), shall be in compliance with all applicable ODOT Manuals and Guidelines.

The fact that the bid items for this Design-Build project are general rather than specific shall not relieve the DBT of the requirement that all work performed and all materials furnished shall be in reasonable conformity with the specifications. The Contractor's Consultant shall reference in the plans the appropriate Construction and Material Specifications Item Number for all work to be performed and all materials to be furnished.

The attention of the Bidder is directed to the provisions of section 100 of the Construction and Material Specifications as modified in the design-build proposal.

It will be the responsibility of the DBT to acquire and utilize the necessary ODOT manuals that apply to the design and construction work required to complete this project.

The current edition, including updates released on or before the prebid meeting date, of the following ODOT Manuals and Guidelines shall be met or exceeded in the performance of the design and construction work required to complete this project:

Bridge Design Manual  
Location and Design Manuals  
    Volume One - Roadway Design  
    Volume Two - Drainage Design  
    Volume Three - Plan Preparation  
Pavement Design & Rehabilitation Manual  
Specifications for Geotechnical Explorations  
Survey Manual  
Construction and Material Specifications

Proposal Notes for Construction and Material Specifications  
Supplemental Specifications for Construction and Material Specifications  
Item Master  
Manual for Abandoned Underground Mines - Inventory and Risk Assessment  
Pavement Design and Rehabilitation Manual  
State Highway Access Management Manual  
Standard Construction Drawings  
Plan Insert Sheets  
Traffic Engineering Manual  
Ohio Manual of Uniform Traffic Control Devices  
Real Estate Administration Policies and Procedures Manual:  
    Appraisal  
    Acquisition Property Management  
    Relocation  
    ROW Plans  
    Utilities  
    Wireless Communication Tower Manual  
Environmental Services Handbooks and Guidelines  
Waterway Permit Manual  
Design Mapping Specifications  
CADD Engineering Standards Manual  
Geotechnical Bulletins  
Project Development Process Manual (Appendix B)

- 8.2 Basis of Payment:** All Items covered by Construction and Material Specifications, Supplemental Specifications, Proposal and Special Provision notes with unit price as a basis of payment will be paid for under the appropriate Lump Sum bid item, unless a unit line price item has been established in the Scope Of Services.

The Consultant shall be required to furnish the Department with a complete breakdown of the lump sum bid items. The breakdown shall include materials to be used in the work, and shall be in sufficient detail to provide ODOT with a means to check partial payment requests.

- 8.3 Final Payment:** The DBT shall prepare and submit the following prior to the request for final payment:

1. All original project files and notes utilized in the preparation of the survey, design and construction of the project
2. Record-Drawings Plans as required in section 8.4 below.

**8.4 Record-Drawing Plans:**

**A. General:** At the completion of the work, prior to final acceptance of the construction, the Consultant shall furnish the Department Record-Drawing construction plans. When



the Record-Drawing plans are completed the Consultant shall professionally endorse (sign and seal) the title sheet.

Record-Drawing plans shall be submitted using one of the following methods:

- 22" x 34" polyester film reproducible mylar, 4-mil thickness with a double or single (top side) matte. Mylars must be in good condition. Only black ink should be used, except that cross section and profile grids may be colored ink. The tracings shall be trimmed and bound. Minimum text size shall be 0.14 inches according to the CADD Engineering Standards Manual.

- Tiff Images created according to the documentation on the Office of Contracts website (<http://www.dot.state.oh.us/DIVISIONS/CONTRACTADMIN/CONTRACTS/Pages/TIFF.aspx>)

In addition to the information shown on the construction plans, the Record-Drawing plans shall show the following:

1. All deviations from the original approved construction plans which result in a change of location, material, type or size of work.
2. Any utilities, pipes, wellheads, abandoned pavements, foundations or other major obstructions discovered and remaining in place which are not shown, or do not conform to locations or depths shown in the plans. Underground features shall be shown and labeled on the Record-Drawing plan in terms of station, offset and elevation.
3. The final option and specification number selected for those items which allow several material options under the specification (e.g., conduit).
4. Additional plan sheets may be needed if necessary to show work not included in the construction plans.

Notation shall also be made of locations and the extent of use of materials, other than soil, for embankment construction (rock, broken concrete without reinforcing steel, etc.).

The Plan index shall show the plan sheets which have changes appearing on them.

Two copies of the Record-Drawing plans shall be delivered to the Project Engineer for approval upon completion of the physical work but prior to the request for final payment. After the Department has approved the Record-Drawing plans, the original tracings and the associated electronic files shall be delivered to the District Production Administrator. Acceptance of these plans and delivery of the original tracings and the associated electronic files is required prior to the work being accepted and the final estimate approved.

The delivered original tracings shall be prepared in conformance with the Location and Design Manual, Volume 3, Section 1200 - Plan Preparation.

**B. CADD files supplied by Consultant:** \_\_\_\_\_ Yes \_\_\_\_\_ No

If marked yes, the Consultant shall comply with ODOT's CADD Standards, and supply files in accordance with the CADD Engineering Standards Manual. All data shall be provided to the Department according to the provisions as detailed under the appropriate CADD links accessed from the Department's Office of Production's web site. This includes, but is not limited to, the level assignments, symbols, lines and line styles that are to be used, line weights, cells, placement of text and file naming conventions. The web site can be accessed at the following URL address:

<http://www.dot.state.oh.us/Divisions/ProdMgt/Production/CADD/Pages/default.aspx>  
<http://www.dot.state.oh.us/Divisions/ProdMgt/Production/Pages/default.aspx>

The following can be accessed from the above URL addresses:

1. ODOT CADD Standard files by selecting the "Microstation Downloads" link
2. ODOT's Location and Design, Volume 3 by selecting the "L&D Manual Vol. 3" link
3. ODOT's GEOPAK Standards by selecting the "GEOPAK Downloads" link

The Department will accept CADD files on CD ROM or DVD electronic media.

1. The Consultant shall submit all CADD information produced in the process of plan development. All CADD information shall be submitted in the current version of MicroStation (\*.dgn) format as indicated in the CADD Engineering Standards Manual. This requirement ensures that ODOT receives an end product that is directly usable on ODOT's CADD systems without additional work. The responsibility to provide the Department with correct and complete CADD data rests with the consultant.
2. The Consultant shall submit all GEOPAK information produced in the process of plan development according to L&D Volume 3, Section 1500. The submission shall include all files generated by GEOPAK as the result of the plan processing and these files shall include but are not limited to the following:
  - a. Coordinate databases (\*.gpk)
  - b. Digital terrain models (\*.tin)
  - c. Original cross section (XS) cell design files
  - d. Edited observation files (\*.obs)
  - e. ASCII text files containing all raw point data (PT #, X, Y, Z, Linking Code/Mapping Code)
  - f. ASCII text files containing all adjusted point data (PT #, X, Y, Z, Linking Code/Mapping Code, Attribute data if any)
  - g. ASCII text file(s) listing chain data for all existing and proposed horizontal alignments; including the centerline of construction, the centerline of right of way and ramp baselines.
  - h. ASCII text file(s) listing vertical alignment data for all existing and proposed profiles.

- i. ASCII text files listing the Northing, easting, station, offset and elevation for all existing and proposed monuments.

A separate file name should be used for each horizontal or vertical alignment. The CADD Engineering Standards Manual provides specific requirements for the content of the required ASCII reports and provides directions on how to create these reports using GEOPAK software.

These requirements and procedures may be updated from time to time with notification in the Design Reference Resource Center (DRRC) website which is located at the following URL, <http://www.dot.state.oh.us/drrc/>. Organizations exchanging ODOT CADD data are responsible for ensuring they are using the current version of these requirements, CADD reference manuals, ODOT cell files and ODOT seed files.

- 8.5 Post-Award Conference:** Within 10 days after bid opening, the DBT shall attend a mandatory post-award meeting. This confidential meeting shall be held with the Estimating Office of the Division of Contract Administration to discuss the Lump Sum estimate with the Department.

- 8.6 Partnering Agreement:** The Contractor is invited to enter into a(n) \_\_\_\_\_ cooperative partnership agreement with the Department on this project. The objective of this agreement is the timely completion of the work and a quality product that will be a source of pride to both the Department and the Contractor. This Partnering Agreement will not affect the terms and conditions of the contract. It is a document which is solely intended to establish an environment of cooperation between the parties. The cost of the partnering workshop(s) will be agreed to and shared equally between the Department and the Contractor. The Contractor will pay all costs directly and the Department will authorize its share to the Contractor by change order. The Contractor is not entitled to any mark ups on the invoiced cost.

- 8.7 Communication:** All communication during design and construction shall be with the District Project Manager and the District Project Engineer.

District's Project Manager's Name: \_\_\_\_\_

Phone number: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

The District Project Engineer shall be named at the pre-design meeting.

At the pre-design meeting, the Contractor shall name a Project Manager who will act as a liaison between the DBT and the Department.

- 8.8 Permits:** Contractor will be required to obtain a permit from the State or local government having jurisdiction, to perform any non-construction work within the existing Right of Way and/or limited access.

**8.9 Entry On Private Property:** The DBT, acting as The Department's agent, may enter upon any lands within the State for the purpose of inspecting, surveying, leveling, digging, drilling, or doing any work deemed necessary in the execution of any survey authorized by the Director of Transportation in accordance with Section 5517.01 of the Ohio Revised Code and Section 102.6 (inclusive of Sections 102.61 through 102.66) of ODOT's Survey Manual. Prior to performing said survey, the DBT will send notification letters indicating the date and duration of entry to the affected property owners no less than forty-eight hours nor more than 30 days prior to the date of entry for said survey in accordance with 102.6 of ODOT's Survey Manual. The DBT shall forward copies of all notification letters distributed to ODOT's Project Manager. Any subsequent claims for compensation due to damages incurred while said survey was being performed will be negotiated between the DBT and the affected property owners with final approval from ODOT's Project Manager. Crop and property damage minimization and reimbursement information, together with the crop damage reimbursement formula and Special Waiver of Damage form, will be provided to the DBT by ODOT's Project Manager. Any subsequent entries onto private property for the purpose of obtaining additional survey or soil information prior to the submission of the bid will be made in accordance with the procedures outlined in this section.

## **9 HAZARDOUS MATERIALS**

## **10 ENVIRONMENTAL**

### **10.1 Waterway Permits:**

It is required that the bidder be aware of Section 404/401 Permits/Certifications for all projects impacting "waters of the US". The level of permit, that is Nationwide versus Individual 404 and 401, is determined by the exact amount of impact to "waters of the US", (i.e., acreage of fill activities in a stream or wetland or linear feet of work in a stream) and in some cases the waters impacted. All individual 404 Permits require 401 Water Quality Certification. Nationwide Permits are activity specific permits used to authorize projects with minor impacts. Projects with more than minor impacts require individual review by the U.S. Army Corps of Engineers and the Ohio Environmental Protection Agency.

The DBT should be aware of the Nationwide Permits and conditions as issued for the State of Ohio and should design projects to meet the requirements of these general permits to avoid the requirements for Individual 404/401 Permits if possible. The Nationwide Permits for the State of Ohio can be found at the various Corps of Engineers' web sites. The Huntington District's web site can be found at:  
<http://www.lrh.usace.army.mil/>.

Coordination of the waterway permits can take up to six (6) months for Individual 404 Permits. Therefore it is imperative that the DBT submit plans (i.e., plan & profile, cross-section and detail sheets for any bridges, culverts, or fill areas in waters) to the District and the Office of Environmental Services, for permit determination, no less than 90 days prior to any in stream or wetland work. The review of plans, any required coordination

or the processing of permit applications must be accomplished by the Office of Environmental Services prior to the commencement of construction activities. The DBT shall be responsible for completing applications for 404 Permits and 401 Water Quality Certification, if they are required. At no time will the DBT coordinate waterway permit issues directly with the permitting agencies unless directed to do so by the Office of Environmental Services.

All Waterway Permit requirements are found in the Waterway Permits Manual.

## **10.2 National Pollutant Discharge Elimination System (NPDES) permit:**

The DBT shall submit to the ODOT Project Manager the total number of acres of earth disturbance activities for both off project and on project work in a timely manner. This information will be used to develop the NOI if required. The NOI will be submitted to the OEPA within 10 days after this information is received from the DBT. Approval from the OEPA takes 21 days and the ODOT Project Manager has 10 days to file the NOI so these 31 days will be counted for in the project.

All temporary erosion control is the responsibility of the Contractor even if a SWPPP is not required. Earth disturbing activity is not permitted prior to the OEPA permit approval. For projects that require an NOI, the SWPPP must be in place prior to the initiation of any earth disturbing activity. All temporary erosion control work and the SWPPP if required will be per SS832. For information about OEPA's NPDES permit requirements see <http://www.epa.state.oh.us/dsw/storm/index.html>. Items used to implement the DBT's Erosion Control requirements are paid from an encumbered amount included in the proposal as a non-bid reference number. The proposal specifies the unit prices for the erosion control items. Payments for erosion control items that exceed the encumbered amount will be made by an Extra Work Change Order using the specified unit prices. The specified unit prices are fixed for the contract and may not be negotiated or adjusted for inflation or claimed changed condition.

## **10.3 Removal of Temporary Erosion Control Items**

All temporary erosion control items shall be removed before the project is accepted. Removed materials shall become the property of the Contractor and shall be disposed of in accordance with the appropriate C&MS specifications.

## **10.4 Stream Crossing Investigations (flood plain analysis)**

The Consultant shall perform a detailed flood plain analysis for each waterway crossing. The analysis shall be as per the Location & Design Manual and The Bridge Design Manual and as follows : The extent of the analysis shall be from a minimum of 500' downstream, to the greater of either one bridge opening/width upstream, or to the limits of the area inundated by the 100-year event. The results of the detailed flood plain study, supporting hydraulic calculations, and recommendations shall be submitted to the District for review and comment prior to construction of the drainage structure. If the proposed

crossing is located in a special flood hazard area as defined by FEMA, the detailed flood plain analysis shall be submitted concurrently to the local flood plain coordinator.

## **11 RIGHT OF WAY (ROW)**

All necessary construction work for the project will be performed within the existing right of way.

Existing right of way lines will be located by the DBT based on requirements specified in Chapter 4733-37 of the Ohio Revised Administrative Code (Board Rules) governed by regulations outlined in Chapter 4733, Ohio Revised Code (Regulation Laws). It is the responsibility of the DBT to research existing right of way information from all available sources including but not limited to ODOT records, County road records, Commissioners' Journals and records of other County offices to the extent necessary to provide an accurate basis for the establishment of the existing right of way.

The DBT will stake and flag the existing right of way in the field prior to the start of construction and will maintain said stakes and flags throughout the duration of the project.

The Consultant will identify and show all right of way encroachments on the construction plans at the Conceptual Review Submission. ODOT's Project Manager will be responsible for clearing all encroachments on Federal-aid projects in accordance with standard encroachment removal

## **12 UTILITIES**

**Utilities Special Provisions** in addition to the Governing Regulations listed in section 8.1 of this document and section 153.64 of the Ohio Revised Code.

**12.1 Existing Utilities:** The District Utility Coordinator, in concurrence with the registered Underground Utility Protection Services- Ohio Underground Protection Service (OUPS) and Oil and Gas Producers Underground Protection Service (OGPUPS) and other utility owners that are non-members of any utility protection services, has determined that the following utilities are located in the area of the project :

**12.2 Utility Coordination Responsibilities:** As soon as it is feasible after the final plan is approved by the Department, the DBT shall stake the existing ROW (and new ROW if additional is acquired) in the field and shall perform clearing and grubbing within that ROW as required by the specifications and the proposal documents, in order to allow utility relocation and reduce potential delays. ROW stakes shall be maintained and updated as needed throughout the project length.

The DBT shall be cognizant of the project's impact on utility facilities. In the event utility rearrangements are required, the project shall not be designed to preclude legal occupancy of the highway ROW by the rearranged utility facilities.

The DBT shall coordinate all existing utilities with construction activities on this project. The DBT shall insure that potential delays in coordination and relocation of the affected utilities are minimized. The DBT shall copy the ODOT Project Manager and the District Utility Coordinator on all correspondence or phone calls between the DBT and each utility. This shall include the submittal of plans to each utility.

A meeting at or near the preliminary review shall be held between the DBT, the District Utility Coordinator and the utility owners to determine if any significant utility relocations can be eliminated or mitigated.

Any betterment to the utility's facility and ineligible, or unnecessary, work shall not be a part of the project's expense but the utility company's fiscal requirement. Determination of eligibility can be coordinated through the District Utility Coordinator. Payment for betterments or ineligible costs shall be made by the appropriated utility through ODOT to the Contractor.

The cost of all utility coordination shall be bid as a Lump Sum Item.

- 12.3 Subsurface Utilities Engineering (SUE):** \_\_\_\_\_ Yes \_\_\_\_\_ No  
If marked yes, the DBT shall use a state approved subsurface utilities engineering location service to field verify all underground utilities prior to beginning of any design work and shall incorporate the results in the design.  
DBT shall have the SUE perform the following Quality Levels: \_\_\_\_\_

### **13 DESIGN AND CONSTRUCTION REQUIREMENTS : MAINTENANCE OF TRAFFIC (MOT)**

**Maintenance of Traffic (MOT) Special Provisions** in addition to the Governing Regulations listed in section 8.1 of this document:

- 13.1 General:** All temporary MOT devices shall comply with the National Cooperative Highway Research Program (NCHRP) 350 Hardware report.

All detour routes shall be provided by the Department and signed by the Contractor. The designated local detour shall also be provided by the Department.

- 13.2 MOT Restrictions:**  
Minimum number of lanes in each direction to remain open during construction: \_\_\_\_\_  
Minimum lane width: \_\_\_\_\_.  
Maximum duration of detour: \_\_\_\_\_.  
Restrictions on lane closures during special events (sports events, fairs, concerts, etc.)  
Restriction related to hospitals, fire and police, schools, etc.

- 13.3 Additional Description of Required Work and special provisions:**  
(add Holiday Closure note as required)

## **14      DESIGN AND CONSTRUCTION REQUIREMENTS : LOCATION & DESIGN**

**Location & Design Special Provisions** in addition to the Governing Regulations listed in section 8.1 of this document:

### **14.1    Survey**

**A. ODOT Survey Responsibilities:** The Department survey crews have provided the following survey information, listed below:

1.      Centerline control and bench marks
2.      Beginning and ending centerline points for the project
3.      At least two bench marks for the project (the datum used was that which the project was originally laid out by)
4.      Critical points such as P.C., P.I., P.T., T.S., C.S.
5.      Vertical clearances for the overhead structures, to serve as a check for the existing vertical clearances

**B. Survey Responsibilities:** All survey data shall be submitted using ODOT's standard field codes and GEOPAK's standard mapping codes. Reduced point data, in comma delimited ASCII text format, will be provided for all surveyed points. This data will include: point number, x coordinate, y coordinate, elevation and point ID. Customized GEOPAK information is available on the ODOT CADD web site.

Monumentation shall not be disturbed. If the Contractor does disturb the monumentation, then it shall be replaced, in-kind, by a Registered Surveyor, with a current registration, recognized by the Ohio State Board of Registration for Professional Engineers and Surveyors. Costs associated for this item shall be borne by the Contractor. Copies of all monumentation changes shall be forwarded to the District Real Estate Administrator.

All control points, provided by ODOT, shall be included in the ASCII file supplied by the DBT to ODOT. They should retain the original point numbers and coordinate values as assigned by ODOT.

The DBT shall provide the following items prior to final acceptance of the Record-Drawing plans:

1.      Copies of all field notes (written or electronic) which shall include the following information:
  - a.      Date
  - b.      Crew members
  - c.      Weather conditions, including temperature, barometric pressure, etc.
  - d.      Instrument(s) used (Serial Number)
  - e.      Raw observation field data
  - f.      Other notes as needed



2. Copies of all Deeds, Plats, Maps and other written evidence used to establish points related to the project including summaries of all parole evidence acquired as a part of the survey operation.
3. Listing of all found monumentation (Horizontal and Vertical).
4. Listing of all monumentation set as part of the project (Horizontal and Vertical) including reference ties for recovery.
5. All monumentation shall be located utilizing NAD 83 (Horizontal Data), NAVD 88 (Vertical Data).
6. Short report indicating adjustment factors and methods, signed and certified by a Registered Surveyor (State of Ohio). The Registered Surveyor (State of Ohio) shall include in the report the datum used and all associated adjustments used.

**14.2 Vertical and Horizontal Alignment:**

**14.3 Pavement:**

**14.4 Roadway:**

**14.5 Drainage:** Yes \_\_\_\_ ; No \_\_\_\_.

**14.6 Design Exceptions:**

Previously approved Design Exceptions:

The Consultant shall advise of any future design features that does not meet the minimum design criteria. The Consultant shall prepare all future design exceptions and submit to ODOT for approval.

**14.7 Interchange Modification/Justifications Studies;**

**14.8 Landscape:** Yes \_\_\_\_ ; No \_\_\_\_.

**14.9 Fencing:** Yes \_\_\_\_; No \_\_\_\_

**14.10 Additional Description of Required Work and Special Provisions:**

## 15 DESIGN AND CONSTRUCTION REQUIREMENTS : STRUCTURES

### 15.1 **Hydraulic data provided by ODOT:** The Department has provided the following items listed below:

1. The waterway opening size of the upstream structure, if the structure is within a half mile.
2. Slab or basement window elevation of an at risk upstream dwelling within a half mile of the structure. An "at risk" dwelling would be at an elevation within two feet above or below the proposed roadway grade.
3. Soil boring information in structure areas.

### 15.2 **Existing Structures Identification:**

Structure File No. L=\_\_\_\_\_ R=\_\_\_\_\_  
Bridge No. \_\_\_\_\_ Feature Intersection \_\_\_\_\_.

### 15.3 **Design and Construction Requirements of Structure \_\_\_\_\_**, in addition to the Governing Regulations listed in section 8.1 of this document:

#### **Existing Structure Data**

Length: L=\_\_\_\_\_ R=\_\_\_\_\_  
Width o/o L=\_\_\_\_\_ R=\_\_\_\_\_ Design Loading = \_\_\_\_\_  
Type: \_\_\_\_\_ Spans = \_\_\_\_\_  
Date Built: \_\_\_\_\_

#### **Alignment & Profile**

Alignment: Existing \_\_\_\_ Relocated \_\_\_\_ ; By ODOT \_\_\_\_ ; By DBT \_\_\_\_:

Profile: Existing \_\_\_\_ Relocated \_\_\_\_ Feathered (Adjustment) \_\_\_\_ .  
By ODOT \_\_\_\_ ; By DBT \_\_\_\_:

#### **Transverse Sections**

Roadway Width: \_\_\_\_\_.

Railing: Type \_\_\_\_\_ Height \_\_\_\_\_.

Fence: Yes \_\_\_\_ No \_\_\_\_ Height/Configuration \_\_\_\_.

Sidewalks: Yes \_\_\_\_ No \_\_\_\_ Width \_\_\_\_.

Investigate the need for **Prefabricated Structure**: Yes \_\_\_\_ ; No \_\_\_\_.

Investigate the need for **Retaining Walls**: Yes \_\_\_\_ ; No \_\_\_\_.

The Consultant shall use the same **span lengths** shown on the existing original plans for the design, and preparation of the detail construction plans for the construction of this structure. The number of spans must also remain the same.

All Shop Drawings shall comply with Item 501.

Initial **foundation investigation** shall be provided by the Department

Note: Collection of **additional** soils information shall be the responsibility of the DBT and considered incidental to this design effort.

- 15.4 Noise Barrier, in addition to the Governing Regulations listed in section 8.1 of this document** the DBT shall design, prepare the detail construction plans, and construct the noise barrier according to the following design requirements:

**General Noise Barrier Requirements:**

**Noise Barrier Panels and Posts:**

**Noise Barrier Bearing Pad and Block Riser:**

**Noise Barrier Foundations:**

**Specific Barrier Descriptions:**

**Other Noise Barrier Requirements:**

**Additional Description of Required Work and special provisions:**

Initial **foundation investigation** shall be provided by the Department

Note: Collection of **additional** soils information shall be the responsibility of the DBT and considered incidental to this design effort.

## **16 DESIGN AND CONSTRUCTION REQUIREMENTS : TRAFFIC CONTROL**

- 16.1 Pavement Markings and Delineators Special Provisions** in addition to the Governing Regulations listed in section 8.1 of this document:

**A. Pavement Marking **Requirements and Locations:**.**

**B. Raised Pavement Markers **Requirements and Locations:****

**C. Delineators:** Yes \_\_\_\_ ; No \_\_\_\_.

All flexible delineators shall conform to Item 620 and shall be placed in accordance with current design standards. Confirmation that no conflicts exist between the proposed locations of delineators and any underground utilities shall be made prior to the installation of the delineators.

**Locations and requirements:**

**D. Barrier Reflectors:** Yes \_\_\_\_ ; No \_\_\_\_.

All barrier reflectors shall conform to Item 626 and shall be placed on bridge parapets, **concrete barrier walls, retaining walls** and guardrail, in accordance with current design standards. **Guardrail blockout reflectors shall be installed on the side of the blockout away from traffic.**

**E. Object Markers:** Yes \_\_\_\_ ; No \_\_\_\_.

All object markers shall conform to Item 630, Sign, Flat Sheet.

**Locations and requirements:**

**16.2 Signing Special Provisions** in addition to the Governing Regulations listed in section 8.1 of this document:

**A. Flat Sheet Signs:** Yes \_\_\_\_ ; No \_\_\_\_.

1. Replace all existing flat sheet signs with new signs, except as indicated below. This includes all signs on the mainline and interchange ramps. This also includes all STOP signs on intersecting roads. Size the signs in accordance with the OMUTCD, except as follows:
2. The following signs shall remain in place and not be replaced:
3. The following signs shall be removed and not replaced:
4. The following signs shall be installed where none currently exist:
5. The following signs will be provided by ODOT for contract installation:
6. At the following locations, the signs shall be mounted overhead:
7. Removed flat sheet signs shall become the property of the Contractor.

**B. Extrusheet Signs:** Yes \_\_\_\_ ; No \_\_\_\_.

1. Replace all existing extrusheet signs with new signs, except at the locations indicated below. This includes all signs on the mainline and interchanges ramps. Size the signs in accordance with the OMUTCD (exceptions are noted below):

2. The entrance ramp approach signing on the following roads shall be included in this project:
3. The following signs shall remain in place and not be replaced:
4. The following signs shall be removed and not replaced:
5. The following signs (in addition to those required by the OMUTCD and TEM) shall be installed where none currently exist:
6. The following signs will be provided by ODOT for contract installation:
7. Tourist-Oriented Directional Signs (TODS) and logo signs are installed and maintained by Ohio Logos, Inc., under contract with and in locations approved by ODOT. Under the terms of the contract, Ohio Logos can be required to temporarily remove or relocate the signs during construction. They can also be required to permanently remove or relocate the signs. Contact Ohio Logos at 1-800-860-5646 to coordinate removals or relocations of TODS and logo signs.
8. At the following locations, the signs shall be mounted overhead:
9. Removed extrusheet signs shall become the property of the Contractor.

**C. Ground Mounted Post Supports:** Yes \_\_\_\_ ; No \_\_\_\_.

1. Replace all existing ground mounted post supports with new supports. New sign installations shall be on new supports. No reuse of existing ground mounted supports shall be allowed.
2. Removed ground mounted supports shall become the property of the Contractor.  
Except the following:

**D. Ground Mounted Beam Supports:** Yes \_\_\_\_ ; No \_\_\_\_.

1. Replace all existing ground mounted beam supports with new ones, except at the locations indicated below:
2. Supports subject to multidirectional impacts at intersections shall use the alternate connection on sizes larger than S4 x 7.7.
3. Removed ground mounted beam supports shall become the property of the Contractor. Except for the following:

**E. Overhead Supports:** Yes \_\_\_\_ ; No \_\_\_\_.

1. Location of all supports shall be as per the Traffic Engineering Manual
2. The following overhead supports shall be reused in place:
3. The following overhead supports shall be relocated:
4. The following overhead supports shall be replaced:
5. At the following locations, new overhead supports shall be installed:
6. The steel portions of existing overhead sign supports at the following locations shall be recoated using the process described in Attachment \_\_\_\_:
7. The steel portions of new overhead supports at the following locations shall be coated using the process described in Attachment \_\_\_\_:
8. The following aesthetic treatments shall be used:
9. At all locations, a minimum vertical clearance of seventeen feet shall be maintained.
10. At the following locations, the median end frame foundation shall be in accordance with the details shown in Standard Construction Drawing TC-21.40:
11. At the following locations, protection of the end frame or poles shall be achieved as follows:
12. All sign attachment assemblies shall be replaced.
13. Removed overhead supports and sign lighting components shall become the property of the Contractor.

**16.3 Lighting Special Provisions** in addition to the Governing Regulations listed in Section 8.1 of this document:

**16.4 Traffic Signals Special Provisions** in addition to the Governing Regulations listed in Section 8.1 of this document:

**A. Signal Supports:** Yes \_\_\_\_ ; No \_\_\_\_.

1. Shall be galvanized steel. No wood poles.
2. For span wire installations, pole strength shall be designed for 3% sag and pole height shall be designed for 5% sag.
3. Strain poles shall be a minimum size of Design 5 and of the anchor base type.
4. Location of the supports shall be as per the Traffic Engineering Manual.

5. Clearance from overhead electric wires shall be as per utility company requirements.

#### **B. Vehicle Signal Heads:**

1. Shall be made of \_\_\_\_\_.
2. Lenses shall be 12 inch and made of \_\_\_\_\_.
3. Shall be completely \_\_\_\_\_ except for the inside of visors which shall be black.
4. Tri-stud wire entrance fitting
5. Far side mounting of signal heads shall be used as much as practical.
6. For protected/permissive operation of a 5-section signal head (either left or right turn), the recommended location of the signal head is over an extension of the channelizing line, through the intersection, that separates the turn lane and the through lane.
7. Shall have backplates.
8. Shall be rigidly mounted on mast arms or tethered on span wires.

#### **C. Pull box:**

1. Shall be concrete, CMS 725.08, 18 inch minimum opening size.
2. Shall not be located in curb ramp areas.
3. Shall not be located where subject to vehicular traffic.

#### **D. Conduit:**

1. Maximum conduit run length between pull boxes and/or poles is 200 feet.
2. Conduit under roadway pavement shall be 3 inch diameter minimum.
3. Conduit must be sized for the number and size of the conductors contained in the conduit. Cable fill should not exceed 40% of the inside cross sectional area of the conduit.
4. Conduit shall be CMS 725.04.

#### **E. Cable and Wire:**

1. Unswitched power cable shall not be run inside of conduit, poles or pull boxes containing other signal cables.
2. Lighting cables operating at voltages higher than 120 volts shall not be run inside of conduit, poles or pull boxes with signal cables.
3. Utility company approval shall be obtained for the attachment of any interconnect cables to utility poles, and for the location of power sources.
4. All abandoned cables shall be removed from aerial spans, conduit and pull boxes. Direct burial cables will be abandoned in place.
5. Signal messenger wire size shall be 3/8 inch diameter.

**F. General:**

1. All signal installations shall be designed and equipped for “approach monitoring”. If a two phase signal is used, a dual ring controller and cabinet wiring utilizing phases 2+6 and 4+8 will be furnished and installed.

**G. Signal(s) is part of an Intelligent Transportation System** (as defined by the Traffic Engineering Manual, Part 13): Yes \_\_\_\_ ; No \_\_\_\_

**16.5 Intelligent Transportation Systems (ITS):** Yes\_\_\_\_; No\_\_\_\_

1. Reference the following documents for ITS requirements:

“Project Level ITS Architecture Report” dated \_\_\_\_\_

“Systems Engineering Analysis” dated \_\_\_\_\_

2. Other ITS Requirements:

**17 PROJECT SCHEDULE REQUIREMENTS**

The current edition of Proposal Note 107, including updates released on or before the prebid meeting date, shall be met or exceeded.

**18 PLAN SUBMITTALS AND REVIEW REQUIREMENTS**

**18.1 Plan Components:** All plans submitted by the DBT shall be in conformance with the following ODOT manuals:

1. Real Estate Policies and Procedures Manual Section 3100.  
The DBT shall also identify all topographic features within the existing and proposed Right-Of-Way limits, including underground utilities.
2. Bridge Design Manual.
3. Location and Design Manual, Volume 3:  
The following sections of the Location and Design Manual, Volume 3 are **NOT** required:  

1302.13	Plan Signatures
1307.2	General summary sheet
1307.3	Subsummaries
1307.4	Quantity Calculations
1310.3	Earthwork and Seeding Quantities

Units of measure are **NOT** required.

Simplified plans (section 1301.2) are **NOT** allowed.



**18.2 Quality Control:** The DBT will be responsible for the professional quality, technical accuracy and adherence to the Governing Regulations listed in section 8.1 of this document, for all plan submittals required under this contract.

The DBT shall immediately notify the Department of any apparent discrepancy between the various design and construction manuals and the Conceptual Documents.

Unless stated otherwise, review comments do not revise the scope or intent of the project and do not constitute a request for changes beyond the current contracted Scope of Services.

In the event the Department determines that any required submission is incomplete, contains inaccuracies which preclude a meaningful review, or does not adhere to the Governing Regulations listed in section 8.1 of this document, the Department will advise the DBT of the shortcomings and direct the DBT to revise and resubmit the plan. No time extension will be granted as a result of such action. The Department will schedule a review meeting or issue review comments as appropriate.

In the event the DBT believes that any review comment, or orders issued by the Department, require a change to the scope of the agreed work, the DBT shall first contact the Department for clarification and shall, within 10 days of receipt of the comments or orders, provide written notice to the District Project Manager and Project Engineer concerning the reasons why the DBT believes the scope has been changed.

**18.3 Stage 1 Plan Review Submission:** The DBT shall submit the Stage 1 detailed design plan submissions as per Location & Design Manual, Volume 3 for review by ODOT. These submission milestones must be shown on the Progress Schedule.

Unless indicated below, the Department shall have 14 calendar days from receipt to review complete submissions. This review time must be shown on the required Progress Schedule.

Submittal	Adjusted Review Time

Following this review, the DBT shall correct any errors, incorporate modifications, perform required investigations and make related changes to the plans and supporting documents prior to submitting the plans for final review.

Plan Review Distribution Table : The DBT shall supply half size (11" x 17") paper prints simultaneously to the parties indicated below, except that **each affected utility company shall receive one full size (22"x34") plans**

	Number of half size Sets
ODOT District Production	
ODOT District Construction	
ODOT Central Office, Division of Highway Operations	
_____ Region Real Estate	
Each affected utility or railroad company	

- 18.4 Major Design Decision:** Separate submittals for concurrence with major design decisions made after the Stage 1 Review are required. Major design decisions involve significant utility relocation, unforeseen acquisition of ROW, traffic operation or geometric decisions that involve two or more viable solutions, and any other decision that impacts the public, operation of the facility or future maintenance.

When the DBT becomes aware of additional decisions during the course of the design, they must advise the District Project Manager in writing.

- 18.5 Stage 2 Plan Review Submission:** For each Buildable Unit the Consultant shall submit Stage 2 detailed design plans as per Location & Design Manual, Volume 3 for review by ODOT. All submissions must be shown on the required Progress Schedule.

The Department shall have 14 calendar days from receipt to review complete submissions. This review time must be shown on the required Progress Schedule.

Following the review the Department will return to the DBT marked plans noted 'ACCEPTED', 'ACCEPTED AS NOTED' or 'NOT ACCEPTED' as described in section 105.02 of the Construction and Material Specifications. The DBT shall correct errors, incorporate changes, perform investigations and make related changes to the plans and supporting documents prior to submitting construction plans.

Plan Review Distribution Table: The DBT shall supply half size (11" x 17") paper prints simultaneously to the parties indicated below except **that each affected utility company shall receive one full size (22"x34") plans:**

	Number of half size Sets
ODOT District Production	
ODOT District Construction	
ODOT Central Office, Division of Highway Operations	
_____ Region Real Estate	

**18.6 Construction Plans:** After the review comments for the final plan review submission have been complied with, and following approval of the design documentation, the DBT shall prepare plan sets for use during construction. All review comments shall be resolved in writing by the DBT to the satisfaction of the Department before the DBT submits the construction plans. Each plan sheet shall have its last revised date noted on the sheet and clearly marked 'Approved For Construction'. The 'Approved For Construction' plan set shall be signed, dated and sealed by a Professional Engineer. Physical construction shall not begin until the plans marked 'Approved For Construction' are delivered to each party on the Plan Distribution Table below. No time extensions will be approved by the District Construction Engineer if the plan distribution is not completed and project delays occur as a result.

Plans Distribution Table : The DBT shall supply full size (22" x 34") and/or half size (11" x 17") paper prints of the each plan submission simultaneously to the parties indicated below:

	# of Full Sets	# of Half Sets
ODOT District Production		
ODOT District Construction		
ODOT Central Office, Division of Highway Operations		
ODOT Central Office, Division of Construction Management		
Federal Highway Administration		
_____ County Engineer		
_____ City Engineer		
_____ Region Real Estate		
Each affected utility or railroad company		

## **18.7 Plan Distribution Addresses:**

Ohio Department of Transportation, District \_\_\_\_\_.  
(Complete Address):

Ohio Department of Transportation Central Office  
Division of Highway Management  
1980 West Broad Street  
Columbus, Ohio 43223  
Attn: (Contact Person)

Ohio Department of Transportation Central Office  
Division of Construction Management  
1980 West Broad Street  
Columbus, Ohio 43223  
Attn: (Contact Person)

Ohio Department of Transportation Central Office  
Office of Environmental Services  
1980 West Broad Street  
Columbus, Ohio 43223  
Attn: (Contact Person)

Federal Highway Administration  
200 North High Street  
Room 328  
Columbus, Ohio 43215-2408  
Attn: (Contact Person)

County Engineer (address and contact person)

City Engineer (address and contact person)

Ohio Department of Transportation - \_\_\_\_\_ Real Estate Region  
(address and contract person)

Utility Companies  
(As shown in section 12)

## **19 BUILDABLE UNITS (BU)**

**Definition:** Buildable Units are portions of the projects which can be designed, reviewed and built with only limited controls and assumptions coming from the design of other portions of the project. Often a Buildable Unit will be defined by a geographic area within the plan, but it may also be defined by types of work or construction stages which may require or permit similar, nearby work to be divided into separate Buildable Units.

All Buildable Units shall summarize the materials required to construct that portion of the project. The summary shall include the Construction and Material Specifications Item Number, and a description of the materials to be used.

**General:** After the approval of the Preliminary Plan, the DBT may break the project work into two or more separate BU which can be progressed through design and construction with minimal or known effect on each other and/or which can be dealt with sequentially such that sufficient data is available for design and review of each BU. In order that the design and construction of one BU may proceed without significant approved information from an associated BU, the DBT may develop and propose assumptions which will allow for the first BU to proceed through design and/or construction. These assumptions shall be submitted for review and comment but their accuracy and effect upon the final design are the sole responsibility of the DBT. Should error in these assumptions result in additional work, remedial work or other changes to assure an acceptable design or should they result in the need to remove work and substitute additional work, the Contractor shall be responsible for all such costs including, removal of unacceptable materials from the site, modification, additional work, repairs, etc. as necessary to produce an acceptable result.

If the DBT elects to develop Buildable Units, the DBT shall prepare, for review by the Department, a table of Buildable Units for the project with each BU described in detail. If the table is approved, the DBT shall modify the Progress Schedule to show a separate group of activities for BU and these activities shall encompass all of the design and construction work in each BU. Work activities shall be further separated in the Progress Schedule to show a meaningful completion status (i.e. separate activities comprising the placement of a bridge deck on steel beams shall describe; shoring, form building, steel placement, placement of conduit & joints, pouring concrete, forming parapets, pouring or slip forming parapets, provision of membranes, provision of wearing surfaces, curing, repair, form removal, cleaning, etc.).

The Final Review Submission and construction plans shall specifically be identified by the Buildable Unit code. If the design of a BU requires input information from an adjacent or related BU, the source for that information in previously approved plans shall be cited or the DBT shall provide an estimated value of the data. The input data shall also be carefully identified. In the same way any assumption, calculations or results from the stage and BU which are used as input to another BU shall be similarly identified, and where appropriate, compared back to that BU to verify previous assumptions. Should assumptions not match values calculated later, the DBT shall re-analyze all affected components and determine appropriate changes. Should those elements have already been constructed, the DBT shall recommend repairs, adjustments, modifications or replacement of the existing work as necessary to comply with the Scope of Work. All costs for re-design, re-submissions, modifications, removals, disposal of materials and new work needed to remedy the project and bring it to compliance shall be borne by the Contractor and no time extensions shall be approved for this.

**20      INDEX OF ATTACHMENTS**