The OHIO DEPARTMENT of TRANSPORTATION

**Consultant Fee Estimation Guidance**



October 1, 2014

Revised:

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| --- | --- | --- | --- | --- |
| 4/1/15 |  |  |  |  |
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**Preface**

The negotiation of fair and reasonable fees for consultant contracts has long been a subject of discussion between the Department and the consultant community. With the Office of Consultant Services, twelve District Offices and other ODOT Offices all negotiating fees with numerous consultants under ODOT’s decentralized structure, negotiating on a consistent basis has been a challenge for the Department. The negotiation of equitable fees was included as a discussion topic on the agenda of the May, 2012 ODOT/ACEC Ohio Partnering Conference, which led to the initiation of a joint effort between the Department and the American Council of Engineering Companies of Ohio (ACEC) to address the issue. The ODOT/ACEC Consultant Fee Committee first met on February 27, 2013 and proceeded to appoint Steering and Oversight Committees, along with thirteen technical Subcommittees.

This effort has substantial grounding in both State Law and Federal Rules including the following: Chapter 5526 of the Ohio Revised Code (ORC) authorizes the Director of the Department of Transportation to *“employ or enter into contracts with any qualified firm for professional services in accordance with this chapter”*. Section 5526.05 of the ORC further directs the Department to negotiate *“compensation that is fair and reasonable, taking into account the estimated value, scope, complexity, and nature of the services”.* Additionally, Title 23 – Highways; Part 172 – Administration of Engineering and Design Related Service Contracts of the Code of Federal Regulations directs the Department to develop written procedures for the “*negotiation of the reimbursement to be paid to the selected consultant”.*

The Steering Committee and each technical Subcommittee included two or more ACEC representatives. The initial goals of the Subcommittees were: 1) Identification of work elements and project characteristics that drive the cost of the work; and 2) Determining the associated units of measure. The Subcommittees adopted a Low – Medium – High standard for measuring complexity worked in development of person-hour standards for each task, and in some cases a reasonable distribution of work among various experience/expertise levels of consultant staff. The Subcommittee recommendations were reviewed by other Subcommittees to assure coordination of the efforts and avoid overlapping work tasks.

The successful development of this document was a collaborative effort between the Department and ACEC, as will be the successful use of the document and its further development. Implementation will require judgment in its use and ongoing refinement of the initial guidance. Successful negotiation of an agreement must be beneficial to both parties, and ongoing collaboration between ODOT and ACEC will ensure the future success of the Consultant Fee Estimation Guidance document.

**Introduction**

The Department’s Consultant Fee Estimation Guidance was developed to assist the Ohio Department of Transportation (ODOT) and Consultants in estimating fair and reasonable fees for professional services. This guidance will serve as a reference tool for ODOT Consultant Contract managers, project managers (both ODOT and Consultant) and other staff involved in estimation and negotiation of staff hours to effect a uniform and consistent process in Districts and Central Office. The guidance is stated in person hours in order to comply with 23 CFR Part 172, 23 USC 112(b)(2), and 48 CFR part 31. Negotiations will consider a Consultant’s direct hourly rates and audited indirect cost rate, although some sections of the Guidance address personnel categories that are appropriate for different tasks.

In this initial version of the Guidance, only Project Development Process activities are addressed. In the future, additional work types including real estate acquisition, bridge inspection and construction administration/inspection may be added.

The individual tasks included for the various project development activities (Environmental, Roadway, Drainage, etc.) have been developed to reflect the factors that reflect the difficulty and cost of completing the work. These tasks may differ from current practice in many instances. Each project activity section includes a description of the overall logic utilized in establishing the tasks and staff hours identified for each task.

The staff hour guidance is provided for Low, Medium and High levels of complexity for each specific task. The overall complexity or type of project (Widening, Reconstruction, New Alignment, etc.) does not dictate the level of complexity of each activity or task – Low or High complexity tasks may occur on any project. In using the guidance, it is important to compare the definitions and narrative provided for each task to the actual project requirements – which may fall above, below or between the definitions of the Low, Medium and High levels of complexity. Where such variations occur, all changes to the standard Scope and guidance should be identified in the project narrative within the scoping document (SAFe).

This initial issuance of the Guidance will certainly require updates and additions as it is used to negotiate projects and actual project development experience becomes available. The Guidance should be viewed as an ongoing improvement process that makes the best use of feedback from users. Both Consultants and ODOT staff are encouraged to continually evaluate the Guidance with a goal of adding to and improving the document.

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**Log of Changes/Revisions Made**

| **Date** | **Task** | **Change** |
| --- | --- | --- |
| 10/16/14 | 2.7.D.A-Geotech Serv. | Added Lab Testing and Geotech Report %’s to table. |
| 10/16/14 | 2.7.A.C - Schematic | Revised High hour from 12 to 32 on Master Task List and in Section 22 |
| 10/21/14 | 2.7.A.F – Cross Sections | Revised task ID to 2.7.A.E and Revised P&P Mainline to 2.2.A.F |
| 11/6/14 | MOT Note 47 | Correct reference from 4.2.?.? to 4.2.F.A |
| 11/6/14 | Master Task List only 3.4.C.A to 3.4.C.D | Duplicate 3.4.C.A’s fixed numbering from 3.4.C.A to 3.4.C.D – matches table in 28. Right of Way Plans |
| 2/18/15 | 2.3.A.E –Bridge Survey | Bridge Survey shown twice, once in Section 19, Survey and once in Section 27, Structures. Removed from Section 27 |
| 2/18/15 | 4.2.A.M-General Summary Sheet | Revised hours (Section 22 correct, revised Master Task List) |
| 2/18/15 | 4.2.A.P-General Notes | Revised hours (Section 22 correct, revised Master Task List) |
| 2/18/15 | 3.3.E.G - Temporary Signal Details (Modification of Existing or Proposed Signal) | Added ”)” at the end of task name in Section 20 |
| 2/18/15 | 4.2.A.D-Earthwork and Seeding Subsummary | Revised High to be by sheet vs. project on the Master Task List |
| 4/1/15 | Mussel Survey Section | Replaced entire Section. New limits and thresholds. Revised hours for Task 3.1.Q – Mussel Survey to reflect changes to hours |
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# Master Task List

|  |  | **Low** | **Med** | **High** |
| --- | --- | --- | --- | --- |
| **Task Number / Task Name** | **Units** | **Rate** | **Rate** | **Rate** |
|  |  |  |  |  |
| **1 - Planning Phase** |  |  |  |  |
|  |  |  |  |  |
| **1.1 - Project Start-up** |  |  |  |  |
| 1.1.A - Planning and Programming |  |  |  |  |
| 1.1.B - STIP/TIP |  |  |  |  |
| 1.1.C - Internal Meeting with Project Sponsor and ODOT staff |  |  |  |  |
|  |  |  |  |  |
| **1.2 - Project Initiation Package** | project | 20 | 36 | 70 |
| 1.2.A - Define Study Area and Logical Termini |  |  |  |  |
| 1.2.B - Conduct Field Review (walk through) |  |  |  |  |
| 1.2.C - Identify Discipline Specific Issues for Project Initiation Package |  |  |  |  |
| 1.2.C.A - Identify Design Issues |  |  |  |  |
| 1.2.C.B - Identify Geotechnical Issues |  |  |  |  |
| 1.2.C.C - Identify Environmental Issues |  |  |  |  |
| 1.2.C.D - Identify Utility Issues |  |  |  |  |
| 1.2.C.E - ITS Project Determination |  |  |  |  |
| 1.2.D - Project Initiation Package Preparation and Submittal |  |  |  |  |
| 1.2.E - Aerial/Base Mapping Coordination with ODOT |  |  |  |  |
| 1.2.F - Concept, Scope and Budget Estimates | project | 8 | 24 | 40 |
|  |  |  |  |  |
| **1.3 - Existing Data, Research and Analysis** |  |  |  |  |
| 1.3.A - Transportation and Land Use Plans |  |  |  |  |
| 1.3.B - Crash Analysis |  |  |  |  |
| 1.3.C - Traffic Counts |  |  |  |  |
| 1.3.C.A - Turning Movement Counts at Intersections - No Build |  |  |  |  |
| 1.3.C.B - Machine Counts on Roadways and Ramps - No Build |  |  |  |  |
| 1.3.D - Planning Level Traffic - No Build Condition |  |  |  |  |
| 1.3.E - Certified Traffic - No Build Condition |  |  |  |  |
| 1.3.F - Capacity Analysis - Existing Conditions |  |  |  |  |
| 1.3.G - Develop Purpose & Need |  |  |  |  |
|  |  |  |  |  |
| **1.4 - Stakeholder Involvement and Public Involvement Plan** |  |  |  |  |
| 1.4.A - Public Involvement Plan |  |  |  |  |
|  |  |  |  |  |
| **1.5 - Project Management for Planning Phase** |  |  |  |  |
| 1.5.A - Meetings |  |  |  |  |
| 1.5.B - General Oversight | month | 10 | 20 | 40 |
| 1.5.C - Project Set Up | lump | 10 | 20 | 40 |
| 1.5.D - Non Routine (Soft) Items | month | 4 | 16 | 32 |
|  |  |  |  |  |
| **1.6 - Limited Review** |  |  |  |  |
| 1.6.A - QA/QC for Limited Review |  |  |  |  |
|  |  |  |  |  |
| **2 - Preliminary Engineering Phase** |  |  |  |  |
| **2.1 - Develop Preliminary Alternatives** |  |  |  |  |
| 2.1.A -Prepare Feasibility Study Report | PDP Path & thresholds | 34 | 194 | 324 |
| 2.1.A.A - Planning Level Traffic for Feasible Alternatives |  |  |  |  |
| 2.1.A.B - Capacity Analysis for Alternatives |  |  |  |  |
| 2.1.A.C - Field Survey and Aerial Mapping - Planning Level |  |  |  |  |
| 2.1.A.D - Typical Section |  |  |  |  |
| 2.1.A.E - Preliminary Alignment and Profile |  |  |  |  |
| 2.1.A.F - Cross-Sections |  |  |  |  |
| 2.1.A.G - Mapping |  |  |  |  |
| 2.1.A.H - Stakeholder Public Involvement |  |  |  |  |
| 2.1.A.I - Prepare Feasibility Study |  |  |  |  |
|  |  |  |  |  |
| **2.2 - Perform Environmental Field Studies** |  |  |  |  |
| 2.2.A - Property Owner Notification |  |  |  |  |
| 2.2.B - Phase I Cultural Resource History/Architecture Survey | study area size | 48 | 100 | 144 |
| 2.2.C - Ecological Survey Report |  |  |  |  |
| Level 1 | study area  thresholds | 61 | 110 | 150 |
| Level 2 | study area  thresholds | 130 | 190 | 380 |
| 2.2.D - Environmental Site Assessment Screening | project | 40 | 92 | 140 |
| 2.2.E - Social and Economic Resources |  |  |  |  |
| 2.2.F - 4(f) determinations |  |  |  |  |
| 2.2.G - Noise Analysis | project thresholds | 80 | 200 | 400 |
| 2.2.H - Noise Analysis - Public Involvement | project thresholds | 42 | 84 | 184 |
|  |  |  |  |  |
| **2.3 - AER Design** |  |  |  |  |
| 2.3.A - Field Survey and Aerial Mapping |  |  |  |  |
| 2.3.A.A - Project Control, Benchmarks, and Reference Points |  |  |  |  |
| A.1 Type “A” Concrete Monument (See RM 1.1) | monument | 36 | 40 | 46 |
| A.2 Type “B” Monument Specified | monument | 16 | 20 | 24 |
| 2.3.A.B - Monumentation recovery |  |  |  |  |
| B.1 - Existing Centerline and R/W | 1 mile | 22 | 28 | 44 |
| B.2 - Property Lines (Used on projects with… … additional R/W needed) | owner | 22 | 28 | 42 |
| 2.3. A.C - Base Mapping (incl. field verify.) |  |  |  |  |
| C.1 - No R/W Project | 0.1 mile | 16 | 22 | 26 |
| C.2 - R/W Project | 0.1 mile | 20 | 26 | 34 |
| 2.3.A.D - Drainage Survey (stream cross sections) | 0.1 mile | 12 | 16 | 20 |
| 2.3.A.E - Bridge Survey |  |  |  |  |
| E.1 - For complete replacement | bridge | 22 | 30 | 44 |
| E.2 - For Bridge Rehabilitation Over a Road | bridge | 26 | 40 | 48 |
| E.3 - For Bridge Rehabilitation Over a Stream or River | bridge | 30 | 48 | 72 |
| 2.3.A.F - Establish property lines, tax id, & ownerships on base map | owner | 4 | 5 | 7 |
| 2.3.A.G - Property Owner Notification | owner | 1.5 | 2 | 2.5 |
| 2.3.B - Roadway |  |  |  |  |
| 2.3.B.A - Design Criteria |  |  |  |  |
| 2.3.B.B - Conceptual Typical Sections |  |  |  |  |
| 2.3.B.C - Horizontal Alignment and Vertical Profile - Mainline |  |  |  |  |
| 2.3.B.D - Plan and Profile - Crossroads |  |  |  |  |
| 2.3.B.E - Plan and Profile - Ramps |  |  |  |  |
| 2.3.B.F - Conceptual cross sections |  |  |  |  |
| 2.3.B.G - Interchange Geometrics |  |  |  |  |
| 2.3.B.H - Analyze Drive locations |  |  |  |  |
| 2.3.B.I - Identify Construction Limits |  |  |  |  |
| 2.3.B.J - Preliminary Pavement Design |  |  |  |  |
| 2.3.C - Drainage |  |  |  |  |
| 2.3.C.A - Drainage Design Criteria Forms (LD-35) | each | 0.5 | 0.5 | 0.5 |
| 2.3.C.B - LD-33 Form (Contact County Engineer) | each culvert | 0.25 | 0.25 | 0.25 |
| 2.3.C.C - Hydraulically size all major storm sewer trunk lines | station | 0.5 | 1.25 | 2 |
| 2.3.C.D- Perform preliminary hydraulic analysis for culverts | each | 2 | 9 | 16 |
| 2.3.C.E- Conceptual BMP | station | 0.25 | 0.5 | 1 |
| 2.3.C.F - Estimate impact to wetlands, streams, & other regulated waters of the US and potential wetland mitigation |  |  |  |  |
| 2.3.D - Traffic Control |  |  |  |  |
| 2.3.D.A - Documentation of Proprietary Bid Justification – Signals | Signal | 4 | 5 | 6 |
| 2.3.D.B - Documentation of Proprietary Bid Justification - Lighting | Project | 3 | 4 | 6 |
| 2.3.D.C - Documentation of alternate bid considerations for signal equipment | Signal | 4 | 5 | 6 |
| 2.3.D.D - Documentation of alternate bid considerations for lighting equipment | Project | 3 | 4 | 6 |
| 2.3.E - Signals |  |  |  |  |
| 2.3.E.A - Signal Warrant Analysis | Signal | 3 | 3 | 3 |
| 2.3.E.B - CFR 940 Documentation | Signal | 3 | 3 | 3 |
| 2.3.E.C - Railroad Coordination - Signals | Signal | 3 | 4 | 5 |
| 2.3.F - Maintenance of Traffic |  |  |  |  |
| 2.3.F.A - MOTEC Request |  |  |  |  |
| 2.3.F.A.1 - MOTEC Request - Report Preparation | per report | 16 | 24 | 32 |
| 2.3.F.A.2 - MOTEC Request - Report Graphics | per scenario | 12 | 12 | 12 |
| 2.3.F.A.3- MOTEC Request - Traffic Counts | \*See Note | \*See Note | \*See Note | \*See Note |
| 2.3.F.A.4 - MOTEC Request - Modeling - Queue Analysis | per scenario | 8 | 16 | 24 |
| 2.3.F.A.5 - MOTEC Request - Modeling - HCS | per intersec-tion and/or segment | 4 | 4 | 4 |
| 2.3.F.A.6 - MOTEC Request - Modeling - Select Link Analysis | per intersec-tion and/or segment | 8 | 8 | 8 |
| 2.3.F.A.7 - MOTEC Request - Geometric Analysis for Temporary Traffic | per ramp investiga-tion | 8 | 16 | 32 |
| 2.3.F.A.8 - MOTEC Request - Cost Estimate | per scenario | 16 | 16 | 16 |
| 2.3.F.B - MOTAA |  |  |  |  |
| 2.3.F.B.1 - MOTAA - Report | per report | 24 | 40 | 60 |
| 2.3.F.B.2 - MOTAA - Conceptual MOT Plan | per MOT scenario | 32 | 52 | 72 |
| 2.3.F.B.3 - MOTAA - Construction Cost | per MOT scenario, per MOT phase | 4 | 4 | 4 |
| 2.3.F.B.4 - MOTAA - Construction Schedule/Duration | per MOT scenario | 4 | 6 | 10 |
| 2.3.F.B.5 - MOTAA - Detour Route Investigation | per detour | 12 | 12 | 12 |
| 2.3.F.B.6 - MOTAA - Modeling - Queue Analysis | per scenario | 8 | 16 | 24 |
| 2.3.F.B.7 - MOTAA - Modeling - HCS | per intersec-tion and/or segment | 4 | 4 | 4 |
| 2.3.F.B.8 - MOTAA - Modeling - Select Link Analysis | per intersec-tion and/or segment | 8 | 8 | 8 |
| 2.3.F.C - Conceptual MOT Plan (Without MOTAA) | per MOT phase | 8 | 22 | 36 |
| 2.3.G - Utilities |  |  |  |  |
| 2.3.G.A - Utility Coordination and Documentation |  |  |  |  |
| 2.3.G.B - Subsurface Utility Engineering |  |  |  |  |
| 2.3.H - Miscellaneous |  |  |  |  |
| 2.3.H.A - Identify and coordinate impacts on FEMA flood zones | each culvert/brg. | 4 | 10 | 16 |
| 2.3.H.B - Determine permissible location for waste and borrow |  |  |  |  |
| 2.3.H.C - Determine potential locations for retaining walls |  |  |  |  |
| 2.3.H.D - Determine Lighting needs - investigate warrants | Project | 40 | 49 | 58 |
| 2.3.H.E - Identify potential total take parcels |  |  |  |  |
| 2.3.H.F - Railroad Coordination |  |  |  |  |
| 2.3.H.G - Evaluate aesthetic options |  |  |  |  |
| 2.3.H.H - Value Engineering |  |  |  |  |
| 2.3.H.I - Determine need for Design Exception |  |  |  |  |
|  |  |  |  |  |
| **2.4 - Prepare Cost Estimates** |  |  |  |  |
| 2.4.A - Roadway/Interchange Costs |  |  |  |  |
| 2.4.B - Right of Way Costs |  |  |  |  |
| 2.4.C - Utility |  |  |  |  |
|  |  |  |  |  |
| **2.5 - AER Submittal and Other Studies** |  |  |  |  |
| 2.5.A - Prepare Alternative Evaluation Report | PDP Path | 56 | 208 | 360 |
| 2.5.B - Certified Traffic for Preferred Alternative |  |  |  |  |
| 2.5.C - Prepare Access Point Request (IMS/IJS) |  |  |  |  |
| 2.5.D - Structures |  |  |  |  |
| 2.5.D.A - Bridge Structure Type Study (break out each bridge separately) | bridge | 250 | 400 | 500+ |
| 2.5.D.B - Complete bridge hydraulic study and scour analysis | each brg alternative | 16 | 28 | 40 |
| 2.5.E - Retaining wall justification |  |  |  |  |
|  |  |  |  |  |
| **2.6 - Public Involvement/Coordination** |  |  |  |  |
| 2.6.A - Public Involvement meeting |  |  |  |  |
| Low | document type and PDP Path | 66 |  |  |
| Medium | document type and PDP Path |  | 738 |  |
| High | document type and PDP Path |  |  | 2091 |
|  |  |  |  |  |
| **2.7 - Stage 1 Design** |  |  |  |  |
| 2.7.A - Roadway |  |  |  |  |
| 2.7.A.A - Title Sheet | sheet | 8 | 12 | 16 |
| 2.7.A.B - General Notes | sheet | 4 | 6 | 8 |
| 2.7.A.C - Schematic Plan | sheet | 20 | 26 | 32 |
| 2.7.A.D - Typical Sections | section |  | 10 | 12 |
| 2.7.A.E - Cross Sections | section | 2 | 3 | 4 |
| 2.7.A.F - Plan and Profile - Mainline |  |  |  |  |
| Plan and Profile - Mainline | sheet | 24 | 28 | 32 |
| Plan and Profile – Mainline (no H&V alignment creation) | sheet | 20 | 24 | 28 |
| 2.7.A.G - Plan and Profile - Crossroads |  |  |  |  |
| Plan and Profile - Crossroads | sheet | 24 | 28 | 32 |
| Plan and Profile - Crossroads (no H&V alignment creation) | sheet | 20 | 24 | 28 |
| 2.7.A.H - Plan and Profile - Ramps |  |  |  |  |
| Plan and Profile - Ramps | sheet | 24 | 28 | 32 |
| Plan and Profile - Ramps (no H&V alignment creation) | sheet | 20 | 24 | 28 |
| 2.7.A.I - Superelevation Table | sheet | 12 | 18 | 24 |
| 2.7.A.J - Intersection Details | intersection | 12 | 16 | 20 |
| 2.7.A.K - Update Interchange Geometrics & Details | sheet | 20 | 26 | 32 |
| 2.7.A.L - Driveway Details | drive | 4 | 10 | 16 |
| 2.7.A.M - Design Exception Request | exception | 12 | N/A | 80 |
| 2.7.A.N Traffic Control | mile | 22 | 46 | 71 |
| 2.7.B - Drainage |  |  |  |  |
| 2.7.B.A - Storm Sewer Profiles | station | 0.5 | 2.25 | 4 |
| 2.7.B.B - Culvert Detail Sheet | each culvert | 20 | 20 | 20 |
| 2.7.B.C - Channel Relocation Details & Section Sheets |  |  |  |  |
| 2.7.B.D - Drainage Calculations |  |  |  |  |
| D.1 – Culvert | each | 8 | 12 | 16 |
| D.2 – Ditches | station | 0.5 | 1.25 | 2 |
| D.3 – Storm Sewer | station | 0.5 | 1.25 | 2 |
| 2.7.B.E - BMP Design | station | 0.5 | 1.25 | 2 |
| 2.7.C - Utilities |  |  |  |  |
| 2.7.C.A - Utility Coordination and Documentation | project | 8 | 12 | 16 |
| 2.7.C.B - Description or proposed water and/or sewer work | sheet  \*plus base of 12 hours per project | 1\* | 2\* | 3\* |
| 2.7.C.C - Subsurface Utility Engineering (SUE) | sheet  \*plus base of 12 hours per project | need hours | need hours | need hours |
| 2.7.C.D - Add Utilities to Plan/Profile Sheets | sheet | 2 | 3 | 6 |
| 2.7.D - Geotechnical Services |  |  |  |  |
| 2.7.D.A - Geotechnical Services and Report |  |  |  |  |
| 2.7.E - Retaining Wall Plans | sheet | 35 | 50 | 65 |
| 2.7.F - Structures - Design Report |  |  |  |  |
| 2.7.F.A - Bridge Design Report | report | 70 | 130 | 200+ |
| 2.7.F.B - Final Structure Site Plan | sheet | 24 | 24 | 24 |
| 2.7.F.C - Supplemental Site Plan for Railroad Crossing | bridge | 80 | 120 | 160 |
| 2.7.G - Miscellaneous |  |  |  |  |
| 2.7.G.A - Perform Airway/Highway clearance analysis | project | 16 | N/A | N/A |
| 2.7.G.B - Service Road Justification | parcel | 16 | N/A | 24 |
| 2.7.G.C - Finalize Pavement Build up and subsurface drainage requirements | N/A | N/A | N/A | N/A |
| 2.7.G.D - Prepare Pedestrian Overpass Justification | N/A | N/A | N/A | N/A |
| 2.7.G.E - RR Coordination |  |  |  |  |
| 2.7.G.F - ITS - Systems Engineering Analysis |  |  |  |  |
| 2.7.H - Prepare C2 Cost Estimates and Update Milestones |  |  |  |  |
| 2.7.H.A - Roadway/Interchange Costs | project | 32 | 40 | 48 |
| 2.7.H.B - Right of Way |  |  |  |  |
| 2.7.H.C - Utility Costs | project | 10 | 12 | 14 |
| 2.7.I - Lighting Plans | Project | 13 | 19 | 25 |
| 2.7.J - Maintenance of Traffic |  |  |  |  |
| 2.7.J.A - Detour Plan | per detour | 8 | 16 | 24 |
| 2.7.J.B- Pedestrian/Bike Lane Detour |  |  |  |  |
| 2.7.J.B.1 - Pedestrian/Bike Lane Detour - Notes | per detour,  per direction | 4 | 4 | 4 |
| 2.7.J.B.2 - Pedestrian/Bike Lane Detour - Plan | per detour,  per direction | 4 | 4 | 4 |
| 2.7.J.C- Conceptual MOT Revision (Select only ONE) |  |  |  |  |
| Conceptual MOT Revision – Without MOTAA | per MOT phase | 4 | 8 | 12 |
| Conceptual MOT Revision - Post MOTAA | per MOT phase | 6 | 24 | 60 |
| 2.7.J.D - MOT Coordination Discussions | per meeting | 14 | 14 | 14 |
| 2.7.K - Signal Plans | Signal | 12 | 15 | 17 |
|  |  |  |  |  |
| **2.8 - Project Management for Preliminary Engineering Phase** |  |  |  |  |
| 2.8.A - Meetings |  |  |  |  |
| 2.8.B - General Oversight | month | 10 | 20 | 40 |
| 2.8.C - Project Set Up | lump | 10 | 20 | 40 |
| 2.8.D - Non Routine (Soft) Items | month | 4 | 16 | 32 |
|  |  |  |  |  |
| **2.9 - Limited Review** |  |  |  |  |
| 2.9.A - QA/QC for Limited Review |  |  |  |  |
|  |  |  |  |  |
| **3 - Environmental Engineering Phase** |  |  |  |  |
| **3.1 - Environmental Field Studies and Refined Impacts** |  |  |  |  |
| 3.1.A - Phase I Cultural Archaeological | study area size | 55 | 86 | 160 |
| 3.1.B - Phase II Cultural Resource History/Architecture Survey |  |  |  |  |
| 3.1.C - Section 4 (f) Evaluation | tier | 8 |  | 150 |
| Section 4 (f) Evaluation – Individual 4(f) for one Section 106 Property | each |  |  | 271 |
| Section 4 (f) Evaluation – Individual 4(f) for one Park/Recreational/Refuge Resource | each |  |  | 423 |
| 3.1.D - Phase I Environmental Site Assessment | site | 38 | 56 | 82 |
| 3.1.E - Farmland Studies |  |  |  |  |
| 3.1.F - Secondary and Cumulative Review |  |  |  |  |
| 3.1.G - Address NEPA Specific Environmental Justice Issues |  |  |  |  |
| 3.1.H - Relocation Assistance Program Conceptual Survey |  |  |  |  |
| 3.1.I - Biological Assessment for Federally Listed Species |  |  |  |  |
| 3.1.J - Final Noise Analysis |  |  |  |  |
| 3.1.K- Determine Right of Way Encroachments | sheet | 0.5 | 1 | 2 |
| 3.1.L - Determine Potential Right of Way from Railway | sheet |  |  |  |
| 3.1.M- Prepare Waterway Permit Determination Package/Permits | IP threshold | 32 |  | 61 |
| Pre-Construction Notification (PCN) | IP threshold | 51 |  | 82 |
| PCN/Individual 404 with Individual 401 ((IP) | IP threshold | 135 | 234 | 312 |
| Isolated Wetland PAN (IWP) | IP threshold | 49 | 74 | 135 |
| 3.1.N- Stream and Wetland Opportunities Inventory Report |  |  |  |  |
| 3.1.O- Phase II Environmental Site Assessment | site | 45 | 80 |  |
| 3.1.P- Air Quality Analyses | type of analysis | 16 | 174 | 216 |
| 3.1.Q - Mussel Survey |  |  |  |  |
| Group 1 Freshwater Mussel Survey | threshold | 71 | 83 | 116 |
| Group 2 Freshwater Mussel Survey | threshold |  | 184 | 288 |
| Group 2 Freshwater Mussel Relocation | threshold |  | 103 | 151 |
| Group 3 Freshwater Mussel Survey | threshold |  | 266 | Case by case |
| Group 4 Freshwater Mussel Survey | Hours should be developed on a site specific case by case basis in consultation with OES | | | |
| 3.1.R – FIS Analysis, Revisions, and Coordination | each culvert/brg. | negotiate |  |  |
|  |  |  |  |  |
| **3.2 - Stage 1 Value Engineering** |  |  |  |  |
| 3.2.A - Value Engineering Study and Report |  |  |  |  |
|  |  |  |  |  |
| **3.3 - Stage 2** |  |  |  |  |
| 3.3.A - Roadway |  |  |  |  |
| 3.3.A.A - Title Sheet | sheet | 4 | 6 | 8 |
| 3.3.A.B - Schematic | sheet | 4 | 6 | 8 |
| 3.3.A.C - General Notes | sheet | 8 | 12 | 16 |
| 3.3.A.D - Typical Sections | section | 2 | 4 | 6 |
| 3.3.A.E-  Plan and Profile - Mainline | sheet | 8 | 12 | 16 |
| 3.3.A.F - Plan and Profile - Crossroads | sheet | 8 | 12 | 16 |
| 3.3.A.G - Plan and profile - Ramps | sheet | 8 | 12 | 16 |
| 3.3.A.H - Cross Sections | section | 1 | 1.5 | 2 |
| 3.3.A.I - Intersection Details | Intersection | 12 | 16 | 20 |
| 3.3.A.J- Interchange Geometrics & Details | sheet | x | x | x |
| 3.3.B - Drainage |  |  |  |  |
| 3.3.B.A - Storm Sewer Profiles | station | 0.25 | 0.5 | 1 |
| 3.3.B.B - Culvert Detail Sheets including headwall and wingwall details | each | 8 |  |  |
| 3.3.B.C - Channel Relocation Details | station | 0.25 | 0.5 | 1 |
| 3.3.B.D - Underdrain details | station | 0.25 | 1 | 2 |
| 3.3.B.E - BMP Details | station | 0.25 | 0.25 | 0.25 |
| 3.3.B.F - Temporary Drainage (MOT) |  |  |  |  |
| 3.3.B.F.1 - Temporary Drainage (MOT) - Adding Temporary Drainage to Plans | per MOT phase, per mile | 8 | 12 | 20 |
| 3.3.B.F.2 - Temporary Drainage (MOT) - MOT Drainage Calculations | per MOT phase, per mile | 6 | 16 | 26 |
| 3.3.B.F.3 - Temporary Drainage (MOT) - Culvert Phasing Details | per culvert | 24 | 24 | 24 |
| 3.3.B.F.4 - Temporary Drainage (MOT) – Temporary Shoring | per cantilever sheet piling design | 24 | 24 | 24 |
| 3.3.C - Traffic Control |  |  |  |  |
| 3.3.C.A - Pavement Marking Plan | mile | 16 | 21 | 25 |
| 3.3.C.B - Signing Plan | mile | 39 | 59 | 81 |
| 3.3.C.C - Systems Engineering Analysis |  |  |  |  |
| 3.3.D - Signal Plan |  |  |  |  |
| 3.3.D.A - Signal Plan Sheets | Signal | 41 | 51 | 60 |
| 3.3.D.B - Interconnect Details | Signal | 13 | 15 | 18 |
| 3.3.E - Maintenance of Traffic |  |  |  |  |
| 3.3.E.A - MOT General Notes | per sheet | 4 | 8 | 12 |
| 3.3.E.B - Detour Plan- Custom Guide Signs | per detour | 12 | 20 | 32 |
| 3.3.E.C - Pedestrian/Bike Lane Detour – Plan Sheet | per detour,  per direction | 4 | 4 | 4 |
| 3.3.E.D - Temporary Signing Details |  |  |  |  |
| 3.3.E.D.1 - Temporary Signing Details - Sign Dimension Details | per sign | 4 | 4 | 4 |
| 3.3.E.D.2 - Temporary Signing Details - Elevation View | per elevation view | 6 | 6 | 6 |
| 3.3.E.E - MOT Typical Sections | per typical | 2 | 4 | 6 |
| 3.3.E.F - MOT Plan Sheets (Select only ONE) |  |  |  |  |
| MOT Plan Sheets - 20 Scale | per sheet | 24 | 30 | 36 |
| MOT Plan Sheets - 50 Scale (1500' coverage length per sheet) | per sheet | 18 | 24 | 30 |
| MOT Plan Sheets - 50 Scale (3000' coverage length per sheet) | per sheet | 24 | 30 | 36 |
| 3.3.E.G - Temporary Signal Details (Modification of Existing or Proposed Signal) |  |  |  |  |
| 3.3.E.G.1 - Temporary Signal Details (Modification of Existing or Proposed Signal) – Adjustments of Heads, Timing & Detection | per signal,  per MOT phase | 20 | 20 | 20 |
| 3.3.E.G.2 - Temporary Signal Details (Modification of Existing or Proposed Signal) - Temporary Pole Placement | per signal | 8 | 8 | 8 |
| 3.3.E.H - New Temporary Signal |  |  |  |  |
| 3.3.E.H.1 - New Temporary Signal – Head Placement, Timing & Detection | per signal,  per MOT phase | 20 | 20 | 20 |
| 3.3.E.H.2 - New Temporary Signal - Temporary Pole Placement & Power Source | per signal | 12 | 12 | 12 |
| 3.3.E.I - Signalized Closures | per closure,  per MOT phase | 8 | 8 | 8 |
| 3.3.E.J - MOT Coordination Discussions | per meeting | 14 | 14 | 14 |
| 3.3.E.K - MOT Constructability Coordination | per project | 8 | 24 | 40 |
| 3.3.E.L - Temporary Pavement Sections and Earthwork |  |  |  |  |
| 3.3.E.L.1 - Temporary Pavement Sections and Earthwork - New Sections | per section | 3 | 3 | 3 |
| 3.3.E.L.2 - Temporary Pavement Sections and Earthwork - Modifying Roadway Sections | per section | 1 | 1 | 1 |
| 3.3.E.M - Crossover Plan and Profile |  |  |  |  |
| 3.3.E.M.1 - Crossover Plan and Profile - Horizontal & Vertical Design, Superelevation Design & Table | per crossover,  per direction | 28 | 28 | 28 |
| 3.3.E.M.2 - Crossover Plan and Profile - Plan & Profile Sheets | per sheet | 12 | 12 | 12 |
| 3.3.E.M.3 - Crossover Plan and Profile – Cross Section Sheets | per section | 3 | 3 | 3 |
| 3.3.E.N - MOT Temporary Access Details |  |  |  |  |
| 3.3.E.N.1 - MOT Temporary Access Details - Temporary Drive Access | per access,  per MOT phase | 20 | 20 | 20 |
| 3.3.E.N.2 - MOT Temporary Access Details - Temporary Ramp Access | per access,  per MOT phase | 20 | 20 | 20 |
| 3.3.E.N.3 - MOT Temporary Access Details - Contractor Work Zone Access Details | per access | 10 | 24 | 24 |
| 3.3.E.O - Miscellaneous MOT Details |  |  |  |  |
| 3.3.E.O.1 - Miscellaneous MOT Details - Plan Insert Sheets | per sheet | 4 | 4 | 4 |
| 3.3.E.O.2 - Miscellaneous MOT Details - Custom Detailing | per sheet | 12 | 12 | 12 |
| 3.3.E.P - PIAC/Incentive Funds Request | per report or presenta-tion | 16 | 16 | 16 |
| 3.3.F - Lighting Plan |  |  |  |  |
| 3.3.F.A - Lighting Analysis | Project | 30 | 40 | 50 |
| 3.3.F.B - Power/Circuit Layout & Details | Sheet | 21 | 31 | 41 |
| 3.3.F.C - Lighting Plan and Details | Sheet | 31 | 38 | 45 |
| 3.3.F.D - Voltage Drop Calculations | Circuit | 11 | 15 | 20 |
| 3.3.F.E - Power Service | Project | 9 | 14 | 18 |
| 3.3.G - Landscape Plan |  |  |  |  |
| 3.3.G.A - Landscape Plan and Details |  |  |  |  |
| 3.3.G.B - General Notes |  |  |  |  |
| 3.3.H - Noise Wall Details |  |  |  |  |
| 3.3.H.A - Noise Wall Plan and Details | foot | x | x | x |
| 3.3.I - Bridge Plans (break out for each bridge separately) |  |  |  |  |
| 3.3.I.A Bridge Plans | sheet | 35-40 | 45-50 | 55-60+ |
| 3.3.I.B Structure Rating | bridge | 16 | 30 | 40+ |
| 3.3.J - Utilities |  |  |  |  |
| 3.3.J.A - Utility Coordination and Documentation | lump | 8 | 24 | 40 |
| 3.3.J.B - Water Works Plan | sheet | 30 | 36 | 48 |
| 3.3.J.C - Water Works Details & Notes | sheet | 16 | 16 | 16 |
| 3.3.J.D - Sanitary Sewer Plans | sheet | 12 | 12 | 12 |
| 3.3.K - Geotechnical Services |  |  |  |  |
| 3.3.K.A - Finalize Geotechnical Investigation and Report |  |  |  |  |
|  |  |  |  |  |
| **3.4 - Right of Way Plans** |  |  |  |  |
| 3.4.A Conceptual Right of Way Plan Review | sheet | 2 | 4 | 6 |
| 3.4.B - Preliminary Right of Way Plans |  |  |  |  |
| 3.4.B.A - Legend Sheet | sheet |  | 10 | 12 |
| 3.4.B.B - Centerline Survey Plat | sheet | 16 | 20 | 24 |
| 3.4.B.C - Property Map | sheet | 20 | 26 | 32 |
| 3.4.B.D - Summary of Additional Right of Way | owner | 2 | 3 | 4 |
| 3.4.B.E - Detailed ROW Plan Sheets | sheet | 24 | 32 | 40 |
| 3.4.B.F - Special Plats | sheet | 32 | 40 | 48 |
| 3.4.B.G - Legal Descriptions and Closure Calculations | legal | 3 | 4.5 | 6 |
| 3.4.B.H - Right-of-Way Acquisition Estimate |  |  |  |  |
| 3.4.B.I - Field Review | sheet | 2 | 3 | 4 |
| 3.4.C - Final Right of Way Plans |  |  |  |  |
| 3.4.C.A Final Right of Way Plans | sheet | 2 | 2.5 | 3 |
| 3.4.C.A - Field Review & Verify Property Owners | sheet | 1 | 1.5 | 2 |
| 3.4.C.B - Record Centerline Plat and all appropriate documents | sheet |  |  |  |
| 3.4.C.C - Set R/W Pins after acquisition | hours/pin | 0.25 | 0.33 | 0.5 |
|  |  |  |  |  |
| **3.5 - Prepare Environmental Document** |  |  |  |  |
| 3.5.A - Prepare Environmental Document |  |  |  |  |
| Low | tier | 59 |  |  |
| Medium | tier |  | 136 |  |
| High | tier |  |  | 266 |
|  |  |  |  |  |
| **3.6 - Environmental Commitments and Plan Notes** |  |  |  |  |
| 3.6.A - Environmental Commitment Plan Notes |  |  |  |  |
|  |  |  |  |  |
| **3.7 - Final Mitigation Plans Coordination** |  |  |  |  |
| 3.7.A - Mitigation for Cultural Resources |  |  |  |  |
| 3.7.B - Mitigation for Streams |  |  |  |  |
| 3.7.C - Mitigation for Wetlands |  |  |  |  |
| 3.7.D - Mitigation Plan for Other Features |  |  |  |  |
|  |  |  |  |  |
| **3.8 - Prepare Cost Estimates and Revise Milestone** |  |  |  |  |
| 3.8.A - Roadway/Interchange Costs | sheet | 32 | 40 | 48 |
| 3.8.B- Structures Costs | bridge | 40 | 60 | 100+ |
| 3.8.C- Utility Costs | sheet | 10 | 12 | 14 |
|  |  |  |  |  |
| **3.9 - Project Management for Environmental Engineering Phase** |  |  |  |  |
| 3.9.A - Meetings |  |  |  |  |
| 3.9.B - General Oversight | month | 10 | 20 | 40 |
| 3.9.C - Project Set Up | lump | 10 | 20 | 40 |
| 3.9.D - Non Routine (Soft) Items | month | 4 | 16 | 32 |
|  |  |  |  |  |
| **3.10 - Limited Review** |  |  |  |  |
| 3.10.A - QA/QC for Limited Review |  |  |  |  |
|  |  |  |  |  |
| **4 - Final Engineering and R/W Phase** |  |  |  |  |
| **4.1 - Right of Way Acquisition** |  |  |  |  |
| 4.1.A - Right of Way Acquisition |  |  |  |  |
|  |  |  |  |  |
| **4.2 - Stage 3 Detailed Design Plans** |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4.2.A - Quantities and Notes |  |  |  |  |
| 4.2.A.A - Pavement Subsummary | sheet | 12 | 18 | 24 |
| 4.2.A.B - Drainage Subsummary | sheet | 8 | 8 | 8 |
| 4.2.A.C - Roadway Subsummary | sheet | 18 | 24 | 40 |
| 4.2.A.D - Earthwork and Seeding Subsummary | project /sheet | 24 project |  | 32 sheet |
| 4.2.A.E - Maintenance of Traffic Subsummary |  |  |  |  |
| 4.2.A.F - Pavement Marking Subsummary | mile | 21 | 41 | 67 |
| 4.2.A.G - Signing Subsummary | mile | 12 | 27 | 42 |
| 4.2.A.H - Signal Subsummary | Signal | 27 | 32 | 37 |
| 4.2.A.I - Noise Wall Subsummary | sheet | x | x | x |
| 4.2.A.J - Retaining Wall Subsummary |  |  |  |  |
| 4.2.A.K - Lighting Subsummary | Sheet | 17 | 21 | 25 |
| 4.2.A.L - Landscape Subsummary | sheet | N/A | N/A | N/A |
| 4.2.A.M - General Summary Sheet | sheet | 18 | 20 | 24 |
| 4.2.A.N - Bridge Estimated Quantities Sheet | bridge | 16 |  | 24 |
| 4.2.A.O - Reinforcing Steel Schedule | sheet | 32 | 32 | 32 |
| 4.2.A.P - General Notes | sheet | 4 | 6 | 8 |
| 4.2.A.Q - Driveway Subsummary or Driveway Details (if included on same sheet) | sheet  \*plus 8 hours to create base subsummary sheet | 0.5\* | 0.75\* | 1\* |
| 4.2.A.R - Lighting Notes | sheet | 23 | 28 | 33 |
| 4.2.A.S – Bridge General Notes | sheet | 8 | 8 | 8 |
| 4.2.B - Traffic Signal Plans |  |  |  |  |
| 4.2.B.A - Wiring diagram & pole orientation | signal | 13 | 21 | 29 |
| 4.2.B.B - Timing Chart | signal | 13 | 17 | 21 |
| 4.2.B.C - Elevation Views of Mast Arm Poles | signal | 8 | 11 | 14 |
| 4.2.B.D - Traffic Signal Signs | signal | 5 | 5 | 6 |
|  |  |  |  |  |
| 4.2.C - Signing Plans |  |  |  |  |
| 4.2.C.A – Signing Plans | mile | 11 | 19 | 26 |
| 4.2.C.B - Elevation View of Major Signs | sign str. | 6 | 9 | 11 |
| 4.2.C.C - SignCAD | sign str. | 4 | 5 | 6 |
| 4.2.D - Miscellaneous |  |  |  |  |
| 4.2.D.A - Obtain Railroad Agreement |  |  |  |  |
| 4.2.D B - Prepare FAA Form 7460-1 for Airway/Highway Clearance | sheet | N/A | N/A | N/A |
| 4.2.D C - Project Site Plan |  |  |  |  |
| 4.2.D.D - Update Systems Engineering Analysis |  |  |  |  |
| 4.2.D.E - Baseline Construction Schedule |  |  |  |  |
| 4.2.D.F- Environmental Justice | project | 174 | 174 |  |
| 4.2.D.G - Title Sheet | sheet | 8 | 12 | 16 |
| 4.2.E - Lighting Plans |  |  |  |  |
| 4.2.E.A - Lighting Details | Sheet assumes 6 elevation per sheet | 37 | 37 | 37 |
| 4.2.E.B - Lighting Details - Underpass Lighting | Sheet | 40 | 49 | 58 |
| 4.2.F - Maintenance of Traffic |  |  |  |  |
| 4.2.F.A - MOT Plan Sheets (Select only ONE) |  |  |  |  |
| MOT Plan Sheets - 20 Scale | per sheet | 8 | 12 | 16 |
| MOT Plan Sheets - 50 Scale (1500' coverage length per sheet) | per sheet | 8 | 12 | 16 |
| MOT Plan Sheets - 50 Scale (3000' coverage length per sheet) | per sheet | 16 | 24 | 32 |
| 4.2.F.B - MOT Quantities – Signalized Closures | per closure, per MOT phase | 4 | 4 | 4 |
|  |  |  |  |  |
| **4.3 - Prepare Cost Estimates and Revise Milestone** |  |  |  |  |
| 4.3.A - Roadway/Interchange Costs | sheet | 32 | 48 | 48 |
| 4.3.B- Right of Way |  |  |  |  |
| 4.3.C- Structures Costs | estimate | 16 | 16 | 16 |
| 4.3.D - Utility Costs | project | 10 | 12 | 14 |
|  |  |  |  |  |
| **4.4 - Final Plan Package** |  |  |  |  |
| 4.4.A - Submission of Final Tracings and Documentation | sheet | 0.25 | 0.25 | 0.25 |
|  |  |  |  |  |
| **4.5 - Project Management for Final Engineering and Right of Way Phase** |  |  |  |  |
| 4.5.A - Meetings |  |  |  |  |
| 4.5.B - General Oversight | month | 10 | 15 | 20 |
| 4.5.C - Project Set Up | lump | 10 | 15 | 20 |
| 4.5.D - Non Routine (Soft) Items | month | 2 | 8 | 16 |
|  |  |  |  |  |
| **4.6 - Pre-Bid Activities** |  |  |  |  |
| 4.6.A - Pre-Bid Questions |  |  |  |  |
|  |  |  |  |  |
| **4.7 - Limited Review** |  |  |  |  |
| 4.7.A - QA/QC for Limited Review |  |  |  |  |
|  |  |  |  |  |
| **5 - Construction Phase** |  |  |  |  |
| **5.1 - On-going services during Construction** |  |  |  |  |
| 5.1.A - On-going Services During Construction |  |  |  |  |
|  |  |  |  |  |

# Preliminary Engineering

|  |
| --- |
| Preliminary Engineering tasks/activities fall mainly within the PDP Phases of “Planning” and “Preliminary Engineering”. Within these Phases are two major deliverables pertaining to engineering: the Feasibility Study and the Alternative Evaluation Report (AER). The challenge is where to define the line between where Preliminary Engineering ends and Environmental Engineering/Final Engineering begins.  The following represents thought on how to address the sliding lines between Feasibility Engineering, Alternative Engineering (or Variations), Engineering on a Preferred Alternative within an AER, Stage 1 thru Final Engineering.  Base Map Final Plan  (PDP) PE Phase thru AER (PDP) PE Phase thru FE Phase  Feasibility  AER **\*Stage 1** \***Stage 2 \*Stage 3**  A  B  **\*Roadway/MOT Guidance Hours start at Base Map**  **(assume one Alternative)**  A  Feasibility studies for 90% of our projects only require a limited engineering evaluation for which the effort can be easily estimated. While for those that need a more extensive alternative evaluation would be negotiated for reasonableness. A starting point of negotiation could potentially be a % of the overall (Base Map to Final Plan) hours with recognition of alternative or variations needed in the feasibility study.  B  The AER can also be a sliding divide between final plan development and Preliminary Engineering but it is thought that an AER engineering effort is typically done on one alternative (may have slight variations). Plan development within the AER should be accounted for in the overall effort for Final Plan. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 1.2.F - Concept, Scope and Budget Estimates | project | 8 | 24 | 40 | 1 |
| **2.1 - Develop Preliminary Alternatives** |  |  |  |  |  |
| **2.1.A - Feasibility Study Development** |  |  |  |  |  |
| 2.1.A.C - Field Survey and Aerial Mapping - Planning Level |  |  |  |  | 2 |
| 2.1.A.D - Typical Section |  |  |  |  | 2 |
| 2.1.A.E - Preliminary Alignment and Profile |  |  |  |  | 2 |
| 2.1.A.F - Cross-Sections |  |  |  |  | 2 |
| 2.1.A.H - Mapping |  |  |  |  | 2 |
| **2.3 - AER Design** |  |  |  |  |  |
| **2.3.B - Roadway** |  |  |  |  |  |
| 2.3.B.A - Design Criteria |  |  |  |  | 2 |
| 2.3.B.B - Conceptual Typical Sections |  |  |  |  | 2 |
| 2.3.B.C - Horizontal Alignment and Vertical Profile - Mainline |  |  |  |  | 2 |
| 2.3.B.D - Plan and Profile - Crossroads |  |  |  |  | 2 |
| 2.3.B.E - Plan and Profile - Ramps |  |  |  |  | 2 |
| 2.3.B.F - Conceptual cross sections |  |  |  |  | 2 |
| 2.3.B.G - Interchange Geometrics |  |  |  |  | 2 |
| 2.3.B.H - Analyze Drive locations |  |  |  |  | 2 |
| 2.3.B.I - Identify Construction Limits |  |  |  |  | 2 |
| 2.3.B.J - Preliminary Pavement Design |  |  |  |  | 2 |
|  |  |  |  |  |  |

**Note:**

1. **1.2.F – Concept, Scope and Budget Estimates**

The development of Scope and Fee proposal after primary agreement.

**Hours are manhours lump for each project**

**Low** – Minor Scope

**Medium** – Typical Path 2 and 3 PDP project.

**High** – Major PDP Path 4 and 5 projects.

1. **Preliminary Engineering**

Because of the sliding lines between Feasibility Engineering, Alternative Engineering (or Variations), Engineering on a Preferred Alternative within an AER, Stage 1 thru Final Engineering specific guidance is not given. Throughout the Fee Guidance document engineering effort has typically been established from Base Map to Final Plan. When estimating effort for Preliminary Engineering that effort should be considered. It is understood that Preliminary Engineering can be taken to many different levels depending on the project needs for NEPA clearance. Future estimates and negotiation will take into account the effort in the Preliminary Engineering phase with consideration of what can be brought forward.

# Project Management

|  |
| --- |
| Use this estimating guide to development the fee proposal for Project Management tasks. During the scope development process, the District or Central Office responsible for the project, will indicate the level of complexity for Project Management expected in each phase of the project (Planning, PE, EE, FE). This will be done by estimating the Project Management level of effort as Low, Medium or High for each individual PM task. Judgment and experience with similar projects shall be exercised to make this determination. The following are some general guidelines. The PM level of effort will generally be higher as the PDP Path number increases, but will depend on the project complexity, the client’s familiarity with the PDP process and the number of stakeholders involved.  As a rule of thumb, Path 1 and 2 projects will use Low, Path 3 and 4 will use Medium and Path 5 will use High. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 1.5.B - General Oversight | month | 10 | 20 | 40 | 1 |
| 1.5 .C - Project Set Up | lump | 10 | 20 | 40 | 2 |
| 1.5.D - Non Routine (Soft) Items | month | 4 | 16 | 32 | 3 |
| 2.8.B - General Oversight | month | 10 | 20 | 40 | 4 |
| 2.8.C - Project Set Up | lump | 10 | 20 | 40 | 5 |
| 2.8.D - Non Routine (Soft) Items | month | 4 | 16 | 32 | 6 |
| 3.9.B - General Oversight | month | 10 | 20 | 40 | 7 |
| 3.9.C - Project Set Up | lump | 10 | 20 | 40 | 8 |
| 3.9.D - Non Routine (Soft) Items | month | 4 | 16 | 32 | 9 |
| 4.5.B - General Oversight | month | 10 | 15 | 20 | 10 |
| 4.5.C - Project Set Up | lump | 10 | 15 | 20 | 11 |
| 4.5.D - Non Routine (Soft) Items | month | 2 | 8 | 16 | 12 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Note:**

1. **1.5.B - General Oversight**

PM duties have been broken down into Weekly and Monthly tasks as follows:

Weekly

* Respond to questions and provide guidance to the internal team
* Make Staff assignments
* Monitor schedule and budget
* Monitor progress of the work
* Monitor the scope of work vs. actual work being performed
* Subconsultant coordination

Monthly

* Schedule review and update
* Invoicing
* Prepare progress report

Notes: includes PM time and Administrative Assistant (AA) time; QA/QC and constructability are to be handled in other task items.

**Hours are manhours per month**

**Low** – 10 hours

* AA support minimal
* No subconsultant

**Medium** –20 hours

* AA support needed regularly
* 1-2 subconsultants

**High** – 40 hours

* AA support needed often
* 3-4 subconsultants

1. **Task 1.5.C - Project Set Up**

Duties for this task occur once per agreement, modification or phase scoped, immediately after project authorization to proceed and include the following:

* The project fee, tasks, overhead, net fee, etc. shall be setup as per agreement in the Accounting system. The tasks selected for allocating the total fee shall match the price proposal and shall be consistent with the submissions and the type of invoicing required by ODOT (lump sum or cost-plus).
* Project Planning and Resource Allocation. The tasks development, allocated budget/ fee for various tasks along with the schedule demand are evaluated to determine project resource needs and assignments.
* Prepare and execute subconsultant agreements
* Develop the critical path schedule

**Hours are manhours lump for each project**

**Low** – 10 hours

* Accounting set up: Project limited to 2 primary technical disciplines (bridge, roadway, environmental, etc.) Develop task package per discipline.
* Resource Planning, staff scheduling: 2 primary technical discipline
* Subconsultant agreements: No subconsultants required
* Critical path scheduling: Simple scheduling, 5 or less activities.

**Medium** – 20 hours

* Accounting set up: 3-4 technical disciplines involved in project (i.e. Environ, roadway, Bridge, traffic)
* Resource Planning, staff scheduling: 3-4 technical disciplines involved in project
* Subconsultant agreements:1-2 subconsultants
* Critical path scheduling: Project task list up to 10 activities, primarily linear project. Only 1 or 2 key milestone dates.

**High** –40 hours

* Accounting set up: 5-7 technical disciplines involved in project( Multiple Environmental sub- categories, multiple bridges, multiple roadway segments, significant drainage design/ stream crossings)
* Resource Planning, staff scheduling: 5-7 technical disciplines
* Subconsultant agreements: 3-4 subconsultants.
* Critical path scheduling: Project task list up to 20 activities, concurrent activities, 3-4 key milestone dates.

1. **Task 1.5.D - Non Routine (Soft) Items**

These items will depend on project complexity, but generally include:

* Client Coordination - responding to email and phone requests from the client and client partners
* Client communication - keeping the ODOT PM informed of progress and project direction, seeking guidance when necessary

Note: Contractually specified meetings and conference calls are excluded from this task. See Meetings task

Note: This task does not include internal communication with the project team (see General Oversight task).

**Hours are manhours per month**

**Low** –4 hours

* Client Coordination: Minimal required. Simple straightforward project. Only a few client calls or emails.
* Client Communication: Provide a single status report to client.

**Medium** – 16 hours

* Client Coordination: Several coordination calls per month, includes multiple disciplines and subconsultants.
* Client Communication: Extended conference call meetings and/ or 1 face to face meeting. Note- meetings included here are above and beyond client meetings specified elsewhere.

**High** – 32 hours

* Client Coordination: Update client on several disciplines, subconsultant ’s work progress. May have weekly coordination calls.
* Client Communication: May include 1 or 2 face/ face meetings to keep project moving. Note- meetings included here are above and beyond client meetings specified elsewhere.

1. **2.8.B - General Oversight**

PM duties have been broken down into Weekly and Monthly tasks as follows:

Weekly

* Respond to questions and provide guidance to the internal team
* Make Staff assignments
* Monitor schedule and budget
* Monitor progress of the work
* Monitor the scope of work vs. actual work being performed
* Subconsultant coordination

Monthly

* Schedule review and update
* Invoicing
* Prepare progress report

Notes: includes PM time and Administrative Assistant (AA) time; QA/QC and constructability are to be handled in other task items.

**Hours are manhours per month**

**Low** – 10 hours

* AA support minimal
* No subconsultants

**Medium** –20 hours

* AA support needed regularly
* 1-2 subconsultants

**High** – 40 hours

* AA support needed often
* 3-4 subconsultants

1. **Task 2.8.C - Project Set Up**

If these tasks are performed in an earlier Phase, they are not to be included here

**Hours are manhours lump for each project**

**Low** – 10 hours

* Accounting set up: Project limited to 2 primary technical disciplines (bridge, roadway, environmental, etc.) Develop task package per discipline.
* Resource Planning, staff scheduling: 2 primary technical discipline
* Subconsultant agreements: No subconsultants required
* Critical path scheduling: Simple scheduling, 5 or less activities.

**Medium** – 20 hours

* Accounting set up: 3-4 technical disciplines involved in project (i.e. Environ, roadway, Bridge, traffic)
* Resource Planning, staff scheduling: 3-4 technical disciplines involved in project
* Subconsultant agreements:1-2 subconsultants
* Critical path scheduling: Project task list up to 10 activities, primarily linear project. Only 1 or 2 key milestone dates.

**High** –40 hours

* Accounting set up: 5-7 technical disciplines involved in project( Multiple Environmental sub- categories, multiple bridges, multiple roadway segments, significant drainage design/ stream crossings)
* Resource Planning, staff scheduling: 5-7 technical disciplines
* Subconsultant agreements: 3-4 subconsultants.
* Critical path scheduling: Project task list up to 20 activities, concurrent activities, 3-4 key milestone dates.

1. **Task 2.8.D - Non Routine (Soft) Items**

These items will depend on project complexity, but generally include:

* Client Coordination - responding to email and phone requests from the client and client partners
* Client communication - keeping the ODOT PM informed of progress and project direction, seeking guidance when necessary

Note: Contractually specified meetings and conference calls are excluded from this task. See Meetings task

Note: This task does not include internal communication with the project team (see General Oversight task).

**Hours are manhours per month**

**Low** –4 hours

* Client Coordination: Minimal required. Simple straightforward project. Only a few client calls or emails.
* Client Communication: Provide a single status report to client.

**Medium** – 16 hours

* Client Coordination: Several coordination calls per month, includes multiple disciplines and subconsultants.
* Client Communication: Extended conference call meetings and/ or 1 face to face meeting. Note- meetings included here are above and beyond client meetings specified elsewhere.

**High** – 32 hours

* Client Coordination: Update client on several disciplines, subconsultant ‘s work progress. May have weekly coordination calls.
* Client Communication: May include 1 or 2 face/ face meetings to keep project moving. Note- meetings included here are above and beyond client meetings specified elsewhere.

1. **3.9.B - General Oversight**

PM duties have been broken down into Weekly and Monthly tasks as followsWeekly

* Respond to questions and provide guidance to the internal team
* Make Staff assignments
* Monitor schedule and budget
* Monitor progress of the work
* Monitor the scope of work vs. actual work being performed
* Subconsultant coordination

Monthly

* Schedule review and update
* Invoicing
* Prepare progress report

Notes: includes PM time and Administrative Assistant (AA) time; QA/QC and constructability are to be handled in other task items.

**Hours are manhours per month**

**Low** – 10 hours

* AA support minimal
* No subconsultants

**Medium** –20 hours

* AA support needed regularly
* 1-2 subconsultants

**High** – 40 hours

* AA support needed often
* 3-4 subconsultants

1. **Task 3.9.C - Project Set Up**

If these tasks are performed in an earlier Phase, they are not to be included here

**Hours are manhours lump for each project**

**Low** – 10 hours

* Accounting set up: Project limited to 2 primary technical disciplines (bridge, roadway, environmental, etc.) Develop task package per discipline.
* Resource Planning, staff scheduling: 2 primary technical discipline
* Subconsultant agreements: No subconsultants required
* Critical path scheduling: Simple scheduling, 5 or less activities.

**Medium** – 20 hours

* Accounting set up: 3-4 technical disciplines involved in project (i.e. Environ, roadway, Bridge, traffic)
* Resource Planning, staff scheduling: 3-4 technical disciplines involved in project
* Subconsultant agreements:1-2 subconsultants
* Critical path scheduling: Project task list up to 10 activities, primarily linear project. Only 1 or 2 key milestone dates.

**High** –40 hours

* Accounting set up: 5-7 technical disciplines involved in project( Multiple Environmental sub- categories, multiple bridges, multiple roadway segments, significant drainage design/ stream crossings)
* Resource Planning, staff scheduling: 5-7 technical disciplines
* Subconsultant agreements: 3-4 subconsultants.
* Critical path scheduling: Project task list up to 20 activities, concurrent activities, 3-4 key milestone dates.

1. **Task 3.9.D - Non Routine (Soft) Items**

These items will depend on project complexity, but generally include:

* Client Coordination - responding to email and phone requests from the client and client partners
* Client communication - keeping the ODOT PM informed of progress and project direction, seeking guidance when necessary

Note: Contractually specified meetings and conference calls are excluded from this task. See Meetings task

Note: This task does not include internal communication with the project team (see General Oversight task).

**Hours are manhours per month**

**Low** – 2 hours

* Client Coordination: Minimal required. Simple straightforward project. Only a few client calls or emails.
* Client Communication: Provide a single status report to client.

**Medium** – 8 hours

* Client Coordination: Several coordination calls per month, includes multiple disciplines and subconsultants.
* Client Communication: Extended conference call meetings and/ or 1 face to face meeting. Note- meetings included here are above and beyond client meetings specified elsewhere.

**High** – 16 hours

* Client Coordination: Update client on several disciplines, subconsultant ‘s work progress. May have weekly coordination calls.
* Client Communication: May include 1 or 2 face/ face meetings to keep project moving. Note- meetings included here are above and beyond client meetings specified elsewhere.

1. **4.5.B - General Oversight**

PM duties have been broken down into Weekly and Monthly tasks as follows

Weekly

* Respond to questions and provide guidance to the internal team
* Make Staff assignments
* Monitor schedule and budget
* Monitor progress of the work
* Monitor the scope of work vs. actual work being performed
* Subconsultant coordination

Monthly

* Schedule review and update
* Invoicing
* Prepare progress report

Notes: includes PM time and Administrative Assistant (AA time); QA/QC and constructability are to be handled in other task items.

**Hours are manhours per month**

**Low** – 10 hours

* AA support minimal
* No subconsultant

**Medium** –15 hours

* AA support needed regularly
* 1-2 subconsultants

**High** – 20 hours

* AA support needed often
* 3-4 subconsultants

1. **Task 4.5.C - Project Set Up**

If these tasks are performed in an earlier Phase, they are not to be included here

**Hours are manhours lump for each project**

**Low** – 10 hours

* Accounting set up: Project limited to 2 primary technical disciplines (bridge, roadway, environmental, etc.) Develop task package per discipline.
* Resource Planning, staff scheduling: 2 primary technical discipline
* Subconsultant agreements: No subconsultants required
* Critical path scheduling: Simple scheduling, 5 or less activities.

**Medium** – 20 hours

* Accounting set up: 3-4 technical disciplines involved in project (i.e. Environ, roadway, Bridge, traffic)
* Resource Planning, staff scheduling: 3-4 technical disciplines involved in project
* Subconsultant agreements:1-2 subconsultants
* Critical path scheduling: Project task list up to 10 activities, primarily linear project. Only 1 or 2 key milestone dates.

**High** –40 hours

* Accounting set up: 5-7 technical disciplines involved in project( Multiple Environmental sub- categories, multiple bridges, multiple roadway segments, significant drainage design/ stream crossings)
* Resource Planning, staff scheduling: 5-7 technical disciplines
* Subconsultant agreements: 3-4 subconsultants.
* Critical path scheduling: Project task list up to 20 activities, concurrent activities, 3-4 key milestone dates.

1. **Task 4.5.D - Non Routine (Soft) Items**

These items will depend on project complexity, but generally include:

* Client Coordination - responding to email and phone requests from the client and client partners
* Client communication - keeping the ODOT PM informed of progress and project direction, seeking guidance when necessary

Note: Contractually specified meetings and conference calls are excluded from this task. See Meetings task

Note: This task does not include internal communication with the project team (see General Oversight task).

**Hours are manhours per month**

**Low** –2 hours

* Client Coordination: Minimal required. Simple straightforward project. Only a few client calls or emails.
* Client Communication: Provide a single status report to client.

**Medium** – 8 hours

* Client Coordination: Several coordination calls per month, includes multiple disciplines and subconsultants.
* Client Communication: Extended conference call meetings and/ or 1 face to face meeting. Note- meetings included here are above and beyond client meetings specified elsewhere.

**High** – 16 hours

* Client Coordination: Update client on several disciplines, subconsultant ‘s work progress. May have weekly coordination calls.
* Client Communication: May include 1 or 2 face/ face meetings to keep project moving. Note- meetings included here are above and beyond client meetings specified elsewhere.

# Project Initiation Package

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  Primary cost drivers for PIP are: PDP Project Path. It is unlikely that the PIP will be needed for a Path 1 project.  Assumes hours for all disciplines. Assumes data is available electronically. Travel distance and time are not included in these hours |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 1.2 – Project Initiation Package | project | 20 | 36 | 70 | 1 |
|  |  |  |  |  |  |

**Note:**

1. **1.2 – Project Initiation Package**

**Hours are manhours based on type of analysis required.**

**Low—Path 2 project**. Assumptions: 4 consultant staff attending onsite meeting with district staff. GIS data is available.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 0 |  |  |  |  |
| Technician/Envi Tech/CADTech | 2 |  |  |  |  |
| Env Specialist | 6 |  |  |  |  |
| Project Engineer | 6 |  |  |  |  |
| Senior Engineer | 3 |  |  |  |  |
| Senior Environmental Lead | 3 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 20 |  |  | **Total** | **20** |

**Medium—Path 3 or 4 project**. Assumptions: Maximum 4 consultants attending onsite meeting with district staff. GIS and aerials available.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 0 |  |  |  |  |
| Technician/Envi Tech/CADTech | 4 |  |  |  |  |
| Env Specialist | 12 |  |  |  |  |
| Project Engineer | 10 |  |  |  |  |
| Senior Engineer | 4 |  |  |  |  |
| Senior Environmental Lead | 6 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | **36** |  |  | **Total** | **36** |

**High—Path 5 project.** Assumptions: Maximum 6 consultant staff attending onsite meeting with district staff. Additional data research is required (i.e. data is available but must be obtained from other sources). Assumes use of existing mapping.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 1 |  |  |  |  |
| Technician/Envi Tech/CADTech | 12 |  |  |  |  |
| Env Specialist | 14 |  |  |  |  |
| Project Engineer | 14 |  |  |  |  |
| Senior Engineer | 14 |  |  |  |  |
| Senior Environmental Lead | 15 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 70 |  |  | **Total** | **70** |

# Ecological

|  |
| --- |
| Use this estimating guide for development of fee.  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  Primary cost drivers for ESRs include: Total study area size, Area of study that is undeveloped, and Extent of ecological resources (i.e. streams, wetlands, jurisdictional ditches and Suitable bat habitat trees).  Overall assumptions for scoping and assignment of fees: (1) SURVEY - Centerlines of streams identifiable on aerials are not surveyed; wetland boundaries and suitable bat habitat tree locations are surveyed using hand-held GPS units (Professional survey is not included); (2) TRAVEL TIME - Do not include travel time to/from site (this will be covered as a separate scope item); (3) SAMPLING AND ADDITIONAL SURVEYS - Biological sampling and T&E species surveys will be scoped separately; (4) PLAN SHEETS - For Level 1 ESRs, include hours for PE to create 1-2 plan sheets. For Level 2 ESRs, assume plan sheets are available and covered under a separate engineering task; (5) EXHIBITS - Include hours for Tech to create ESR exhibits for all scope levels. NEW: Hours include Environmental Management hours and QA/QC hours. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.2.C - Ecological Survey Report |  |  |  |  |  |
| Level 1 | study area  thresholds | 61 | 110 | 150 | 1 |
| Level 2 | study area  thresholds | 130 | 190 | 380 | 2 |

**Note**:

1. **2.2.C - Ecological Survey Report –**

**Level 1**

**Hours are personnel hours based on study area size and thresholds. Level of effort is categorized into Low, Medium and High.**

**LOW** - See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **Streams (#/L.F.)** | **Wetlands (#/Ac.)** | **Jurisdictional Ditches (#/L.F.)** | **Suitable bat habitat (# trees)** | **# of Report Revisions** |
| 0-5 Ac. Total | ≤3 / ≤300 L.F. | ≤2 / ≤0.25 Ac. | ≤3 / ≤400 L.F. | ≤10 | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 2 |  |  |  |  |
| Technician/Envi Tech/CADTech | 15 |  |  |  |  |
| Env Specialist | 40 |  |  |  |  |
| Project Engineer | 2 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 2 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 61 |  |  | **Total** | **61** |

**MEDIUM** - See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **Streams (#/L.F.)** | **Wetlands (#/Ac.)** | **Jurisdictional Ditches (#/L.F.)** | **Suitable bat habitat (# trees)** | **# of Report Revisions** |
| 5-50 Ac. Total | ≤5 / ≤1,000 L.F. | ≤3 / ≤0.5 Ac. | ≤3 / ≤400 L.F. | ≤25 | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 4 |  |  |  |  |
| Technician/Envi Tech/CADTech | 30 |  |  |  |  |
| Env Specialist | 62 |  |  |  |  |
| Project Engineer | 6 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 8 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 110 |  |  | **Total** | **110** |

**HIGH** – See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **Streams (#/L.F.)** | **Wetlands (#/Ac.)** | **Jurisdictional Ditches (#/L.F.)** | **Suitable bat habitat (# trees)** | **# of Report Revisions** |
| 50-120 Ac. Total | ≤8 / ≤3,000 L.F. | ≤3 / ≤1 Ac. | ≤3 / ≤400 L.F. | ≤50 | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 4 |  |  |  |  |
| Technician/Envi Tech/CADTech | 40 |  |  |  |  |
| Env Specialist | 88 |  |  |  |  |
| Project Engineer | 8 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 10 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 150 |  |  | **Total** | **150** |

1. **2.2.C - Ecological Survey Report**

**Level 2**

**Hours are personnel hours based on study area size and thresholds. Level of effort is categorized into Low, Medium and High.**

**LOW** - See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **Streams (#/L.F.)** | **Wetlands (#/Ac.)** | **Jurisdictional Ditches (#/L.F.)** | **Suitable bat habitat (# trees)** | **# of Report Revisions** |
| ≤25 Ac. Total (≤ 5 Ac. Undeveloped) | ≤3 / ≤1,500 L.F. | ≤3 / ≤1 Ac. | ≤3 / ≤1,000 L.F. | ≤25 | 2 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 4 |  |  |  |  |
| Technician/Envi Tech/CADTech | 40 |  |  |  |  |
| Env Specialist | 72 |  |  |  |  |
| Project Engineer | 8 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 6 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 130 |  |  | **Total** | **130** |

**MEDIUM** - See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **Streams (#/L.F.)** | **Wetlands (#/Ac.)** | **Jurisdictional Ditches (#/L.F.)** | **Suitable bat habitat (# trees)** | **# of Report Revisions** |
| ≤50 Ac. Total (≤ 10 Ac. Undeveloped) | ≤5 / ≤3,000 L.F. | ≤5 / ≤2 Ac. | ≤5 / ≤1,500 L.F. | ≤50 | 2 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 8 |  |  |  |  |
| Technician/Envi Tech/CADTech | 52 |  |  |  |  |
| Env Specialist | 112 |  |  |  |  |
| Project Engineer | 10 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 8 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 190 |  |  | **Total** | **190** |

**HIGH** – See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **Streams (#/L.F.)** | **Wetlands (#/Ac.)** | **Jurisdictional Ditches (#/L.F.)** | **Suitable bat habitat (# trees)** | **# of Report Revisions** |
| ≤300 Ac. Total (≤ 75 Ac. Undeveloped) | ≤10 / ≤15,000 L.F. | ≤25 / ≤5 Ac. | ≤15 / ≤3,000 L.F. | ≤75 | 3 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 10 |  |  |  |  |
| Technician/Envi Tech/CADTech | 60 |  |  |  |  |
| Env Specialist | 292 |  |  |  |  |
| Project Engineer | 10 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 8 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 380 |  |  | **Total** | **380** |

# Mussel Surveys

|  |
| --- |
| For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  There is not a Low level of effort for Group 2 Freshwater Mussel Surveys. Effort for the Group 3 streams is based on the smaller Group 3 drainages. The largest streams and Lake Erie will be handled on a case-by-case basis. All Group 4 streams will be handled on a case-by-case basis.  The Ohio Mussel Survey Protocol is the basis for the work tasks and stream categories referenced in the following tables. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 3.1.Q - Mussel Survey |  |  |  |  |  |
| Group 1 Freshwater Mussel Survey | threshold | 71 | 83 | 166 | 1 |
| Group 2 Freshwater Mussel Survey | threshold |  | 184 | 288 | 2 |
| Group 2 Freshwater Mussel Relocation | threshold |  | 103 | 151 | 2 |
| Group 3 Freshwater Mussel Survey | threshold |  | 256 | Case by Case | 3 |
| Group 4 Freshwater Mussel Survey | Hours should be developed on a site specific case by case basis in consultation with OES | | | | |

**Note:**

1. **Group 1 Freshwater Mussel Survey (FMS)**

Primary cost drivers for Group 1 FMS include: Stream size (width and depth), Size of Area of Direct Impact (ADI).

Overall assumptions for scoping and assignment of fees: (1) PROTOCOL – Survey follows Ohio Survey Mussel Protocol (OSMP, April 2014) (2) Federal T&E SPECIES - Absent (3) SURVEY - Survey using Snorkeling/SCUBA/SSA, as noted (4) RELOCATION - Relocations occur during survey mobilization (5) REPORTING - One report required containing all deliverables stated in OMSP (6) TAGGING - not required (7) MOBILIZATIONS – single (8) MUSSEL ABUNDANCE: <100 (9) SITE-SPECIFIC AUTHORIZATION - Required from ODNR prior to conducting field efforts. (10) scoping data such as stream width and depth, and results of the project reconnaissance survey are available in the Ecological Survey Report. (11) Aerial mapping from free online mapping tools should be used to assist with determining stream width.

**Hours are person hours based thresholds**

**Low** -

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Survey Area (m2)** | **Survey Length** | **Stream width** | **Max Depth** | **Salvage Zone (ADI + 5m upstream + 10 m downstream)** |  |
| ≤ 900m2 | ≤ 60m | ≤ 15m | ≤ 1.0m | ≤ 600m2 |  |
| **HOURS** | **Personnel** | **# Management/ Study Plan / Planning Hours** | **# Group I Survey Hours** | **# Relocation Hours** | **# Reporting Hours** | **Mobilization Hours** |
| Clerical/Administrative |  |  |  |  |  |
| CAD / GIS Tech |  |  |  | 4 |  |
| Env Specialist | 4 | 12 | 8 |  | 8 |
| Field Supervisor |  |  |  |  |  |
| Project Manager | 4 | 6 | 4 | 16 | 4 |
| Principal |  |  |  |  |  |
| Editor |  |  |  | 1 |  |

**Total Hours 71**

Assumptions:

* Low Group 1 stream has 10 - 200 square mile drainage area.
* Smaller streams that contain deeper portions because of Ohio River backwaters or marinas on Lake Erie may need special consideration.
* Assumes a typical crew of 3 \* 1 day \* 10 hour day for survey and relocation
* Snorkeling with no or minimal diving. If a site does have areas that are deep enough to dive, stream should be treated asa Medium.

**Medium** -

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Survey Area (m2)** | **Survey Length** | **Stream width** | **Max Depth** | **Salvage Zone (ADI + 5m upstream + 10 m downstream)** |  |
| ≤2,4000 m2 | ≥ 60m | > 15 & ≤ 40m | >1m | ≤ 1,00 m2 |  |
| **HOURS** | **Personnel** | **# Management/ Study Plan / Planning Hours** | **# Group I Survey Hours** | **# Relocation Hours** | **# Reporting Hours** | **Mobilization Hours** |
| Clerical/Administrative |  |  |  |  |  |
| CAD / GIS Tech |  |  |  | 4 |  |
| Env Specialist | 4 | 16 | 12 |  | 8 |
| Field Supervisor |  |  |  |  |  |
| Project Manager | 4 | 8 | 6 | 16 | 4 |
| Principal |  |  |  |  |  |
| Editor |  |  |  | 1 |  |

**Total Hours 83**

Assumptions:

* Medium Group 1 Stream has 200-500 square mile drainage
* These streams may have small areas that require diving, such as bridge pool, scour holes, pools associated with large rootwads, etc.
* These sites would generally not require diving of the entire site. If more than 50% of the site requires diving then more hours will be needed
* Assumes a typical crew of 3: Survey is 1 day\*8 hours; Relocation is 1 day\*6 hours
* Snorkeling/Diving

**High** -

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Survey Area (m2)** | **Survey Length** | **Stream width** | **Max Depth** | **Salvage Zone (ADI + 5m upstream + 10 m downstream)** |  |
| >2400m2 | ≥60m | > 40m | > 1m | >1600m2 |  |
| **HOURS** | **Personnel** | **# Management/ Study Plan / Planning Hours** | **# Group I Survey Hours** | **# Relocation Hours** | **# Reporting Hours** | **Mobilization Hours** |
| Clerical/Administrative |  |  |  |  |  |
| CAD / GIS Tech |  |  |  | 4 |  |
| Env Specialist | 4 | 32 | 24 | 4 | 8 |
| Field Supervisor | 2 | 16 | 12 |  | 4 |
| Project Manager | 6 | 16 | 12 | 16 | 4 |
| Principal |  |  |  | 1 |  |
| Editor |  |  |  | 1 |  |

**Total Hours 166**

Assumptions:

* High Group 1 Stream has a 500-1,000 square mile drainage area
* These streams are generally wide, and may require more extensive areas of diving
* Streams between 1,000 and 2,500 square miles should be evaluated to determine if using the Group 3 protocol would be more effective
* Assumes a typical crew of 4\*2days\*8 hour days; Phase II assumes crew of 4\*1day\*12 hour day
* Scuba / Surface Supply Air
* Boat may be required

1. **Group 2 Freshwater Mussel Survey**

Primary cost drivers for Group 2 FMS include: Stream size (width and depth), Size of Area of Direct Impact (ADI), Substrate Complexity, Multi-Phase Survey Requirements

Overall assumptions for scoping and assignment of fees: (1) PROTOCOL – Survey follows Ohio Survey Mussel Protocol (OSMP, April 2014) (2) Federal T&E SPECIES - Present (3) SURVEY - Survey using Snorkeling/SCUBA/SSA. A boat may be necessary therefore a minimum crew of 4 is required (4) RELOCATION - Relocation efforts require 2nd mobilization (5) REPORTING - Phase I & Phase II report must be approved by Agencies prior to conducting relocation efforts. Two reports required containing all deliverables stated in OMSP (6) TAGGING - not required (7) MOBILIZATIONS - double (8) MUSSEL ABUNDANCE: <100 (9) SITE-SPECIFIC AUTHORIZATION - Required from ODNR and USFWS prior to conducting field efforts. (10) Relocation hours assume that no federally listed species were found during Phase 1 and Phase 2 surveys. If federal species are known from the area, hours for the relocation will be based on project specific relocation requirements from the Biological Opinion.

**Hours are person hours based thresholds**

**Low - THERE IS NOT A LOW SCOPE LEVEL FOR GROUP 2 FRESHWATER MUSSEL SURVEYS.**

**Medium** –

**Phase 1 and Phase 2 survey work**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Survey Area (m2)** | **Survey Length** | **Stream width** | **Max Depth** |  |  |
| <9000 m2 | 225m | > 15 & ≤ 40m | > 1m |  |  |
| **HOURS** | **Personnel** | **# Management/ Study Plan / Planning Hours** | **# Phase I Survey Hours** | **# Phase II Survey Hours** | **Phase I & II Report Hours** | **Mobilization Hours** |
| Clerical/Admin. |  |  |  |  |  |
| CAD / GIS Tech |  |  |  | 8 |  |
| Env. Specialist | 4 | 32 | 24 |  | 8 |
| Field Supervisor |  | 16 | 12 | 30 | 4 |
| Project Manager | 8 | 16 | 12 | 2 | 4 |
| Principal | 4 |  |  |  |  |
| Editor |  |  |  |  |  |

**Total Hours 184**

**Relocation Survey**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Survey Area (m2)** | **Survey Length** | **Stream Width** | **Salvage Zone (ADI + 5m upstream + 10 m downstream)** | **Max Depth** |
| N/A | <60m | >15 to <40 m | > 1600 m2 | >1m |
| **HOURS** | **Personnel** | **# Management/ Study Plan / Planning Hours** | **# Relocation Survey Hours** | **# Relocation Report Hours** | **Mobilization Hours** |
| Clerical/Admin. |  |  |  |  |
| CAD / GIS Tech |  |  | 4 |  |
| Env. Specialist | 4 | 24 |  | 8 |
| Field Supervisor |  | 12 |  | 4 |
| Project Manager | 8 | 12 | 14 | 4 |
| Principal | 4 |  | 2 |  |
| Editor |  |  | 3 |  |

**Total Hours 103**

Assumptions:

* Phase I assumes crew of 4\*2 days\*8 hour days; Phase II assumes crew of 4\*1day\*12hour day; Relocation assumes crew of 4\*1day\*12 hour day
* Scuba / Surface Supply Air

**High** –

**Phase 1 and Phase 2 Survey Work**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Survey Area (m2)** | **Survey Length** | **Stream width** | **Max Depth** |  |  |
| 9000 | ≥ 255m | > 40m | ≤ 1m |  |  |
| **HOURS** | **Personnel** | **# Management/ Study Plan / Planning Hours** | **# Phase I Survey Hours** | **# Phase II Survey Hours** | **Phase I & II Report Hours** | **Mobilization Hours** |
| Clerical/Admin |  |  |  |  |  |
| CAD / GIS Tech |  |  |  | 8 |  |
| Env. Specialist |  | 48 | 60 |  | 8 |
| Field Supervisor | 4 | 24 | 30 |  | 4 |
| Project Manager | 8 | 24 | 30 | 30 | 4 |
| Principal | 4 |  |  | 2 |  |
| Editor |  |  |  |  |  |

**Total Hours 288**

**Relocation Survey**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Survey Area (m2)** | **Survey Length** | **Salvage Zone (ADI + 5m upstream + 10 m downstream)** |  |  |
| >1650 m2 | ≥ 55m | > 350 m2 |  |  |
| **HOURS** | **Personnel** | **# Management/ Study Plan / Planning Hours** | **# Relocation Survey Hours** | **# Relocation Report Hours** | **Mobilization Hours** |
| Clerical/Admin |  |  |  |  |
| CAD / GIS Tech |  |  | 4 |  |
| Env. Specialist |  | 48 |  | 8 |
| Field Supervisor | 4 | 24 |  | 4 |
| Project Manager | 8 | 24 | 14 | 4 |
| Principal | 4 |  | 2 |  |
| Editor |  |  | 3 |  |

**Total Hours 151**

Assumptions:

* Phase I assumes crew of 4\*3days\*8 hour days; Phase II assumes crew of 4\*3 days\*10 hour days; Relocation assumes crew of 4\*2 days\*12 hour days
* Scuba / Surface Supply Air

1. **Group 3 Freshwater Mussel Survey**

Primary cost drivers for Group 3 FMS include: Stream size (width and depth), Size of Area of Direct Impact (ADI), Substrate Complexity

Overall assumptions for scoping and assignment of fees: (1) PROTOCOL – Survey follows Ohio Survey Mussel Protocol (OSMP, April 2014) (2) Federal T&E SPECIES - Absent; (3) SURVEY - Survey using SCUBA/SSA. A boat may be necessary therefore a minimum crew of 4 is required (4) RELOCATION - Relocations occur during Phase I mobilization (5) REPORTING - One report required containing all deliverables stated in OMSP (6) TAGGING - not required (7) MOBILIZATIONS - single (8) MUSSEL ABUNDANCE: <100 (9) SITE-SPECIFIC AUTHORIZATION - Required from ODNR prior to conducting field efforts. (10) The average channel width of the other Group 3 streams is 80 meters.

(11) Survey areas in the Sandusky Bay, Lake Erie, the Ohio River, and the Maumee River may be very large. Although these waterbodies are considered Group 3 waterbodies, they are much larger in size than the rest of the Group 3 streams. Hours for the surveys in the waterways listed above should be considered on a case-by-case basis.

**Hours are person hours based thresholds**

**For Group 3 Freshwater Mussel Streams, the following hours provides for the typical Group 3 stream.**

**Medium**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Survey Area (m2)** | **Survey Length** | **Stream width** | **Max Depth** | **Salvage Zone (ADI + 5m upstream + 10 m downstream)** |  |
| 3,000 to 9,000 | ≥ 60m | Average 80m | > 1m | >2,000 to 7,000 m2 |  |
| **HOURS** | **Personnel** | **# Management/ Study Plan / Planning Hours** | **# Group 3 Survey Hours** | **# Relocation Hours** | **# Reporting Hours** | **Mobilization Hours** |
| Clerical/Administrative |  |  |  |  |  |
| CAD / GIS Tech |  |  |  | 8 |  |
| Env. Specialist |  | 48 | 48 |  | 12 |
| Field Supervisor | 4 | 24 | 24 |  | 4 |
| Project Manager | 8 | 24 | 24 | 20 |  |
| Principal | 4 |  |  | 2 |  |
| Editor |  |  |  | 2 |  |

**Total Hours 256**

Assumptions:

* Phase I and Relocation EACH assumes crew of 4\*3days\*8 hour days
* Scuba / Surface Supply Air

# Cultural

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  **History/Architecture:**  Primary cost drivers for Phase I H/A investigations include: Total study area size and number/density of resources over 50 years of age.  Overall assumptions for scoping and assignment of fees: (1) SURVEY - ; (2) TRAVEL TIME - Travel time is not included  **Archaeology:**  Primary cost drivers for Phase I Archaeology investigations include: Total study area size, amount of the area that is disturbed/undisturbed, amount of areas that can be surface surveyed versus shovel tested, and density of archaeological sites/materials.  Overall assumptions for scoping and assignment of fees: (1) SURVEY - Survey levels should follow the Ohio Historic Preservation Office Guidelines (OHPO 1994) (i.e. surface survey on a 10-m interval; shovel test survey on a 15-m interval); (2) TRAVEL TIME - Travel time is not included. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.2.B - Phase I Cultural Resource History/Architecture Survey | study area size | 48 | 100 | 144 | 1 |
| 3.1.A - Phase I Cultural Archaeological | acre | 55 | 86 | 160 | 2 |
|  |  |  |  |  |  |

**Note:**

1. **2.2.B - Phase I History/Architecture Survey**

**Hours are manhours based on study area size and density of resources over 50 years of age.**

**Low** - See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **Known resources** | **APE** | **Impacts** | **Report** | **# of Report Revisions** |
| Photograph log and resource specific photographs of up to 2 resources over 50 years old; short report format | None or will not be impacted due to nature of project | Small project footprint(<0.25 miles linear) or mostly modern or unoccupied (rural) land; No known historic properties in APE and/or project is of a type that won't impact historic properties if present (no or minimal new r/w). | None anticipated due to project type or location | Short report format | Assumes 1 OES revision |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 4 |  |  |  |  |
| Technician/Envi Tech/CADTech | 18 |  |  |  |  |
| Architectural Historian | 26 |  |  |  |  |
| Senior Architectural Historian | 9 |  |  |  |  |
| Project Engineer | 0 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 1 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 48 |  |  | **Total** | **48** |

**Medium** - See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **Known resources** | **APE** | **Impacts** | **Report** | **# of Report Revisions** |
| Photograph log and resource specific photographs of up to 10 resources over 50 years old; eligibility determination; up to 3 eligible resources/Phase II recommendations and associated OHIs; historic context | May be known resources in the project area but no Nat’l Historic Landmarks. Project type may have minor impacts to known historic properties if present. | Medium footprint project (up to 1 mile linear or 0.25 miles linear with work extending 300' each way on up to 3 intersections) in areas that are mostly modern development or rural **OR** a smaller footprint in a historic urban area where up to 10 resources over 50 years of age are anticipated. | Minor based on project type (e.g. minor strip r/w) or project location | Standard | Assumes 2 revisions: 1 OES and 1 OHPO |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 8 |  |  |  |  |
| Technician/Envi Tech/CADTech | 12 |  |  |  |  |
| Architectural Historian | 62 |  |  |  |  |
| Senior Architectural Historian | 17 |  |  |  |  |
| Project Engineer | 0 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 1 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 100 |  |  | **Total** | **100** |

**High** – See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **Known resources** | **APE** | **Impacts** | **Report** | **# of Report Revisions** |
| Photograph log and resource specific photographs of up to 20 individual resources over 50 years old; eligibility determinations; up to 5 eligible resources/Phase II recommendations or 1 recommended historic district with associated OHIs; historic context. | Could have known or suspected NRHP listed or eligible resources in the project area. | Larger footprint project (2 miles linear or 0.5 miles linear with work extending 500' each way on up to 5 cross streets) in areas that are mostly modern development or rural **OR** a smaller footprint in a historic urban area where up to 20 individual resources over 50 years of age can be anticipated. | Could be adverse effect based on project type or project location | Standard | Assumes 2 revisions: 1 OES and 1 OHPO |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 8 |  |  |  |  |
| Technician/Envi Tech/CADTech | 32 |  |  |  |  |
| Architectural Historian | 60 |  |  |  |  |
| Senior Architectural Historian | 42 |  |  |  |  |
| Project Engineer | 0 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 2 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 144 |  |  | **Total** | **144** |

1. **3.1.A - Phase I Cultural Archaeological**

**Hours are manhours for per acre for fieldwork and manhours per project for report**

**Low** - Assumes per acre that 75% is disturbance assessment and 25% will be subjected to shovel testing with a maximum of five shovel test units, a maximum of one small ineligible archaeological site is identified, short report format can be used

Short report can be used: Shortened report formats can be used:

• when cultural resources are present but not impacted by a project,

• when ineligible cultural resources are present and impacted,

• when there are no cultural resources present, and

• when resources are not present due to disturbance.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **# Sites** | **Report** | **Method assumptions** |  | **# of Report Revisions** |
| Per acre\* | <=1 small low density artifact scatter--not NRHP Eligible | Short report format | Per acre: 75% disturbance assessment; 25% shovel testing (max. 5 shovel test units) |  | **1** |
| **HOURS** | **Personnel** | **# Hours/acre for fieldwork** | **# Hours Total for analysis/report/etc.** |  |  |  |
| Clerical/Administrative |  | 4 |  |  |  |
| Technician/Envi Tech/CADTech | 2 | 16 |  |  |  |
| Field Director/Crew Chief | 2 | 21 |  |  |  |
| Principal Investigator | 1 | 8 |  |  |  |
| Project Engineer |  | 0 |  |  |  |
| Senior Engineer |  | 0 |  |  |  |
| Senior Environmental Lead |  | 1 |  |  |  |
| Principal |  | 0 |  |  |  |
|  |  | 5 | 50 |  | **Total** | **55** |

**Medium** - Assumes per acre that 50% is disturbance assessment and 50% will be subjected to shovel testing with a maximum of 15 shovel test units, a maximum of two low-medium density artifacts scatters

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **# Sites** | **Report** | **Method assumptions** |  | **# of Report Revisions** |
| Per acre\* | ≤ 2 low-medium density artifact scatters | full report | Per acre: 50% disturbance assessment; 50% Shovel testing (max 15 Shovel test units) |  | **1** |
| **HOURS** | **Personnel** | **# Hours/acre for fieldwork** | **# Hours Total for analysis/report/etc.** |  |  |  |
| Clerical/Administrative |  | 8 |  |  |  |
| Technician/Envi Tech/CADTech | 6 | 16 |  |  |  |
| Field Director/Crew Chief | 6 | 32 |  |  |  |
| Principal Investigator | 1 | 16 |  |  |  |
| Project Engineer |  | 0 |  |  |  |
| Senior Engineer |  | 0 |  |  |  |
| Senior Environmental Lead |  | 1 |  |  |  |
| Principal |  | 0 |  |  |  |
|  |  | 13 | 73 |  | **Total** | **86** |

**High** – High level of effort, assumes per acre that 25% is disturbance assessment, 65% will be subject to shovel testing, and 10% is surface survey with a maximum of 25 shovel test units, a maximum of two high density artifacts scatters

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Study area** | **# Sites** | **Report** | **Method assumptions** |  | **# of Report Revisions** |
| Per acre\* | ≤ 2 high density artifact scatters--eligibility undetermined | Full report, complex historic context | 25% disturbance assessment; 65% shovel testing; 10% surface survey (max 25 shovel test units) |  | **1** |
| **HOURS** | **Personnel** | **# Hours/acre for fieldwork** | **# Hours Total for analysis/report/etc.** |  |  |  |
| Clerical/Administrative |  | 8 |  |  |  |
| Technician/Envi Tech/CADTech | 10 | 30 |  |  |  |
| Field Director/Crew Chief | 10 | 60 |  |  |  |
| Principal Investigator | 1 | 40 |  |  |  |
| Project Engineer |  | 0 |  |  |  |
| Senior Engineer |  | 0 |  |  |  |
| Senior Environmental Lead |  | 1 |  |  |  |
| Principal |  | 0 |  |  |  |
|  |  | 21 | 139 |  | **Total** | **160** |

# Air Quality

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 3.1.P – Air Quality Analyses | type of analysis | 16 | 174 | 216 | 1 |
|  |  |  |  |  |  |

**Note:**

1. **3.1.P – Air Quality Analyses**

**Hours are manhours based on type of analysis required.**

**Low** -See table below

**Qualitative MSAT Analysis**. Assumptions: Project DYADT <140,000. Project adds capacity, a new interchange, relocates travel lanes significantly closer to sensitive land uses, OR expands an intermodal center.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 0 |  |  |  |  |
| Technician/Envi Tech/CADTech | 0 |  |  |  |  |
| Env Specialist | 14 |  |  |  |  |
| Project Engineer | 1 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 1 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 16 |  |  | **Total** | **16** |

**Medium** -See table below

**Quantitative MSAT Analysis**. Assumptions: Project DYADT >140,000. Project adds capacity, a new interchange, relocates travel lanes significantly closer to sensitive land uses, OR expands an intermodal center.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 0 |  |  |  |  |
| Technician/Envi Tech/CADTech | 16 |  |  |  |  |
| Env Specialist | 150 |  |  |  |  |
| Project Engineer | 4 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 4 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 174 |  |  | **Total** | **174** |

**High** -See table below

**PM 2.5 Hotspot Analysis.** Assumptions: Project is located in a nonattainment area. Project DYADT >125,000 AND diesels >10,000. Project causes a significant increase in diesels between DYNBADT and DYBADT.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 0 |  |  |  |  |
| Technician/Envi Tech/CADTech | 16 |  |  |  |  |
| Env Specialist | 192 |  |  |  |  |
| Project Engineer | 4 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 4 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 216 |  |  | **Total** | **216** |

# Noise Analysis

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  Overall assumptions for scoping and assignment of fees: (1) a geo-referenced CAD file of the existing and proposed alignments with 2-foot contours is provided to the noise modeler; (2) certified traffic is provided for mainline and major intersecting roadways or ramps; (3) no public involvement activities are included in this effort; and (4) hard copy printing costs are not included |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.2.G Noise Analysis | project thresholds | 80 | 200 | 400 | 1 |
|  |  |  |  |  |  |

**Note:**

1. **2.2.G Noise Analysis**

|  |  |  |  |
| --- | --- | --- | --- |
| **Thresholds** | **Low** | **Medium** | **High** |
| Noise Sensitive Areas | 1-3 | 4-6 | 6-12 |
| Noise Measurement Locations | 1-5 | 5-10 | 10-15 |
| Modeled Receptors | 1-20 | 20-40 | 40-75 |
| Modeled Barriers | 0 | 1-4 | 5-7 |
| Recommended Barriers | 0 | 1-3 | 3-5 |
| Category C, D, and E Sites | 1 | 2-5 | 5-7 |
| Degree of change to layout of Build compare to No Build | Few changes | Minor changes | Major changes |

**Low** -See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 4 |  |  |  |  |
| Technician/Envi Tech/CADTech | 24 |  |  |  |  |
| Env Specialist | 40 |  |  |  |  |
| Project Engineer | 8 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 4 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 80 |  |  | **Total** | **80** |

**Medium** -See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 8 |  |  |  |  |
| Technician/Envi Tech/CADTech | 72 |  |  |  |  |
| Env Specialist | 100 |  |  |  |  |
| Project Engineer | 16 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 4 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 200 |  |  | **Total** | **200** |

**High**-See table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 16 |  |  |  |  |
| Technician/Envi Tech/CADTech | 120 |  |  |  |  |
| Env Specialist | 200 |  |  |  |  |
| Project Engineer | 40 |  |  |  |  |
| Senior Engineer | 12 |  |  |  |  |
| Senior Environmental Lead | 12 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 400 |  |  | **Total** | **400** |

# Noise Public Involvement

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. Travel distance and time are not included with these hours.  Primary cost drivers for Noise Public Involvement include: number of Noise Sensitive Areas (NSAs), number of noise measurement locations, number of receptors, number of modeled barriers, number of recommended barriers, and the number of unusual sites to be evaluated.  Overall assumptions for scoping and assignment of fees: (1) a geo-referenced CAD file of the existing and proposed alignments with 2-foot contours is provided to the noise modeler; (2) certified traffic is provided for mainline and major intersecting roadways or ramps; (3) no public involvement activities are included in this effort; and (4) hard copy printing costs are not included. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.2.H Noise Analysis – Public Involvement | project thresholds | 42 | 84 | 148 | 1 |
|  |  |  |  |  |  |

**Note:**

1. **2.2.H Noise Analysis – Public Involvement**

|  |  |  |  |
| --- | --- | --- | --- |
| **Thresholds** | **Low** | **Medium** | **High** |
| Number of Communities | 1 | 2 | >2 |
| Prepare mail survey, letter, and graphics | YES | YES | YES |
| Conduct Canvassing | NO | YES | YES |
| Hold Noise Public Involvement Meeting | NO | NO | YES |
| Noise Public Involvement Summary Report | YES | YES | YES |

**Low** -See table below

Small project area – short realignments, intersection improvements, roundabouts, etc.. Mail survey – maximum 20 homes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 2 |  |  |  |  |
| Technician/Envi Tech/CADTech | 1 |  |  |  |  |
| Env Specialist | 37 |  |  |  |  |
| Project Engineer | 0 |  |  |  |  |
| Senior Engineer | 0 |  |  |  |  |
| Senior Environmental Lead | 2 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 42 |  |  | **Total** | **42** |

**Medium** -See table below

Non-freeway widening projects and interchange projects are typically in this category. Mail survey and canvassing – maximum of 100 homes.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 4 |  |  |  |  |
| Technician/Envi Tech/CADTech | 6 |  |  |  |  |
| Env Specialist | 70 |  |  |  |  |
| Project Engineer | 0 |  |  |  |  |
| Senior Engineer | 2 |  |  |  |  |
| Senior Environmental Lead | 2 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 84 |  |  | **Total** | **84** |

**High**-See table below

Freeway improvements are typically in this category. Public Involvement Meeting includes displays and a PowerPoint presentation. Up to 100 benefited dwellings per community. Maximum of 5 communities (essentially 5 barriers). Prep and mailing of 300 letters with graphics.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 12 |  |  |  |  |
| Technician/Envi Tech/CADTech | 14 |  |  |  |  |
| Env Specialist | 108 |  |  |  |  |
| Project Engineer | 0 |  |  |  |  |
| Senior Engineer | 6 |  |  |  |  |
| Senior Environmental Lead | 8 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 148 |  |  | **Total** | **148** |

# Environmental Site Assessment

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  Primary cost drivers for ESAs include: Study area size/length and area of study that is developed.  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, additional work hours will be needed and will be assigned on a project-specific basis. Travel distance and time are not included with these hours. All work will follow the latest ODOT Environmental Site Assessment Guidelines. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.2.D - Environmental Site Assessment Screening | project | 40 | 92 | 140 | 1 |
| 3.1.D - Phase I Environmental Site Assessment | site | 38 | 56 | 82 | 2 |
| 3.1.O - Phase II Environmental Site Assessment | site | 45 | 80 |  | 3 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Note:**

1. **2.2.D - Environmental Site Assessment Screening**

Assumes:

* Aerial photography will be available through ODOT
* Worst case ROW footprint is available
* GIS auditor data and parcel mapping is available online

**Hours are manhours per project**

**Low** –

No ROW ESA Screenings: Restricted to Minor Projects with no (or very little) right-of-way acquisition but deep excavation will occur and identification of ONLY petroleum contaminated soils is needed with involvement with only 1-2 BUSTR type sites. BUSTR regulatory file review limited to providing potential for encountering PCS during construction, PCS levels in the construction area and compare to the BUSTR Reuse Levels.

.

Low Level ESA Screenings: For an agricultural/residential area with no indication of previous commercial/industrial use.

A spreadsheet could be used in place of individual screening sheets. Does not include full takes.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SCOPE** | **Length of Study Area** | **Commercial/ Industrial** | **# of Report Revisions** | **Additional Assumptions** |
| 5 miles | 0 | 1 | File Reviews: 4 hours max. |
| **HOURS** |  | **# Hours** |  | Includes QA/QC |
| Clerical/Administrative | 1 |  |  |
| Technician/Envi Tech/CADTech | 5 |
| Env Specialist | 24 |
| Project Engineer | 2 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 8 |
| Principal | 0 |

**Total 40**

**Medium** – For projects that have up to 1 mile of commercial / Industrial uses. Commercial / Industrial sites will need individual screening sheets. 5 miles of study area with up to 1 mile of commercial / Industrial use

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SCOPE** | **Length of Study Area** | **Commercial/ Industrial** | **# of Report Revisions** | **Additional Assumptions** |
| 5 miles | 1 mile | 1 | No agency file review |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 2 |  |  |
| Technician/Envi Tech/CADTech | 12 |
| Env Specialist | 46 |
| Project Engineer | 8 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 34 |
| Principal | 0 |

**Total 92**

**High** – For Projects with 1-5 miles of commercial / Industrial uses. Individual screening sheet for each site. Assumes up to 10 person field days (e.g. 5 days for 2 people). Up to 10 mile study area with up to 5 miles of commercial / Industrial

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SCOPE** | **Length of Study Area** | **Commercial/ Industrial** | **# of Report Revisions** | **Additional Assumptions** |
| 10 miles | 5 mile | 1 |  |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 2 |  |  |
| Technician/Envi Tech/CADTech | 16 |
| Env Specialist | 86 |
| Project Engineer | 10 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 26 |
| Principal | 0 |

**Total 140**

1. **3.1.D - Phase I Environmental Site Assessment**

Assumes:

* Fee is per site (regardless of # of parcels in site)
* An ESA screening, including a regulatory database review, has been conducted and is available for use
* The following types of sites will be separately negotiated: Landfill, CERCLA (regardless of NFRAP)

**Low** – Commercial or industrial site

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SCOPE** | **# of Hours for File Reviews** |  | **# of Report Revisions** | **Additional Assumptions** |
| 4 | 0 | 1 | Assumes 4 hours for file review |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 4 |  | Assumes CAD and electronic county auditor data are available. |
| Technician/Envi Tech/CADTech | 4 |
| Env Specialist | 20 |
| Project Engineer | 1 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 7 |
| Principal | 2 |

**Total 38**

**Medium** – Site involving regulatory activity (BUSTR & RCRA)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SCOPE** | **# of Hours for File Reviews** |  | **# of Report Revisions** | **Additional Assumptions** |
| 8 (This might be low for a RCRA site) |  | 1 | Assumes 8 hours for file review |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 2 |  | Assumes CAD and electronic county auditor data are available. |
| Technician/Envi Tech/CADTech | 8 |
| Env Specialist | 30 |
| Project Engineer | 1 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 15 |
| Principal | 0 |

**Total 56**

**High** – Site involving DERR, VAP & RCRA corrective actions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SCOPE** | **# of Hours for File Reviews** |  | **# of Report Revisions** | **Additional Assumptions** |
| 12 (Definitely low for a VAP or RCRA Corr. Action Site) |  | 1 | Assumes 16 hours for file review |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 4 |  | Assumes CAD and electronic county auditor data are available. |
| Technician/Envi Tech/CADTech | 8 |
| Env Specialist | 44 |
| Project Engineer | 2 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 24 |
| Principal | 0 |

**Total 82**

1. **3.1.O - Phase II Environmental Site Assessment**

Assumes:

* Fee is Per Site
* Direct costs for rental of drill rig and their personnel is not included
* Direct costs for lab analysis are not included – Hours/Fees for special testing will be negotiated
* Work beyond ESA Phase II Medium par Work beyond ESA Phase II Medium parameters will be separately negotiated
* Includes only 1 mobilization
* Site access not included

**Low -** Commercial or industrial site.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SCOPE** | **# of Field Days** | **Monitoring Wells** | **# of Report Revisions** | **# of Chemical Runs per Sample\*** |
| 1 | 0 | 1 | up to 2 |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 2 |  | Assumes CAD and electronic county auditor data are available. |
| Technician/Envi Tech/CADTech | 6 |
| Env Specialist | 24 |
| Project Engineer | 1 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 12 |
| Principal | 2 |

**Total 45**

**Medium** – Site involving regulatory activity (BUSTR & RCRA).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SCOPE** | **# of Field Days** | **Monitoring Wells** | **# of Report Revisions** | **# of Chemical Runs per Sample\*** |
| 2 (4 monitoring wells in 2 days is sometimes a stretch) | up to 4 | 1 | up to 3 |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 4 |  | Assumes CAD and electronic county auditor data are available. |
| Technician/Envi Tech/CADTech | 10 |
| Env Specialist | 40 |
| Project Engineer | 2 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 24 |
| Principal | 0 |

**Total 80**

**High** – Hours for a high level Phase II ESA are not provided. The hours will need to be tailored to the specific project.

\*For Soils Analytical

* Run 1
  + BTEX and MBTE – Benzene, Toluene, Ethylbenzene,  Xylene and Methyl Tert-Butyl Ether by Method 8021
  + PAHs – Polynuclear Aromatic Hydrocarbons by Method 8310 or 8100
  + TPH, GRO/ DRO/ORO – Total Petroleum Hydrocarbon, Gas Range Organics (C6-C12), Diesel Range Organics (C10-C20),
* Run 2
  + VOCs and MBTE – Volatile Organic Compounds by and Methyl Tert-Butyl Ether by Method 8260
  + Semi-VOCs – Semi-volatile Organic Compounds by Method 8270
  + Total RCRA Metals – Lead, Arsenic, Barium, Chromium, Cadmium, Mercury, Selenium, Silver
  + PH, GRO/ DRO/ORO – Total Petroleum Hydrocarbon, Gas Range Organics (C6-C12), Diesel Range Organics (C10-C20), Other Range Organics (C20-C34) by Method 8015

For Groundwater Analytical

* Run 1
  + BTEX and MBTE – Benzene, Toluene, Ethylbenzene,  Xylene and Methyl Tert-Butyl Ether by Method 8021
  + PAHs – Polynuclear Aromatic Hydrocarbons by Method 8310 or 8100
* Run 2
  + VOCs and MBTE – Volatile Organic Compounds by and Methyl Tert-Butyl Ether by Method 8260
  + Semi-VOCs – Semi-volatile Organic Compounds by Method 8270
  + Total RCRA Metals – Lead, Arsenic, Barium, Chromium, Cadmium, Mercury, Selenium Silver

# Environmental Justice

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  Primary cost drivers for EJAR include: see notes  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, additional work hours will be needed and will be assigned on a project-specific basis. These hours do not include preparation of the EJ mapping using USEPA’s EJ View tool or completion of the questions on the Online CE Form as thes are included in the CE scope/fee. Travel distance and time are not included with these hours. All work will follow the latest ODOT Environmental Justice Guidelines. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 4.2.D.F-Environmental Justice | project | 174 | 174 |  | 1 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Note:**

1. **4.2.D.F-Environmental Justice**

**Low/Medium** –

For a Low/Medium EJAR, it is assumed that the project is a higher level project (complex Path 3, Path 4, or a Path 5 with non-complex EJ issues). Most PI activities will be included in the PI costs. Up to two EJ specific outreach activities should be included in the EJAR scope/fee. These hours do not include preparation of the EJ mapping using the USEPA's EJ View tool or completion of questions in the Online CE as these are included in the NEPA scope/fee. EJAR scope/fee includes EJ specific outreach and preparation of the EJ Analysis Report document (with revisions).

**Hours are manhours per project**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Development of PI plan and activities focused on outreach to EJ populations in the project area. Outreach activities will be inclusive of EJ populations and consider effects of the following on EJ populations: pedestrian access; public transit use/accessibility; right-of-way impacts and relocations; restriction of access to community features, places of employment or other facilities/services; etc. (see ODOT-OES' EJ Guidance). Include attendance at one EJ outreach preparation/planning meeting with ODOT District/CO/LPA. Include hours for status updates (via email or short conference call). | | | | |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 0 |  |  |
| Technical /PI/RW | 16 |
| Env Specialist | 12 |
| Project Engineer/Survey | 2 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 6 |
| Principal | 0 |

**Subtotal 36**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Outreach activities specific to EJ communities. This may include door to door outreach (assumes two people), direct mailings/printed information (up to 50 mailings), and up to two public meetings. Include exhibits and presentation materials (it is assumed that most materials from general PI can be used but there may be an additional exhibit and handouts specific to EJ impacts). | | | | |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 12 |  |  |
| Technical /PI/RW | 12 |
| Env Specialist | 24 |
| Project Engineer/Survey | 0 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 16 |
| Principal | 0 |

**Subtotal 64**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Response to comments from EJ outreach. Assumes up to 50 responses. | | | | |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 2 |  |  |
| Technical /PI/RW | 0 |
| Env Specialist | 8 |
| Project Engineer/Survey | 14 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 11 |
| Principal | 0 |

**Subtotal 35**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Prepare EJAR. Assumes minimal mapping with be needed; general information can be pulled from existing reports; one revision. | | | | |
| **HOURS** |  | **# Hours** |  |  |
| Clerical/Administrative | 0 |  |  |
| Technical /PI/RW | 6 |
| Env Specialist | 18 |
| Project Engineer/Survey | 6 |
| Senior Engineer | 0 |
| Senior Environmental Lead | 9 |
| Principal | 0 |

**Subtotal 39**

**TOTAL 174 Hours**

1. **High** –

A High level of effort for the EJAR would include Path 4 and Path 5 projects with complex EJ issues, multiple impacted EJ communities, and anticipated disproportionately high and adverse effects. Since these projects are unique and rare in our program and each one has a different set of challenges and methods for dealing with those challenges no template scope and fee can be developed.

# Section 4(f)

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 3.1.C - Section 4 (f) Evaluation | tier | 80 |  | 150 | 1 |
| Section 4 (f) Evaluation – Individual 4(f) for one Section 106 Property | each |  |  | 271 | 2 |
| Section 4 (f) Evaluation – Individual 4(f) for one Park/Recreational/Refuge Resource | each |  |  | 423 | 3 |
|  |  |  |  |  |  |

**Note:**

**Scope and Detail Hours:**

|  |  |
| --- | --- |
| **Personnel** | **Acronym used below** |
| Environmental Specialist | ES |
| Technician/Designer | TEC |
| Project Engineer/Survey | PE |
| Senior Project Engineer | SPE |
| Senior Environ Lead | SEL |
| Administrative/Clerical | Ad |
| Project Manager | General project management should not be included with this task. PM time needed directly for task to go under SE. |
| Principal | Prcpl |

**1. 3.1.C - Section 4 (f) Evaluation**

**Hours are manhours based on Non-Individual Section 4(f) for One Park/Recreational/Refuge Resource.**

**Low** - Simple: Assumes a simple No Use, Temporary No Use, exception, or *de minimis* finding; no avoidance alternative development; develop graphics and descriptions; mainly standard commitments/Measure to Minimize Harm; up to 2 meetings; coordination with up to 2 OWJs.

|  |  |  |
| --- | --- | --- |
| **Summary**  **of**  **HOURS** | **Personnel** | **# Hours** |
| Clerical/Administrative | 4 |
| Technician/Environmental Tech/CADTech | 10 |
| Environmental Specialist | 30 |
| Project Engineer | 10 |
| Senior Engineer | 12 |
| Senior Environmental Lead | 14 |
| Principal |  |
|  | **TOTAL** | **80** |

| **Tabs\*** | **Description/Level of Effort** | **Low** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | ES | TEC | PE | SPE | SEL | Ad | Prcpl |
| Identify Resource | Summary from land use / community resource sections | 4 |  |  |  |  |  |  |
| Coordinate with OWJ | Includes preparing correspondence and exhibits; phone calls and meetings. Assume 2 meetings with OWJ to discuss public activities and use of property; impacts; and mitigation. Could include a field review. | 12 | 6 | 4 | 8 | 10 | 2 |  |
| Exhibits | Prepare exhibits and appendices | 2 | 4 | 6 | 4 | 2 | 1 |  |
| Prepare 4(f)/6(f) Form | Prepare the 4(f)/6(f) form and associated attachments. | 10 |  |  |  | 2 | 1 |  |
| Revision | Revise | 2 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

**High**- Complex: Assumes complex *de minimis* or Programmatic Evaluation; develop up to 2 avoidance alternatives; site-specific, graphics; resource specific mitigation/measures to minimize harm; up to 4 meetings; and coordination with up to 4 OWJs. PM hours are built into the SEL (assume 4 hours).

|  |  |  |
| --- | --- | --- |
| **Summary**  **of**  **HOURS** | **Personnel** | **# Hours** |
| Clerical/Administrative | 6 |
| Technician/Environmental Tech/CADTech | 24 |
| Environmental Specialist | 60 |
| Project Engineer | 16 |
| Senior Engineer | 16 |
| Senior Environmental Lead | 28 |
| Principal |  |
|  | **TOTAL** | **150** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tabs\*** | **Description/Level of Effort** | **High** | | | | | | |
|  |  | ES | TEC | PE | SPE | SEL | Ad | Prcpl |
| Identify Resource | Summary from land use / community resource sections | 6 |  |  |  |  |  |  |
| Coordinate with OWJ | Includes preparing correspondence and exhibits; phone calls and meetings. Assume 2 meetings with OWJ to discuss public activities and use of property; impacts; and mitigation. Could include a field review. | 28 | 14 | 8 | 12 | 18 | 2 |  |
| Alternative analysis | Up to 2 exhibits with alternatives and graphics. | 6 | 10 | 8 | 4 | 4 | 1 |  |
| Prepare 4(f)/6(f) Form | Prepare the 4(f)/6(f) form and associated attachments. | 16 |  |  |  | 3 | 2 |  |
| Revision | Revise | 4 |  |  |  | 3 | 1 |  |
|  |  |  |  |  |  |  |  |  |

**2. 3.1.C - Section 4 (f) Evaluation – Individual 4(f) for one Section 106 Property**

The Section 4(f) Evaluation will build upon the resource determinations, impacts analysis, mitigation, coordination from the Section 106 process.

Assume public involvement requirements are included in the NEPA public involvement activities. PM hours are built into the SEL (assume 8 hours).

**Hours are manhours based on task**

**High - Individual Section 4(f) findings are uncommon and complex. There is no high/medium/low level—there is either an Individual Section 4(f) or not.**

|  |  |  |
| --- | --- | --- |
| **Summary**  **of**  **HOURS** | **Personnel** | **# Hours** |
| Clerical/Administrative | 21 |
| Technician/Environmental Tech/CADTech | 69 |
| Environmental Specialist | 97 |
| Project Engineer | 20 |
| Senior Engineer | 16 |
| Senior Environmental Lead | 32 |
| Principal | 1 |
|  | **TOTAL** | **256** |

| **Tabs\*** | **Description/Level of Effort** |  | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | ES | TEC | PE | SPE | SEL | Ad | Prcpl |
| **Prepare Draft Individual Section 4(f) Document** | Summarize information from Section 106 documents and SHPO coordination; prepare discussions of avoidance alternatives, measures to minimize harm, and mitigation. | 32 | 12 |  |  | 4 | 4 |  |
| Exhibit | Prepare exhibits and appendices. Assume new graphics created for avoidance alternatives | 8 | 16 | 2 |  | 3 | 2 |  |
| Revision | Revise document in accordance with ODOT and FHWA comments. Assume 4 revisions (2 for ODOT and 2 for FHWA) | 24 | 8 |  | 2 | 4 | 2 |  |
| Circulate Document | Circulate copies of document to USDOI, SHPO, others. |  |  |  |  | 2 | 2 |  |
| Alternatives | Engineering for Alternatives Analysis | 2 | 14 | 16 | 12 | 8 |  | 1 |
| **Prepare Final Individual Section 4(f) Document** | Update the draft document with any new information; discuss the selected preferred alternative; feasible and prudent discussion; least harm assessment; summarize comments received from reviewers of the draft document; add concluding FHWA statement. | 17 | 8 | 1 | 1 | 7 | 6 |  |
| Exhibits | Prepare exhibits and appendices. Assume new graphics created for avoidance alternatives | 2 | 7 |  |  | 2 | 2 |  |
| Revision | Revise document in accordance with ODOT and FHWA comments. Assume 4 revisions (2 for ODOT and 2 for FHWA) | 12 | 4 | 1 | 1 | 2 | 3 |  |
|  |  |  |  |  |  |  |  |  |

1. **3.1.C - Section 4 (f) Evaluation – Individual 4(f) for one Park/Recreational/Refuge Resource**

Assume public involvement requirements are included in the NEPA public involvement activities. PM hours are built into the SEL (assume 8 hours).

**Hours are manhours based on task**

**High - Individual Section 4(f) findings are uncommon and complex. There is no high/medium/low level—there is either an Individual Section 4(f) or not.**

|  |  |  |
| --- | --- | --- |
| **Summary**  **of**  **HOURS** | **Personnel** | **# Hours** |
| Clerical/Administrative | 28 |
| Technician/Environmental Tech/CADTech | 113 |
| Environmental Specialist | 175 |
| Project Engineer | 23 |
| Senior Engineer | 21 |
| Senior Environmental Lead | 48 |
| Principal | 0 |
|  | **TOTAL** | **408** |

| **Tabs\*** | **Description/Level of Effort** | **Tier III: High CE4** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | ES | TEC | PE | SPE | SEL | Ad | Prcpl |
| Identify Resource | Data collection to determine Section 4(f) applicability | 8 | 2 |  |  | 2 |  |  |
| Coordinate with OWJ | Includes preparing correspondence and exhibits; phone calls and meetings. Assume 4 meetings with OWJ to discuss public activities and use of property; impacts; and mitigation. Could include a field review. Include time for developing mitigation plan and exhibits | 49 | 13 |  |  | 5 | 3 |  |
| Prepare memorandum of agreement | Assume 4 revisions | 32 | 12 |  |  | 8 | 4 |  |
| **Prepare Draft Individual Section 4(f) Document** | Summarize project description and purpose and need from other project documents; describe resource and impacts; prepare discussion of avoidance alternatives, measures to minimize harm/ mitigation, comments and coordination. | 31 | 11 | 5 | 3 | 7 | 5 |  |
| Exhibits | Prepare exhibits and appendices | 8 | 22 | 2 | 2 | 4 | 2 |  |
| Document Revision | Revise document in accordance with ODOT and FHWA comments. Assume 4 revisions (2 for ODOT and 2 for FHWA) | 13 | 6 | 1 | 1 | 1 | 2 |  |
| Circulate | Circulate copies of document to USDOI, OWJ, others. |  |  |  |  | 2 | 4 |  |
| Alternative | Alternatives for engineering changes | 6 | 24 | 12 | 12 | 6 |  |  |
| **Prepare Final Individual Section 4(f) Document** | Update the draft document with any new information; discuss the selected preferred alternative; prudent and feasible discussion; assessment of least overall harm; summarize comments received from reviewers of the draft document; add concluding FHWA statement. | 12 | 10 | 2 | 2 | 8 | 4 |  |
| Exhibits | Prepare exhibits and appendices | 2 | 9 |  |  | 1 | 2 |  |
| Document Revision | Revise document in accordance with ODOT and FHWA comments. Assume 4 revisions (2 for ODOT and 2 for FHWA) | 14 | 4 | 1 | 1 | 4 | 2 |  |
|  |  |  |  |  |  |  |  |  |

# Waterway Permits

|  |
| --- |
| Please use this estimating guide for development of fee for the development of waterway permit applications. The scope of work is broken into three categories of Low, Medium and High.  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  The primary time drivers for waterway permits include: Scale and quality of surface water impacts  Overall assumptions for scoping and assignment of fees: (1) All necessary non-CWA coordination was completed under a separate scope, (2) Does not include mitigation work, (3) Does includes time for engineering drawings and concepts for permit application (including anti-degradation alternatives); assumes some level of preliminary engineering has been completed, (4) IPs and LEVEL 2/3 PANs include time for permit strategy meeting with OES and the district. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 3.1.M - Prepare Waterway Permit Determination Package/Permits | IP threshold | 32 |  | 61 | 1 |
| Pre-Construction Notification (PCN) | IP threshold | 51 |  | 82 | 2 |
| PCN/Individual 404 with Individual 401 ((IP) | IP threshold | 135 | 234 | 312 | 3 |
| Isolated Wetland PAN (IWP) | IP threshold | 49 | 74 | 135 | 4 |
|  |  |  |  |  |  |

**Note:**

1. **3.1.M - Prepare Waterway Permit Determination Request Package**

**Hours are person hours based on Individual Permit (IP) threshold**

**Low** – Simple, see table below:

Permit Determination Request Package that is estimated to result in a Permit Determination of a non-reporting permit or PCN. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  | **Streams (#)** | **Wetlands (ac.)** | **Jurisdictional Ditches (ac.)** | **Section 10** | **Estimated # of Revisions** |
|  | below IP threshold | below IP threshold. |  | no | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 0 |  |  |  |  |
| Technician/Envi Tech/CADTech | 4 |  |  |  |  |
| Env Specialist | 19 |  |  |  |  |
| Project Engineer | 16 |  |  |  |  |
| Senior Engineer | 1 |  |  |  |  |
| Senior Environmental Lead | 2 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 32 |  |  | **Total** | **32** |

**High** - Complex, see table below:

Permit Determination Request Package that is estimated to be for a project requiring an individual permit. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  | **Streams (#)** | **Wetlands (ac.)** |  |  | **Estimated # of Revisions** |
|  | above IP threshold | above IP threshold |  |  | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 0 |  |  |  |  |
| Technician/Envi Tech/CADTech | 8 |  |  |  |  |
| Env Specialist | 36 |  |  |  |  |
| Project Engineer | 8 |  |  |  |  |
| Senior Engineer | 1 |  |  |  |  |
| Senior Environmental Lead | 8 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 61 |  |  | **Total** | **61** |

1. **Pre-Construction Notification (PCN)**

**Hours are person hours based on IP threshold**

**Low – Simple, see table below:**

Simple PCN that exceeds a low impact trigger (for example: Oak Openings, temporary fill, barely exceeding impact thresholds, etc). If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  | **Streams (#)** | **Wetlands (ac.)** |  |  | **Estimated # of Revisions** |
|  | above IP threshold | above IP threshold |  |  | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 2 |  |  |  |  |
| Technician/Envi Tech/CADTech | 4 |  |  |  |  |
| Env Specialist | 34 |  |  |  |  |
| Project Engineer | 4 |  |  |  |  |
| Senior Engineer | 1 |  |  |  |  |
| Senior Environmental Lead | 6 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 51 |  |  | **Total** | **51** |

**High - Complex, see table below:**

PCN Project that is almost an IP and includes multiple crossings/resources, or higher quality resources. Permit application-specific engineering is more detailed or is more numerous. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. Project Manager (PM) hours are built into the Senior Environmental Lead (SEL) (assume 2 hours).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  | **Streams (#)** | **Wetlands (ac.)** |  |  | **Estimated # of Revisions** |
|  | below IP threshold | below IP threshold |  |  | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 2 |  |  |  |  |
| Technician/Envi Tech/CADTech | 12 |  |  |  |  |
| Env Specialist | 44 |  |  |  |  |
| Project Engineer | 12 |  |  |  |  |
| Senior Engineer | 4 |  |  |  |  |
| Senior Environmental Lead | 8 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 82 |  |  | **Total** | **82** |

1. **PCN/Individual 404 with Individual 401 ((IP)**

**Hours are personhours based on IP threshold**

**Low – see table below:**

Impacts just barely exceed NWP/RGP PCN limits, or impacts to a small quantity of a high quality resource (for example impact just exceeds >0.10 acre of Category 3 wetland), or barely exceeds a 401 WQC for the NWPs conditions trigger. Project is small and quantity of impacts are small. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  |  |  |  |  | **Estimated # of Revisions** |
|  |  |  |  |  | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 2 |  |  |  |  |
| Technician/Envi Tech/CADTech | 16 |  |  |  |  |
| Env Specialist | 40 |  |  |  |  |
| Project Engineer | 32 |  |  |  |  |
| Senior Engineer | 4 |  |  |  |  |
| Senior Environmental Lead | 40 |  |  |  |  |
| Principal | 1 |  |  |  |  |
|  |  | 135 |  |  | **Total** | **135** |

**Medium** – see table below:

Larger impacts (<2000' stream , <5 acres wetland) to medium to low quality resources. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. PM hours are built into the SEL (assume 4 hours).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  |  |  |  |  | **Estimated # of Revisions** |
|  |  |  |  |  | 2 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 4 |  |  |  |  |
| Technician/Envi Tech/CADTech | 26 |  |  |  |  |
| Env Specialist | 72 |  |  |  |  |
| Project Engineer | 56 |  |  |  |  |
| Senior Engineer | 8 |  |  |  |  |
| Senior Environmental Lead | 66 |  |  |  |  |
| Principal | 2 |  |  |  |  |
|  |  | 234 |  |  | **Total** | **234** |

**High** – see table below:

Large impacts, greater than "Medium." Impacts could include high medium and/or low quality. Stream impacts are <10,000 linear feet and wetland impacts <10 acres. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. PM hours are built into the SEL (assume 8 hours).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  |  |  |  |  | **Estimated # of Revisions** |
|  |  |  |  |  | 3 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 4 |  |  |  |  |
| Technician/Envi Tech/CADTech | 40 |  |  |  |  |
| Env Specialist | 90 |  |  |  |  |
| Project Engineer | 56 |  |  |  |  |
| Senior Engineer | 20 |  |  |  |  |
| Senior Environmental Lead | 98 |  |  |  |  |
| Principal | 4 |  |  |  |  |
|  |  | 312 |  |  | **Total** | **312** |

1. **Isolated Wetland PAN (IWP)**

For each level of effort (Low, Medium, High) a standard scope is based on the Level provided in the Isolated Wetland Rule. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.

**Hours are personhours based on IP threshold**

**Low – Level 1 PAN; see table below:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  |  |  |  |  | **Estimated # of Revisions** |
|  |  |  |  |  | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 2 |  |  |  |  |
| Technician/Envi Tech/CADTech | 4 |  |  |  |  |
| Env Specialist | 30 |  |  |  |  |
| Project Engineer | 6 |  |  |  |  |
| Senior Engineer | 1 |  |  |  |  |
| Senior Environmental Lead | 6 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 49 |  |  | **Total** | **49** |

**Medium – Level 2 PAN; see table below:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  |  |  |  |  | **Estimated # of Revisions** |
|  |  |  |  |  | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 2 |  |  |  |  |
| Technician/Envi Tech/CADTech | 12 |  |  |  |  |
| Env Specialist | 24 |  |  |  |  |
| Project Engineer | 20 |  |  |  |  |
| Senior Engineer | 8 |  |  |  |  |
| Senior Environmental Lead | 8 |  |  |  |  |
| Principal | 0 |  |  |  |  |
|  |  | 74 |  |  | **Total** | **74** |

**High – Level 3 PAN; see table below:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** |  |  |  |  |  | **Estimated # of Revisions** |
|  |  |  |  |  | 3 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |
| Clerical/Administrative | 2 |  |  |  |  |
| Technician/Envi Tech/CADTech | 16 |  |  |  |  |
| Env Specialist | 40 |  |  |  |  |
| Project Engineer | 32 |  |  |  |  |
| Senior Engineer | 4 |  |  |  |  |
| Senior Environmental Lead | 40 |  |  |  |  |
| Principal | 1 |  |  |  |  |
|  |  | 135 |  |  | **Total** | **135** |

# Feasibility Study

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  Primary cost drivers for Feasibility Studies include: Path, number of build alternatives, number of preliminary alternatives to be evaluated, complexities of alternatives comparison (e.g. historic bridge, park impacts, unique engineering challenges), number of decision makers, number of review rounds, potential for controversy, need for graphics, and documentation type.  Overall assumptions for scoping and assignment of fees: (1) Traffic studies and preliminary design are estimated separately; (2) public involvement is estimated separately; (3) Hard copy printing costs are not included. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.1.A – Prepare Feasibility Study Report | PDP Path & thresholds | 34 | 194 | 324 | 1 |
|  |  |  |  |  |  |

**Note:**

1. **2.1.A – Prepare Feasibility Study Report**

**Hours are manhours based on document type and PDP Path.**

**Low** - See table below

Will typically be PDP Path 1 or 2. The FSR format will be a technical memo or detailed meeting minutes with attachments. One to three alternatives under consideration. Design alternatives to be evaluated were already looked at in a previous stand-alone study, such as a Structure Type Study, Safety Study, or Maintenance of Traffic Alternatives Analysis. The Feasibility Study Report will be a summary of what has occurred in other studies and a brief addition of new information that was considered if identification of the preferred alternative, such as environmental issues or public involvement. Design and environmental issues are limited to just a few considerations. Decision makers at District level

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |  |  |
| Clerical/Administrative | 2 |  |  |  |  |  |  |
| Technician/Envi Tech/CADTech | 4 |  |  |  |  |  |  |
| Env Specialist | 10 |  |  |  |  |  |  |
| Project Engineer | 8 |  |  |  |  |  |  |
| Senior Engineer | 2 |  |  |  |  |  |  |
| Senior Environmental Lead | 8 |  |  |  |  |  |  |
| Principal | 0 |  |  |  |  |  |  |
|  |  | 34 |  |  |  |  | **Total** | **34** |

**Medium** - See table below:

Will typically be PDP Path 2 or 3. Feasibility Study Report will use a condensed outline to address key issues. Three to five alternatives under consideration. FSR will summarize other stand-alone decision-making studies (such as safety study, Structure Type Study, etc.) and additional information will be added to address issues impacting the identification of the preferred alternative or otherwise important for project planning. Will typically be only one complex topic to address. Some new graphics will be needed to illustrate key issues. Decision makers will be at District and Central Office. Will typically be one round of revisions

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |  |  |
| Clerical/Administrative | 16 |  |  |  |  |  |  |
| Technician/Envi Tech/CADTech | 32 |  |  |  |  |  |  |
| Env Specialist | 50 |  |  |  |  |  |  |
| Project Engineer | 40 |  |  |  |  |  |  |
| Senior Engineer | 30 |  |  |  |  |  |  |
| Senior Environmental Lead | 22 |  |  |  |  |  |  |
| Principal | 4 |  |  |  |  |  |  |
|  |  | 194 |  |  |  |  | **Total** | **194** |

**High** – See table below:

Will typically be PDP Path 4 or 5 where the Feasibility Study Report will evaluate a range of alternatives and most likely recommend 2 to 3 alternatives for additional consideration. Complex Path 3 projects with numerous issues may also be classified in this category. May often include five or more alternatives with two or more complex issues to balance. FSR will use full table of contents. Complex discussions with use of specialized graphics. Project has extensive public involvement and agency coordination. Documentation of alternatives, design issues and environmental issues will require detailed presentation. Decision makers at District, Central Office and Federal Highway Administration. Will typically be two to three rounds of revisions

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |  |  |
| Clerical/Administrative | 24 |  |  |  |  |  |  |
| Technician/Envi Tech/CADTech | 60 |  |  |  |  |  |  |
| Env Specialist | 72 |  |  |  |  |  |  |
| Project Engineer | 60 |  |  |  |  |  |  |
| Senior Engineer | 30 |  |  |  |  |  |  |
| Senior Environmental Lead | 70 |  |  |  |  |  |  |
| Principal | 8 |  |  |  |  |  |  |
|  |  | 324 |  |  |  |  | **Total** | **324** |

# Public Involvement

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  Public Involvement will be rated by significance/level of public involvement and three levels of PI involvement are assumed:  **Low** MINOR PUBLIC INVOLVEMENT - Typically Path 1 or 2 Project  **Medium** MODERATE PUBLIC INVOLVEMENT - Typically Path 2 or 3 Project  **High** SUBSTANTIAL PUBLIC INVOLVEMENT- Typically Path 4-5 Project but could be a complex Path 3 Project |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| 2.6.A - Public Involvement/Coordination |  |  |  |  |  |
| Low | document type and PDP Path | 66 |  |  | 1 |
| Medium | document type and PDP Path |  | 738 |  | 2 |
| High | document type and PDP Path |  |  | 2091 | 3 |
|  |  |  |  |  |  |

**Note:**

**Scope and Detail Hours:**

|  |  |
| --- | --- |
| **Personnel** | **Acronym used below** |
| Clerical / Administrative | Ad |
| Technical / PI / RW | TEC |
| Environmental Specialist | ES |
| Project Engineer / Survey | PES |
| Senior Engineer | SE |
| Senior Environmental Lead | SEL |
| Principal | Prcpl |

1. **Tier 1 Minor Public Involvement – Typically Path 1 or 2 Project**

For a Low PI, it is assumed that the project is a lower level project (typically a Path 1 or 2) and that only minimal public involvement is required. Only minor PI is required, such as: one press release, direct mailings to property owners directly impacted by the project and attendance at a 2-3 township, city meeting, etc. Assume 2 meetings with ODOT/others on PI items during the course of the project.

**Hours are manhours based on document type and PDP Path.**

**Low** - See table below

| **Tabs\*** | **Assumptions and Notes** | **Low** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | AD | TEC | ES | PES | SE | SEL | Prcpl | **TOTAL** |
| Development of 1 Press notification, including graphics | Senior hours for reviews | 2 | 2 | 1 | 2 | 0 | 3 | 0 | **10** |
|  |  |  |  |  |  |  |  |  |  |
| Direct mailings (1 time) and creation of mailing list (no updates required) - direct to any parties directly impacted by project such as property owners, tenants- assume under 50. | Senior hours for reviews  GIS Auditor info available | 4 | 2 |  |  |  | 2 |  | **8** |
|  |  |  |  |  |  |  |  |  |  |
| Attendance at up to 3 other organized meetings, if applicable, such as township meeting, city meeting, etc. | No graphics/handouts creation  3 hours/meeting |  |  | 8 | 14 |  | 11 |  | **33** |
|  |  |  |  |  |  |  |  |  |  |
| Attendance at up to 2 ODOT status meetings, if applicable. | No graphics/handouts creation  3 hours/ meeting |  |  |  | 6 |  | 9 |  | **15** |
|  |  |  |  |  |  |  |  |  |  |
| **TOTAL** | | | | | | | | | **66** |

1. **MEDIUM Moderate Public Involvement – Typically Path 2 or 3 Project**

For a Medium PI, it is assumed that the project is a moderate level project (typically a Path 2 or 3) and that more public involvement is required. PI envisioned for this level is: up to two press release; one broad newsletter/public mailing- assume up to 200 copies going out; direct mailings to property owners directly impacted by the project; attendance at a 5-6 township, city meetings over the course of the development of the project; 1-2 stakeholder meetings and one planned public involvement meeting.

**Hours are manhours based on document type and PDP Path.**

**Medium** - See table below

| **Tabs\*** | **Assumptions and Notes** | **Medium** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | AD | TEC | ES | PES | SE | SEL | Prcpl | **TOTAL** |
| Press notifications - Plus one newsletter/flyer/ broad notification statement, including graphics and some GIS work. | Senior hours for reviews  PM hours added into SEL- assume 2 hours | 20 | 14 | 12 | 6 |  | 6 |  | **58** |
|  |  |  |  |  |  |  |  |  |  |
| Direct mailings (assume 2 times) and creation of mailing list (with 2 updated) - more than one and more broad outreach than Low PI such as public within study area- assume less than 200. | Senior hours for reviews  GIS Auditor Info Available  (Review mailing each update)  (Review mailing each update) | 30 | 16 | 8 |  |  | 6 |  | **60** |
|  |  |  |  |  |  |  |  |  |  |
| Attendance at multiple (up to 6) other organized meetings such as township meeting, city meeting, etc. | No graphics/handouts creation  3 hours/ meeting  6 meetings  PM hours added into SEL- assume 6 hours |  | 8 | 24 | 24 | 4 | 18 |  | **78** |
|  |  |  |  |  |  |  |  |  |  |
| Potential (1-2) stakeholder or special interest meetings- Development of presentations, graphics, responses and comments, Q&As, Handouts, etc. | Assume 2 meetings  Number of boards = Max. 5  Includes power point  PM hours added into SEL- assume 12 hours | 16 | 32 | 32 | 12 | 12 | 28 |  | **132** |
|  |  |  |  |  |  |  |  |  |  |
| At least 1 public involvement meeting - open house format- Development of presentations, graphics, responses and comments, Q&As, Handouts, etc. Including a pre-meeting with ODOT for PI planning. | Use some graphics from stakeholder meetings; Time includes updates and remounting  Minor updates to handouts  Assumes comment/response table  Includes Powerpoint development  PM hours added into SEL- assume 6 hours | 24 | 56 | 80 | 20 | 8 | 30 |  | **218** |
|  |  |  |  |  |  |  |  |  |  |
| Attendance at up to 4 ODOT status meetings, if applicable. | 3 hours/meeting  PM hours added into SEL- assume 8 hours |  |  | 16 |  |  | 24 |  | **40** |
|  |  |  |  |  |  |  |  |  |  |
| Project web site coordination and maintenance - public tips | Use existing website and only upload pdf files of documents, stakeholder and public meeting information and public hearing information. Does not include designing logos, icons or website pages. Does not include responding to comments submitted by email.  Assumes 4 hours per month for coordination and maintenance for a 36 month period. | 4 | 120 | 8 | 8 |  | 12 |  | **152** |
|  |  |  |  |  |  |  |  |  |  |
| **TOTAL** | | | | | | | | | **738** |

1. **HIGH Substantial Public Involvement – Typically Path 4 or 5 Project but could be complex Path 3 Project**

For a High PI, it is assumed that the project is a larger and more complex project (typically a Path 4 or 5) and that the highest level of public involvement is required for longer duration (assumption of 36 months). PI envisioned for this level includes: regular media/press notifications; dedicated website; broad newsletter/public mailing; direct mailings to property owners directly impacted by the project; regular (monthly) attendance at a township, city meeting; 6+ stakeholder meetings, 3+ planned public involvement meetings and a formal public hearing.

**Hours are manhours based on document type and PDP Path.**

**High** - See table below

| **Tabs\*** | **Assumptions and Notes** | **High** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | AD | TEC | ES | PES | SE | SEL | Prcpl | **TOTAL** |
| Press notification - Media notification plus at least one newsletter/flyer/broad notification statement- assume quarterly updates over 36 months, so 12 notifications. | Includes graphics prep.  Senior hours for reviews  (Draft, Coordinate with District, and Send) | 42 | 60 | 66 | 24 |  | 8 |  | **200** |
|  |  |  |  |  |  |  |  |  |  |
| Direct mailings (assume 5 times) and creation of mailing list (assume 2 updates); more direct mailings and more involved direct mailings than Low and Medium PI- assume 500+ mailings. | Senior hours for reviews  GIS Auditor Info Available  (Review mailing each update) | 68 | 64 | 35 | 2 |  | 16 |  | **185** |
|  |  |  |  |  |  |  |  |  |  |
| Attendance at multiple (up to 12) other organized meetings such as township meeting, city meeting, etc. | No graphics/handouts creation  3 hours/meeting  Assume 12 meetings  PM hours added into SEL- assume 12 hours | 4 | 8 | 56 | 40 | 16 | 44 | 4 | **172** |
|  |  |  |  |  |  |  |  |  |  |
| Several (up to 6) stakeholder or special interest meetings. Development of presentations, responses and comments, Q&As, handouts, etc. | 3 hours/meeting  Assume 6 meetings  Includes a maximum of 10 boards  Includes PowerPoint development  PM hours added into SEL- assume 24 hours | 48 | 84 | 84 | 36 | 36 | 84 | 12 | **384** |
|  |  |  |  |  |  |  |  |  |  |
| Multiple (3) public involvement meetings. Development of presentations, graphics, responses and comments, Q&As, handouts, etc. | Use some graphics from stakeholder meetings; time includes updates and remounting  Minor updates to handouts, PM hours added into SEL- assume 30 hours  Assume responses to 30 separate issues per meeting  Prepare 3 Public Meeting Summary Reports (assume 2 revisions per 3 reports)  Attendance at meetings 4 hours including set up and breakdown;7 consultant staff per meeting  Does not include mailings of hearing notices (captured in 2).  Assumes a comment/response table  Includes PowerPoint development | 66 | 124 | 188 | 42 | 24 | 90 | 8 | **542** |
|  |  |  |  |  |  |  |  |  |  |
| Possible (If Authorized) public hearing - formal meeting format; Development of formal presentations, responses and comments, Q&As, handouts, etc. | Use graphics from other meetings  Use some graphics from other meetings plus 6 new exhibits for the preferred alternative (e.g., impacts to Section 4(f) resources and noise wall locations)  Time to coordinate with venue and court reporter  Prepare legal notice for local papers  Assume responses to 50 separate issues  Prepare Public Hearing Summary Report (assume 2 revisions)  Attendance at hearing 4 hours including set up and breakdown - 7 consultant staff  Does not include mailings of hearing notices (captured in 2).  Assumes a comment/response table, PM hours added into SEL- assume 12 hours | 40 | 92 | 80 | 16 | 8 | 32 | 4 | **272** |
|  |  |  |  |  |  |  |  |  |  |
| Project web site coordination and maintenance - public tips | Use existing website and only upload pdf files of documents, stakeholder and public meeting information and public hearing information. Does not include designing logos, icons or website pages. Does not include responding to comments submitted by email.  Assumes 4 hours per month for coordination and maintenance for a 36 month period. | 4 | 120 | 8 | 8 |  | 12 |  | **152** |
|  |  |  |  |  |  |  |  |  |  |
| Multiple planning / strategy mtgs with districts for public involvement meetings and other special interest mtgs. Assume 10 ad hoc meetings over the course of the project. Could include meetings requested by stakeholders. | Assumes 10 meetings x 4 hours per meeting x 2 people = 80 hours  Assumes 8 hours prep/response per meeting 80 hours  PM hours added into SEL- assume 24 hours | 8 | 24 | 32 | 24 | 32 | 56 | 8 | **184** |
|  |  |  |  |  |  |  |  |  |  |
| **TOTAL** | | | | | | | | | **2091** |

# Alternative Evaluation Report (AER)

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  Primary cost drivers for Alternative Evaluation Report (AER): Path, number of detailed alternatives to be evaluated, complexities of alternatives comparison (e.g. historic bridge, park impacts, unique engineering challenges), number of decision makers, number of review rounds, potential for controversy, need for graphics, and documentation detail.  Overall assumptions for scoping and assignment of fees: (1) Traffic studies and Stage I/II design are cost separately; (2) public involvement is cost separately; (3) Hard copy printing costs are not included |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.5.A - Prepare Alternative Evaluation Report | PDP Path | 56 | 208 | 360 | 1 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Note:**

1. **2.5.A - Prepare Alternative Evaluation Report**

**Hours are manhours based on document type and PDP Path.**

**Low** - See table below

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Project Considerations** | **Document type** | **Path** | **Number of Alt** | **Complex Issues** | **Decision Makers** | **Graphics** | **# of Reports** |
| Design alternatives to be evaluated are a small component of the bigger project. Design/environmental issues are limited to just a few considerations. | Documentation is assumed to be a brief overview of issues and conclusions and supported w/design and traffic studies completed under other studies. PM hours are built into the SEL (assume 2 hours). Only pertinent items from the recommended table of contents are expected to be included in the AER. | 1-2 | 1-2 | no | District | Use available materials | 1 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |  |  |
| Clerical/Administrative | 4 |  |  |  |  |  |  |
| Technician/Envi Tech/CADTech | 8 |  |  |  |  |  |  |
| Env Specialist | 14 |  |  |  |  |  |  |
| Project Engineer | 18 |  |  |  |  |  |  |
| Senior Engineer | 6 |  |  |  |  |  |  |
| Senior Environmental Lead | 6 |  |  |  |  |  |  |
| Principal | 0 |  |  |  |  |  |  |
|  |  | 56 |  |  |  |  | **Total** | **56** |

**Medium** - See table below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Project Considerations** | **Document type** | **Path** | **Number of Alt** | **Complex Issues** | **Decision Makers** | **Graphics** | **# of Reports** |
| Design alternatives to be evaluated are more detailed in nature. They can include whole alignments or detailed issues of a bigger alignment. Design/environmental issues are more complex and require many aspects to consider and compare. Project as a whole is more complex. | Documentation can be complex and lengthy in nature. Many subject areas are discussed in detail and the conclusions are supported with many graphics, tables and details. PM hours are built into the SEL (assume 8 hours). | 2-3 | 3-4 | 1-3 | District/CO | Convert drawings to exhibits; simple illustrations | 2 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |  |  |
| Clerical/Administrative | 24 |  |  |  |  |  |  |
| Technician/Envi Tech/CADTech | 36 |  |  |  |  |  |  |
| Env Specialist | 44 |  |  |  |  |  |  |
| Project Engineer | 40 |  |  |  |  |  |  |
| Senior Engineer | 30 |  |  |  |  |  |  |
| Senior Environmental Lead | 30 |  |  |  |  |  |  |
| Principal | 4 |  |  |  |  |  |  |
|  |  | 208 |  |  |  |  | **Total** | **208** |

**High** – See table below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SCOPE** | **Project Considerations** | **Document type** | **Path** | **Number of Alt** | **Complex Issues** | **Decision Makers** | **Graphics** | **# of Reports** |
| Design alternatives to be evaluated are more detailed in nature. They can include whole alignments or detailed issues of a bigger alignment. Design/environmental issues are complex and require many aspects to consider and compare. Project as a whole is complex. Could be pubic/agency concerns. | Documentation is complex and detailed in nature. Many subject areas are discussed in detail and the conclusions are supported with many graphics, tables and details. Documentation is circulated for public/agency review/comment. PM hours are built into the SEL (assume 8 hours). | Complex Path 3 or Path 4-5 | 5+ | 3+ | District/CO/ FHWA | Specially made graphics | 3 |
| **HOURS** | **Personnel** | **# Hours** |  |  |  |  |  |  |
| Clerical/Administrative | 32 |  |  |  |  |  |  |
| Technician/Envi Tech/CADTech | 72 |  |  |  |  |  |  |
| Env Specialist | 86 |  |  |  |  |  |  |
| Project Engineer | 60 |  |  |  |  |  |  |
| Senior Engineer | 40 |  |  |  |  |  |  |
| Senior Environmental Lead | 62 |  |  |  |  |  |  |
| Principal | 08 |  |  |  |  |  |  |
|  |  | 360 |  |  |  |  | **Total** | **360** |

# Environmental Document (CE Levels 1-4)

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 3.5.A - Prepare Environmental Document |  |  |  |  |  |
| Low | tier | 59 |  |  | 1 |
| Medium | tier |  | 136 |  | 2 |
| High | tier |  |  | 266 | 3 |
|  |  |  |  |  |  |

**Note:**

1. **3.5.A - Prepare Environmental Document –Low Level**

For a Low Level environmental document, it is assumed that the project is a lower level project (typically a Path 1 or 2) and that the project assumes little or no impact to the environment. The project is expected to have a straight-forward project description and alternatives discussion. With little to no environmental impact the CE serves as documentation of research with only the minimal coordination/compliance measures.

Prepare Environmental Document.

Hours include:

* Time to upload projects to the ODOT Online CE project file
* Development of project description, existing & proposed design parameters, MOT & ROW
* Development of the Purpose & Need statement
* Development of basic alternatives (no feasibility studies)
* Graphics needed for the project description, P&N and alternatives discussion
* Farmlands (FCIR score<160) & Drinking Water
* For resource discussions at low/no impact use boilerplate language. If impact such that a higher separate task is needed, then the CE hours only include time to summarize the report.
* Completion of the Online CE form
* 1 revision after comment period.
* QA/QC

Hours do not include:

* Preparation of other environmental documents.

**Low** **Level**: Categorical Exclusion Level 1 - Typically Path 1 project

|  |  |  |
| --- | --- | --- |
| **Summary**  **of**  **HOURS** | **Personnel** | **# Hours** |
| Clerical/Administrative | 2 |
| Technician/Environmental Tech/CADTech | 4 |
| Environmental Specialist | 50 |
| Project Engineer | 1 |
| Senior Engineer\* | 0 |
| Senior Environmental Lead | 2 |
| Principal | 0 |
|  | **TOTAL** | **59** |

\*General project management should not be included with this task. PM time needed directly for this task to go under the Senior Engineer.

1. **3.5.A - Prepare Environmental Document – Medium Level**

For a Medium Level environmental document, it is assumed that the project is a moderate level project (typically a Path 2 or 3) and that more environmental coordination and documentation is required. The project information and description will require more time and resources to develop. Being a higher level CE, environmental impacts are anticipated which will require additional documentation and/or coordination to complete the CE.

Prepare Environmental Document.

Hours include:

* Time to upload projects to the ODOT Online CE project file
* Development of project description, existing & proposed design parameters, MOT & ROW
* Development of the Purpose & Need statement (if not developed in a separate task)
* Development of basic alternatives (if no feasibility study)
* Graphics needed for the project description, P&N and alternatives discussion
* Farmlands (FCIR score<160) & Drinking Water
* For resource discussions at low/no impact use boilerplate language. If impact such that a higher separate task is needed, then the CE hours only include time to summarize the report.
* Completion of the Online CE form
* 3 rounds of revisions after comment period.
* QA/QC

Hours do not include:

* Preparation of other environmental documents.

**Medium** Level: Categorical Exclusion Level 2 or 3 - Typically Path 2 or 3 projects

|  |  |  |
| --- | --- | --- |
| **Summary**  **of**  **HOURS** | **Personnel** | **# Hours** |
| Clerical/Administrative | 4 |
| Technician/Environmental Tech/CADTech | 8 |
| Environmental Specialist | 90 |
| Project Engineer | 6 |
| Senior Engineer\* | 2 |
| Senior Environmental Lead | 24 |
| Principal | 2 |
|  | **TOTAL** | **136** |

\*General project management should not be included with this task. PM time needed directly for this task to go under the Senior Engineer.

1. **3.5.A - Prepare Environmental Document – High Level**

For a High Level environmental document, it is assumed that the project is a larger and more complex project (typically a Path 4 or 5) and that numerous and/or substantial impacts are expected. Project information and description will be detailed and lengthy. Additional detailed discussions and coordination will be needed as part of the CE document. A CE 4 will require additional review/approval time for ODOT OES and then FHWA approvals.

Prepare Environmental Document.

Hours include:

* Time to upload projects to the ODOT Online CE project file
* Development of project description, existing & proposed design parameters, MOT & ROW
* Purpose & Need statement likely prepare as separate task: summarize in CE.
* Alternatives discussion: summarize feasibility study w/ PM oversight.
* Farmlands (FCIR score<160) & Drinking Water
* For resource discussions at low/no impact use boilerplate language. If impact such that a higher separate task is needed, then the CE hours only include time to summarize the report.
* Completion of the Online CE form
* Up to 6 rounds of revisions after comment period.
* QA/QC

Hours do not include:

* Preparation of other environmental documents.

**High Level**: Categorical Exclusion Level 4 - Typically Path 4 or 5 projects

|  |  |  |
| --- | --- | --- |
| **Summary**  **of**  **HOURS** | **Personnel** | **# Hours** |
| Clerical/Administrative | 6 |
| Technician/Environmental Tech/CADTech | 14 |
| Environmental Specialist | 186 |
| Project Engineer | 12 |
| Senior Engineer | 2 |
| Senior Environmental Lead | 42 |
| Principal | 4 |
|  | **TOTAL** | **266** |

# Survey

|  |
| --- |
| Use this estimating guide for development of fee ……….. Low, Medium, High………  Factors for hours will be based on the length of the project, the number of ownerships, or number of bridges depending on the task. Project Control hours will be based on the number and type of monuments and the positioning method as defined in the Scope of Services  Bridges are for structures over 20' span and each bridge on a divided multi-lane roadway counts as a separate bridge.  Complexity depends on:  1) type of project - new alignment, reconstruction, widening, maintenance;  2) length of the project;  3) the number of property owners;  4) if additional R/W needed;  5) terrain and vegetation coverage,  6) type of roadway - number of lanes, intersections/interchanges, speed and traffic volume;  7) the Original Public Land Survey area and County;  8) setting - urban/commercial, urban/residential, rural  NOTE: Adjustments will be reflected in the Low-Med-High.  An Assumption is that Sub Consulted Traffic Control, cost of special equipment (man lifts, boats etc.) will be included as a cost in other portions of the proposal. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.3.A.A.- Project Control, Benchmarks, and Reference Points | Monument |  |  |  |  |
| A.1 - Type “A” Concrete Monument (See RM-1.1) | monument | 36 | 40 | 46 | 1 |
| A.2 – Type “B” Monument Specified | monument | 16 | 20 | 24 | 2 |
| 2.3.A.B - Monumentation Recovery |  |  |  |  |  |
| B.1 - Existing Centerline and R/W | 1 mile | 22 | 28 | 44 | 3 |
| B.2 - Property Lines (Used on projects with… … additional R/W needed) | owner | 22 | 28 | 42 | 4 |
| 2.3.A.C - Base Mapping (incl. field verify) |  |  |  |  |  |
| C.1 - No R/W Project | 0.1 mile | 16 | 22 | 26 | 5 |
| C.2 - R/W Project | 0.1 mile | 20 | 26 | 34 | 6 |
| 2.3.A.D – Drainage Survey (Stream cross sections) | 0.1 mile | 12 | 16 | 20 | 7 |
| 2.3.A.E – Bridge Survey |  |  |  |  |  |
| E.1 - For complete replacement | bridge | 22 | 30 | 44 | 8 |
| E.2 - For Bridge Rehabilitation Over a Road | bridge | 26 | 40 | 48 | 9 |

| E.3 - For Bridge Rehabilitation Over a Stream or … ….…River | bridge | 30 | 48 | 72 | 10 |
| --- | --- | --- | --- | --- | --- |
| 2.3.A.F – Establish property lines, tax id, & ownerships on base map | owner | 4 | 5 | 7 | 11 |
| 2.3.A.G – Property Owner Notification | owner | 1.5 | 2 | 2.5 | 12 |

**Note:**

1. **2.3.A.A1 - Project Control, Benchmarks, and Reference Points (Type “A” Concrete Monuments, Specified (See Standard Construction Drawing RM-1.1)**

Task is for establishment of project control, benchmarks and reference points as described in the Survey and Mapping Specification Section 502. Includes marking for OUPS, constructing the monument per the Standard Construction Drawing RM-1.1, GNSS observations and preparation and submitting of Project Control Reports and Deliverables in accordance with the Survey and Mapping Specification.

**Hours are manhours for each monument required per the Scope.**

**Low** - Single alignment less than 1 mile requires 1-2Type A monuments with Azimuth Marks positioned by ODOT VRS

**Medium** - Single alignment less than 1 mile requires 1-2 Type A monuments with Azimuth Marks positioned by Static GNSS OR Multiple alignments greater than 1 mile requires Type A monuments with Azimuth marks per mile positioned by ODOT VRS

**High** - Multiple alignments greater than 1 mile requires Type A monuments with Azimuth Marks per mile positioned by Static GNSS

1. **2.3.A.A2 - Project Control, Benchmarks, and Reference Points (Type “B” Monument Specified)**

Task is for establishment of project control, benchmarks and reference points as described in the Survey and Mapping Specification Section 502. Includes marking for OUPS, constructing the monument per the Standard Construction Drawing RM-1.1, GNSS observations and preparation and submitting of Project Control Reports and Deliverables in accordance with the Survey and Mapping Specification

**Hours are manhours for each monument required per the Scope**

**Low** - Single alignment less than 1 mile requires 1-2 Type B monuments with Azimuth Marks positioned by ODOT VRS

**Medium** - Single alignment less than 1 mile requires 1-2 Type B monuments with Azimuth Marks positioned by Static GNSS OR Multiple alignments greater than 1 mile requires 1-2 Type B monuments with Azimuth marks per mile positioned by ODOT VRS

**High** - Multiple alignments greater than 1 mile requires 1-2 Type B monuments with Azimuth marks per mile positioned by Static GNSS

1. **2.3.A.B1 - Monumentation Recovery - Existing Centerline and R/W**

Task includes the plan and other records research, the field search and location of existing Centerline and Right of Way monumentation needed to set up the existing Centerline of Right of Way alignment(s) and existing Right of Way lines and boundary monuments within the limits of proposed construction.

**Hours are for 1 mile of project length**.

**Low** - Previous Plans indicate Centerline and/or Right of Way monumentation is available, County has good survey records available on line, Rural, low volume traffic and generally open site good for VRS surveying.

**Medium** - Previous Plans indicate Centerline and/or Right of Way monumentation is available, County has good survey records, urban location with low to medium traffic volume and speed and partially open site with some potential VRS surveying

**High** - Previous Plans indicate minimal if any Centerline and/or Right of Way monumentation is available and may have little or no alignment defined, County has poor survey records, urban or high speed, high volume traffic and minimal open site with limited potential VRS surveying

1. **2.3.A.B2 - Monumentation Recovery -Property Lines (Used on projects with additional R/W needed)**

Task includes the plan and other records research, the field search and survey location of boundary monuments and other field evidence as needed to define property lines per minimum Boundary Survey Standards to prepare Right of Way Plans to ODOT specifications for Right of Way plans.

**Assumption** - Ownerships along the project corridor within the project limits will be the basis for determining the number of ownerships

**Hours are manhours for each ownership**

**Low** - County has good Survey Records available on line, Property Survey Records indicate boundary monuments are available, rural, low volume traffic and generally open site good for VRS surveying

**Medium** - County has good Survey Records, Property Survey Records indicate boundary monuments are likely available, urban location with low to medium traffic volume and speed and partially open site with some potential VRS surveying

**High** - Property Survey Records indicate minimal boundary monuments are available, County has poor survey records, urban or high speed, high volume traffic and minimally open site with limited potential for VRS surveying

1. **2.3.A.C1 - Base Mapping (incl. field verify) - No R/W Project**

Task includes the survey location of all existing Planimetric and Terrain topographic features per The ODOT Survey and Mapping Specifications Section 504 needed for design of the project, including but not limited to, plan view features, all Digital Terrain Modeling (DTM) features needed for defining the existing ground surface for the generation of alignment profiles and cross sections, overhead and underground utility locations, including the OUPS design ticket request, existing storm drainage pipes within the design corridor and other special application areas of the project, if applicable, such as special Maintenance of Traffic areas. Also includes all Mapping checks and Mapping Deliverables required for review of the mapping data prior to any design, the completed DTM file(s) and Basemap file(s) per ODOT CAD standards and will include the Existing Centerline of Right of Way alignment(s) and the Existing Right of Way lines

**Hours are manhours for 0.1 mile of project length**

**Low** - Project site is Rural or light residential, low volume traffic and generally open site suitable for VRS surveying

**Medium** - Project site has rural or urban location with medium traffic volume and speed, minimal traffic sight distance issues and moderate terrain with partially open site suitable for some potential VRS surveying.

**High** - Project site is dense residential or commercial corridor, multi lanes, high volume or high speed traffic, some severe terrain and steep slopes and minimally open site with dense vegetation not suitable for VRS surveying.

1. **2.3.A.C2 - Base Mapping - R/W Project**

Task includes the survey location of all existing Planimetric and Terrain topographic features per The ODOT Survey and Mapping Specifications Section 504 needed for design of the project and needed to prepare Right of Way Plans to show impacts on properties, including but not limited to, plan view features, all Digital Terrain Modeling (DTM) features needed for defining the existing ground surface for the generation of alignment profiles and cross sections, overhead and underground utility locations, including the OUPS design ticket request, existing storm drainage pipes within the design corridor and other special application areas of the project, if applicable, such as special Maintenance of Traffic areas. Also includes all Mapping checks and Mapping Deliverables required for review of the mapping data prior to any design, the completed DTM file(s) and Basemap file(s) per ODOT CAD standards and will include the Existing Centerline of Right of Way alignment(s) and the Existing Right of Way lines.

**Hours are manhours for 0.1 mile of project length**

**Low** - Project site is Rural or light residential, low volume traffic and generally open site suitable for VRS surveying

**Medium** - Project site has rural or urban location with medium traffic volume and speed, minimal traffic sight distance issues and moderate terrain with partially open site suitable for some potential VRS surveying

**High** - Project site is dense residential or commercial corridor, multi lanes, high volume or high speed traffic, some severe terrain and steep slopes and minimally open site with dense vegetation not suitable for VRS surveying.

1. **2.3.A.D – Drainage Survey (Stream cross sections)**

Task includes location of all existing Planimetric and Terrain topographic features per The ODOT Survey and Mapping Specifications Section 504 needed for design of the project involved with a drainage feature outside the roadway area including, plan view features, all Digital Terrain Modeling (DTM) features needed for defining the existing ground surface for hydraulic analysis. Also includes all Mapping checks and Mapping Deliverables required for review of the mapping data prior to any design, the completed DTM file(s) and Basemap file(s) per ODOT CAD standards

**Hours are manhours for 0.1 mile of project drainage length**

**Low** - Drainage site is Rural and generally open site suitable for VRS surveying with a shallow (can be crossed with knee high boots) water depth or dry channel typically less than 20 feet wide

**Medium** - Drainage site is residential, has a moderate (can be safely crossed with chest wades) water depth typically less than 50 feet wide, moderate surrounding terrain with partially open site suitable for some potential VRS surveying

**High** - Drainage site is urban, with significant or unknown water depth requiring the use of a boat and special hydrographic surveying techniques, typically greater than 50 feet wide, with steep banks, moderate surrounding terrain with dense vegetation not suitable for VRS surveying

1. **2.3.A.E1 – Bridge Survey –for Complete Bridge Replacement**

Task Includes the location of the basic bridge features (deck and roadway over the bridge, approach slabs, abutments and piers, if applicable) to show the size and location of the structure in the basemap. The data for the roadway over the bridge will be collected in a manner to create a separate Digital Terrain Modeling (DTM) features needed for defining the existing roadway surface for the generation of the existing roadway profiles and cross sections

**Hours are manhours for each bridge over 20' length within the project**

**Low** - Bridge site is Rural or light residential, low volume traffic and generally open site suitable for VRS surveying

**Medium** - Bridge site is urban location with low to medium traffic volume and speed and partially open site with some potential VRS surveying

**High** - Bridge site is urban or commercial corridor, high speed, high volume traffic or minimal open site with limited potential VRS surveying

1. **2.3.A.E2 – Bridge Survey – for Bridge Rehabilitation Over a Road**

Task Includes the location of the detailed bridge features (deck and roadway over the bridge, approach slabs, abutments, beam seats, beam size, beam locations, beam profiles and piers, if applicable) to show the size and location of the structure in the basemap. The data for the roadway over the bridge will be collected in a manner to create a separate Digital Terrain Modeling (DTM) features needed for defining the existing roadway surface for the generation of the existing roadway profiles and cross sections. The data for location and elevation of the top of abutments and piers, beam seats and beam profiles will be used for detailed design of the rehabilitated structure

**Hours are manhours for each bridge being rehabilitated over 20' length over another roadway or land area within the project**

**Low** - Bridge is a single span and the site is rural or light residential, low volume traffic for both roadways and generally open site suitable for VRS surveying

**Medium** - Bridge is 2 spans and the site is urban location with low to medium traffic volume and speed for one or both roadways and partially open site with some potential VRS surveying

**High** - Bridge is more than 2 spans and the site is urban or commercial corridor, high speed, high volume traffic for one or both roadways or minimal open site with limited potential VRS surveying.

1. **2.3.A.E3 – Bridge Survey – for Bridge Rehabilitation Over a Stream or River**

Task Includes the location of the detailed bridge features (deck and roadway over the bridge, approach slabs, abutments, beam seats, beam size, beam locations, beam profiles and piers, if applicable) to show the size and location of the structure in the basemap. The data for the roadway over the bridge will be collected in a manner to create a separate Digital Terrain Modeling (DTM) features needed for defining the existing roadway surface for the generation of the existing roadway profiles and cross sections. The data for location and elevation of the top of abutments and piers, beam seats and beam profiles will be used for detailed design of the rehabilitated structure

**Hours are manhours for each bridge being rehabilitated over 20' length over a water course within the project**

**Low** - Bridge is a single span and the site is rural or light residential, low volume traffic for the roadway and generally open site suitable for VRS surveying with a shallow (can be crossed with knee high boots) water depth or dry channel typically less than 50 feet wide and a height of the bridge deck above the channel of less than 15 feet

**Medium** - Bridge is 2 spans and the site is urban location with low to medium traffic volume and speed for the roadways and partially open site with some potential VRS surveying and has a moderate (can be safely crossed with chest wades) water depth channel typically less than 100 feet wide, low speed current and a height of the bridge deck above the channel between 15 -25 feet

**High** - Bridge is more than 2 spans and the site is urban or commercial corridor, high speed, high volume traffic for the roadway, minimal open site with limited potential VRS surveying, difficult access to below the bridge with significant or unknown water depth in the channel requiring the use of a boat, typically greater than 100 feet wide channel, swift current, steep banks, moderate surrounding terrain with dense vegetation creating difficult measuring situation requiring special surveying techniques

1. **2.3.A.F – Establish property lines, tax id, & ownerships on base map**

Task includes resolution Public Land Survey System (PLSS Sections, Great Lots and Virginia Military District Parcels) corners and lines and property boundary corners and lines per minimum Boundary Survey Standards needed to prepare Right of Way Plans to ODOT specifications and delineate on the Basemap

**Hours are manhours for each ownership**

**Low** - County has good ownership, survey and deed records available on line and Property Survey Records indicate boundary monuments are available

**Medium** - County has good ownership and survey records, Property Survey Records indicate boundary monuments are likely available

**High** - County has poor ownership, survey and deed records, Property Survey Records indicate minimal boundary monuments are available.

1. **2.3.A.G – Property Owner Notification**

Task includes research of the public tax records for Tax Identification Number, Owner name, property and tax mailing address and entry of that data into an Excel spreadsheet file for use in preparing Property Owner Notification letters to ODOT specifications

**Hours are manhours for each ownership**

**Low** - County has good ownership records available on line

**Medium** - County has good ownership records

**High** - County has poor ownership records available with difficult access procedures

# Maintenance of Traffic

|  |
| --- |
| Use this estimating guide for development of fee for Maintenance of Traffic (MOT) related tasks. For each MOT task, work hours are apportioned based upon the level of effort, if applicable.  For each level of effort (Low, Medium, High) a guideline is provided. If a project's scope exceeds these thresholds, then additional work hours may be needed and may be assigned on a project-specific basis. If a project’s scope requires additional tasks items not included in the list, then additional task items and work hours may need to be developed on a project-specific basis.  All MOT task list items were developed excluding consideration for larger Path 4 and 5 projects. For the purpose of this MOT task list, some smaller Path 4 and 5 projects may be included if they are: less than or equal to two seasons, or less than or equal to five miles of reconstruction. For larger Path 4 and 5 projects some of the tasks and work hours may need additional consideration. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| **2.3.F – Maintenance of Traffic** |  |  |  |  |  |
| **2.3.F.A -** **MOTEC Request** |  |  |  |  |  |
| 2.3.F.A.1 - MOTEC Request - Report Preparation | per report | 16 | 24 | 32 | 1 |
| 2.3.F.A.2 - MOTEC Request - Report Graphics | per scenario | 12 | 12 | 12 | 2 |
| 2.3.F.A.3 - MOTEC Request - Traffic Counts | \*See Note | \*See Note | \*See Note | \*See Note | 3 |
| 2.3.F.A.4 - MOTEC Request - Modeling - Queue Analysis | per scenario | 8 | 16 | 24 | 4 |
| 2.3.F.A.5 - MOTEC Request - Modeling – HCS | per intersection and/or segment | 4 | 4 | 4 | 5 |
| 2.3.F.A.6 - MOTEC Request - Modeling - Select Link Analysis | per intersection and/or segment | 8 | 8 | 8 | 6 |
| 2.3.F.A.7 - MOTEC Request - Geometric Analysis for Temporary Traffic | per ramp investigation | 8 | 16 | 32 | 7 |
| 2.3.F.A.8 - MOTEC Request - Cost Estimate | per scenario | 16 | 16 | 16 | 8 |
| **2.3.F.B -** **MOTAA** |  |  |  |  |  |
| 2.3.F.B.1 - MOTAA - Report | per report | 24 | 40 | 60 | 9 |
| 2.3.F.B.2 - MOTAA - Conceptual MOT Plan | per MOT scenario | 32 | 52 | 72 | 10 |

| 2.3.F.B.3 - MOTAA - Construction Cost | per MOT scenario, per MOT phase | 4 | 4 | 4 | 11 |
| --- | --- | --- | --- | --- | --- |
| 2.3.F.B.4 - MOTAA - Construction Schedule/Duration | per MOT scenario | 4 | 6 | 10 | 12 |
| 2.3.F.B.5 - MOTAA - Detour Route Investigation | per detour | 12 | 12 | 12 | 13 |
| 2.3.F.B.6 - MOTAA - Modeling - Queue Analysis | per scenario | 8 | 16 | 24 | 14 |
| 2.3.F.B.7 - MOTAA - Modeling - HCS | per intersection and/or segment | 4 | 4 | 4 | 15 |
| 2.3.F.B.8 - MOTAA - Modeling - Select Link Analysis | per intersection and/or segment | 8 | 8 | 8 | 16 |
| **2.3.F.C - Conceptual MOT Plan (Without MOTAA)** | per MOT phase | 8 | 22 | 36 | 17 |
| **2.7.J - Maintenance of Traffic** |  |  |  |  |  |
| **2.7.J.A - Detour Plan - Plan** | per detour | 8 | 16 | 24 | 18 |
| **2.7.J.B - Pedestrian/Bike Lane Detour** |  |  |  |  |  |
| 2.7.J.B.1 - Pedestrian/Bike Lane Detour - Notes | per detour,  per direction | 4 | 4 | 4 | 19 |
| 2.7.J.B.2 - Pedestrian/Bike Lane Detour – Plan | per detour,  per direction | 4 | 4 | 4 | 20 |
| **2.7.J.C - Conceptual MOT Revision (Select only ONE)** |  |  |  |  |  |
| Conceptual MOT Revision – Without MOTAA | per MOT phase | 4 | 8 | 12 | 21 |
| Conceptual MOT Revision - Post MOTAA | per MOT phase | 6 | 24 | 60 | 22 |
| **2.7.J.D - MOT Coordination Discussions** | per meeting | 14 | 14 | 14 | 23 |
| **3.3.B.F - Temporary Drainage (MOT)** |  |  |  |  |  |
| 3.3.B.F.1 - Temporary Drainage (MOT) - Adding Temporary Drainage to Plans | per MOT phase, per mile | 8 | 12 | 20 | 24 |
| 3.3.B.F.2 - Temporary Drainage (MOT) - MOT Drainage Calculations | per MOT phase, per mile | 6 | 16 | 26 | 25 |
| 3.3.B.F.3 - Temporary Drainage (MOT) - Culvert Phasing Details | per culvert | 24 | 24 | 24 | 26 |
| 3.3.B.F.4 - Temporary Drainage (MOT) – Temporary Shoring | per cantilever sheet piling design | 24 | 24 | 24 | 27 |
| **3.3.E - Maintenance of Traffic** |  |  |  |  |  |
| 3.3.E.A - MOT General Notes | per sheet | 4 | 8 | 12 | 28 |
| 3.3.E.B - Detour Plan-Custom Guide Signs | per detour | 12 | 20 | 32 | 29 |
| 3.3.E.C - Pedestrian/Bike Lane Detour | per detour,  per direction | 4 | 4 | 4 | 30 |
| **3.3.E.D - Temporary Signing Details** |  |  |  |  |  |
| 3.3.E.D.1 - Temporary Signing Details - Sign Dimension Details | per sign | 4 | 4 | 4 | 31 |
| 3.3.E.D.2 - Temporary Signing Details - Elevation View | per elevation view | 6 | 6 | 6 | 32 |
| **3.3.E.E - MOT Typical Sections** | per typical | 2 | 4 | 6 | 33 |
| **3.3.E.F - MOT Plan Sheets (Select only ONE)** |  |  |  |  |  |
| MOT Plan Sheets - 20 Scale | per sheet | 24 | 30 | 36 | 34 |
| MOT Plan Sheets - 50 Scale (1500' coverage length per sheet) | per sheet | 18 | 24 | 30 | 35 |
| MOT Plan Sheets - 50 Scale (3000' coverage length per sheet) | per sheet | 24 | 30 | 36 | 36 |
| **3.3.E.G - Temporary Signal Details (Modification of Existing or Proposed Signal)** |  |  |  |  |  |
| 3.3.E.G.1 - Temporary Signal Details (Modification of Existing or Proposed Signal) – Adjustments of Heads, Timing & Detection | per signal,  per MOT phase | 20 | 20 | 20 | 37 |
| 3.3.E.G.2 - Temporary Signal Details (Modification of Existing or Proposed Signal) - Temporary Pole Placement | per signal | 8 | 8 | 8 | 38 |
| **3.3.E.H - New Temporary Signal** |  |  |  |  |  |
| 3.3.E.H.1 - New Temporary Signal – Head Placement, Timing & Detection | per signal,  per MOT phase | 20 | 20 | 20 | 39 |
| 3.3.E.H.2 - New Temporary Signal - Temporary Pole Placement & Power Source | per signal | 12 | 12 | 12 | 40 |
| **3.3.E.I - Signalized Closures** | per closure,  per MOT phase | 8 | 8 | 8 | 41 |
| **3.3.E.J - MOT Coordination Discussions** | per meeting | 14 | 14 | 14 | 42 |
| **3.3.E.K - MOT Constructability Coordination** | per project | 8 | 24 | 40 | 43 |
| **3.3.E.L - Temporary Pavement Sections and Earthwork** |  |  |  |  |  |
| 3.3.E.L.1 - Temporary Pavement Sections and Earthwork - New Sections | per section | 3 | 3 | 3 | 44 |
| 3.3.E.L.2 - Temporary Pavement Sections and Earthwork - Modifying Roadway Sections | per section | 1 | 1 | 1 | 45 |
| **3.3.E.M - Crossover Plan and Profile** |  |  |  |  |  |
| 3.3.E.M.1 - Crossover Plan and Profile - Horizontal & Vertical Design, Superelevation Design & Table | per crossover,  per direction | 28 | 28 | 28 | 46 |
| 3.3.E.M.2 - Crossover Plan and Profile - Plan & Profile Sheets | per sheet | 12 | 12 | 12 | 47 |
| 3.3.E.M.3 - Crossover Plan and Profile – Cross Section Sheets | per section | 3 | 3 | 3 | 48 |
| **3.3.E.N - MOT Temporary Access Details** |  |  |  |  |  |
| 3.3.E.N.1 - MOT Temporary Access Details - Temporary Drive Access | per access,  per MOT phase | 20 | 20 | 20 | 49 |
| 3.3.E.N.2 - MOT Temporary Access Details - Temporary Ramp Access | per access,  per MOT phase | 20 | 20 | 20 | 50 |
| 3.3.E.N.3 - MOT Temporary Access Details - Contractor Work Zone Access Details | per access | 10 | 24 | 24 | 51 |
| **3.3.E.O - Miscellaneous MOT Details** |  |  |  |  |  |
| 3.3.E.O.1 - Miscellaneous MOT Details - Plan Insert Sheets | per sheet | 4 | 4 | 4 | 52 |
| 3.3.E.O.2 - Miscellaneous MOT Details - Custom Detailing | per sheet | 12 | 12 | 12 | 53 |
| **3.3.E.P - PIAC/Incentive Funds Request** | per report or presentation | 16 | 16 | 16 | 54 |
| **4.2.F – Maintenance of Traffic** |  |  |  |  |  |
| **4.2.F.A - MOT Plan Sheets (Select only ONE)** |  |  |  |  |  |
| MOT Plan Sheets - 20 Scale | per sheet | 8 | 12 | 16 | 55 |
| MOT Plan Sheets - 50 Scale (1500' coverage length per sheet) | per sheet | 8 | 12 | 16 | 56 |
| MOT Plan Sheets - 50 Scale (3000' coverage length per sheet) | per sheet | 16 | 24 | 32 | 57 |
| **4.2.F.B - MOT Quantities – Signalized Closures** | per closure, per MOT phase | 4 | 4 | 4 | 58 |

**Note:**

1. **2.3.F.A.1 - MOTEC Request - Report Preparation**

**Hours are manhours per report.**

**Low** - 2 page report.

**Medium** – 3 page report.

**High** – 4 page report.

1. **2.3****.F.A.2 - MOTEC Request - Report Graphics**

One page of graphics per scenario.

**Hours are manhours per scenario.**

**Low, Medium & High** – Assumes four hours for designer and eight hours for CADD.

1. **2.3****.F.A.3 - MOTEC Request - Traffic Counts**

For traffic counts refer to the current Schedule of Values for statewide traffic counts administered through the Office of Technical Services.

**Low, Medium & High** – See note above.

1. **2.3.F.A.4 - MOTEC Request - Modeling - Queue Analysis**

If not already completed in MOTAA. Accessing existing count data and downloading/importing and running analysis.

**Hours are manhours per scenario.**

**Low** – Assumes no adjustments to traffic volumes and one interchange or up to four segments.

**Medium** – Assumes adjustments to rural traffic volumes, as necessary, and two interchanges or five to eight segments.

**High** – Assumes more than two ramp closures and adjustment to urban traffic volumes, as necessary, and multiple (three or more) interchanges or greater than eight segments.

1. **2.3.F.A.5 – MOTEC Request – Modeling – HCS**

If not already completed in MOTAA. Modeling of the intersection or the roadway segment.

**Hours are manhours per intersection and/or segment.**

**Low, Medium & High** – Assumes traffic volumes provided or adjustments needed to the volumes for two or less links.

1. **2.3.F.A.6 - MOTEC Request - Modeling - Select Link Analysis**

If not already completed in MOTAA and if warranted. Acquiring existing MPO model and performing select link analysis. This task does not cover for the effort of developing a new model if one does not already exist.

**Hours are manhours per intersection and/or segment.**

**Low, Medium & High** – Assumes model has already been developed and adjustments needed to the volumes for two or less links.

1. **2.3.F.A.7 - MOTEC Request - Geometric Analysis for Temporary Traffic**

Checking existing ramp geometrics and available room for temporary traffic route during construction, etc. For locations within the project limits, using available mapping. For locations outside the project limits (areas outside the proposed project improvements), using available record plans. If record plans are not readily available, using field observations and basic field measurements (not detailed survey).

**Hours are manhours per ramp investigation.**

**Low** – Location within the project limits and will be using available mapping to determine feasibility.

**Medium** – Locations outside the projects limits and existing plans are readily available to determine feasibility.

**High** – Locations outside the project limits and existing plans are not readily available and field observations and basic field measurements are necessary (not detailed survey) to determine feasibility.

1. **2.3.F.A.8 - MOTEC Request - Cost Estimate**

Developing cost estimate for each scenario for inclusion into the report.

**Hours are manhours per scenario.**

**Low, Medium & High** – Assumes eight hours designer and eight hours CADD.

1. **2.3.F.B.1 - MOTAA - Report**

Preparation of the report including identification of constraints. Includes preparation of all tables (bridge, ramp, constraint, etc).

**Hours are manhours per report.**

**Low** – Reports with Part-Width and Crossover MOT scenarios.

**Medium** – Reports with up to four MOT scenarios total including Part-Width, Crossover, Contraflow and one additional MOT Scenario (Example: hybrid, total closure, etc).

**High** – Reports with five or six MOT scenarios total including Part-Width, Crossover, Contraflow along with two or three additional MOT scenarios (examples: hybrid, total closure, etc)

1. **2.3.F.B.2 - MOTAA - Conceptual MOT Plan**

Development of conceptual MOT plan, including graphics, lane configuration diagrams, cross sections, etc.

**Hours are manhours per MOT scenario.**

**Low** – Assumes two to four cross sections needed to meet TEM requirements and up to two MOT phases. Assumes sixteen hours for CADD and sixteen hours for concept development.

**Medium** – Assumes five to eight cross sections needed to meet TEM requirements and three to four MOT phases. Assumes 32 hours for CADD and twenty hours for concept development.

**High** – Assumes more than eight cross sections needed to meet TEM requirements and five to eight MOT phases. Assumes 40 hours for CADD and hours for 32 concept development. Larger Path 4 and 5 projects are not included and are to be negotiated separately (larger Path 4 and 5 project examples: more than two seasons or more than five miles reconstruction).

1. **2.3.F.B.3 - MOTAA - Construction Cost**

Development of construction cost for the report. Planning level estimate using major cost drivers (portable barrier, temporary pavement, striping, signs, etc).

**Hours are manhours per MOT scenario, per MOT phase.**

**Low, Medium & High** – Assumes two hours designer and two hours CADD.

1. **2.3.F.B.4 - MOTAA - Construction Schedule/Duration**

Development of construction schedule, including durations, for the report. Assumes schedules to a per month accuracy. Schedule will need to identify durations for each MOT phase and for any total closures. (For total closures less than 30 days, estimate the approximate number of days.)

**Hours are manhours per MOT scenario.**

**Low** –Assumes up to two MOT phases.

**Medium** – Assumes three to four MOT phases.

**High** – Assumes five to eight MOT phases and/or innovative contracting considerations.

1. **2.3.F.B.5 - MOTAA - Detour Route Investigation**

Identifying necessary detours and creating a basic graphic for report. Includes basic evaluation of the detour route to identify fatal flaws and potential mitigation measures.

**Hours are manhours per detour.**

**Low, Medium & High** – Assumes the use of basic mapping (auditor's mapping if available, web based mapping, etc) and driving the route.

1. **2.3.F.B.6 - MOTAA - Modeling - Queue Analysis**

Accessing existing count data and downloading/importing and running analysis. Examples for segments: lane reductions, additions, etc.

**Hours are manhours per scenario.**

**Low** – Assumes no adjustments to traffic volumes and one interchange or up to four segments.

**Medium** – Assumes adjustments to rural traffic volumes, as necessary, and two interchanges or five to eight segments.

**High** – Assumes more than two ramp closures and adjustment to urban traffic volumes, as necessary, and three or more interchanges or greater than eight segments.

1. **2.3.F.B.7 - MOTAA - Modeling - HCS**

Modeling of the intersection and/or the roadway segment.

**Hours are manhours per intersection and/or segment.**

**Low, Medium & High** – Assumes traffic volumes provided or adjustments needed to the volumes for two or less links.

1. **2.3.F.B.8 - MOTAA - Modeling - Select Link Analysis**

If warranted. Acquiring existing MPO model and performing select link analysis. This task does not cover for the effort of developing a new model if one does not already exist.

**Hours are manhours per intersection and/or segment.**

**Low, Medium & High** – Assumes model has already been developed and adjustments needed to the volumes for two or less links.

1. **2.3.F.C - Conceptual MOT Plan (Without MOTAA)**

If no MOTAA is required. Includes: plan view schematic, sequence of construction with durations, typical sections.

**Hours are manhours per MOT phase.**

**Low** – Assumes one note sheet and up to two typical sections.

**Medium** – Assumes one note sheet and three to four typical sections.

**High** – Assumes one note sheet and five to six typical sections.

1. **2.7.J.A - Detour Plan - Plan**

Includes: Map and Standard Sign Layout of the Detour.

**Hours are manhours per detour.**

**Low** – Mapping and up to twelve signs.

**Medium** – Mapping and thirteen to 24 signs.

**High** – Mapping and more than 24 signs.

1. **2.7.J.B.1 - Pedestrian/Bike Lane Detour - Notes**

Description of the detour, identifying items specific to the detour such as channelizing or fencing.

**Hours are manhours per detour, per direction.**

**Low, Medium & High** – Approximately three to four notes.

1. **2.7.J.B.2 - Pedestrian/Bike Lane Detour - Plan**

Map only.

**Hours are manhours per detour, per direction.**

**Low, Medium & High** – Assumes a detour of less than one mile.

1. **2.7.J.C - Conceptual MOT Revision - Without MOTAA**

If no MOTAA was required. Includes: plan view schematic, sequence of construction with durations, typical sections. (Select Only One)

**Hours are manhours per MOT phase.**

**Low** – Assumes one note sheet and up to two typical sections.

**Medium** – Assumes one note sheet and three to four typical sections.

**High** – Assumes one note sheet and five to six typical sections.

1. **2.7.J.C - Conceptual MOT Revision - Post MOTAA**

If MOTAA was required and had been completed. (Select Only One). Needs to be negotiated after AER is complete and prior to Stage 1.

**Hours are manhours per MOT phase.**

**Low** – Minor changes to the sheets but the overall MOT concept developed in MOTAA does not change. Examples of minor changes to the sheets: labeling, dimensions, etc.

**Medium** – Minor changes to the MOT concept developed in MOTAA. Examples of minor changes to the MOT concept: relocation of crossover, addition of temporary pavement beyond TEM requirements, etc.

**High** – Significant changes to the MOT concept developed in MOTAA. Examples of significant changes to the MOT concept: revised phase joint, additional bridge widening, use of a hybrid of alternatives created in the MOTAA.

1. **2.7.J.D - MOT Coordination Discussions**

Includes coordination with ODOT, local agencies and/or stakeholders (including adjacent design and construction projects). Includes items such as: travel time, meeting attendance, exhibit preparation, meeting minutes.

**Hours are manhours per meeting.**

**Low, Medium & High** – Assumes two hours for CADD/Exhibits, four hours for Sr. Engineer, eight hours for designer. The hours for the Engineer and Designer include travel time assuming a meeting location within one hour travel time each way and a two hour meeting duration.

1. **3.3.B.F.1 - Temporary Drainage (MOT) - Adding Temporary Drainage to Plans**

Adding details to MOT plan, profile and cross sections. Quantities are covered in 4.2.F.A MOT Plan Sheets task item.

**Hours are manhours per MOT phase, per mile.**

**Low** – Assumes eight hours CADD. Includes: small spot locations (up to two).

**Medium** – Assumes twelve hours CADD. Includes: multiple (three to five) locations not in an urban corridor.

**High** – Assumes twenty hours CADD. Includes: developed urban corridors or six or more locations not in an urban corridor.

1. **3.3.B.F.2 - Temporary Drainage (MOT) - MOT Drainage Calculations**

Performing calculations for MOT drainage in accordance to L&D, Vol. 2. Note that each MOT phase may require different levels (low, medium, high). In general, the level should decrease as the phasing increases. All hours are designer hours.

**Hours are manhours per MOT phase, per mile.**

**Low** – Spread calculations only. Additional drainage conveyance items may be required, but design is not required to satisfy design criteria.

**Medium** – Spread calculations and additional drainage conveyance calculations required to satisfy design requirements.

**High** – Spread calculations with a significant addition of drainage conveyance calculations required to satisfy design requirements.

1. **3.3.B.F.3 - Temporary Drainage (MOT) - Culvert Phasing Details**

Cross section showing the roadway, culvert and sheeting.

**Hours are manhours per culvert.**

**Low, Medium & High** – Assumes eight hours designer and sixteen hours CADD.

1. **3.3.B.F.4 - Temporary Drainage (MOT) – Temporary Shoring**

For use where shoring is required to be shown in the plans (eight feet or more of retained earth; BDM 208.1) to maintain the roadway during phased construction. The hours assume cantilever sheet piling design only and sheet piling information located on the roadway or culvert plan and profile sheet with the size of the sheet piles noted (i.e., when no structural detailing is required). A change in the depth of retained earth constitutes a new cantilever sheet piling design (e.g., if the depth changes between MOT phases, etc). Does not include hours for design of any tie back system.

**Hours are manhours per cantilever sheet piling design.**

**Low, Medium & High** – Assumes all designer hours.

1. **3.3.E.A - MOT General Notes**

All MOT notes, including sequence of construction.

**Hours are manhours per sheet.**

**Low** – Up to four standard notes.

**Medium** – Five or more standard notes.

**High** – Includes customized/specialized notes.

1. **3.3.E.B - Detour Plan - Custom Guide Signs**

If applicable, recreating existing signs for the legend due to the detour along with proposed custom signs for the detour. Includes field work to verify existing signs. Needs to be negotiated after Stage 1 is complete and prior to Stage 2.

**Hours are manhours per detour.**

**Low** – Up to eight custom signs. Approximately four hours research, four hours drafting (up to eight signs), four hours site visit. Example: Detour to next interchange.

**Medium** – Nine to sixteen custom signs. Approximately eight hours research, eight hours drafting (up to sixteen signs), four hours site visit. Example: Use of two Interstates/Interstate Look Alikes in the detour with advance signing.

**High** – Seventeen to 24 custom signs. Approximately twelve hours research, twelve hours drafting (up to 24 signs), eight hours site visit. Example: Use of more than two Interstate/Interstate Look Alike in the detour with advance signing.

1. **3.3.E.C - Pedestrian/Bike Lane Detour - Plan Sheet**

Add signing.

**Hours are manhours per detour, per direction.**

**Low, Medium & High** – Assumes approximately eight signs.

1. **3.3.E.D.1 - Temporary Signing Details - Sign Dimension Details**

Guide sign design details, relocations, etc.

**Hours are manhours per sign.**

**Low, Medium & High** – Sign CAD details and drafting.

1. **3.3.E.D.2 - Temporary Signing Details - Elevation View**

Elevation views; Includes checking the design of the truss.

**Hours are manhours per elevation view.**

**Low, Medium & High** – Field verify cross sections and creating the elevation view.

1. **3.3.E.E - MOT Typical Sections**

**Hours are manhours per typical.**

**Low** – Reuse of roadway existing and proposed sections.

**Medium** – Reuse of roadway existing and proposed sections but involves modifications to them. Examples modifications may include: labeling, dimensions, etc.

**High** – Involves creation of a new typical section due to temporary roadway, etc.

1. **3.3.E.F - MOT Plan Sheets - 20 Scale**

Example: Urban Areas (Select only ONE scale/coverage task item for MOT Plan Sheets.) Hours exclude development of Quantities and General Summary.

**Hours are manhours per sheet.**

**Low** – Assumes standard phasing with two to four lane shifts and closures and no access considerations.

**Medium** – Assumes standard phasing with up to six lane shifts and closures and with access considerations.

**High** – Assumes more than six lane shifts and closures and with access considerations.

1. **3.3.E.F - MOT Plan Sheets - 50 Scale (1500' coverage length per sheet)**

Example: Rural Area with Access Points (Select only ONE scale/coverage task item for MOT Plan Sheets.) Hours exclude development of Quantities and General Summary.

**Hours are manhours per sheet.**

**Low** – Assumes standard phasing with two to four lane shifts and closures and no access considerations.

**Medium** – Assumes standard phasing with up to six lane shifts and closures and with access considerations.

**High** – Assumes more than six lane shifts and closures and with access considerations.

1. **3.3.E.F - Plan Sheets - 50 Scale (3000' coverage length per sheet)**

Example: Interstate/Interstate Look Alikes (Select only ONE scale/coverage task item for MOT Plan Sheets.) Hours exclude development of Quantities and General Summary.

**Hours are manhours per sheet.**

**Low** – Assumes standard phasing with two to four lane shifts and closures and no access considerations.

**Medium** – Assumes standard phasing with up to six lane shifts and closures and with access considerations.

**High** – Assumes more than six lane shifts and closures and with access considerations.

1. **3.3.E.G.1 - Temporary Signal Details (Modification of Existing or Proposed Signal) – Adjustments of Heads, Timing & Detection**

Includes the following items -

Signal Head Placement: Adjusting signal heads to fall within the cone of vision.

Signal Timing Adjustments: Identification of existing timing, developing a model, providing new signal timing recommendations (including CADD detailing). Also includes updating signal timings for all signals in the coordinated system (per signal is for each signal in the coordinated system).

Detection Modifications: Relocating loop(s) or adding a microwave detector. Show wiring to the cabinet.

**Hours are manhours per signal, per MOT phase.**

**Low, Medium & High** – Assumes: four hours for Signal Head Placement (two hours for designer and two hours for CADD), twelve hours for Signal Timing Adjustments (six hours for model and six hours for CADD), and four hours for Detection Modifications (three for designer and one for CADD).

1. **3.3.E.G.2 - Temporary Signal Details (Modification of Existing or Proposed Signal) - Temporary Pole Placement**

Includes SWISS analysis or mast arm calculations. Assumes the placement of poles in order to accommodate all MOT phases.

**Hours are manhours per signal.**

**Low, Medium & High** – Assumes four hours for designer and four hours for CADD.

1. **3.3.E.H.1 - New Temporary Signal – Head Placement, Timing & Detection**

Includes the following items:

Signal Head Placement: Placing signal heads to fall within the cone of vision.

Signal Timing: Creation of signal timing plans for the new temporary signal, for each MOT phase, including updating signal timings for all signals in a coordinated system. Per signal is for each signal in the coordinated system.

Detection: Includes loops, video or microwave detection. Show wiring to the cabinet.

**Hours are manhours per signal, per MOT phase.**

**Low, Medium & High** – Assumes four hours for Head Placement (two hours designer, two hours CADD), twelve hours for Signal Timing (six hours for model, six hours for CADD) and four hours for Detection (two hours for designer, two hours for CADD).

1. **3.3.E.H.2 - New Temporary Signal - Temporary Pole Placement & Power Source**

Includes the following items:

Temporary Pole Placement: Includes SWISS analysis and pole location. Assumes the placement of poles in order to accommodate all MOT phases.

Power Source: Contacting utility companies, getting existing information, etc.

**Hours are manhours per signal.**

**Low, Medium & High** – Assumes eight hours for Temporary Pole Placement (four hours for designer and four hours for CADD) and four hours for Power Source (three hours for designer for collecting information and one hour for CADD).

1. **3.3.E.I - Signalized Closures**

For rural two-lane applications without access issues within the closure. This item is to be used in lieu of Temporary Signal Details (Modification of Existing or Proposed Signal), New Temporary Signal and MOT Plan Sheets.

**Hours are manhours per closure, per MOT phase.**

**Low, Medium & High** – Assumes two hours for designer and six hours for CADD.

1. **3.3.E.J - MOT Coordination Discussions**

Includes coordination with ODOT, local agencies and/or stakeholders (including adjacent design and construction projects). Includes items such as: travel time, meeting attendance, exhibit preparation, meeting minutes.

**Hours are manhours per meeting.**

**Low, Medium & High** – Assumes two hours for CADD/Exhibits, four hours for Sr. Engineer, eight hours for designer. The hours for the Engineer and Designer include travel time assuming a meeting location within one hour travel time each way and a two hour meeting duration.

1. **3.3.E.K - MOT Constructability Coordination**

Interdisciplinary coordination for technical project staff on feasibility of construction of MOT (roadway, bridges, drainage, environmental, etc).

**Hours are manhours per project.**

**Low** – All hours for designer. Includes: rural lane closures (phased or detoured; without crossovers), urban resurfacing (phased or detoured). Examples: resurfacing, rural simple bridge or culvert replacement, rural widening (no crossovers), signalized closures.

**Medium** – All hours for designer. Includes: rural crossovers or interchanges; urban lane closures (no crossovers; single season). Examples: urban widening (no crossover), urban bridge or culvert replacement (no crossover), rural widening (with crossover), service interchange modifications (urban or rural), rural service interchange reconstruction, urban service interchange minor reconstruction.

**High** – All hours for designer. Includes: urban projects with crossovers and/or any urban two-season projects. Examples: Urban widening with crossover, < 5 miles reconstruction, urban two-season arterial widening, urban service interchange major reconstruction.

1. **3.3.E.L.1 - Temporary Pavement Sections and Earthwork - New Sections**

Assumes outside of the roadway design area. Includes showing utilities. All temporary pavement cross sections, including crossovers and widening. Includes development of temporary earthwork quantities and temporary construction limits.

**Hours are manhours per section.**

**Low, Medium & High** – Assumes two hours for CADD and one hour for designer.

1. **3.3.E.L.2 - Temporary Pavement Sections and Earthwork - Modifying Roadway Sections**

All temporary pavement cross sections, including crossovers and widening. Includes development of temporary earthwork quantities and temporary construction limits.

**Hours are manhours per section.**

**Low, Medium & High** – Assumes 2/3 time for CADD and 1/3 time for designer.

1. **3.3.E.M.1 - Crossover Plan and Profile - Horizontal & Vertical Design, Superelevation Design & Table**

Includes the following items:

Horizontal & Vertical Design: Curve data and stationing. Includes generating alignment and profile geometry. Includes iteration(s).

Superelevation Design & Table: Includes generating superelevation geometry and elevations.

**Hours are manhours per crossover, per direction.**

**Low, Medium & High** – Assumes eight hours for Horizontal Design (all designer hours), eight hours for Vertical Design (all designer hours) and twelve hours for Superelevation Design & Table (eight hours designer, four hours CADD).

1. **3.3.E.M.2 - Crossover Plan and Profile - Plan & Profile Sheets**

For defining the geometrics, not for showing quantities. (Quantities covered in 4.2.F.A MOT Plan Sheets task item.) Includes detailing.

**Hours are manhours per sheet (matching roadway scale, assumes stack plan and profile).**

**Low, Medium & High** – Assumes all CADD hours.

1. **3.3.E.M.3 - Crossover Plan and Profile – Cross Section Sheets**

Includes development of Temporary Earthwork Quantity. Includes developing cross sections and detailing.

**Hours are manhours per section.**

**Low, Medium & High** – Assumes one hour designer and two hours CADD.

1. **3.3.E.N.1 - MOT Temporary Access Details - Temporary Drive Access**

Applies if temporary alignment is required for access and is not covered by a general note. Includes generating geometry and detailing sheets. Includes temporary driveway access details.

**Hours are manhours per access, per MOT phase.**

**Low, Medium & High** – Assumes eight hours designer and twelve hours CADD.

1. **3.3.E.N.2 - MOT Temporary Access Details - Temporary Ramp Access**

Applies if temporary alignment is required for access and is not covered by a general note. Includes generating geometry and detailing sheets. Includes temporary ramp access details.

**Hours are manhours per access, per MOT phase.**

**Low, Medium & High** – Assumes eight hours designer and twelve hours CADD.

1. **3.3.E.N.3 - MOT Temporary Access Details - Contractor Work Zone Access Details**

Work zone contractor access will be developed when using portable barrier or if temporary alignment is required for access and is not covered by a general note, Includes generating geometry and detailing sheets. This task item includes: Inclusion of requirements and detailing for contractor Ingress/Egress; Development of other specific contractor access details (contractor access roads), any needed quantity calculations for information purposes.

**Hours are manhours per access.**

**Low** – Inclusion of the contractor access plan insert sheet, including detailing the locations. Assumes four hours designer and six hours CADD.

**Medium & High** – Developing alignment and details for access.Assumes eight hours designer and sixteen hours CADD.

1. **3.3.E.O.1 - Miscellaneous MOT Details - Plan Insert Sheets**

Selecting and adding standard plan insert sheets. Also includes verifying and layout for feasibility.

**Hours are manhours per sheet.**

**Low, Medium & High** – Assumes two hours designer and two hours CADD.

1. **3.3.E.O.2 - Miscellaneous MOT Details - Custom Detailing**

Details not covered by Misc Details - Plan Insert Sheets or Standard Construction Drawings.

**Hours are manhours per sheet.**

**Low, Medium & High** – Assumes four hours designer and eight hours CADD.

1. **3.3.E.P - PIAC/Incentive Funds Request**

Support the district by providing information for the ODOT prepared report and/or ODOT prepared PIAC (Project Impact Advisory Council) presentation. Report/presentation is used for requesting incentive funds. Support role may include: graphics creation, maps, traffic volumes, etc.

**Hours are manhours per report or presentation.**

**Low, Medium & High** – Assumes twelve hours designer and four hours CADD.

1. **4.2.F.A - MOT Plan Sheets - 20 Scale**

Includes Stage 2 revisions, Quantities and Subsummary. Example: Urban Areas. (Select only ONE scale/coverage task item for MOT Plan Sheets.)

**Hours are manhours per sheet.**

**Low** – Assumes standard phasing with two to four lane shifts and closures and no access considerations.

**Medium** – Assumes standard phasing with up to six lane shifts and closures and with access considerations.

**High** – Assumes more than six lane shifts and closures and with access considerations.

1. **4.2.F.A - MOT Plan Sheets - 50 Scale (1500' coverage length per sheet)**

Includes Stage 2 revisions, Quantities and Subsummary. Example: Rural Area with Access Points. (Select only ONE scale/coverage task item for MOT Plan Sheets.)

**Hours are manhours per sheet.**

**Low** – Assumes standard phasing with two to four lane shifts and closures and no access considerations.

**Medium** – Assumes standard phasing with up to six lane shifts and closures and with access considerations.

**High** – Assumes more than six lane shifts and closures and with access considerations.

1. **4.2.F.A - MOT Plan Sheets - 50 Scale (3000' coverage length per sheet)**

Includes Stage 2 revisions, Quantities and Subsummary. Example: Interstate/Interstate Look Alikes. (Select only ONE scale/coverage task item for MOT Plan Sheets.)

**Hours are manhours per sheet.**

**Low** – Assumes standard phasing with two to four lane shifts and closures and no access considerations.

**Medium** – Assumes standard phasing with up to six lane shifts and closures and with access considerations.

**High** – Assumes more than six lane shifts and closures and with access considerations.

1. **4.2.F.B - MOT Quantities – Signalized Closures**

Includes quantities for signalized closures.

**Hours are manhours per closures, per MOT phase.**

**Low, Medium & High** – Assumes two hours designer, two hours CADD.

# Drainage

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| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) if a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.3.C.A – Drainage Design Criteria Forms (LD-35) | each | 0.5 | 0.5 | 0.5 | 1 |
| 2.3.C.B – LD-33 Form (Contact County Engineer) | each culvert | 0.25 | 0.25 | 0.25 | 2 |
| 2.3.C.C – Hydraulically size all major storm sewer trunk lines | station | 0.5 | 1.25 | 2 | 3 |
| 2.3.C.D – Perform preliminary hydraulic analysis for culverts | each | 2 | 9 | 16 | 4 |
| 2.3.C.E – Conceptual BMP | station | 0.25 | 0.5 | 1 | 5 |
| 2.3.H.A – Identify and Coordinate Impacts on FEMA flood zones | each culvert/brg. | 4 | 10 | 16 | 6 |
| 2.5.D.B – Complete bridge hydraulic study and scour analysis | each brg alternative | 16 | 28 | 40 | 7 |
| 2.7.B.A – Storm Sewer Profiles | station | 0.5 | 2.25 | 4 | 8 |
| 2.7.B.B – Culvert Detail Sheet | each culvert | 20 | 20 | 20 | 9 |
| 2.7.B.C – Channel Relocation Details & Section Sheets | station | 1 | 2.5 | 4 | 10 |
| 2.7.B.D – Drainage Calculations |  |  |  |  |  |
| D.1 - Culvert | each | 8 | 12 | 16 | 11 |
| D.2 - Ditches | station | 0.5 | 1.25 | 2 | 12 |
| D.3 - Storm Sewer | station | 0.5 | 1.25 | 2 | 13 |
| 2.7.B.E – BMP Design | station | 0.5 | 1.25 | 2 | 14 |
| 3.1.R – FIS Analysis, Revisions, and Coordination | each culvert/brg. | negotiate |  |  | 15 |
| 3.3.B.A – Storm Sewer Profiles | station | 0.25 | 0.5 | 1 | 16 |

| 3.3.B.B – Culvert Detail Sheets including headwall and wingwall details | each | 8 |  |  | | 17 |
| --- | --- | --- | --- | --- | --- | --- |
| 3.3.B.C – Channel Relocation Details | station | 0.25 | 0.5 | 1 | | 18 |
| 3.3.B.D – Underdrain Details | station | 0.25 | 1 | 2 | | 19 |
| 3.3.B.E – BMP Details | station | 0.25 | 0.25 | 0.25 | | 20 |
| 4.2.A.B – Drainage Subsummary | sheet | 8 | 8 | | 8 | 21 |

**Note:**

1. **2.3.C.A – Drainage Design Criteria Forms (LD-35)**

**Hours are manhours for establishment of drainage criteria form, typical staffing level Engineer I-Engineer II.**

**Low** - complexity not a factor

**Medium** - complexity not a factor

**High** – complexity not a factor

1. **2.3.C.B – LD-33 Form (Contact County Engineer)**

**Hours are manhours for each culvert, typical staffing level Engineer I-Engineer II**

**Low** - complexity not a factor

**Medium** - complexity not a factor

**High** – complexity not a factor

1. **2.3.C.C – Hydraulically size all major storm sewer trunk lines**

Additional complexity for Ultra-urban, utilities, or combined sanitary/storm

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer III**

**Low** - Minimal storm sewer design or utilization of existing trunk sewer

**Medium** - Single Trunk Line with well-defined drainage boundaries

**High** - Multiple Connecting Trunk branches and/or with poorly defined drainage boundaries

1. **2.3.C.D – Perform preliminary hydraulic analysis for culverts**

Additional complexity for Environmental commitments, Flood Plan and Encroachments.

**Hours are manhours for each culvert, typical staffing level Engineer I – Engineer III**

**Low** - Single New Structure on New Alignment with no need for bank full design. Replacement of existing structure in-kind. No FEMA analysis required

**Medium** - Multiple new or replacement of multiple Structures or a series of Structures

**High** - Multiple culverts or design iterations, Bank full design, FEMA analysis required, Constrained Headwaters

1. **2.3.C.E – Conceptual BMP**

Additional complexity for routing of hydrographs, Design and/or use of alternative BMP

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer III**

**Low** - Vegetated bio filters and/or Vegetated fore slopes, In-Lieu Fee

**Medium** - Manufactured Systems

**High** - Stage-Discharge calculations, bio retention, wetlands, Infiltration Basins, Infiltration Trenches

1. **2.3.H.A – Identify and Coordinate Impacts on FEMA flood zones**

Determine if proposed encroachments are within FEMA regulated flood zones. Identify flood zone types and quantify the allowable impacts through coordination with the Local Floodplain Coordinator and the Ohio Department of Natural Resources as required.

Additional complexity if CLOMR or LOMR Required

**Hours are manhours for each culvert/bridge , typical staffing level Engineer II – Engineer III**

**Low** - FEMA Zone A

**Medium** - FEMA Zone AE with no rise condition

**High** - CLOMR or LOMR Required

1. **2.5.D.B – Complete bridge hydraulic study and scour analysis**

**Hours are manhours for each bridge alternative**

**Low** - Simple structure crossings with no FEMA analysis

**Medium** - Multiple structures and/or FEMA Zone A

**High** -Multiple structures FEMA Zone AE

1. **2.7.B.A – Storm Sewer Profiles**

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer II**

**Low** - Minimal storm sewer design or utilization of existing trunk sewer

**Medium** - Single Trunk Line with well-defined drainage boundaries

**High** - Multiple Connecting Trunk branches and/or with poorly defined drainage boundaries

1. **2.7.B.B – Culvert Detail Sheet**

**Hours are manhours for each culvert, typical staffing level Engineer I – Engineer II**

**Low** - Complexity not a factor

**Medium** - Complexity not a factor

**High** - Complexity not a factor

1. **2.7.B.C – Channel Relocation Details & Section Sheets**

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer III.**

**Low** - Straight or simple geometry with a single typical section

**Medium** -

**High** - Complex geometry or varying typical section

1. **2.7.B.D – D.1 - Drainage Calculations - Culvert**

**Hours are manhours for each culvert, typical staffing level Engineer I – Engineer III**

**Low** - new culvert on new alignment without upstream affected properties

**Medium** - Replacement of existing structure with minimal upstream affected properties

**High** - Culverts in series. Culverts with significant potential to impact upstream properties.

1. **2.7.B.D – D.2 - Drainage Calculations – Ditches**

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer III**

**Low** - median ditches

**Medium** - standard side ditches with constant slope and constant width

**High** - side ditches with non-standard shape or varying slope

1. **2.7.B.D – D.3 - Drainage Calculations – Storm Sewer**

Additional complexity for ultra-urban, utilities, or combined sanitary/storm

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer III**

**Low** - Minimal storm sewer design or utilization of existing trunk sewer

**Medium** - Single Trunk Line with well-defined drainage boundaries

**High** - Multiple Connecting Trunk branches and/or with poorly defined drainage boundaries

1. **2.7.B.E – BMP Design**

Additional complexity routing of hydrographs, design and/or use of alternative BMP

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer III**

**Low** - Vegetated biofilters and/or Vegetated foreslopes, In-Lieu Fee

**Medium** - Manufactured Systems

**High** - Stage-Discharge calculations, bio retention, wetlands, Infiltration Basins, Infiltration Trenches

1. **3.1.R – FIS Analysis, Revisions, and Coordination**

Perform floodplain coordination as identified in earlier tasks. Ensure that transportation projects are in compliance with the National Flood Insurance Program (NFIP) that is administered by the Ohio Department of Natural Resources for the Federal Emergency Management Agency (FEMA). Perform necessary hydraulic calculations and coordinate results/findings with Local Floodplain Administrators, the Ohio Department of Natural Resources, and FEMA as necessary.

Additional complexity when CLOMR or LOMR required

**Hours are manhours for each culvert/bridge , typical staffing level Engineer II – Engineer III**

**Low** - FEMA Zone A

**Medium** - FEMA Zone AE or A1-A30 with no FIS mapping revisions required

**High** - FEMA Zone AE or A1-A30 with FIS mapping revisions required

1. **3.3.B.A –Storm Sewer Profiles**

Additional complexity for ultra-urban, utilities, or combined sanitary/storm and pre versus post analysis

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer II**

**Low** - Minimal storm sewer design or utilization of existing trunk sewer

**Medium** - Single Trunk Line with well-defined drainage boundaries

**High** - Multiple Connecting Trunk branches and/or with poorly defined drainage boundaries

1. **3.3.B.B –Culvert Detail Sheets including headwall and wingwall details**

**Hours are manhours for each culvert, typical staffing level Engineer I – Engineer II**

**Low** -

**Medium** -

**High** -

1. **3.3.B.C –Channel Relocation Details**

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer II**

**Low** -

**Medium**-

**High** -

1. **3.3.B.D – Underdrain Details**

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer III**

**Low** -

**Medium** -

**High** –

1. **3.3.B.E –BMP Details**

**Hours are manhours by Station (100 feet) of project length, typical staffing level Engineer I – Engineer III**

**Low**

**Medium**

**High** –

1. **4.2.A.B – Drainage Subsummary**

**Hours are manhours per sheet, typical staffing level Engineer I – Engineer II**

**Low**

**Medium**

**High**

# Roadway

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) if a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis.  Guidelines for hours assumes that preliminary engineering was based on planning level information and that effort included in Stage 1 is reestablishment of horizontal and vertical alignments, etc. based on new survey data. Estimated hours are based on the task checklist from Volume 3, section 1403.7.3 (page 14-42). The estimated hours are cradle to grave of plan development. In some cases preliminary engineering may be used or a portion thereof which should be reflected in the proposed hours (reduction)  If no preliminary design information is available or usable, the tasks associated with that effort must be added to the overall fee (earlier steps). |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.7.A.A - Title Sheet | sheet | 8 | 12 | 16 | 1 |
| 2.7.A.B - General Notes | sheet | 4 | 6 | 8 | 2 |
| 2.7.A.C - Schematic Plan | sheet | 20 | 26 | 32 | 3 |
| 2.7.A.D -  Typical Sections | section | 6 | 10 | 12 | 4 |
| 2.7.A.E -  Cross Sections | section | 2 | 3 | 4 | 5 |
| 2.7.A.F -  Plan and Profile - Mainline |  |  |  |  |  |
| Plan and Profile - Mainline | sheet | 24 | 28 | 32 | 6 |
| Plan and Profile – Mainline (no H&V alignment creation) | sheet | 20 | 24 | 28 | 7 |
| 2.7.A.G -  Plan and Profile - Crossroads |  |  |  |  |  |
| Plan and Profile - Crossroads | sheet | 24 | 28 | 32 | 8 |
| Plan and Profile - Crossroads (no H&V alignment creation) | sheet | 20 | 24 | 28 | 9 |
| 2.7.A.H -  Plan and Profile - Ramps |  |  |  |  |  |
| Plan and Profile - Ramps | sheet | 24 | 28 | 32 | 10 |
| Plan and Profile - Ramps (no H&V alignment creation) | sheet | 20 | 24 | 28 | 11 |
| 2.7.A.I - Superelevation Table | sheet | 12 | 18 | 24 | 12 |
| 2.7.A.J - Intersection Details | intersection | 12 | 16 | 20 | 13 |
| 2.7.A.K -  Interchange Geometrics & Details | sheet | 20 | 26 | 32 | 14 |

| 2.7.A.L - Driveway Details | drive | 4 | 10 | 16 | 15 |
| --- | --- | --- | --- | --- | --- |
| 2.7.A.M - Design Exception Request | exception | 12 | N/A | 80 | 16 |
| 2.7.C.A - Utility Coordination and Documentation | project | 8 | 12 | 16 | 17 |
| 2.7.C.B - Description of proposed water and/or sewer work | sheet  \*plus base of 12 hours per project | 1\* | 2\* | 3\* | 18 |
| 2.7.C.C - Subsurface Utility Engineering (SUE) | sheet  \*plus base of 12 hours per project | need hours | need hours | need hours | 19 |
| 2.7.C.D – Add Utilities to Plan/Profile sheets | sheet | 2 | 3 | 6 | 20 |
| 2.7.G.A - Perform Airway/Highway clearance analysis | project | 16 | N/A | N/A | 21 |
| 2.7.G.B - Service Road Justification | parcel | 16 | N/A | 24 | 22 |
| 2.7.G.C - Finalize Pavement Build up and subsurface drainage requirements | N/A | N/A | N/A | N/A | 23 |
| 2.7.G.D - Prepare Pedestrian Overpass Justification | N/A | N/A | N/A | N/A | 24 |
| 2.7.H.A - Roadway/Interchange Costs | projec~~t~~ | 32 | 40 | 48 | 25 |
| 2.7.H.C – Utility Costs | project | 10 | 12 | 14 | 26 |
| 3.3.A.A -  Title Sheet | sheet | 4 | 6 | 8 | 27 |
| 3.3.A.B -  Schematic | sheet | 4 | 6 | 8 | 28 |
| 3.3.A.C - General Notes | sheet | 8 | 12 | 16 | 29 |
| 3.3.A.D - Typical Sections | section | 2 | 4 | 6 | 30 |
| 3.3.A.E -  Plan and Profile - Mainline | sheet | 8 | 12 | 16 | 31 |
| 3.3.A.F -  Plan and Profile - Crossroads | sheet | 8 | 12 | 16 | 32 |
| 3.3.A.G -  Plan and profile - Ramps | sheet | 8 | 12 | 16 | 33 |
| 3.3.A.H -  Cross Sections | section | 1 | 1.5 | 2 | 34 |
| 3.3.A.I -  Intersection Details | Intersection | 12 | 16 | 20 | 35 |
| 3.3.A.J -  Interchange Geometrics & Details | sheet | x | ~~x~~ | ~~x~~ | 36 |
| 3.3.H.A – Noise Wall Plan & Details | foot | x | x | x | 37 |
| 3.3.J.A - Utility Coordination and Documentation | lump | 8 | 24 | 40 | 38 |
| 3.3.J.B - Water Works Plan | sheet | 30 | 36 | 48 | 39 |
| 3.3.J.C - Water Works Details & Notes | sheet | 16 | 16 | 16 | 40 |
| 3.3.J.D - Sanitary Sewer Plans | sheet | 12 | 12 | 12 | 41 |
| 3.8.A - Roadway/Interchange Costs | sheet | 32 | 40 | 48 | 42 |
| 3.8.C – Utility Costs | sheet | 10 | 12 | 14 | 43 |
| 4.2.A.A - Pavement Subsummary | sheet | 12 | 18 | 24 | 44 |
| 4.2.A.C - Roadway Subsummary | sheet | 18 | 24 | 40 | 45 |
| 4.2.A.D - Earthwork and Seeding Subsummary | project/sheet | 24  project |  | 32  sheet | 46 |
| 4.2.A.I - Noise Wall Subsummary | sheet | x | x | x | 47 |
| 4.2.A.L - Landscape Subsummary | sheet | N/A | N/A | N/A | 48 |
| 4.2.A.M - General Summary Sheet | sheet | 18 | 20 | 24 | 49 |
| 4.2.A.P -  General Notes | sheet | 4 | 6 | 8 | 50 |
| 4.2.A.Q - Driveway Subsummary or Driveway Details (if include on same sheet) | sheet  \*plus 8 hours to create base subsummary sheet | 0.5 | 0.75 | 1 | 51 |
| 4.2.D.B - Prepare FAA Form 7460-1 for Airway/Highway Clearance | sheet | N/A | N/A | N/A | 52 |
| 4.2.D.G - Title Sheet | sheet | 8 | 12 | 16 | 53 |
| 4.3.A - Roadway/Interchange Costs | sheet | 32 | 48 | 48 | 54 |
| 4.3.D – Utility Costs | project | 10 | 12 | 14 | 55 |
| 4.4.A - Submission of Final Tracings and Documentation | sheet | 0.25 | 0.25 | 0.25 | 56 |

**Note:**

**1. 2.7.A.A - Title Sheet**

Assumes location map is created; Project manager obtains information, Cadd Tech drafts, reviewer verifies info. Sheet tends to be higher in designer/reviewer hours rather than Cadd Tech.

**Hours are manhours by sheet**

**Low-** 1-X Design designations. Project limits are short, or work is minor such as a single bridge replacement with limited roadway approach.

**Medium**- X-X Design Designations**.**

**High**: 0ver X Design Designations. Complex work such as interstate reconstruction with multiple roads involved.

NOTE: Do not pay for additional sheets. The work for creating an additional sheet should be reflected in the Low-Med-High designation.

1. **2.7.A.B - General Notes**

Assumes utility coordination is handled in a separate task. This effort includes information gathering and drafting, such as review of environmental documents to capture all commitments. Assumes commitments are defined in the environmental document.

**Hours are manhours by sheet**

**Low** -Rural or local project, short work limits, limited work such as a single bridge replacement, mill/fill project. Minimal number of environmental commitments

**Medium -** Urban or larger rural project, multiple lanes, widening or major rehab. Moderate number of environmental commitments (up to 5)

**High-** Complex larger urban or interstate project, multiple improvement involvement. More than 5 environmental commitments**.**

1. **2.7.A.C - Schematic Plan**

Assume that the hours for creating the proposed horizontal and vertical alignments are included in the plan and profile sections.

Assume that more complicated projects will require higher detail resulting in more sheets, which should reflect the additional hours required. Note: benchmarks/control points included in L&D checklist for this task, therefore included in this effort even if represented on another sheet.

Assume if additional sheets are provided for clarity, that all hours will be based on 1 sheet only.

Predominantly Cadd Tech hours with some higher level review.

**Hours are manhours by sheet.**

**Low -** somewhat linear project with minimal to no intersections/interchanges. Simple geometry. Short project.

**Medium -** realignment that does not include interchangesbut may have more involved geometry and multiple intersections.

**High -** : project with interchanges, or other complex geometry. Long projects.

1. **2.7.A.D - Typical Sections**

Includes determining section from the L&D, draft, label, review. Verify existing build up based on geotech. Design transitions, superelevation,

**Hours are manhours by individual section.** Overall hours can be a mix of low, medium, and high typical sections. .

**Low- Rural, two lane, uncurbed. Minor Mill/fill. Details**

**Medium- Urban or multi-lane rural. Complex mill/fill or pavement rehab.**

**High** - 6 or more lanes total, divided freeway,

1. **2.7.A.F - Cross Sections**

**Hours are manhours by section.**

**Low** - set pattern lines, cut sections, show existing (pavement, utilities), show proposed (criteria runs, establish vba) . Two-lane or undivided four lane projects with shoulders and minimal cut/fill.Mill/fill projects, non-interstate.

**Medium** -define superelevation Geopak shape file/template. Multiple lane curbed sections, or undivided highways. Mill/fill interstate projects.

**High** - adds extensive utilities, retaining walls, noisewalls, match lines, special benching, undercut, reinforced soil slopes & drainage (assume drafting of storm structures and network with design accounted for in drainage tasks is similar to the iterative design & drafting of ditches).

1. **2.7.A.E - Plan and Profile - Mainline**

Assume that the creation of the proposed horizontal and vertical alignments are included in this effort.

Assume complexity of urban verse rural is mostly covered in the variance of scale used for Plan and Profile.

Create BP (proposed base file, approx. 10hr/sheet), refine horizontal & vertical alignments create sheets, reference files, clean up, label, include drainage in plan,

Assume hours for drainage profile is included with storm sewer profile task.

Include guardrail LON calculations, construction limits, and pavement dimensions.

Assume CL of R/W is established under the R/W task.

Separate plan/profile sheets count as one sheet.

**Hours are manhours by sheet.**

**Low** -rural, local urban two-lane.

**Medium** - urban interstate, rural or urban collectors

**High** – urban arterial, complex urban interstate

Selection of Low, Medium and high should also consider such factors as number of drives, complexity of drainage, amount of right-of-way take, or other features that would complicate a plan sheet.

1. **2.7.A.E – Plan and Profile – Mainline (H&V alignment creation NOT included)**

Same as Note 5 but assume that the creation of the proposed horizontal and vertical alignments have been performed in a previous task and **ARE NOT** included in this effort.

1. **2.7.A.G - Plan and Profile - Crossroads**

Same as mainline

**Hours are manhours by sheet.**

**Low** -rural, local urban two-lane.

**Medium** - urban interstate, rural or urban collectors.

**High** – urban arterial, complex urban interstate

1. **2.7.A.G – Plan and Profile Cross Roads (H&V alignments creation NOT included)**

Same as Note 6 but assume that the creation of the proposed horizontal and vertical alignments have been performed in a previous task and **ARE NOT** included in this effort.

1. **2.7.A.H - Plan and Profile - Ramps**

Same as mainline

**Hours are manhours by sheet.**

**Low** -rural

**Medium** - urban interstate

**High** – urban arterial

1. **2.7.A.H – Plan and Profile - Ramps(H&V alignments creation NOT included)**

Same as Note 7 but assume that the creation of the proposed horizontal and vertical alignments have been performed in a previous task and **ARE NOT** included in this effort.

1. **2.7.A.I - Superelevation Table**

Includes superelevation calculations, table generation, transition

**Hours are manhours by sheet.**

**Low** - two-lanes

**Medium** – multiple lanes, non-complex

**High** – multiple lanes, auxiliary lane, bi-furcated section, etc

1. **2.7.A.J - Intersection Details**

Includes running truck turn templates

**Hours are manhours by intersection.** Overall hours can be a mix of low, medium, and high intersections.

**Low** - T-intersection or 4-way, asphalt pavement, graded shoulders

**Medium** – 4-way intersection, two-or more lanes, asphalt pavement with curbs and ramps.

**High** – 4-way intersection, multiple lanes, with concrete pavement and curbs and ramps.

1. **2.7.A.K - Interchange Geometrics & Details**

**Hours are manhours by sheet.**

**Low -** rural, one-lane exit/entrance ramp

**Medium -** urban or rural, multiple exit/entrance lanes

**High** - urban multiple lanes, auxiliary lanes

1. **2.7.A.L - Driveway Details**

Units changed from hrs/sheet to hrs/drive

**Hours are manhours by drive.**

**Low** - Less than 50’ long, perpendicular to centerline, same location, field or residential

**Medium** - 50’ to 150’, skewed, commercial, residential, or field

**High** – over 150’, commercial, realignment, other complexities

1. **2.7.A.M - Design Exception Request**

Estimate per exception requested, not per sheet

**Hours are manhours by exception request.**

**Low** - design criteria information and approval sheet.

**Medium** - N/A

**High** - full report. Identify deficiency; obtain accident data, review for appropriateness, correct data; describe existing facility, proposed facility, controlling criteria, describe deviation, accident history analysis, proposed mitigation, support for the exception,

Complicated crash analysis; more difficult impact analysis. 40 of the hours account for use of the Highway Safety Manual to predict future accidents based on new build.

1. **2.7.C.A - Utility Coordination and Documentation**

Includes general administration such as developing contact list, sending plans, etc”

Possible utilities: water, storm, sanitary, electric, gas, phone, cable.

Does not include incorporation of plan information received from utilities into the base map.

**Hours are manhours by project.**

**Low** - 2 number of utilities, short project

**Medium** - simple project (e.g. rural) with utility relocation or more than 2 utilities

**High** - numerous utilities, with conflicts; several underground, complex urban location

1. **2.7.C.B - Description of proposed water and/or sewer work**

12 base hours include general administrations such as developing contact list, sending plans, etc”

**Additional hours beyond the base hours are manhours by plan sheet on which water/sewer work is involved.**

**Low** – Sewer or water only, minor conflicts

**Medium** - Sewer or water only with numerous conflicts, or both sewer and water with minor conflicts

**High** – Both sewer and water, numerous conflicts.

1. **2.7.C.C - Subsurface Utility Engineering (SUE)**

12 base hours include general administrations such as subconsultant coordination, developing contact list, sending plans, etc”

Includes incorporation of plan information received from SUE investigation. Hours are for coordination of SUE field work only. SUE field work costs hours should be handled on a case by case basis.

**Additional hours beyond the base hours are manhours by plan sheet on which SUE work is involved.**

**Low** -Average of up to X number of utilities per sheet

**Medium** -Average of from X to X number of utilities per sheet

**High** – Average of over X number of utilities per sheet

1. **2.7.C.D – Add Utilities To Plan/Profile Sheets**

Includes incorporation of plan information received from utilities into the base map (in addition to locations already obtained through field survey).

Compensable will take longer than non-compensable utilities because the designer is responsible for the new location.

Address mark up plans from utilities

**Hours are manhours per plan sheet**

**Low** - basic coordination with minimal to no impacts.

**Medium** - simple project (e.g. rural) with utility relocation. Newer suburban

**High** - numerous utilities, with conflicts; several underground, older urban.

1. **2.7.G.A - Perform Airway/Highway clearance analysis**

**Hours are manhours by runways/airports.**

**Low** - basic coordination with FAA; includes preparation of L&D 1404 figures to show no effect on imaginary notification surface.

**Medium** - N/A

**High** - project encroaches on imaginary notification surface Hours negotiated on a case by case basis.

1. **2.7.G.B - Service Road Justification**

Base cost to include plan sheet development (geometrics, property identification), type of road, land use, develop unit costs

Costs include determining unit cost, completion of the Service Road Study Form.

**Hours are manhours by parcel requiring access.**

**Low** - service road through open space, no relocation.

**Medium -** N/A

**High** - building or business with potential of relocation, congested areas

1. **2.7.G.C - Finalize Pavement Build up and subsurface drainage requirements**

Negotiated on a case by case basis as needed.

1. **2.7.G.D - Prepare Pedestrian Overpass Justification**

Negotiated on a case by case basis as needed.

1. **2.7.H.A - Roadway/Interchange Costs**

Use number of sheets in Estimator as number of sheets (less the cover page)

Effort includes determination of quantities (no subsummaries or general summary at this stage).

Estimate hours for roadway items ~~and bridge~~ items based on general assumptions such as square footage.

Drainage quantities available; roadway item quantities are approximated.

Variation between low, medium, high is minimal at this point since quantities are approximate.

Include additional hours for projects with complex plan splits.

Subsummary tables are not developed. Estimate should be based on logical units in a spreadsheet or some other practical program.

**Hours are manhours by sheet.**

**Low -** Rural or local project, short work limits, limited work such as a single bridge replacement, mill/fill project.

**Medium -** Urban or larger rural project, multiple lanes, widening or major rehab.

**High**-Complex larger urban or interstate project, multiple improvement involvement.

1. **2.7.H.C – Utility Costs**

**Hours are manhours by project. Applies to water and sanitary sewer lines**

**Low** - One or two relocations, short length or minor complexity

**Medium** - Two to four relocations of moderate length/complexity, or two or three relocations of short length/minor complexity

**High** –Several relocations, extensive length, complex

1. **3.3.A.A - Title Sheet**

Complete sheet index, miscellaneous updates based on plan changes.

**Hours are manhours by sheet.**

**Low -**Same as 2.7.A.A

**Medium** - Same as 2.7.A.A

**High** – Same as 2.7.A.A

1. **3.3.A.B - Schematic**

Add environmental mapping and update as needed.

**Hours are manhours by sheet.**

**Low** - Same as 2.7.A.C

**Medium** - Same as 2.7.A.C

**High** - Same as 2.7.A.C

1. **3.3.A.C - General Notes**

**Hours are manhours by sheet.**

**Low** -Rural or local project, short work limits, limited work such as a single bridge replacement, mill/fill project.

**Medium** -Urban or larger rural project, multiple lanes, widening or major rehab.

**High -** Complex larger urban or interstate project, multiple improvement involvement

1. **3.3.A.D -Typical Sections**

Common updates to typical sections include more clearly defined bridge limits and roadway transition sections.

**Hours are manhours by individual section.** Overall hours can be a mix of low, medium, and high typical sections.

**Low** -Same as 2.7.A.D

**Medium** -Same as 2.7.A.D

**High** – Same as 2.7.A.D

1. **3.3.A.E - Plan and Profile - Mainline**

Primarily updates.

**Hours are manhours by sheet.**

**Low** - Same as 2.7.A.E

**Medium** -Same as 2.7.A.E

**High** - Same as 2.7.A.E

1. **3.3.A.F - Plan and Profile - Crossroads**

Primarily updates.

**Hours are manhours by sheet.**

**Low** -Same as 2.7.A.G

**Medium** -Same as 2.7.A.G

**High** - Same as 2.7.A.G

1. **3.3.A.G - Plan and profile - Ramps**

Primarily updates.

**Hours are manhours by sheet.**

**Low** – Same as 2.7.A.H

**Medium** - Same as 2.7.A.H

**High** - Same as 2.7.A.H

1. **3.3.A.H - Cross Sections**

Add applicable plan features such as noisewalls or retaining walls; update per design changes

**Hours are manhours by section.**

**Low** – Same as 2.7.A.F

**Medium** - Same as 2.7.A.F

**High** - Same as 2.7.A.F

1. **3.3.A.I - Intersection Details**

Includes joint layout and grading. For the most part geometrics/curb face are already set

**Hours are manhours by (intersection)**

**Low** – Same as 2.7.A.J

**Medium** - Same as 2.7.A.J

**High** - Same as 2.7.A.J

1. **3.3.A.J - Interchange Geometrics & Details**

Probably will include only minor updates

**Hours are manhours by sheet.**

**Low** - Same as 2.7.A.K

**Medium** - Same as 2.7.A.K

**High** - Same as 2.7.A.K

1. **3.3.H.A – Noise Wall Plan and Details**

Low, Medium, High hours to be determined by the complexities of the design of the Noise Walls based on the following:

* Drainage Issues
* Terrain differentials
* Utilities crossing the proposed Noise Wall
* Bridges within the limits of the Noise wall
* Special details to mount Noise Walls on barrier

**Hours are manhours by foot of wall.**

**Low -** no complexities

**Medium** –2-3 complexities

**High** –3 or more complexities

1. **3.3.J.A - Utility Coordination and Documentation**

Lump sum hours (do not use per sheet for this task)

**Hours are manhours by lump.**

**Low** - basic coordination with minimal to no impacts

**Medium** - simple project (e.g. rural) with utility relocation

**High** - numerous utilities, with conflicts; several underground

1. **3.3.J.B - Water Works Plan**

Hours estimate based on number of water works plan & profile sheets

May include lowering, frost proofing, connections, valves, hydrants.

**Hours are manhours by sheet.**

**Low** - freeway, rural 2 lane

**Medium** - newer, suburban

**High** - older urban arterial

1. **3.3.J.C - Water Works Details & Notes**

Hours estimate based on number of water works notes & details sheets.

Incorporate department standards

**Hours are manhours by sheet.**

**Low** - Same as 3.3.J.C

**Medium** - Same as 3.3.J.C

**High** - Same as 3.3.J.C

1. **3.3.J.D - Sanitary Sewer Plans**

Hours estimate based on number of affected roadway plan & profile sheets (with sanitary sewer)

Includes calculations

May require separate profile from the roadway

**Hours are manhours by sheet.**

**Low** - Same as 3.3.J.D

**Medium** - Same as 3.3.J.D

**High** – Same as 3.3.J.D

1. **3.8.A - Roadway/Interchange Costs**

Items in Stage 2 added or with increased detail: traffic signals, lighting, noise barriers, traffic control, MOT, culvert/headwalls.

See Bridge Group for structure hour’s estimate. Not included in this task.

**Hours are manhours by sheet.**

**Low** – Same as 2.7.H.A

**Medium** - Same as 2.7.H.A

**High** – Same as 2.7.H.A

1. **3.8.C – Utility Costs**

**Hours are manhours by project.**

**Low** – Same as 2.7.H.C

**Medium** - Same as 2.7.H.C

**High** - Same as 2.7.H.C

1. **4.2.A.A - Pavement Subsummary**

Includes setting up calculation sheet, supplemental calculations, review.

Low-high range is primarily based on the number of rows required per sheet (defined by # of width changes, ramps, etc.). Number of areas that need to be measured in CADD significantly increase the level of hours/effort.

**Hours are manhours by subsummary sheet.**

**Low** - rural interstate, minimal cross roads or interchanges, minimal pavement width transitions.

**Medium** – rural or urban, moderate cross roads and pavement width transitions

**High** - urban interstates, high number of ramps

1. **4.2.A.C - Roadway Subsummary**

Will vary dependent on the number of actual items on each sheet. Some sheets may carry columns that are not present on majority of sheets for LOW level projects.

Include curb, guardrail, and barrier

Hours are based on subsummary sheet as a standalone sheet.

**Hours are manhours by sheet.**

**Low** -rural, local urban two-lane.

**Medium** - urban interstate, rural or urban collectors

**High** – urban arterial, complex urban interstate

1. **4.2.A.D - Earthwork and Seeding Subsummary**

Automated earthwork quantities are accounted for in the cross sections task. This task (4.2.A.D) should reflect calculations needed at transition points such as bridges, interchanges and intersections, as well as development of the subsummary sheets.

**Hours are manhours by project (low) or by subsummary sheet (high).**

**Low** - simple projects will probably not have a subsummary. Totals will be carried directly to the G.S. Hours are per project.

**Medium –** N/A

**High** - large project with significant breaks, such as interchanges and bridges. Hours are by subsummary sheet.

1. **4.2.A.I - Noise Wall Subsummary**

Low, Medium, High hours to be determined by the complexities of the design of the Noise Walls based on the following:

* Drainage Issues
* Terrain differentials
* Utilities crossing the proposed Noise Wall
* Bridges within the limits of the Noise wall
* Special details to mount Noise Walls on barrier

**Hours are manhours by foot of wall.**

**Low -** no complexities.

**Medium** – 2-3 complexities.

**High** –3 or more complexities.

1. **4.2.A.L - Landscape Subsummary**

Needs to be estimated on a project by project basis. Landscaping effort can vary greatly (e.g. urban streetscape work, interchange beautification, or just simple vegetation added).

1. **4.2.A.M - General Summary Sheet**

**Hours are manhours by sheet.**

**Low -** Rural or local project, short work limits, limited work such as a single bridge replacement, mill/fill project.

**Medium -** Urban or larger rural project, multiple lanes, widening or major rehab.

**High-** Complex larger urban or interstate project, multiple improvement involvement**.**

1. **4.2.A.P - General Notes**

**Hours are manhours by sheet.**

**Low** – Same as previous stage

**Medium** – Same as previous stage

**High** – Same as previous stage

1. **4.2.A.Q - Driveway Subsummary or Driveway Details (if include on same sheet)**

**Hours are manhours by sheet**

**8 hours for base subsummary sheet plus hours based on Low, Medium, High complexity description**

**Low** – Same as 2.7.A.L

**Medium** – Same as 2.7.A.L

**High** – Same as 2.7.A.L

1. **4.2.E.B - Prepare FAA Form 7460-1 for Airway/Highway Clearance**

**Negotiate on a case by case basis.**

1. **4.2.D.G - Title Sheet**

Includes addition of Standard Construction Drawings, supplemental specs, special provisions (review list, determine appropriateness of use, check revision date); update of sheet index, miscellaneous updates. Hours at stage 3 include repeating this task for the final plans.

**Hours are manhours by sheet.**

**Low** –Same as 2.7.A.A

**Medium** – Same as 2.7.A.A

**High** – Same as 2.7.A.A

Consideration of Low-Medium-High can also be based on the number of disciplines affected such as drainage, lighting, MOT, traffic control, structures, etc.

1. **4.3.A - Roadway/Interchange Costs**

Final cost estimate is based on actual quantities. Final deliverable is in Estimator program. Higher level of detail than Stage 1 & 2. A significant portion of the hours are accounted in the subsummary and summary tasks above. Most effort includes populating Estimator and evaluating unit prices.

Contingency is reduced because of additional effort in determining quantities.

**Hours are manhours by sheet.**

**Low** – Same as 2.7.H.A

**Medium** – Same as 2.7.H.A

**High** – Same as 2.7.H.A

1. **4.3.D – Utility Costs**

**Hours are manhours by sheet.**

**Low** – Same as 2.7.H.C

**Medium** -Same as 2.7.H.C

**High** - Same as 2.7.H.C

1. **4.4.A - Submission of Final Tracings and Documentation**

**Hours are manhours by sheet.**

Scope and complexity of the project determines the number of sheets so hours for low, medium and high are the same.

# Traffic Signals

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.3.D.A - Documentation of Proprietary Bid Justification | Signal | 4 | 5 | 6 | 1 |
| 2.3.D.C - Documentation of alternate bid considerations for signal equipment | Signal | 4 | 5 | 6 | 1 |
| 2.3.E - Signals |  |  |  |  | 1 |
| 2.3.E.A - Signal Warrant Analysis | Signal | 3 | 3 | 3 | 1 |
| 2.3.E.B - CFR 940 Documentation | Signal | 3 | 3 | 3 | 1 |
| 2.3.E.C - Railroad Coordination - Signals | Signal | 3 | 4 | 5 | 1 |
| 2.7.K - Signal Plans | Signal | 12 | 15 | 17 | 1 |
| 3.3.D - Signal Plan |  |  |  |  | 1 |
| 3.3.D.A - Signal Plan Sheets | Signal | 41 | 51 | 60 | 1 |
| 3.3.D.B - Interconnect Details | Signal | 13 | 15 | 18 | 1 |
| 4.2.A - Quantities and Notes - Signals |  |  |  |  | 1 |
| 4.2.A.H - Signal Subsummary | Signal | 27 | 32 | 37 | 1 |
| 4.2.B - Traffic Signal Plans |  |  |  |  | 1 |
| 4.2.B.A - Wiring diagram & pole orientation | Signal | 13 | 21 | 29 | 1 |
| 4.2.B.B - Timing Chart | Signal | 13 | 17 | 21 | 1 |
| 4.2.B.C - Elevation Views of Mast Arm Poles | Signal | 8 | 11 | 14 | 1 |
| 4.2.B.D - Traffic Signal Signs | Signal | 5 | 5 | 6 | 1 |
|  |  |  |  |  |  |

**Note:**

**Scope and Detail Hours:**

|  |  |
| --- | --- |
| **Personnel** | **Acronym used below** |
| Project Manager / Project Executive | PM |
| Senior Engineer | SE |
| Project Engineer / Survey Manager | PE / SM |
| PI Spec / Design Engineer | PI / DE |

1. **Traffic Signals**

**Low** hours are included in table below for each Task identified for Traffic Signals

"For a low level project, it is assumed that the project is a simple, straightforward project (typically a Path 1 or 2).

A low level project is generally in a rural setting or a township or village. Signal design is straightforward, typically a span wire design with little or no interconnect. Design could operate as a semi- or fully actuated operation. Pedestrian facilities are minimal or nonexistent. There are minimal or no utility and right-of-way conflicts. Setting could be a city but a simple, non-dense population / development for a signal. Design generally includes local signal timing only.

Prepare plans. Assume (3) round of reviews.

|  |  |  | **Hours of Personnel Assigned Per Task\*** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | | **Description/Level of Effort** | **Unit** | **Low - Path 1 or 2** | | | |
|  | |  |  | **PM** | **SE** | **PE / SM** | **EI / Tech** |
|  | |  |  |  |  |  |  |
| 2.3.D.A - Documentation of Proprietary Bid Justification - Signals | | Patented or proprietary materials, specifications, or processes shall not be included in a contract unless meeting one of the criteria in TEM, Section 120-4.  Where a single item is specified, a request and justification shall be submitted by the maintaining agency to the Office of Traffic Engineering (OTE) with a copy to the appropriate District. The request contents shall be in accordance with TEM, Section 120-4. | per signal | 1 | 1 | 2 |  |
| 2.3.D.C - Documentation of alternate bid considerations for signal equipment | | The alternate bid procedure has been established to permit a local agency to obtain a specific brand, feature or design of traffic control or lighting device for use on a project.  Submit an alternate bid request in accordance with TEM, Section 120-7. | per signal | 1 | 1 | 2 |  |
| **2.3.E – Signals** | |  |  |  |  |  |  |
| 2.3.E.A - Signal Warrant Analysis | | All new or reconstructed signalized intersections shall be warranted based on OMUTCD Chapter 4C and TEM. | per signal | 1 | 1 | 1 |  |
| 2.3.E.B - CFR 940 Documentation | | CFR 940 Documentation (when required) Note: ODOT working on blanket 940 exemptions. Will make this easier when finalized. | per signal | 1 | 2 |  |  |
| 2.3.E.C - Railroad Coordination - Signals | | Signal Railroad Preemption: Field Diagnostics Review, etc. | per signal | 1 | 2 |  |  |
|  | |  |  |  |  |  |  |
| 2.7.K - Signal Plans | | This task includes items necessary for signal design during Stage 1 project development (i.e. preliminary signal pole layout, controller placement, etc.). This task includes QA/QC of ODOT Stage 1 signal plans. | per signal | 1 | 3 | 2 | 6 |
|  | |  |  |  |  |  |  |
| **3.3.D - Signal Plan** | |  |  |  |  |  |  |
| 3.3.D.A - Signal Plan Sheets | | Develop Stage 2 Signal Plan sheets in accordance with TEM Section 140 and 440-7. With the submittal, include SWISS files on a CD (see Section 440-5) and Synchro files on a CD (see Section 440-6). | per signal | 1 | 7 | 3 | 30 |
| 3.3.D.B - Interconnect Details | | Provide any necessary details/notes for interconnected signals. | per signal |  | 1 | 2 | 10 |
|  | |  |  |  |  |  |  |
| **4.2.A – Quantities and Notes - Signals** | |  |  |  |  |  |  |
| 4.2.A.H - Signal Subsummary | | Determine quantities and prepare subsummary. | per signal |  | 2 | 3 | 22 |
|  | |  |  |  |  |  |  |
| **4.2.B - Traffic Signal Plans** | |  |  |  |  |  |  |
| 4.2.B.A - Wiring diagram & pole orientation | | Prepare wiring diagram and pole orientation in accordance with TEM Section 440.  Indicate the type of cable and number of conductors connecting each signal head, pedestrian head, detector, push button, etc. This task includes QA/QC of ODOT Stage 3 signal plans. | per signal | 1 | 6 | 3 | 3 |
| 4.2.B.B - Timing Chart | | Prepare coordination timing. | per signal |  | 1 | 2 | 10 |
| 4.2.B.C - Elevation Views of Mast Arm Poles | | Prepare Elevation Details for Strain Poles. (Hours assume 4 spans per intersection.) | per signal |  | 1 | 2 | 5 |
| 4.2.B.D - Traffic Signal Signs | | Prepare sign designs for signal projects using SignCAD (i.e. Overhead Street Name Signs or Special Signs) or as per TEM. | per signal |  | 1 | 1 | 3 |

**Medium -** hours are included in table below for each Task identified in Traffic Signals

For a medium level project, it is assumed that the project is a larger and more complex project (typically a Path 2, 3 or 4).

A medium level project is in an urban setting, a developed commercial / retail corridor and could include a freeway interchange. Design includes pedestrian features (pedestrian signal heads and pushbuttons). Design includes minimal or moderate utility and right-of-way conflicts. Signals are span wire or mast arm designs with video, loops or radar vehicle detection. Signal design may be decorative in nature with signal support mounted intersection lighting. Design is generally part of a closed loop system running coordinated timing with fiber or wireless interconnect.

Prepare plans. Assume (3) round of reviews.

|  |  |  | **Hours of Personnel Assigned Per Task\*** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | | **Description/Level of Effort** | **Unit** | **Medium - Path 2, 3 or 4** | | | |
|  | |  |  | **PM** | **SE** | **PE / SM** | **EI / Tech** |
|  | |  |  |  |  |  |  |
| 2.3.D.A - Documentation of Proprietary Bid Justification - signals | | Patented or proprietary materials, specifications, or processes shall not be included in a contract unless meeting one of the criteria in TEM, Section 120-4.  Where a single item is specified, a request and justification shall be submitted by the maintaining agency to the Office of Traffic Engineering (OTE) with a copy to the appropriate District. The request contents shall be in accordance with TEM, Section 120-4. | per signal | 1 | 1 | 3 |  |
| 2.3.D.C - Documentation of alternate bid considerations for signal equipment | | The alternate bid procedure has been established to permit a local agency to obtain a specific brand, feature or design of traffic control or lighting device for use on a project  Submit an alternate bid request in accordance with TEM, Section 120-7. | per signal | 1 | 1 | 3 |  |
| **2.3.E - Signals** | |  |  |  |  |  |  |
| 2.3.E.A - Signal Warrant Analysis | | All new or reconstructed signalized intersections shall be warranted based on OMUTCD Chapter 4C and TEM. | per signal | 1 | 1 | 1 |  |
| 2.3.E.B - CFR 940 Documentation | | CFR 940 Documentation (when required) Note: ODOT working on blanket 940 exemptions. Will make this easier when finalized. | per signal | 1 | 2 |  |  |
| 2.3.E.C - Railroad Coordination - Signals | | Signal Railroad Preemption: Field Diagnostics Review, etc. | per signal | 1 | 3 |  |  |
|  | |  |  |  |  |  |  |
| 2.7.K - Signal Plans | | This task includes items necessary for signal design during Stage 1 project development (i.e. preliminary signal pole layout, controller placement, etc.). This task includes QA/QC of ODOT Stage 1 signal plans. | per signal | 1 | 4 | 3 | 7 |
|  | |  |  |  |  |  |  |
| **3.3.D - Signal Plan** | |  |  |  |  |  |  |
| 3.3.D.A - Signal Plan Sheets | | Develop Stage 2 Signal Plan sheets in accordance with TEM Section 140 and 440-7. With the submittal, include SWISS files on a CD (see Section 440-5) and Synchro files on a CD (see Section 440-6). | per signal | 1 | 9 | 5 | 36 |
| 3.3.D.B - Interconnect Details | | Provide any necessary details/notes for interconnected signals. | per signal |  | 1 | 2 | 12 |
|  | |  |  |  |  |  |  |
| **4.2.A - Quantities and Notes - Signals** | |  |  |  |  |  |  |
| 4.2.A.H - Signal Subsummary | | Determine quantities and prepare subsummary. | per signal |  | 2 | 5 | 25 |
|  | |  |  |  |  |  |  |
| **4.2.B - Traffic Signal Plans** | |  |  |  |  |  |  |
| 4.2.B.A - Wiring diagram & pole orientation | | Prepare wiring diagram and pole orientation in accordance with TEM Section 440.  Indicate the type of cable and number of conductors connecting each signal head, pedestrian head, detector, push button, etc. This task includes QA/QC of ODOT Stage 3 signal plans. | per signal | 1 | 8 | 3 | 9 |
| 4.2.B.B - Timing Chart | | Prepare coordination timing. | per signal |  | 1 | 3 | 13 |
| 4.2.B.C - Elevation Views of Mast Arm Poles | | Prepare Elevation Details for Mast Arm Poles. (Hours assume 4 poles per intersection.) | per signal |  | 2 | 2 | 7 |
| 4.2.B.D - Traffic Signal Signs | | Prepare sign designs for signal projects using SignCAD (i.e. Overhead Street Name Signs or Special Signs) or as per TEM. | per signal |  | 1 | 1 | 3 |

**High -** hours are included in table below for each Task identified in Traffic Signals

For a high level project, it is assumed that the project is a large and complex project (typically a Path 4 or 5).

A high level project is in an urban setting with dense population / development and / or includes an interchange. Signals are typically a mast arm design with video or radar vehicle detection. Signal design may be decorative in nature with combination signal support mounted intersection lighting. Design includes pedestrian features (pedestrian signal heads and Accessible Pedestrian Signals.) Design often includes significant utility and right-of-way constraints. Design could be part of a central system running timing responsive or adaptive control software.

Prepare plans. Assume (3) round of reviews.

|  |  |  | **Hours of Personnel Assigned Per Task\*** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | | **Description/Level of Effort** | **Unit** | **High - Path 4 or 5** | | | |
|  | |  |  | **PM** | **SE** | **PE / SM** | **EI / Tech** |
|  | |  |  |  |  |  |  |
| 2.3.D.A - Documentation of Proprietary Bid Justification - Signals | | Patented or proprietary materials, specifications, or processes shall not be included in a contract unless meeting one of the criteria in TEM, Section 120-4.  Where a single item is specified, a request and justification shall be submitted by the maintaining agency to the Office of Traffic Engineering (OTE) with a copy to the appropriate District. The request contents shall be in accordance with TEM, Section 120-4. | per signal | 1 | 2 | 3 |  |
| 2.3.D.C - Documentation of alternate bid considerations for signal equipment | | The alternate bid procedure has been established to permit a local agency to obtain a specific brand, feature or design of traffic control or lighting device for use on a project.  Submit an alternate bid request in accordance with TEM, Section 120-7. | per signal | 1 | 2 | 3 |  |
| **2.3.E - Signals** | |  |  |  |  |  |  |
| 2.3.E.A - Signal Warrant Analysis | | All new or reconstructed signalized intersections shall be warranted based on OMUTCD Chapter 4C and TEM. | per signal | 1 | 1 | 1 |  |
| 2.3.E.B - CFR 940 Documentation | | CFR 940 Documentation (when required) Note: ODOT working on blanket 940 exemptions. Will make this easier when finalized. | per signal | 1 | 2 |  |  |
| 2.3.E.C - Railroad Coordination - Signals | | Signal Railroad Preemption: Field Diagnostics Review, etc. | per signal | 1 | 4 |  |  |
|  | |  |  |  |  |  |  |
| 2.7.K - Signal Plans | | This task includes items necessary for signal design during Stage 1 project development (i.e. preliminary signal pole layout, controller placement, etc.). This task includes QA/QC of ODOT Stage 1 signal plans. | per signal | 1 | 5 | 3 | 8 |
|  | |  |  |  |  |  |  |
| **3.3.D - Signal Plan** | |  |  |  |  |  |  |
| 3.3.D.A - Signal Plan Sheets | | Develop Stage 2 Signal Plan sheets in accordance with TEM Section 140 and 440-7. With the submittal, include SWISS files on a CD (see Section 440-5) and Synchro files on a CD (see Section 440-6). | per signal | 1 | 11 | 6 | 42 |
| 3.3.D.B - Interconnect Details | | Provide any necessary details/notes for interconnected signals. | per signal |  | 2 | 2 | 14 |
|  | |  |  |  |  |  |  |
| **4.2.A - Quantities and Notes Signals** | |  |  |  |  |  |  |
| 4.2.A.H - Signal Subsummary | | Determine quantities and prepare subsummary. | per signal |  | 2 | 7 | 28 |
|  | |  |  |  |  |  |  |
| **4.2.B - Traffic Signal Plans** | |  |  |  |  |  |  |
| 4.2.B.A - Wiring diagram & pole orientation | | Prepare wiring diagram and pole orientation in accordance with TEM Section 440.  Indicate the type of cable and number of conductors connecting each signal head, pedestrian head, detector, push button, etc. This task includes QA/QC of ODOT Stage 3 signal plans. | per signal | 1 | 9 | 3 | 16 |
| 4.2.B.B - Timing Chart | | Prepare coordination timing. | per signal |  | 1 | 4 | 16 |
| 4.2.B.C - Elevation Views of Mast Arm Poles | | Prepare Elevation Details for Mast Arm Poles. (Hours assume 4 poles per intersection.) | per signal |  | 2 | 3 | 9 |
| 4.2.B.D - Traffic Signal Signs | | Prepare sign designs for signal projects using SignCAD (i.e. Overhead Street Name Signs or Special Signs) or as per TEM. | per signal |  | 1 | 1 | 4 |

# Lighting

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.3.D.B - Documentation of Proprietary Bid Justification - Lighting | Project | 3 | 4 | 6 | 1 |
| 2.3.D.D - Documentation of alternate bid considerations for lighting equipment | Project | 3 | 4 | 6 | 1 |
| 2.3.H.D - Determine Lighting needs - investigate warrants | Project | 40 | 49 | 58 | 1 |
|  |  |  |  |  |  |
| 2.7.I - Lighting Plans | Project | 13 | 19 | 25 | 1 |
|  |  |  |  |  |  |
| **3.3.F - Lighting Plan** |  |  |  |  | 1 |
| 3.3.F.A - Lighting Analysis | Project | 30 | 40 | 50 | 1 |
| 3.3.F.B - Power/Circuit Layout & Details | Sheet | 21 | 31 | 41 | 1 |
| 3.3.F.C - Lighting Plan and Details | Sheet | 31 | 38 | 45 | 1 |
| 3.3.F.D - Voltage Drop Calculations | Circuit | 11 | 15 | 20 | 1 |
| 3.3.F.E - Power Service | Project | 9 | 14 | 18 | 1 |
|  |  |  |  |  |  |
| **4.2.A - Quantities and Notes - Lighting** |  |  |  |  | 1 |
| 4.2.A.K - Lighting Subsummary | Sheet | 17 | 21 | 25 | 1 |
| 4.2.A.R - Lighting Notes | Sheet | 23 | 28 | 33 | 1 |
|  |  |  |  |  |  |
| **4.2.E – Lighting Plans** |  |  |  |  |  |
| 4.2.E.A - Lighting Details | Sheet assumes 6 elevation per sheet | 37 | 37 | 37 | 1 |
| 4.2.E.B - Lighting Details – Underpass Lighting | Sheet | 40 | 49 | 58 | 1 |

**Note:**

**Scope and Detail Hours:**

|  |  |
| --- | --- |
| **Personnel** | **Acronym used below** |
| Project Manager / Project Executive | PM |
| Senior Engineer | SE |
| Project Engineer / Survey Manager | PE / SM |
| Engineer Intern / Technician | EI / Tech |

1. **Lighting**

**Low** hours are included in table below for each Task identified in Lighting

"For a low level project, it is assumed that the project is a simple, straightforward project (typically a Path 1 or 2).

Projects in the low category include diamond interchanges with partial interchange lighting, diamond interchanges with conventional light poles, lighting on a one mile or less roadway project with one control center, intersection lighting, streetscape lighting, minor upgrades to existing lighting on roadways or the interstate and other projects that would be considered under the limited highway lighting category.

Prepare plans. Assume (3) round of reviews.

|  |  |  | **Hours of Personnel Assigned Per Task\*** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | | **Description/Level of Effort** | **Unit** | **Low - Path 1 or 2** | | | |
|  | |  |  | **PM** | **SE** | **PE / SM** | **EI / Tech** |
|  | |  |  |  |  |  |  |
| 2.3.D.B - Documentation of Proprietary Bid Justification - Lighting | | "Patented or proprietary materials, specifications, or processes shall not be included in a contract unless meeting one of the criteria in TEM, Section 120-4.    Where a single item is specified, a request and justification shall be submitted by the maintaining agency to the Office of Traffic Engineering (OTE) with a copy to the appropriate District. The request contents shall be in accordance with TEM, Section 120-4." | If needed, per project. | 1 | 2 |  |  |
| 2.3.D.D - Documentation of alternate bid considerations for lighting equipment | | "The alternate bid procedure has been established to permit a local agency to obtain a specific brand, feature or design of traffic control or lighting device for use on a project.    Submit an alternate bid request in accordance with TEM, Section 120-7." | If needed, per project. | 1 | 2 |  |  |
| 2.3.H.D - Determine Lighting needs - investigate warrants | | "Lighting warrants for freeway and interchange lighting are based on the need for highway lighting and the benefits derived from lighting.    Evaluate warrants according to the Traffic Engineering Manual, Section 1103.    See attached file for lighting items that should be considered during the development of the scope of services." | If needed, per project. Assume volume data and crash data are available or provided by others. | 4 | 16 | 20 |  |
|  | |  |  |  |  |  |  |
| 2.7.I - Lighting Plans | | This task includes items necessary for lighting plans during Stage 1 project development. Includes QA/QC. | HL for Stage 1 usually only looks at ROW needs for power, control centers, tower or poles locations that need ROW. Minimal effort. |  | 5 | 8 |  |
|  | |  |  |  |  |  |  |
| **3.3.F - Lighting Plan** | |  |  |  |  |  |  |
| 3.3.F.A - Lighting Analysis | | Perform photometric lighting analysis and calculations in accordance with the TEM Section 1140. | Per project. | 2 | 12 | 12 | 4 |
| 3.3.F.B - Power/Circuit Layout & Details | | Develop power/circuit layout and details.Refer to TEM, Section 1100. | Per sheet. | 1 | 4 | 8 | 8 |
| 3.3.F.C - Lighting Plan and Details | | Lighting plans should be prepared in accordance with the Traffic Engineering Manual, Section 1100.  See TEM, Section 1141 for Stage 2 submittal requirements. | Per sheet. | 1 | 6 | 12 | 12 |
| 3.3.F.D - Voltage Drop Calculations | | Perform voltage drop calculations in accordance with the TEM Section 1140. | Per circuit. | 2 | 3 | 6 |  |
| 3.3.F.E - Power Service | | This task includes items necessary for lighting power service including coordination with utility companies. Includes QA/QC. | Per job. | 1 | 6 | 2 |  |
|  | |  |  |  |  |  |  |
| **4.2.A - Quantities and Notes - Lighting** | |  |  |  |  |  |  |
| 4.2.A.K - Lighting Subsummary | | Determine quantities and prepare subsummary. | Per subsummary sheet. | 1 | 4 | 8 | 4 |
| 4.2.A.R - Lighting Notes | |  | Per sheet. | 1 | 6 | 12 | 4 |
|  | |  |  |  |  |  |  |
| **4.2.E – Lighting Plans** | |  |  |  |  |  |  |
| 4.2.E.A - Lighting Details | | Prepare elevation views for light towers. Lighting plans should be prepared in accordance with the Traffic Engineering Manual, Section 1100.  See TEM, Section 1141 for Stage 3 submittal requirements. | Per sheet. Assumes 6 elevations per sheet. | 1 | 6 | 12 | 18 |
| 4.2.E.B - Lighting Details – Underpass Lighting | | Prepare underpass lighting details. Lighting plans should be prepared in accordance with the Traffic Engineering Manual, Section 1100.  See TEM, Section 1141 for Stage 3 submittal requirements. This task includes QA/QC of stage 3 lighting plans. | Per sheet. | 2 | 10 | 16 | 12 |

**Medium -** hours are included in table below for each Task identified in Lighting

For a medium level project, it is assumed that the project is a larger and more complex project (typically a Path 2, 3 or 4).

Projects in the medium category include diamond interchanges or other interchange types using high mast light towers or conventional light poles, lighting on an interstate or roadway with 1-2 control centers, continuous freeway lighting one mile or less and other projects that would be considered under the complex highway lighting category.

Prepare plans. Assume (3) round of reviews.

|  |  |  | **Hours of Personnel Assigned Per Task\*** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | | **Description/Level of Effort** | **Unit** | **Medium - Path 2, 3 or 4** | | | |
|  | |  |  | **PM** | **SE** | **PE / SM** | **EI / Tech** |
|  | |  |  |  |  |  |  |
| 2.3.D.B - Documentation of Proprietary Bid Justification - Lighting | | "Patented or proprietary materials, specifications, or processes shall not be included in a contract unless meeting one of the criteria in TEM, Section 120-4.    Where a single item is specified, a request and justification shall be submitted by the maintaining agency to the Office of Traffic Engineering (OTE) with a copy to the appropriate District. The request contents shall be in accordance with TEM, Section 120-4." | If needed, per project. | 1 | 3 |  |  |
| 2.3.D.D - Documentation of alternate bid considerations for lighting equipment | | "The alternate bid procedure has been established to permit a local agency to obtain a specific brand, feature or design of traffic control or lighting device for use on a project.    Submit an alternate bid request in accordance with TEM, Section 120-7." | If needed, per project. | 1 | 3 |  |  |
| 2.3.H.D - Determine Lighting needs - investigate warrants | | "Lighting warrants for freeway and interchange lighting are based on the need for highway lighting and the benefits derived from lighting.    Evaluate warrants according to the Traffic Engineering Manual, Section 1103.    See attached file for lighting items that should be considered during the development of the scope of services." | If needed, per project. Assume volume data and crash data are available or provided by others. | 4 | 20 | 25 |  |
|  | |  |  |  |  |  |  |
| 2.7.I - Lighting Plans | | This task includes items necessary for lighting plans during Stage 1 project development. This task includes QA/QC of ODOT Stage 1 lighting plans. | HL for Stage 1 usually only looks at ROW needs for power, control centers, tower or poles locations that need ROW. Minimal effort. |  | 7 | 12 |  |
|  | |  |  |  |  |  |  |
| **3.3.F - Lighting Plan** | |  |  |  |  |  |  |
| 3.3.F.A - Lighting Analysis | | Perform photometric lighting analysis and calculations in accordance with the TEM Section 1140. | Per project. | 2 | 16 | 16 | 6 |
| 3.3.F.B - Power/Circuit Layout & Details | | Develop power/circuit layout and details.Refer to TEM, Section 1100. | Per sheet. | 1 | 6 | 12 | 12 |
| 3.3.F.C - Lighting Plan and Details | | Lighting plans should be prepared in accordance with the Traffic Engineering Manual, Section 1100.  See TEM, Section 1141 for Stage 2 submittal requirements. | Per sheet. | 1 | 7 | 16 | 14 |
| 3.3.F.D - Voltage Drop Calculations | | Perform voltage drop calculations in accordance with the TEM Section 1140. | Per circuit. | 2 | 4 | 9 |  |
| 3.3.F.E - Power Service | | This task includes items necessary for lighting power service including coordination with utility companies. This task includes QA/QC of ODOT Stage 2 lighting plans. | Per job. | 2 | 9 | 3 |  |
|  | |  |  |  |  |  |  |
| **4.2.A - Quantities and Notes - Lighting** | |  |  |  |  |  |  |
| 4.2.A.K - Lighting Subummary | | Determine quantities and prepare subsummary. | Per subsummary sheet. | 1 | 5 | 10 | 5 |
| 4.2.A.R - Lighting Notes | |  | Per sheet. | 1 | 9 | 14 | 4 |
|  | |  |  |  |  |  |  |
| **4.2.E – Lighting Plans** | |  |  |  |  |  |  |
| 4.2.E.A - Lighting Details | | Prepare elevation views for light towers. Lighting plans should be prepared in accordance with the Traffic Engineering Manual, Section 1100.  See TEM, Section 1141 for Stage 3 submittal requirements. | Per sheet. Assumes 6 elevations per sheet. | 1 | 6 | 12 | 18 |
| 4.2.E.B - Lighting Details – Underpass Lighting | | Prepare underpass lighting details. Lighting plans should be prepared in accordance with the Traffic Engineering Manual, Section 1100.  See TEM, Section 1141 for Stage 3 submittal requirements. This task includes QA/QC of stage 3 lighting plans. | Per sheet. | 2 | 13 | 20 | 14 |

**High -** hours are included in table below for each Task identified in Lighting

For a high level project, it is assumed that the project is a large and complex project (typically a Path 4 or 5).

Projects in the high category include diamond interchanges or other interchange types using high mast light towers or a combination of high mast light towers and low mast / conventional light poles, lighting at systems interchanges, lighting on an interstate or roadway with multiple control centers, continuous freeway lighting one mile or more and other projects that would be considered under the complex highway lighting category.

Prepare plans. Assume (3) round of reviews.

|  |  |  | **Hours of Personnel Assigned Per Task\*** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | | **Description/Level of Effort** | **Unit** | **High - Path 4 or 5** | | | |
|  | |  |  | **PM** | **SE** | **PE / SM** | **EI / Tech** |
| **2.3 - AER Design** | | **Lighting** |  |  |  |  |  |
| 2.3.D.B - Documentation of Proprietary Bid Justification - Lighting | | "Patented or proprietary materials, specifications, or processes shall not be included in a contract unless meeting one of the criteria in TEM, Section 120-4.    Where a single item is specified, a request and justification shall be submitted by the maintaining agency to the Office of Traffic Engineering (OTE) with a copy to the appropriate District. The request contents shall be in accordance with TEM, Section 120-4." | If needed, per project. | 2 | 4 |  |  |
| 2.3.D.D - Documentation of alternate bid considerations for signal and lighting equipment | | "The alternate bid procedure has been established to permit a local agency to obtain a specific brand, feature or design of traffic control or lighting device for use on a project.    Submit an alternate bid request in accordance with TEM, Section 120-7." | If needed, per project. | 2 | 4 |  |  |
| 2.3.H.D - Determine Lighting needs - investigate warrants | | "Lighting warrants for freeway and interchange lighting are based on the need for highway lighting and the benefits derived from lighting.    Evaluate warrants according to the Traffic Engineering Manual, Section 1103.    See attached file for lighting items that should be considered during the development of the scope of services." | If needed, per project. Assume volume data and crash data are available or provided by others. | 4 | 24 | 30 |  |
|  | |  |  |  |  |  |  |
| 2.7.I - Lighting Plans | | This task includes items necessary for lighting plans during Stage 1 project development. This task includes QA/QC of ODOT Stage 1 lighting plans. | HL for Stage 1 usually only looks at ROW needs for power, control centers, tower or poles locations that need ROW. Minimal effort. |  | 9 | 16 |  |
|  | |  |  |  |  |  |  |
| **3.3.F - Lighting Plan** | |  |  |  |  |  |  |
| 3.3.F.A - Lighting Analysis | | Perform photometric lighting analysis and calculations in accordance with the TEM Section 1140. | Per project. | 2 | 20 | 20 | 8 |
| 3.3.F.B - Power/Circuit Layout & Details | | Develop power/circuit layout and details.Refer to TEM, Section 1100. | Per sheet. | 1 | 8 | 16 | 16 |
| 3.3.F.C - Lighting Plan and Details | | Lighting plans should be prepared in accordance with the Traffic Engineering Manual, Section 1100.  See TEM, Section 1141 for Stage 2 submittal requirements. | Per sheet. | 1 | 8 | 20 | 16 |
| 3.3.F.D - Voltage Drop Calculations | | Perform voltage drop calculations in accordance with the TEM Section 1140. | Per circuit. | 2 | 6 | 12 |  |
| 3.3.F.E - Power Service | | This task includes items necessary for lighting power service including coordination with utility companies. This task includes QA/QC of ODOT Stage 2 lighting plans. | Per job. | 2 | 12 | 4 |  |
|  | |  |  |  |  |  |  |
| **4.2.A - Quantities and Notes - Lighting** | |  |  |  |  |  |  |
| 4.2.A.K - Lighting Subsummary | | Determine quantities and prepare subsummary. | Per subsummary sheet. | 1 | 6 | 12 | 6 |
| 4.2.A.R - Lighting Notes | |  | Per sheet. | 1 | 12 | 16 | 4 |
|  | |  |  |  |  |  |  |
| **4.2.E – Lighting Plans** | |  |  |  |  |  |  |
| 4.2.E.A - Lighting Details | | Prepare elevation views for light towers. Lighting plans should be prepared in accordance with the Traffic Engineering Manual, Section 1100.  See TEM, Section 1141 for Stage 3 submittal requirements. | Per sheet. Assumes 6 elevations per sheet. | 1 | 6 | 12 | 18 |
| 4.2.E.B - Lighting Details – Underpass Lighting | | Prepare underpass lighting details. Lighting plans should be prepared in accordance with the Traffic Engineering Manual, Section 1100.  See TEM, Section 1141 for Stage 3 submittal requirements. This task includes QA/QC of stage 3 lighting plans. | Per sheet. | 2 | 16 | 24 | 16 |

# Traffic Control

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) a standard scope is provided. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.7.A.N - Traffic Control | mile | 22 | 46 | 71 | 1 |
| **3.3.C - Traffic Control** |  |  |  |  | 1 |
| 3.3.C.A -Pavement Marking Plan | mile | 16 | 21 | 25 | 1 |
| 3.3.C.B - Signing Plan | mile | 39 | 59 | 81 | 1 |
| **4.2.A - Quantities and Notes** |  |  |  |  | 1 |
| 4.2.A.F - Pavement Marking Subsummary | mile | 21 | 41 | 67 | 1 |
| 4.2.A.G - Signing Subsummary | mile | 12 | 27 | 42 | 1 |
| **4.2.C - Signing Plans** |  |  |  |  |  |
| 4.2.C.A – Signing Plans | mile | 11 | 19 | 26 | 1 |
| 4.2.C.B - Elevation View of Major Signs | sign str. | 6 | 9 | 11 | 1 |
| 4.2.C.C - SignCAD | sign str. | 4 | 5 | 6 | 1 |
|  |  |  |  |  |  |

**Note:**

**Scope and Detail Hours**

|  |  |
| --- | --- |
| **Personnel** | **Acronym used below** |
| Project Manager / Project Executive | PM |
| Senior Engineer | SE |
| Project Engineer / Survey Manager | PE / SM |
| Engineer Intern / Technician | EI / Tech |

1. **Traffic Control**

**Low** hours are included in table below for each Task identified in Traffic Control

"For a low level project, it is assumed that the project is a simple, straightforward project (typically a Path 1 or 2).

A low level project is typically in a rural setting or a township or village. Two / three lane roadways, rural freeways, and intersection designs are straightforward. Access management issues are minimal. Signing and pavement markings are typically limited and simple in design and quantities.

Prepare plans. Assume (3) round of reviews.

|  |  |  | **Hours of Personnel Assigned Per Task\*** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | | **Description/Level of Effort** | **Unit** | **Low - Path 1 or 2** | | | |
|  | |  |  | **PM** | **SE** | **PE / SM** | **EI / Tech** |
| **2.7 Stage 1 Design** | |  |  |  |  |  |  |
| 2.7.A.N - Traffic Control | | This task includes items necessary for traffic control plans during Stage 1 project development (i.e. preliminary pavement markings and / or signing plans). This task includes QA/QC of ODOT Stage 1 traffic control plans. | Per Mile | 2 | 4 | 4 | 12 |
| **3.3 Stage 2** | |  |  |  |  |  |  |
| **3.3.C - Traffic Control** | | This task includes items necessary for traffic control items during Stage 2 project development. |  |  |  |  |  |
| 3.3.C.A -Pavement Marking Plan | | Develop pavement marking plan in accordance with the Traffic Engineering Manual, Section 340 and Section 341.Typically, pavement markings are shown on the same sheet as Signing.Show the following:- Location of pavement edges, number of lanes, speed change lanes, transitions, raised medians and all structures. Lane widths if other than 12 feet (3.7 meters).- Directional arrows (one per lane) indicating the number of lanes.- Pavement marking at merging, diverging or intersecting roadways. Show painted gores for merging and diverging roadways. Show auxiliary markings. | Per Mile | 1 | 3 | 5 | 7 |
| 3.3.C.B - Signing Plan | | Stage 2 Signing Plan should include the following in accordance with TEM, Section 240  - Location of pavement edges, number of lanes, lane widths if other than 12 feet, speed change lanes, transitions, raised medians and all structures. - Location of existing signing; and existing sign legends at each location. - Directional arrows (one per lane) indicating the number of lanes. - Location of proposed signing. - Proposed sign legends at each location - Level of signing proposed, ground mounted or overhead. - Size of signs. - Sign code numbers. - Legend for symbols used. - Guardrail locations. - SignCAD files on CD showing detailed designs for all designable guide signs, with positive contrast legends of Clearview font. See the TEM, Sections 100 and 200 for additional information.  This task includes QA/QC of ODOT Stage 2 traffic control plans. | Per Mile | 2 | 5 | 6 | 26 |
| **4.2 - Stage 3 Detailed Design Plans** | |  |  |  |  |  |  |
| 4.2.A.F - Pavement Marking Subsummary | | Determine quantities and prepare subsummary. Include Delineator locations (Table), Raised Pavement Marker locations (Table), Barrier Reflector locations (Table), and Object Marker locations (Table). Plan notes are included here. | Per Mile | 1 | 3 | 5 | 12 |
| 4.2.A.G - Signing Subsummary | | Determine quantities and prepare subsummary. | Per Mile |  | 2 | 10 |  |
| 4.2.C.A - Signing Plans | | This task includes development of Stage 3 Signing Plans. This task includes QA/QC of ODOT Stage 3 traffic control plans. | Per Mile |  | 2 | 5 | 4 |
| 4.2.C.B - Elevation View of Major Signs | | Prepare elevation views for major guide signs in accordance with TEM, Section 240. | Per Sign Str. |  | 1 | 1 | 4 |
| 4.2.C.C - SignCAD | | Develop sign designs using SignCAD for interstate signs, street name signs and special signs if needed. | Per Sign Str. |  | 1 | 1 | 2 |

**Medium -** hours are included in table below for each Task identified in Traffic Control

For a medium level project, it is assumed that the project is a larger and more complex project (typically a Path 2, 3 or 4)

A medium level project is typically in an urban setting. Multi-lane roadways, urban freeways, and intersection designs are more complex. Access management issues are moderate. Signing and pavement markings are typically simple to moderate in design and quantities.

Prepare plans. Assume (3) round of reviews

|  |  |  | **Hours of Personnel Assigned Per Task\*** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | | **Description/Level of Effort** | **Unit** | **Medium- Path 2, 3 or 4** | | | |
|  | |  |  | **PM** | **SE** | **PE / SM** | **EI / Tech** |
| **2.7 Stage 1 Design** | |  |  |  |  |  |  |
| 2.7.A.N - Traffic Control | | This task includes items necessary for traffic control plans during Stage 1 project development (i.e. preliminary pavement markings and / or signing plans). This task includes QA/QC of ODOT Stage 1 traffic control plans. | Per Mile | 2 | 8 | 6 | 30 |
| **3.3 Stage 2** | |  |  |  |  |  |  |
| **3.3.C - Traffic Control** | | This task includes items necessary for traffic control items during Stage 2 project development. |  |  |  |  |  |
| 3.3.C.A -Pavement Marking Plan | | Develop pavement marking plan in accordance with the Traffic Engineering Manual, Section 340 and Section 341.Typically, pavement markings are shown on the same sheet as Signing.Show the following:- Location of pavement edges, number of lanes, speed change lanes, transitions, raised medians and all structures. Lane widths if other than 12 feet (3.7 meters).- Directional arrows (one per lane) indicating the number of lanes.- Pavement marking at merging, diverging or intersecting roadways. Show painted gores for merging and diverging roadways. Show auxiliary markings. | Per Mile | 1 | 4 | 7 | 9 |
| 3.3.C.B - Update Signing Plan | | Stage 2 Signing Plan should include the following in accordance with TEM, Section 240: - Location of pavement edges, number of lanes, lane widths if other than 12 feet, speed change lanes, transitions, raised medians and all structures. - Location of existing signing; and existing sign legends at each location. - Directional arrows (one per lane) indicating the number of lanes. - Location of proposed signing. - Proposed sign legends at each location - Level of signing proposed, ground mounted or overhead. - Size of signs. - Sign code numbers. - Legend for symbols used. - Guardrail locations. - SignCAD files on CD showing detailed designs for all designable guide signs, with positive contrast legends of Clearview font. See the TEM, Sections 100 and 200 for additional information.  This task includes QA/QC of ODOT Stage 2 traffic control plans. | Per Mile | 3 | 6 | 6 | 44 |
| **4.2 - Stage 3 Detailed Design Plans** | |  |  |  |  |  |  |
| 4.2.A.F - Pavement Marking Subsummary | | Determine quantities and prepare subsummary. Include Delineator locations (Table), Raised Pavement Marker locations (Table), Barrier Reflector locations (Table), and Object Marker locations (Table). | Per Mile | 3 | 4 | 7 | 27 |
| 4.2.A.G - Signing Subsummary | | Determine quantities and prepare subsummary. | Per Mile |  |  | 4 | 23 |
| 4.2.C.A - Signing Plans | | This task includes development of Stage 3 Signing Plans. This task includes QA/QC of ODOT Stage 3 traffic control plans. | Per Mile | 1 | 7 | 5 | 6 |
| 4.2.C.B - Elevation View of Major Signs | | Prepare elevation views for major guide signs in accordance with TEM, Section 240. | Per Sign Str. |  | 1 | 2 | 6 |
| 4.2.C.C - SignCAD | | Develop sign designs using SignCAD for interstate signs, street name signs and special signs if needed. | Per Sign Str. |  | 1 | 1 | 3 |
|  | |  |  |  |  |  |  |

**High -** hours are included in table below for each Task identified in Traffic Control

"For a high level project, it is assumed that the project is a larger and more complex project (typically a Path 4 or 5)

A high level project is in an urban setting with dense population / development. Multi-lane roadways, urban freeways, and intersection /roundabout / interchange designs are complex and often involve unique design applications (MSE walls, closely spaced bridges and interchanges, and complex access management issues.) Signing can be extensive. Pavement markings are typically moderate to complex in design and quantities.

Prepare plans. Assume (3) round of reviews.

|  |  |  | **Hours of Personnel Assigned Per Task\*** | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | | **Description/Level of Effort** | **Unit** | **High- Path 4 or 5** | | | |
|  | |  |  | **PM** | **SE** | **PE / SM** | **EI / Tech** |
| **2.7 Stage 1 Design** | |  |  |  |  |  |  |
| 2.7.A.N - Traffic Control | | This task includes items necessary for traffic control plans during Stage 1 project development (i.e. preliminary pavement markings and / or signing plans). This task includes QA/QC of ODOT Stage 1 traffic control plans. | Per Mile | 2 | 11 | 8 | 50 |
| 3.3 Stage 2 | |  |  |  |  |  |  |
| **3.3.C - Traffic Control** | | This task includes items necessary for traffic control items during Stage 2 project development. |  |  |  |  |  |
| 3.3.C.A -Pavement Marking Plan | | Develop pavement marking plan in accordance with the Traffic Engineering Manual, Section 340 and Section 341.Typically, pavement markings are shown on the same sheet as Signing.Show the following:- Location of pavement edges, number of lanes, speed change lanes, transitions, raised medians and all structures. Lane widths if other than 12 feet (3.7 meters).- Directional arrows (one per lane) indicating the number of lanes.- Pavement marking at merging, diverging or intersecting roadways. Show painted gores for merging and diverging roadways. Show auxiliary markings. | Per Mile | 2 | 5 | 8 | 10 |
| 3.3.C.B - Signing Plan | | Stage 2 Signing Plan should include the following in accordance with TEM, Section 240: - Location of pavement edges, number of lanes, lane widths if other than 12 feet, speed change lanes, transitions, raised medians and all structures. - Location of existing signing; and existing sign legends at each location. - Directional arrows (one per lane) indicating the number of lanes. - Location of proposed signing. - Proposed sign legends at each location - Level of signing proposed, ground mounted or overhead. - Size of signs. - Sign code numbers. - Legend for symbols used. - Guardrail locations. - SignCAD files on CD showing detailed designs for all designable guide signs, with positive contrast legends of Clearview font. See the TEM, Sections 100 and 200 for additional information.  This task includes QA/QC of ODOT Stage 2 traffic control plans. | Per Mile | 4 | 8 | 7 | 62 |
| **4.2 - Stage 3 Detailed Design Plans** | |  |  |  |  |  |  |
| 4.2.A.F - Pavement Marking Subsummary | | Determine quantities and prepare subsummary. Include Delineator locations (Table), Raised Pavement Marker locations (Table), Barrier Reflector locations (Table), and Object Marker locations (Table). | Per Mile | 4 | 5 | 10 | 48 |
| 4.2.A.G - Signing Subsummary | | Determine quantities and prepare subsummary. | Per Mile |  |  | 6 | 36 |
| 4.2.C.A - Signing Plans | | This task includes development of Stage 3 Signing Plans. This task includes QA/QC of ODOT Stage 3 traffic control plans. | Per Mile | 1 | 12 | 5 | 8 |
| 4.2.C.B - Elevation View of Major Signs | | Prepare elevation views for major guide signs in accordance with TEM, Section 240. | Per Sign Str. |  | 1 | 2 | 8 |
| 4.2.C.C - SignCAD | | Develop sign designs using SignCAD for interstate signs, street name signs and special signs if needed. | Per Sign Str. |  | 1 | 2 | 3 |

# Geotechnical Services

|  |
| --- |
| Use this estimating guide for development of fee. ….Low, Medium and High……..  For each level of effort (Low, Medium, High) cost drivers have been identified. If a project's scope exceeds these thresholds, then additional work hours will be needed and will be assigned on a project-specific basis. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 1.2.C.B - Identify Geotechnical Issues |  |  |  |  | 1 |
| 2.7.D.A - Geotechnical Services and Report: |  |  |  |  | 2 |
| RECONNAISSANCE AND PLANNING (5%) |  |  |  |  | 2 |
| FIELD COORDINATION (5%) |  |  |  |  | 2 |
| Logging (if drilling is subcontracted) (NA) |  |  |  |  | 2 |
| FIELD EXPLORATION (45%) |  |  |  |  | 2 |
| LABORATORY TESTING (20%) |  |  |  |  | 2 |
| GEOTECHNICAL EXPLORATION REPORT (25%) |  |  |  |  | 2 |
|  |  |  |  |  |  |

**Note:**

Average cost for geotechnical engineering services per foot of drilling **$134 per foot**

|  |  |
| --- | --- |
| **Total Drilling (ft)** | **Typical cost rate range\*** |
| > 500 | $100 to $150 per foot |
| 150 - 500 | $100 to $175 per foot |
| < 150 | $125 to $250 per foot, $25,000 maximum |

\*Typical cost range for project that includes all tasks, Reconnaissance and Planning, Field Coordination, Field Exploration, Laboratory Testing and Geotechnical Exploration Report, performed in accordance with the SGE

1. **1.2.C.B - Identify Geotechnical**

See Red Flag Summary in Note 2 below.

1. **2.7.D.A - Geotechnical Services and Report:**

Guidelines follow ODOT’s Office of Geotechnical Engineering fee proposal format.

| **Task** | **Cost Drivers** | **How to Measure** |
| --- | --- | --- |
| **RED FLAG SUMMARY**  Literature Search  Interviews  Site Visit  Report | None; Task will typically be performed by ODOT, and will be removed from the Geotechnical task list in the future. | * N/A |
| **RECONNAISSANCE AND PLANNING (5%)**  Office Reconnaissance  Field Reconnaissance  Exploration Plan | * Size of project * Access to and amount of historic data * Complex, inconsistent, or problematic geology * Geometry complexities * Potential for geohazards (landslides, rock fall, AUM, shoreline erosion, karst, etc.) * Need for start-up and/or site meetings; are they planned? | * 5% to 10% of total cost * 5% on larger or less complex projects * 10% on smaller or more complex projects |
| **FIELD COORDINATION (5%)** | * Urban Setting * Difficult utility clearance * Site access difficulties (right of entry for RR, dozer needs, drill pad construction) * Right of entry on private property * Need for permit(s) * Damage reports * Damage repairs * Traffic control complexity * Senior employee may be required for:   + Communications with client/public   + Review/sign agreement | * 5 to 10% of total cost |
| **Logging (if drilling is subcontracted) (NA)** |  | * 10% of total cost if drilling is subcontracted |
| **FIELD EXPLORATION (45%)**        Mobilization/Demobilization    Traffic Maintenance      Subsurface Exploration        Pavement cores      Undisturbed samples    Rock core  Boring Sealing      Instrumentation    Direct Costs | 1. Truck rig (less cost) versus ATV rig (more cost) 2. Distance to site (greater than/less than 50 miles) 3. Need to remobilize (more than 1 day) 4. Need to mobilize multiple rigs/crews to site      1. Night versus day 2. Interstate versus state route 3. Set-up type        1. Drilling mount (truck-most common, barge, skid) 2. Sample intervals more frequent sampling = more cost 3. Boring depth (>50 feet) 4. Difficult drilling conditions (artesian, peat, cobbles, boulders, heaving sand, mine spoil, etc.) 5. Type of drilling necessary (auger - most common, mud-rotary, roller bit) 6. Night drilling 7. boring access (off road, distance between holes, uneven ground, large elevation changes) water hauling and/or pumping, if necessary 8. Restricted drilling hours      1. diameter of core 2. pavement versus bridge deck 3. thickness of core 4. Condition of the core      1. No cost drivers discussed 2. No cost drivers discussed        1. Depth of boring (>50 feet) 2. Access to water (requires travel from the boring) 3. Geology 4. Seal required      1. No cost drivers discussed        1. No cost drivers discussed 2. Pass through costs | * Between 40% and 50% of total costs * 30% to 40% of total cost if logging is subcontracted * Cost range = $500 - $2500 * No measure recommended - pass through cost * Proposal must include at least one quote * Cost range for soil drilling = $12 to $26/foot * Cost range for cores = $150-$250/core * Cost range of $50 - $100 * Cost range of $40-$50/foot      * Cost range of $5-$8 per foot * Backfilling (if sealing is not required) is part of drilling cost per foot * Inclinometers - $25/foot * No other instrumentation unit costs recommended * Cost range for Dozer and Operator = $100 to $200/hr * Cost range for site restoration = $100 to $200/site |
| **LABORATORY TESTING (20%)** | Test quantities and types (engineering judgment) | * Between 15% and 25% of total cost |
| **GEOTECHNICAL EXPLORATION REPORT (25%)**  Subgrade and Roadway  Bridge  Other Structures (describe)  Geohazard (describe) | * Geology (weak and/or compressible soil, deep * bedrock, adverse groundwater) * Geohazards (landslides, rock falls, voids, mining) * Presence of uncontrolled fill and debris * Ground improvements * Size and Path * Number of structures * Alternate foundation type recommendations * Multiple wall type considerations * Depth of borings * Meetings * Stability analyses, model complexity * Construction MOT schemes | * Between 20% and 30% of total cost * Create worksheet within proposal to break hours down by anticipated efforts/activity * 2-3 hours per boring for boring logs * Soil profile sheets - 4 hours per sheet |

# Structures

|  |
| --- |
| These hours are for standard bridge types used in Ohio. These hours do not apply to historic bridges, arch bridges, lift bridges, cable supported bridges, or segmental bridges. These hours are not appropriate for bridge overlay projects. Use these hours with caution for bridge rehabilitation projects as they may not be representative of the level of effort needed to produce a biddable set of plans. Estimating Stage 2 bridge design hours using sheet count requires knowing the type of bridge that will be designed, which may require a two-step negotiation. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 2.5.D.A - Bridge Structure Type Study (break out each bridge separately) | bridge | 250 | 400 | 500+ | 2 |
| 2.7.E - Retaining Wall Plans | sheet | 35 | 50 | 65 | 3 |
| 2.7.F - Structures - Design Report |  |  |  |  |  |
| 2.7.F.A - Bridge Design Report | report | 70 | 130 | 200+ | 4 |
| 2.7.F.B - Final Structure Site Plan | sheet | 24 | 24 | 24 | 5 |
| 2.7.F.C – Supplemental Site Plan for Railroad Crossing | bridge | 80 | 120 | 160 | 6 |
| 3.3.I.A - Bridge Plans (break out for each bridge separately) | sheet | 35-40 | 45-50 | 55-60+ | 7 |
| 3.3.I.B - Structure Rating | bridge | 16 | 30 | 40+ | 8 |
| 3.8.C – Structures Costs | bridge | 40 | 60 | 100+ | 9 |
| 4.2.A.N – Bridge Estimated Quantities Sheet | bridge | 16 |  | 24 | 10 |
| 4.2.A.O – Reinforcing Steel Schedule | sheet | 32 | 32 | 32 | 11 |
| 4.2.A.S – Bridge General Notes | sheet | 8 | 8 | 8 | 12 |
| 4.3.C – Structures Costs | estimate | 16 | 16 | 16 | 13 |
|  |  |  |  |  |  |

**Note:**

1. **Not Used**
2. **2.5.D.A - Bridge Structure Type Study (break out each bridge separately)**

Determine proposed structure type. If there is a left and right structure with the same spans and skews, count as one bridge for this task. A left and right horizontally curved bridge, count as two bridges for this task. These hours do not apply to bridge overlay projects, minor bridge rehabilitations, or deck replacement projects.

**Hours are manhours for each bridge**

**Low** - small span - Primary determination is culvert or single span bridge. All bridges rehabilitations scoped for superstructure replacement and retention of existing substructure.

**Medium** - 4 spans or less. Maximum span length less than 130 ft. Small number of options for locations of substructure units. Steel & concrete beams are options.

**High** - 5 spans or more. Maximum span length is greater than 150 ft. Span configurations are numerous. Steel & concrete superstructure types are available.

1. **2.7.E - Retaining Wall Plans**

Supply a sheet description and sheet count for all retaining walls. Indicate the type of wall for each location. Use weighted average for hours/sheet if multiple wall types will be included in a set of plans.

**Hours are manhours per sheet**

**Low** – Walls are MSE walls

**Medium** - Cantilever type walls

**High** - Walls are predominately tied back

1. **2.7.F. A- Structures - Design Report**

Prepare and submit the report per 202.2 of BDM

**Hours are manhours for each report**

**Low** – No staged construction. Bridge constructed using a detour.

**Medium** – Bridge constructed in stages.

**High** – Bridge constructed in stages requiring temporary supports of the existing slab.

1. **2.7.F.B - Final Structure Site Plan**

Complete Site Plan.

**Hours are manhours for each Site Plan**

This task has no Low/Medium/High delineation. Hours for this task are a constant.

1. **2.7.F.C – Supplemental Site Plan for Railroad Crossing**

Provide per 202.2.4 of BDM

**Hours are manhours for each bridge**

**Low** – normal

**Medium** – limits of Site Plan would impact an adjacent bridge.

**High** – Multiple railroad owners are involved.

1. **3.3.I.A - Bridge Plans (break out for each bridge separately)**

Submit list of sheets for each bridge. Total Sheet Count should not include Site Plan(s), Estimated Quantities, and Reinforcing Steel List(s). Include sheets for any temporary works necessary for each bridge.

**Hours are manhours per sheet**

**Low** - Straight Bridge, less than 30 degree skew, single super-structure type, constant bridge width, Left and Right bridges with same spans and skew

**Medium** - Straight Bridge, less than 30 degrees skew, multiple super-structure type or variable bridge width

**High** - curved bridge or skew greater than 30 degrees, may have variable bridge width

1. **3.3.I.B - Structure Rating**

Load rate bridge per Section 900 BDM. If there is a Left and Right bridge pair with the same spans and skews, count as one bridge for this task.

**Hours are manhours for each bridge**

**Low** - Standard PCBars/Virtis compatible bridge

**Medium** - multiple structure types within bridge - all compatible with PCBars/Virtis

**High** - Structure type not compatible with PCBars/Virtis

1. **3.8.C – Structures Costs**

Prepare cost estimate

**Hours are manhours for each bridge.** If there is a left and right structure with the same spans and skews, count as one bridge for this task

**Low** – Standard ODOT Bridge. All quantities can be accounted for in the Estimator program.

**Medium** - Standard ODOT Bridge with special construction methods. Quantities are not accounted for in the Estimator program and co-ordination with ODOT is necessary.

**High** - Non-standard ODOT bridge. Quantities are not accounted for in the Estimator program and co-ordination with vendors/suppliers/contractors is necessary.

1. **4.2.A.N – Bridge Estimated Quantities Sheet**

Quantities should already have been calculated to attain cost estimate in item 3.8.C above. This task is to prepare the sheets.

**Hours are for each bridge**

**Low** – one sheet of quantities

**Medium** – No definition established for Medium.

**High –**two sheets of quantities

1. **4.2.A.O – Reinforcing Steel Schedule**

Reinforcing steel should already be designed. This task is to prepare the sheets.

**Hours are manhours per sheet**

This task has no Low/Medium/High delineation. Hours for this task are a constant.

1. **4.2.A.S – Update of Bridge General Notes**

Update only

**Hours are manhours per sheet**

This task has no Low/Medium/High delineation. Hours for this task are a constant.

1. **4.3.D – Structures Costs**

Update cost estimate only

**Hours are manhours for each estimate**

This task has no Low/Medium/High delineation. Hours for this task are a constant.

# Right of Way Plans

|  |
| --- |
| Use this estimating guide for development of fee ……….. Low, Medium, High….  Factors for hours will be based on the type of area, length of the project, the number of ownerships, number of legal descriptions, number of pins set and several other factors depending on the task. |

| **Task Number / Task name** | **Unit of Measure** | **Low** | **Medium** | **High** | **Note** |
| --- | --- | --- | --- | --- | --- |
| 3.1.K - Determine Right of Way Encroachments | sheet | 0.5 | 1 | 2 | 1 |
| 3.1.L - Determine Potential Right of Way from Railway | sheet |  |  |  | 2 |
| 3.4.A - Conceptual Right of Way Plan Review | sheet | 2 | 4 | 6 | 3 |
| 3.4.B.A - Legend Sheet | sheet |  | 10 | 12 | 4 |
| 3.4.B.B - Centerline Survey Plat | sheet | 16 | 20 | 24 | 5 |
| 3.4.B.C - Property Map | sheet | 20 | 26 | 32 | 6 |
| 3.4.B.D - Summary of Additional Right of Way | owner | 2 | 3 | 4 | 7 |
| 3.4.B.E - Detailed ROW Plan Sheets | sheet | 24 | 32 | 40 | 8 |
| 3.4.B.F - Special Plats | sheet | 32 | 40 | 48 | 9 |
| 3.4.B.G - Legal Descriptions and Closure Calculations | legal | 3 | 4.5 | 6 | 10 |
| 3.4.B.I - Field Review | sheet | 2 | 3 | 4 | 11 |
| 3.4.C.A Final Right of Way Plans | sheet | 2 | 2.5 | 3 | 12 |
| 3.4.C.B - Field Review & Verify Property Owners | sheet | 1 | 1.5 | 2 | 13 |
| 3.4.C.C - Record Centerline Plat and all appropriate documents | sheet |  |  |  | 14 |
| 3.4.C.D - Set R/W Pins after acquisition | hours/pin | 0.25 | 0.33 | 0.50 | 15 |
|  |  |  |  |  |  |

**Note:**

1. **3.1.K - Determine Right of Way Encroachments**

**Hours are manhours per sheet.**

**Low** – Rural area

**Medium** –Suburban area

**High** –Urban area

1. **3.1.L - Determine Potential Right of Way from Railway**

**Hours are manhours per sheet**

**Low** -

**Medium** -

**High** –

1. **3.4.A - Conceptual Right of Way Plan Review**

Much of this work is a part of the Preliminary Right of Way plan Development and shall be presented on the Right of Way Detail/Topo Sheets.

**Hours are manhours per sheet**.

**Low** -

**Medium** -

**High** -

1. **3.4.B.A - Legend Sheet**

NOTE: Do not pay for additional sheets. The work for creating an additional sheet should be reflected in the Low-Med-High

**Hours are manhours per sheet**

**Low** – N/A

**Medium** - Requires 1-2 surveyor certifications and requires 1-4 Utility List and Note.

**High** - Requires 3 or more surveyor certifications and requires 4 or more Utility List and Note OR requires 2 surveyor certification and requires 5 or more Utility List and Note.

1. **3.4.B.B - Centerline Survey Plat**

**Hours are manhours per sheet**

**Low** - Low: One sheet linear project with no intersection, minimal monuments set and/or reset, one centerline for construction & R/W.

**Medium** -Multiple sheets, realignment that may include an interchange and multiple centerlines.

**High** - New Alignment and/or realignment with multiple interchanges and numerous monuments set and reset.

1. **3.4.B.C - Property Map**

**Hours are manhours per sheet**

**Low** – Rural area, typically of culvert or bridge replacement project, no more than 10 property owners, one centerline for construction & R/W.

**Medium** –Suburban area, realignment with more than 10 property owners.

**High** – Urban area, new Alignment and/or realignment, urban area, with numerous property owners.

1. **3.4.B.D - Summary of Additional Right of Way**

**Hours are manhours per owner**

**Low** - Average of 2 APPN's and 2 types of takes per owner.

**Medium** - Average of 3 APPN's and 3 types of takes per owner, may have mineral rights, land contract, leases and encroachments.

**High** -Average of 4 APPN's or more and 4 types of takes per owner, will have one of the following mineral rights, land contract, leases and encroachments.

1. **3.4.B.E - Detailed ROW Plan Sheets**

ROW Detail sheets are based on 400 - 500' centerline per sheet.

**Hours are manhours per sheet**

**Low** - Rural area, minimal topography within the project limits “Path 2” type porject.

**Medium** - Suburban area, Residential, with some commercial and/or industrial.

**High** – Urban area, Dense residential, commercial and industrial.

1. **3.4.B.F - Special Plats**

**Hours are manhours per sheet**

**Low** – Rural area

**Medium** – Suburban area

**High** –Urban area

1. **3.4.B.G - Legal Descriptions and Closure Calculations**

**Hours are manhours per legal description**

**Low** - Standard legal description format following the ODOT manual, ORC 4733 and OAC 4733-37. Typically simple shaped descriptions such as triangular and rectangular.

**Medium** - County OR District Recording requirements above and beyond the requirements of the ODOT Manual, ORC 4733 and OAC 4733-37

**High** - County AND District Recording requirements above and beyond the requirements of the ODOT Manual, ORC 4733 and OAC 4733-37 and/or will involve Railroad parcel.

1. **3.4.B.I - Field Review**

**Hours are manhours per sheet**

**Low** –Rural area

**Medium** –Suburban area

**High** Urban area

1. **3.4.C.A - Final Right of Way Plans**

**Hours are manhours per sheet**

**Low** –Rural area

**Medium** –Suburban area

**High** –Urban area

1. **3.4.C.B - Field Review & Verify Property Owners**

**Hours are manhours per sheet**

**Low** – Rural area

**Medium** –Suburban area

**High** –Urban area

1. **3.4.C.C - Record Centerline Plat and all appropriate documents**

Will vary depending on county recorded in

**Hours are manhours per sheet**

**Low** -

**Medium** -

**High** -

1. **3.4.C.D - Set R/W Pins after acquisition**

**Hours are manhours per pin**

**Low** -Relatively flat terrain, little or no vegetation

**Medium** -Considerable amount of vegetation and/or uneven terrain

**High** -Rugged terrain and/or thick vegetation