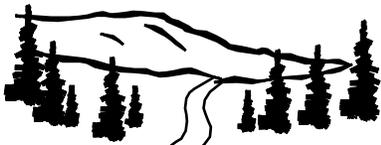


Region 5 Tech Center Quality Control Plan 2007



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Plan Model Outline

General

The Region 5 quality control plan is modeled after the flow of ODOT's project development process.

This document provides an overview of the Region 5 model. While policies, procedures, reporting structures and communication protocols are specified; the R5TC model recognizes that a more or less rigorous application of these guidelines is required depending on the size, complexity and political sensitivity of the project.

Quality Control Philosophy

Quality control is an ongoing deliberate process, planned and carried out by the provider of design services. It is based on adherence to 3 primary principles.

1. Prevent errors from being introduced. At least as much effort should be placed in preventing errors as in finding the errors later.
2. Ensure that errors are detected and corrected as early as possible. Therefore, quality controls, which include checking and back-checking procedures, must be implemented during all phases of the work.
3. Eliminate the causes of the errors as well as the errors themselves. By removing the cause, the quality process has been improved.

Areas of Focus

In order to adhere to these primary principles the characteristics of Quality Control need to be identified and organized so that they can be continuously applied and improved upon. The characteristics of the Region 5 plan are organized and presented below.

Training

Through training, we can ensure quality is done correctly the first time, by preventing problems and thus reacting to them. A well trained staff can prevent errors from being introduced.

- Training should support the goal that work is done correctly the first time.

- Quality is achieved by focusing on preventing problems or errors through training rather than by reacting to them.
- Quality is achieved by providing proper training of personnel and ensuring that all personnel remain current on the knowledge and skills needed for their position.

Resourcing

To achieve quality requires assigning the best qualified personnel to the project. The assignment of qualified personnel to conduct quality reviews ensures a true quality review.

- Quality is achieved by assigning qualified individuals to perform all work functions.
- Quality is ensured by arranging/resourcing peer reviews to be conducted by qualified personnel outside of the design team.

Management

Personnel management plays a role in quality, by resourcing the work, and instilling knowledge in the assigned personnel of the scope of their work and their role in the project. Management also, decides on the proper approach to the quality process on each project and documents that approach.

- Management controls quality by adequate planning, coordination, supervision, and technical direction; proper definition and a clear understanding of job requirements and procedures.
- Management instills in the design team a sense of ownership towards quality and continual process improvement.
- In order to ensure that the work product meets or exceeds ODOT expectations, Management makes certain that all personnel involved in performing the work have a clear understanding of the scope and intent of the overall project, and ensures appropriate design criteria and environmental constraints are applied.
- Management makes certain that all personnel involved in performing the work are aware of the project schedule, and understand the importance of meeting both intermediate milestones and final completion dates.
- Management ensures that the quality control process is documented properly, to the degree appropriate to each project.
- Management ensures that errors are detected and corrected as early as possible. Therefore, quality controls, which include checking and back-checking procedures, must be implemented during all phases of the work.

Review

- Quality is verified through checking, reviewing, and monitoring of work activities, with documentation by experienced, qualified individuals who are not directly responsible for performing the work.
- Reviewing ensures that errors are detected and corrected as early as possible. Therefore, quality controls, which include checking and back-checking procedures, must be implemented during all phases of the work.

Through review of work performed, quality is both verified and ensured. Reviews must be held as early as possible to ensure the quality.

Operational Protocols

Purpose

The purpose of outlining Operational Protocols is to clearly communicate a process that ensures that the R5TC Quality Control Plan:

- Produces high quality, cost effective products that meet the expectations of its customers.
- Meets or exceed all ODOT standards for project development activities.
- Adheres to the deliverables and schedule outlined herein.

Region 5 staff are committed to following this plan in the development of all in-house STIP projects.

General Procedures

- This document is divided into 6 sections corresponding to key project development milestones: Scoping, Approved Design, Plan Review, PS&E Submittal, Construction and Maintenance. Each of these milestones is described at the beginning of each section. Plan Review is further divided into Preliminary Contract Plan Review, Advance Contract Plan Review, and Final Contract Plan Review.
- Each section is divided into sub-sections representing the technical units in the Region 5 Technical Center (Roadway, Bridge/Geo/Environmental, Right of Way/ Survey and Traffic), the Area offices, Maintenance, and the Technical Center Manager. For each sub-section the “Products and Services” necessary to complete that milestone for each unit is listed. Who produces and reviews those products and services is clearly identified under the “Roles and Responsibilities” heading. How each unit and milestone is documented for quality control is also clearly identified.
- An organizational chart (Appendix) is provided that indicates a standardized review and communications process. It outlines roles and responsibilities as well as the individuals involved in these respective processes. Each process features a combination of internal and external review arranged through partnering with other Regions.

- A flow chart (Appendix) is provided that integrates the Agency project development procedure with R5TC quality control and TS quality assurance processes. The types and occurrences of review are shown at locations where we anticipate they will be engaged.
- The R5TC will utilize a Statement of Technical Review (STR) for each representative discipline (Appendix). Signatories will be the peer reviewer and reviewing manager. The STR ensures that products have navigated the QC process, that all comments are considered and accounted for and that the supervising manager indicates the product meets standards of the agency and the practice. One STR will be developed for each discipline on each project. It will suffice for all products produced in the discipline.
- All comments, issues, responses and resolutions developed as a result of review will be forwarded to the provider via the R5TC comments worksheet (Appendix). The worksheet for each individual project will be posted on a Region 5 server. Comments can be made by reviewers directly. Comments will be compiled and archived (on CD) by the provider and stored with the final plans set in permanent Region files.
- There will be a general limitation of review cycles. For example, if a product rolls up into a final product it will not necessarily require an independent sub-product review. Sub-product reviews will be at the discretion of the manager responsible for the product. The intent here is that managers will be close enough to the work to ensure that standard procedures and processes are in place and being utilized. Therefore final products will reflect quality procedures.
- A number of quality control checklists have been developed over time by many ODOT units. Staff will utilize these. New or updated lists will be developed as needed in conjunction with other Regions and TS. Checklists currently being used are included in the Appendix.

Scoping Phase

- The NE and SE Areas will ensure that scoping teams have the proper disciplines represented. Requests for staffing will be made to the Tech Center.
- Areas will maintain a complete list of scoping attendees on file.

- Areas will be responsible for completeness and accuracy of the prospectus. Appropriate funding is also an Area responsibility.

Design Alternatives Phase (interim product review)

- The purpose of review at this stage is to check methodology, strategy and design philosophy along with the interim product in question. Requests for interim product review will be submitted to the discipline manager. The discipline manager will determine the level and format of review required to meet the request. These may or may not be in compliance with the formalized format of the R5TC.

Approved Design Phase

- The purpose of Approved Design Review is to ensure that major features of the product have been identified, the final scope has been decided upon and the project is ready to move into detailed design. Requests for review at this stage will be submitted to the discipline manager. The discipline manager will determine the level and format of review required to meet the request. The Roadway designer will assemble Approved Design materials for review and acceptance by the Project Team.
- The provider shall respond to all comments and issues as part of the overall QC process. It is not possible or required that all comments or issues have been resolved to the reviewers satisfaction. However, the provider will respond to all comments with rationale as to why changes could not be made in every instance.
- The provider shall keep a record of all comments and responses provided during QC review in the project file. The recording medium will be in CD format.

Preliminary and Advanced Plans Phases

- Preliminary and Advanced Plans for Construction will be distributed to the appropriate technical discipline, district maintenance, and construction offices for a QC review to insure compliance with ODOT

standards and policies and to check for fatal flaws and or construction and staging issues.

- Each Provider shall respond to all comments and issues (in writing) raised by reviewers as part of the overall QC process.
- The reviewer shall acknowledge (in writing) that they have received responses to their comments.
- Changes made to plans as a result of comments received will be subject to review at the next review milestone.

Final Plans Phase (Ready for Submittal to PSE)

- Comments received at this point often require an addendum letter to fix any last minute errors, omissions, corrections, etc.
- All final reports, products and required deliverables will be on file with the appropriate R5TC discipline.
- Before advancement to PS&E peer and management reviewers will sign applicable Statement(s) of Technical Review (STR). The STR signifies that all intermediate and final QC reviews have been conducted in accordance with the QC plan and that there are no outstanding issues or comments associated with the plans, specifications and estimates.

Definitions

Quality

Is defined as the degree to which a product or service meets or exceeds a customer's requirements and expectations.

Quality Management

All activities of the overall management function that determine quality policy, objectives, and responsibilities, and implement them by means such as quality planning, quality assurance, quality control, and quality improvement within the system.

Quality Control (QC)

Refers to the operational activities put in place to control the quality of a product or service. These include such activities as providing clear decisions and directions, constant supervision by experienced individuals, immediate review of completed activities for accuracy and completeness, and accurate documentation of all decisions, assumptions, and recommendations. Quality control procedures, if followed, should ensure that the work is done correctly the first time. Essentially, QA is what the project manager does to confirm that a QC program is effective and provides feedback upon which further development of the QC program can be made.

Quality Assurance (QA)

Refers to the certainty that products and services meet the requirements for quality. The objective of quality assurance is the continual improvement of the total delivery process to enhance quality, productivity, and customer satisfaction. Essentially, quality assurance describes the process of enforcing quality control standards. When quality assurance is well-implemented, progressive improvement in terms of both reducing errors and omissions and increasing product usability and performance should be noted. Quality assurance should function as a "voice" for the customer, a reminder that the work product is intended for use by a customer.

Quality Control Plan

Is a comprehensive, well-defined, written set of procedures and activities aimed at delivering products that meet or exceed a customer's expectations, as expressed in contract documents and other published sources. A quality control plan will identify the organization or individuals responsible for quality control and the specific procedures used to ensure delivery of a quality product. A quality control

plan will also detail quality assurance measures and the method of accountability and required documentation.

Peer Review (PR)

Is an independent technical review of the product(s) developed for the project by each discipline. The review will be conducted by a peer that is not directly involved with the project and shall be independent of the final review and/or approval by the managing engineer or lead worker. Note that if a product rolls up into a final product it will not necessarily require an independent sub-product review.

Product Approval Review (PAR)

Is conducted by the managing engineer, lead worker responsible, or Engineer of Record (EOR) for the technical products produced within each discipline. For products developed and stamped by a Registered Professional, the managing engineer or lead worker shall signify review and approval of the product by signing the report. For products developed by an Engineer in training or other un-licensed person, the managing engineer or lead worker shall signify review and approval by stamping, certifying, or signing the product (as applicable).

PS&E

A scheduled milestone event wherein all elements of a project necessary for ODOT to advertise it for competitive low bid through Commission Services is complete. This includes, but is not limited to, the plan set, the specifications, a construction schedule, and the final PS&E estimate and confirmation that needed permitting and funding is in place.

Quality Control Plan



Section 1.0 Scoping

1.0 Scoping

1.1 Roadway Design Unit

The Roadway design Unit's role in the scoping phase is to provide geometric design, hydraulics and utility expertise in the development of probable design solutions, staging options and the relocation of in-conflict utility facilities. The Roadway Design Unit prepares a project narrative, and compiles the total project cost estimate. The roadway designer is the focal point in gathering total project cost information and provides extra detail if required to assist other units in determining impacts and cost. The Region Utilities Specialist is the focal point for all utility related project information.

Products/Services

- Total project cost estimate (use approved cost estimate spreadsheet)
 - Reviewed by lead designer or manager
- Review final scoping document
- Project narrative (includes design criteria, assumptions, staging, etc.)
- Preliminary evaluation of Hydraulic issues
 - Streamside estimate of potential scour issues, highwater marks etc.
 - Review any maintenance information regarding culvert conditions
 - Are any streams designated "Fish Passable" and on ODF&W list?
- Cost estimate for necessary hydraulic engineering, including stream hydrology, storm water management, erosion control, specialty culvert design (such as fish passage)

Roles and Responsibilities

- Roadway Designer:
 - Provide geometric design expertise in the development of probable design solutions and staging options.
 - Prepare a project narrative and compile the total project cost estimate. They will need to coordinate with other units to complete the work.
 - Review the final scoping document
- Preliminary Designer
 - Provide geometric design expertise in the development of probable design solutions and staging options when interchanges or major intersections are involved. Also provide cost estimate data.
- Region Utility Specialist

- Develop estimate of utility costs for project
- Identify likely utilities present from UPERMIT database and prior experience
- Attend scoping meetings and project visit
- Identify possible reimbursable utility conflicts within project area
- Provide estimated cost for relocation of reimbursable utility conflicts to Roadway Designer for inclusion in total project cost.
- Hydraulic Designer
 - Provide scope and cost estimates for preliminary project cost establishment. Send all cost information to Roadway designer.
- Roadway Manager/Lead Designer
 - Review total project cost estimate.
 - Review project narrative and final scoping document.

1.2 Bridge/ Geo Units

The Bridge/Geo Unit is a multi-discipline group which provides design expertise as it relates to structures, geology, geotechnical, and hazardous materials.

Products/Services

- Identification of the scope and problem
- Correct Identification of Potential Structure types/Standards
- Preliminary evaluation of HazMat issues
 - Physical observation to estimate potential Hazardous Materials problems, determined by intersection locations, project area, surrounding buildings, etc
 - Brief internet search of relevant databases pertinent to known existing spill and contamination, as delineated by ASTM procedure.
 - Responsibility of Region Hazmat Coordinator
 - Final product is contained in Part 3 prospectus document (see below)
- Preliminary evaluation of Engineering Geology issues
 - Existing slopes adequate?
 - Any Maintenance feedback regarding slides soft pavement?
 - If cuts will be necessary, any information to indicate potential problems
- Preliminary cost estimate for structures, hazmat, geology/geotech (Forward cost estimates to Roadway to include in total project cost)
 - Cost estimating spreadsheets for structural elements
 - Initialed copy kept in project packets

- Make cost estimates of any drilling or other field work using Geotechnical cost estimating spreadsheet
- Cost estimate for Preliminary Site Assessment for Hazmat, and additional prognosis of risk for contamination cleanup.
- All cost estimates will be reviewed by the Unit Manager.
- Review of Part 3 prospectus

Roles and Responsibilities

- Bridge Designer, Geotechnical Designer Hazmat Geologist and Engineering Geologist: Provide scope and cost estimates for preliminary project cost establishment. Send all cost information to Roadway designer.
- Peer or Unit Manager: Provide review of cost information and scope of project.

1.3 Environmental Unit

During the Scoping phase of a project the Environmental Unit is responsible for providing information to the project team about the known or potential occurrence of environmental resources in the project area. Environmental resources include: Archeology, Historic Resources, Biology – fish, birds, plants and associated habitats, Wetlands, socio-economic concerns, water quality, hazardous materials, and others.

Products/Services

- Identification of the scope of the project and potentially affected resources (REC)
 - Summarize purpose of the project and project description as provided by the Project Leader on to draft Part 3.
 - Review databases and literature sources for existing information regarding presence of environmental resources. Summarize on draft Part 3.
 - Contact selected in-house resource specialists, those located at Env. Services, and at other agencies for information on presence, absence or potential of presence of environmental resources.
 - Provide environmental resource information to ODOT Project Leaders and Development Teams, ODOT Foresters and other staff, to assist with environmental compliance.

- Assist in the development of the project purpose, need and alternatives.
- Produce draft Part 3 of the Prospectus (REC and specialists as needed)
 - Check SHPO Database for previously listed or inventoried properties in project area (Cultural Resource Specialist).
 - Check ODOT Bridge Log for bridges over 50 years old in project area, or bridges that will be 50 when the project goes to construction (Cultural Resource Specialist).
 - Summarize information gathered during scoping trip, literature search.
 - Attend and coordinate field and office meetings with regulatory officials. (REC)
- Produce budget estimates for environmental work (REC)
 - Based on the anticipated need for resource specialists estimate a budget for environmental work using Environmental Services budget information PE cost estimates worksheet. Send cost information to PL for inclusion in PE budget.
- Produce Baseline Reports as to be determined necessary by Tech Center Management (REC and all specialists)
 - Provide API (Area of Potential Impact) map based on preliminary design to resource specialists. Provide Part 3 and scope of project to resource specialists. (REC)
 - Each specialist provides a baseline report with a map showing the location of resources to be avoided, also included in the report are temporal constraints that may be imposed during construction. (All Specialists)
 - Delineate/determine jurisdictional Waters of the U.S./State (wetlands) within API's using 1987 COE manual for design consideration (Wetland Specialist);
 - Identify constraints and areas of potential impacts based on project description (Wetland Specialist) ;
 - Recommend solutions and mitigation as needed (Wetland Specialist); and
 - Determine level and types of documentation as needed to facilitate project (Wetland Specialist).
 - Field survey of historic properties within project APE (Area of Potential Effect) to identify resources that are 50 years old (Cultural Resource Specialist).
 - Preliminary determinations of eligibility for the National Register (some basic background research may be required) (Cultural Resource Specialist).

- Get tax lot maps of project area to determine resource boundaries (Cultural Resource Specialist).
- Photograph historic resources during field survey (Cultural Resource Specialist).
- Check old right of way maps and/or bridge files in Transportation Building for basic background information (Cultural Resource Specialist).
- Produce baseline report according to approved format (Cultural Resource Specialist).
- Baseline report is reviewed by Cultural Resources Team Leader, edited, and then sent to REC and PL (Cultural Resource Specialist).
- Summarize resource specialists' technical baseline reports into an overall Baseline report and distribute. (REC)
- Coordinate and manage consultants and sub-consultants through ODOT baseline report process.
- Complete Environmental Checklist (REC)
 - Complete checklist in PDWP database using information gathered to complete Part 3.
- Recommend classification of project as a 1, 2, or 3 (REC)
 - Use FHWA classification criteria to recommend the environmental category of the project.
- Commit to project schedule (all)
 - REC or ETL attends initial project meeting and reviews the proposed project schedule.
 - Based on the project scope provided, the Specialists commit to producing particular products by a certain date.
 - Review schedule and scope to ensure that wetland products can be completed within their designated periods (Wetland Specialist).
- Presentation to CETAS (EPM)
 - EPM along with the Project Leader presents Class 1 and 3 projects to CETAS to determine whether or not CETAS will participate in development of the project.
- Draft Notice of Intent for Class 1 projects (EPM)
 - Transmit to FHWA for publishing in Federal Register
- For class 1 and 3 projects organize and attend scoping meeting with local community interested agencies and tribes to determine the scope of the environmental document, range of alternatives, and impacts to be considered.(EPM)
- Develop preliminary list of interested parties based on input from PDT and cooperating agencies.

1.4 RW Unit

The Right of Way Unit's role in the Scoping Phase is to provide right of way expertise in the development of the project scope, schedule and budget, including participation in the environmental phase. This includes concurrence with determined scope of project, creation of liaison cost estimates for the prospectus, and development of timelines for acquisition of needed property. The Right of Way Project Manager is the focal point for all right-of-way related project information.

Products/Services	Roles and Responsibilities
<ul style="list-style-type: none"> • Write or oversee consultant writing of RW Report for environmental phase. This can include estimates, socioeconomic reports, and other work related to DEIS and FEIS including public meetings. 	<ul style="list-style-type: none"> • RW Project Manager
<ul style="list-style-type: none"> • Attend scoping meetings and team site visit <ul style="list-style-type: none"> ○ Provide RW/ input on scoping packet to Project Leader for inclusion in scoping report and prospectus. 	<ul style="list-style-type: none"> • RW Project Manager
<ul style="list-style-type: none"> • Develop RW Liaison Estimate <ul style="list-style-type: none"> ○ Research real estate market ○ Determine appropriate costs for land, improvements, damages & administration <ul style="list-style-type: none"> ▪ Provide the following estimates to PL <ul style="list-style-type: none"> • Total RW cost (send to Roadway Designer) • Number of RW files; Fee/Easement • Time needed to complete acquisitions, relocations and clear property needed for project. 	<ul style="list-style-type: none"> • RW Project Manager <ul style="list-style-type: none"> ○ RW Staff Agents will often perform these tasks under the immediate supervision and review of the R/W Project Manager

To provide above products and services during the Scoping Phase RW/ needs to receive the following:

Products/Services	From Responsible Party
<ul style="list-style-type: none"> • Scoping Packets – including draft prospectus • Scoping meeting and project visit invitations 	<ul style="list-style-type: none"> • Project Leader
<ul style="list-style-type: none"> • Right of Way map and/or aerial photos with Overlaid scope level design, estimated right of way lines, and take areas in s.f. or acres 	<ul style="list-style-type: none"> • Designer

1.5 Traffic Unit

The Region 5 Traffic Unit is responsible to develop or coordinate the list of potential projects and recommend solutions for the Safety, ITS and Operations Programs. Region 5 Traffic Unit provides expertise in Traffic Operations, Signal Timing, Traffic Safety, Capacity Analysis, and Access Management for all projects.

The appropriate Region Traffic Staff will lead or assist in identifying CLEAR problem statements for potential projects through various management programs, corridor studies, planning efforts, accident history, Safety Management System (SMS) which includes SPIS (Safety Priority Index System), SIP (Safety Investment Program), HEP (Hazard Elimination Program), or other sources.

Products/Services

- Provide appropriate analysis and recommendations of each potential alternative,
 - Supply analysis and Benefit: Cost analysis for Safety and Operations Projects by October 31st of each calendar year.
 - Refine analysis as necessary
- Develop pros and cons as related to safe traffic operation
- Provide accurate preliminary cost estimates to the roadway designer on:
 - Traffic control items
 - Signal installation
 - Signs
 - Striping
 - Access Management
- Provide conceptual drawings for potential projects sponsored by the Region 5 Traffic Unit.

Region 5 Quality Control Plan

- Identify necessary and potential approvals by others
 - Traffic design exceptions.
 - State Traffic Engineer approval
- Identify Access Management requirements, strategies, plans, etc. based upon PD-03

Roles and Responsibilities

The Region Traffic Manager and selected staff will insure that they have helped to develop accurate and timely problem statements and proposed solutions.

- Analyze and evaluate the alternatives. Early analysis is essential to insure timely project selection.
- Develop Benefit-Cost ratios for the projects
- Evaluate turn lane warrants as appropriate
- Provide signal related warrant analyses
- Assist the project leading in developing the necessary intergovernmental agreements (IGA).
- Provide access management expertise to implement and follow Oregon Administrative Rule 734 Division 51 and Project Delivery Operational Notice PD-03
- Identify the need for Access Management Strategies and or Plans
- Develop a preliminary access management strategy if required
- Coordinate with Area Planner to identify any planning activities in the project vicinity to insure consistency local adopted plans
- Review final scoping document
- Review and provide accurate cost estimates
- Refine conceptual designs as necessary

Survey Unit

The Survey Unit's role in the scoping phase is to identify survey requirements, products, and limits for the project, for scoping team discussions, and perform a field visit of the project site.

Products/Services

- Identification of survey needs/limits incorporating the needs of other units

- Identification of possible existing r/w and new r/w needs
 - Review current r/w maps and deeds
 - Evaluate design impacts for new r/w
- Provide cost estimate for surveying of PE functions
 - Evaluate needs of other units
 - Estimate Right-of-Way retracement needs
 - Estimate PE survey needs including Design foot print, Environmental, Hydraulics, Right-of-Way, and Bridge
 - Send all cost information to the roadway designer for inclusion in the total project cost.

Roles and Responsibilities

Survey Team Leader

- View project in field, attend kick-off meeting, assemble and analyze needs and prepare and submit estimate to roadway designer.

Lead Surveyor

- Receive briefing from Survey Team Leader on project, review existing documentation, and review estimate and offer comments if necessary

Surveyor

- Research Right-of-Way records, existing survey records, and Right-of-Way maps, submit data to Survey Manager

1.7 Area Offices

Area offices are responsible for collecting data and information needed for scoping, contacting local jurisdictions for their input on proposed projects, and coordinating scoping tours. Once scoping is complete, the Area office collects copies of all work done by Tech Center staff, compiles a master scoping file for each project, and prepares Part I of the prospectus.

During STIP or OTIA scoping efforts Region 5 generally convenes a Scoping Coordination team which consists of the Tech Center Manager, an Area Manager, the STIP Coordinator and one Project Leader or CPM from each area. Specific program managers may also participate in the team as resource, or core team members as needed. (i.e. Safety, Traffic, ITS) This team is not completely

responsible for delivering the scoping products, but serves as the decision making and communication point of contact for the Region effort.

Emergency or unanticipated projects often occur and require scoping. Assigning resources and required products for these scoping efforts should be coordinated by the Area with the Tech Center Manager.

Products/Services

- Scoping packets
 - Scoping packet should include information needed for scoping team, suggested documents are included in the Scoping Manual
- Organize scoping trips and project lists by program for Area.
- Master scoping file
 - Includes scope, schedule, total project budget and final scoping document.
- PDWP input – Part I
- Documentation of plan review comments

Roles and Responsibilities

- All Scoping participants will utilize and adhere to the Region 5 Scoping Manual. A copy can be found on the Region Intranet Project Development page.
- Project leader submits request for resources, by Area to Tech Center manager. Develops scoping packets, conducts scoping trips, develops master scoping file, and enters project data into PDWP.

- The Area Manager's signature is required on Part I of the prospectus before any project may be programmed.

1.8 Maintenance

In the scoping phase, maintenance's role is to provide a prioritized list of projects within the programs they manage such as, Preservation, Rock fall, culverts, etc. They also provide a great deal of field expertise while participating on scoping teams. Maintenance crews are out in the field dealing with safety issues, local politics and design deficiencies daily and are a great resource in helping to identify scope schedule and budget.

Products/Services

- Prioritized project list for managed programs.
- Provide field expertise while participating on scoping teams.

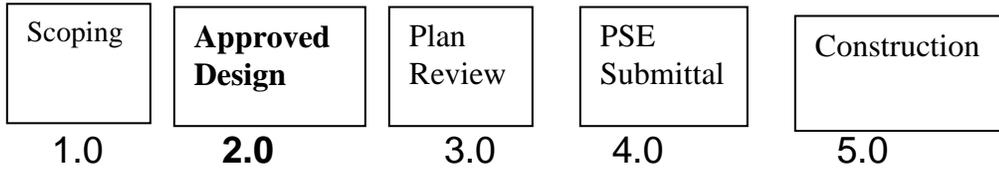
Roles and Responsibilities

- District Manager will insure that all project lists needed for project scoping are delivered in a timely manner. Will ensure that appropriate staff are available to participate on scoping teams.
- Maintenance staff will actively participate on scoping teams, as requested by District Manager.

1.9 Tech Center Manager

The Tech Center Manager's shall ensure that all technical resources are available, actively participate on scoping teams and deliver quality products on time. The Tech Center Manager will aid in the development of program management strategies with Region management staff.

Quality Control Plan



Section 2.0 Approved Design

2.0 Approved Design

This milestone is outlined in PD-02 as being the milestone where the project's final footprint is established which has taken into account all design variables, impacts and mitigations. It also confirms the purpose and need, scope, schedule, and budget for the project as described in the prospectus. This milestone signifies that the project is ready to begin Right of Way and permitting activities and the project team can move into the next phase in developing contract documents. As per PD-02, if there are any changes requested to the project footprint, it will require a formal Project Development Change Request. Each of the Area offices will manage this process.

2.1 Roadway Unit

Products/Services

- Approved Design Exceptions
 - All exceptions to standards should be identified, the Design Exception request(s) written and approval granted before they are included in approved plans
- Interchange Layout Sheet (if applicable)
- Hydraulics report
- Project Narrative
- Preliminary Cost Estimate
- Approved Design Plan set
 - Anything that affects R/W should be shown on the Approved Design Plans. All cut/fill lines should be shown clearly. In addition to the roadway work make sure the footprint includes any areas required for signs, signals, mitigation sites, water quality sites, approach work, staging, etc.
 - Existing and proposed centerlines should be shown
 - Plan layout of roadway features such as lane lines, curb, guardrail, barrier, etc. Anything that would help clarify roadway work proposed and that would affect the footprint.
 - Profiles, when necessary to clarify work
 - Basic typical sections to show pavement design and lane configurations

Roles and Responsibilities

- Roadway Designer:
 - Coordinate design activities with all other units to assure roadway design is complete for the Approved Plan milestone.
 - Provide Drafter with all data necessary to draft Approved Plans
 - Produce cost estimate for roadway work and compile total project cost estimate
 - Produce Project Narrative
 - Write all necessary Design Exception Requests
 - Compile plan sheets from all units for printing and distribution
 - After Approved Design Plan set has been reviewed make all corrections/additions/deletions necessary and provide new set of Approved Design Plans to Project Leader for completion of the Approved Design milestone
- Drafter:
 - After receiving data from Roadway Designer draft Approved Design Plan set
- Hydraulic Designer
 - Provide Hydraulic recommendations
 - Produce Hydraulic Report
- Region Utility Specialist
 - Forward for review a copy of survey base map to each utility likely to be present
 - Collect comments and corrections to the survey base map from each utility
 - Identify errors and omissions in survey base map
 - Send annotated survey base map to Project Team Leader and survey Team Leader illustrating necessary changes and/or areas requiring additional surveying
- Preliminary Designer:
 - Develop Interchange or major intersection designs when required. Complete Interchange Layout Sheet.
- Roadway Manager and/or Lead Designer:
 - Review plans to ensure that the design confirms the purpose and need of the project and fully articulates the scope as defined in the prospectus. The design solution should address the problem. Question any additional work that is included that doesn't appear to have any tie to the solution – why was it added, were additional funds added to include this work, etc...

- Review Approved Plans for conformance to standards and to ensure all design exceptions are identified, request(s) written and approval initiated:
 - Horizontal alignment
 - Vertical alignment
 - Sight Distance
 - Superelevation
 - Vertical clearance
 - Typical section
 - Intersection layout
 - ADA
 - Staging Plan (include communication with Motor Carriers, local agencies, transit, etc.)
 - Storm sewer and culvert design
 - Mitigation plans
- Review the project narrative and cost estimate for completeness and accuracy
- Roadway Manager:
 - After the Approved Design Plan set is reviewed and comments received, ensure that any additions/deletions/corrections are made and a complete set is delivered to the Project Leader

2.2 Bridge/Geo Unit

Products/Services

- Review of project
- Type Size & Location (TS&L) with any design exceptions noted
 - Review check list for completeness of TS&L, calculations and conclusions for constructability and cost.
 - Peer check, Manager review, TS&L document signed and stamped
- Geotech Exploration
 - Preliminary drilling and geotechnical recommendations
 - Slope recommendations finalized, compared with Roadway "catch points" to determine if appropriate Right of Way purchase, or if retaining walls will be needed to control R/W amount.
- Preliminary Estimates for Earthwork and Structure Design

- Level One Hazardous Material investigation as required by ASTM guidelines, to determine exact extent and quantity of contamination
 - Technically reviewed by peer, Reviewed by Unit Manager, Signed document filed in project packet.
- Update Costing
 - Review existing costs for changes, additions, flaws.
 - Updated costing sheet forwarded to Project Leader for project packet
- Review of foot print / prelim slope/grade estimates

Roles and Responsibilities

- Bridge Designer: Complete TS&L, update cost as necessary.
- Geotechnical Designer, and Engineering Geologist: Provide slope and drilling estimates, and slope catch point for Right of Way for preliminary project cost establishment
- Hazmat Geologist: Provide Level One HazMat document
- Peer or Unit Manager: Provide review of cost information and scope of project, countersign documents as necessary to attest to review.

2.3 Environmental Unit

Products/Services

(Environmental classification 1, 2, & 3 Projects)

- Participate in the development of design alternatives which minimize effects to environmental resources and can be accepted by regulatory agencies.
(all)
 - Regulators and Resource agencies may also be brought in to assist with avoidance and mitigation measures.
- Use Programmatic BAs/BOs if they are compatible with the project
 - Check that all project components are of types covered by a PBO.
 - Use professional judgment to provide documentation to resource agencies and project files
- Produce BA (Bios)
 - Prepare Biological Assessment to comply with Section 7 of the Endangered Species Act
 - Consultant documents are reviewed by Region Biologist. BAs produced by Region Biologist are reviewed by ETL and REC.

- Contact USFWS and NOAA-Fisheries and other resource agencies as needed for field visits and technical assistance
 - Project Leader, REC and Construction PM sign off on BA prior to its submittal to agencies.
- Produce No Affect memo (Bios)
 - Based on professional judgment prepare a No Effect Memo if needed. Provide copy to Spec Writer, REC and Project Leader.
- Programmatic Agreement (PA) Memo (Cultural Resource Specialist)
 - Check that all project components are of types that are covered by the PA with SHPO/FHWA/ACHP.
 - PA Memo is only allowed for Class II projects.
 - Write memo to file according to approved format.
 - PA Memo reviewed by Cultural Resources Team Leader, then distributed to PL, REC, and other parties as applicable.
- 4(f) Documentation (EPM)
 - Evaluate reasonable and prudent alternatives to use of 4(f) property
 - Develop 6(f) documentation if Land and Water Conservation Fund resources are being converted and produce the required replacement resources.
- Section 106 (Cultural Resource Specialist)
 - Complete appropriate Determination of Eligibility (DOE) form for all resources identified as potentially eligible in Baseline Report (standard DOE, bridge DOE, ORS 358 DOE). Research at appropriate repositories required (Cultural Resource Specialist).
 - Determine project impacts to potentially eligible or National Register listed properties, and complete a Finding of Effect (FOE) for each resource.
Note: FOE can not be completed until project design is finalized. (Cultural Resource Specialist).
 - Section 106 documents reviewed by Cultural Resources Team Leader (Cultural Resource Specialist).
 - Submit completed DOE/FOEs to SHPO for concurrence (30 day review period). PL and REC also receive a copy of the completed Section 106 Documents (Cultural Resource Specialist).
- Develop mitigation concept for unavoidable impacts to biological resources (Bio).
 - Determine direct and indirect impacts with design engineer including avoidance/minimization actions;
 - With the design engineer identify mitigation site through Right-of-Way with guidance from regulatory agencies if needed;
 - With the design engineer develop conceptual mitigation design including grading, drainage, and planting plans;

- Review by peer or unit manager;
- For third party mitigation, start agreements (i.e. IGA, MOU).
- Provided draft Terms and Conditions from BO to Spec Writer (Bio)
 - Self Explanatory
- Coast Guard Permit (Permit Specialist)
 - Complete application and submit.
- Preliminary Wetland Mitigation Plans (Wetland Specialist)
 - Determine direct and indirect wetland fill/removal impacts with design engineer including avoidance/minimization actions;
 - Identify mitigation site through Right-of-Way or determine PTP with guidance from regulatory agencies;
 - Process wetland functional assessment;
 - Develop conceptual mitigation design including grading, drainage, and planting plans;
 - Develop mitigation goals, objectives, performance standards, and monitoring protocols;
 - Review by peer or unit manager;
 - For third party mitigation, start agreements (i.e. IGA, MOU).
 - Review mitigation plan or PTP proposal completeness for joint permit application check list.
- 404/DSL Fill/Removal Application (Permit Specialist)
 - Complete application and submit.

(Environmental classification 1 & 3 Projects)

- Produce EA or DEIS (Environmental Assessment or Draft Environmental Impact Statement) [This work is usually done by a consultant with an EPM managing the process.] (EPMs)
 - Develop draft Purpose and Need statement and present to CETAS for concurrence
 - Summarize technical reports
 - Develop Evaluation Criteria to assess alternatives and present to CETAS for concurrence
 - Evaluate proposed alternatives
 - Present range of alternatives to CETAS for concurrence
 - EPM provides review of consultant produced EIS and EA
- Study Committee process is needed for an EA/DEIS, it must include PDT, FHWA, DOJ, and all cooperating agencies.
- Present Preferred Alternative to CETAS (EPM)
 - Gain formal and documented CETAS and PDT concurrence on selected alternative.

- Prepare Recommendation Document after Public comment period and development of responses to comments (EPM)
 - Summarize and respond to public and agency comments.
 - Present the preferred alternative and the rationale for why it was chosen.
- Facilitate public meetings (EPMs)
 - Respond to questions verbally
 - Prepare exhibits or documents
 - Distribute EA/DEIS to interested parties including announcement of public hearing (EPM).
 - Provide comment and sign-in sheets
 - Ensure appropriate ODOT staff attend
 - RECs may attend public meetings for Class 2 projects.
- Prepare NOA (Notice of Availability) of DEIS and FEIS and send to local papers and federal register (EPM)
- Facilitate Public Hearing after the DEIS or EA is released to the public (EPM)
 - Respond to questions verbally
 - Provide court reporter if appropriate
 - Provide translator in needed
 - Prepare exhibits and handouts.
 - Ensure proper ODOT staff attends
 - Provide comment and sign-in sheets.
- Develop responses to public and agency comments with legal time frame (EPM)
- Environmental reports for DEIS and EA (all specialists)
 - Similar to Baseline technical reports; research is summarized and findings presented (all).
- FEIS (Final Environmental Impact Statement) (EPM)
 - Send document through Study Committee process
 - Presents the Preferred Alternative and why it was chosen
 - Respond to comments on the DEIS from the public and agencies
- REA/FONSI (Record of Decision/Finding of No Significant Impact) (EPM)
 - Documents the decision that the project will not have a significant impact.
- ROD (Record of Decision) (EPM)
 - Documents the decisions made during the NEPA/EIS process

2.4 Right of Way Unit

The Right of Way/ Unit's role during the Approved Design Phase is to provide right of way and expertise in the development of the approved design. This includes participation as voting members of the project development team and concurring with determined scope and footprint of the project. The Right of Way Project Manager continues to be the focal point for all right-of-way related project information and

Products/Services	Roles and Responsibilities
<ul style="list-style-type: none"> • Write Right of Way Acquisition/Relocation Plan – the size and complexity of Plan is determined by size and complexity of project. <ul style="list-style-type: none"> ○ Determine potential risks to timeline and budget and strategize to minimize risk ○ Determine kind and complexity of appraisals needed <ul style="list-style-type: none"> ▪ On-site reviews of alignment with Designer and/or Appraisal Reviewer ▪ Determine if access changes are compensable and process to follow (appraisal or remedy process) ○ Determine relocation needs <ul style="list-style-type: none"> ▪ Discuss relocations with Relocation Reviewer – on site visit as needed depending on complexity ○ Write Plan for Project File. 	<ul style="list-style-type: none"> • RW Project Manager – RW Staff Agents will occasionally perform portions of these tasks under the immediate supervision and review of the R/W Project Manager
<ul style="list-style-type: none"> • Develop Program Estimate for project • Review Project Budget for adequate funds • Write Programming Estimate and send to RW Program Coordinator at Technical Services Branch (TSB) for Authorization 	<ul style="list-style-type: none"> • RW Project Manager

To provide above products and services during the Approved Design Phase RW/ needs to receive the following:

Products/Services	From Responsible Party
<ul style="list-style-type: none"> • Survey Base Map • Right of Way Acquisition map 	<ul style="list-style-type: none"> • Survey Unit
<ul style="list-style-type: none"> • Environmental Report (incl. Phase 1 results) • Environmental FHWA Clearances 	<ul style="list-style-type: none"> • Environmental Unit
<ul style="list-style-type: none"> • Final Approved Access List (listing access locations, changes, et. al.) 	<ul style="list-style-type: none"> • Project Leader

2.5 Traffic Unit

Products/Services

- Provide completed traffic analysis and traffic report as appropriate
 - Signal Analysis
 - Capacity Analysis
 - Operational Analysis
 - Queuing Analysis
 - Work Zone Restriction Analysis
 - Warrant Analysis (Signal, Turn Lanes, etc.)
 - Crash History Analysis
- Develop and coordinate with designer to provide approved design plan sheets that include
 - Signal Plans
 - Sign Plans
 - Striping Plan
 - Access Management Strategy
 - Lane configurations and turn movements
- Provide concurrence and approvals from State Traffic Engineer and Region Access Management Engineer for:
 - Signal Warrant
 - Turn lanes
 - Access Management Plan/Strategy
- Review and Coordinate with Roadway to insure the project footprint is sufficient to accommodate identified design elements.
- Review and update preliminary cost estimate for accuracy

Roles and Responsibilities

Review the project design and layout for compliance with the Traffic Management and Access Management design and policy criteria.

- Traffic Manager
 - Ensure the designers and/or engineer of record deliver plans and they have been reviewed for completeness and accuracy.
 - Hold the staff accountable for agreed upon milestones and deliverables as well as timely reviews of all documents
- Region Traffic Engineer
 - Acquire approvals and signatures for traffic design, lane configurations, intersections and interchanges as appropriate.
 - Review Signal Operations Issues
 - Check for Fatal Flaws (power outage, all flash operations)
 - Track the IGA to insure it is complete or near complete for signal maintenance agreement
 - Acquire State Traffic Engineer Approvals
- Sign Designer
 - Review Sign Issues
 - Ensure exceptions are approved
- Signal Designer
 - Review Signal Design Issues
 - Ensure exceptions are approved
- Traffic Analyst
 - Complete all analysis as required
- Access Management Engineer
 - Complete preliminary Access Management Strategy or Plan
 - Complete Access Management Plan or Interchange Access Management Plan as needed.

2.6 Survey Unit

Products/Services

- Review project scope, deadlines, methodology, and special features/needs with project team, office staff and field crews.
- Base map
 - Check base map for conformance to drafting standards.
 - Review base map with roadway designer and others to verify coverage.

- Field crew processes data for base map and follow office practices for data storage.
- Review field notes for completeness
- Digital Terrain Model (DTM).
 - Review and compare confidence points to DTM, check for conformance to allowable tolerance.
 - Review DTM coverage to project field data request.
 - Review model for anomalies.
 - Field crew processes data for DTM and follows office practices for data storage.
 - Review field notes for completeness.
- Monument Recovery and ROW Retracement Survey
 - Check electronic field files.
 - Check field notes for completeness, descriptions of monuments, and network points. Descriptions of topo data tied.
 - Review of the network and monument ties by the PLS in charge of the project. Network Report and Monument Report to be submitted to PLS and checked for accuracy.
 - Check that all electronic files have been stored according to office procedure.
 - Review of Retracement centerline
 - Review basis of bearing
 - Review monument offsets, and stationing to R/W lines
 - Review of R/W breaks
 - Review of side street R/W impacts and need for street resolve
 - Review and evaluate impacts of resolve R/W lines to existing property
 - Review county surveys, deeds and R/W resolve
 - Review placement of property lines from which R/W is to be purchased
 - Review of Narrative of resolved centerline and R/W lines
 - Review the description of how the centerline and R/W was resolved
 - Review the basis of surveying and control
 - LDP conversion review
 - Approved by PLS stamping the survey. This should be done immediately after resolve.
 - Review of drafting. (See Survey Filing Map drafting checklist and drafting standards document)
 - Final check of drawing before Mylar plotting.
 - Send to appropriate County Surveyor for review.

- Review County edits and make corrections to mapping.
 - Sign Mylar and file with County.
 - Signature by PLS on Filing of SFM for retracement
- PLS in charge, sign final Survey filing Map and file with appropriate County.
- Archive copy of final survey
- R/W Map & Descriptions
 - Review of R/W Map (Items to be reviewed)
 - Drafting standards
 - Horizontal alignment
 - Existing r/w lines
 - Property lines
 - Ownership (Deed interpretation)
 - New r/w lines
 - Review of R/W Description (Items to be reviewed)
 - Access Control
 - Existing r/w file information
 - Caption (section, ownership, strip description)
 - New horizontal alignment
 - R/W station and offsets
 - Areas
 - Other
 - Review of Forest Service Plats, BLM plats
 - Railroad Encroachment map check
 - Final check of descriptions and r/w map
 - Archive final r/w map
 - Statement of Technical review

Roles and Responsibilities

- Right of Way / Survey Manager
 - Communicate to office staff and field crew the scope, time frames, special needs, and safety concerns for the execution of the tasks
 - Review field products as they are submitted to monitor quality, completeness, and satisfaction of needs of project
 - Monitor schedule, make adjustments as needed to remain on schedule
 - Review researched data with staff.
 - Identify and provide any special training to staff to accomplish tasks.
 - Review retraced centerline with Senior Surveyor and Lead Surveyor and offer input
 - Review retracement survey narrative.

- Review LDP conversion
- Confer with drafter (ATE) about format and any problems
- Review edits made as requested by county
- If Survey Managers' project, sign mylar and file with County.
- Receive request for services from Project Leader or Right-of-Way Unit for ROW map and descriptions.
- Assign Senior Right-of-Way Surveyor and review project scope and schedule.
- Perform final review of descriptions, exhibit maps, and right-of-way map as they are completed.
- Provide Statement of Technical Review.
- Lead Surveyor
 - Review found and tied monuments tied by field crew, compare to records
 - Review network points and placement, review reports to monitor accuracy and stability of network
 - In reviewing found and tied monuments Senior Surveyor will check their spatial relationships against record and decide if they are adequate for the task at hand or whether the crew needs to return to the field to re-tie any monuments or search further. These findings will be discussed with the Survey Manager and the Lead Surveyor.
 - Review all elements as shown above under the Monument Recovery and ROW Retracement Survey section above.
 - Sign Mylar and file with County, if the project is assigned to the Senior Surveyor.
 - Directs daily activities of the field crew. Sets up file protocol for future file placement on project. Reviews each days work for accuracy and completeness. Reviews finished base map and DTM for accuracy and adequacy. Disseminates data to designers, project leaders, and other units. Lead Surveyor reviews all survey products with designer and others to be sure the products are adequate. Lead Surveyor reports in when tasks are complete and correct.
 - If the project is assigned to the Lead Surveyor for stamping, the Lead Surveyor will make all the reviews and checks listed under the Monument Recovery and ROW Retracement Survey section above.
 - If the project is not assigned to the Lead Surveyor, the Lead Surveyor will check to ensure that all files, drawings, and notes are filed according to office procedure.
 - Review project with Surveyor assigned, before beginning drafting
 - Draft retracement survey, following Survey Filing Map Standards, as established by Technical Services Survey unit.

- During the progress of developing the drawing the Survey Analyst will continuously check the drawing against the record data to ensure accuracy.
- The completed map will be handed off to either the Senior Surveyor or the Lead Surveyor, as directed by the Survey Manager, for a quality check.
- Field Crew
 - The Field Crew Chief and crew (ES 1 and ES 2) are responsible for having the necessary training to execute the tasks assigned, keeping the equipment repaired and in working order, and for having all the required information with them at the job site to perform each task successfully.
 - The Field Crew Chief and crew (ES 1 and ES 2) are responsible for performing all survey tasks in conformance with the current base map, DTM, and network standards, as published by Technical Services Survey Unit.
 - The Field Crew are responsible for processing all raw data and producing the base map and the DTM and providing it to the Lead Surveyor for review.
- Senior Right-of-Way Description Writer
 - Review record information
 - Produce Right-of-Way map
 - Produce exhibit maps and descriptions
 - Draft new alignment, access control, parcel lines, new Right-of-Way lines on maps
 - Pass off to Right-of-Way survey technician for final checking of above items
 - Make revisions as necessary, either for problems discovered during checks, or for those decided at a later date by others
 - Transfer data to Right-of-Way Engineering and archive project
- Right-of-Way Junior Description Writer
 - Receive projects and briefing from Senior Right-of-Way Descriptions Writer.
 - Produce same products as listed under “Senior Right-of-Way Surveyor”
 - At completion of tasks, hand off products to Senior Right-of-Way Descriptions Writer for checking
 - After approval of products, transmit to Right-of-Way Engineering and archive

2.7 Area Offices

At Approved Design, the Area offices ensure that all operational procedures and notices through the Approved Design process are being followed. They are also making sure that communication plans are in place or in the process of being implemented. This milestone is when the Areas are locking in the final project footprint, scope, schedule and budget.

Products/Services

- Communication Plan, following template and PD-12, including, at a minimum:
 - Stakeholder contact list, (Mailing lists for NEPA documents are the responsibility of the Environmental Project Manager)
 - Project Information Sheet (1 page handout for public distribution)
 - Documentation of any public meetings and stakeholder involvement
 - Documentation of agreements and Motor Carrier involvement concerning proposed staging plans for any needed highway closures, detours
- PDT meeting documentation
- AMS schedule
- Updated prospectus
- IGA's with affected local jurisdictions

Roles and Responsibilities

- Area Managers
 - If significant changes to original project scope, schedule or budget, Area Manager's signature is required on Project Development Change Request form
 - Area Manager's signature is required on Communication Plan for each project.
 - Area Manager's signature is required on any Intergovernmental Agreement needed for the project. (District Manager signature required on any IGA which extends after the life of the project)
 - District Manager signature required on the Discipline Issues Worksheet
- Project Leader
 - Project leader responsible to schedule and facilitate PDT meetings, coordinate and follow through to resolve project issues, prepare documents and gather information as needed to obtain required signatures

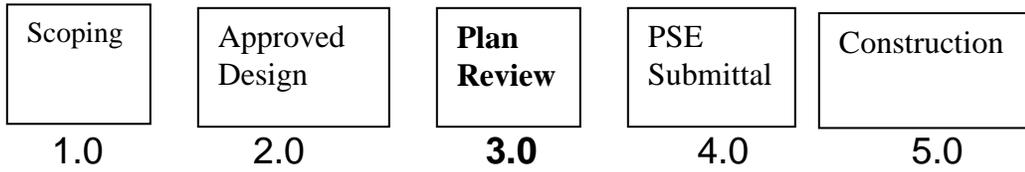
2.8 Maintenance

The role of maintenance at approved design is to participate on the project team in development of the final scope, schedule and budget for a project. This is maintenance's opportunity to have input on design elements and process as it relates to their specific section.

2.9 Tech Center Manager

The role of the Tech Center Manager is to ensure that the technical staff have completed a quality project design that is within the scope, schedule and budget. The Tech Center manager will also ensure that the Tech Center staff followed the quality control plan in the development of the design and will certify by signature with the appropriate Area Manager on the Certification of Approved Design.

Quality Control Plan



Section 3.0 Plan Review

3.0 Plan Review

The plan review milestone includes the development of the contract documents through three phases, preliminary plans, advance plans and final plans.

3.1 Roadway Unit

3.1.1 Preliminary Plan Review

Products/Services

- Preliminary Plan Set:
 - Plans should be as complete as possible. They should include:
 - Existing and proposed centerlines, including staging centerlines
 - Existing and proposed R/W lines
 - Profiles showing existing and proposed vertical alignments
 - Complete Typical Sections
 - Most roadway features, including lane lines, curb, guardrail, barrier, sidewalk, approaches, etc... May not include the complete drainage work
 - Appropriate bubble notes designating biddable roadway work
 - As many Details as possible
 - Culverts (includes Trenchless Technology)
 - Fish Passage details
 - Erosion control or Temporary Water management as necessary
 - Drainage
- Detailed Calculation of Quantities
 - Stream Cross sections, and other stream related drawings
 - Culvert details, including headwalls and aprons
- Preliminary Bid Summary and Cost Estimate
- Project Narrative
- Provide other Tech Center units with project information and be the focal point assembly of preliminary plan set and distribution.
- Distribution of plan sets

Roles and Responsibilities

- Roadway Designer:
 - Coordinate design activities with all other units to assure roadway design is complete for the Preliminary Plan milestone.

- Provide Drafter with all data necessary to draft Preliminary Plans
- Edit Approved Plan cost estimate for roadway work and compile total project cost estimate again
- Edit Approved Plan Project Narrative to reflect all additions/changes/deletions made since the Approved Plan milestone.
- Provide other Tech Center units with project information, such as base maps, cross sections, sheet break out, etc.
- Compile plan sheets from all units and provide to spec typist for printing and distribution
- Provide Region Utility Specialist any utility conflicts that have been identified.

- Drafter:
 - After receiving data from Roadway Designer draft complete plan set
 - Draft Traffic Control Plans
 - Draft Striping Plans

- Drafter (independent drafter):
 - Review Preliminary Plan set for conformance to drafting standards which can include the following items:
 - Font type and size
 - Patterning
 - Roadway features (cells)
 - Line styles and weights
 - Sheet layout
 - Notes (placement, bubbles and leaders, order and content)
 - Title Block
 - Headings
 - North Arrow
 - Stationing
 - Checking CAD files to determine if the correct levels and format were used

- Roadway Manager/Lead Designer:
 - Review the Preliminary Plan set:
 - Check Typical Sections for the following (use the Pavement Design and plan sheets):
 - Stationing limits (Do they match the title sheet and plan sheets). Ensure typical and stack(s) match adjacent typicals and stack(s) (check for gaps, overlaps).
 - Lane, shoulder, median, bike lane, sidewalk widths (are they standard, do they match the plan sheets)

- Taper sections (are they labeled correctly, are the taper rates adequate)
- Pavement Cross-slopes (is profile grade point shown correctly, is slope a normal crown, superelevated, or “as directed”)
- Fill and cut slopes (including ditch slopes)
- Depth of sub-base, base, and pavement (do they match pavement design)
- Pavement removal (if grinding, make sure that the widths and stations make sense and are constructable)
- Ramp and street connections (are they adequately shown)
- Curb type, height, and placement
- Barrier or guardrail (if shown are they accurate and adequate)
- Check Detail Sheets for the following:
 - Referenced in construction notes
 - Constructability
 - Enough detail is shown
 - Used appropriately for the design
 - Engineer’s stamp
- Review the Construction Plan and Profile sheets again and check for the following:
 - Sheet design (is the sheet too hard to read, is there not enough shown, is the scale appropriate, etc.)
 - Notes (check that all note numbers have notes, and that all notes are referenced. Ensure all construction work has a note. Ensure that the note covers the work being done or intended)
 - Standard Drawings (check that all listed standard drawings in construction notes are on the title sheet. Also check to ensure the correct standard drawings are being used)
 - Earthwork Brackets (check that the earthwork quantities make sense, i.e. if doing guardrail flares there should not be large quantities)
 - Project/paving limits
 - Profile(s)
 - Clear zone (is there adequate clear zone, are steep slopes adequately protected, was the best device used and was it placed appropriately, is there anything left unprotected?)

- Drainage design (check sizes, flow, and inlet and outlet locations. Does the design appear adequate? Was something missed? Use their drainage calculation if necessary to adequately assess the design. Are the pipe profiles shown on profile sheet)
- Review cost estimate

3.1.2 Advance Plans and Specifications Review

Products/Services

- Preliminary Plan Comment Responses
 - A complete list of all comments pertaining to the Roadway design from the Preliminary Plan review and how those comments were addressed. Transmitted to Project Leader.
- Advance Special Provisions
- Advance Plan Set
 - Plans should be complete. They should include:
 - Existing and proposed centerlines, including staging centerlines
 - Existing and proposed R/W lines
 - Complete Profiles showing existing and proposed vertical alignments, earthwork brackets, and pertinent drainage features
 - Complete Typical Sections
 - All roadway features, including lane lines, curb, guardrail, barrier, sidewalk, approaches, drainage, etc.
 - All appropriate bubble notes designating biddable roadway work
 - All appropriate Details
 - Pipe Data Sheet
 - Culverts (includes Trenchless Technology)
 - Fish Passage details
 - Erosion control or Temporary Water management as necessary
 - Drainage
- Advance Bid Summary and Cost Estimate
- Project Narrative
- Construction Schedule
- Distribution of plans and specifications for review

Roles and Responsibilities

- Roadway Designer:

- Document how all comments from the Preliminary Plan review (that pertain to Roadway) were addressed.
- Coordinate design activities with all other units to assure roadway design is complete for the Advance Plan milestone.
- Provide Drafter with all data necessary to draft Advance Plans
- Provide Roadway bid summary and cost estimate to the Specification Writer
- Edit Preliminary Plan Project Narrative to reflect all additions/changes/deletions made since the Preliminary Plan milestone.
- Deliver Advance Plan sheets for Roadway to the Specification Writer
- Drafter:
 - After receiving data from Roadway Designer draft complete plan set
 - Draft Traffic Control Plans
 - Draft Striping Plans
- Drafter (different than the one who drafted the project):
 - Review Advance Plan set for conformance to drafting standards (See the detailed list under Preliminary Plan and Review)
- Specification Writer:
 - Compile Advance Plan Special Provisions
 - Work with all units and the Construction office to ensure the special provisions address all construction requirements
 - Enter bid item and cost estimate data into Trns*port
 - Develop preliminary construction schedule.
- Roadway Manager/Lead Designer:
 - Review the Advance Plan set
 - Review should be similar to what was done at Preliminary Plans (See the detailed list under Preliminary Plan and Review)
 - Review bid items, quantities, and cost estimate.
 - Quantities shown in the notes on the plans should add up to what is shown in the estimate
- Roadway Manager
 - Sign off on the Advance Plan Quality Alert Checklist concurring that the set was complete for all items shown

3.1.3 Final Plans Review

Products/Services

- Advance Plan Comment Response

- A complete list of all comments pertaining to the Roadway design from the Advance Plan review and how those comments were addressed.
- Final Special Provisions
- Final Plan Set (paper copy for review)
 - Plans should be 100% complete
 - Culverts (includes Trenchless Technology)
 - Fish Passage details
 - Erosion control or Temporary Water management as necessary
 - Drainage
- Final Bid Summary and Cost Estimate
- Final Project Narrative
- Final Plan Quality Alert Checklist
- Final Construction Schedule
- Assemble final plan set and specifications
- Statement of Technical Review.

Roles and Responsibilities

- Roadway Designer:
 - Document how all comments from the Advance Plan review (that pertain to Roadway) were addressed. Transmit to project leader
 - Coordinate design activities with all other units to assure roadway design is complete for the Final Plan milestone.
 - Provide Drafter with all data necessary to draft Final Plans
 - Edit Advance Plan Project Narrative to reflect all additions/changes/deletions made since the Preliminary Plan milestone.
 - Distribute paper copies of the Final Plans for one last review to the following people:
 - Roadway Manager
 - Drafter (different then the one who drafted the project)
 - Designer/Construction employee (to do Quantity review)
 - Lead Designer (optional)
 - Specifications Writer
 - Provide Roadway bid summary and cost estimate to the Specification Writer
- Drafter:
 - After receiving data from Roadway Designer draft 100% complete plan set. Provide Designer with paper copies
 - Draft Final Traffic Control Plans
 - Draft Final Striping Plans

- Drafter (different than the one who drafted the project):
 - Review Final Plan set for conformance to drafting standards (See the detailed list under Preliminary Plan and Review)
- Specification Writer:
 - Document how all comments from the Advance Plan review (that pertain to the special provisions) were addressed.
 - Work with all units and the Construction office to ensure the special provisions address all construction requirements and concerns
 - Develop final construction schedule.
 - Make appropriate edits to Estimator bid item list and cost estimate
 - Assemble Final plan set, specifications, Statements of Technical Review and other PS&E documents.
- Specification Writer (Independent Spec. Writer):
 - Review the final Special Provisions to ensure conformance to Standards and that all items have been addressed
- Roadway Manager/Lead Designer:
 - Review the Final Plan set
 - Review should be similar to what was done at Preliminary Plans (See the detailed list under Preliminary Plan and Review)
 - Review bid items, quantities, and cost estimate.
 - Quantities shown in the notes on the plans should add up to what is shown in the estimate
- Roadway Manager
 - Sign off on the Final Plan Quality Alert Checklist, after the Final Review has been completed, concurring that the set was complete for all items shown
 - Ensure that Quality Control Plan was followed and sign off on Statement of Technical Review.

3.1.4 Utility Relocation

Products/Services

- Send formal utility conflict notification to each impacted utility
- Submit utility reimbursement package to Railroad/Utility Engineer at ROW TSB

Roles and Responsibilities

- Region Utilities Specialist
 - Coordinate Utility Relocations

- Forward copy of project plans (roadway, bridge, signal, etc.) to each known utility present
- Take utility conflict list(s) from Designer and format to send to affected utilities.
- Identify utility conflicts as reimbursable or non-reimbursable
- Collect utility relocation plans from each conflicting utility
- Collect relocation time requirements from each conflicting utility
- Collect relocation cost estimates and proof of easement/service agreement/property deed from each utility with reimbursable utility conflicts
- Review utility relocation plans with project Designer(s) and Project Manager's office
- Approve utility relocation plans and relocation time requirements
- Coordinate between relocating utility and Utility Permit Specialist at District office
- Send relocation plan and schedule approval letter after consensus with Designer(s) and Project Manager's office
- Perform plan review and submit comments to project leader

3.2 Bridge/Geo Units

The Bridge/Geo Unit is a diverse unit of disciplines, producing multiple products such as all construction plans for any structures, soundwall and any earthwork that might need to be done.

3.2.1 Preliminary Plan Review

Products/Services

- Detailed Calculation of Loads, Quantities
 - Final Geotechnical report
 - Reviewed by Peer or Unit Manager, final copy to Project Leader for Project packet
 - Review global stability issues around any retaining structures.
 - Peer review
 - Full technical review and check of all calculations and conclusions for Structures
 - Detailed review of drawings for accuracy and completeness
 - Documentation of required changes, and completed copies to be kept as part of Project packet

- Transmit all plan review comments and responses to project leader.
- Level Two Hazardous Material investigation as required by ASTM guidelines, to determine exact extent and quantity of contamination
 - Technically reviewed by peer, Reviewed by Unit Manager, Signed document filed in project packet
- Verification of appropriate levels of HazMat specifications, with quantities as determined by Level two investigation
- Preliminary Plans
 - Bridge (includes Box Culverts)
 - Retaining walls
- Preliminary bid Summary and cost estimate for each discipline
- Review/Check by peer and supervisor
 - Verify “red line” correction made to drawings
 - Verify applicability and completeness of specifications
- Obtain necessary Permits for Material Sources
 - Permits filed with Project packet

Roles/Responsibilities

- Bridge and Geotech Designers/Checkers
 - Document how all comments from the Preliminary Plan review (that pertain to Bridge/Geo) were addressed.
 - Coordinate with others to assure changes are consistent across disciplines
 - Coordinate with independent Checker to ensure design accuracy and compliance with applicable codes and standards.
 - Provide changes to drafter
- Drafter
 - Make necessary changes to plans, as submitted by each designer
- Unit Manager
 - Review plan set for consistent adherence to standard protocol
 - Send comments to P/L for inclusion in comprehensive list of necessary corrections

3.2.2 Advance Plans and Specifications Review

Products/Services

- Preliminary Plan Comment Responses

Region 5 Quality Control Plan

- A complete list of all comments pertaining to Bridge/Geo design from the Preliminary Plan review and how those comments were addressed. Transmitted to Project Leader.
 - Transmit all plan review comments and responses to project leader.
- Advance Plans and Specifications
 - Bridge (includes Box Culverts)
 - Retaining walls
- Advance Bid Summary and cost estimate for each discipline
- Review/Check by peer and supervisor
 - Verify “red line” correction made to drawings
 - Verify applicability and completeness of specifications

Roles/Responsibilities

- Bridge, Hydraulics and Geotech Designers/Checkers
 - Document how all comments from the previous Plan review were addressed.
 - Coordinate with others to assure changes are consistent across disciplines
 - Coordinate with independent Checker to ensure design accuracy and compliance with applicable codes and standards.
 - Provide changes to drafter
- Drafter
 - Make necessary changes to plans, as submitted by each designer
- Unit Manager
 - Review plan set for consistent adherence to standard protocol
 - Send comments to P/L for inclusion in comprehensive list of necessary corrections
 - Review plan set
 - Review bid items for completeness

3.2.3 Final Contract Plans Review

Products/Services

- Advance Plan Comment Responses
 - A complete list of all comments pertaining to Bridge/Geo design from the previous Plan review and how those comments were addressed.
 - Transmit all plan review comments and responses to project leader.
- Final Plans and Specifications
 - Bridge (includes Box Culverts)

- Retaining walls
- Preliminary bid Summary and cost estimate for each discipline
- Review/Check by peer and supervisor
 - Verify “red line” correction made to drawings
 - Verify applicability and completeness of specifications

Roles and Responsibilities

- Bridge Designer: Complete Design, update cost as necessary, and ensure appropriate reviews occur. (Checkers to feedback to Designers)
- Geotechnical Designer and Geologist: Provide Geotechnical Report with subsurface Data, and ensure appropriate reviews occur. (Checkers to feedback to Designers)
- Hazmat Geologist: Provide Level Two HazMat document
- Peers or Unit Manager: Provide review of cost information and scope of project, countersign documents as necessary to attest to review.
- All Designers: Mylars and Specification delivered to Roadway designer for inclusion into Plan Set
- All Designers and Reviewers: Route and sign “Statement of Technical Review”, forward to Unit manager for final signature.
- Drafter (independent drafter)
 - Provide review of plan sheets to check conformance to drafting standards.
- Unit Manager: Provide “Statement of Technical Review” to PL

3.2 Environmental Unit

The Environmental Unit will be providing their products and services throughout the plan review process. They will be performing a liaison role with the regulatory agencies and tracking the progress on all environmental permits needed for each project.

Products/Services

- Advanced Wetland Mitigation Plans (Wetland Specialist)
 - Detailed review of mitigation drawings/plans for accuracy and completeness;
 - Develop wetland mitigation plan sheets and special provisions
 - Review by peer or Unit Manager, copies to Project Leader for incorporation into project contract documents;

- Coordinate the development of contract plans and specifications with the roadway designer as it relates to mitigation plans.
 - Complete final agreements, if using Payment to Provide (PTP);
 - Coordinate payment through Financial Unit, if purchasing credits from a mitigation bank.
- Final Wetland Mitigation Plans (Wetland Specialist)
 - Full technical review and check of all details and conclusions for mitigation plan; and
 - Verify applicability and completeness of plan sheets and special provisions;
- Review and comment on plans and specs (all)
 - Plans and specs are reviewed by each specialist involved. Each ensures that elements negotiated during the design phase, and agreed to by regulators and resource agencies (i.e. Biological Opinion) are included in the documents (all)
 - Review plans, specs and permits for inconsistencies and conflicts (REC).
- 4(f) Documentation (EPM, Cultural Resource Specialist)
 - If required, complete the appropriate 4(f) documentation (can be Programmatic 4(f) for bridges, Programmatic 4(f) for historic resources, or full 4(f) document) (Cultural Resource Specialist).
 - Submit completed 4(f) documents to FHWA for signature after review by Cultural Resources Team Leader. PL and REC also receive a copy (Cultural Resource Specialist).
 - Documents the mitigation for impacts to 6(f) property (EPM)
- Section 106 Mitigation Plan (Cultural Resource Specialist)
 - Complete mitigation as described in MOA (Note: this activity may continue into the Construction phase of the project, depending on the nature of the project and the type of mitigation required).
- Statement of Technical Review (Unit Manager & ETL)
- Memorandum of Agreement (MOA) (Cultural Resource Specialist)
 - Typically required for projects having an adverse effect to historic resources.
 - Write MOA, spelling out mitigation for adverse effects to historic resources.
 - MOA reviewed by ETL and Unit Manager, ODOT Contracts section, SHPO, and FHWA (and possibly others, depending on the nature of the project).
 - Edit MOA after review. Re-send to ODOT Contracts to get a contract number.

3.4 Right of Way Unit

The Right of Way/ Survey Unit’s role during the Plan Review Phase is two-fold. First to continue to provide right of way and in the continued development and approval of Advance Plan and Final Plan designs; and second, to plan and administer the right of way acquisition process including appraisal, acquisition, relocation, and project related property management. The Right of Way Project Manager continues to be the focal point for all right-of-way related project information.

Products/Services	Roles and Responsibilities
<ul style="list-style-type: none"> • Create files & enter data into RAIN • Prepare & mail General Information Notice Packets to Grantors (maps, letters, brochures) • Order title reports or last vesting deeds as directed by RW Project Manager and enter resulting data (owners, parties with interest, contact information) into RAIN Rolodex 	<ul style="list-style-type: none"> • RW Admin Staff <ul style="list-style-type: none"> ○ Review by RW Project Manager
<ul style="list-style-type: none"> • Manage appraisal process <ul style="list-style-type: none"> ○ Identify appraisers – assign or contract ○ Research, write, and submit appraisal to RW Project Manager ○ Enter appraisal data into RAIN and submit to Appraisal Review <ul style="list-style-type: none"> ▪ Appraisal Reviewer establishes Just Compensation & notifies RW Unit 	<ul style="list-style-type: none"> • RW Project Manager • RW Staff Agent/ Consultant with RW Project Manager Review • RW Project Manager • Appraisal Reviewer TSB
<ul style="list-style-type: none"> • Enter appraisal contract data into RAIN • Process contract invoices for payment 	<ul style="list-style-type: none"> • RW Unit Administrative Staff
<ul style="list-style-type: none"> • Perform plan review and submit comments to project leader. • Manage acquisition/relocation process <ul style="list-style-type: none"> ○ Identify acquisition team ○ Assign work and establish checkpoints and due dates 	<ul style="list-style-type: none"> • RW Project Manager – manages and reviews all deliverables

<ul style="list-style-type: none"> ○ Monitor timelines; review all deliverables from Agents as they are completed ○ Complete Final Report Checklists 	
<ul style="list-style-type: none"> ● Acquire needed property for the project & complete necessary Relocations <ul style="list-style-type: none"> ○ Prepare relocation/rental studies ○ Prepare and deliver offers and relocation benefits to Grantors ○ Make additional contacts as needed and settle acquisitions, finish relocations <ul style="list-style-type: none"> ▪ Complete Relocation Closing Reports; submit to RW Project Manager ▪ Take physical possession 	<ul style="list-style-type: none"> ● RW Staff Agents – All deliverables are reviewed by the RW Project Manager; relocation studies / reports are reviewed by Relocation Reviewer ● Complex files may be handled by RW Project Manager
<ul style="list-style-type: none"> ○ Complete Final Reports; or ○ Prepare, review and approve Recommendations for Condemnation(s) 	<ul style="list-style-type: none"> ● RW Staff Agents prepares Final Reports and Recommendations for Condemnation, RW Project Manager Reviews, and RW Manager Approves
<ul style="list-style-type: none"> ● Review and approve Final Report Settlements and Recommendations for Condemnations 	<ul style="list-style-type: none"> ● RW Manager
<ul style="list-style-type: none"> ● Compile final report packages for approval ● Send Final Report package to TSB for payment ● Compile RC Packages, Input Condemnation data to RAIN, Submit to TSB Staff for deposit 	<ul style="list-style-type: none"> ● RW Unit Administrative Staff
<ul style="list-style-type: none"> ● Obtain legal possession through payment to grantor(s) or court deposit 	<ul style="list-style-type: none"> ● TSB Staff
<ul style="list-style-type: none"> ● Manage acquired project related property <ul style="list-style-type: none"> ○ Hazardous materials testing <ul style="list-style-type: none"> ▪ Contract out asbestos, lead, and other hazardous materials testing ▪ Contract abatement as needed ○ Perform sale of any viable 	<ul style="list-style-type: none"> ● RW Project Manager <ul style="list-style-type: none"> ○ These functions at times are performed by RW Staff Agents and in those

<p>improvements that needs to be cleared from the land in preparation for construction</p> <ul style="list-style-type: none"> ▪ Develop Sale Specifications, place ads, award sales, and conclude transactions ○ Clear properties needed for construction <ul style="list-style-type: none"> ▪ Contract demolition of all remaining structures and clearing of land ▪ Contract abandonment of wells, septics, springs, etc., as needed 	<p>instances the RW Project Manager reviews all work and deliverables</p>
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To provide above products and services during the Plan Review Phase RW/Utilities needs to receive the following:

Products/Services	From Responsible Party
<ul style="list-style-type: none"> • RW Rollout Meeting 	<ul style="list-style-type: none"> • Project Leader/CPM
<ul style="list-style-type: none"> • Updated Right of Way Acquisition map • Acceptable RW Descriptions 	<ul style="list-style-type: none"> • Survey/Descriptions
<ul style="list-style-type: none"> • Approval (HFO, FHWA, Funds and Grants) 	<ul style="list-style-type: none"> • Funds and Grants
<ul style="list-style-type: none"> • Notice of Receipt of funds 	<ul style="list-style-type: none"> • Region Financial Plan Coordinator
<ul style="list-style-type: none"> • Establishment of RW EA / Notice to Proceed or “authorization” 	<ul style="list-style-type: none"> • RW Program Coordinator
<ul style="list-style-type: none"> • Construction Plans and cross sections • Updated plans as they are produced from the Design Acceptance Package through Preliminary, Advanced and Final. 	<ul style="list-style-type: none"> • Design <ul style="list-style-type: none"> ○ Roadway ○ Bridge ○ Traffic ○ Signal ○ Sign ○ Etc.

3.5 Traffic Unit

The Traffic unit is a multi-disciplinary team that encompasses all aspects of traffic operations and safety including; signals warrants and signal timing, signing, striping, safety and crash analysis, access management, and capacity and mobility analysis and will provide the necessary products to deliver the project.

3.5.1 Preliminary Plans

Products/Services

- Preliminary plan sheets should be 75% complete:
 - Signal Plans/Illumination – Loop placement, phasing, ped. issue's, site distance, opti-com, interconnection
 - Sign Plans – inventory complete, specialty sign placement (these plan sheets may not be completed at prelims)
 - Traffic Control – Staging base sheet with work zone restrictions identified, including cross sections.
 - Striping Plan – May not be completed at prelims due to changes.
- Preliminary bid summary and Cost Estimate
- Access Management Strategy should be complete and agreed by the Project Team
 - Identify access closures on the access list
 - Median Control turn movement restrictions
 - Letters should be prepared and reviewed by DOJ
- Access Management Plan, Interchange Access Management Plans and associated IGA should be 75% complete

Roles and Responsibilities

All staff shall review for fatal flaws in the design. A detailed Design Review Checklist shall be developed that will include:

- Lane alignment
 - Cabinet Flash Needs
 - If a signal, phasing and loop placement
 - Access Control/Reservations
 - Sight distance
 - Consistency with planning documents
 - Etc.
-
- Traffic Engineer
 - Review design and ensure accuracy and completeness, using checklists to ensure completeness.
 - Traffic Operations Engineer
 - Review signal design, using checklists to ensure completeness.
 - Develop signal timing plan
 - TCP designer

- Provide TCP design sheets, using checklists to ensure completeness.
- Signal Designer
 - Provide signal design sheets, using signal design/review checklist to ensure completeness.
- Drafter (independent drafter)
 - Provide review of plan sheets to check conformance to drafting standards.
- Sign/Striping Designer
 - Provide sign/striping design sheets as necessary, using sign/striping design/review checklist to ensure completeness.
- Access Management Staff
 - Coordinate with District, Area, Local Jurisdiction on Access Strategy, AMP or IAMP
 - Continue IGA if required

3.5.2 Advance Plans and Specification Review

A review checklist will be utilized to identify any issues.

Products/Services

- Advance Plan sheets (should be 95% complete)
 - Signal/Illumination-Quantities,
 - Sign Plans- all elements shown, sign support data sheets completed.
 - Traffic Control Plan-WZ traffic staged, including signing, cross sections, quantities, and lane restrictions.
 - Striping Plan- Detailed striping plans
- Bid summary and cost estimate
- Advance specifications from each discipline
- Access Management Strategy
 - Confirm access closures and median control is consistent with strategy
 - Closure Letters should be ready to send
- Access Management Plan completed and IGA ready for signature by local jurisdiction

Roles and Responsibilities

- Traffic Engineer

- Review design and insure accuracy and completeness, using checklists to ensure completeness.
- Traffic Operations Engineer
 - Review signal design, using checklists to ensure completeness.
 - Complete signal timing plan
- TCP designer
 - Provide TCP design sheets, using checklists to ensure completeness.
- Signal/Illumination Designer
 - Provide signal design sheets, using checklists to ensure completeness.
- Drafter (independent drafter)
 - Provide review of plan sheets to check conformance to drafting standards.
- Sign/Striping Designer
 - Complete sign design sheets necessary, using checklists to ensure completeness.
- Access Management Staff
 - Coordinate with District, Area, Local Jurisdiction on AMP or IAMP
 - Send access closure/modification letters
 - Complete IGA if required

3.5.3 Final Contract Plan Review

A review checklist will be utilized to identify any issues that may have been missed or overlooked during the other review processes. Each discipline will finalize their products for signature.

Products/Services

- Final plans and Specifications
 - Signal
 - Sign
 - Traffic Control
 - Striping
 - Illumination
- Final bid summary and cost estimate
- Statement of Technical Review signed by appropriate reviewers
- Finalize Access Management Strategy
 - Confirm there were no changes to access closures
 - Letters should be sent

- Confirm Access Management Plan IGA is signed or near adoption by local jurisdiction.

Roles and Responsibilities

- Traffic Engineer
 - Review design and insure accuracy and completeness, using checklists to ensure completeness.
- Traffic Operations Engineer
 - Review signal/TCP design, using checklists to ensure completeness.
 - Complete signal timing plan
- TCP designer
 - Provide TCP design sheets, using checklists to ensure completeness.
- Signal/Illumination Designer
 - Provide signal design sheets, using checklists to ensure completeness.
- Drafter (independent drafter)
 - Provide review of plan sheets to check conformance to drafting standards.
- Sign/Striping Designer
 - Complete sign design sheets necessary, using checklists to ensure completeness.
- Access Management Staff
 - Last review of accesses to insure they are consistent with strategy or plan
 - Complete IGA if required
 - Assist appeals coordinator with any appeals that may arise
- Region Traffic Manager: Will hold the traffic unit staff accountable for agreed upon milestones and deliverables as well as timely reviews of all contract plan documents. Provide Statement of Technical Review.
- Unit designer or the engineer of record will deliver or review plans for completeness and accuracy

3.6 Survey Unit

The Survey Unit's role during the plan review process is to gather any additional data required to complete the design. This unit will also be working with the Region 5 ROW unit to take care of any ROW map edits or description changes.

These additional products and changes will follow the quality control procedure outlined in the Approved design section of this document.

3.7 Area Offices

While Plans are under development, Project Leaders are responsible to ensure that construction and maintenance staffs, along with local stakeholders, are engaged in the design process. Project Leaders are the central point for comments, and are responsible to coordinate with appropriate technical discipline staff for responses. All project decisions made by the PDT are documented by the Project Leader.

When Advanced Plans are issued, the Project Leader completes a Quality Alert Checklist. The Project Leader is responsible to follow up and resolve any outstanding issues on the Quality Alert Checklist prior to Final Design.

During the Plan Review process, Project Leaders are responsible to resolve any budget short falls or schedule issues. In the event that budget shortfalls cannot be addressed through a scope reduction or other innovative design method, Area offices must coordinate a funding increase with the Region's Financial Plan Manager. The project leader is also responsible for documenting all plan review comments at Preliminary plans, Advance plans and Final plans.

Throughout the plan review process, the Project Leader is responsible to continually monitor and update the communication plan.

Any intergovernmental agreements for the project are reviewed by the Area at this time and modified as needed.

Products/Services

- Updated communication plan
- Updated AMS schedule
- PDT meeting documentation
- Plan Review documentation
- Documentation of any public meetings and stakeholder involvement
- PDLT budget increase request form (when necessary), including justification documentation
- Final Quality Alert Checklist
- Amended IGA's, if necessary

- Documentation of plan review comments

Roles and Responsibilities

- Project Leader
 - Complete Quality Alert Checklist at advance plans, follow up and resolve any outstanding issues on the Quality Alert Checklist prior to Final Design.
 - Obtain any necessary signatures on final checklists
 - Gather, forward and document plan review comments.
- Construction Project Manager
 - Review advance and final plans for constructability issues.
- Area Manager
 - Sign Final Alert Checklist
 - Any funding increase request must be sent to PDLT by the Area Manager.
 - Project Manager's signature is required on the updated communication plan.
 - Area Manager's signature is required on the final Quality Alert Checklist.

3.8 Maintenance

Products/Services

The role of maintenance in the plan review process is to participate as voting members on the project team and provide a plan review function as it relates to the design. This plan review phase is where the specific details and final design takes place. This is the maintenance Section's opportunity to comment on any issues as it relates to the selection of roadside design features, maintainability issues, life cycle analysis, etc. The active participation of the District Office is a critical component to aid in the development of a successful project.

Roles and Responsibilities

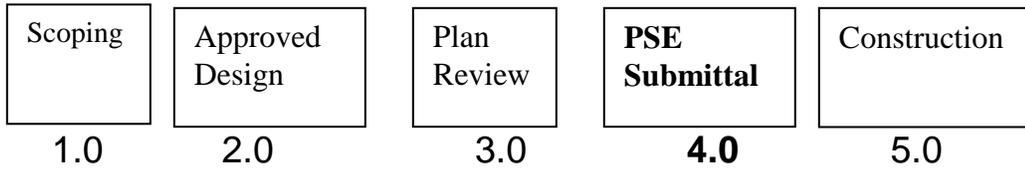
- District Manager
 - Ensure that all project teams have a District representative.
- Maintenance Staff

- Actively participate on project teams and provide the plan review function.

3.9 Tech Center Manager

The Tech Center Manager will ensure that the technical staff have completed a quality project design that is within the scope, schedule and budget. The Tech Center manager will also ensure that the Tech Center staff followed the quality control plan in the development of the design.

Quality Control Plan



Section 4.0 PSE Submittal

4.0 PSE Submittal

4.1 Roadway Unit

The Roadway Unit's role is to assemble all of the contract document materials and documentation necessary to submit the project to the Specifications & Estimating Unit, Office of Pre-Letting for advertisement and award.

Products/Srvices

- Estimated Construction Authorization, the "Green Sheet"
- PE Certified and signed mylars
- Statement of Technical Review Sheets
- PE Certified and signed Special Provisions
- Estimator bid item list
- Estimator cost estimate
- Construction Schedule
- Pre-Letting Project Submittal Checklist

Roles and Responsibilities

- Roadway Designer:
 - Address all comments made during the Final Review process and forward to project leader.
 - Provide Drafter with all data necessary to draft Final mylars
 - Provide all final information on the Roadway bid summary and cost estimate to the Specification Writer
- Region Utilities Specialist
 - Write and Forward Utility Status Report to Railroad/Utility Engineer, Project Manager, District Manager, Project Team Leader and Financial Services office
 - Forward Section 00150.00 ("Cooperation with Utilities") portion of project special provisions to project's specification writer, Railroad/Utility Engineer, Project Team Leader and Project Manager
- Drafter:
 - After receiving data from Roadway Designer draft all changes to the Final plans.
 - Print Final mylars and provide to the Roadway Designer
- Engineer of Record:

- PE Certify and sign all Final mylars
- Specification Writer:
 - Complete all final edits to the Special Provisions
 - Obtain all required PE Certifications and signatures
 - Complete the final Trns*port bid item list and cost estimate
 - Complete “Green Sheet”
 - Complete final construction schedule
 - Complete Pre-Letting Project Submittal Checklist
- Roadway Manager
 - Sign off on the Final Plan Quality Alert Checklist, after the Final Review has been completed, concurring that the set was complete for all items shown
 - Review the complete Final PS&E package (includes all items shown under the Products section above)
 - Submit PS&E package to the Tech Center Manager

4.2 Bridge/Geo Unit

- Detailed check of drafting, quantities, cost estimates, and specifications by peer reviewer
- Final check of drawing details before Mylar plotting
- Specifications produced by each discipline need to be stamped. Project package to include stamped specifications.
- FINAL STAMP/Signature (-Geologists or Engineers of Record)
- Deliver Mylars to Roadway Designer, Specifications to Spec. Writer for compilation.
- Communicate with PM & REC HazMat work/requirements for the project. (The intent is to allow one last chance before/during the bid process to clarify/modify requirements, and to program appropriate CE budget).

4.3 Environmental Unit

The role of the Environmental Unit at this milestone is to have secured all permits previously identified as being required to perform the construction activities for the project. And verify that all field/study work is completed along with all clearances and agreements are complete and final. This is carried out by the Environmental Permit Specialists with oversight from the Environmental Unit Manager.

- Completed Statement of Technical Review

- Final review of drawings to verify compliance with conditions of permits, BA/BO, BMP's or other conditions/requirements that apply. (REC)
- Communicate special or sensitive environmental conditions/requirements for the project with the PM. (The intent is to allow one last chance before/during the bid process to clarify/modify requirements, and to program appropriate CE budget).

4.4 Right of Way / Survey Unit

The Right of Way/ Unit's role during the PSE Submittal Phase is two-fold; 1) to assure that all property needed for the construction of the project is in possession of the agency and cleared for construction prior to the bid date of the project. The Right of Way Project Manager continues to be the focal point for all right-of-way related project information and.

Products/Services	Roles and Responsibilities
<ul style="list-style-type: none"> • Certify Project - Certification affirms that acquisition and relocation were performed in accordance with the Uniform Act and that all property is owned, cleared, and ready for bid • Completed Statement of Tech Review 	<ul style="list-style-type: none"> • RW Project Manager prepares certification and RW Manager certifies • RW Manager
<ul style="list-style-type: none"> • Compile and send Right of Way State Obligation and Grantor Obligation forms to the Specification Writer, Project Leader, Consultant Project Manager, Construction Project Manager, and others as requested • Organize all project and property files • Manage files and retention – clean files (retain originals, eliminate duplication) and maintain files in anticipation of regular review by internal staff, external interested parties (attorneys, appraisers, et. al.) and possible FHWA audits 	<ul style="list-style-type: none"> • RW Unit Administrative Staff

To provide above products and services during the PSE Submittal Phase RW/Utilities needs to receive the following:

Products/Services	From Responsible Party
<ul style="list-style-type: none"> • Notice of PS&E timeline for RW projects 	<ul style="list-style-type: none"> • Project Leader
<ul style="list-style-type: none"> • Notice that Condemned files are in possession 	<ul style="list-style-type: none"> • TSB
<ul style="list-style-type: none"> • Notice that there is no right of way for non-RW projects and that a certification is needed for PS&L 	<ul style="list-style-type: none"> • Project Leader

4.5 Traffic Unit

Products/Services

- Completed Statement of Technical Review
- Engineer stamp and signature on traffic plan sheets
- Final Bid summary and Specifications
- Signed Access Management Strategy

Roles and Responsibilities

- Assist the project leader in completing the final quality alert checklist
- Engineer of record will stamp and sign plans sheets
 - Signal Plans
 - Sign Plans
 - Traffic Control Plan
 - Striping Plan
 - Illumination Plan
 - Access Management Strategy
- Sign off on final
 - Cost estimates
 - Quantities
 - Specifications

4.7 Area Offices

At the PS&E stage, Area offices are responsible to coordinate any addendums with the Project Manager’s office and the Region Tech Center.

At this stage, all outstanding items on the final Quality Alert Checklist should already be resolved, however, if any remain, the Project Leader is responsible to

follow up and resolve them prior to bid let. In particular, the Project Leader is responsible to ensure that all permits, land use actions, and intergovernmental agreement issues have been resolved prior to bid let.

At PS&E, the Project Leader must engage the Project Manager's office in updating the communication plan to cover communication needs during construction.

Products/Services

- Updated Communication Plan for construction
- Addendums for bid let and associated background documentation
- Final resolution and documentation of any remaining outstanding issues
- If needed, Project leader will initiate letter to Deputy Director allowing advertisement although outstanding issues still exist.
- Pre-letting project submittal checklist

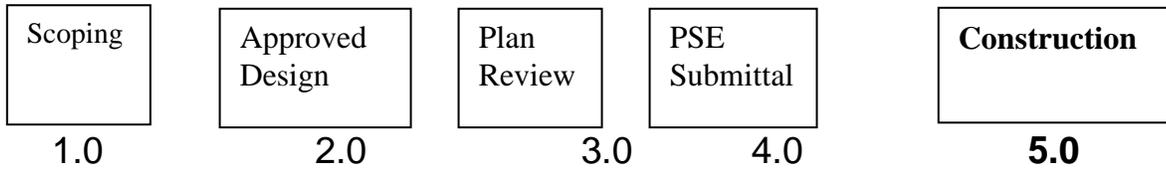
Roles and Responsibilities

- Area Manager and Project Manager signatures are required on the updated Communication Plan
- Project Leader will follow through with unresolved issues and produce pre-letting project submittal checklist and documentation

4.8 Tech Center Manager

The role of the Tech Center Manager is to review the contract document submittal package, checking over key items such as the estimated construction authorization "Green Sheet" and items listed on the pre-letting project submittal check list plan before submittal to Design Manager for signature. If there are outstanding issues listed on the Final Quality Alert Checklist, review issues and action plan. Review and comment on approval letter addressed to the Highway Division Executive Deputy Director before Region 5 Manager signs. If there are any outstanding issues, review action plan and concur.

Quality Control Plan



Section 5.0 Construction

5.0 Construction

5.1 Roadway Unit

Products/Services

- Construction Package (Transmitted to Construction Office)
 - Project Narrative
 - Copies of approved Design Exception letter
 - Preliminary and Advance Comments Documents showing how they were addressed
 - Reports/Spreadsheets
 - Alignment reports
 - Grade reports
 - Pipe locations
 - Bid Summary
 - MicroStation/InRoads file list
 - Others as needed
 - Project photographs
 - Transmittal letter to the construction office
- PE Certified and signed revisions to design

Roles and Responsibilities

- Roadway Designer/Engineer of Record:
 - Compile and deliver Construction Package
 - Review computer files, grades, and reports with Office Engineering Support person
 - Be available to answer questions and resolve problems that pertain to the roadway design
- Region Utilities Specialist
 - Coordinate with utilities relocating during construction phase
 - Resolve unanticipated utility conflicts discovered during construction
 - Complete reimbursable utility relocations
 - Review submission of utility relocation invoices for reimbursable conflicts
 - Receive verification from Project Manager that reimbursable conflicts are relocated as approved
 - Write and Send spur letters to utilities failing to meet relocation time commitments

- Submit utility reimbursement invoices to Railroad/Utility Engineer
- Roadway Manager:
 - Work to resolve any issues that come up during construction, when requested
 - Meet with Construction staff on a quarterly basis and review change orders, current construction projects and invite construction staff to team meetings to discuss constructability issues.

5.2 Bridge/Geo Unit

Products/Services

- Shop drawing verification/Checking
 - Copies of shop drawings and communications are filed with the project files.
 - As-built drawings are to be transmitted to Headquarters to inclusion with project structure files.
- Closed communication loop with Const. Personnel
- Change notices verified by "Engineer of Record"
- Deviations approved by "Engineer of Record", or primary designer or design checker or ...
 - Responsibility passed to altering Engineer
- Project Budget reviewed for adequate funds

5.3 Environmental Unit

Products/Services

- Attend Pre-con (REC, Specialists and EPM as needed)
 - Attend pre-con and explain environmental constraints, permits, requirements, and consequences.
 - Present wetland mitigation concepts to ensure that plans and expectations are well understood (Wetland Specialist); and
 - Review DSL/404 permit conditions with ODOT construction staff and contractor highlighting obligations and requirements (Wetland Specialist).
- On the ground support (Bio, REC, Historian, and Wetland Specialist as needed)

- Provide guidance in the field to ODOT inspectors and contractors in support of wetland mitigation grading, drainage, and planting plans (Wetland Specialist);
- Review grade checks during excavation, plant material per contract specifications, seeding/planting implementation, and compliance of DSL/404 permit conditions (i.e. appropriate upland disposal site, erosion BMPs) (Wetland Specialist); and
- If needed, coordinate “As-built” drawings with Survey Unit for DSL/404 permit requirements and for inclusion in project files (Wetland Specialist)
- Respond to emergencies such as hazmat spills or other unplanned events. (REC and other Specialists as needed)
- Perform Fish Salvage (Bios)
- Process In-water work extensions (Bio, Permits)
- Re-initiate ESA consultations if needed (Bio, Permits)
- Modify permits in support of changes during construction (Permits)

5.4 Right of Way Unit

The Right of Way/ Unit’s role during the Construction Phase is to act as a liaison between the grantors and construction crews and to complete the coordination of reimbursable utility relocations. The Right of Way Project Manager continues to be the focal point for all right-of-way related project contacts.

Products/Services	Roles and Responsibilities
<ul style="list-style-type: none"> ● Follow-up and resolve certification holdouts and track litigation 	<ul style="list-style-type: none"> ● RW Project Manager
<ul style="list-style-type: none"> ● Provide liaison as needed between the project property owners and the Project Manager, construction crews and inspectors. ● Provide information and interpretation related to State’s and Grantor’s Obligations and right of way law as requested 	<ul style="list-style-type: none"> ● RW Project Manager
<ul style="list-style-type: none"> ● Receive and process State’s and Grantor’s Obligations as completed in the field 	<ul style="list-style-type: none"> ● RW Project Manager receives from Construction Project Manager

To provide above products and services during the Construction Phase RW/Utilities needs to receive the following:

Products/Services	From Responsible Party
<ul style="list-style-type: none"> • Final Plans at PS&E 	<ul style="list-style-type: none"> • Design
<ul style="list-style-type: none"> • Notification of settlements/stipulated judgments 	<ul style="list-style-type: none"> • Justice

5.5 Traffic Unit

Products/Services

- Construction support
 - Review change orders that affect traffic issues
 - Help resolve unforeseen traffic issue
- Turn-on signals, Complete pre – turn on inspections prior to scheduling signal turn-ons. Advise Inspector of deficiencies and request correction of these deficiencies.
- Develop signal timing plans for implementation
- Review proposed changes to traffic Control Plans

Roles and Responsibilities

- Traffic Unit will be accountable for timely and professional response to customer service requests.

5.6 Survey Unit

Products/Services

- Project Monumentation
 - Review of Monumentation Centerline and R/W lines
 - Review of Deeds that purchased property and compare to ODOT Drwg. (R/W Map)
 - Review of R/W breaks
 - Review of station and offset calls to R/W
 - Review of final Field Survey for monumentation
 - Review of final monumentation network and/or the setting of monuments

- Survey Crew sets final Right-of-Way monuments and/or network monuments
 - Survey Analyst or Lead Surveyor prepares work map showing location and point numbers of Right-of-Way monuments to be set.
 - Lead Surveyor determines location and spacing of network to be set
- Final monuments are set
- Review of Narrative of monumentation centerline and network
 - Review “method of R/W monumentation” statement in narrative
 - Review the basis of survey and control
 - Check that LDP conversion is in narrative
 - Approval by PLS stamping the survey. This should be done immediately after resolve
- Review of drafting
 - See Survey Filing Map drafting checklist and drafting standards document
- Final check of drawing before Mylar plotting
 - Send to appropriate County for review
 - Review County edits and make corrections to mapping
 - Sign Mylar and file with County, (signature by PLS in charge of project)
 - Archive final survey

Roles and Responsibilities

- Survey Manager
 - Makes certain there are resources available to perform the work
 - Monitors schedule and budget
 - Reviews daily progress with team, keeps in contact with Project Leader and others as necessary, to apprise them of progress and any problems
- Lead Surveyor
 - Assigns monumentation map preparation tasks to Survey Analyst or Survey Drafter for the preparation of the Survey Filing Map
 - Reviews Deeds, Right-of-Way maps, deed calls, and alignments to ensure the monumentation agrees with the property purchased
 - Reviews all drafting products, with attention to alignment, location, conformance to new deeds purchased, and proper narrative formatting
 - Reviews drafting to ensure adherence to drafting standards and Survey Filing Map drafting checklist

- Sends draft map to County Surveyors' Office for review
- Stamps final map and sends to County for recording
- Senior Description Writer
 - Receives all documentation and electronic files from Senior Surveyor, such as Deeds and Right-of-Way maps
 - Compiles data and begins preparation of map
 - Reviews documentation while preparing map to check for any discrepancies
 - Makes certain map conforms to Survey Filing Map drafting checklist and drafting standards document
 - Delivers draft of Survey Filing Map to Senior Surveyor for redlines and comments
 - Makes edits and prepares map for filing
- Field Survey Crew
 - Meets with Lead Surveyor and Lead Description Writer or Junior Description Writer to gain understanding of what monumentation is to be set and where
 - Checks previously prepared work map for completeness to ensure all monuments are set that are required
 - Sets monuments
 - Double ties all monuments to ensure accuracy
 - Returns electronic file of sets to Survey Analyst to check electronically recorded locations agree with computed locations

5.7 Area Offices

During construction, Area offices are responsible to discuss all change orders with the design engineer or other appropriate technical staff.

The Area office is responsible to coordinate contract authorization increases, when necessary, with the Region Financial Plan Manager. Reasons for change orders, authorization increases or significant under runs will be communicated to the Region Tech Center Manager, to help prevent similar issues on future projects.

The Project Manager or Assistant Project Manager will be available to tour projects with Tech Center staff during construction.

Project Managers prepare narratives at the completion of each construction project, and these will be sent to the Tech Center Manager for review so that issues encountered during construction may be addressed on future projects.

During construction, the Project Manager is responsible to continually monitor and adhere to the established communication plan, and to keep Region public involvement staff apprised of project progress. The Project Manager's office is responsible to follow through on all "punch list" (not completed) items noted on this or other final walk through inspections.

The Area office is also responsible to participate in an annual review of construction projects with Tech Center staff. (Annual review meeting to be arranged by Tech Center.)

Products/Services

- Weekly construction updates for state-wide press releases
- Documentation of contract change orders, and contract authorization increases (when needed).
- Final Project Manager narrative

Roles and Responsibilities

- Any funding increase request must be sent to PDLT from the Area Manager.
- Project Manager and Area Manager signatures are required on all change orders and authorization increases.
- The project manager's office is responsible to close out project at completion of the project or the end of plant establishment whichever comes first. The project manager's office coordinates with the environmental unit to ensure plant establishment for wetland mitigation has been achieved and follows through with the contractor if it has not.

5.8 Maintenance

The role of Maintenance during construction is to support the Construction Project Manager, coordinate maintenance activities in project area as it relates to traffic control. Maintenance will also coordinate with the Construction Project Manager during emergency response.

APPENDIX

STATEMENT OF TECHNICAL REVIEW FOR ENVIRONMENTAL WORK

Official Name of Project

Key #

Region 5 Bridge/Geo/Environmental Unit

(Today's Date)

COMPLETION OF INTERNAL TECHNICAL REVIEW

The subject services have been completed for the Project listed above. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project, as defined in the Quality Control Plan. The independent technical review verifies that the products that pertain to this STR were in compliance with established laws, policies, standards, principles, and procedures. This included review and consideration of comments submitted and any assumptions, exceptions, evaluated alternatives and constructability issues. The product(s) covered by this STR support the project as outlined in the Project Prospectus and developed by the Project Team.

Discipline (Category of documents)	Responsible Specialist	Reviewed by	Date
Biology			
Prospectus Part 3			
EA / EIS			
Wetlands			
Permits			
Archaeology			
Hazmat			
Historic Resources			
Water Quality			
Noise			
Air Quality			

Region 5 Bridge/Geo/Environmental Unit Manager

Mark Hanson, PE

Date

Region 5 Quality Control Plan

Access Management Engineer

Your Name Here

Date

Region 5 Traffic Unit Manager

Thomas Kuhlman, PE; PLS

Date

