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HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

Subject

Overview

HD-201.1 INTRODUCTION

This chapter provides guidance of administrative procedures related to design involvement throughout the project development process (PDP). Topics range from project inception to design participation in construction and project closeout. Duties include Central Office and district responsibilities, as well as procedures for consultant involvement. This chapter is organized chronologically for a typical project, but the design team should be familiar with its entirety to ensure no administrative duties are overlooked as the project progresses.

The "Project Delivery Core Processes" are discussed in the following chapters and are summarized in **Exhibit 200-01**.

HD-201.2 RESOURCES

To ensure compliance with state and federal regulations and to ensure consistency, projects should be developed in a manner that uses the methods and controls adopted in manuals and policy statements as referenced herein.

The Code of Federal Regulations (CFR) Title 23, "Highways"; Chapter 1, "Federal Highway Administration, Department of Transportation," should be consulted for all federal-aid projects.

The Division of Highway Design website references current design resources online at: http://transportation.ky.gov/Highway-Design/Pages/default.aspx.

HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

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Pre-Design Activities

HD-202.1 PROJECT ORGANIZATION

Projects may be proposed by various entities including area development districts (ADDs), district offices, and local officials to address safety, operational, or other transportation system needs. When potential projects are identified, the district planning engineer completes the Project Identification Form (PIF). The PIF is used to:

- Define the problem to be addressed
- Provide characteristics of the existing conditions
- Identify an initial project description
- Provide a planning level estimate of environmental, design, right-of-way, utility, and construction costs for use in future project scoping and prioritization

Once the PIF is completed, the project is placed on the Unscheduled Projects Listing (UPL) maintained by the Division of Planning.

Projects on the UPL are continuously reviewed for accuracy and necessity, culminating in a prioritized list of needs for each ADD and metropolitan planning organizations (MPOs), as well as the District Transportation Plan (DTP). They are prioritized every two years in consideration for funding through the Highway Plan. Projects to be funded must meet the goals of the Long-Range Statewide Transportation Plan (STP) through the statewide rural-needs assessment or metropolitan- and urban-needs assessment. Project funding is evaluated based on review of the PIF and:

- Relative project priorities
- Available funding
- Project costs and scope

The Division of Program Management staff assimilates this information and develops a draft Highway Plan for presentation to the legislature in even-numbered years.

HD-202.1 PROJECT ORGANIZATION (cont.)

The approved Highway Plan is the culmination of decisions and legislation resulting in a schedule of proposed projects for planning, roadway design, right-of-way, utility, and construction phases within the years specified in the particular plan. Legislative action adopts the Highway Plan and provides the framework for project advancement for the biennium. After a project is identified and adopted in the Highway Plan, funding may be authorized for activities in the current biennium.

HD-202.2 ASSIGNMENT OF PROJECT

Once the Highway Plan is approved, projects with an identified design phase, which includes the schedule, budget, and scope as defined in the plan, become the responsibility of the Project Development Branch Manager (PDM). The PDM should be involved in the project's pre-design activities, be responsible for the concept and final design phases, and also serve as an advisor during construction. In some cases, a special project manager may be assigned.

The PDM may choose to delegate project activities, including project management, based on available resources and workload within a district. This delegation should be noted in the Preconstruction Database allowing designated individuals to be involved during the planning phase to ensure continuity and consistency through the preliminary and final design phase. These assignments should be reported to the location engineer early in the process.

HD-202.3 PROJECT DATA

The PDM needs to obtain as much existing data as possible before beginning a project. It is important that the PDM review the Highway Plan so that project needs can be identified and scheduled in anticipation of the beginning of the design phase. **HD-202.3.1** through **HD-202.3.11** provides details of the data typically required in anticipation of the design phase. It should be obtained as soon as possible. The PDM should not wait on design authorization to begin this process.

HD-202.3.1 Planning Study Results

The PDM should request any information from the Division of Planning when previous studies may have been performed. Much of the data outlined in **HD-202.3.2** through **HD-202.3.11** may be found in the planning study. Previous studies should also include initial cost estimates, utilizing the *Preliminary Cost Estimate Worksheet* (**Exhibit 200-02**) or similar documentation.

The Division of Planning website includes recently completed studies at:

http://transportation.ky.gov/Planning/Pages/Planning-Studies-and-Reports.aspx

HD-202.3.2 Record Plans/Management System Reports/Other Information

The PDM should obtain copies of the record plans in the area of the new project. KYTC maintains record plans of previous highway projects on the Project Archives GIS website at:

http://maps.kytc.ky.gov/photolog/?config=ProjectArchives

Typically, plan sets are also maintained in the district office and in Central Office.

HD-202.3.3 Traffic Data

The Division of Planning website includes historical traffic count data online at:

http://transportation.ky.gov/Planning/Pages/count-maps.aspx

HD-202.3.4 Crash Data

Crash data is another key component in determining appropriate solutions for a project. On all projects, crash history should be analyzed. It is recommended that a minimum of three years of crash data be reviewed. A crash study by location, type, severity, contributing circumstances, environmental conditions, and time periods may suggest possible safety deficiencies. In addition, potentially hazardous features and locations should be identified to determine appropriate safety enhancement. Crash data can be obtained from sites such as the Kentucky State Police website, the Transportation Enterprise Database (TED), and other websites. The Kentucky State Police website is located at:

http://crashinformationky.org/KCAP/Public/Home.aspx

HD-202.3.5 Project Mapping

Mapping can include aerial survey data, traditional ground-collected data, aerial and LIDAR, and data collected using other techniques. Floodplain maps should be reviewed for local conditions. FEMA provides these maps online at:

https://msc.fema.gov/portal

HD-202.3.6 Right of Way

The existing right-of-way limits should be obtained using the Project Archives GIS website, Property Valuation Administrator's (PVA) office, County Clerk's office, and district highway offices, as well as other sources.

HD-202.3.7 Preliminary Budget

The Highway Plan establishes the preliminary budget, which should be based on the initial project scope and available funding. Requests for any needed additional funds should be made through the Division of Program Management as early as possible.

HD-202.3.8 Existing Geotechnical Information

Results from completed KYTC geotechnical investigations are available through the Geotechnical Branch's online database. Additional geotechnical mapping and information may also be obtained from the Geotechnical Branch in the Division of Structural Design. The Geotechnical Branch's online database is located at:

http://kgs.uky.edu/kgsmap/kytcLinks.asp

HD-202.3.9 Utilities

Utility information is critical to project development and should be obtained from the Kentucky Water Resource Information System (WRIS) and other GIS websites (http://kia.ky.gov/wris/), for potable water and sanitary sewer, GOOGLE EARTH Streetview (or similar), and BUD One Call, as well as direct contact with local utility providers. Coordination with the district utility agent is essential to obtaining the appropriate data as early as possible in the process. The location of utilities within the project limits is the responsibility of the project manager. The appropriate level of accuracy for the utility location shall be commensurate with the potential for conflict and the stage of development of the project.

HD-202.3.10 Agency Coordination

Any agency coordination that has previously occurred should be collected and reviewed. This information should be available from the district planning engineer.

HD-202.3.11 Modal Considerations

Studies and other information concerning other transportation modes should be obtained and considered throughout the design process. Examples are:

- Transit bus stops
- Local master plans
- Connections to nearby destinations
- Inter-state modal routes (such as bicycle routes)

HD-202.4 RESOURCE DETERMINATION

The PDM is responsible for progressing projects in the Highway Plan through the design process. When initiating a project, the PDM reviews the workload and required expertise of the district design staff and determines how to best execute the project. Issues that may influence these decisions include:

- Project schedule
- Milestones
- Impact mitigation
- Difficulty obtaining right of way
- Utility relocation

The fiscal year date to initiate the right-of-way process is a key determinant in deciding how to perform the work. The schedule is typically devised using this milestone date.

Fast-track or high-priority projects assigned to the districts may also influence the schedules of projects already in progress.

If resources are not available in the district, the design may be assigned to other internal resources, or consultant services may be utilized by statewide consultant contracts or by procuring other consultant services. **HD-205** discusses consultant administration.

Project Teams—Based on the resource determination and identified project needs, the PDM should assemble an appropriate project team. This team should utilize subject matter experts (SMEs) as required.

Central Office Support—The highway design location engineer serves as support and as liaison between the district design team, the Division of Highway Design, other Central Office divisions, and the Federal Highway Administration (FHWA).

HD-202.5 PROJECT AUTHORIZATIONS

The PDM should file a request for funding authorization with the location engineer using the TC 90-122 form, *Request for Funding Authorization* (**Exhibit 200-03**), and *Project Spend-Down* (**Exhibit 200-04**). A *Design Funds Documentation Summary* (**Exhibit 200-05**) should be used to develop an estimate of needed funds.

The Division of Program Management prepares the TC 10-1 form, *Project Authorization* (**Exhibit 200-06**), and, when funds are authorized, distributes the form (and approved PR-1 for federal-aid projects) to the location engineer and

PDM. Typically, authorizations are made for each phase of the project development process: Planning, Design, Right-of-Way, Utility, and Construction.

During the design process, there may be changes that require additional funding requests. These requests should be dealt with in the same manner as detailed above. It may be advantageous to initially request enough funds to complete the early project development. Once the transportation decision is made, the PDM would request additional funding for final design.

HD-202.6 PRE-DESIGN MEETING

After project authorization, the PDM should hold a meeting to review the issues faced by the project. The primary focus of this meeting is to address the following:

- Purpose and Need
- Project Scope
- Schedule and Milestones
- Additional Resources
- Additional Mapping
- Environmental Overview
- Traffic Forecasting
- Public Involvement

HD-202.6.1 through **HD-202.6.8** details these discussion points.

HD-202.6.1 Purpose and Need

A purpose and need statement is necessary for developing for developing all projects. It is a requirement on projects that will include NEPA documentation, an environmental impact statement, or environmental assessment/FONSI. A clear, well-justified purpose and need discussion explains to the public and decision-makers that expenditure of funds is necessary and worthwhile. The purpose and need statement shall be continuously evaluated during the development process and modified as needed based on information gained through the public involvement process. FHWA provides guidance for the development of a purpose and need statement in their Environmental Review Toolkit available online at:

http://www.environment.fhwa.dot.gov/projdev/tdmelements.asp

HD-202.6.2 Project Scope

The project should be clearly defined and should address the following:

- Type of project (New Route, Reconstruction, 4R [Resurfacing, Restoration,

Rehabilitation, Reconstruction], 3R [Resurfacing, Restoration, Rehabilitation], or Spot Improvements)
- Project description (project location, magnitude and length, classification, current ADT, etc.)
- Draft purpose and need statement
- Roadway characteristics
- Potential options to consider (without preference)
- Design criteria
- Proposed access control
- Possible funding types
- Potential environmental actions
- Right-of-way requirements
- Number and types of drainage structures anticipated

HD-202.6.3 Schedule and Milestones

The schedule and milestones should be established based on funding availability, complexity, and goals of the project. Milestones should be established for:

- Alternative Concepts
- Preliminary Line and Grade
- Final Inspection
- Right-of-Way Plans
- Final Plans

HD-202.6.4 Additional Resources

During the meeting, it is important to determine additional resources needed to complete the project.

HD-202.6.5 Additional Mapping

If additional mapping is required, requests for project mapping should be submitted to the survey coordinator, Division of Highway Design. The PDM and survey coordinator should evaluate the information and area. Selection of the type and extent of coverage should be determined. Care should be taken to ensure sufficient coverage to avoid the need for subsequent mapping. Aerial survey~~s~~ requests are typically made prior to the "window of opportunity", during the months of December through March. The season, angle of the sun, vegetation, and other factors are critical to the scheduling of aerial mapping and should be considered when requesting this service.

Typically, the division survey coordinator requires information defining the project area, as well as the desired scale for the mapping. The survey coordinator should be contacted whenever questions arise. **HD-300** provides further details on surveying.

HD-202.6.6 Environmental Overview

As soon as possible following project authorization, the PDM and environmental coordinator should examine the potential project area for environmental impacts. These include but are not limited to:

- Air quality
- Aesthetics
- Cemeteries
- Cultural resources
- Endangered species
- Federal lands
- Floodplains
- Groundwater resources
- Hazardous materials and underground storage tanks (HazMat/UST)
- Noise
- Section 4(f) resources (cultural resources, recreational parks, wildlife refuges, etc.)
- Section 6(f) resources
- Socioeconomic concerns and environmental justice
- Streams
- Wetlands

If environmental concerns are detected or perceived, a request for investigation should be submitted to the Director of the Division of Environmental Analysis. The Division of Environmental Analysis will provide the results of its investigation and any recommendations for consideration. The project team is then responsible for evaluating this information and incorporating the recommendations into the project.

HD-400 and **HD-500** provide additional information concerning environmental and permit concerns. Additional information may also be found in the KYTC *Environmental Analysis Guidance Manual*.

HD-202.6.7 Traffic Forecasting

Traffic data is needed on projects to determine the number of lanes, the necessity for turn lanes, and the lengths of required turn lanes. Traffic data is also a major contributor to the purpose and need statement for the project. If after reviewing the existing traffic information the PDM deems additional traffic information is needed, a request should be sent to the Division of Planning.

HD-202.6.8 Public Involvement

Public involvement is an essential component in the development of a project. The viewpoints and opinions of the public are important considerations in the transportation decision-making process.

The PDM and the district public information officer (PIO) should discuss how public involvement will be conducted on the project as early in the project development phase as possible. **HD-600** contains additional information concerning public involvement.

HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

Subject

Preliminary Design

HD-203.1 OVERVIEW

Once a project is in the Highway Plan, the Project Development Branch Manager (PDM) is responsible for the movement of the project through the design process. The first step in the process is preliminary design. The critical product of preliminary design is the transportation decision **and rationale** documented in the environmental document and reflected in the preliminary line and grade plans. Design is only one component of the preliminary design phase; therefore, the PDM must work together with other disciplines (such as environmental analysis) to complete this phase.

HD-203.2 KEY DECISION POINTS

There are key points during the development of all projects when decisions must be made by the PDM and the project development team (PDT). These decision points are required by NEPA, but are also critical in delivering any project. These key decision points are identified and discussed below.

- **Purpose and Need:** Purpose and need provides the foundation for successful decision-making and the basis for the evaluation and comparison of reasonable alternatives. For projects with completed planning studies, the PDT should use this as a starting point for further developing the purpose and need statement. For each project, the purpose and need will be utilized to establish the scope of the required work, including the study area and expected project deliverables. The outcome of this decision point is a draft purpose and need statement.

- **Range of Alternatives:** At the next point in the process, the PDT should develop a range of alternatives for consideration within the study area that meet the purpose and need of the project. Alternatives and corridors previously evaluated should be the beginning point. Alternatives and corridors eliminated during the development studies should not require further investigation, if each alternative was developed adequately with sufficient documentation and rationale for its elimination. Key environmental

features within the corridor should be identified and mapped before alignment studies begin. Alternatives may be eliminated from further consideration with adequate supporting documentation. While a preferred alternative may stand out, the PDT should resist making a recommendation until they understand relevant impacts and issues. Following the review of the alternatives, the subject matter experts (SMEs) would then proceed with an evaluation of alternatives left for consideration.

The SMEs will need to consider a corridor approach, as opposed to a given alignment, so that adjustments can be made to avoid or minimize impacts. They also need to remain involved in the decision-making process to ensure impacts are considered and offer suggestions on how to minimize or mitigate when necessary. Evaluation of the range of alternatives should also include preliminary information about total project costs. The PDT consists of members from the various functional areas of the Department of Highways. The input of these members should be solicited throughout the project development process. The output from the range of alternatives phase should consist of the list of possible, practical, and feasible alternatives that fulfill the purpose and need. This is the list of alternatives that should be further developed and evaluated.

The scope of impacts for each of these alternatives is critical in the progression of alternative analysis and shared transportation decision-making process. The SMEs should present to the PDT the results of their investigations, including the baseline studies and the corresponding impacts of each of the alternatives on the study area.

They should also offer suggestions on the risk associated with moving forward with each alternative and the time frame involved in resolving identified impact issues (such as 4(f) involvement that could take an additional 12 months to resolve, stream mitigation that would cost $450,000, or impact on endangered species habitat). Right-of-way and utility SMEs should also present their findings so that the PDT can fully consider the possible impacts that property acquisition and utility location, both public and private, might have on the transportation decision.

If the SMEs uncover subsequent information that could have a significant impact to the budget or schedule of the project, the SMEs and PDM should inform the PDT so that the new information can be given due consideration.

When determining the impacts, the PDT must work through the decision-making process, including avoidance, minimization, mitigation, and possibly even enhancement efforts necessary to address the impact. The PDM and PDT shall always consider environment, economics, and engineering. The

PDT could also may make decisions or determine that additional information is required to further investigate alternatives. Based on findings that detail the impacts and issues involved with each alternative, the PDT should discuss and possibly determine a preferred alternative.

All decisions are documented and included in the draft environmental document. The output from the scope-of-impacts phase may include the following:

- Draft environmental assessment or categorical exclusion
- Preliminary alternative plans
- Right-of-way and utility impacts with associated costs
- Possible mitigation measures
- Corresponding project costs and schedule impacts

When public and resource agency involvement is determined to have been sufficient, the PDT may identify a preferred alternate in the environmental document prior to conducting the public hearing.

- **Selected Alternative:** The PDT will select a preferred alternative based on environmental, economic, and engineering issues and public input. This is the final key decision point of shared transportation decision-making in the conceptual stage of the project. The final environmental document would then be prepared, reviewed, and approved. The output would be the final approved environmental document and the selected alternate to proceed into final design.

The purpose of these key decision points is to ensure that the environmental and design processes are integrated.

The PDT has the flexibility to combine these key decision points on a project-by-project basis. Smaller projects may offer the opportunity to combine the range of alternatives and scope of impacts. It is important that all PDT members and SMEs are aware of the intent to combine the decision points and are prepared to concurrently address the issues associated with each decision point. However, some projects may require further discussion of avoidance, minimization, and mitigation and require opportunities for the PDT to convene and discuss these topics. Each of these decision points should be discussed and considered before a final decision is made.

These key decision points must be a model for all projects and therefore should be included in the consultant contracts as scheduled milestones.

The PDT with the appropriate input from SMEs must determine the time

required for completing their respective responsibilities and set the schedule appropriately. As stated before, the transportation decision-making process requires the different functional divisions within the Cabinet to work together. The Division of Highway Design is an integral part of this process and must work with other divisions to ensure projects are delivered.

The key decision points include establishing purpose and need, identifying the range of alternates and their impacts, and selecting a preferred alternative.

The process can change significantly from project to project. More public meetings may be necessary due to controversy on a particular project or the need to deal with a number of different alternatives. **HD-600** further details public involvement and discusses the possibility of having advisory committees, focus groups, etc..

In addition, the environmental impacts of the project may vary significantly, altering the project requirements. **HD-400** provides more details on types of environmental actions. Categorical exclusions (CE) projects are those projects or project actions that do not individually or cumulatively have a significant effect on the human environment. For these projects a number of meetings may be combined to expedite the process. A public hearing may not be required.

On other larger or controversial projects, an environmental impact statement (EIS) may be required. A process similar to the following example may be used; however, regulatory agencies require more input from interested agencies, and more documentation is required.

The following example provides a general overview of the steps that may occur during the preliminary design process. The example shown is for a typical capacity improvement project that requires a Finding of No Significant Impact (FONSI). For a flow chart of this example, see **Exhibit 200-07**.

1. Purpose and Need—The first key decision point involves defining the purpose and need, which occurs at the pre-design meeting. At this meeting the PDT discusses the purpose and need for the project, determines the resources needed to complete the project, and begins developing a public information plan.

2. Public Meeting #1—Sometimes it is necessary to have a public meeting very early in the process to address the purpose and need statement. This public meeting would typically be informal and act as a public kickoff for the project. The purpose of this meeting is to gather information, determine community support of the project, and understand community issues and desires.

3. Review of Alternatives—This meeting is held after substantial investigation and analysis by the design team to identify a **reasonable** range of **competitive** alternatives that meet the purpose and need of the project. The range of alternatives must include at least one option that meets the scope, budget, and timeline of the Highway Plan. Alternatives and corridors previously evaluated during the planning process should be the beginning point. An environmental overview should also be available before alignment studies commence.

   To meet the purpose and need of the project and to provide a reasonable and competitive alternative, concepts should be developed with attention to engineering and fiscal constraints. In addition, designers should ensure that alternatives meet the operational, safety, and other performance goals established by the purpose and need statement.

   The objective of the meeting is to refine the alternatives and provide a list of possible, practical, and feasible alternatives that fulfill the purpose and need. The study area and preliminary project costs for each alternative should also be defined. While a preferred alternative may stand-out, the PDT should resist making a recommendation until all alternatives are adequately explored and the impacts and issues surrounding each are understood.

   Following the review of the alternatives, the subject matter experts (SMEs) would then proceed with an evaluation of those alternatives left for consideration.

4. Scope of Impacts—After the SMEs have studied the range of alternatives, the PDT should come together to discuss the scope of impacts. The SMEs should present to the PDT the results of their investigations, including the baseline studies and the corresponding impacts of each of the alternatives on the study area. They should also offer suggestions on the risk associated with moving forward with each alternative and the time frame involved in resolving identified impact issues. Right-of-way and utility agents should also present their findings during this meeting so that the PDT may fully consider the possible impacts that property acquisition and utility location might have on the transportation decision.

   When determining the impacts, the PDT must work through the decision-making process, which includes avoidance, minimization, mitigation, and enhancement of the impact for each alternative. The decisions that are made will be documented. The output from the scope-of-impacts phase may include the draft environmental assessment or categorical exclusion, preliminary alternative plans, right-of-way and utility impacts with associated

costs, possible mitigation measures, and corresponding project costs and schedule impacts. If public and resource agency involvement is determined to have been sufficient to do so, the PDT may identify a preferred alternative in the environmental document before the public hearing.

5. Public Meeting #2—Once the PDT has a reasonable number of feasible and competitive alternatives and understands the potential impacts, it may be appropriate to hold another public meeting to present the potential alternatives and gather public opinion. This meeting may be held before or after a preferred alternative is identified.

6. Preliminary Line and Grade Meeting—After the public meeting data have been accumulated, the PDT comes together to discuss the public input and the scope of impacts. The PDT uses the available data, analysis, and professional judgment to narrow down the alternatives to a preferred alternative. The primary goal of this meeting is to determine a preferred alternative and document the rationale used in reaching this decision.

7. Finalize Environmental Assessment—The environmental assessment (EA) is the document that accumulates all the information gathered for the project. This will include the base studies that are completed. The EA also documents the different alternatives considered. The EA should describe the proposed action in sufficient detail; the purpose and need for the proposed action; all alternatives; and the environmental, social, and economic impacts, along with the secondary and cumulative effects of the proposed action for each of the alternatives. Proposed mitigation measures should be documented in the EA. It should also have a list of the persons and agencies consulted during the early coordination process. Once the draft EA is completed and approved by FHWA, the opportunity for a public hearing may be advertised.

8. Public Hearing—The public hearing is the only public meeting that is required. **HD-600**, "Public Involvement," details how to conduct a public hearing**.**

9. Alternative Confirmed—Following the approval of the environmental assessment and the public hearing, the PDT should meet to select a preferred alternative based on environmental, economic, and engineering issues and public input. The final environmental document should then be prepared, reviewed, and approved. The output should be the final approved environmental document and the selected alternative to proceed into final design.

10. FONSI & Location Approval—For the example in **Exhibit 200-07** the FONSI is the final environmental document that details what decision was made. The

FONSI focuses on the selected alternative and also responds to issues raised during the public hearing. The EA shall be attached to the FONSI, as it provides the supporting documentation for the decisions made for selecting the alternative. It should state that the proposed project will have no significant impacts on the environment. The FONSI should reflect compliance with all applicable environmental laws and regulations. The PDM will publish the location approval to inform the public of the decision. The announcement may be provided through whatever media is deemed appropriate (newspaper, web, etc.).

11. Final Design—The FONSI is signed, the design is detailed, and plans for right-of-way acquisition, utility relocation, and construction are prepared.

HD-400, "Environmental Considerations," and the *Environmental Analysis Guidance Manual* provide further information on CE and EIS projects.

HD-203.3 TYPICAL CONSIDERATIONS FOR THE DEVELOPMENT OF ALTERNATIVES

During the preliminary design phase it is imperative that potential constraints, issues, and solutions be identified as early in the process as practical so that the best solution can be identified from the outset. The following identifies some of the resources and analysis requirements to assist the designer in developing these alternatives.

HD-203.3.1 Geometric Design

All alternatives should be developed in accordance with guidance provided in **HD-700**, "Geometric Design Guidelines."

HD-203.3.2 Basic Number of Lane Determination

Number of lanes should be determined through capacity analysis, community input, cost, and desired function as well as other factors.

HD-700, "Geometric Design Guidelines," provides more information on number of lane determination.

HD-203.3.3 Roadside Design

Roadside safety design is a very important component of the total highway design and should be thoroughly considered during the design process. The goal of roadside safety design is to create a "forgiving roadside," which allows for errant vehicles leaving the roadway and supports a roadside design where serious consequences are reduced.

HD-800 provides more information on roadside safety design.

HD-203.3.4 Intersection Design

The designer should use traffic capacity analysis, site data, crash data, and other pertinent data to determine the configuration and traffic control for intersections. Additionally, some traffic control designs such as signals and modern roundabouts require additional analysis and review procedures.

HD-900 provides more information on traffic engineering and intersection design**.**

HD-203.3.5 Access Management

Access management includes several principles and techniques that help preserve mobility and improve safety. Designers should incorporate access management techniques into project designs.

HD-1100 provides more information on access management.

HD-203.3.6 Pedestrian and Bike Facilities

The project team shall consider the need to incorporate pedestrian and bicycle facilities on all new roadway construction and reconstruction projects. Pedestrian and bicycle facilities may be considered for other projects on a project-by-project basis.

HD-1500 provides guidance on pedestrian and bicycle facilities.

HD-203.3.7 Maintenance of Traffic and Constructability

Maintenance of traffic and constructability may preclude a given alternate. It is critical that these issues be examined during the development of alternatives.

HD-203.3.8 Railroad Coordination

Coordination with railroad companies must be done when highway improvements have the potential for affecting railroad facilities. The Central Office railroad coordinator should be contacted as soon as possible, but no later than the selection of the preferred alternative, in order to facilitate the necessary approvals. The PDM should also ensure that the project records indicate the need for railroad involvement.

HD-1400 provides more information on railroad coordination.

HD-203.3.9 Interchange Justification Studies

The FHWA requires an interchange justification study (IJS) to add access (interchanges and ramps) to the existing interstate system. This policy is applicable to new or revised access points to existing interstate facilities regardless of the funding of the original construction or the funding for the new access points. Revised access is considered to be a change in the interchange

configuration even though the number of actual points of access may not change. For example, replacing one of the direct ramps of a diamond interchange with a loop, or changing a cloverleaf interchange into a fully directional interchange, would be considered revised access for the purpose of applying this policy. IJSs or interchange modification reports (IMRs) may be required.

All requests for new or revised access points on completed interstate highways must be closely coordinated with the planning and environmental processes. FHWA approval constitutes a federal action and requires that NEPA procedures be followed. NEPA procedures will be accomplished as part of the normal project development process and as a condition of the access approval. This means the final approval of access cannot precede the completion of the NEPA process. To offer maximum flexibility, however, any proposed access points can be submitted for a determination of engineering and operational acceptability prior to completion of the NEPA process.

The PDT should obtain engineering and operational acceptability as early in the process as possible. The IJS should be developed consistent with FHWA's *Interstate System Access Informational Guide* and submitted to the FHWA. This guide provides more information on IJS and IMR requirements and is available online at:

http://www.fhwa.dot.gov/design/interstate/pubs/access/access.pdf

HD-203.4 COMMUNICATING ALL PROMISES (CAP)

During project development, many commitments (promises) are made to project stakeholders and the general public. To ensure that commitments are kept, the PDM will accumulate and track all promises in the project database system. The information to be recorded includes:

- A description of the promise
- To whom the promise was made
- Source of the promise
- Date the promise was made
- Location of the work or activities to fulfill the promise

All project promises require PDM approval before they are officially logged into the system. The extent to which project promises can be made by other individuals is to be determined by the PDM. The PDM shall retain the responsibility for ensuring that all promises (related to topics such as roadway features, environmental concerns, right of way, outstanding demolitions, utilities, structure design, etc.) are ultimately recorded in the system. CAP is

intended but not limited to record commitments not in other project documents.

The system is designed to not allow deletions. If a promise is to be changed or countermanded, an additional entry will be required to document this change. The PDM should understand that the goal is not to increase the number of promises made but to ensure that the Cabinet delivers on made promises.

A CAP report shall be created and included in the documents submitted to the Division of Construction Procurement's Plans, Specifications, and Estimates Branch (PS&E) for letting. The CAP report shall be included in the bid package and shall remain a part of the contract document.

HD-203.5 PRELIMINARY LINE & GRADE (PL&G) MEETING MINUTES

The PL&G meeting minutes should include at a minimum:

- Meeting attendees
- Discussion of proposed alignments (vertical and horizontal) and their associated impacts
- Right of Way, Utility, and Construction cost estimates for each alignment
- Selection of preferred line, grade, and typical section
- Traffic control schemes
- Listing of considerations that led to the selection of the preferred line, grade, and typical section
- Listing of considerations to address the Water Related Impacts Summary
- Tentative list by station and size of all structures, if applicable

When considering environmental issues during the design process, it is recommended to avoid impacts to water resources where possible. If impacts are unavoidable, the next step is to minimize these impacts. Once these unavoidable impacts have been determined, mitigation may be required in some cases. Where possible, enhancement of water resources may also be considered in a project.

The Water Related Impact Summary (**Exhibit 200-08**) was developed to aid the PDT in the decision-making process and is required for all projects. As described in the exhibit, "Section 1: Impact Checklist" shall be completed for each alternate considered in the conceptual design phase of the project. This will aid in the comparison of water-related impacts associated with each alternate. Completion of "Section 2: Impact Discussion" is only required for the selected alternate and is used to describe the avoidance, minimization, mitigation, or enhancement measures that have been considered in the project as noted in the Design Executive Summary.

The project manager shall submit the final PL&G minutes to the location engineer for approval. Once the location engineer approves the PL&G minutes the project manager shall ensure distribution to the PDT.

HD-203.6 DESIGN EXECUTIVE SUMMARY (DES)

The Design Executive Summary (DES) is the record of engineering decisions related to the project and contains rationale concerning the identification of the preferred alternative and requested design exceptions. Projects administered by the KYTC Division of Highway Design shall require a DES unless an exemption is given by the division director. The Division of Highway Design uses this information in determining approval of design exceptions. The Division of Environmental Analysis uses this report in determining environmental actions that may be required. Since the DES documents the rationale used when making design decisions, it is important that the DES document all pertinent information used in the decision process.

HD-203.6.1 DES Contents

The DES (**Exhibit 200-09**) includes the summary form, which can be found on the Division of Highway Design Intranet webpage, and the following attachments:

- Typical section (including bridge typical sections)
- Project location map
- Project overview and existing conditions
- Purpose and need statement
- Description and range of alternatives (including no-build alternative and an alternative meeting concerning the approved Highway Plan budget) with respective traffic control schemes, and environmental, utility and right of way impacts
- Discussion of design exceptions and variances (if applicable per **HD-704** guidelines) and mitigation strategies
- Cost comparison table of alternatives versus Highway Plan (R, U, and C)
- Reason for cost overrun (if estimated costs exceed the Six-Year Highway Plan budget costs for all phases by 15 percent or more)
- Choice of preferred alternative and reasons for its selection
- Discussion of clearzone
- Consideration of bicycle and pedestrian facilities (**HD-1502**)
- Additional design reviews if required

The project engineer submits the DES to the PDM. The PDM or a designated representative is responsible for the content and recommendation of the DES to the location engineer. **HD-203.6.2** details DES review and approval processes.

HD-203.6.2 DES Approval Processes

Tier 1 DES Approvals: Final approval requires signature of the location engineer if the following criteria are met:

- Environmental Document Type < CE LVIII
- Local or Collector Roadway Classification (non NHS)
- Design Year ADT ≤ 1500
- No Design Exceptions required for any of FHWA's 13 Controlling Criteria (**HD-704**)
- Preferred Alternative Cost ≤ 115% of the Current Highway Plan

or:

- Environmental Document Type < CE LVIII
- Low Volume 400 current ADT with or without exceptions
- Preferred Alternative Cost ≤ 115% of the Current Highway Plan

Tier 2 DES Approvals: Final approval requires signatures of the location engineer and Roadway Design Branch Manager if the following criteria are met:

- Environmental Document Type < CE LVIII
- Local or Collector Roadway Classification (non NHS)
- Design Year ADT > 1500
- No Design Exceptions required for any of FHWA's 13 Controlling Criteria
- Preferred Alignment Cost ≤ 115% of the Current Highway Plan

Tier 3 DES Approvals: Final approval requires signatures of the location engineer, Roadway Design Branch Manager, and Director of the Division of Highway Design if the following criterion is met:

- Projects not meeting Tier 1 & 2 parameters

A copy of the approved DES is returned to the PDM and the location engineer to be filed in the project file. On FHWA oversight projects the DES shall be provided to FHWA, and their approval for design exceptions shall be solicited under separate cover. FHWA approval of the design exceptions shall be made part of the project record.

HD-203-7 POST CONCEPT ACTIVITIES

HD-203-7.1 Advertisement of Location Approval

Advertisements of location approval are required for those projects that have an EIS or FONSI document. While there is no regulatory or statutory obligation to advertise the location approval for projects that have categorical exclusions (CEs)

and categorical exclusions for minor projects (CEMPs), advertisements are encouraged as an indication of the Cabinet's willingness to share information with the public. It is important that every effort be made to keep the public involved and informed concerning environmental clearance and location approvals. The decision as to the manner of the advertisement is a matter of balancing the costs of advertising with the expected benefits to be derived. The PDM may advertise location approval notices for projects via the internet or other innovative advertisement means. Projects that require an EIS or a FONSI shall be advertised in local or regional newspapers and, when appropriate, one newspaper with statewide circulation.

HD-203.7.2 Request for Geotechnical Investigation

A determination of the types and locations of geotechnical features is essential to the design and construction of a roadway. Typically, a request for analyses is made after preliminary line and grade approval. The *Geotechnical Guidance Manual* details the procedures to follow when soil and subsurface exploration is required. The designer is responsible for the submission of adequate information to the Division of Structural Design, Geotechnical Branch, concerning project alignment, grades and cross sections, and structure locations needing information for scour calculations and any changes that occur in them. The Geotechnical Branch will provide a report of its recommendations to the PDM for consideration on the project.

HD-203.7.3 Subsurface Utility Information and Early Coordination

Locations of existing utilities shall be obtained early in the design process. During the design process when it becomes apparent that roadway construction may conflict with underground utilities, coordination with the utility companies should be initiated. A more accurate location of the utility can be requested. The PDT shall determine the quality level of utility locations that are appropriate for the various stages of project development. Discussion to determine affected utilities and their potential relocations should be initiated at this stage.

HD-303 provides more information on subsurface utility location.

HD-203.7.4 Value Engineering (VE) Studies

A VE study is an independent, systematic, creative analysis to analyze a project's design or reduce its cost while still meeting the purpose and need of the project. The PDM shall consult current FHWA requirements to determine which projects require a VE study. The PDT may request a VE study to optimize designs and project costs on significantly smaller projects.

A VE study should be conducted shortly after the preferred alternative has been identified. When a candidate project is identified, the Quality Assurance Branch should be contacted to schedule a VE study.

HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

Subject

Final Design

HD-204.1 OVERVIEW

The project moves into the final design phase once a selected alternative has been chosen and the transportation decision has been made and documented. Resolutions of project-specific issues or special circumstances identified in the preliminary design phase must be carried through to the final design.

The details developed for the chosen alternative in the final design phase are utilized to prepare the plans needed for right-of-way acquisition, utility relocation, and construction.

HD-204.2 PAVEMENT DESIGN

The responsibility for designing the pavement depends on the average daily traffic (ADT), percentage of trucks, facility type, and equivalent single-axle loads (ESALs).

HD-1000 provides more information on pavement design.

HD-204.3 ROADWAY SIGN DESIGN

Signing plans shall be completed to a conceptual stage in time for delivery prior to the joint inspection for detailed review by a traffic subject matter expert (SME) and to accommodate right-of-way and utility needs. Conceptual signing plans should be reviewed for the necessity of structural design, such as overhead trusses and sign piers. Conflicts between roadway design elements and sign placement also need to be addressed. Signing plans should be incorporated into the contract plan set before the letting.

HD-1200 provides more information on signing.

HD-204.4 SOIL & SUBSURFACE EXPLORATION

Geotechnical report recommendations should be utilized in the preparation of the contract plans. Such recommendations include cut and fill slopes, rock

roadbed, CBR values, rock disintegration zones, etc. The Project Development Branch Manager (PDM) may request additional geotechnical investigations as recommended by SMEs during final design for roadway and structural design elements.

HD-204.5 SUBSURFACE UTILITY INFORMATION & COORDINATION

When potential utilities conflicts are identified, more precise locations should be obtained for utilities that may be impacted by the proposed project. Locations may be obtained at different levels of accuracy. As early as possible, the project manager should work with the utility supervisor to initiate coordination with impacted utilities. Obtaining more precise location of the utilities may be key in determining the level of impact and facilitating the necessary coordination.

HD-303 provides more information on subsurface utility location**.**

HD-204.6 ROADSIDE SAFETY DESIGN

Roadside safety design is an important component of the total highway design and should be thoroughly considered during the design process. The goal of roadside safety design is to create a “forgiving roadside” that allows for errant vehicles leaving the roadway and supports a roadside design that reduces serious consequences.

HD-800 provides more information on roadside safety design.

HD-204.7 INTERSECTION DESIGN & SIGNAL PLANS

The designer should use traffic capacity analysis, site data, and crash data to prepare studies of alternative configurations and alignments for intersecting roadways. Intersection’s configuration and use of traffic control devices should be discussed by the project development team (PDT) on an intersection-by-intersection basis.

When the PDT identifies locations that may require signal, signing, or lighting plans, the district traffic engineer should notify the Division of Traffic Operations in writing and provide appropriate supporting information to obtain concurrence.

The project manager is responsible for making sure the appropriate traffic plans are identified and included in the total plan set. To facilitate this process, the project manager should notify the district traffic engineer of PDT meetings and inspections as early in the process as feasible.

HD-900 provides more information on intersection design and signal plans.

HD-204.8 RAILROAD COORDINATION

Coordination with railroad companies is required when highway improvements may involve railroad facilities. The Division of Right of Way and Utilities' railroad coordinator should be contacted as soon as possible, but no later than the selection of the preferred alternative. The railroad coordinator will facilitate the necessary approvals and identify what additional considerations should be made concerning potential impacts of the highway on those facilities. The PDM should ensure that the project database system documents the need for railroad involvement, which is typically accomplished by adding "Railroad Involvement" in the "Project Concerns" area.

HD-1400 provides more information on railroad coordination.

HD-204.9 ACCESS MANAGEMENT

Access management encompasses several principles and techniques designed to increase the capacity of roads, manage congestion, and reduce crashes. These are goals in the planning and design of new roads and reconstruction of existing roads, and designers should consider all access management tools available and choose which are to be incorporated into the project designs.

HD-1100 provides more information on access management.

HD-204.10 MAINTENANCE OF TRAFFIC

The traffic management plan (TMP) should be developed as an inherent part of the final design. **HD-206** provides more details on the TMP.

HD-204.11 INNOVATIVE BID PROCESSES

The designer should carefully consider the impacts of construction on the traveling public. Innovative bid processes are recommended when:

- The public will experience extreme disruption and delays
- The time of completion for a project or an individual phase is particularly critical
- There is a significant cost savings

If the designer chooses to use innovative bid processes, a well-developed maintenance-of-traffic plan may be necessary. Established practices for road user delay costs should be used to determine benefit/cost ratios for the

processes in **HD-204.11.1** through **HD-204.11.5**. The Division of Planning may help in the development of these ratios. For lane or partial road closures, the Kentucky User Cost Program (KyUCP) may be utilized to determine road user delay and costs. This program is maintained by the Division of Highway Design's Rehabilitation Branch.

HD-204.11.1 Incentive/Disincentive

It is common to charge liquidated damages against all project completion dates. Liquidated damages may be charged in excess of rates established in the *Standard Specifications* when deemed appropriate and when expected impacts to the public may be considered greater than the damages established by specification. Liquidated damages may be charged against individual phases of a contract, particularly when the phase is deemed to be critical to the operation of the highway or the safety of the motoring public. However, the use of incentives/disincentives described in the paragraph below is probably a more effective method to handle impacts of individual phases.

Incentives/disincentives should be considered on projects having high traffic volumes and involving construction requirements that will greatly restrict or even shift traffic away from the existing facility. The incentive/disincentive contract compensates a contractor the same amount per day for early completion of a contract or phase as for penalizing the contractor for late completion. If a decision is made to apply a different incentive and disincentive cost, the incentive rate shall not be greater than the disincentive rate. The amount applied for the incentive/disincentive is based on the following:

- Traffic safety
- Traffic maintenance
- Road-user delay costs

Generally, incentives/disincentives are applied only to work that directly affects motorists. This frequently does not replace normal contractual liquidated damages. The incentive/disincentive provision should be sufficient to motivate a contractor to complete the project or phase ahead of schedule. Disincentives may be used without incentives.

In considering the use of incentives/disincentives or any of the other innovative practices that follow, the designer must assure the work zone will be free of delays beyond the contractor's control. The use of incentive/disincentive contracts should be based on a calendar day completion or a fixed completion date rather than a workday completion. Therefore, the proposal must address or waive any contractual language that suggests a conflict with the times established for the incentive/disincentive. This includes the end of construction seasons or other seasonal construction limitations and impacts by holidays.

Incentive/disincentive contracts should allow for a contractor working beyond a normal 40-hour work week to accomplish the work.

The project team should also consider how the construction engineering and inspection (CEI) will be accomplished. The project team and the Division of Construction should develop a workload schedule. On occasion, the Cabinet may need to obtain the services of a contractor for CEI.

HD-204.11.2 Cost Plus Time Bidding (A+B Bidding)

Cost plus time bidding is used when it is desired for the contractor to develop the timeliest method of completing a project. Bidding is developed for this type of project by using the formula:

A + B = C

A = traditional bid for contract items; actual contractual amount

B = product of the total number of calendar days required to complete the project multiplied by a road user cost per day established for the project

Note: The B component may also be measured in hours for very rapid construction projects on high-type facilities. A maximum value for the B component or a fixed completion date may still be established to limit contract time or to guarantee a completion date.

C = total bid made by the contractor

A disincentive is included in the contract. It is based on the established road-user costs and is placed in effect if the number of days bid by the contractor is exceeded. Similarly, an incentive amount may be included in the contract to reward the contractor for completing the work earlier than the time bid. The use of contract incentives requires approval of the State Highway Engineer.

Cost plus time bidding is effective when multiple bidders are involved. If the designer determines that there may be a single bidder for a project, it is more appropriate to use one of the other two described innovative bidding processes.

HD-204.11.3 Lane Rental

The lane rental concept is used to encourage contractors to minimize road-user impacts during construction, while permitting them the flexibility to decide the appropriate time frames for lane closures and restrictions. There is no specific bid item for lane rental. The award of the project is based solely on the

contractor's estimated bid price. However, a provision for a lane rental fee assessment based on a road-user cost is included in the contract and is assessed against the contractor's contract on his or her monthly contract payments. The fee is assessed for the time that the contractor occupies or obstructs any part of the roadway. The fee may be specific to certain segments of the contract.

The designer may base rental fees on weekly, daily, hourly, or fractions-of-an-hour rates. The lengths of lane closures may also be considered. Greater fees may be charged for times when traffic may be greater (such as during rush hours when hourly rates are bid or during holidays when a daily rate is bid). The designer may make restrictions on lane closures for special events or holidays. Generally, the department should limit the restrictions placed on the contractor and allow the contractor to decide the best times for lane closures. Critical path method scheduling of this type of an operation is essential for the contractor to assure the economic impact to his or her contract and for the department's complete understanding of the schedule on which the contractor will complete the work.

Lane rentals should be considered on projects that greatly affect the traveling public. Major urban projects are prime candidates. Lane rentals are used to encourage contractors to schedule work to minimize lane restrictions in terms of duration and number of closures or other obstructions. Lane rentals also encourage lane closures at low-volume times.

HD-204.11.4 Pre-Bid Conferences

When using innovative bidding methods, pre-bid conferences should be considered to allow the contractor to understand established restrictions, time frames involved with the overall project, and specific phases that require extra control and effort.

HD-204.11.5 Workzone Capacity

The determination of workzone capacity is essential to determine user delay. The *Highway Capacity Manual* FHWA's *Life Cycle Cost Analysis in Pavement Design* (FHWA-SA-98-079, chapter 3) are two reference documents that are used to determine workzone capacity. The Kentucky User Cost Program (KyUCP) developed by the Kentucky Transportation Center was based on Chapter 3, "Workzone User Costs," in the FHWA publication. For lane closures, not including complete road closure, the KyUCP should be used to determine roadway user delays and costs. For workzones that include complete road closure and detours, the Division of Planning should be consulted to provide detour analysis and delay costs.

Workzone capacity is primarily affected by roadway geometry, construction intensity (such as lane width, workzone traffic control, proximity, etc.), and the

composition of the traffic stream (such as percent of passenger cars, single unit trucks, and combination unit trucks). The designer should understand each of these factors and how they affect capacity.

The Transportation Research Board completed a series of studies that measured the actual flow of traffic in work zones. The following chart is an indication of expected impacts to traffic flow when lane reductions occur:

Number of Normal Lanes	Number of Open Lanes	AVERAGE VPH	CAPACITY (PCPHPL)
2	1	1340	1340
3	2	2980	1490
3	1	1170	1170
4	3	4560	1520
4	2	2960	1480
5	2	2740	1370

The average capacities shown are for the expected total traffic on open lanes in the construction zone and the traffic per vehicle lane. As shown in the chart above, the more merging that is required in a construction zone, the less traffic can pass through the work area. Additionally, the composition of the traffic stream will impact these numbers. These numbers should be used to determine a rough prediction of encountering expected delays due to lane closures. The presence of ramps within the construction zone increases the impact to the traffic flow.

The impact to traffic occurs at the merge point. As traffic flows into the reduced lanes, traffic counts as shown above may be expected. Length of closure has no impact on the amount of traffic that can pass any roadway segment, as the reduced lanes control the number of vehicles that may pass. Avoid lengthy lane closures, particularly if no apparent work is visible to the motorist, to reduce frustration to travelers. Establish lengths of closures based on a reasonable period to accomplish work activities.

As previously discussed, lane rentals based on a per-mile basis of closure may be an effective method to allow the contractor the maximum closure he or she deems feasible in an established period. The designer may consider complete closures of roadways or ramps to finish construction in the shortest periods possible where alternate routes exist. Another consideration would be to allow closures on only one side of the highway at a time.

The use of two-lane, two-way operation (TLTWO) on one roadway of a normally divided highway should be determined only after careful consideration of other available methods of traffic control. The PDT should consider the use of a median barrier wall for positive separation of traffic on TLTWO. Generally, a

TLTWO should be used on urban-type streets or other low-speed operations where the driver can see the transition back to normal one-way operations. There may be some reason the PDT may choose using TLTWO in circumstances other than those cited without the use of a barrier wall. In these cases, the lanes should be separated by tubular markers and paid in accordance to guidance found in the *Standard Specifications*.

HD-204.11.6 Traffic References

The *Traffic Control through Highway and Street Work Zones Manual*, the *Standard Drawings Manual,* and the *Manual on Uniform Traffic Control Devices* provide more information on traffic control methods.

HD-204.12 DETERMINATION OF EXCESS EXCAVATION AREAS

The balance of excavation and embankment within economic limits should be considered in conjunction with all alternate alignments and grades studied. Opportunities to correct any imbalances should also be examined.

Beneficial utilization of excess excavation material within or adjacent to the right of way is almost limitless. On projects where earthwork distribution indicates excess excavation material, consideration should first be given to further adjustment of horizontal alignments, vertical grades, and road geometrics to achieve a balanced distribution. Special attention should be given to areas where elimination of guardrail using techniques such as flattening slopes or false cuts may enhance safety. There may be opportunities to adjust the alignment to improve horizontal sight distance, by moving into more of a fill situation or less of a cut. Vertical sight distances may be improved beyond minimum standards by flattening or alternatively raising grades to reduce or lengthen vertical curves, which may subsequently reduce or increase excavation to meet embankment requirements.

Areas for filling between the proposed roadway and existing roads should be explored for opportunities to eliminate hazards or drainage structures, reduce flooding in the area, or enhance overall drainage characteristics. Filling of depressions or depressed properties adjacent to the roadway may enhance drainage and also facilitate utility relocations. Local governments and public agencies may have economically accessible property to fill.

At the earliest stage of project development, the PDT should assess earthwork distribution and determine the best method for handling any excess excavation. Due to the economic and time issues involved, this must be part of the decision-making process during preliminary design.

If it is determined that off-site disposal of excess material is necessary, a sufficient number of potential disposal sites to accommodate the volume of excess material

should be identified and presented to the project team. These sites should be reasonably located and economically accessible. Property owners should be contacted to gauge their interest in providing potential disposal sites. Environmental, constructability, and utility relocation issues should be considered for these sites.

A determination should be made to (a) designate all or part of the fills as part of the plans, or (b) allow the contractor to provide his or her own disposal sites. That determination must be based upon an economic benefit to construction of the highway and be supported by an analysis that economically justifies selection of the particular identified fill areas.

Whether or not designated disposal sites are included in the plans, permits required under Sections 401 and 404 of the Clean Water Act should be obtained from the U.S. Army Corps of Engineers (USACE) and the Kentucky Division of Water (DOW) during project development for all of the identified sites. USACE permit applications, including necessary plans, environmental baselines, and other data, should be prepared and ready for submission to the appropriate USACE district and the DOW at least by the time of right-of-way plan submission to the Central Office. A permit may be obtained whether or not the department intends to purchase the property. For federally funded projects or projects impacting jurisdictional streams, the environmental document needs to include the impacts of the disposal sites as well.

If the earthwork distribution and economic assessments indicate sufficient available fill areas and adequate storage, the preferred choice should be to not designate off-site permanent disposal areas in the plans. However, appropriate permits should be obtained for the potential sites. The sites should be identified in the plans, but it should be the contractor's discretion to dispose of the excess material in accordance with the *Standard Specifications* available at:

http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

If the contractor chooses not to use the permitted sites, he or she will be responsible for obtaining the necessary permits and for completing the project within the specified contract completion time.

For projects with enough interested owners, permits may be obtained for multiple sites to allow flexibility to bidders. However, additional notes or details in the plans may be needed to minimize the disturbed areas.

If an adequate number of storage areas are not available that would prevent an individual property owner or bidder from adversely affecting the project cost, or

otherwise control the bidding process~~,~~ the PDT should consider including the disposal sites in the plans. KYTC prefers not to condemn for excess material disposal sites unless they are vital to the project or there are not enough sites available without placing an "undue and unreasonable burden on an individual property owner." This will require early contact with interested property owners.

Plans will include details showing the original and final configuration of the fill area, any site preparatory work such as benching, and both surface and subsurface drainage. Designated disposal sites may be acquired as a temporary construction easement or acquired in fee simple.

- **Temporary construction easement**—Disposal sites that have geological accessibility or physical characteristics that may severely limit or preclude enhancement of the property upon construction of the fill should be acquired as a temporary construction easement. Upon completion of the project and expiration of the easement term, control of the property will revert to the landowner. Early agreement and acquisition should be practiced.

- **Fee simple**—Excess excavation disposal sites that will be enhanced by construction of the fill should be purchased in fee simple and constructed in an engineered, controlled manner. Material placed in disposal sites that are selected for development should be:

  - Constructed with stabilization methods to reduce significant differential settlement
  - Graded and compacted to facilitate the future development
  - Contoured to minimize water runoff and erosion

Section 205 of the *Standard Specifications* provides more details.

In accordance with KRS 176.050 and KRS 176.525, the department shall consult with all legislative bodies affected by a project when disposal sites resulting from new road construction projects have a potential for industrial-site development. Solicitation of local government officials' preference of sites is also required. It is essential to obtain an agreement or resolution early that details how the property will be transferred. If there is no interest and the property is still vital to construction, the site can be acquired through the easement process.

HD-204.13 DRAINAGE DESIGN & PRELIMINARY DRAINAGE FOLDER SUBMITTAL

Any item related to a proposed drainage plan for a highway project for which the Division of Highway Design has responsibility is to be coordinated through the Central Office Drainage Branch for approval. This coordination takes the form of the submittal of a drainage folder. Chapter 3 of the Division of Highway Design's

Drainage Manual details the contents of drainage folders and is available online at:

http://transportation.ky.gov/Highway-Design/Pages/Drainage.aspx

HD-204.13.1 Drainage Folders

Drainage design is documented in a drainage folder to support the development of plans and serves as a permanent record of the drainage design process for a highway project. The folder must contain the basis of the total proposed drainage plan for the project. The Transportation Cabinet's policies, specifications, and standards must be reflected through economical and hydraulically feasible alternatives for a proposed drainage plan.

Each project should have a drainage inspection that may be included with the final inspection or held separately. The minutes of the drainage inspection may be included in the final inspection report.

Drainage folders are required on all projects that contain major drainage structures. This includes structures used to transport water directly through or to delay the flow of water into or away from the highway system. This includes extensions to existing structures or improvement of those structures or drainage systems.

There are two Division of Highway Design drainage folders: preliminary and final. A third folder, the advance situation folder, is primarily used by the Division of Structural Design. Chapter 202 of the *Division of Structural Design Guidance Manual* contains requirements for the advance situation folder and is available online at:

http://transportation.ky.gov/Structural-Design/Pages/Manuals-Downloads.aspx

Exhibit 200-18 shows the drainage review process.

HD-204.13.2 Submitting Preliminary Drainage Folders

A preliminary folder shall be assembled at the district prior to the drainage inspection. Consultant project preliminary folders shall be submitted to the district prior to the drainage inspection. Typically, preliminary drainage folders are not required unless the drainage features include bridges, bridge-sized culverts, storm sewers, major channel changes, etc.

The district shall review all drainage folders and place them in the appropriate ProjectWise folder for review and approval by the Drainage Branch. This allows the drainage engineer ample opportunity to review the folder and coordinate scheduling of the drainage inspection with the project manager. Early

submission of the preliminary drainage folder for minor-impact projects affords the drainage engineer the opportunity to conduct the drainage inspection with the joint inspection. The *Drainage Manual* summarizes items to be included in each drainage folder type. A request for a drainage inspection may be included in the submittal process. The project manager will set a date for the inspection. Consultant firms shall send all folders to the district office for review.

HD-204.14 EROSION CONTROL

The erosion control plan (ECP) is an essential component of the plan development process and is required by the Kentucky Point Discharge Elimination System (KPDES). Site-specific erosion control plans for any particular phase of construction is usually a designer's educated guess. As the job progresses, the contractor and the section engineer are in the best position to generate effective erosion control plans. To assist the section engineer and contractor, the designer should include the disturbed drainage area (DDA) information and probable best management practices (BMP) devices and quantities for bid purposes. Modifications and additions may be needed during construction to achieve the BMPs.

The KPDES permit states that the BMP shall include all requirements that have been approved by the local storm water programs. The initial BMP and notice of intent (NOI) (for one or more acres of disturbance) shall be included in the final plan submittal. The Division of Highway Design's *Drainage Manual* provides details on the development of the erosion control plan, appropriate forms, and additional ECP information. The manual is available online at:

http://transportation.ky.gov/Highway-Design/Pages/Drainage.aspx

HD-204.15 INITIAL/ULTIMATE DESIGN PLANS

It may be beneficial for some projects to develop a typical section calling for two-lane initial and four-lane ultimate construction. Steps for plan development are listed below.

1. Centerline and grade should be established to fit both initial and ultimate construction and to ensure the median and superelevation rates and transitions conform to geometric criteria.

2. Initial and ultimate construction should be shown using differing symbology for all drainage, structures, special detail sheets, and cross-section templates.

3. Construction notes, quantities, earthwork distribution, and general summary included in the plans should be developed for initial construction only.

4. Disturbance limits should be shown for initial construction; however, the outside limits must be determined for the ultimate construction to identify right-of-way needs.

5. Right-of-way acquisition and utility relocation, if necessary, should be included for ultimate construction.

HD-204.16 FINAL INSPECTIONS

All projects should have a final inspection. This inspection should be held when the contract plans are approximately 80 percent complete. The plans should include all right-of-way and utility information including identified relocations, detailed MOT information, and traffic plans and reflect approved decisions from the DES. The project manager may combine other design review meetings with the final inspections (such as bridge replacement projects). The project manager should make the contract plans available to the PDM and the location engineer. The final inspection should be scheduled to ensure the PDT has at least two weeks to review the plans. When appropriate, the contract plans should also be made available to the FHWA and the city or county. A construction cost estimate detailing biddable quantities should be included.

HD-204.16.1 Final Inspection Report

The final inspection report shall document comments of all final inspection party members. The report will document the maintenance-of-traffic methodology and any specific comments made about that plan. In addition, the report will provide the following:

- A complete list of all box culverts and bridges
- A cost estimate comparing the current estimate to the Highway Plan
- Recommendations for any roads to be conveyed to local jurisdictions
- Notes on environmental effects that might be different from those previously identified and need to be further addressed by DEA
- Recommendations for traffic devices that do not currently exist

Required estimates shall be shown in the inspection reports as follows:

	Current Project Estimate	**Highway Plan Budget**
Right-of Way		
Utility		
Construction		
Total		

For projects with a construction estimate greater than $1 million, 10 percent

engineering and contingency should be added. For projects less than $1 million construction, 15 percent engineering and contingency should be added. The *State Highway Engineer Guidance Manual* establishes the policy for project authorization overrun and modifications to project authorization.

At the final inspection stage, the project development team discusses construction time and documents it as part of the report. The project manager is responsible for setting the number of construction workdays and/or completion dates for all projects. The project manager is required to submit the construction time as part of the final plans submission. The district construction office should review the recommended construction time.

HD-204.16.2 Drainage Inspection

The final inspection and drainage inspection are usually held at the same meeting. The persons responsible for writing the final inspection report shall also be responsible for writing the drainage inspection report. The drainage report will preferably be included as part of the final inspection report, with drainage comments following final inspection comments. All drainage should be addressed in the report. Those individuals responsible for the review of the drainage, both in the district and in Central Office, shall review and provide necessary comments to the inspection. Review and approval of nonmajor structures (< 54 inches) shall be the responsibility of the district drainage engineer. The project manager shall ensure that the Central Office drainage engineer's endorsement of the comments is included with the report.

The drainage inspection will document any needed scour analysis developed from the geotechnical investigation described in **HD-203**, “Preliminary Design.” This report will also contain the recommended location, span arrangement, abutment type, and the sounding layout for the piers and abutments.

A separate drainage inspection report may be written when the drainage inspection is held at a different time than the final inspection or when otherwise deemed appropriate by the project manager.

HD-204.16.3 Right-of-Way Plan Inspection

Due to time constraints involving the acquisition of right-of-way parcels, the PDM may decide to conduct a right-of-way inspection months prior to the final inspection. A right-of-way inspection should be utilized at the discretion of the PDM to expedite the right-of-way process, such as in aiding project authorization, initiating total takes, or to accomplish some advance acquisition of properties.

A right-of-way inspection differs from a final inspection in that the final plan design is not as complete. This should be the exception on the majority of

projects. A final inspection is required on these projects at a later date.

Note: Some right-of-way activities (such as title search, preliminary appraisals, and comp sales) may be performed during the design phase utilizing design funds.

HD-204.16.4 Submittal of Inspection Reports

The consultant or district design engineer prepares the report and sends it to the PDM. The project manager sends it to all invited inspection team members for comment and/or endorsement. The draft report should be sent within 10 working days after the meeting or inspection. Comments should be returned to the project manager within 2 weeks. The project manager will then finalize the report with assistance from the consultant and PDT. Copies of the inspection report shall be sent to the project inspection team members and other involved divisions such as the Divisions of Structural Design, Environmental Analysis, or Traffic Operations. On federal full-oversight projects, submittal to the FHWA is required for their comments before distribution.

HD-204.17 SUBMISSION OF RIGHT-OF-WAY PLANS

Final right-of-way plans shall be submitted after the final inspection. Under special circumstances and with approval from the Director of the Division of Highway Design, right-of-way plans can be submitted prior to final inspection. At the time of submission, the final design needs to be complete enough to ensure that adequate right of way or easements are available for side slopes, drainage structures, signs, utilities, waste sites, staging areas, MOT, etc.

HD-1305 and **HD-1306** provide more information on right-of-way submittal.

HD-204.18 UTILITY RELOCATION

The relocation of existing utilities is a primary concern during project development.

Utility relocation plans should either be made a part of the final plans or included in the plans for information purposes only.

HD-204.19 PERMIT REQUEST FOR WATER-RELATED IMPACTS

Permits are always required for state and federally funded projects that involve waters of the United States (lakes, rivers, streams, or wetlands) in the Commonwealth of Kentucky.

HD-500 provides more information on permits.

HD-204.20 ADVANCE FOLDER & FINAL DRAINAGE FOLDER SUBMITTAL

The advance folder should be submitted prior to the delivery of the right-of-way plans after the final inspection report has been approved. The district shall notify the Central Office Drainage Branch when they have completed their review of the advance folder. The Drainage Branch will complete their review. Upon completion of the advance folder, the Drainage Branch shall notify the Division of Structural Design and other pertinent Central Office personnel of the folder's availability. The advance folder is considered the "order form" for the Division of Structural Design to begin structure design. The advance folder should contain any explicit requirements as decided by the PDM and the project team.

The final drainage folder shall be prepared by or submitted to the district prior to the submittal of final plans. The final folder shall be reviewed in the district office prior to submittal to the Drainage Branch.

The final drainage folder shall reflect the recommendations of the review process and becomes the permanent record document for the project drainage plan. It shall contain all required information to support the selection of drainage items proposed on the plans and document final resolution of the drainage inspection comments. Where variations of current practices and standards are incorporated into the drainage plan, those variations shall be fully documented in the final drainage folder.

Chapter 300 of the *Drainage Manual* provides more information and is available online at:

http://transportation.ky.gov/Highway-Design/Pages/Drainage.aspx

Exhibit 200-18 outlines the drainage review process.

HD-204-21 REVIEW OF STRUCTURE PLANS

Project managers should review early-stage and final-structure plans to ensure that the structure is in agreement with the intent of the project and does not conflict with other project details (such as utilities, MOT, environmental concerns, etc.).

HD-204-22 CHECK PRINTS TO PLAN PROCESSING

The project manager shall submit check prints, a cost estimate, and estimated completion date to the Plan Processing Branch of the Division of Highway Design approximately 5 months before the scheduled letting date. The Plan Processing

Branch will return the plans with corrections and comments to the project manager for inclusion of appropriate items in the plan set.

HD-204-23 CONSTRUCTIBILITY REVIEWS

The Constructability Review (CR) Program is managed by the Quality Assurance Branch in the Division of Highway Design. *Constructability* is defined by AASHTO as "a process that utilizes construction personnel with extensive construction knowledge early in the design stages of projects to ensure that the projects are constructible, while also being cost effective, biddable, and maintainable." A CR allows those with construction expertise to examine design decisions and provide advice in construction phasing, traffic control, ease of construction, environmental considerations, and construction scheduling. The goal of this program is to minimize the need for costly change orders that result from design errors and omissions and to evaluate the “buildability” of the record plans prior to letting. To obtain maximum benefits from CR, the review should occur at key stages of the design process. Project managers are encouraged to utilize CRs.

All KYTC projects are eligible to be reviewed for constructability issues utilizing the CR Program. The extent of the review will depend on the complexity of the project. Requests for CRs should be submitted directly to the Quality Assurance Branch as early as possible to ensure timely reviews. From that point, the review will be assigned to a CR staff member for commentary. Upon completion of the independent review, a CR report will be generated and sent to the PDM for consideration. Participation from construction personnel is essential as part of the project team throughout the life of a project, and constructability reviews are **not** intended to replace or supplant this participation. The CR program is intended to be an independent resource to the project team to identify issues from a constructability standpoint.

Constructability reviews will focus on the following areas:

- Feasibility of alternatives
- Lessons learned from previous projects
- Potential waste or borrow sites
- Maintenance of traffic (detours, traffic control devices, etc.)
- Staging and phased construction
- Local access during construction
- Schedule
- Bidability
- Drainage issues
- Erosion control and seeding issues
- Future work and maintenance issues

HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

Subject

Consultant Contract Administration

HD-205.1 OVERVIEW - SELECTION & MANAGEMENT OF CONSULTANTS

Two general types of consultant contracts are available for use: statewide and project-based. Various statewide contracts utilize on-call consultant services and have a predetermined upset limit. Through these contracts on a case-by-case basis, assignments are made for individual projects using letters of agreement. The PDM may choose to use statewide contracts as needed and should coordinate with the statewide contract manager. The notice to proceed on statewide contracts is immediate and consultants can begin work once the assignment has been made by the statewide contract manager. The Division of Professional Service's webpage provides a list of statewide contract managers and other information at:

http://transportation.ky.gov/Professional-Services/Documents/Statewide%20services%20advertising%20schedule.pdf

HD-205.2 ADVERTISING FOR CONSULTANT SERVICES

When project-based consultant services are necessary to complete the project, the PDM will submit project information to the location engineer for preparing a request for proposals (RFP) for consultant services. The RFP includes, but is not ~~e~~ limited to the following:

- County
- Route
- District
- Item Number
- Project Description
- Project Manager
- User Divisions
- Approximate Fee
- Type of Contract

Note: Section 15-05.0400 of the *Professional Services Guidance Manual* provides information on the type of contract.

- Purpose and Need
- Scope
- Project Length
- Method of Design
- Available KYTC Studies
- Funding Source
- Deliverables
- Special Instructions
- Project Schedule Milestones
- Environmental Information
- Evaluation factor recommendations (when appropriate)

The location engineer and PDM are responsible for coordinating project information with other divisions to determine services the selected consultant needs to provide. The PDM should include services that may be required from the consultant at a later time for the completion of the project. The location engineer will provide the following information:

- User Division Committee Members
- Prequalification Requirements

Information on prequalification requirements is available at:

http://transportation.ky.gov/Professional-Services/Pages/Prequalified-Firms.aspx

On or before the first Monday of the expected project posting month, the location engineer will forward the required information through the Director of the Division of Highway Design to the Director of the Division of Professional Services. The Division of Professional Services will provide the following information:

- Disadvantaged Business Enterprise (DBE) Requirement
- Procurement Schedule
- Evaluation Factors
- Secretary and Governor's pool members

HD-205.3 CONSULTANT SELECTION COMMITTEE

In accordance with the *Professional Services Guidance Manual*, **Chapter 15-04**, "Selection Process," a consultant selection committee determines which consultant will be offered a contract for a specific project. The selection committee comprises five members, including two from the user division, two

from the Secretary's pool, and one from the Governor's pool.

Note: The procurement and contracting process can take several months, which should be considered by the PDM in scheduling.

HD-205.4 PRE-DESIGN CONFERENCE

Once a consultant is selected, the PDM arranges a pre-design conference (generally within 10 days of selection) and invites the appropriate SMEs. During the pre-design conference, project data is reviewed to refine the purpose and need of the project, to review the consultant's scope of work, and to discuss proposed work units for the consultant contract. **Exhibit 200-11** provides sample minutes for a pre-design conference.

HD-205.5 SUBMISSION OF UNITS & NEGOTIATIONS

After the PDM and consultant reach an agreement on the work units and document them on the *Production Hour Worksheet* (**Exhibit 200-12**), both should independently prepare a production-hour estimate for each work unit. If the consultant's production hour estimate is less than 500 hours per discipline, the PDM can negotiate directly with the consultant. For projects in excess of 500 production hours per discipline, the consultant shall submit the independent production-hour estimates to the Division of Professional Services. Unless otherwise directed by the Director of the Division of Highway Design, the PDM shall submit his or her independent production hour estimates to the location engineer for concurrence. The location engineer will forward these estimates to the Division of Professional Services.

The Division of Professional Services will determine which types of negotiations are appropriate and coordinate those negotiations with the PDM and consultant.

The PDM shall ensure that the following items are submitted with the approved production-hour estimate:

- Pre-design conference minutes
- Complete listing of target dates
- Recommended percentages for payment in accordance with the established target dates
- Verification that funding is available
- Type of contract (lump sum, cost plus, etc.)

The Division of Professional Services will use the above information to negotiate a design fee with the consulting engineer.

HD-205.6 CONTRACT & NOTICE TO PROCEED

After completion of the negotiations, the consultant shall submit the necessary information to the Division of Professional Services. The Division of Professional Services prepares the contract for the consultant's and appropriate Cabinet management's signatures. The Division of Professional Services notifies the consultant of the notice to proceed when the contract is approved. After receiving approval from the Legislative Research Commission (LRC) Contract Review Committee, the Division of Professional Services notifies the consultant of the notice to bill.

HD-205.7 PAY ESTIMATES & CONSULTANT MONITORING

All services included in the contract performed by consultants will be under the supervision of the applicable PDM. The consultant will submit a pay estimate as progress is made (typically on a monthly basis) using the TC 40-408 form, *Engineering Services Pay Estimate* (**Exhibit 200-13**). The Personal Service Contract (PSC) Invoice Form **(Exhibit 200-14)** must be submitted with each invoice. The Division of Professional Services provides specific pay estimate instructions online at:

http://transportation.ky.gov/Professional-Services/Pages/Forms.aspx

The consultant will complete and attach the *Consultant Monthly Report* **(Exhibit 200-15**) to all pay estimates submissions. The first submission of the *Consultant Monthly Report* shall include all established project milestones.

Milestones shall include those provided in the consultant contract and departmental obligations or other items such as time frames expected for outside review that might be on a project's critical path. Inclusion of milestone pages is required with the first submission and when the milestone dates are changed or milestone completions are met. Milestones shall show a date, unless the milestones are not applicable. Milestones that are not applicable should show the date as "not required."

The consultant shall provide statements reporting progress or advising of required actions by KYTC (for example, "Conceptual Design Report submitted June 10 – awaiting approval.") Similarly, the PDM shall provide a response to the information submitted within one week of its receipt and indicate needed actions by the consultant. The History and Project Documentation listing at the back of the monthly report should be used to provide a chronological order of events. If necessary, the consultant or the PDM can include attachments of additional pages. Once items are addressed by both parties, the PDM should

approve the *Consultant Monthly Report* and send copies to the consultant, location engineer, and involved KYTC divisions and branches (for example, the discussion of environmental issues should be sent to the Division of Environmental Analysis).

The *Consultant Monthly Report* is considered supplemental information to the pay estimate submittal. The PDM is responsible for determining if the pay estimate is consistent with the consultant's progress detailed in the report and with the project milestones. If the monthly report notes outstanding issues, the pay estimate can be approved based on the consultant work completed if the work pending (per the monthly report) is not reflected in the consultant's pay estimate. If the pay estimate is consistent with the *Consultant Monthly Report* and the PSC, the PDM should email the pay estimate and supporting documentation for further payment processing to the KYTC Consultant Estimate Accounts group with appropriate signatures and statements of approval. As mandated by KRS 45.453, all invoices should be paid within 30 working days of receipt. The only exception is written notification to the consultant of a problem with the invoice.

HD-205.8 CONTRACT MODIFICATIONS

It may become necessary to change the amount of work or time alotted in the contract for a project. The PDM and the location engineer should be judicious when requiring additional work that may need additional charges.

After careful consideration of requesting additional work, the same process used to initiate the contract should be used to develop the contract modification. When a contract modification is requested, the consultant shall be responsible for providing a brief explanation (desirably less than one page) for its need. The explanation must be written such that someone not familiar with the project may understand the purpose of the request. It must make clear why the requested work was not covered by the original agreement or in previous modifications **Chapter 15-06** of the *Professional Services Guidance Manual* details the policy on contract modifications and is available at:

http://transportation.ky.gov/Organizational-Resources/Policy%20Manuals%20Library/Professional%20Services.pdf

The modification must address whether current contracted dates will be affected by the change and, if so, must provide new projected dates of completion. This information is to be provided to the PDM, who will endorse it to the location engineer and the Division of Professional Services. Timely responses should be made to all requests for contract modifications. A 90-day period must pass between subsequent contract modifications. The consultant

should maintain a chronology of all the project's modifications to be submitted with each request.

The Division of Professional Services contacts the location engineer and the PDM to advise the contract modification amount. At this time, the PDM communicates with divisions affected by the proposed contract modification (such as the Divisions of Environmental Analysis, Structural Design, etc.) to ascertain additional funding that may be required to facilitate the additional work. The location engineer should advise the PDM to consider funding needs of other agencies.

If current funding will not cover the added expenses, the PDM completes the *Request for Funding Authorization* form (**Exhibit 200-03**) indicating the need for additional funds. The PDM develops a spend-down plan for funds required. The *Request for Funding Authorization* form and the spend-down plan are transmitted to the location engineer for review and forwarding to the Division of Program Management. See **HD-202.5** for more information on requesting funds.

The Division of Program Management will review the request. If the additional funds are approved, the Division of Program Management will issue a TC 10-1 form, *Project Authorization*, for the additional funds, and send a copy to the Division of Professional Services, the location engineer, and the PDM.

Upon receipt of the TC 10-1 form, the Division of Professional Services will prepare the contract modification and solicit the appropriate signatures for submittal to LRC.

HD-205.9 CONSULTANT EVALUATIONS

It is necessary to evaluate the consultant's performance at appropriate milestones (such as conceptual design approval, joint inspection approval, and contract plan submittal). Forms and instructions for evaluations are available on the Division of Highway Design's intranet website at:

https://intranet.kytc.ky.gov/org/DHD/Pages/default.aspx

The location engineer and the PDM, with input from SMEs, shall complete independent evaluations as needed for the appropriate disciplines. The evaluation comments section should reflect reasons for scores on an evaluation, such as the degree of complexity of a project. When completed, the Roadway Design Branch Manager shall provide the consultant with the evaluation. If the consultant disagrees with the rating, he or she may request an appeal within 30 days through the Director of the Division of Highway Design. The director will discuss the evaluation with the project manager and location engineer and

assess whether a reevaluation is warranted. If applicable, the director will communicate reevaluation results to the consultant.

HD-205.10 CLOSEOUT OF CONSULTANT PROJECTS

The project closeout process is the responsibility of the respective location engineer and should ensure all contract deliverables are met, including the final drainage folder. The closeout process should begin with the award of the contract for construction. Soon after the award, the project manager should request a final pay estimate.

HD-205.11 FINAL PAY ESTIMATE

Hard-copy final pay estimates must be submitted by the PDM to the Roadway Design Branch Manager using the TC 40-408 form, *Engineering and Engineering Related Services Pay Estimate* (**Exhibit 200-13**). The final invoice number must be suffixed with an F to designate final. The consultant must submit the final pay estimate, the complete final monthly report, and the PSC invoice with original signatures.

For remaining encumbrances being liquidated, the consultant should send a letter stating all work is complete and that no additional changes will be made. For example, for geotechnical work that is not billed 100 percent in a lump sum contract, a copy of the final geotechnical project charges and work performed should be submitted with the letter.

In addition, if available budget funding is negative, a funding request must be sent to the Division of Program Management. The funding request should be sufficient to cover the negative amount.

Upon receipt of the final pay estimate, the Roadway Design Branch Manager will request an evaluation from the location engineer. The average of district and Central Office evaluations shall become the final rating for the consultant's performance. The Roadway Design Branch Manager will prepare a letter to the consultant, with a copy sent to the PDM, summarizing the evaluation and the average final rating. Copies of the evaluations, PSC invoice form, and final pay estimate are sent to the Division of Professional Services.

Cost-plus contracts require an audit before being closed by the Division of Professional Services.

HD-205.12 CHECKLIST FOR CLOSING CONSULTANT CONTRACT

The project manager and location engineer may use the following checklist in

preparation for consultant design contract close-out.

- Has all "design" work been accomplished? --Determination made by Location Engineer and or Project Manager after conferring with all appropriate Central Office divisions. (For example, Divisions of Highway Design, Structural Design, and Environmental Analysis and Geotechnical Branch)

- Are there consultant contract modifications not completed? (For example, Divisions of Highway Design, Structural Design, and Environmental Analysis and Geotechnical Branch)

- Have all necessary consultant evaluations been completed? (For example, Divisions of Highway Design, Structural Design, and Environmental Analysis and Geotechnical Branch)

- Has an audit of cost plus components of the consultant contracts been issued by the Division of Professional Services?

- Have all payments been processed?

The Roadway Design Branch Manager shall ensure the Design Phase Program and Project Closeouts are performed in a timely manner.

HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

Subject

Maintenance of Traffic

HD-206.1 OVERVIEW

During preliminary line and grade inspection, the project team considers and discusses potential traffic control schemes for each alternative and addresses this discussion in the inspection report. The designer should develop detailed construction phasing plans of the preferred alternate for review at the joint inspection. Traffic control schemes should be developed and included as drawings and notes on temporary traffic control sheets within the plans. The traffic control plan (TCP) shall be developed using the current editions of the *Manual on Uniform Traffic Control Devices* (MUTCD), *Standard Specifications for Road and Bridge Construction*, and *Standard Drawing*s as a basis.

HD-206.2 TRAFFIC CONTROL PLAN (TCP)

The TCP should outline specific requirements for proper maintenance and control of traffic.

The TCP will vary in scope depending on the size and complexity of the project. Some projects will require site-specific phasing of construction activities to allow for continuous safe passage of the traveling public. Other projects may only require a reference to established documents such as the Standard Drawings and the MUTCD. To ensure consideration is given to traffic control, the proposed concept should be discussed at the preliminary line & grade inspection. With the recommendations made, the designer should develop the TCP in conjunction with a construction phasing plan and present it for further review at the final inspection meeting. At this time the project team should carefully consider the TCP to clearly identify concerns that may be addressed in final plan production. A “Maintenance of Traffic” section should be developed within the plans and include the TCP and pertinent information from the public information plan (PIP).

The TCP should outline time or construction limitations. Liquidated damages may be utilized by the project team to encourage compliance when deemed appropriate. Developing strategies that limit impact to the traveling public is

encouraged. If practical, the existing number of lanes should be maintained throughout a construction project, particularly on interstates and other major routes. If lane restrictions are necessary, options that limit closures should be considered. Some considerations for these decisions may include restricting work during peak periods of traffic flow and the use of nighttime construction or other innovative methods. In unison with Section 105, "Cooperation by Contractor," of the *Standard Specifications for Road and Bridge Construction*, the TCP should also consider other adjacent roadway sections that may be under construction and avoid conflict between competing phases of adjacent projects.

HD-206.2.1 Traffic Impact Guidelines

When developing the TCP, the following traffic impact guidelines should be utilized:

Interstate Projects

1. Expected queue length due to lane closures should be analyzed and should not exceed 3 miles more than what would normally be expected without the construction project.
2. Total closures of an interstate segment should not be considered unless there is an interstate detour available that can safely accommodate the expected increased traffic.
3. User costs should be analyzed and the use of incentives/disincentives (**HD–204.11.1**) should be considered to encourage timely completion of the total project or critical phases.

Non-Interstate Projects

1. Expected queue length due to lane closures should be analyzed and should not exceed 3 miles more than what would normally be expected without the construction project.
2. Total closures of a segment should not be considered unless there is a detour available that can handle the expected increased traffic. Adverse travel should not be excessive and should be kept to a minimum whenever practical.

HD-206.2.2 Work Vehicles and Equipment

When developing a TCP, project teams should address issues such as ingress and egress for work vehicles, equipment, and material deliveries. The project team should refer to the current editions of the MUTCD *Standard Drawings*, and *Standard Specifications for Road and Bridge Construction* for additional guidance.

HD-206.2.3 TCP Review

The project team should review and discuss appropriate documentation for the TCP. When a traffic management plan (TMP) is utilized, the final TCP should be incorporated in the TMP.

HD-206.3 TRAFFIC MANAGEMENT PLAN (TMP)

For the purposes of traffic management plans, projects are separated into two classifications: significant and other.

Significant projects are defined as follows:

- Any project on the interstate system which is anticipated to occupy a location for more than 3 days
- Any project on a multilane roadway which is anticipated to occupy a location for more than 3 days where the existing DDHV is over 1,000 vehicles per hour and would close a lane during the peak hours
- Any project on a 2-lane roadway which is anticipated to occupy a location for more than 3 days where the existing DHV is over 1,000 vehicles per hour and would close a lane during the peak hours
- Any project on the Interstate or National Highway System that would involve a detour

For significant projects, a TMP (**Exhibit 200-16**) includes a TCP and a PIP. The PDM should work closely with the district public information officer (PIO) and the district project delivery and preservation (PD&P) staff to provide accurate and timely information to the public. The TMP shall be approved by the PDM, the Project Delivery and Preservation Branch Manager, and the Engineering Support Branch Manager (and FHWA on interstate or oversight projects.). A copy should be provided to the location engineer.

For other projects, the TMP will only consist of a TCP unless the project team determines that a PIP is necessary.

Major revisions of the TMP at any point during the life of the project (pre- and post-letting) require review and approval by the signatories. This documentation should be placed in the project file within the district, with a copy to the location engineer.

HD-206.3.1 Traffic Control Devices and Pavement Markings

The PDM is responsible for the development or coordination of all temporary striping plans and the use of pavement markings if required for the project. **HD-1201** provides more information on pavement markings. Coordination with the district traffic engineer and the Division of Traffic Operations is imperative in the development of the TCP or TMP, especially on projects with signalized intersections. All other traffic control devices deemed necessary for the TCP should be established and quantified for the project. **HD 206.7**, “Maintenance of Traffic Bid Items,” provides additional information.

HD-206.3.2 Diversion Geometric Design

On-site diversions should desirably adhere to the standards, design speed, and pavement widths present on the existing facility. When this is not feasible, the appropriate speed warning signs should be included in the traffic control plan. Additional advanced warning devices may be desirable and the PDM may elect to enhance the traffic control devices if the situation warrants such enhancements.

HD-206.3.3 Detours

Considerations for projects involving road closures include the length and condition of the detour route, weight limits of structures, and costs of conditioning and maintaining the detour route. A detour map will be included in the plans showing required detour routes and signs. Project plans should delegate the responsibility for posting the project's detour signs.

HD-206.3.4 Positive Protection and Separation Devices

In some highway work zones, separation devices or positive protection devices may be beneficial. Positive protection devices are defined as devices that contain and/or redirect vehicles. Separation devices typically do not have redirecting capabilities. However, both should meet the crashworthiness evaluation criteria contained in AASHTO's *Manual for Assessing Safety Hardware (MASH), 2009*. Specification details for the type of devices available and typical placement schemes are available in the MUTCD, *Standard Drawings*, *Standard Specifications for Road and Bridge Construction*, and *AASHTO's Roadside Design Guide*. Positive protection devices in highway work zones are intended to minimize or reduce the risk of worker exposure to motorized traffic and to emphasize road user safety. Under conditions deemed short term or mobile in nature, the project team should evaluate the risk of placement of temporary barrier walls in lieu of portable channelization devices combined with "truck mounted attenuators" or other mobile crashworthy devices.

HD-206.3.5 Exposure Control Measures

Exposure control measures are defined as traffic management strategies implemented to avoid work zone crashes involving workers and motorized traffic by eliminating or reducing traffic through the work zone, diverting traffic away from the work space, or reducing the time to construct. Exposure control measures shall be considered where appropriate while providing adequate consideration to the potential impacts on mobility. A wide range of measures may be appropriate for use on individual projects, such as:

- Full road or ramp closures
- Median crossovers
- Full or partial detours or diversions
- Protection of work zone setup and removal operations using rolling road blocks

- Performing work at night or during off-peak periods when traffic volumes are lower
- Accelerated construction techniques

HD-206.4 GUIDANCE FOR THE USE OF UNIFORMED LAW ENFORCEMENT OFFICERS (LEOs) IN HIGHWAY WORK ZONES

A number of conditions may indicate the need for uniformed LEOs in highway work zones. The presence of uniformed LEOs and marked law enforcement vehicles in view of motorized traffic on a highway project may benefit driver behavior and alertness, helping to maintain appropriate speeds within the highway work zone.

The use of uniformed LEOs to assist in the maintenance of traffic for highway construction and maintenance work zones is considered on a project-by-project basis. Specific conditions include but are not limited to the following:

- Workers are present adjacent to high-speed traffic without positive protection devices.
- Traffic control setup or removal presents significant risk to workers.
- Complex or very short-term traffic pattern changes create significant potential for road user confusion.
- Night operations create substantial safety risks.
- Existing conditions or crash history indicates a potential for safety or congestion impacts that can be improved with driver awareness.
- Operations that require stoppage of traffic.
- High-speed roadways where traffic queuing is anticipated to extend a considerable distance from the work zone.
- Other site conditions where traffic poses a high risk for workers and road users.

HD-206.5 ROADSIDE DESIGN IN WORK ZONES

The forgiving roadside concept as discussed in AASHTO's *Roadside Design Guide* should be applied to all work zones as appropriate for the type of work and to the extent roadside conditions allow. Due to the limited horizontal clearance available and the heightened awareness of motorists through work zones, clear-zone requirements should be more flexible than those for permanent conditions.

Engineering judgment must be used in applying clear zone concepts to the work zones. Whenever feasible, determination of the width of a work zone's clear zone should be based on the following:

- Traffic speeds and volumes
- Roadway geometrics
- Available right-of-way width

- Cost
- Duration of work, whenever feasible

Depending on site restrictions, it may be feasible to provide only an operational clearance. AASHTO's *Roadside Design Guide* provides specific information for determining clear zones in work zones.

Pavement edge drop-offs may occur during highway work. When not properly addressed, drop-offs may lead to the loss of control of an errant vehicle and the potential for a serious crash.

No vertical drop-off greater than two inches should occur between adjacent lanes where traffic is expected to cross in a lane-change maneuver. Warning signs should be placed in advance of the area in accordance with the MUTCD.

When contending with pavement edge drop-offs in construction zones, the designer should consider the following guidance:

- **Less than two inches**—no protection required

  Note: Warning signs should be placed in advance of and throughout the drop-off area.

- **Two to four inches**—plastic drums, vertical panels, or barricades every 100 feet on tangent sections for speeds of 50 mph or greater

  Note: Cones may be used in place of plastic drums, vertical panels, or barricades during daylight hours. For tangent sections with speeds less than 50 mph and for curves, devices should be placed every 50 feet. Spacing of devices on tapered sections should be in accordance with the MUTCD.

- **Greater than four inches**—positive separation or wedge with 3:1 or flatter slope needed

  Note: Place channelizing devices along the traffic side of the drop-off and maintain, if practical, a 3 feet wide buffer between the edge of the travel lane and the drop-off. If the drop-off is greater than 12 inches, positive separation is strongly encouraged. If concrete barriers are used, special reflective devices or steady-burn lights should be used for overnight installations.

For temporary conditions, drop-offs greater than four inches may be protected with plastic drums, vertical panels, or barricades for short distances during daylight hours while work is performed in the drop-off area.

Flare rates for temporary barriers should be selected to provide the most cost-beneficial safety treatments possible. Benefit/cost analyses of temporary concrete barriers indicate that total accident costs appear to be minimized for flare rates ranging from 4:1 to 8:1.

AASHTO's *Roadside Design Guide* and the *Standard Drawings* provide specific information about roadside design in work zones.

HD-206.6 PEDESTRIAN ACCOMMODATIONS IN THE WORK ZONE

Pedestrian flow along roadways must be considered in the TMP. When there is obvious evidence of pedestrians within a proposed work zone, the project team should discuss their presence and determine if a custom TCP should be developed with explicit direction of how to phase pedestrian traffic when pedestrian facilities are impacted. It may be more beneficial to allow district PD&P staff along with the contractor to develop the plan based on their agreed construction phasing plan. The PDM will ultimately determine how to address pedestrian traffic in the work zone. In accordance with Chapters 6D, 6F, and 6H of the current edition of the MUTCD, it is the general view of KYTC that pedestrian access in a work zone shall be provided. The provided access shall replicate as nearly as practical the existing pedestrian facility, including ADA-compliant ramps where necessary. Occasionally, work zones may necessitate closure of the pedestrian facility. When this occurs, appropriate detouring or construction of a temporary pedestrian facility should be provided to maintain mandatory access. The following statement should be inserted into the MOT's "General Notes" for projects where pedestrian access is not restricted:

> **Pedestrian Consideration:**
> Take note of obvious evidence of pedestrian use within the project limits. Evidence may consist of pedestrians moving along the roadway on a permanent or non-permanent pedestrian facility. If pedestrians are present the Contractor shall comply with the Manual of Uniform Traffic Control Devices, current edition, chapter 6D, 6F and 6H. If pedestrians are present, the pedestrian access shall remain available at all times, either by reasonable detour or diversion. The temporary facility must replicate the existing facility as nearly as practical including ADA compliance where necessary. Appropriate signage for the control of pedestrian access will be measured and paid under the bid item "Temporary Signs". Payment for construction, maintenance and subsequent removal of the temporary facility or detour and all other incidentals shall be included in the bid item "Maintain & Control Traffic".

HD-206.7 MAINTENANCE-OF-TRAFFIC BID ITEMS

The designer is encouraged to read the *Standard Specifications for Road and Bridge Construction* to become familiar with requirements for each bid item. Section 112 specifically involves maintenance-of-traffic issues. Bid items for the TCP should be established in conformance with this section and in compliance with the MUTCD and *Standard Drawings*.

All projects shall include a bid item for "Maintain and Control Traffic." The unit shall be lump sum. All traffic control items shall be bid in accordance with Section 112 of the current edition of the *Standard Specifications for Road and Bridge Construction*.

All roadway projects that contain diversions in the plans shall include a bid item for each diversion. The lump-sum bid item includes all necessary grading, culverts, and bridges to construct the diversion and shall include removal per the *Standard Specifications*. Earthwork shall be computed for all diversions shown on the plans, and quantities of excavation and embankment are noted on the plans for the contractor's information only. These quantities should not be included in the pay items for earthwork. Drainage structure openings are noted in square feet for the contractor's information. The *Drainage Guidance Manual* details the proper sizing of drainage structures for a diversion.

As TCPs become more extensive and complex, separate pay items may be required. These pay items apply to traffic signals, stationary signs, flashing arrows, temporary barrier walls, temporary guardrail, temporary crash cushions, temporary pavement markers, temporary striping, and other items as needed. If their use evolves in future construction phases, the designer should consider bid items needed for relocating the above features when detailed on the maintenance-of-traffic plans. In addition to the “Maintain and Control Traffic” item, other pay items may include variable message signs and other special or unusually expensive items unique to the project.

HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

Subject

Miscellaneous Administrative Issues

HD-207.1 QUANTITY & FUNDING BREAKOUTS

When a roadway project crosses boundaries, such as county or rural-urban, funding separations may be required. Federal project funds are separated by county or by rural-urban boundaries, with different federal project numbers when two or more are required, and by participating (eligible for federal funds) and nonparticipating (not eligible for federal funds) quantities when applicable.

A roadway project crossing county boundaries requires separation of funds. All boundary lines are tied to the project centerline by station and bearing. Quantities are separated and summarized for each section.

When FHWA declares expenditures on a federal-aid project nonparticipating, notify the Office of Program Management and the Division of Accounts. When the department retains salvageable material, federal participation decreases the cost of dismantling by the value of the salvaged materials.

HD-207.2 REMOVAL ITEMS

Items included in the description of “Roadway Excavation” in the *Standard Specifications for Road and Bridge Construction* should not be included as separate bid items on plans, but noted as "Remove." *Standard Specifications for Road and Bridge Construction* are available at:

http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

HD-207.3 ROCK QUANTITIES

The designer should determine the quantities of rock available from roadway excavation and the quantity needed for rock roadbed, embankment, and channel lining class IV. The Division of Structural Design’s *Geotechnical Manual* provides forms and outlines procedures to follow to determine accurate quantities. This manual is available online at:

http://transportation.ky.gov/Organizational-Resources/Policy%20Manuals%20Library/Geotechnical.pdf

HD-207-4 EMBANKMENT IN PLACE

"Embankment in Place" is the preferred bid item any time additional material (borrow excavation) is needed for embankment construction, including hydraulic embankments, except when unusual circumstances may dictate otherwise.

HD-207.5 CHANNEL LINING CLASS IV

Channel lining class IV is a separate direct pay item. In addition, after determining the quantity of material, that quantity is included in the project's "Roadway Excavation" or "Embankment in Place," as applicable.

HD-207.6 EARTHWORK CALCULATIONS

The designer should provide an approximate "balanced" grade; however, some situations preclude this possibility. The pay items for earthwork are "Roadway Excavation" or "Embankment in Place" and are the design quantities. Earthwork calculations on summary sheets shall show the distribution of various quantities for the entire project. It does not matter whether the pay item is "Roadway Excavation" or "Embankment in Place," except when involving large quantities of rock excavation. Common excavation is the material above the rock disintegration zone (RDZ) line when one is present, or above the solid rock line when indicating no RDZ on the cross sections. Summary sheets should note that the estimate for earthwork calculations is for information only. Assumptions for shrinkage and swell factors are the contractor's responsibility.

On projects requiring alternate pavement designs, variations in earthwork quantities should be documented.

HD-207.7 WATER FOR DUST CONTROL

Water, as a contract bid item, is used for the control of dust created partially or entirely by the traveling public. Water used for the control of dust created by the contractor or used to obtain compaction is considered incidental to construction. Guidance for quantity estimates is 500—2,000 million gallons per mile, varying with the length of time.

HD-207.8 FILLING & CAPPING

A bid item must be established for filling and capping wells, manholes, catch

basins, etc. Structures under 24 inches in diameter will be itemized as "each." The units for structures 24 inches and over will be square yards. All structures are plotted and appropriately noted on the plans.

HD-207.9 ENTRANCES

Plan notes for the construction of entrances should include the width, type, and area in square feet but shall not contain the word *private.*

HD-207.10 DIVIDE OR BREAK OUT PROJECT SECTIONS

Sometimes it is necessary to divide a project into smaller design, right-of-way, or construction sections. Descriptions, mile points and phase costs for each section should be provided to the Division of Program Management.

HD-207.11 STRUCTURES

Consultant-developed structural designs for bridges, box culverts, tunnel liners, retaining walls, and noise barriers will be submitted to the Division of Structural Design for review and approval. For department projects, the project manager shall furnish all necessary data to the Division of Structural Design for analysis and design.

HD-207.12 FARM UNDERPASSES & OVERPASSES

Farm animal underpasses and overpasses are a right-of-way consideration. These structures shall not show on the plans until determined feasible by the Division of Right of Way and Utilities. An estimated cost of the proposed structure should be used to help determine the feasibility.

When one of these structures is to be designed for the project, a separate situation folder for transmittal is submitted to the Division of Structural Design.

HIGHWAY DESIGN	*Chapter* ADMINISTRATIVE PROCEDURES
	Subject Preparation of Contract Roadway Plans

HD-208.1 OVERVIEW

HD-208.2 through **HD-208.19** discuss policies and procedures for the preparation of contract roadway plans, **HD-209** outlines procedures concerning final contract plan set submittal, and **HD-1305** and **HD-1306** outline procedures for right-of-way plan submittals and revisions.

HD-208.2 CONTRACT PLAN SET

Contract plan sets are the highway plans awarded through the letting process. The contract plan sets are a product of the project development process and are comprised of the roadway, structures, traffic, and/or utility relocation plans.

The *CADD Standards for Highway Plans* documents required standards for all electronic file submittals of contract roadway plans and proposals to the Division of Highway Design. The primary goal of these standards is to ensure the best possible use of these files in the review, publication, construction, and archive processes. The standards represent the minimum requirements for the development of highway plans and are available online at:

http://transportation.ky.gov/CADD-Standards/Pages/default.aspx

HD-208.3 SHEETS OF THE PLAN SET

The following guidelines should be followed in the development of plans to produce legible, reproducible, and permanent documents:

- Final contract plans shall be created and submitted in PDF format as described in the current CADD Standards policy as the record plan set (that is the legal, binding set).

- Plan sheets should be sized to the proper dimensions (22 inches x 36 inches). Standardized sheets are available from the CADD cell library.

- Data shall not be placed in the sheet margins.

All sheets shall contain a sheet information block in the upper right-hand corner showing the project item number, county, and sheet number. Full construction numbers are required only on the front layout sheet, the first roadway plan sheet, and the first cross-section sheet. Only the layout sheet will show the total number of sheets.

Letter designations, illustrated below, are used to denote sheet types for final contract plans. The "sheet type" notation labels the sheet number in the sheet information block.

Sheet Types

R – Roadway
S – Structure
T – Traffic
U – Utility Relocation
X – Roadway Cross Section

Sheet Information Blocks

COUNTY OF	ITEM NO.	SHEET NO.
HENDERSON	2-101	R3

Project title blocks shall appear on the first plan sheet and first cross-section sheet. The project title blocks will show the following information:

- County
- State project number
- Federal project number (when applicable)
- Name of the respective designer
- Date plans are submitted to the Plan Processing Branch

No signatures are required in these title blocks.

Project Title Blocks

DESIGNED BY: Alex Kolze
DATE SUBMITTED: 04-10-2011

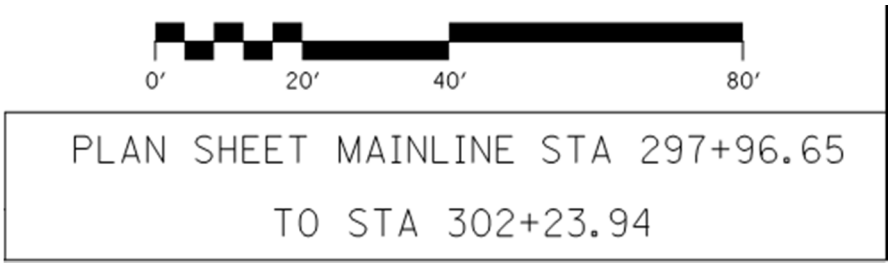
Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF

HENDERSON

PROJECT NUMBERS: FD52 051 0060 022-024
STPS 5053

PLAN SHEET STA. 11+00 TO STA. 20+00

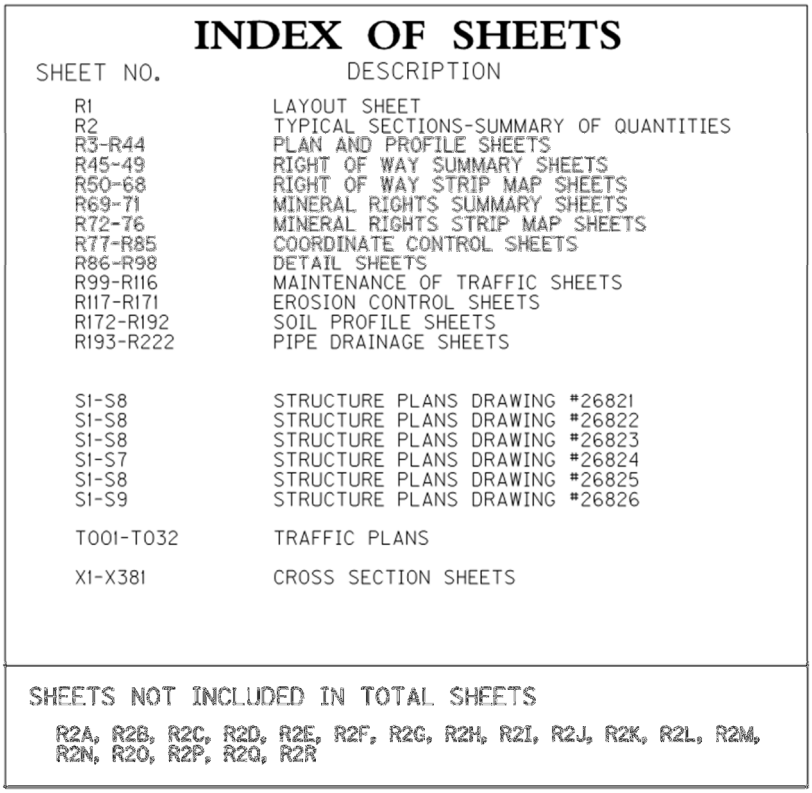
A graphical scale shall be placed on plans sheet depicting a "top" view, as shown below. Graphical scale cells are found in the CADD Cell Library.



A sheet title box shall appear in the lower right corner of all sheets of the plan set. The sheet title box will guide the user when reviewing the sheets. Station ranges should be used in the sheet title box when applicable (for example, PLAN SHEET STA. 11+00 TO STA. 20+00). Use the data fields provided.

HD-208.4 SHEETS IN THE CONTRACT PLAN SETS

When applicable, contract plan sets should be assembled in the following order and reflected in the Index of Sheets block on the layout sheet.



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
R1	LAYOUT SHEET
R2	TYPICAL SECTIONS-SUMMARY OF QUANTITIES
R3-R44	PLAN AND PROFILE SHEETS
R45-49	RIGHT OF WAY SUMMARY SHEETS
R50-68	RIGHT OF WAY STRIP MAP SHEETS
R69-71	MINERAL RIGHTS SUMMARY SHEETS
R72-76	MINERAL RIGHTS STRIP MAP SHEETS
R77-R85	COORDINATE CONTROL SHEETS
R86-R98	DETAIL SHEETS
R99-R116	MAINTENANCE OF TRAFFIC SHEETS
R117-R171	EROSION CONTROL SHEETS
R172-R192	SOIL PROFILE SHEETS
R193-R222	PIPE DRAINAGE SHEETS
S1-S8	STRUCTURE PLANS DRAWING #26821
S1-S8	STRUCTURE PLANS DRAWING #26822
S1-S8	STRUCTURE PLANS DRAWING #26823
S1-S7	STRUCTURE PLANS DRAWING #26824
S1-S8	STRUCTURE PLANS DRAWING #26825
S1-S9	STRUCTURE PLANS DRAWING #26826
T001-T032	TRAFFIC PLANS
X1-X381	CROSS SECTION SHEETS

SHEETS NOT INCLUDED IN TOTAL SHEETS

R2A, R2B, R2C, R2D, R2E, R2F, R2G, R2H, R2I, R2J, R2K, R2L, R2M, R2N, R2O, R2P, R2Q, R2R

HD-208.5.1 LAYOUT SHEET

The layout sheet (**Exhibit 200-17**) is the cover or title sheet for the plan set. The layout sheet should contain an area map created using the Layout Map Generator available at:

http://maps.kytc.ky.gov/kyview/

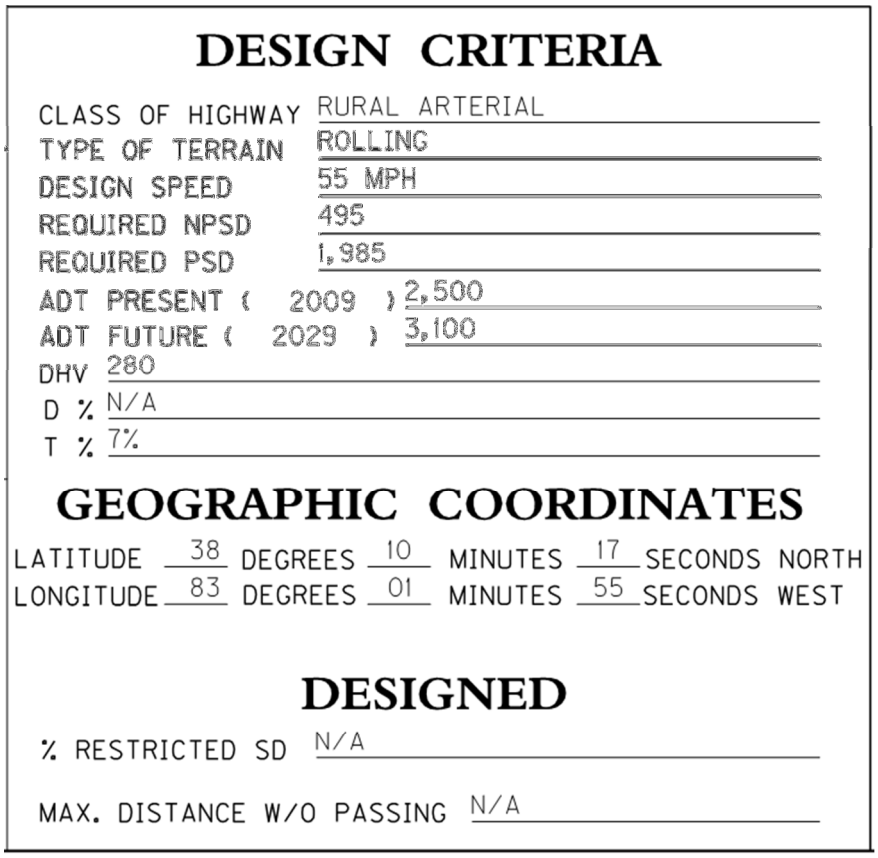
The map shall clearly show the project's construction or right-of-way limits with beginning and ending stations, a north arrow, and bridge stations and descriptions. The layout sheet shall include:

- Road name
- Federal and state route numbers
- Type of work
- Notation if the highway is listed on or off the National Highway System
- Type of access control proposed for the project

Note: **HD-1100** details different types of access control.

- When using alternate funding, show project limits by funding category
- If the project is broken out into sections, show breakouts for county lines and separate project numbers.

Standard drawings used on the project are shown by drawing number only.



DESIGN CRITERIA

CLASS OF HIGHWAY: RURAL ARTERIAL
TYPE OF TERRAIN: ROLLING
DESIGN SPEED: 55 MPH
REQUIRED NPSD: 495
REQUIRED PSD: 1,985
ADT PRESENT (2009): 2,500
ADT FUTURE (2029): 3,100
DHV: 280
D %: N/A
T %: 7%

GEOGRAPHIC COORDINATES

LATITUDE 38 DEGREES 10 MINUTES 17 SECONDS NORTH
LONGITUDE 83 DEGREES 01 MINUTES 55 SECONDS WEST

DESIGNED

% RESTRICTED SD: N/A

MAX. DISTANCE W/O PASSING: N/A

All applicable design criteria should be entered in the lower left information block. Geographic coordinates should be to the midpoint of the project. If information is not needed, use “N/A” as a placeholder.

HD-208.5.1 Project Lengths

For project totals, project lengths should be computed in miles to three decimal places. For projects with multiple funding sections or counties, section lengths should be adjusted so that their sum equals the total project length. An exception to this would be when multiple federal projects are included in one set. When combining multiple separate federal projects into one plan, each

federal project length should be computed to three decimal places. The total of the rounded lengths should be the length in miles, without regard to whether the lengths for the separate sections equal the total project length.

Lengths for state projects are computed in a similar manner, except the method to make the total for a summation of separate sections equal the project total is accomplished by adjusting the individual section lengths such that the total of the subsections will equal the total project length.

HD-208.5.2 Railroad Track Deductions

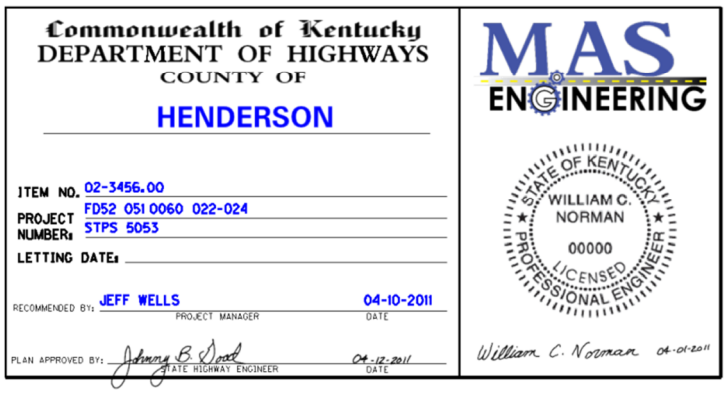
Use the following deductions in surfacing lengths for railroad crossings:

	SINGLE TRACK *(feet)*	**DOUBLE TRACK** *(feet)*
90 degrees	8.5	22.5
30 degrees	9.8	26.0
45 degrees	12.0	31.8
60 degrees	17.0	45.0

For skews not shown above, divide the overall railroad width (8.5 feet for single track and 22.5 feet for double track) by the cosine of the skew angle.

HD-208.5.3 Signatures on Plans

Signatures on Plans



LAYOUT SHEET SIGNATURE BLOCK

All final contract plans shall bear the signature (electronic or handwritten) of the State Highway Engineer. Final contract plans prepared by consulting engineering firms shall bear the additional electronic signature and electronic stamp of the seal of a civil or highway professional engineer (PE) licensed in the Commonwealth of Kentucky. 201 KAR 18:104 requires digital signatures for projects designed by consultants. When engineering work is completed by a subconsultant, the prime consultant shall be responsible for determining

whether the prime or subconsultant shall affix the digital signature.

Authorized signatures for plan sets are located on the layout sheet as seen above. Two signature lines appear in the lower right-hand corner of the layout sheet. The top line labeled "Recommended by" is for the project manager's name. (**Note:** A typed name is sufficient; a signature is no longer required). The bottom line labeled "Plan Approved By" is for the State Highway Engineer's electronic signature. Consultant information is inside the block in the far right corner and includes the firm's name and project engineer's electronic signature and electronic stamp of his or her PE seal and digital signature.

HD-208.6 RIGHT-OF-WAY REVISION SHEET

When a revision occurs, a sheet is added to the right-of-way plans. This sheet is labeled "Right-of-Way Revision Sheet" and inserted directly after the layout sheet. This sheet shall be numbered "R1a."

Each time a right-of-way revision is processed, a block shall be added to the new sheet showing:

- Right-of-way revision number
- Plan revision date
- Sheets revised
- Parcels involved
- Any relevant remarks

Exhibit 1300-06 shows an example right-of-way revision sheet.

After each revision, the sheet can be updated electronically, reprinted, and inserted into the plans.

HD-208.7 TYPICAL SECTIONS, SUMMARIES OF QUANTITIES, & GENERAL NOTE SHEETS

The typical sections, summaries of quantities, and general note sheets follow the layout sheet in the roadway construction plans. These sheets are designated as "R2," "R2a," "R2b," "R2c," etc.

HD-208.7.1 Typical Section Sheets

HD-700, "Geometric Design Guidelines," details methods used to determine the appropriate typical section for the project to be shown on the typical section sheets. The typical section sheet (**Exhibit 200-18**) shows the following:

- Dimension and pavement details for each project
- Pay limits of roadway excavation for solid rock undercut and removal of low

bearing soils utilized in the cross sections

- Special notes pertaining to the slopes outside the shoulders, use of guardrail, superelevated shoulders, paved surface on shoulders, etc.

Typical section sheets included in the roadway construction plans shall depict the typical cross section of the mainline roadway. If applicable, a normal crown and a superelevated section should be shown along with a bridge typical section. Typical sections of approach roads and entrances should also be included with the applicable station ranges noted below each typical section utilized.

HD-208.7.2 Summary Sheets

Standardized sheets from the CADD cell library shall be used for general summary, pipe drainage summary, paving quantities, and paving areas. For smaller projects, combined summaries may be used. All pay items are to be shown on the general summary except for those items on pipe drainage, paving, and bridge and culvert summaries. Projects that cross county lines will require independent summary of quantities for each county. The structure, utility, and traffic (S, U, and T) summaries should stay with their respective sets.

Bid item codes and descriptions should be used on all summary sheets for all bid items and are maintained by the Division of Construction's Technical Support Branch. After plans are submitted to Central Office, the Technical Support Branch assigns code numbers for special or nonrecurring items not included in the current listing.

It is not required to show entrance pipe, perforated pipe, and nonperforated pipe by location on the drainage summary, but it is required to show them by quantities. Entrance pipe 36 inches or greater in diameter, which is considered culvert pipe, is to be shown by location with the quantity listed on the summary as culvert pipe.

HD-208.7.3 General Notes Sheets

The Division of Construction provides common special notes and provisions online at:

http://transportation.ky.gov/Construction/Pages/Special-Notes--Special-Provisions.aspx

The Division of Highway Design's Plan Processing Branch also provides special notes and provisions online at:

http://transportation.ky.gov/Highway-Design/Pages/Plan-Processing.aspx

The designer shall select the project applicable notes from these lists and include

them on the general note sheets.

HD-208.8 PLAN & PROFILE SHEETS

Plan sheets may be a stand-alone sheet with separate profile sheets or half-plan, half-profile sheets. All graphics shall be represented according to the current version of the CADD standards available online at:

http://transportation.ky.gov/CADD-Standards/Pages/default.aspx

HD-208.8.1 Plan Sheets

The first sheet following the summary sheets and general notes sheet numbered "R3," should contain a list of symbols typically used on plans (such as conventional signs) and a list of utility owners with address, contact names, and phone numbers. A project title block is required in the lower right-hand corner. All applicable sheets shall show beginning and ending stations of the project's construction and right of way. All plan sheets will have a north arrow and, if applicable, should show station equations for main line and approach intersections. The direction of centerline stationing should run in the cardinal directions from south to north and from west to east as the sheets progress. The alignment should show the centerline stationing. **Exhibit 200-19** shows an example plan sheet.

Plan sheet shall show the following:

- All points of intersection (PI), points on tangent (POT), points on curvature (POC), and points on sub-tangent (POST)
- Calculated bearing of each tangent
- Points of curvature (PC), points of tangency (PT), tangent to spiral (TS), spiral to curve (SC), curve to spiral (CS), and spiral to tangent (ST) with the station number
- Curve data for all simple and spiral curves as shown in the following table:

SIMPLE CURVES			SPIRAL CURVES		
Pl Station			Pl Station		
Δ	=	Delta Angle	Δ	=	Delta Angle of the Combination of Circular Curve & Spiral Curves
T	=	Tangent Distance	Ts	=	Tangent Distance Spiral Curve
L	=	Length of Curve	Ls	=	Length of Spiral Curve
R	=	Radius of Curve	Lc	=	Length of Circular Curve
E	=	External Distance	Θs	=	Spiral Angle
E	=	Rate of Superelevation	LT	=	Long Tangent Spiral Curve
Runoff	=	Superelevation Runoff Distance	ST	=	Short Tangent Spiral Curve
Runout	=	Superelevation Runout Distance	R	=	Radius of Circular Curve
			Es	=	External Distance of the Combination of Circular & Spiral Curves
			e	=	Rate of Superelevation of Circular Curve
			Runoff	=	Superelevation Runoff Distance
			Runout	=	Superelevation Runout Distance

HD-208.8.2 Scales

Generally, the alignment and topography on plan sheets are depicted using a scale of 1 inch = 50 feet in rural areas and urban areas of sparse topography. Urban areas of dense topography and city street projects should use a scale of 1 inch = 20 feet.

HD-208.8.3 Profile Sheets

On the profiles, the existing ground line and the proposed grade line should be shown on the same horizontal scale as the plan. The ratio of the vertical scale to the horizontal scale typically is 1:10. Ground line and grade line elevations are shown at intervals consistent with cross section intervals. The existing ground line elevations are shown to the tenth of a foot, unless paved, then to the hundredth of a foot. The proposed grade line elevations are shown to the hundredth of a foot.

Profile sheets should show proposed drainage structures with labeling for the following:

- Location
- Type
- Size and skew
- Flood evaluation data
- Transverse benching
- Perforated pipe

- Surface and special ditches (with elevations and slopes shown)
- Vertical curve data

If pipes are located parallel to the facility, the project manager may require edge of pavement or gutter line profiles be provided. Stations, elevations, and descriptions of all vertical control points (such as VPIs, PVCs, and PVTs) should be shown. When practical, existing underground utilities and overhead low wires should be shown on the profiles to the appropriate accuracy. **HD-300**, "Surveying," provides additional information. **Exhibit 200-20** shows an example profile sheet.

HD-208.9 UTILITY REFERENCE SHEETS

Generally, the goal is to relocate existing utilities prior to roadway construction. When utilities are to be installed or relocated by others, utility reference sheets may be included in the plans to show their proposed location. For additional information, the designer should refer to the *Utilities Guidance Manual* available at:

http://transportation.ky.gov/Organizational-Resources/Policy%20Manuals%20Library/Utilities%20and%20Rails.pdf

HD-208.10 RIGHT-OF-WAY SUMMARY SHEETS & STRIP MAPS

Right-of-way plans are required on all projects acquiring right of way or easements. **HD-1300** contains details and procedures for the development of these summary sheets and right-of-way plans. Include right-of-way summary sheets and strip maps in the roadway construction plans.

HD-208.11 MINERAL RIGHTS SUMMARY SHEETS & STRIP MAPS

Mineral plans may be required on projects impacting mineral rights. **HD-1300** contains details and procedures for the development of these summary sheets as well as mineral plans. Include mineral rights summary sheets and strip maps in the roadway construction plans.

HD-208.12 COORDINATE CONTROL & PROJECT COORDINATES SHEETS

These sheets have information about the project's coordinates, including the origin of levels, the State Plane Coordinate System, the Geoid model, and the project datum factor (if in ground coordinates). Conversely, if in grid coordinates, a project datum factor may be included with an accompanying note included stating that the project datum factor has been included for ground distances. The coordinate control points should have a point name, description,

Northing (Y), Easting (X), Elevation (Z) (when applicable), and station/offset description.

Proposed alignment points and the right-of-way monument information should also be reported and include a station/offset, monument type, description, Northing (Y), and Easting (X) for each mainline and approach on the coordinate control sheets along with existing topography (without annotation, for reference). The data for the coordinate control points and right-of-way monuments may be shown on the coordinate control sheet on which they appear or be tabled on individual sheets following the last coordinate control plan sheet.

The following points are plotted on coordinate control sheets:

- Existing and established control points in the project area
- All reference and alignment points
- Right-of-way monuments and witness monuments

Coordinate control sheets should be drawn to a scale that best depicts the project limits and shows the coordinate control points.

Exhibit 200-21 shows an example coordinate control sheet.

HD-208.13 DETAIL SHEETS

Detail sheets consist of all other sheets not classified in the index of sheets on the layout sheet. Detail sheets include:

- Special detail drawings
- Drawings from the active sepia list, available at:

  http://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings.aspx

- Pavement and superelevation development sheets
- Interchange and intersection layout sheets
- Railroad detail sheets
- Environmental mitigation plans
- Landscaping plans
- Contour grading schemes
- Other sheets that detail aspects of the roadway project's construction

The PDM will determine which detail sheets are necessary on a project-by-project basis.

HD-208.14 MAINTENANCE-OF-TRAFFIC SHEETS

Maintenance-of-traffic (MOT) sheets show the proposed traffic operations during construction. **HD-206** discusses traffic management during construction. Any sheets created for on-site diversions or off-site detours may be included with the MOT sheets, which may include plans, profiles, and cross sections for diversions and signing plans for detours.

The PDM will determine whether separate MOT and phasing plans sheets are required. The PDM needs to communicate the intent and the details of the MOT scheme. MOT plans may show, not limited to, the following:

- Typical sections
- Plans
- Profiles
- Roadway construction phasing details
- Striping plans
- Traffic control devices
- Signing
- Detours
- Cross section

HD-208.15 EROSION CONTROL PLANS

Most projects require complete erosion control plans as necessitated by Kentucky Pollution Discharge Elimination System (KPDES) requirements. A complete erosion control plan set shall consist of contoured plan sheets plotted on separate sheets developed specifically for the erosion control plan set. These plans shall show:

- Existing contours
- Centerline
- Right-of-way and easement lines
- Disturbed drainage areas
- Point and overland discharge locations
- Critical erosion control features
- Post-construction best management plans (BMPs)
- Construction notes for all erosion control items

The first erosion control sheet shall contain standard and project-specific erosion control notes and a legend of erosion control symbols. More information about erosion control plan development can be found in **HD-204**, “Final Design,” and in KYTC *Drainage Manual* (**DR-1004**). **Exhibit 200-22** provides an example erosion control plan.

The *Drainage Manual* is available online at:

http://transportation.ky.gov/Highway-Design/Pages/Drainage.aspx

The *Standard Drawings* include erosion control detail drawings and are available online at:

http://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings.aspx

HD-208.16 GEOTECHNICAL & SOIL PROFILE SHEETS

The Division of Structural Design, Geotechnical Branch provides sheets to include in the roadway plan set. These may include geotechnical notes sheets, geotechnical symbols sheets, and soil profile sheets. Soil profiles sheets should be developed at an appropriate scale for the project. The soil profile can be used to establish cut and fill slopes, and the CBR values can be used in the development of pavement design, cut and embankment stability sections, and rock refill. These sheets are a result of a cooperative effort between the designer, the Division of Highway Design, and the Division of Structural Design, Geotechnical Branch.

HD-208.17 PIPE SHEETS

Except for entrance pipes and longitudinal under drains, all inlets, manholes, pipes, and culverts should be plotted on cross section sheets with their slopes, lengths, elevations, and sizes shown. Pertinent data such as discharge, high-water elevations, flood evaluation data, and material quantities should be included. The KYTC *Drainage Manual* provides more detail and is available online at:

http://transportation.ky.gov/Highway-Design/Pages/Drainage.aspx

HD-208.18 CROSS-SECTION SHEETS

These sheets will show the cross-sectional view of the proposed roadway at consistent intervals (minimally at 50-feet) and at other locations necessary to define the earthwork volumes and to reflect additional needed details, such as in urban areas. Each cross section will show the station, offset (left and right) of centerline, the proposed roadway template, permanent drainage features, earthwork quantities including benching, and construction notes. Each cross section will be annotated with, at a minimum, proposed grade point elevations and edge of travelled way, ditch flow line elevations, proposed slopes, and lane

widths including tapers. The location of underground utilities and MOT information should be shown on cross sections. Widening for guardrail systems, slope stability, curve widening, etc., should be reflected in the cross sections. It may be useful to show right-of-way and easement limits, erosion control features, etc. **Exhibit 200-23** provides an example cross-section sheet.

HD-208.19 STRUCTURES, TRAFFIC, & UTILITY RELOCATION PLANS

Contract plan sets often include plans for structures, traffic (lighting, signal, and sign) and utility relocation. The project manager will work with different subject-matter experts to ensure the final contract plan set includes all the applicable plans.

HIGHWAY DESIGN	*Chapter* ADMINISTRATIVE PROCEDURES
	Subject Submittal of the Final Contract Plans

HD-209.1 SUBMITTAL DEADLINES

Submitting final contract plans on time is essential to prevent scheduling problems and delayed lettings. The project manager shall submit final contract plans to the Director of the Division of Highway Design (with copies of the submittal to the location engineer and the Plan Processing Branch Manager) a minimum of 90 days in advance of all lettings requiring PS&E (plans, specifications, and estimates) and 60 days in advance for all other projects. The Plan Processing Branch shall be advised at that time of any additional information that they will need to be inserted into the plans as identified by the Contract Plan Submittal Form (**Exhibit 200-24**).

HD-209.2 SIGNATURE REQUIREMENTS

All final contract plans shall bear the electronic signature of the State Highway Engineer. Final contract plans prepared by consulting engineering firms shall bear the electronic signature and electronic stamp of the seal of a professional civil or highway engineer licensed by the Commonwealth of Kentucky and his or her digital signature.

HD-209.3 SUBMITTAL CONTENTS & GENERAL REQUIREMENTS

The PDM or designee includes the following items with the submission of final contract plans to the Central Office Division of Highway Design:

- Final contract plans created and submitted in a full-size PDF as called for in the latest CADD Standards policy as the legally binding set
- A Contract Plan Submittal form (**Exhibit 200-24**)
- Information needed to create the proposal, including the following, when applicable:

- Communicating All Promises (CAP) report (even if the CAP has no entries)
- Final estimate (including all items in the complete contract plans)
- Project construction schedule (fixed completion date or maximum work days)
- Permit/water-quality certification
- Utility impact notes
- Right-of-way certification
- Special provisions for protection of railroad interest
- Project-specific special notes or specifications
- Best Management Practices (BMP) documents
- Notice of Intent (NOI) documents

- The supplemental electronic files (delivered via ProjectWise) as required by the *CADD Standards for Highway Plans*

  Note: There shall be an overt distinction between the files that represent the contract plan and supplemental files. Supplemental files are given for informational purposes only.

- On projects with FHWA oversight, the Project Development Checklist (PDC) (**Exhibit 200-25**)

HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

Subject

Design Participation in Construction Phase

HD-210.1 OVERVIEW

The project manager's involvement with a project does not end with the letting and award. During the construction of a project, issues often arise that require clarification of the designer's intent. Unforeseen circumstances may necessitate changes to the original design. Project manager responsibilities include:

- Attending preconstruction meetings
- Assisting with change orders
- Assisting with construction revisions
- Participating in post-construction review

HD-210.2 PRECONSTRUCTION MEETING

The project manager should attend the preconstruction meeting to explain notes and nonstandard bid items and to report on any important or unusual project information that has occurred during the development of the plans. The project manager should provide updates on right-of-way acquisition, utility relocation, and special environmental concerns. The project manager shall report any special commitments (such as CAPs and environmental mitigation measures) that were agreed to.

HD-210.3 CONSTRUCTION CHANGE ORDER

The project manager may be asked to review a proposed construction change order and advise the section engineer. He or she may determine if the intent of the original design and conformance to the appropriate design standards are met.

HD-210.4 CONSTRUCTION REVISION

A construction revision may occur for several reasons. Construction staff may ask project development staff to assist in the development of a revision by providing data files, drawing revisions to plans, reviewing revisions, or advising on design standards. Project development staff may be asked to arrange project team meetings or coordinate plan revisions. Electronic files of the plan revisions shall be posted in the appropriate project folder in ProjectWise.

HD-210.5 POST-CONSTRUCTION REVIEW

Annually, the Quality Assurance Branch (QAB) conducts post-construction reviews of projects in each district. Project development staff, the design consultant, construction staff, and the construction contractor meet to discuss issues that occurred on the project. The review takes place near the end of construction or after the project is complete.

Post-construction reviews help to better understand how the design process and design standards can be improved to minimize errors and omissions during construction. Reviews assist to create better designs for future highway projects. The review team develops suggestions on how issues could have been avoided and proposes suggestions for improvements to design standards and processes. QAB staff documents and enters information into the Lessons Learned Database.

HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

Subject

Use, Distribution, & Retention of Plans

HD-211.1 SHOW PLANS

Prior to the letting, an electronic copy of the contract plan is stored in the Transportation Cabinet's file management system for use by the district offices. This plan set is comprised of the roadway, structures, traffic, utility relocation, and/or building plans. It does not contain any addenda.

HD-211.2 CONTRACT LETTING PLANS

Upon award of the contract, the contract letting plans, which includes the roadway, structures, traffic, utility relocation, and/or building plans with incorporated addenda, shall be marked as "Record Set" and shall be distributed as follows:

- Two contract plan sets are identified as "Contract Letting Plans." The district office receives one full-sized contract letting plan set. The Division of Construction receives a half-size contract letting plan set and a complete electronic contract plan set including supplemental information.

- In addition to the full-size contract plan set noted above, the chief district engineer receives:

  - Two complete, full-size sets
  - Seven complete, half-size sets
  - Two complete electronic contract plan sets including supplemental information

- An electronic copy of the contract plan set is maintained in the Transportation Cabinet's file management system. The contract plan set shall be moved to an "Awarded" folder in the Transportation Cabinet's file management system.

HD-211.3 POST CONSTRUCTION

Upon completion of the project, a copy of the plans shall be placed in the Project Archives website, "Project Plan Archive (1909-Present)" at:

http://maps.kytc.ky.gov/photolog/?config=ProjectArchives

HD-211.4 LOCATION FIELD INFORMATION

The Division of Highway Design shall retain the location field information in the Transportation Cabinet's file management system. Data collected and stored by electronic data collecting methods (electronic or hard copy) is treated as standard field information.

HD-211.5 RETENTION SCHEDULE FOR FILES

The Transportation Cabinet Records Retention Schedule provides guidance on the retention of highway design documents and is maintained by the Kentucky Department for Libraries and Archives, Public Records Division. The schedule is available at:

http://kdla.ky.gov/records/recretentionschedules/Documents/State%20Records%20Schedules/kytransportation.PDF

HIGHWAY DESIGN

Chapter

ADMINISTRATIVE PROCEDURES

Subject

Coordination with Outside Agencies

HD-212.1 OVERVIEW

The design of a roadway often involves other state, federal, and local agencies. The Project Development Branch Manager (PDM) shall be responsible for ascertaining the extent of other agency involvement and initiating the department's requirement for gaining agreement or cooperation as necessary. Highway design should focus on avoiding and minimizing impacts on public, historic, and natural resources. When these types of resources are impacted, coordination with external agencies is critical and should take place early in the process to help ensure a successful project.

HD-212.2 NATIONAL PARKS & FORESTS

National parks and forests are under the jurisdiction of the U.S. Forest Service. When these resources are impacted by a transportation project, coordination with the U.S. Forest Service should be initiated through the district environmental coordinator or the Division of Environmental Analysis (DEA).

HD-212.3 DAMS & JURISDICTIONAL WATERWAYS

Generally, the U.S. Army Corps of Engineers (USACE) and the Kentucky Division of Water (DOW) are involved with projects involving dams and jurisdictional waterways. **HD-502** provides guidance for such projects. Agencies such as the U.S. Coast Guard, FEMA, and Tennessee Valley Authority may also be involved. Coordination should be initiated through the district environmental coordinator or DEA.

HD-212.4 AIRPORTS

Highway projects located within two miles of an airport require coordination with the Department of Aviation. Nonfederal airports are under the control of the Department of Aviation.

HD-212.5 KENTUCKY ENERGY AND ENVIRONMENT CABINET (EEC)

Consult the DOW's Wastewater Branch in the development of plans for projects:

- Involving sanitary facilities for rest areas
- Utilizing combined sewers to outlet highway drainage
- Adjusting or relocating existing sanitary sewers

HD-212.6 REST AREAS, LOADOMETER STATIONS, & WELCOME CENTERS

Rest areas, loadometer stations, and welcome centers shall be designed for the needs and safety of the traveling public and personnel who staff, operate, and maintain the facilities.

The design of these facilities must be coordinated with other divisions. The Division of Maintenance staffs and operates rest areas. The Department of Vehicle Regulation oversees loadometer stations. The Division of Maintenance and the Tourism, Arts and Heritage Cabinet oversee welcome centers.

FHWA issued a study, FHWA-1P-81-1, on safe rest area planning, location, and design as a general guide and exchange of information. (AASHTO's *Guide for Development of Rest Areas on Major Arterials and Freeways*).

The Division of Highway Design's current design criteria will govern the design of exit and entrance ramps, pavement, drainage, etc.

HD-212.7 TRAFFIC COORDINATION WITH CITIES FOR CONSTRUCTION

Construction or reconstruction projects within incorporated city limits should be coordinated with the appropriate city agency.

HD-212.8 CLOSING OF PUBLIC ROADS & STREETS

The Department of Highways has the authority to close, alter, or relocate any public road or street involved with the construction of a limited access facility. The construction of any state highway that is not a limited access facility requires initiation of legal proceedings by the local governing body having jurisdiction over the street or road to affect such closings. Each district has the responsibility of maintaining a liaison and informing local officials when projects involve limited access facilities. The Director of the Division of Highway Design shall forward the district's report and recommendation along with the director's recommendations and endorsements to the Commissioner of the Department of Highways. If closure is endorsed, the director shall include an official order to

implement the closure recommendations. The official order should be routed through the Deputy State Highway Engineer for the Office of Project Development, the State Highway Engineer, and the Office of Legal Services for approval.

For projects that require a design public hearing, all design work should be completed with the time necessary for the department to determine its position on the closure prior to the hearing date. On projects that do not require a design public hearing, the department's position on road closures should be determined before approving the plans-in-hand inspection report. Permanent ingress or egress ramps on the state primary road system on fully controlled access facilities shall not be closed, except for repairs, unless a public hearing is first held in the area to be affected by the closing. At least 20 days before the hearing, the department shall advertise in a newspaper of general circulation in the affected area notifying interested persons of the date, time, and place of the hearing.

HD-212.9 SANITARY LANDFILLS AFFECTED BY HIGHWAYS

When a proposed highway crosses or interferes with a sanitary landfill, the PDM shall furnish applicable information to the Director of the Division of Highway Design by the preliminary line and grade stage. Concurrence and approval of a recommended alignment will not be given until review and consultation with the Solid Waste Branch of the Division of Waste Management, Energy and Environment Cabinet. The review must indicate whether the potential problems of removal and disposal of unsuitable materials and/or relocation of the landfill can be satisfactorily resolved.

HD-212.10 RETURN OF RECONSTRUCTED FACILITIES TO COUNTY JURISDICTION

If it is desirable to return reconstructed facilities to county jurisdiction, it will be the responsibility of the project development team (PDT) to make this recommendation during the joint inspection. This will require conveying to the county the completed facility, including the right of way, thereby eliminating the responsibility for maintenance by state forces.

When the PDM recommends that the appropriate facilities be transferred to the county, the chief district engineer will be responsible for initiating and coordinating the activities required to transfer these facilities.

It is the policy of the Transportation Cabinet to convey to local jurisdictions (county/city) maintenance responsibility and associated rights of way for the following facilities:

- All segments of state roads left to serve as frontage or local access roads following construction
- All frontage or access roads constructed with the new highway
- All segments of local roads that are relocated with the new highway construction, and for which right of way was purchased by the Cabinet
- All segments of sidewalks and multiuse paths (adjacent and nonadjacent)

With the design and construction of any new facility, the functional classification system in the general area affected by the new construction should be reexamined. A determination should be made whether the facilities being replaced are relevant to the state road system as defined by their functional usage.

Before the final inspection, the district office planning engineer, with assistance from the Division of Planning, will prepare a highway systems map of the general area showing the new alignment. At the final inspection, the inspection party reviews each abandoned state road, frontage road, access road, and relocated local road. In addition, a review of newly classified or existing supplemental road facilities is made to ensure it is in the best interest of the Cabinet to convey the facilities to the local jurisdiction. The PDT will make a recommendation accordingly.

The designer shall prepare deed descriptions for right of way for all portions of the state road, access road, frontage road, or local road that lies outside the normal right-of-way limits required for maintenance of the new roadway. The chief district engineer and his or her staff, in consultation with the Division of Planning, will initiate and coordinate the activities required to transfer maintenance responsibilities and associated rights of way for these facilities to local jurisdictions.

HD-212.11 ACCESS AT STREAMS

During the early stages of plan development, review access to streams. Existing entrances to the area adjacent to streams need to be reconstructed or relocated as appropriate. Use of abandoned roadbeds for access shall be limited to providing reasonable access to the area. Boat launching ramps, parking areas, and access to these facilities may be provided only with an agreement with the Department of Fish and Wildlife Resources.

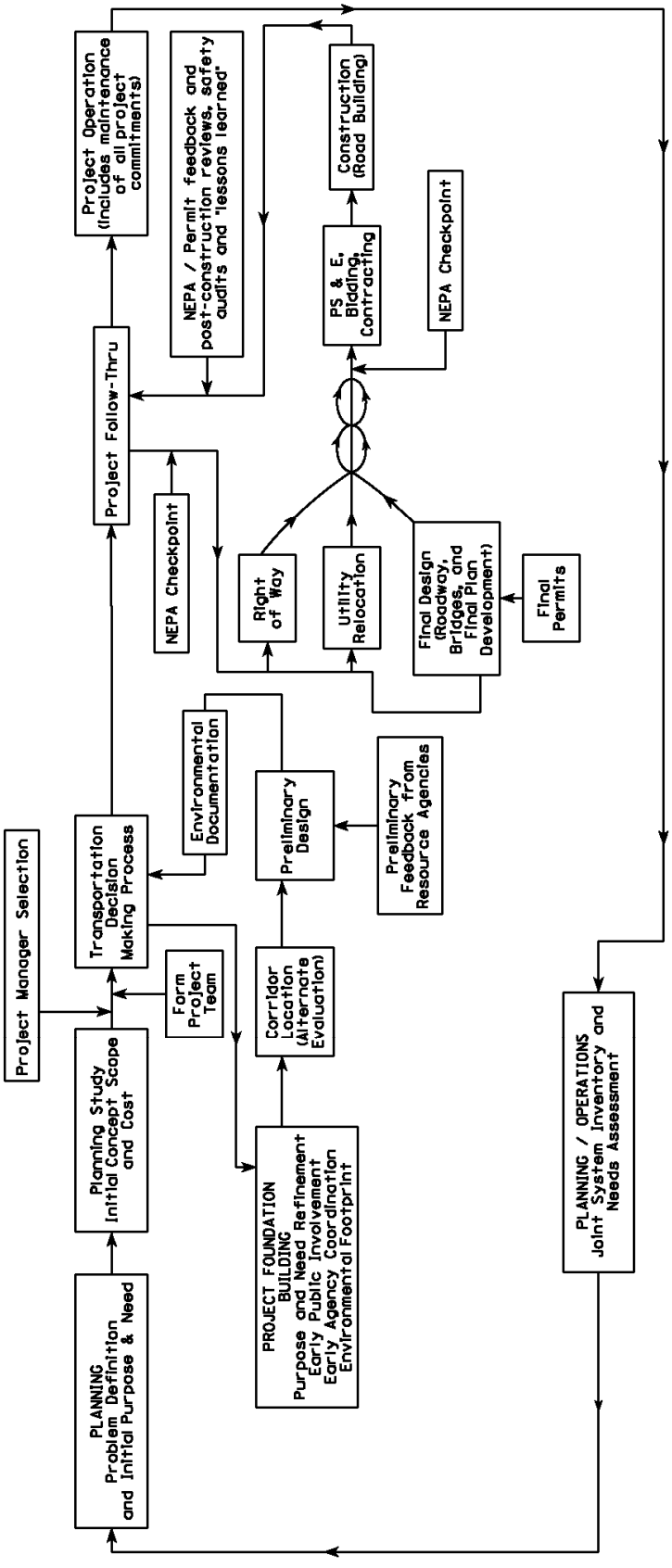
HD-212.12 U.S. ARMY CORPS OF ENGINEERS (USACE) PROJECTS

USACE projects involving the relocation, rearrangement, or alteration of any state or county highway requires the approval of the Department of Highways. The *State Highway Engineer Guidance Manual* contains policies and procedures

for coordinating these projects.

Project Delivery Core Processes

("Project ID + Scope" Thru "Road Building" and Maintenance)



Project Identification Form
Preliminary Cost Estimate

General Information:	County	McMartin	Route	KY 12	MP	6.1-7.9
UNL # or Item #	11-155	Prepared By:	Brad Travis	DATE:	1/31/2013	
Length (Mi.)	1.8 mi.	Median wid.	0	# Lanes	2	Pave. Depth (in.)
Ex.R/W (Ft.)	60	NewR/W(Ft.)	100	Total Width (all lanes)	24	Shoulder Width (each side) 8
Brief Description Summary from Project ID Form	Reconstruct KY 12 and KY 99 from US 66 to US 88 in Billtown					

TOTAL PROJECT ESTIMATE:	**$ 8,711,480**				
Planning:	$ 90,000	Design:	$ 900,000	Right of Way:	$ 568,000
Utilities:	$ 313,480	Construction:	$ 3,349,500		

Construction Total Construction Cost $ 6,840,000

☐ **PerMile AverageCost:** $3,800,000

Total Project Cost = $ 6,840,000

☑ **Itemized Construction Estimate:** (Use Best Available Information)

	Quantity	Unit	Unit Price	Total Cost
Excavation:	120000	cy	$6	$ 720,000
Asphalt	15000	Ton	$80	$ 1,200,000
DGA	20000	Ton	$20	$ 400,000
Detour	1	Lump Sum	$125,000	$ 125,000
Bridge	1	Each	$600,000	$ 600,000
Other				
Other				
Other				
Other				
Other				
Other				
Other				
*Miscellaneous		10%	$3,045,000	$ 304,500
		Total Construction Cost =		$ 3,349,500

* Miscellaneous charges are a Percentage of all other major cost not listed above. This cost might include cost of Clearing and Grubbing, Mobilization, Demobilization, Guardrail, Seeding, Staking, Striping, Culvert Pipes, etc. Any of these individual cost could be added above in the OTHER cell if approximate quantities are known.

CONSTRUCTION COMMENTS and NOTES

Design: Total Design Cost $ 900,000

☑ **Per Mile Average Design Estimate:** $500,000

Total Design Estimate (mileage) = $ 900,000

☐ **Percent of Construction, Design Estimate** Percent

Total Design Estimate (percent) = $ -

DESIGN COMMENTS and NOTES:

Planning: Total Planning Cost $ 90,000

☐ **Per Mile Average Planning Estimate:**

Total Planning Estimate (mileage) = $ -

☑ **Percent of Design, Planning Estimate** Percent 10

Total Planning Estimate (percent) = **$ 90,000**

PLANNING COMMENTS and NOTES:

Project Identification Form
Preliminary Cost Estimate

Right of Way: **Total Estimated R/W Cost** **$ 568,000**

☐ **Per Mile Average Estimated R/W Cost:**

Total R/W Estimated Cost (mileage) = $ -

☑ **Itemized Right of Way Estimate**

	Quantity	Avg. Value	Total Value
Farm Acres	31	$8,000	$ 248,000
Commercial Acres	1	$100,000	$ 100,000
Non-Developable Acre	5	$1,000	$ 5,000
# of Homes	2	$100,000	$ 200,000
# of Buildings	1	$15,000	$ 15,000
# Commercials Bldgs			
# of Graves			
Other			
Other			
Other			
Administrative & Legal %of R/W		$ 568,000	
**Total Right of Way Cost =			$ 568,000

☐ **Per Acre Average Estimated R/W Cost:**

Total R/W Estimated Cost (mileage) = _____

** Right of Way estimates are based on best assumptions at the time of estimate.

RIGHT-OF-WAY COMMENTS and NOTES:

Utilities: **Total Utility Cost** **$ 313,480**

☐ **Per Mile Average Utility Cost:**

Total Utility Estimated Cost = $ -

☑ **Itemized Utility Estimate**

	Quantity	Unit	Unit Price	Total Cost
Gas	360	Ft.	18	$ 6,480
Power	46	Ea.	4,500	$ 207,000
Telephone	2000	Ft.	10	$ 20,000
Sewer				
Water	3200	Ft.	25	$ 80,000
Other				
**Total Utility Cost =				$ 313,480

** Utility estimates are based on best assumptions at the time of estimate.

UTILITY COMMENTS and NOTES:

TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
DIVISION OF PROGRAM MANAGEMENT
REQUEST FOR FUNDING AUTHORIZATION

TC 90-122
1/2015

County: McMartin | Road Name: KY 12 & KY 99 | Project Manager: Brad Travis

Six Year Item No: 11-155.00 | eMars No.: 8799901D | Authorization No.:

Funding: ☐ FHWA ☑ State ☐ Local ☐ Other

Project Phase and Responsibility:	Planning	Design	Right of Way
		Consultant	
Utilities	Construction	Title Deeded To	Other

Type of Request and Amount Requesting	FUNDING FOR PHASES INDICATED	Previous Amount Authorized
	PLANNING AND DESIGN	
Initial ◉ Partial ○ Additional ○ $1,500,000	☐ Special Agreement ☐ Scoping Study ☑ PE & Environmental ☑ Phase II Design. Anticipated Environmental Doc. ☑ CE Level 2 or below ☐ Above CE Level 2	
	RIGHT OF WAY	
Initial ○ Partial ○ Additional ○ ☐ Advance R/W Acquisition	No. of Parcels ____ Acquisition Cost ____ Relocation Cost ____ *Relocation Assistance* Residences ____ Businesses ____ Miscellaneous ____ Grave Relocation ____ ☐ Hardship ☐ Corridor Preservation ☐ Other ____ *Parcel No* *Owner*	
	UTILITIES	
Initial ○ Partial ○ Additional ○	☐ Utility Adjustment ☐ Railroad Adjustment ☐ Railroad Protective Devices. PE ____ Right of Way ____ Construction ____ *Name of Utilities or Railroad Company* *Amount*	

Applicable when requesting Authorization of Funding:

☐ *Yes* ☑ *No* R/W Plans submitted to Program Management

☐ *Yes* ☑ *No* Environmental Cleared

Six-Year Plan Amount	Total Estimated Phase Cost	Phase Cost Overrun/(Underrun)	Percent Overrun/(Underrun)	Projected Phase End Date
$2,300,000	$1,500,000	($800,000)	(34.78%)	6/30/2016

Comments/Remarks:

District 11 is requesting initial funding to be placed in the D phase in order to advertise for consultant design services. These funds will also include state forces to complet necessary tasks. Preliminary engineering will be advertised and final design may be added by contract modification.

Apr 27, 2014
Date

Brad Travis, PE
Request Submitted by:

Exhibit 200-04

Item Number: 11-155.00 **Phase: DESIGN**
MARS #
County: McMartin
Job: Reconstruct KY 12 from US 66 to US 88 in Billtown

	DATE	EXPENDITURE $$$	Running Total	
2014	January			
	February			
	March			
	April			
	May			
	June			
	July	$ 75,000	$ 75,000	
	August	$ 75,000	$ 150,000	
	September	$ 75,000	$ 225,000	
	October	$ 75,000	$ 300,000	
	November	$ 75,000	$ 375,000	
	December	$ 75,000	$ 450,000	
2015	January	$ 50,000	$ 500,000	
	February	$ 50,000	$ 550,000	
	March	$ 75,000	$ 625,000	
	April	$ 75,000	$ 700,000	
	May	$ 75,000	$ 775,000	
	June	$ 75,000	$ 850,000	
	July	$ 60,000	$ 910,000	
	August	$ 60,000	$ 970,000	
	September	$ 60,000	$ 1,030,000	
	October	$ 60,000	$ 1,090,000	
	November	$ 75,000	$ 1,165,000	
	December	$ 75,000	$ 1,240,000	
2016	January	$ 75,000	$ 1,315,000	
	February	$ 65,000	$ 1,380,000	
	March	$ 60,000	$ 1,440,000	
	April	$ 60,000	$ 1,500,000	TOTAL
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			
2017	January			
	February			
	March			
	April			
	May			
	June			
	July			
	August			
	September			
	October			
	November			
	December			

Example Design Funds Documentation Summary

		County:	McMartin	District:	11		eMars Number:	8799901D	
		Item Number:	11-155.00				UPN:		
		Route:	KY 12 & KY 99				Federal Number:		
		Description:	Reconstruct KY 12 and KY 99 from US 66 to US 88 in Billtown						
		Project Length:		3.9	in miles		Type of Project:	Reconstruction (O)	
		Prepared By:	Brad Travis	Date:	April 27, 2014		Geotech	In-House / Consultant	In-House Man-Hours	Total Project Cost
Line	Unit	Cost Centers				Item	Charge Centers			
1	PM	Surveying				Y	District	$60,000	1,200	$60,000
2	PM	Design by District Personnel				N	District	$40,000	0	$0
3	PM	Public Involvement Program				N	District	$2,000	0	$0
4	PM	Design by consultant				Y	Consultant	$1,000,000		$1,000,000
5	PM	Consultant Supervision by Project Manager (15%)					Consultant/ HDO	$150,000	3,000	$150,000
6	DEA	Environmental activities in design				Y	District/CO	$10,000	400	$10,000
7	DEA	Environmental CEMP (CE for minor projects)				N	District/CO	$5,000	0	$0
8	DEA	Environmental CE Levels 1 & 2				N	District/CO	$15,000	0	$0
9	DEA	CE Project Field studies for one study				N	District/CO	$13,500	0	$0
10	DEA	Programmatic 4(f) issues				N	District/CO	$10,000	0	$0
11	DEA	EA/FONSI for projects 0-1 mile in length or CE 3				N	Consultant	$250,000		$0
12	DEA	EA/FONSI for projects 1-5 miles in length				N	Consultant	$500,000		$0
13	DEA	EA/FONSI for projects over 5 miles in length				N	Consultant	$850,000		$0
14	DEA	Environmental EIS				N	Consultant	$1,500,000		$0
15	DEA	Phase II Archeology				N	Consultant	$60,000		$0
16	DEA	Phase III Archeology				N	Consultant	$300,000		$0
17	DEA	Environmental permits (per Nationwide permit)				N	District/CO	$3,000	0	$0
18	DEA	Mitigation		N	Total acreage:	0	Consultant	$72,000		$0
19	Bridges	Bridge activities in design				Y	CO	$3,500	70	$3,500
20	Bridges	Bridges in house design for one span		0	Additional spans:	0	CO	$25,000	0	$0
21	Bridges	Culverts (single barrel, no bends, no extensions)		0	Add. bends:	0	CO	$1,000	0	$0
22	Bridges	Culverts (multiple barrels)		0	Add. barrels/bends:	0	CO	$10,000	0	$0
23	Bridges	Culverts (extension with one barrel)		0	Add. barrels/bends:	0	CO	$8,000	0	$0
24	Bridges	Retaining wall			Total length:	0	CO	$5,000	0	$0
25	Bridges	Bridges for one span		1	Additional spans:	0	Consultant	$60,000		$60,000
26	Bridges	Culverts (single barrel, no bends, no extensions)		0	Add. barrels/bends:	0	Consultant	$27,000		$0
27	Bridges	Retaining wall - Consultant			Total length:	0	Consultant	$18,000		$0
28	Geotech	Geotech activities in design				Y	CO	$40,000	800	$40,000
29	Geotech	Roadway per mile		0	Additional mile:	0	CO	$80,000	0	$0
30	Geotech	Bridge (base = single span)	No. of spans:	0	Additional pier:	0	CO	$25,000	0	$0
31	Geotech	Culvert core holes			Length (ft) :	0	CO	$16,000	0	$0
32	Geotech	Retaining Wall			Length (ft) :	0	CO	$23,000	0	$0
33	Geotech	Landslide Investigation				N	CO	$30,000	0	$0
34	Geotech	Roadway per mile - consultant		0	Additional mile:	0	CO	$176,000	0	$0
35	Geotech	Bridges core holes - consultant		0	Additional piers:	0	Consultant	$55,000		$0
36	Geotech	Culvert core holes - consultant			Length (ft) :	0	Consultant	$38,000		$0
37	Geotech	Retaining Wall - consultant			Length (ft) :	0	Consultant	$54,000		$0
38	Geotech	Landslide - consultant				N	Consultant	$75,000		$0
39	Design	Central Office Drainage				Y	CO	$12,000	240	$12,000
40	Design	Central Office Location				Y	CO	$10,000	200	$10,000
41	Design	Constructability Review				Y	CO	$5,000	100	$5,000
42	Design	Estimating - charged to OVERHEAD now				N	CO	$5,000	0	$0
43	Design	Pavement Design				Y	CO	$5,000	100	$5,000
44	Design	Phototech - charged to OVERHEAD now				N	CO	$5,000	0	$0
45	Design	Plan Processing & Printing				Y	CO	$10,000	200	$10,000
46	Design	Plans, Specifications & Estimates (PS&E)				Y	CO	$5,000	100	$5,000
47	Design	Railroad Agreements				N	District/CO	$10,000	0	$0
48	Design	Signing Panel Signs				N	CO	$1,000	0	$0
49	Design	Survey Coordination				N	CO	$5,000	0	$0
50	Design	Value Engineering Projects - NHS				N	CO	$60,000	0	$0
51	Planning	Basic planning activities in design				N	District/CO	$5,000	0	$0
52	Planning	Alternate studies by planning in design				N	CO/Consultant	$500,000		$0
53a	Planning	Pre-design scoping studies (IPS)				N	District/CO	$75,000	0	$0
53b	Planning	DNA Studies (in-house)				N	District/CO	$12,000	0	$0
53c	Planning	Project specific forecasts for design				N	CO/Consultant	$5,000 to $35,000	0	$0
53d	Planning	Project specific models for design				N	CO/Consultant	$25,000 to $150,000	0	$0
54	Other Divisions	Project Delivery & Preservation activities in design				Y	District/CO	$5,000	100	$5,000
55	Other Divisions	Legal activities in design				N	District/CO	$0	0	$0
56	Other Divisions	Right of way activities in highway design				Y	District/CO	$10,000	0	$10,000
57	Other Divisions	Utilities activities in highway design				Y	District/CO	$15,000	300	$15,000
58	Other Divisions	Traffic Operation activities in design				Y	District/CO	$4,000	80	$4,000
59	Other Divisions	Lighting design				Y	CO	$12,000	240	$12,000
60	Other Divisions	Signal design				Y	District/CO	$6,000	120	$6,000
61		Man-Hour Cost (average)	$50	$ / hour				Total Man Hours	7,250	
								Total Project Cost (based on hourly estimate)	$362,500	$1,422,500

KENTUCKY TRANSPORTATION CABINET
FRANKFORT, KENTUCKY

PROJECT AUTHORIZATION

TC10-1 REV 8/95

91845 000

AUTHORIZATION NO. _____

IT IS HEREBY ORDERED THAT THE PROJECT HEREIN DESCRIBED BE UNDERTAKEN AND ACCOMPLISHED WITHIN THE FUNDING LEVEL AUTHORIZED

1. PROJECT ID	A: PROJECT ID NUMBER	B: FEDERAL PROJECT NO.	C:DISTRICT HWY / ADD	D: COUNTY	E: 6 YRP ITEM NUMBER
	033 0012 00-001		05	MCMARTIN	11-155

F:TYPE OF PROJECT	G:ROUTE NUMBER	H: FACILITY NAME	I: SYSTEMS
033 - RECONSTRUCT	I-264	BILLTOWN - KEITHVILLE ROAD	

J: PROJECT LENGTH	K: SCOPE OF PROJECT
.04 MI	RECONSTRUCT KY 12 AND KY 99 FROM US 66 TO US 88 IN BILLTOWN

L: NO OF BRIDGES	M: PROGRAM PRIORITY	N: RS ITEM NUMBER	O: 6 YR PLAN PARENT NUMBER
			11 0155 00 2014

2. PROJECT PHASE AND RESPONSIBILITY	A. PLANNING	B. DESIGN	C. RIGHT OF WAY	D. UTILITIES
	DOH	CONSULTANT		
	E. CONSTRUCTION	F. TITLE DEEDED TO:	G. MAINTENANCE	H. OTHER

3. FUNDING & TIME ACCOUNTABILITY — PARTICIPATING AGENCIES

FEDERAL FHWA STATE DOH LOCAL _____ OTHER _____

REQUESTED FUNDS FOR THIS AUTHORIZATION

ITEM NUMBER SUFFIX	PHASE	FUND	PROGRAM	FISCAL YEAR FEDERAL	FISCAL YEAR STATE	FEDL APPR. CODE	ENACTED 6YR PLAN AMOUNT	% DIFFERENCE VS 6YP AMT	CURRENT FUNDING REQUEST
11 - 155.00	D	1200	FD52	2014	2014	M001			1,500,00.00
CURRENT ESTIMATE APPROVED BY:	BT	DATE 06/30/2014			CURRENT FUNDING REQUEST TOTAL				500,000.00

AUTHORIZATION SUMMARY FOR THIS 10-1 SERIES

PHASE	INITIAL PROJECT ESTIMATE	CURRENT PROJECT ESTIMATE	TOTAL AUTHORIZATION TO DATE (INCL.CURRENT REQUEST)
NON-HIGHWAY	$ 0.00	$ 0.00	$ 0.00
PLANNING	$ 0.00	$ 0.00	$ 0.00
DESIGN	$ 2,300,000.00	$ 1,500,000.00	$ 1,500,000.00
RIGHT OF WAY	$ 0.00	$ 0.00	$ 0.00
UTILITIES	$ 0.00	$ 0.00	$ 0.00
CONSTRUCTION	$ 0.00	$ 0.00	$ 0.00
TOTAL	$ 2,300,000.00	$ 1,500,000.00	$ 1,500,000.00

4. REMARKS:

THIS AUTHORIZATION PROVIDES INITIAL DESIGN FUNDS TO BEGIN THE DESIGN PHASE OF THE PROJECT. (PE, ENVIRONMENTAL, DESIGN).

TJ

PROJECT APPROVAL RECOMMENDED BY:

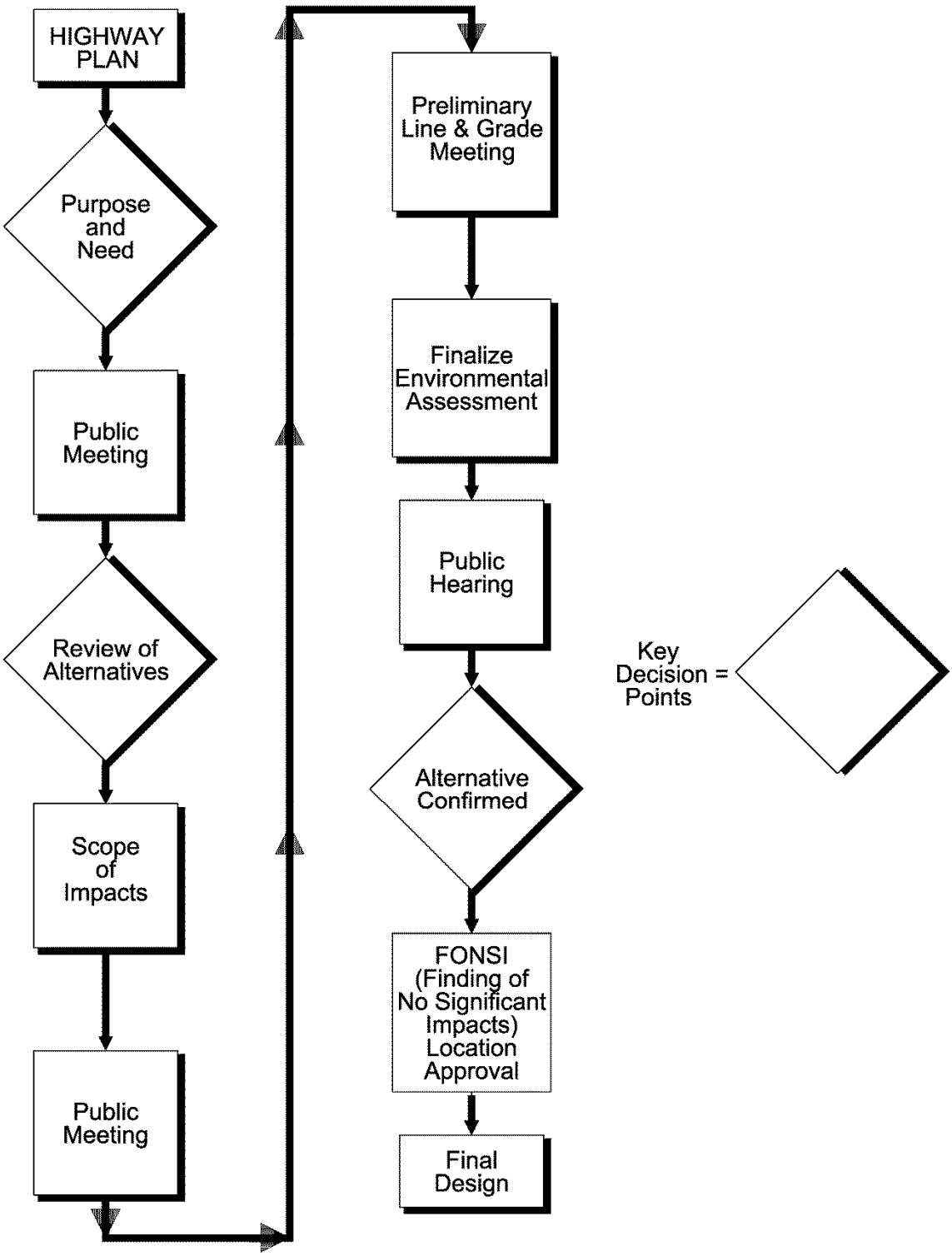
_____
SIGNATURE DATE

SIGNED AND APPROVED BY:

_____
SECRETARY OF TRANSPORTATION OR DESIGNATED REPRESENTATIVE

CB

PRELIMINARY DESIGN EXAMPLE
FLOW CHART FOR PROJECTS WITH A FONSI



WATER RELATED IMPACTS SUMMARY

County	Sampson	**Route No.**	KY 900	**Item No.**	1-315.00
Date	9-12-2014	**Program #**	8689901D		
Federal Project No.					
State Project No.	108 0900 016-020				
Location Engineer	Sarah Kate Bradley				

Section 1: Impact Checklist

Complete this section for each alternative considered at the conclusion of Phase 1 design.

Alternate 1

FLOODPLAIN IMPACTS		
FEMA Study Type	**Yes**	**Community No.**
Detailed FEMA Study with delineated floodway*	X	21213C, 29003C
Detailed FEMA Study without delineated floodway*		
Approximate FEMA Study		
No FEMA Study		
* May require initiation of the map revision process if impacts to water surface elevations cannot be avoided. Potential impacts to floodplains and/or floodways shall be assessed early in the project. Refer to Sections DR 203 and DR 204 of the Drainage Manual.		

The project is located on the FEMA Flood Map Panel 21213C0225C (Sampson County) & FEMA Flood Map Panel 29003C0225C (Allen County) and the project is in a "Zone A" flood area.

SIGNIFICANT RESOURCE IMPACTS				
Are open sinkholes impacted? If so, how many sinkholes are impacted?	Yes		No	X
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	Yes		No	X
Are any of the streams in the project area designated "Special Use Waters" (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	Yes		No	X

Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are also discussed in DR 500 of the Drainage Manual.

Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environment analysis for more information.

STREAM CHANNEL IMPACTS				
Will stream relocations (channel changes) be needed? If so, how many total linear feet are estimated? _____ LF	Yes		No	X
Will new culverts or culvert extensions be constructed? If so, how many total linear feet are estimated? 1300 LF	Yes	X	No	
Will temporary stream crossings be needed?	Yes		No	X
Will excess material sites that require permitting be needed?	Yes		No	X
Will bridges be constructed?	Yes	X	No	

On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.

Alternate 1A

FLOODPLAIN IMPACTS		
FEMA Study Type	**Yes**	**Community No.**
Detailed FEMA Study with delineated floodway*	X	21213C, 29003C
Detailed FEMA Study without delineated floodway*		
Approximate FEMA Study		
No FEMA Study		

* May require initiation of the map revision process if impacts to water surface elevations cannot be avoided. Potential impacts to floodplains and/or floodways shall be assessed early in the project. Refer to Sections DR 203 and DR 204 of the Drainage Manual.

The project is located on the FEMA Flood Map Panel 21213C0225C (Sampson County) & FEMA Flood Map Panel 29003C0225C (Allen County) and the project is in a “Zone A” flood area.

SIGNIFICANT RESOURCE IMPACTS				
Are open sinkholes impacted? If so, how many sinkholes are impacted?	Yes		No	X
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	Yes		No	X
Are any of the streams in the project area designated "Special Use Waters" (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	Yes		No	X

Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are also discussed in DR 500 of the Drainage Manual.

Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environment analysis for more information.

STREAM CHANNEL IMPACTS				
Will stream relocations (channel changes) be needed? If so, how many total linear feet are estimated? _____ LF	Yes		No	X
Will new culverts or culvert extensions be constructed? If so, how many total linear feet are estimated? _1400_ LF	Yes	X	No	
Will temporary stream crossings be needed?	Yes		No	X
Will excess material sites that require permitting be needed?	Yes		No	X
Will bridges be constructed?	Yes	X	No	

On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.

Alternate 1B

FLOODPLAIN IMPACTS		
FEMA Study Type	**Yes**	**Community No.**
Detailed FEMA Study with delineated floodway*	X	21213C, 29003C
Detailed FEMA Study without delineated floodway*		
Approximate FEMA Study		
No FEMA Study		
* May require initiation of the map revision process if impacts to water surface elevations cannot be avoided. Potential impacts to floodplains and/or floodways shall be assessed early in the project. Refer to Sections DR 203 and DR 204 of the Drainage Manual.		

The project is located on the FEMA Flood Map Panel 21213C0225C (Sampson County) & FEMA Flood Map Panel 29003C0225C (Allen County) and the project is in a "Zone A" flood area.

SIGNIFICANT RESOURCE IMPACTS				
Are open sinkholes impacted? If so, how many sinkholes are impacted? 1	Yes	X	No	
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	Yes		No	X
Are any of the streams in the project area designated "Special Use Waters" (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	Yes		No	X
Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are also discussed in DR 500 of the Drainage Manual. Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environment analysis for more information.				

STREAM CHANNEL IMPACTS				
Will stream relocations (channel changes) be needed? If so, how many total linear feet are estimated? _____ LF	Yes		No	X
Will new culverts or culvert extensions be constructed? If so, how many total linear feet are estimated? 2050 LF	Yes	X	No	

Will temporary stream crossings be needed?	Yes		No	X
Will excess material sites that require permitting be needed?	Yes		No	X
Will bridges be constructed?	Yes	X	No	

On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.

Alternate 2

FLOODPLAIN IMPACTS		
FEMA Study Type	**Yes**	**Community No.**
Detailed FEMA Study with delineated floodway*	X	21213C, 29003C
Detailed FEMA Study without delineated floodway*		
Approximate FEMA Study		
No FEMA Study		

* May require initiation of the map revision process if impacts to water surface elevations cannot be avoided. Potential impacts to floodplains and/or floodways shall be assessed early in the project. Refer to Sections DR 203 and DR 204 of the Drainage Manual.

The project is located on the FEMA Flood Map Panel 21213C0225C (Sampson County) & FEMA Flood Map Panel 29003C0225C (Allen County) and the project is in a "Zone A" flood area.

SIGNIFICANT RESOURCE IMPACTS				
Are open sinkholes impacted? If so, how many sinkholes are impacted? 1	Yes		No	X
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	Yes		No	X
Are any of the streams in the project area designated "Special Use Waters" (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	Yes		No	X

Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are also discussed in DR 500 of the Drainage Manual.

Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environment analysis for more information.

STREAM CHANNEL IMPACTS				
Will stream relocations (channel changes) be needed? If so, how many total linear feet are estimated? 200 LF	Yes	X	No	
Will new culverts or culvert extensions be constructed? If so, how many total linear feet are estimated? 1460 LF	Yes	X	No	
Will temporary stream crossings be needed?	Yes		No	X
Will excess material sites that require permitting be needed?	Yes		No	X
Will bridges be constructed?	Yes	X	No	

On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.

Section 2 : Impact Discussion

The alternates that were considered for this project cross several small drainage areas but the two crossing of main concern are an intermittent stream and a perennial river. Due to the length of the streams and the fact that the proposed construction must stay close to the existing KY 900 route these stream crossing are unavoidable. The preferred Alternate 1A will cross the intermittent stream with a 60" culvert pipe and will cross the perennial river with an approximately 250' long bridge. As a temporary measure to minimize impacts to the stream and river during construction, erosion and sediment control structures will be utilized. These structures will include temporary diversion ditches, silt traps, and silt fences. Permanent solutions to minimize erosion and thereby lessening any long-term effects to the affected stream will include, but not be limited to: permanent seeding, turf reinforcement, mat protection, culvert outlet scour protection.

It is believed that the proposed construction impact to the environment, specifically the stream, will be minimal.

DESIGN EXECUTIVE SUMMARY

County:	Sampson	**Item #:**	1-315.00
Route Number(s):	KY 900	**State Program #:**	8689901D
BMP/EMP:	16.3/19.2	**Federal Project #:**	N/A
Type of Work:	Reconstruction		

Highway Plan Project Description: Improvements to KY 900: Reconstruct KY 900 from KY 122 to Lee Keen Road west of Sulphur Fork Creek.

EXISTING CONDITIONS

ADT (current): 2,200	**Truck Class:** A		**Trucks:** 10 %
Existing Functional Classification: ☐ Urban ☑ Rural — Collector	**Terrain:** Rolling	**Route is on (check all that apply):** ☐ NHS ☐ NN ☐ Ext Wt ☑ None	
Posted Speed Limit: 55 mph or **Statutory Speed Limit:**		☐ 35 mph (urban) ☐ 55 mph (rural)	
Existing Bike Accommodations: Shared Lane		**Ped:** ☐ Sidewalk ☐ Other	

PROPOSED CONDITIONS

Design Functional Classification: ☐ Urban ☑ Rural — Collector	**Design ADT (year):** 2,800 **DHV:**	**Access Control:** By Permit **Min. Spacing:**	

CONTROLLING CRITERIA:	EXISTING	AASHTO Guidance (for selected design speed)	Recommendation	Design Exception (check if exception is needed)
Design Speed		Range: 50-60 mph Selected: 55 mph	55 mph	☐
Lane Width, No. of Lanes	10', 2 lanes	11'-12', 2 lanes	11'-12', 2 lanes	☐
Shoulder Width, slope (minimum usable)	Varies	8', 4%	8', 4% 650' of 6' wide shldr.	☑
Bridge Width (clear roadway)	22'	38'-40'	36'	☑
Max. Grade	10.00%	7.00%	7.00%	☐
Horiz. Radius (min.)	1000'	960'	960'	☐
Horiz. & Vertical SSD (min.)	240'	425'	495'	☐
Vert. HLSD (min.)	505'	425'	495'	☐
Normal Cross Slope	2.00%	2.00%	2.00%	☐
Max. Superelev. Rate (emax= %)	8.00%	8.00%	8.00%	☐
Vert. Clearance	n/a	14.5'	n/a	☐
OTHER CRITERIA:				**Design Variance**
Border Area (urban)	n/a	n/a	n/a	☐
Sidewalk Width, slope	n/a	n/a	n/a	☐
Bike Lane Width, slope	n/a	n/a	n/a	☐
Shared Use Path Width	n/a	n/a	n/a	☐
Other:				☐

DESIGN EXECUTIVE SUMMARY

Design Criteria Notes: The exception will be at the proposed bridge where guardrail will be installed and a 6' usable shoulder will be provided from approximate Sta. 787+50 to Sta. 794+50.

Environmental Action: Overview

Completion Date: ☐ scheduled ☑ actual 7/5/2014

Existing Pavement Depths: unknown

Include:

1. Typical sections, including bridges (on 8.5X11 inch paper)
2. Map showing project location
3. Project overview and existing conditions
4. Purpose and Need statement
5. Discussion of alternatives (including preferred and no build) with respective traffic control schemes and utility and right of way impacts.
6. Discussion of Design Exceptions and mitigation strategies
7. Cost comparison table of alternatives vs. Highway Plan
8. Discussion if preferred alternate cost is >115% than highway plan
9. Discussion of clearzone
10. Consideration for bicycle and pedestrian facilities (see HDM 1502)
11. Water-related impacts summary

Submitted by Project Engineer: *Grant Asher* ☑ KYTC ☐ Consultant **Date: 9/12/2014**

Recommended by Project Manager: *Sarah Kate Bradley* **Date: 9/12/2014**

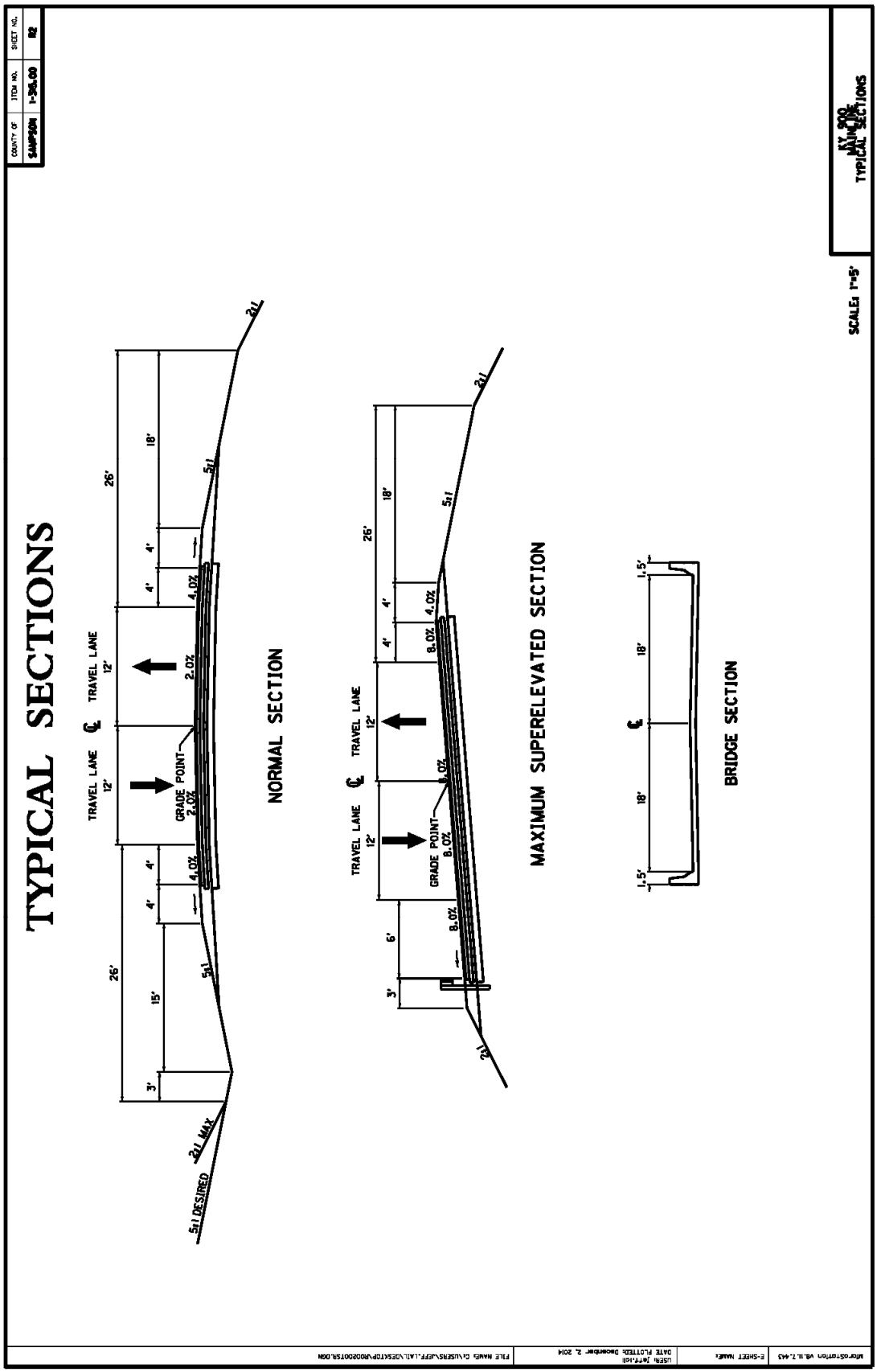
Tier Level Approval ☐ Tier 1 ☐ Tier 2 ☑ Tier 3

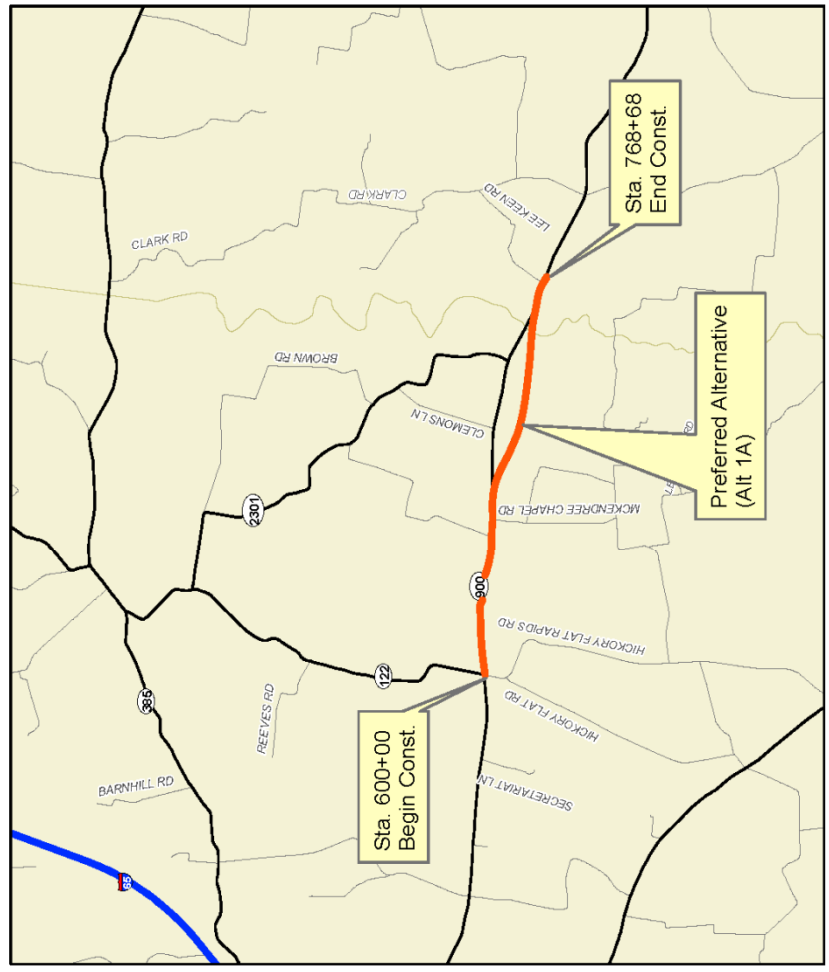
Location Engineer: *Heidi Johnston* **Date: 9/17/2014**

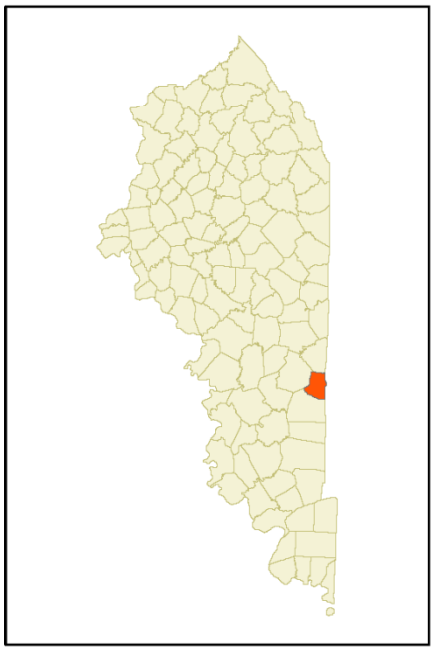
Roadway Design Branch Manager: *John Smith* **Date: 9/19/2014**

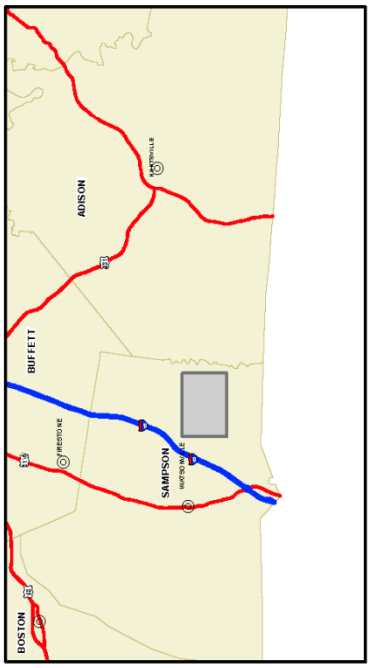
Comments:

Geometric Approval Granted by: *Bob Hill* Director, Div. of Hwy. Design **Date: 9/22/2014**


COUNTY OF
SAMPSON
ITEM NO.
I-326.00
SHEET NO.
R2
TYPICAL SECTIONS
NORMAL SECTION
MAXIMUM SUPERELEVATED SECTION
BRIDGE SECTION
TRAVEL LANE
12'
GRADE POINT
2.0%
4.0%
8.0%
26'
18'
15'
6'
4'
3'
1.5'
5:1
2:1
2:1 MAX
5:1 DESIRED
SCALE: 1"=5'







1-315.00
Sampson County
KY 900 Reconstruction

Item No. 01-315.00
Improvements to KY 900: Reconstruct KY 900 from KY 122 to Lee Keen Road east of Sulphur Fork Creek
Sampson County, Kentucky

Project Overview and Existing Conditions

The purpose of this project is to improve safety and provide a better connection for travelers along KY 900 from the intersection with KY 122 in Sampson County eastward to Sulphur Creek as part of an overall improvement strategy for the entire KY 900 corridor. The existing KY 900 has narrow 10' driving lanes, no shoulders and limited sight distance at multiple vertical crest curves. These substandard geometric features in conjunction with 2,200 ADT and 10% truck traffic combine to create a very hazardous roadway. The proposed roadway will have 12' driving lanes, 8' shoulders and will accommodate the existing motorists as well as the expected increase of 2,800 ADT and 13% trucks.

Existing Road Concerns:

- Safety - 72 collisions in the past 5 years, including 2 fatalities
- Geometric deficiencies
- Heavy tractor trailer truck traffic
- Hill with limited sight distance at Clay Smith Road intersection

Purpose and Need

As part of the Kentucky primary highway network, KY 900 is a rural two-lane facility which connects US 31E near Huntsville in Adison County to I-65 near Watsonville in Sampson County. KY 900 is functionally classified as a rural major collector, and it provides a link between the employment, education, governmental, health and recreation service centers in Adison and Sampson Counties. While existing and projected traffic volumes indicate that the level of service will remain acceptable at least until Year 2030, the existing geometrics increase travel times and create safety concerns at certain locations. Traffic consists primarily of passenger cars, but there is a relatively large proportion of heavy vehicles, and horse and buggy traffic is fairly common due to the Mennonite communities in the area. This mixture of vehicles combined with the roadway geometrics and narrow cross-section creates safety concerns, and several locations were identified as having potentially high crash rates.

The "2008 Alternatives Study on KY 900 from KY 122 to US 31E (1-8305.00)" identified the section of KY 900 from the intersection with KY 122 in Sampson County to Sulphur Creek as the number one priority for potential improvement.

The purpose of this project is to improve safety and provide a better connection for travelers along KY 900 from the intersection with KY 122 in Sampson County eastward to Sulphur Creek as part of an overall improvement strategy for the entire KY 900 corridor.

Discussion of Alternatives

Alternate 1

Alternate 1 connects to the proposed 3-8306 project and continues its horizontal tangent. This alternate remains parallel to the existing KY 900 alignment and then diverges on a cross county route to the south at Sta. 710+00. Alternate 1 provides a straighter, better geometric route than Alternate 2 and has right of way impacts to 24 parcels and 2 relocations. The following are some of the impacts:

- Residential house located at Right Sta. 685+00 is a potential historic property but is not on the national registry. Alternative 1 will impact this property.
- Alternate 1 & 2 cross two major gas transmission lines. Comment was made to check these areas closely during Final Design to ensure that we have roadway embankment and that there are no roadway ditches here.
- Earthwork does balance, however most of the excavation is located on the east end of the project which would result in long hauls for the excavation equipment.
- It was noted that this alternate has no telephone impacts in Sampson County, which could result in a more expedited construction schedule.

Alternate 2

Alternate 2 also connects to the proposed 1-315.00 project at Hickory Flats Road (KY 122) and continues its horizontal tangent. Alternate 1 and Alternate 2 are identical until Sta. 670+41.14 where Alternate 2 continues along the existing KY 900 corridor. The proposed Alternate 2 route parallels on the north and south and crosses the existing KY 900 roadway at 5 locations. This creates a complex design which will result in difficulties of maintaining the existing KY 900 traffic during construction. From Sta. 750+00 to Sta. 785+00, the existing roadway has a down grade of approximately 8%-9%. According to current KYTC design standards, this type of roadway should be limited to a 7% maximum grade. In order to maintain a 7% down grade and vertical crest curve with the appropriate sight distance, the proposed vertical alignment creates elevation differences between existing and proposed of approximately 10'-15'. This results in steep driveways that range in grade from 10%-13% and some required the addition of sharp horizontal curves to increase the length of the driveway just to keep the vertical grades within an acceptable limit. Alternate 2 has right of way impacts to 42 parcels and 3 relocations. The following are some of the impacts and points of discussion:

- Switches to the north side of the road at Sta. 685+00 and does not impact historic property.
- This alternative has approximately half of the earthwork as Alternate 1; however when the diversions and maintenance of traffic is considered, Alternate 2 is more expensive and much more complicated to construct.

- Alternate 2 has more stream impacts and mitigation requirements than Alternate 1.
- Alternate 2 also impacts a natural spring that will require a spring box to be installed in the proposed embankment.
- Alternate 2 has much more significant impacts to the telephone, water, and overhead power utilities. This not only adds cost to the project but will add time to the construction schedule.
- Alternate 2 results in only one roadway and bridge to maintain.

Alternate 1A

A modified Alternate 1 was developed which was referred to as Alternate 1A. This alternate will take the Alternate 1 alignment and shift it farther to the south from Sta. 669+64.59 to Lee Keen Road to lessen the impacts on three properties. This would also shift the end of the project approximately 9000' to the east and eliminate the relocation of a property owner. The following exhibit represents the proposed Alternate 1A in blue.

Alternate 1B

Alternate 1B that would continue along the existing KY 900 route for an additional ¼ of a mile before detouring south, thus minimizing impacts to two parcels. Due to the terrain that Alternate 1B crossed and the additional earthwork and drainage structures that would be required, it resulted in approximately $1,900,000 of increased construction cost. This alternate would also have additional utility relocation cost as well due to the additional length of roadway that follows the existing KY 900 route. Due to these issues the design team determined that Alternate 1B was not a feasible design alternative.

Preferred Alternative – Alternate 1A

It is the opinion of the design team that **Alternate 1A** would provide the best alternative for the relocation of KY 900 from KY 122 to Lee Keen Road. This alternative is the least intrusive to the community, impacts the fewest number of residents, and provides the safest geometric alignment for the roadway. The Project Team also recommends that the existing bridge be left in place versus constructing a new connector on the east end to serve the existing route.

Maintenance of Traffic Plan

This project will be constructed under traffic. Since the majority of the construction will be new route traffic impacts will be minimal. The west end tie-in at KY 122 will require traffic to be limited to one lane with a flagger. The east end tie-in will require the construction of a temporary detour due to the difference in grades at the tie-in point. All approach roads associated with this project have alternative connects to other roads which will result in short detours during required closures.

Discussion of Design Exceptions and Mitigation Strategies

The design exception will be at the proposed bridge where guardrail will be installed and a 6' usable shoulder will be provided from approximate Sta. 787+50 to Sta. 794+50. The existing shoulder in this location is 1-2 ft. Six ft. shoulders are proposed in this area instead of 8 ft. to minimize right of way impacts and to avoid water line relocations.

Cost Comparison Table

Cost Comparison						
	Alternate 1	**(Preferred) Alternate 1A**	(W/out Existing Bridge) Alternate 1A	Alternate 1B	Alternate 2	Latest Approved Highway Plan
Right-of-Way	$2,000,000	**$2,000,000**	$2,000,000	$2,000,000	$1,950,000	$1,750,000 (2016, SPP)
Utilities	$6,940,000	**$6,940,000**	$6,940,000	$7,340,000	$7,740,000	$5,600,000 (2016, SPP)
Construction	$8,400,000	**$8,600,000**	$9,540,000	$9,700,000	$8,600,000	$9,600,000 (2018, SPP)
Total	$17,340,000	**$17,540,000**	$18,480,000	$19,040,000	$18,290,000	$16,950,000
% Above SYP	2%	**3%**	9%	12%	8%	

The Precon Database has been updated with the current estimate for Alternate 1A.

Discussion if Preferred Alternative is > 115% Than the Highway Plan

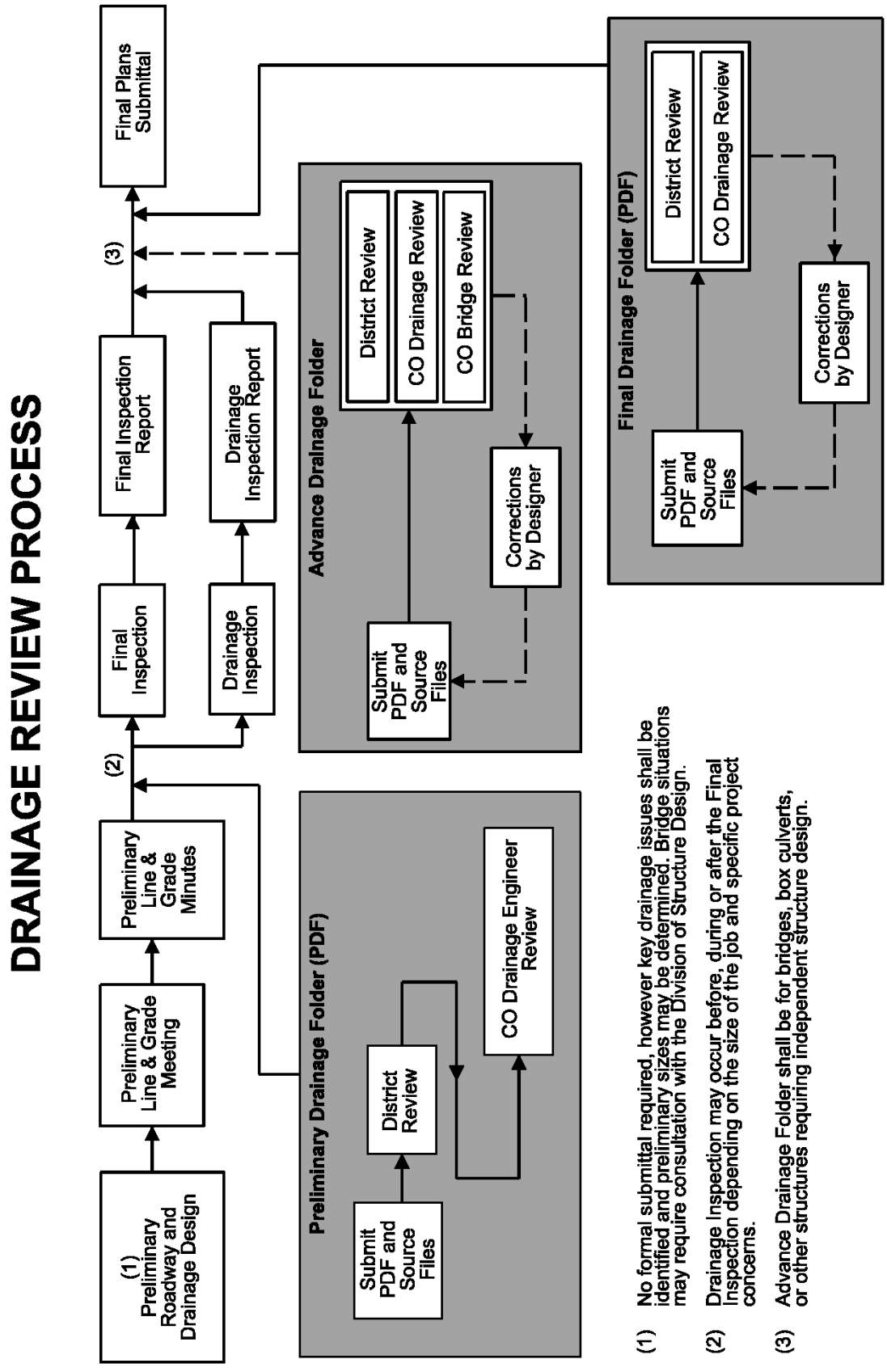
The preferred alternative is within 115% of the Highway Plan.

Discussion of Clearzone

The typical section for this project provides a 16' 5:1 fill slope and ditch foreslope where feasible, resulting in a 24' clearzone.

Consideration for Bicycle and Pedestrian Facilities

This project is located in a rural area with no existing bicycle or pedestrian facilities that would provide connectivity in this area. The long range plan for this area does not include the addition of such facilities and there are no local or regional bicycle plans that have designated bicycle improvements for this area. Therefore, the design team did not see the need to include bicycle facilities as a part of this project.



(1) No formal submittal required, however key drainage issues shall be identified and preliminary sizes may be determined. Bridge situations may require consultation with the Division of Structure Design.

(2) Drainage Inspection may occur before, during or after the Final Inspection depending on the size of the job and specific project concerns.

(3) Advance Drainage Folder shall be for bridges, box culverts, or other structures requiring independent structure design.

PRE-DESIGN CONFERENCE MINUTES

Item No.: 4-396.00 County: Grant Route: US 155

Pre-Design Conference
Consultant Name: JMA Engineers, INC Date:10-31-2014
Consultant Project Manager: John E. Lee

BMP/EMP:
Dept. Project Manager: Sam Anderson Length: 2.3 6.2-8.5
Type of Work: Roadway Reconstruction Environmental Type: CE Level I
Description: Improve safety and substandard geometrics for US 155 from MP 6.2-8.5.

The consultant is to provide engineering and related services for this project for the following items (check all that apply):

[ ] Pre-design scoping study
[X] Preliminary Roadway Design
[ ] Final Roadway Design

Scoping Studies
The type and extent of studies necessary for any given project will be defined at the Pre-design conference. The Department reserves the right to solicit other firms to complete the actual design of the project after studies are completed. The project may be split into design sections or may require the selection of another consultant to perform activities specifically identified during the study phase.

Design Related Services
The following design related services shall be performed as checked below:

	Not Required	Department	Consultant	Statewide
Photogrammetry:	[ ]	[X]	[ ]	[ ]
Surveying:	[ ]	[ ]	[X]	[ ]
Environmental:	[ ]	[X]	[X]	[ ]
Geotechnical:	[ ]	[X]	[ ]	[ ]
Right of Way & Utility Estimates:	[ ]	[X]	[ ]	[ ]
Traffic Engineering Analysis: (Basic; Highway Capacity Manual)	[ ]	[ ]	[X]	[ ]
Traffic Engineering Analysis: (Advanced; Micro-simulation)	[X]	[ ]	[ ]	[ ]
Traffic Forecasting:	[ ]	[X]	[ ]	[ ]
Pavement Design:	[ ]	[ ]	[X]	[ ]
Structure Plans:	[ ]	[X]	[X]	[ ]
Signing Plans:	[ ]	[ ]	[X]	[ ]
Signal Plans:	[X]	[ ]	[ ]	[ ]
Lighting Plans:	[X]	[ ]	[ ]	[ ]
Landscaping Plans:	[X]	[ ]	[ ]	[ ]
Utility Design:	[ ]	[X]	[ ]	[ ]
Utility Coordination:	[ ]	[X]	[ ]	[ ]
Right of Way Services:	[ ]	[X]	[ ]	[ ]

Unless otherwise specified in the Pre-design Conference Minutes, the Department shall provide:

(1) All existing and projected traffic counts, including intersection turning movements.
-A Traffic Forecast has been requested by KYTC and project ESAL counts will be provided at a later date. Estimated completion date February 2015.

(2) The project's photogrammetry will be provided in DGN format, in English units. Additionally, the mass point and breakline files will be provided to aid the consultant in creating a digital terrain model. Ortho-rectified aerial photographs will also be provided.
-Photogrammetric data and DTM will be provided at a later date. Estimated date December 2014.

(3) Copies of any available record plans of existing roads and construction plans of any proposed road projects as details are finalized and become available.
-Existing Roadway Plans will be provided at the meeting. (Scanned PF file on ProjectWise)

(4) Copies of any previous pertinent studies, reports or project documentation.
-A Data Need Analysis (DNA) study was performed by KYTC and will be provided at the meeting.

Scope of Work

The consultant's responsibility for scope of work shall include:

-Alternate Alignment Selection – KYTC wishes to consider up to 3 alternatives, at least one of which must be within 115% of the Highway Plan budget. One of the items that shall influence the alternate selection is the Maintenance of Traffic scheme.
-Public Meeting (Prior to Preliminary Line and Grade Meeting)
-For PL&G Meeting, the Consultant shall provide a Project Decision Matrix for the proposed alternativees with a minimum of the following criteria: Cost (By Phases), Environmental Impacts, Utility Impacts, R/W impacts, and Traffic Impacts during construction.

Surveying

The consultant's responsibility for surveys shall include:

The Consultant will be required to perform all surveys, except Photogrammetric Data, which will be provided by the Cabinet.

Preliminary Design

The consultant shall be responsible for all alternatives and construction cost estimates necessary to make a determination of a recommended alternative. These alternatives should generally include the following items:

Explanations of work in most cases are identified within the Production-Hours Documentation.

Specific notes pertaining to preliminary design not specified in the Production-Hour Documentation.

Preliminary hydraulic studies, including stream sections, stream profile, and necessary channel changes. Consideration of avoidance and minimization of effects on blue-line streams must be included in accordance with Section 404 and 401 of the Clean Water Act. The consultant shall be responsible for obtaining all floodway studies and other pertinent drainage information to be utilized in their design.

Environmental

The Cabinet will be responsible for Environmental Works. The Consultant will provide mapping and design information as needed to the Cabinet to prepare Environmental Documentations and other permits as required for this project. The Consultant will also be required to submit an Environmental Overview documenting the impacts associated with proposed building alternates. Production hours will be included for this effort.

If the consultant is responsible for the required environmental documentation, the Environmental Coordinator will review the project scope with the Director of the Division of Environmental Analysis to determine the level of environmental documentation that will be required (Overview, CE or EA/FONSI). The consultant will prepare the Production-Hour estimate (for environmental work only) based upon this determination and submit the estimate to the Director of the Division of Environmental Analysis for review and approval.

The environmental consultant shall provide a general environmental footprint to the Project Development Team as soon as possible so alternative alignments can be developed.

The District Environmental Coordinator shall be notified upon the discovery of any environmental issue or condition which may influence alignment design or preferred? alignment recommendation.

The Division of Environmental Analysis and the District Environmental Coordinator shall be notified should it become necessary to change an environmental services milestone date.

A preliminary "Purpose and Need Statement" of the project is to be defined early in the initial design and environmental review stages of the project and developed more extensively during the public involvement process. If a Purpose and Need Statement has been developed during the planning phase of the project it will serve as the preliminary Purpose and Need Statement. The Purpose and Need Statement shall be continuously evaluated during the development process and modified as needed based on information gained through the public involvement process. The development of the projects "Purpose and Need Statement" will be the responsibility of the project team.

The consultant or their sub-consultant shall notify the District Environmental Coordinator prior to initiating any fieldwork for the environmental baseline studies.

Public Involvement

If necessary, public meetings or hearings will be held as discussed at the pre-design conference. The consultant will be responsible for providing all necessary exhibits and attending any public meetings or hearings that may be held.

One Public Meeting will be required prior to the PL&G meeting (Additional meeting may be needed).

Final Design

In the case of a federally funded Preliminary Roadway Design contract, the consultant may not advance

into the final design stages until such time that all public hearing requirements are met and a final environmental document has been approved.

The consultant shall be responsible for the development of all final details necessary for the complete design of Grade, Drain, and Surfacing Plans suitable for the letting to contract of the project. Plan scales for this project are as follows:

1) Plan and Profile	-	1" = 50'
2) Cross Sections	-	1" = 10'
3) Cross Section Spacing	-	50' typical, additional sections as necessary
4) Pipe Sections	-	1" = 5' (Preferred)
5) Right of Way Strip Maps	-	1" = 100'
6) Soil Profile Sheets	-	1" = Adjust to Geotechnical Report
7) Coordinate Control Sheets	-	1" = 50' (or 100')
8) Erosion Control Sheets	-	1" = 50' (or 100')

Detail sheets shall be provided as required or as otherwise specified.

The consultant is responsible for providing an acceptable plan for the maintenance of traffic. This plan shall include, as necessary:

(1) All required phases and notes to adequately explain the activities required of the contractor during construction to address maintenance of traffic.
(2) Plan and profile views of diversions, part-width construction or other necessary maintenance of traffic items.
(3) Cross-sections to depict maintenance of traffic details and the location of traffic in various phases.

A Final Inspection will be held when the right of way taking, plan construction notes and drainage items are shown on the plans. A detailed maintenance of traffic scheme shall also be available. An updated cost estimate based on all established bid items will be required. Details of Avoidance, Minimization and Mitigation Alternatives for blue-line streams shall be presented. A Drainage Inspection will also be held, frequently concurrent with the Final Inspection. Finalization of plans shall not occur until the approvals of the Final and Drainage Inspection Reports are given by the Department.

A separate Right of Way Inspection may be held, at the discretion of the Department, in order to expedite the Right of Way phase. The Project Manager will make the determination if adequate details have been developed and included within the plans to hold an inspection. Upon approval of the inspection report and incorporation of inspection recommendations into the plans, the Right of Way Plans will be submitted.

It shall be the consultant's responsibility to see that all comments addressed in all inspection reports have been resolved before submission of Final Plans. Any item that may affect right of way should be resolved prior to the submission of Final Right of Way Plans.

Approximately 6 months prior to the letting date, a complete set of full-size final plans in PDF format will be submitted to the Project Manager, to be forwarded to the Plan Processing Section in the Central Office. The Plan Processing Section shall review the plans and return the plans with comments, corrections and revisions necessary to be made to the original plans. The consultant, prior to submittal of the original PDF file of the final construction plans, will perform the required changes to the final plans. The submittal of the final plans, all electronic plans, terrain models, geometric files, etc. shall be submitted to the Project Manager.

General

(1) The consultant shall be represented at all inspections and meetings. Any plans or exhibits required shall be the responsibility of the consultant.

(2) Any sub-consultants utilized must have approval of the Department prior to their performance of any work.

(3) The consultant is responsible for having obtained and being knowledgeable of all Department Manuals including, but not limited to, Design, Drainage, Standard Drawings and Bridges. All work shall be performed in accordance with those manuals or other memos issued subsequent to the publication of those manuals unless otherwise explicitly stated.

(4) The consultant shall submit the Production-Hour Worksheet, listing only the involved units of work, including supporting documentation of units obtained to the Project Manager to be reviewed. Upon agreement of the Production-Hour units, the consultant shall submit the fee proposal with detailed production-hours on the Department's Standard Production-Hour Worksheet to the Director of Professional Services. The Department's Project Manager shall also submit the Department's Production-Hour estimate.

(5) Change orders to this project will not be permitted except in such cases that:

- the project limits have been substantially revised from those initially indicated in the Pre-design Minutes.
- a change of scope has occurred.
- the consultant is requested to revise the plans as a result of a direction change by the Department.

(6) The consultant is responsible, at all times, for correction of any errors or omissions that they may have made in the preparation of the plans. The consultant shall immediately notify the Project Manager of any item that they feel requires extra work. The consultant shall not proceed with that item of work until such time that the matter of extra work has been resolved.

(7) All original submissions, including pay estimates and consultant monthly reports, shall be sent to the Project Manager. The pay estimate and monthly report may be electronically submitted to the Project Manager. The consultant monthly report shall be submitted even if a pay estimate is not being submitted. All correspondences pertinent to this project shall have the County, Item No. and Project Description noted. The Consultant shall provide the Project Manager with PSC with the monthly invoice. The Consultant shall prepare each month a monthly report to be submitted to the Project Manager.

(8) Hardcopy sets of plans shall be provided for inspections and meetings, as requested by the Project Manager.

(9) The consultant will be responsible for preparation of all minutes of meetings, including this Pre-design Conference.

(10) Periodic progress meetings will be held with the District as discussed during the Pre-design Conference.

(11) All design work and development of plans, preliminary and final, shall be prepared in MicroStation DGN format in accordance with current KYTC CADD Standards.

(12) The Department's Project Manager assigned to this project is Min Jiang.

(13) The current schedule for this project, as described in the enacted Six Year Plan is as follows:

Phase	FY
Final Design	2015
Right of Way	2015
Utilities	2016
Construction	2017

Milestones

The consultant shall provide milestone dates for the following activities:

1) Preliminary Roadway Design
   a) Alternate Alignments ready for a Project Team Meeting -March 1, 2015
   b) Hold Public Hearing -March 15, 2015
   c) Hold PL&G Inspection -April 15, 2015
   d) Submit DES -May 1, 2015
   e) Submit Preliminary Right of Way Plans -
   f) Submit Electronic Plans -

2) Environmental Services
   a) Submit Environmental Overview -April 15, 2015
   ~~b) Approval of Environmental Base Studies~~
   ~~c) Submittal of Draft EA to KYTC~~
   ~~d) Approval of EA by FHWA~~
   ~~e) Receipt of FONSI by KYTC~~ -
   ~~f) FHWA Approval of FONSI or EIS~~ -

3) Final Roadway Design
   a) Submission of Critical Cross Sections to Geotechnical Branch for obtaining back slopes -
   b) Submit Preliminary Drainage Folder -
   c) Drainage Inspection -
   d) Final Plans-in-Hand Inspection -
   e) Advanced Situation Folders -
   f) Right of Way Plans Submittal -
   g) Submittal of Review Plans/Check Prints -
   h) Final Roadway Plans & Final Drainage Folder Submittal -
   i) Final Structure Plans Submittal -

Other milestones may be added to this list as deemed necessary by the Department or consultant.

Milestone dates are based on receiving Notice to Proceed by January 1, 2014 and aerial photogrammetric and digitization by January 1, 2014.

Molly Meade	10/15/14
Consultant	Date
Brad Travis	10/17/14
Project Manager	Date
James Smith	10/17/14
Project Development Branch Manager	Date
Sarah Bradley	10/19/14
Location Engineer	Date

KENTUCKY TRANSPORTATION CABINET

PRODUCTION-HOUR WORKSHEET (revised 7/14)

COUNTY	Grant	PROJECT TYPE	Reconstruction
ROUTE	US 155	CONSULTANT	
DESC	Improve safety and substandard geometrics for US 155 MP 6.2-8.5	REVIEWED BY	
		PREPARED BY	
ITEM NO.	4-396.00	DATE	10/24/14

SURVEY

No.	ITEM	CREW	UNIT	AMOUNT	HRS/UNIT	HOURS
	RECONNAISSANCE					
1	Control - (existing)	1	Mile	0.5	4	2
2	Utilities - (data gathering, identification & contact)	1	No.	7	2	14
3	Drainage - (sink holes, streams, pipes, etc.)	1	Mile	0.5	2	1
	CONTROL					
4	Horizontal	2	Mile	0.5	12	12
5	Vertical	2	Mile	0.5	12	12
6	Process data	1	Mile	0.5	2	1
	PLANIMETRIC SURVEY					
7	Planimetric location *(specify complete, pickup or update)*	2	Mile	0.5	32	32
8	Subsurface Utility Engineering, Quality Levels C & D	1	Mile			0
9	Subsurface Utility Engineering, Quality Level B	1	LS			0
10	Subsurface Utility Engineering, Quality Level A	1	LS			0
11	Process data	1	Mile	0.5	2	1
	TERRAIN SURVEY					
12	DTM data collection *(Items 11-18 not required if used)*	2	Acre			0
13	Verify terrain model accuracy	2	Mile			0
14	Tie-ins	2	No.	4	1	12
15	Drainage situations survey (Bridge)	2	No.			0
16	Drainage situations survey (Culvert)	2	No.			0
17	Drainage pipe section (non-situation size)	2	No.			0
18	Flood plain data	2	No.	1	8	24
19	Railroad Surveys	2	No.			0
20	Additional necessary DTM data *(specify pickup or update)*	2	Acre	1.4	4	17
21	Process data	1	Mile	0.5	2	1
	ESTABLISH PROPERTY LINES & OWNERSHIP					
22	Contact & Interview Property Owners	1	Parcel	29	0.5	15
23	Field tie property lines/corners	2	Parcel	29	1	87
	STAKING					
24	Stake centerlines, approaches, detours	2	Mile			0
25	Stake core holes - structures *(unit is per structure)*	2	No.			0
26	Stake core holes - roadway *(unit is per core hole)*	2	No.			0
	SURVEY MISCELLANEOUS					
27	Determine roadway elevations (Crown and EP)	2	Mile	0.5	8	12
28	Environmental areas	2	No.			0
29	Prepare & Mail Notification Letters to Property Owners	1	LS	1	3	3
	SURVEY TOTAL					**246**

KENTUCKY TRANSPORTATION CABINET

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ROUTE	US 155	CONSULTANT	
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		PREPARED BY	
ITEM NO.	4-396.00	DATE	10/24/14

PRELIMINARY LINE AND GRADE

No.	ITEM	UNIT	AMOUNT	HRS/UNIT	HOURS
30	Computer setup	LS	1	2	2
31	Prepare existing manuscripts	Mile	0.5	8	4
32	Establish approximate property lines and ownership	Parcel	29	0.5	15
33	Study and develop typical sections	No.	14	2	28
34	Study and develop horizontal alignments	Mile	1.7	24	41
35	Study and develop vertical alignments	Mile	1.7	16	27
36	Create and evaluate proposed roadway models	Mile	1.7	24	41
37	Design entrances	No.	36	1	36
38	Pre-size pipes (all alternates)	No.	16	1	16
39	Pre-size culverts (all alternates)	No.	1	2	2
40	Pre-size bridges (all alternates)	No.	2	10	20
41a	Conduct Traffic Engineering Analysis (Basic; Highway Capacity Manual Proce	Intersection	6	8	48
41b	Conduct Traffic Engineering Analysis (Advanced; Micro-simulation)	Intersection			0
42	Study and development of interchange	No.			0
43	Study and development of intersection	No.	6	8	48
44	Study and develop maintenance of traffic plan	LS	1	20	20
45	Plot/print copies of plans for team meeting and inspections	LS	1	8	8
46	Calculate preliminary quantities and develop cost estimates	Alt.	4	16	64
47	Revise plans and estimates	LS	1	24	24
48	Preliminary Right of Way with taking areas	Parcel	116	0.5	58
49	Prepare Design Executive Summary	LS	1	24	24
50	Develop/document "Avoidance Alternatives to Water Related Impacts"	LS	1	4	4
	PRELIMINARY LINE & GRADE MISCELLANEOUS				
51					0
52					0
53					0
54					0
55					0
	PRELIMINARY LINE AND GRADE TOTAL				**530**

KENTUCKY TRANSPORTATION CABINET

PRODUCTION-HOUR WORKSHEET (revised 7/14)

COUNTY	Grant	PROJECT TYPE	Reconstruction
ROUTE	US 155	CONSULTANT	
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		PREPARED BY	
ITEM NO.	4-396.00	DATE	10/24/14

UTILITY COORDINATION

No.	ITEM	PERSONS	UNIT	AMOUNT	HRS/UNIT	HOURS
56	Utility Coordination Meeting	2	No.			0
57	Develop Utility Relocation Layout Sheets (1"=200')		Mile			0
58	Develop Utility Relocation Plans (1"=50')		Mile			0
	UTILITY COORDINATION MISCELLANEOUS					
59						
	UTILITY COORDINATION TOTAL					**0**

RIGHT OF WAY PLANS

No.	ITEM	UNIT	AMOUNT	HRS/UNIT	HOURS
60	Deed research	Parcel			0
61	Establish property and ownership	Parcel			0
62	Calculate Right of Way	Parcel			0
63	Prepare legal descriptions	Parcel			0
64	Complete Right of Way summary sheet	Parcel			0
65	Generate Right of Way strip map *(scale 1" = xxx')*	Sheet			0
66	Prepare Right of Way Plans Submittal	LS			0
67	Right of Way revisions after Right of Way submittal	LS			0
	R/W PLANS MISCELLANEOUS				
68	Deed Research for Existing Alignments	LS			0
69	Deed Research for Existing Parcels	Parcel			0
70	Prepare Legal Descriptions for Right of Way transfer	Parcel			0
71					
72					
	RIGHT OF WAY PLANS TOTAL				**0**

KENTUCKY TRANSPORTATION CABINET

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ITEM NO.	4-396.00	DATE	10/24/14

FINAL PLAN PREPARATION

No.	ITEM	UNIT	AMOUNT	HRS/UNIT	HOURS
80	Computer setup	LS			0
81	Update existing topography and terrain model	Mile			0
82	Refine alignments (horizontal & vertical)	Mile			0
83	Develop pavement design	No.			0
84	Finalize templates & transitions	No.			0
85	Develop final roadway model	Mile			0
86	Develop proposed design	Mile			0
87	Generate plan sheets *(scale 1" = xxx')*	Sheet			0
88	Generate profile sheets *(scale 1" = xxx')*	Sheet			0
89	Detail cross sections *(scale 1" = xxx')*	No.			0
90	Design entrances	No.			0
91	Revise roadway plans from soils report	Mile			0
	DRAINAGE				
92	Develop pipe sections (< 54")	No.			0
93	Develop drainage system map	Mile			0
94	Develop drainage situation (bridge)	No.			0
95	Develop drainage situation (culvert)	No.			0
96	Develop blue line stream channel change (=> 200')	No.			0
97	Drainage analysis (entrance pipes)	No.			0
98	Drainage analysis (A < = 200 acres)	No.			0
99	Drainage analysis (200 acres < A < 1.0 sq. mile)	No.			0
100	Drainage analysis (A = > 1.0 sq. mile) level 1 analysis	No.			0
101	Drainage analysis (A = > 1.0 sq. mile) level 2 analysis	No.			0
102	Drainage analysis (A = > 1.0 sq. mile) level 3 analysis	No.			0
103	Special drainage studies	No.			0
104	Roadway ditches and channels	Mile			0
105	Develop Erosion Control Plan	Mile			0
106	Inlet spacing calculations	No.			0
107	Storm sewers calculations	No.			0
108	Perform scour analysis	No.			0
109	Assemble preliminary and final drainage folders	LS			0
110	Prepare advanced situation folder - bridge	No.			0
111	Prepare advanced situation folder - culvert	No.			0
	DRAINAGE MISCELLANEOUS				
112		LS			0
113					0
114					0
115					0

KENTUCKY TRANSPORTATION CABINET

PRODUCTION-HOUR WORKSHEET (revised 7/14)

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ITEM NO.	4-396.00	DATE	10/24/14

FINAL PLAN PREPARATION (Continued)

No.	ITEM	UNIT	AMOUNT	HRS/UNIT	HOURS
116	Prepare layout sheet	LS			0
117	Prepare typical sections	No.			0
118	Prepare Interchange geometric approval	No.			0
119	Prepare intersection geometric approval	No.			0
120	Prepare coordinate control sheet	Mile			0
121	Prepare elevation developments	No.			0
122	Prepare striping plan	No.			0
123	Calculate final quantities	Mile			0
124	Complete general summary	LS			0
125	Complete paving summary	LS			0
126	Complete drainage summary	LS			0
127	Complete pavement under-drain summary	LS			0
128	Prepare cost estimate	LS			0
129	Plot/print copies of plans	LS			0
130	Plan revisions	Mile			0
131	Prepare final construction plans submittal	LS			0
	MAINTENANCE OF TRAFFIC				
132	Write maintenance of traffic notes (TCP)	LS			0
133	Prepare construction phasing plans	Mile			0
134	Develop diversion plan sheets	Sheet			0
135	Develop diversion profile sheets	Sheet			0
136	Develop diversion cross sections	No.			0
137	Develop temporary drainage	No.			0
	FINAL PLANS MISCELLANEOUS				
138	Document available rock quantities	LS			0
139					0
140					0
141					0
142					0
143					0
	FINAL PLANS TOTAL				**0**

KENTUCKY TRANSPORTATION CABINET

PRODUCTION-HOUR WORKSHEET (revised 7/14)

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ITEM NO.	4-396.00	DATE	10/24/14

MEETINGS

No.	ITEM	PERSONS	UNIT	AMOUNT	HRS/UNIT	HOURS
150	Prelim. line and grade inspection	2	No.	1	12	12
151	Drainage inspection	2	No.			0
152	Final inspection	2	No.			0
153	Misc. project coordination meetings	2	No.	2	9	18
154	Project team meetings	2	No.	1	9	9
	MEETINGS MISCELLANEOUS					
155	Value Engineering Study		LS			0
156	Constructability Review		LS			0
	MEETINGS TOTAL					**39**

PUBLIC INVOLVEMENT

No.	ITEM	PERSONS	UNIT	AMOUNT	HRS/UNIT	HOURS
160	Develop and Maintain Mailing List		LS	1	8	8
161	Prepare for Advisory Committee/Officials Meeting		No.	4	1	4
162	Attend Advisory Committee/Officials Meeting	2	No.	2	4	16
163	Prepare for Public Meetings/Hearings		No.	1	4	4
164	Attend Public Meetings/Hearings	2	No.	1	12	24
165	Prepare and Distribute Newsletter		No.			0
166	Property owner coordination		No.	1	0.25	0
	PUBLIC INVOLVEMENT MISCELLANEOUS					
167						0
168						0
169						
	PUBLIC INVOLVEMENT TOTAL					**56**

QA/QC

No.	ITEM	UNIT	AMOUNT	HRS/UNIT	HOURS
180	Plan review				0
181	Structure review				0
	QA/QC TOTAL				**0**

KENTUCKY TRANSPORTATION CABINET

PRODUCTION-HOUR WORKSHEET (revised 7/14)

COUNTY	Grant	PROJECT TYPE	Reconstruction
ROUTE	US 155	CONSULTANT	
DESC	Improve safety and substandard geometrics for US 155 MP 6.2-8.5	REVIEWED BY	
		PREPARED BY	
ITEM NO.	4-396.00	DATE	10/24/14

PRODUCTION-HOUR SUMMARY

SURVEY TOTAL		**246**
LINE AND GRADE TOTAL		**530**
UTILITY COORDINATION TOTAL		**0**
RIGHT OF WAY PLANS TOTAL		**0**
FINAL PLANS TOTAL		**0**
MEETINGS TOTAL		**39**
PUBLIC INVOLVEMENT TOTAL		**56**
QA/QC TOTAL		**0**
GRAND TOTAL		**871**

Exhibit 200-13

Kentucky Transportation Cabinet
Division of Professional Services

TC 40-408
06/2014

ENGINEERING AND ENGINEERING-RELATED SERVICES PAY ESTIMATE

KYTC Contract Number	Funding	Federal No.	State No.	Item No.	Estimate No.
PON2 1400001234	1100 C35 D625 FD04 1550 C034 E143	N/A	8503803D	11-155.00	23P

Consultant Name and Address
JAM Engineering 123 Smithronvilleford Road Jonesmontshireton, KY

Invoice Date
1-Jul-14

County/Route/Mile Point
McMartin/KY 3

Effective Date of Notice to Begin Work Work May Not Begin Before This Date
1-Feb-12

For Work Done		
1-May-14	Through	30-May-14

Description of Work	Method of Fee	Total Contract Amount	Total % Prev. Est.	% This Est.	Total % to Date	Previous Earnings	Earnings This Estimate	Total Earnings to Date
Preliminary Engineering Services	Lump Sum	300,000.00	100.00%	0.00%	**100.00%**	300,000.00		300,000.00
Environmental Services	Lump Sum	50,000.00	100.00%	0.00%	**100.00%**	50,000.00		50,000.00
CM #1 Additional Preliminary Engineering Services	Lump Sum	25,000.00	100.00%	0.00%	**100.00%**	25,000.00		25,000.00
CM #2 Final Roadway Design	Lump Sum	300,000.00	41.79%	8.38%	**50.17%**	$ 125,365.00	**$ 25,132.00**	150,497.00
CM #3 Structure Design Services	Lump Sum	100,000.00	50.25%	25.25%	**75.50%**	$ 50,252.00	**$ 25,252.00**	75,504.00
								-
								-
								-
								-
								-
								-
								-
								-
								-
Page 1		775,000.00	71.05%	6.50%	**77.55%**	550,617.00	**50,384.00**	601,001.00
Page 2		-				-	-	-
Totals		775,000.00	71.05%	6.50%	**77.55%**	550,617.00	**50,384.00**	601,001.00

Total Earnings to Date	601,001.00
Less Previous Earnings	550,617.00
Total This Estimate	**50,384.00**

Miscellaneous Information

DBE Portion of Estimate
Joe Small - $12,123.00

I certify the amounts in this estimate are accurate.
Molly Meade
Consultant Signature
Brad Travis
KYTC Project Manager

PERSONAL SERVICE CONTRACT INVOICE FORM
GOVERNMENT CONTRACT REVIEW COMMITTEE
LEGISLATIVE RESEARCH COMMISSION

Pursuant to KRS 45A.695, **no payment shall be made on any personal service contract** unless the individual, firm, partnership, or corporation awarded the personal service contract submits its invoice for payment on a form established by the committee.

Invoices shall be submitted every ninety (90) days, unless the personal service contract specifies a different submission time period.

Separate invoices shall be submitted for each distinct matter covered by the personal service contract, and shall be signed by the individual responsible for that matter

The issuance of an invoice to the Commonwealth constitutes an affirmation by the individual, firm, partnership, or corporation awarded the personal service contract that the invoice truly and accurately represents work actually performed, and the expenses actually incurred.

The head of the contracting body shall approve the invoice, indicating that the charges in the invoice reflect the value of the work performed, and all recorded costs and disbursements were reasonably and necessarily incurred in connection with the matter invoiced.

NOTE: All questions must be answered fully. If the space provided is insufficient, additional pages should be attached referencing the specifically numbered item. Any questions regarding the invoice requirements should be directed to the contracting agency.

Contract Number: 201299 **Date of Invoice:** 5/30/14

Kentucky Transportation Cabinet — Department of Highways

Contracting Body — **Division, Branch, etc.**

1. Name & Address of Contractor:
JAM Engineering
123 Smithtonvilleford Road
Jonesmontshireton, KY

2. Contractor's Tax I.D. Number: 47-9999999

3. Effective Period of Contract:
Starting Date: March 8, 2012
Ending Date: Oct. 1, 2014

4. Combined Total Amount Charged in this Invoice for Services and Reimbursable Disbursements: $50,384.00

5. Dates of Service Covered under this invoice:
Starting Date: May 1, 2014
Ending Date: May 30, 2014

6. Is this the FINAL invoice for services performed under this contract:
____ Yes X No

7. Date of most recent invoice submitted prior to this invoice: 4/30/14

8. How often is the contractor required to submit invoices under the terms of the personal service contract:

9. Provide a description of the matter covered by this invoice: Invoices submitted no more than once a month during the progress of work for partial payment of work completed to date.

10. Provide a full description of each service provided, including the date each service was performed, the name and title of each individual who worked on the matter, and the time the individual spent on the matter: Reference is made to the attached Consultant Monthly report and TC61-408 Engineers Pay Estimate.

11. Provide the hourly rate for each individual working on the matter and the total charge for that individual for each matter involved: Reference is made to the attached Consultant Monthly report and TC61-408 Engineers Pay Estimate.

12. Provide the subject matter and recipient of any correspondence: Reference is made to the attached Consultant Monthly report and TC61-408 Engineers Pay Estimate.

13. Provide a full description of any work product produced, designating the way in which the work product is associated with the matter being invoiced. (Attorneys Billing for Legal Services: If you contend that any information is subject to privilege, please identify the privileged item, and provide sufficient information to evaluate the claim of privilege): See attached Consultant Monthly Report.

14. Provide an itemized list of all disbursements to be reimbursed by the state for each matter invoiced and the total charge for that matter: Reference is made to the attached TC61-408 Engineers Pay Estimate.

SIGNATURES:

Contractor: Molly Meade **Date: 5/30/14**

Title: JAM Project Engineer

Contracting Body

Approved by: Brad Travis **Date: 6/14/14**

Title: KYTC Project Manager

REVISED 11/1/13

CONSULTANT MONTHLY REPORT

CONSULTANT JAM Engineering, Inc

COUNTY McMartin **ITEM NO.** 11-155.00

STATE PROJECT NO. 9999901D **KYTC CONTRACT NO.** 201299

(Program code per precon report + project id no. per TC10)

PROJECT DESCRIPTION:

Provide Phase I Roadway Design services for improvements to Grant Road (KY 3) from Jamestown Road interchange to near the Springfield Road Interchange. The Consultant will evaluate improvements to the interchange of Billtown Road that will improve the operation and capacity of the interchanges to meet future traffic volumes.

The Consultant was change ordered to provide Phase II Final Design Plans.

	CURRENT COST ESTIMATE	DATE OF CURRENT COST
RIGHT-OF-WAY	$1,200,000	1/1/13
UTILITIES	$9,000,000	1/1/13
CONSTRUCTION	$19,500,000	1/1/14

DATE OF NOTICE TO PROCEED FOR STUDIES	N/A
DATE OF NOTICE TO PROCEED PHASE I	March 8, 2012
DATE OF NOTICE TO PROCEED PHASE II	April 4, 2013
DATE OF RECEIPT OF MANUSCRIPT	February 10, 2012
LETTING DATE (FY OR ACTUAL)	July 11, 2014
CONTRACT COMPLETION DATE	October 31, 2014

REPORT OF MONTHLY ACTIVITIES (SUBMISSIONS, ACTIONS NEEDED, ETC.):

- 3/10/14 Held Project Meeting to discuss Springfield Road improvements.

RECOMMENDED BY: Molly Meade *CONSULTANT* **DATE** 5/30/14

APPROVED BY: *Brad Travis* *KTC PROJECT MANAGER* **DATE** *6/14/14*

REVISED 11/1/13

CONSULTANT MONTHLY REPORT

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CONSULTANT JAM Engineering, Inc

ITEM NO. 11-155.00

ACTIVITY	SCHEDULE		
	CONTRACT	REVISED	ACTUAL
I. **ENVIRONMENTAL**			
A. **SUBMIT BASE STUDIES**			
1. **AIR**	10/1/12		11/15/12
2. **NOISE**	10/1/12		11/15/12
3. **WATER**	10/1/12		11/15/12
4. **BIOLOGICAL**	10/1/12		11/15/12
5. **CULTURAL / HISTORICAL**	10/1/12		11/7/12
6. **ARCHAEOLOGICAL**	10/1/12		1/31/13
7. **TERRESTRIAL**	10/1/12		11/15/12
8. **SOCIO-ECONOMIC**	10/1/12		11/15/12
9. **HAZMAT/UST** (Phase 1)	10/1/12		11/6/12
B. **SUBMIT EA / DRAFT EIS FOR REVIEW**	N/A		N/A
C. **SUBMIT EA / DRAFT EIS TO FHWA**	12/15/12		3/20/13
D. **APPROVAL OF EA / DRAFT EIS BY FHWA**	N/A		N/A
E. **HOLD PUBLIC HEARING** (APPROX. 90 DAYS AFTER EA APPROVAL)	10/15/12		11/29/12
F. **FONSI / EIS APPROVAL** (APPROX. 60 DAYS AFTER HEARING)	3/1/13		4/18/13

REVISED 11/1/13

CONSULTANT MONTHLY REPORT
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CONSULTANT JAM Engineering, Inc.
ITEM NO. 11-155.00

ACTIVITY	SCHEDULE CONTRACT	SCHEDULE REVISED	SCHEDULE ACTUAL
II. PRELIMINARY ROADWAY DESIGN			
A. **SUBMIT P. L. & G. PLANS**	8/31/12		9/12/12
B. **HOLD P. L. & G.** (APPROX. 14 DAYS AFTER SUBMITTAL)	9/14/12		10/9/12
C. **SUBMIT P. L. & G. REPORT** (APPROX. 7 DAYS AFTER INSPECTION)	9/21/12		10/18/12
D. **P. L. & G. REPORT APPROVAL** (APPROX. 21 DAYS AFTER SUBMITTAL)	10/12/12		11/1/12
E. **SUBMISSION OF CRITICAL CROSS SECTIONS TO GEOTECH**	N/A		N/A
F. **SUBMIT DESIGN EXECUTIVE SUMMARY**	11/16/12		1/31/13
G. **SUBMIT PRELIMINARY R/W PLANS**	12/1/12		2/28/13
H. **CONSULTANT EVALUATION RECEIVED**	YES [x] NO [ ]	DATE:	11/1/12
III. FINAL ROADWAY DESIGN			
A. **SUBMISSION OF FINAL CROSS SECTIONS TO GEOTECH**	1/3/13		1/3/13
B. **SLOPE RECOMMENDATIONS RECEIVED FROM GEOTECH**	4/26/13	5/31/13	5/31/13
C. **SUBMIT PAVEMENT DESIGN**	5/15/13	6/15/13	6/15/13
D. **SUBMIT PRELIMINARY DRAINAGE FOLDER** (INCLUDING SOURCE DATA)	6/14/13	9/17/13	11/4/13
E. **HOLD DRAINAGE INSPECTION** (APPROX. 14 DAYS AFTER SUBMITTAL)	6/28/13	10/1/13	11/22/13
F. **SUBMIT FINAL INSPECTION PLANS**	6/14/13	9/17/13	11/4/13
G. **HOLD FINAL INSPECTION** (APPROX. 14 DAYS AFTER SUBMITTAL)	6/28/13	10/1/13	11/22/13
H. **CONSULTANT EVALUATION RECEIVED**	YES [x] NO [ ]	DATE:	2/1/14

REVISED 11/1/13

CONSULTANT MONTHLY REPORT

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CONSULTANT JAM Engineering, Inc.

ITEM NO. 11-155.00

ACTIVITY	SCHEDULE		
	CONTRACT	REVISED	ACTUAL
III. FINAL ROADWAY DESIGN CONTINUED:			
I. SUBMIT FINAL INSPECTION REPORT (APPROX. 7 DAYS AFTER INSPECTION)	7/5/13	10/8/13	12/17/13
J. FINAL INSPECTION REPORT APPROVAL (APPROX. 21 DAYS AFTER SUBMITTAL)	7/26/13	10/29/13	1/2/14
K. SUBMIT FINAL RIGHT OF WAY PLANS	4/26/13	6/15/13	7/10/13
L. SUBMIT ADVANCE SITUATION FOLDER	6/1/13	6/1/13	6/21/13
M. SUBMIT REVIEW SET OF FINAL PLANS	7/26/13	3/28/14	
N. FINAL REVIEW COMMENTS RECEIVED (APPROX. 30 DAYS AFTER SUBMITTAL)	8/15/13	4/28/14	
O. SUBMIT FINAL PLANS & FINAL DRAINAGE FOLDER (INCLUDING SOURCE DATA)	8/23/13	5/23/14	
P. CONSULTANT EVALUATION RECEIVED	YES [ ] NO [ ]	DATE:	
Q. SUBMIT FINAL PAY ESTIMATE	YES [ ] NO [ ]	DATE:	
IV. STRUCTURAL DESIGN			
A. RECEIVE GEOTECH INFORMATION (APPROX. 180 DAYS AFTER RECEIPT OF ADVANCED SITUATION FOLDER)	N/A	6/14/13	8/9/13
B. SUBMIT STAGE I PRELIMINARY PLANS	N/A	7/15/13	8/29/13
C. SUBMIT STAGE II PRELIMINARY PLANS	N/A	9/1/13	
D. SUBMIT PHASE I FINAL PLANS	N/A	12/1/13	
E. SUBMIT FINAL STRUCTURAL PLANS	8/23/13	2/14/14	

REVISED 11/1/13

CONSULTANT MONTHLY REPORT

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CONSULTANT JAM Engineering, Inc.

ITEM NO. 11-155.00

HISTORY and PROJECT DOCUMENTATION

October, 2011
- 10/18/11: Held Pre-Design Conference Meeting.

February, 2012
- 2/10/12: Received Mapping and Survey Information.

March, 2012
- 3/8/12: Received Notice to Proceed.

May, 2012
- 5/21/12: Held Team Alignment Review Meeting.
- 5/31/12: Submitted Cultural Historic Determination of Eligibility Study.

August, 2012
- 8/10/12: Held coordination meeting JAM Engineering who is designing the Grant Road Interchange.

September, 2012
- 9/12/12 Submitted Preliminary Line and Grade Plans.

October, 2012
- 10/9/12 Held Preliminary Line and Grade Meeting.
- 10/18/12 Submitted Preliminary Line and Grade Meeting Minutes for review.

November, 2012
- 11/1/12 Submitted Final Preliminary Line and Grade Meeting Minutes.
- 11/6/12 Submitted UST/Hazmat Baseline Report.
- 11/7/12 Submitted Assessment of Effect to Historic Properties.
- 11/13/12 Held Public Officials Meeting
- 11/15/12 Submitted Noise Baseline Study.
- 11/29/12 Held Public Meeting

December, 2012
- 12/11/12 Submitted plans and cross sections to geotech.

January, 2013
- 1/31/13 Submitted the Design Executive Summary.
- 1/31/13 Submitted the Archaeological Survey.

February, 2013
- 2/8/13 Negotiated Phase II design.

April, 2013
- 4/18/13 Submitted the final Categorical Exclusion Level 2 document.

June, 2013
- 6/21/13 Held Project Team Meeting to discuss proposed retaining walls.
- 6/21/13 Submitted the final advance Situation Folder for the bridges.

July, 2013
- 7/10/13 Submitted final right of way plans.

August, 2013
- 8/22/13 Submitted Right of Way revision No. 1.

November, 2013
- 11/4/13 Submitted Final Plans In Hand Inspection plans.
- 11/6/13 Submitted revised Interchange Geometric Approval Sheet.
- 11/22/13 Held Final Plans in Hand Inspection meeting.

December, 2013
- 12/17/13 Submitted the Final Plans in Hand Inspection minutes.

March, 2014
- 3/10/14 Held Project Meeting to discuss Springfield Road improvements.

Kentucky Transportation Cabinet
Division of Highway Design
TRAFFIC MANAGEMENT PLAN

County: Milton Item No.: 9-1065.00

Federal Project No.: BRO 8703 (001)

Project Description:

Replace bridge and approaches over Beargrass Creek on East Main Street (US 24) 0.25 mile east of US 31E (Baxter Ave) (B347) (SR=25.3) (056B00347N)

Roadway Classification: ☒ Urban ☐ Rural

☐ Local ☐ Collector ☒ Arterial ☐ Interstate
ADT (current) 8100 AM Peak Current 514vph* PM Peak Current 1011vph* (*4 Lanes)
% Trucks 8.3

Project Designation: ☐ Significant ☒ Other: _____

Traffic Control Plan Design:

Taper and Diversion Design Speeds 35 mph

Minimum Lane Width 12' Minimum Shoulder Width N/A

Minimum Bridge Width 15' MOT Lane Phase1 / 12.75' MOT Lane Phase 2

Minimum Radius 655' Maximum Grade 2.25%

Minimum Taper Length 100' Minimum Intersection Level of Service N/A

Existing Traffic Queue Lengths N/A Projected Traffic Queue Lengths No Delay

Comments:

US 24 (E. Main St.) over Beargrass Creek bridge replacement project is on the NHS.

The US 24 (E. Main St.) over Beargrass Creek bridge replacement project is not designated as "Significant" due to the existing DHV count being less than 1000 VPH per lane and no detour on a NHS route, however a Public Information Plan (PIP) will be included for this project.

Kentucky Transportation Cabinet
Division of Highway Design
TRAFFIC MANAGEMENT PLAN

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Item No. 9-1065.00

Discussion:

1) Public Information Plan			
a) Prepare with assistance from ☒ KYTC or ☐ _____			
b) Identify Trip Generators	N/A	f) Railroad Involvement	N/A
c) Identify Types of Road Users	Referenced	g) Address Pedestrians, Bikes Mass Transit	Referenced
d) Public Information Message	Referenced	h) Address Timing, Frequency, Updates, Effectiveness of Plan	N/A
e) Public Information Strategies to be used	Referenced	i) Police & Other Emergency Services	Referenced

Kentucky Transportation Cabinet
Division of Highway Design
TRAFFIC MANAGEMENT PLAN

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Item No. 9-1065.00

2) Temporary Traffic Control Plan (For Each Phase of Construction) Phase I			
Exposure Control Measures		**Positive Protection Measures**	
a) Is Road Closure Allowed Type:	N/A	a) Address Drop Off Protection Criteria	Referenced
b) Detour Conditions	N/A	b) Temporary Barrier Requirements	Referenced
c) Working Hour Restrictions	Referenced	c) Evaluation of Existing Guardrail Conditions	N/A
d) Holiday or Special Event Work Restrictions	N/A	d) Address Temporary Drainage	N/A
e) Evaluation of Intersection LOS	N/A	**Uniformed Law Enforcement Officers**	N/A
f) Evaluation of Queue Lengths	N/A	**Payment for Traffic Control***	
g) Evaluation of User Costs and Incentives/Disincentives	Referenced	a) Method of Project Bidding	N/A
h) Address Pedestrians, Bikes, Mass Transit	Referenced	b) Special Notes	Referenced
Work Vehicles and Equipment	N/A	*Payment for traffic control items shall be in accordance with the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction	

Comments:

US 24 (E. Main St.) over Beargrass Creek – Phase 1

Phase 1 construction includes: Structure removal, relocation of 36" water main and relocation of underground telephone, construction of abutment caps, beams, bridge slab, bridge railing, subgrade, asphalt base/surface pavements, standard header curbs, inlet adjustments, sidewalks and concrete entrance.

- Traffic will be maintained on existing facilities and remaining existing bridge structure.
- See attached TTCP sheet for Phase 1 Construction.

Kentucky Transportation Cabinet
Division of Highway Design
TRAFFIC MANAGEMENT PLAN

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Item No. 9-1065.00

2) Temporary Traffic Control Plan (For Each Phase of Construction) Phase 2			
Exposure Control Measures		**Positive Protection Measures**	
a) Is Road Closure Allowed Type:	N/A	a) Address Drop Off Protection Criteria	Referenced
b) Detour Conditions	N/A	b) Temporary Barrier Requirements	N/A
c) Working Hour Restrictions	Referenced	c) Evaluation of Existing Guardrail Conditions	N/A
d) Holiday or Special Event Work Restrictions	N/A	d) Address Temporary Drainage	N/A
e) Evaluation of Intersection LOS	N/A	**Uniformed Law Enforcement Officers**	N/A
f) Evaluation of Queue Lengths	N/A	**Payment for Traffic Control***	
g) Evaluation of User Costs and Incentives/Disincentives	Referenced	a) Method of Project Bidding	Referenced
h) Address Pedestrians, Bikes, Mass Transit	Referenced	b) Special Notes	Referenced
Work Vehicles and Equipment	N/A	*Payment for traffic control items shall be in accordance with the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction	

Comments:

US 24 (E. Main St.) over Beargrass Creek – Phase 2

Phase 2 construction includes: Tie relocated 36" water main to existing facility, remaining structure removal, construction of abutment caps, beams, bridge slab, bridge railing, subgrade, asphalt base/surface pavements, standard header curbs, inlet adjustments, and sidewalks.

- Traffic will be maintained on existing and new facilities.
- See attached TTCP sheet for Phase 2 Construction.

Kentucky Transportation Cabinet
Division of Highway Design
TRAFFIC MANAGEMENT PLAN

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Item No. 9-1065.00

2) Temporary Traffic Control Plan (For Each Phase of Construction) Phase 3			
Exposure Control Measures		**Positive Protection Measures**	
a) Is Road Closure Allowed Type:	N/A	a) Address Drop Off Protection Criteria	Referenced
b) Detour Conditions	N/A	b) Temporary Barrier Requirements	N/A
c) Working Hour Restrictions	Referenced	c) Evaluation of Existing Guardrail Conditions	N/A
d) Holiday or Special Event Work Restrictions	N/A	d) Address Temporary Drainage	N/A
e) Evaluation of Intersection LOS	N/A	**Uniformed Law Enforcement Officers**	N/A
f) Evaluation of Queue Lengths	N/A	**Payment for Traffic Control***	
g) Evaluation of User Costs and Incentives/Disincentives	Referenced	a) Method of Project Bidding	Referenced
h) Address Pedestrians, Bikes, Mass Transit	Referenced	b) Special Notes	Referenced
Work Vehicles and Equipment	N/A	*Payment for traffic control items shall be in accordance with the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction	

Comments:

US 24 (E. Main St.) over Beargrass Creek – Phase 3

Phase 3 construction includes: While maintaining at least two (2) lanes of traffic through the new approaches and bridge structure complete the construction of final asphalt overlay on newly constructed base pavements performed in previous construction phases, final stripping, seeding/protection and final clean-up.

- Traffic will be maintained on new facilities.
- See attached TTCP sheet for Phase 3 Construction.

Kentucky Transportation Cabinet
Division of Highway Design
TRAFFIC MANAGEMENT PLAN

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APPROVAL:

Tim Jones	**1/13/14**
Project Manager	Date
Alex Washington	1/13/14
Project Delivery and Preservation Manager	Date
Maria Johnson	1/14/14
Engineering Support Manager	Date
FHWA Representative	Date

Revisions to the TMP require review/approval by the signatories.

Item No. 9-1065.00

Milton County

US 24 (East Main Street) over Beargrass Creek

TRAFFIC MANAGEMENT PLAN OVERVIEW

PROJECT GOALS AND OBJECTIVES

The purpose of this project is to replace the existing bridge and approaches on US 24 (East Main Street), a state maintained urban road over Beargrass Creek near downtown Louisville. The sufficiency rating of the current bridge is 20.7. A bridge with a sufficiency rating below 50 is considered substandard.

The following goals and objectives were developed to balance community issues with transportation issues.

- The new bridge is to be constructed in the same location as the existing structure using the same horizontal alignment and vertical alignment. Utilizing a two phase construction approach replace the existing bridges superstructure, sidewalks and railings only with a new superstructure incorporating the existing stone masonry abutments, stone masonry wingwalls and stone masonry railings into the proposed bridge design. Existing stone masonry abutments will be retrofitted with new abutment caps to accommodate the new beam layout of the proposed superstructure. Geotechnical Report S-078-2012 performed by KYTC Geotechnical Branch confirmed the structural viability of reusing and retrofitting the existing stone masonry abutments. This bridge alternate will require a Level 1 drainage analysis. With this alternate the approaches to the bridge will be replaced and existing sidewalks will be improved.

- *Right of way impacts:* There are four parcels that are adjacent to the proposed bridge replacement. It is not anticipated that the bridge replacement project will require the acquisition of permanent right-of way or temporary easements. There are no relocations required. There are no historic properties that will be impacted by this project.

- *The impacts to the Utilities:* This project would impact the following utilities in the area: Acme Water Company has a 36" Water Main that is located in a concrete vault on the underside of the upstream side of existing structure. The 36" Water Main is to be relocated to the downstream underside of the proposed structure and incorporated into the bridge design. Approximately 150' to 300' of water line will need to be relocated. Acme Phone Co. has an existing communication duct line located on the underside of the downstream side of existing structure leased to Level 3. A proposed utility vault is to be incorporated into the downstream underside of the proposed structure to house existing and future communication lines. ACME GAS CO. has an 8" Gas Main located on the

underside of the existing structure which is to be removed and capped on either side of the proposed structure. The existing gas main will not be relocated back on the bridge. No other utilities or overhead facilities on the project will be affected.

- *Environmental impacts:* The request for environmental analysis has been submitted and a CE LVL 1 is anticipated. Existing stone masonry abutments, stone masonry wingwalls and stone masonry railings are being incorporated into the design of the proposed structure as requested by SHPO. The SHPO has determined the original structure had a metal railing and is to be replaced using a modern type metal railing (Rail Type 8). Concrete elements of the proposed Rail Type 8 and sidewalks on this project shall use "Metro Historic Mix" for construction. The inclusion of these elements into the new design leads to a "No Adverse Effect to Historic Properties" for this bridge replacement project. Wetlands, endangered species or sensitive aquatic habitats are not expected to be affected by this project. Beargrass Creek, a blue-line stream which is concrete lined in this section of the creek, is a tributary of the Ohio River.

- *Pedestrian facilities:* Along this section of US 24 (E. Main Street) there are existing sidewalks along the west approach to the bridge and deteriorated sidewalks on the existing bridge structure ending at the east end of the bridge. No sidewalks are directly present leaving the structure at the east approach of the bridge, however there is foot traffic crossing the bridge and further east of the projects limits there are sidewalks present on US 24 (E. Main Street). The Project Team took this into consideration along with this being a spot improvement bridge replacement project and has decided to tie in the existing approach sidewalks to the west, include sidewalks on the proposed structure and construct sidewalks on the east approach of the proposed structure within the limits of the project only. Sidewalks on this project shall use "Metro Historic Mix" for construction.

- The existing drainage pattern will remain virtually unchanged. The four existing curb inlets (Two on each approach to the bridge) shall be adjusted to the new curbs to allow for new transitions to the proposed bridge structure. Each existing/adjusted curb inlets will drain to Beargrass Creek as originally designed.

- The construction period for this project is anticipated to be 3 to 4 months. Due to the existing DHV on this project being less than 1000 VPH per lane and no detour on a NHS route, *this project is not considered significant,* however a Public Information Plan (PIP) will be included for this project.

BRIDGE REPLACEMENT ON US 24 OVER BEARGRASS CREEK BETWEEN US 31E AND SPRING STREET (M.P. 0.26) ITEM # 9-1065 PUBLIC INFORMATION PLAN

The primary goal of the Public Information Plan (PIP) is to inform the motoring public and area stakeholders of project information including Maintenance of Traffic (MOT) which includes lane closures. The KYTC District 9 Public Information Officer (PIO) will coordinate and disseminate to stakeholders and the media appropriate information regarding the construction plans.

LOCAL STAKEHOLDERS

- Elected Officials
  - State Senator John Doe – (502) 555-5500; john.doe@lrc.ky.gov
  - State Senator Alexander Hamilton – (502) 555-5501; Al.Hamilton@lrc.ky.gov
  - State Representative Ben Franklin – (502) 555-5502; ben.franklin@lrc.ky.gov
  - State Representative Abraham Livingston – (502) 555-5503; Abe.Livingston@lrc.ky.gov
  - Mayor Roger Gilman – (502) 555-5504 ; Roger.Gilman@milton.gov
  - Metro Councilwoman Olivia Baldwin (502) 555-5505; liv.baldwin@milton.gov
  - Metro Councilman George Sherman – (502) 555-5506; G.Sherman@Milton.gov

- Local Agencies
  - Jesse Ingersoll, Director of Transportation for Milton County Public Schools – (502) 555-5507; J.Ingersoll@Milton.kyschools.us
  - Wilma Few, Transit Authority – (502) 555-5507; Wilma@rideta.org
  - Lt. Sam Morris, Milton Police Department Traffic Division – (502) 555-5508; sam.morris@Milton.gov
  - Sheila Paterson, Milton Visitors and Convention Bureau – (502) 555-5509; spaterson@gotomilton.com

- Utility Companies
  - Local utility companies are kept apprised of this project at the monthly utility coordination meetings hosted by District 9

TRUCKING FIRMS AND OUT OF STATE STAKEHOLDERS

Information will be distributed electronically to trucking firms via Ryan Jackson at the Department of Vehicle Regulation (502-555-5510; Ry.Jackson@ky.gov). Information will also be posted on the 511 website (www.511.ky.gov) and on the 511 telephone information system.

PRESENTATIONS

A project description including anticipated schedule will be provided to the media, stakeholders and other emergency service agencies via e-mail prior to construction. Information will be provided to these groups via traffic advisories, press releases, the District 9 website, District 9 Facebook page and the weekly District 9 Road Show of Construction and Maintenance Activities.

MEDIA RELATIONS

The District PIO will prepare an initial news release regarding the contract award for the project.
The PIO will conduct interviews with the media throughout the project duration to keep the public informed of construction progress. Traffic advisories will be submitted to the media when a change in the MOT occurs. The contractor must provide to the PIO via the Resident Engineer notification of any change in the MOT at least five (5) days prior to the change.

MAINTENANCE OF TRAFFIC

Item No. 9-1065.00

Milton County

US 24 (East Main Street) over Beargrass Creek

GENERAL NOTES

TRAFFIC CONTROL

Traffic shall be maintained in accordance with the plans, these notes, and Section 112 of the current *Standard Specifications for Road and Bridge Construction.* Except for the roadway and traffic control bid items listed, all items of work necessary to maintain and control traffic will be paid at the lump sum bid price to "Maintain and Control Traffic". All traffic lane shifts and temporary lane closures used on the Project will be in compliance with the appropriate Standard Drawings and MUTCD requirements. Do NOT use Cones for traffic lane shifts, temporary lane closures or shoulder closures.

Contrary to Section 106.01, traffic control devices used on this project may be new, or used in like new condition at the beginning of the work and maintained in like new condition until completion of the work. Traffic Control Devices will conform to current MUTCD.

The Contractor will be responsible for the continuous maintenance and upkeep of all traffic control devices.

Traffic speeds are to be reduced from 35 M.P.H to 25 M.P.H through project limits and for the duration of the construction project.

All advanced construction approach signing shall be in place before any traffic lane shifts.

Channelizing devices (Drum) shall be placed at a spacing of no greater than twenty (20) feet in all tapers and at a spacing of no greater than fifty (50) feet for use in tangent channelizing sections.

PROJECT PHASING

PHASE 1

STEP 1

US 24 (East Main Street)

Install all advanced construction approach signing. Beginning at the intersection of US 24 (E. Main St), Story Avenue and Baxter Avenue place channelizing drums as shown on the Phase One Construction Plan to Station 1+40 and Station 1+94 to Station 6+07 to facilitate the merging of all eastbound traffic on US 24 (E. Main St) from Baxter Avenue, Story Avenue, N. Johnson St and S. Johnson St to form one lane to the right. Place channelizing drums from Station 6+07 to Station 9+19 and from Station 7+70 to Station 11+02 as shown on the Phase One Construction Plan to form a shifted lane for eastbound traffic on US 24 (E. Main St) from Bickel Avenue to merge into traffic on the above one lane right. Place temporary concrete traffic barrier (Type T) beginning at Station 10+17 utilizing a 4:1 Flare to Station 11+02 and continuing across the existing structure over Beargrass Creek to Station 13+58 as shown on the Phase One Construction Plan forming one 15' lane right across the existing structure. Place channelizing drums from Station 13+58 to Station 16+36 at end of Phase One Construction maintenance of traffic (MOT).

Existing traffic signals located at the intersection of US 24 (E. Main St) and Johnson Street are to remain operational for the duration of Phase One Construction traffic lane shifts.

STEP 2

US 24 (East Main Street)

While maintaining traffic on shifted MOT lane to the right on US 24 (E. Main St) begin the removal of the existing superstructure over Beargrass Creek as shown on the Phase One Construction section of bridge. Once removed begin construction of abutments placed in the stone masonry, bridge deck, bridge sidewalks and bridge railing as shown in Phase One construction. Relocate the 36" water main on proposed structure and in the roadway bridge approaches to facilitate tie-ins to the existing 36" water main to be completed in Phase Two construction. Construct all standard header curbs to the left and adjust to existing inlets. Construct all concrete sidewalks to the left and concrete entrance at Lt Station 13+58. Construct all subgrade, asphalt base and asphalt surfaces in bridge roadway approaches as shown on Phase One Construction Plan.

PHASE 2

STEP 1

US 24 (East Main Street)

Begin relocation of channelizing drums to shift traffic to the newly completed left half of structure constructed in Phase One. Beginning at the intersection of US 24 (E. Main St), Story Avenue and Baxter Avenue place channelizing drums as shown on the Phase Two Construction Plan to Station 1+40 and Station 2+00 to Station 5+00 to control the movement of eastbound traffic on US 24 (E. Main St) from Story Avenue and N. Johnson St to remain in the furthest left lane. Place channelizing drums from Station 5+73 to Station 11+03 as shown on the Phase Two Construction Plan to merge eastbound traffic on US 24 (E. Main St) from Baxter Avenue, S. Johnson Street and Bickel Avenue to form one lane left. Place temporary concrete traffic barrier (Type T) beginning at Station 10+33 utilizing a 4:1 Flare to Station 11+03 and continuing across the newly constructed structure over Beargrass Creek to Station 13+59 as shown on the Phase Two Construction Plan forming one 12.75' lane left across the newly constructed structure. Place channelizing drums from Station 13+59 to Station 15+61 at end of Phase One Construction maintenance of traffic (MOT).

Existing traffic signals located at the intersection of US 24 (E. Main St) and Johnson Street are to remain operational for the duration of Phase Two Construction traffic lane shifts.

STEP 2

US 24 (East Main Street)

While maintaining traffic on shifted MOT lane to the left on US 24 (E. Main St) finalize the tie-ins from the newly relocated 36" water main to the existing 36" water main. After the 36" water main has been reconnected to its new location and online, begin the removal of the remaining existing superstructure over Beargrass Creek and the abandoned 36" water main. Once removed begin construction of remaining abutments placed in the stone masonry, bridge deck, bridge sidewalks and bridge railing as shown for the Phase Two Construction. Construct all standard header curbs to the right and adjust to existing inlets. Construct all concrete sidewalks to the right. Construct all subgrade, asphalt base and asphalt surfaces in bridge roadway approaches as shown on the Phase Two Construction Plan.

PHASE 3

STEP 1

US 24 (East Main Street)

Remove Phase Two traffic control and maintain traffic on the newly constructed roadway approaches and structure over Beargrass Creek which were completed in Phase One and Phase Two. Utilizing temporary lane closures and maintaining at least one twelve (12) foot lane of one-way traffic, construct final roadway striping, seeding/protection and final project clean-up.

SPECIAL NOTES

VARIABLE MESSAGE SIGNS

Provide variable message signs on US 31E (Baxter Avenue) and Story Avenue in advance of the proposed bridge construction at locations to be determined by the Engineer. Variable message signs are to inform the traveling public of the dates of proposed construction, times of the proposed temporary lane shifts and should be in place seven (7) days before the actual beginning of construction. The locations designated may vary as the work progresses. The messages required to be provided will be designated by the Engineer. The variable message signs will be in operation at all times. In the event of damage or mechanical/electrical failure, the Contractor will repair or replace the Variable Message Sign immediately. Variable Message Boards will be paid for once, no matter how many times they are moved or relocated. The Department **WILL NOT** take possession of the signs upon completion of the work.

PAVEMENT EDGE DROP-OFFS

Difference in Elevation for Travel Lanes
A pavement edges that traffic is expected to cross in a lane change situation should not have an elevation difference greater than one and one-half inches. This may be increased to two inches for low speed situations. Warning signs should be placed in advance and throughout the drop-off area.

Pavement Drop-off
Pavement edges that traffic is not expected to cross, except accidentally, should be treated as follows:

Less Than Two Inches – No protection required. Warning signs "Shoulder Drop Off" (W8-9a) shall be placed at each end of the project preceding the drop-off area

Greater Than Two Inches – In addition to the warning signing requirements for less than two inches, protect drop-off with wedge of 3:1 or flatter slope when work ceases for periods of time exceeding three (3) hours.

For temporary conditions, drop-off greater than two inches may be protected with plastic drums, vertical panels, or barricades for short distances during daylight hours while work is being done in the drop-off area.

ROADWAY CLOSURES

US 24 (East Main Street) is to remain open to eastbound through traffic and maintain a minimum of one twelve (12) foot lane of one-way traffic during all phases of construction at all times throughout the project limits. A roadway closure with a signed detour route will not be allowed on this project.

Lane closures and lane reductions shall be in accordance with Standard Drawing Number ***TTC-120-02 (LANE CLOSURE MULTI-LANE HIGHWAY CASE II),*** current ***MUTCD*** requirements, ***MOT Plans*** and as directed by the resident engineer.

TRAFFIC COORDINATOR

Designate an employee to be traffic coordinator. The Traffic Coordinator will inspect the project maintenance of traffic once every hour during the Contractor's operations and at any time a temporary lane closure is in place. The Traffic Coordinator will report all incidents throughout the work zone to the Engineer on the project. The Contractor will furnish the name and telephone number where the Traffic Coordinator can be contacted at all times.

During any period when a temporary lane closure is in place, the Traffic Coordinator will arrange for personnel to be present on the project at all times to inspect the traffic control, maintain the signing and devices, and variable message boards. The personnel will have access on the project to a radio or telephone to be used in case of emergencies or accidents. Payment of the Traffic Control Coordinator will be incidental to MOT.

SIGNS

Contrary to section 112, Individual signs will be measured only once for payment, regardless of how many times they are set, reset, removed, and relocated during the duration of the project. Replacements for damaged signs or signs directed to be replaced by the Engineer due to poor legibility or reflectivity will not be measured for payment.

PEDESTRIAN CONSIDERATION

Take note of obvious evidence of pedestrian use within the project limits. Evidence may consist of pedestrians moving along the roadway on a permanent or non permanent pedestrian facility. If pedestrians are present the Contractor shall comply with the Manual of Uniform Traffic Control Devices, current edition, chapter 6D, 6F and 6H. If pedestrians are present, the pedestrian access shall remain available at all times, either by reasonable detour or diversion. The temporary facility must replicate the existing facility as nearly as practical including ADA compliance where necessary. Appropriate signage for the control of pedestrian access will be measured and paid under the bid item "Temporary Signs". Payment for construction, maintenance and subsequent removal of the temporary facility or detour and all other incidentals shall be included in the bid item "Maintain & Control Traffic".

BLASTING PROHIBITED

Blasting shall be prohibited on this project. Rock structure excavation shall be performed in a method approved by the Engineer.

TEMPORARY ENTRANCES

The Contractor will not be required to provide continuous access to **residential properties** during the working day. However, at the end of each day the Contractor shall provide reasonable egress and ingress to each property. The time during which a residential entrance is blocked shall not exceed six (6) hours. The Contractor will be required to maintain at least one (1) entrance on **commercial properties**.

The Contractor shall notify all property owners twenty-four (24) hours in advance of any driveway or entrance closings. Payment will be allowed at the unit price bid for all surfacing materials required to construct and maintain any temporary entrances which may be necessary, to provide access to the residential properties. However, no direct payment will be allowed for excavation and/or embankment.

ON STREET PARKING RESTRICTIONS

The Contractor shall coordinate with Milton Public Works to obtain the necessary parking restriction signage required to temporarily close all on street parking affected by this project. Signs must be obtained from John Smith (502-555-5510) at the Milton Metro Public Works/Urban Roads Division, 5014 Farmers Road, Milton, KY 97412. Payment for obtaining, installing, maintaining and removing these signs shall be incidental to bid item "Maintain and Control Traffic".

LIQUIDATED DAMAGES

Liquidated Damages as shown in Section 108.09 of the current Standard Specifications will be assessed for each day work remains uncompleted beyond the Specified Completion Date. This project has a Fixed Completion Date of September 15th, 2014.

In addition to the Liquidated Damages specified above, Liquidated Damages in the following amounts will be charged when US 24 (East Main Street) is closed for more than two consecutive hours to eastbound through traffic throughout the project limits.

US 24 Roadway Closures:	$ 1,000 for the first hour or fraction thereof
	$ 2,000 for the second hour or fraction thereof
	$ 10,000 any additional hour or fraction thereof

If work is delayed by inclement weather, the minimum work required to allow removal of the lane closure, as directed by the Engineer, shall be resumed immediately as soon as weather permits or the Department will begin to assess Liquidated Damages as specified herein.

Contrary to Section 108.09 of the current Standard Specifications, **the disincentive fee will be charged during those periods when seasonal limitations of the Contract prohibit the Contractor from working on a controlling item or operation. This includes the months from December through March.**

All liquidated damages will be applied cumulatively.

All other portions of Section 108 apply.

Exhibit 200-16

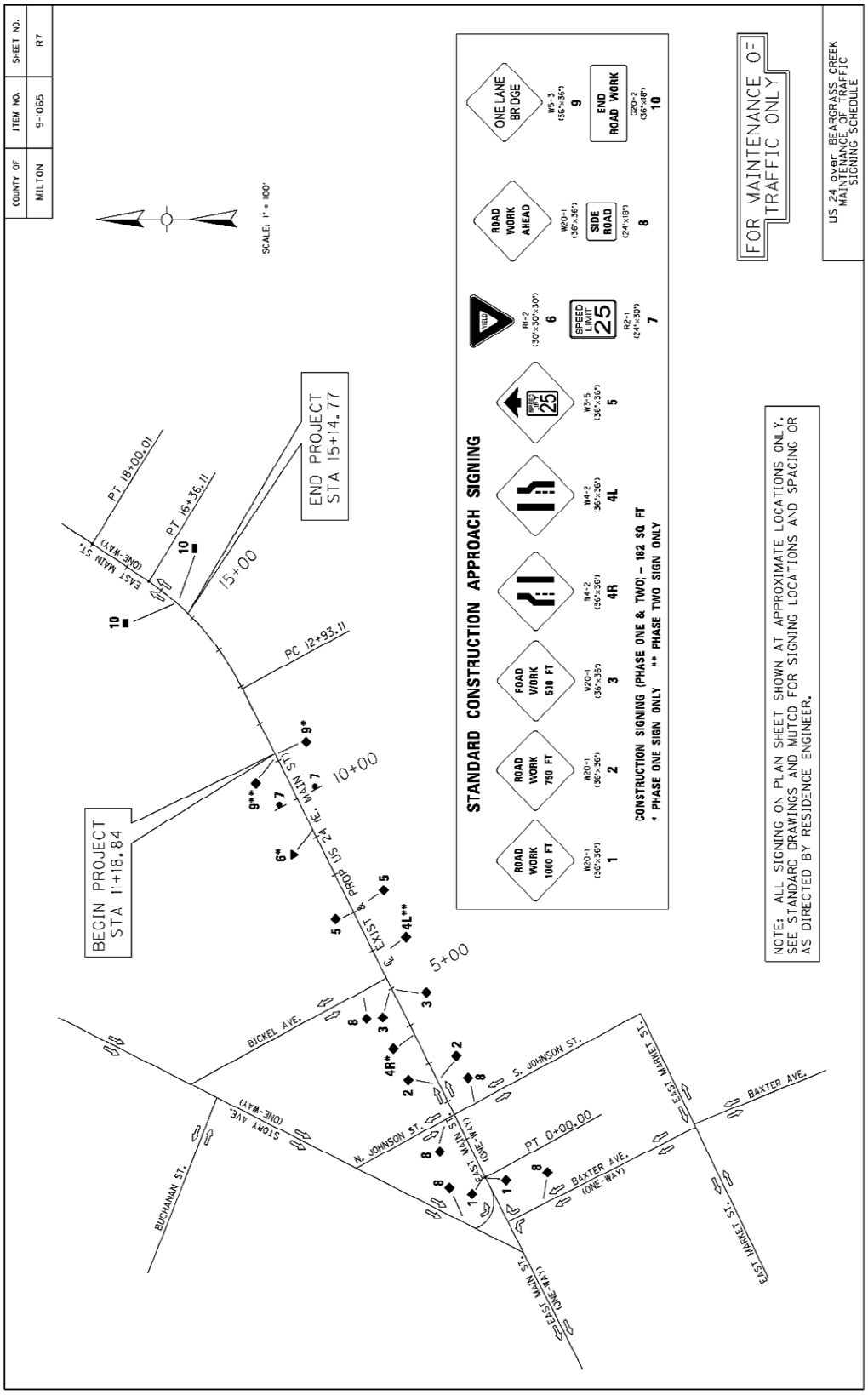


Exhibit 200-16

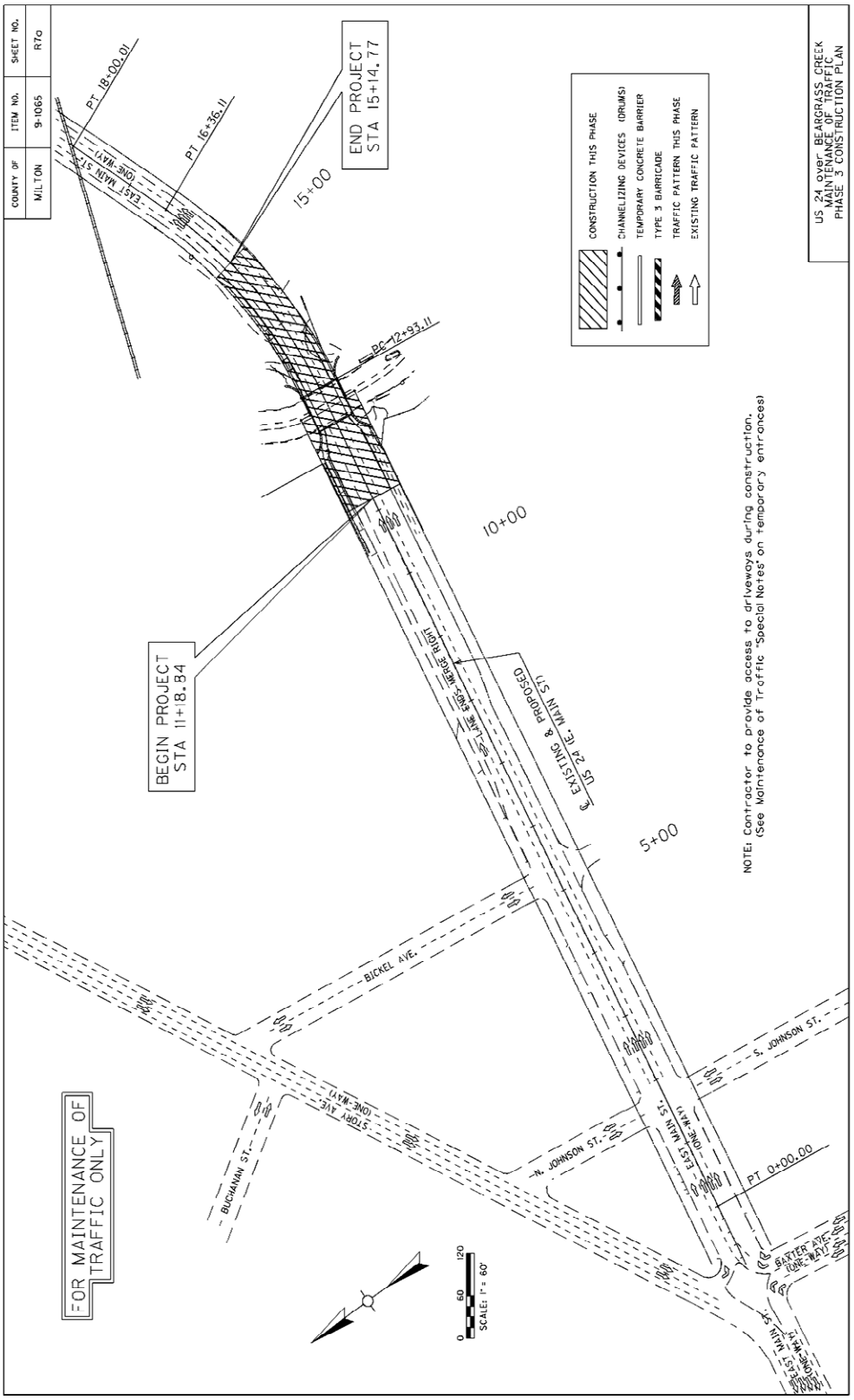


Exhibit 200-16

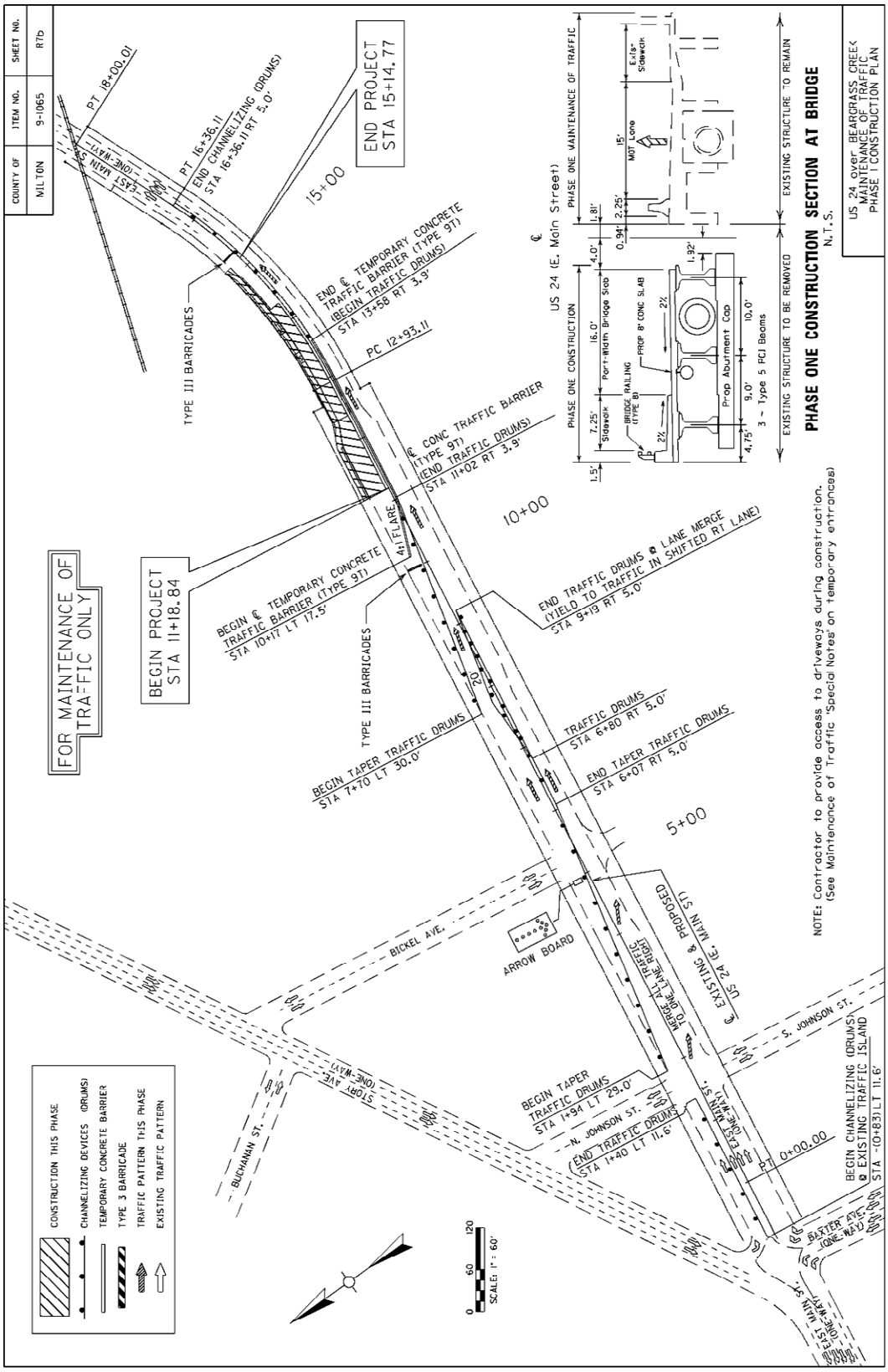
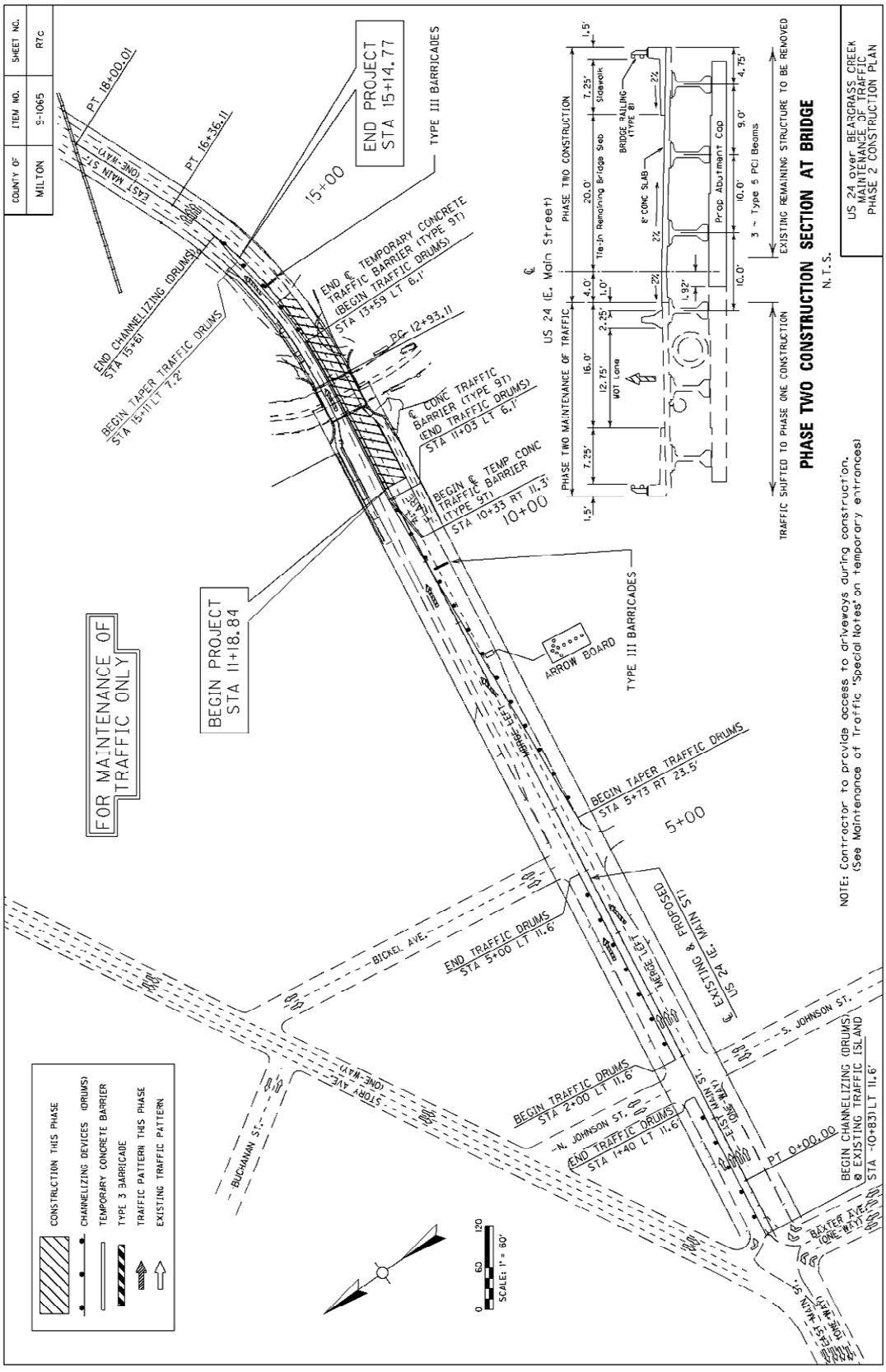


Exhibit 200-16



COUNTY OF	ITEM NO.	SHEET NO.
ROBERTSON	06-0983.02	R1

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

PLANS OF
PROPOSED PROJECT

NEW ROUTE FROM US62 TO KY617

ROBERTSON COUNTY
STPR 0071 (025)

INDEX OF SHEETS

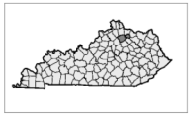
SHEET NO.	DESCRIPTION
R1	LAYOUT SHEET
R2	TYPICAL SECTIONS-SUMMARY OF QUANTITIES
R3-R44	PLAN AND PROFILE SHEETS
R45-49	RIGHT OF WAY SUMMARY SHEETS
R50-68	RIGHT OF WAY STRIP MAP SHEETS
R69-71	MINERAL RIGHTS SUMMARY SHEETS
R72-76	MINERAL RIGHTS STRIP MAP SHEETS
R77-R85	COORDINATE CONTROL SHEETS
R86-R98	APPROACH ROAD PROFILE SHEETS
R99-R116	ENTRANCE PROFILE SHEETS
R117-R171	MAINTENANCE OF TRAFFIC SHEETS
R172-R192	EROSION CONTROL SHEETS
R193-R222	SOIL PROFILE SHEETS
R223-R265	PIPE DRAINAGE SHEETS
S1-S8	STRUCTURE PLANS DRAWING *26821
S1-S8	STRUCTURE PLANS DRAWING *26822
S1-S8	STRUCTURE PLANS DRAWING *26823
S1-S7	STRUCTURE PLANS DRAWING *26824
S1-S8	STRUCTURE PLANS DRAWING *26825
S1-S9	STRUCTURE PLANS DRAWING *26826
T001-T032	TRAFFIC PLANS
U1-U12	UTILITY PLANS
X1-X381	CROSS SECTION SHEETS

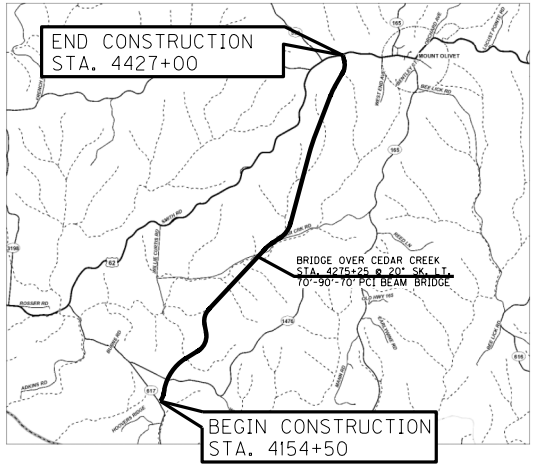
SHEETS NOT INCLUDED IN TOTAL SHEETS

R2A, R2B, R2C, R2D, R2E, R2F, R2G, R2H, R2I, R2J, R2K, R2L, R2M, R2N, R2O, R2P, R2Q, R2R

STANDARD DRAWINGS

NUMBER		
RBI-001-10	RDI-001-09	RPM-140-04
RBI-002-06	RDI-002-04	RPM-145-03
RBI-003-08	RDI-003-04	RPS-010-10
RBI-004-04	RDI-004-03	RPS-020-13
RBM-115-05	RDI-005-03	RPS-030-05
RBR-001-11	RDI-006-03	RPS-031-05
RBR-014-05	RDI-007-03	RPS-032-05
RBR-015-04	RDI-008-03	RPS-033-06
RBR-016-04	RDI-011-02	RPS-034-06
RBR-025-05	RDI-012-02	RPS-035-05
RDB-105-05	RDI-016-02	RPS-036-05
RDB-106-04	RDI-020-08	RPS-037-05
RDD-040-04	RDI-021	RPS-038-05
RDH-005-02	RDI-025-04	RPS-039-05
RDH-110-02	RDI-026	RPX-010-04
RDH-120-02	RDI-120-03	RPX-015-03
RDH-210-03	RDP-001-05	RPX-020-05
RDH-220-02	RDP-005-04	TPM-100-02
RDH-310-04	RDP-006-03	TPM-105-02
RDH-312-04	RDP-007-03	TPM-110-02
RDH-350-03	RDP-010-08	TPM-115-02
	RDX-210-02	TPM-120-02
	RDX-220-04	TPM-150-01
	RDX-225	TTC-100-03
	RDX-230	TTC-105-02
	RGS-001-06	TTC-110-02
	RGX-010-03	TTC-135-01
	RGX-015-02	TTC-150-02
	RGX-060	TTC-155-01
	RGX-061	TTC-160-01
	RGX-065-01	TTD-120-01
		TTD-125-01





THESE PLANS ARE FOR GRADE, DRAIN & SURFACING

THIS PROJECT IS OFF THE NH SYSTEM

THE CONTROL OF ACCESS ON THIS PROJECT SHALL BE BY PERMIT

LAYOUT MAP

DESIGN CRITERIA

CLASS OF HIGHWAY	RURAL ARTERIAL
TYPE OF TERRAIN	ROLLING
DESIGN SPEED	55 MPH
REQUIRED NPSD	495
REQUIRED PSD	1,985
ADT PRESENT (2009)	2,500
ADT FUTURE (2029)	3,100
DHV	280
D %	N/A
T %	7%

GEOGRAPHIC COORDINATES

LATITUDE 38 DEGREES 10 MINUTES 17 SECONDS NORTH
LONGITUDE 83 DEGREES 01 MINUTES 55 SECONDS WEST

DESIGNED

% RESTRICTED SD N/A

MAX. DISTANCE W/O PASSING N/A

LENGTH 27.020 LIN. FT. 5.117 MILES	LENGTH ____ LIN. FT. ____ MILES	LENGTH ____ LIN. FT. ____ MILES	LENGTH ____ LIN. FT. ____ MILES
ADDED / DEDUCTED — FOR EQUALITIES ____ LIN. FT. NOT INCLUDED	ADDED / DEDUCTED — FOR EQUALITIES ____ LIN. FT. NOT INCLUDED	ADDED / DEDUCTED — FOR EQUALITIES ____ LIN. FT. NOT INCLUDED	ADDED / DEDUCTED — FOR EQUALITIES ____ LIN. FT. NOT INCLUDED
RAILROAD CROSSINGS NO. ____ LIN. FT.	RAILROAD CROSSINGS NO. ____ LIN. FT.	RAILROAD CROSSINGS NO. ____ LIN. FT.	RAILROAD CROSSINGS NO. ____ LIN. FT.
BRIDGES 230 LIN. FT.	BRIDGES ____ LIN. FT.	BRIDGES ____ LIN. FT.	BRIDGES ____ LIN. FT.

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF
ROBERTSON

ITEM NO. 06-0983.02
PROJECT NUMBER: FD52 032 0007 013-019
STPR 0071 (025)
LETTING DATE: NOVEMBER 15, 2012

RECOMMENDED BY: DAVID STONE 9/14/2012
PROJECT MANAGER DATE

PLAN APPROVED BY: ____
STATE HIGHWAY ENGINEER DATE

FILE NAME: C:\ROBERTSON\ROD100LS.DGN
USER: DavidStone
DATE PLOTTED: September 14, 2012
E-SHEET NAME: ROD00LS
MicroStation v8.11.9.608

Exhibit 200-18

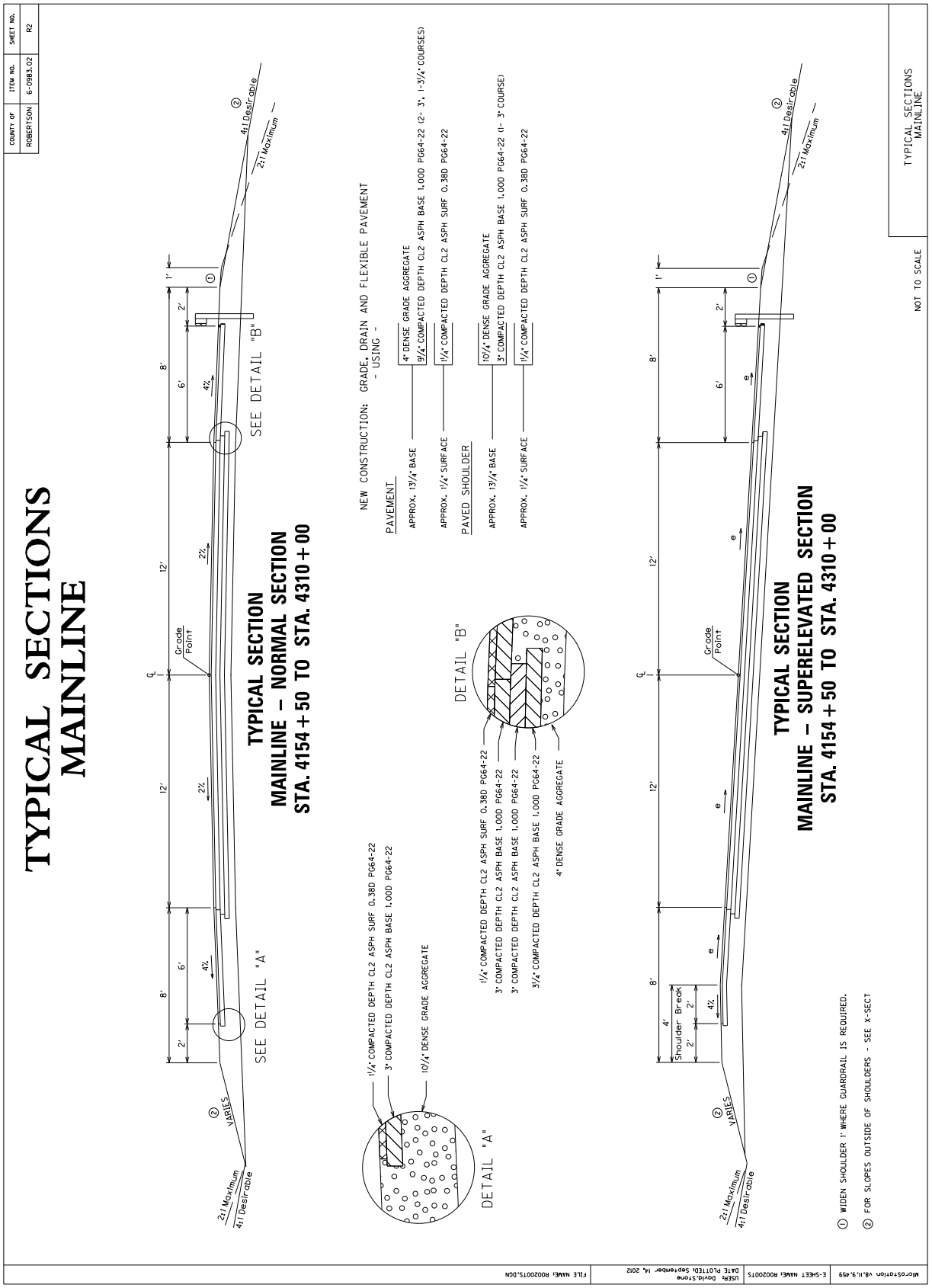
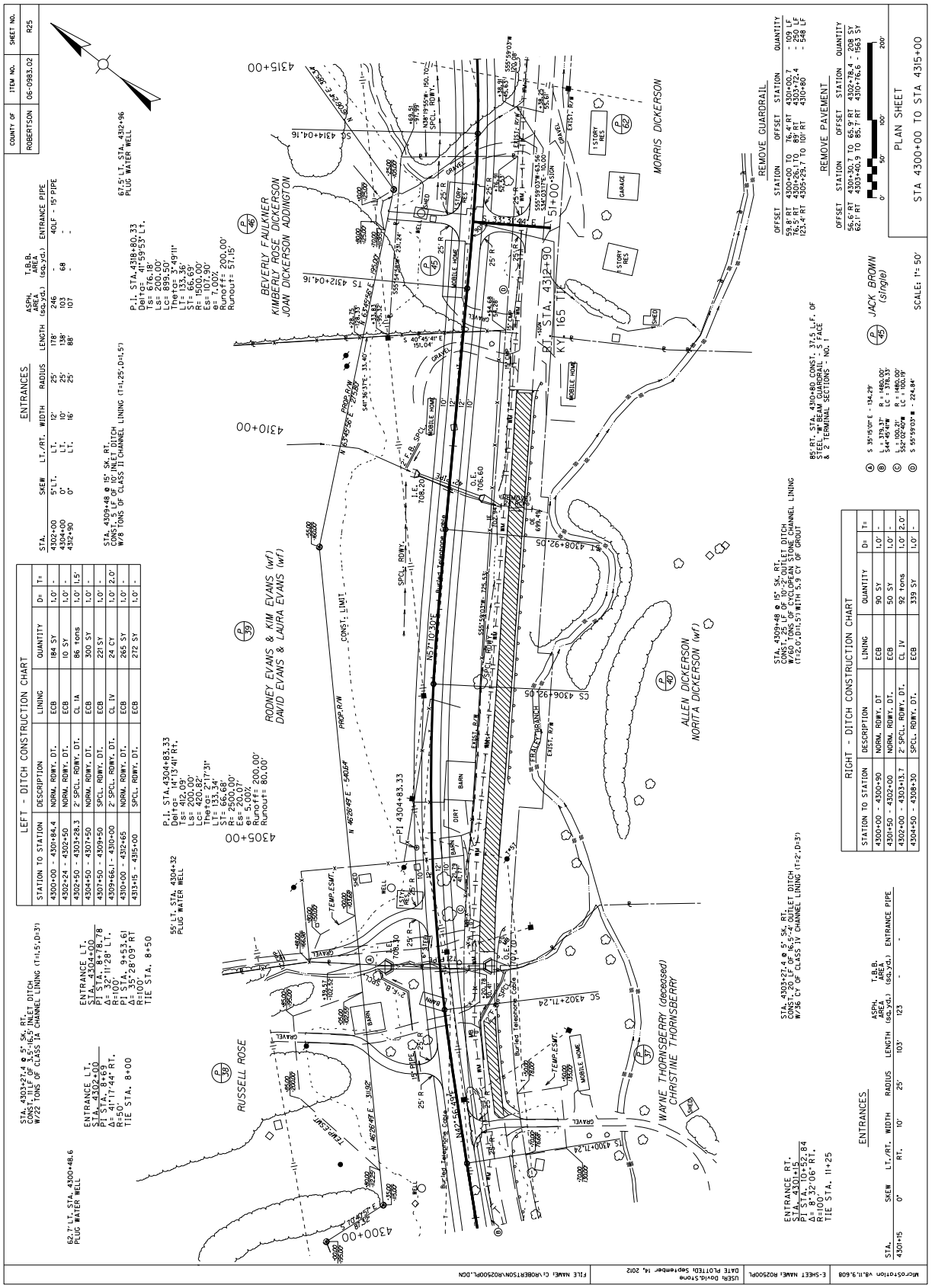
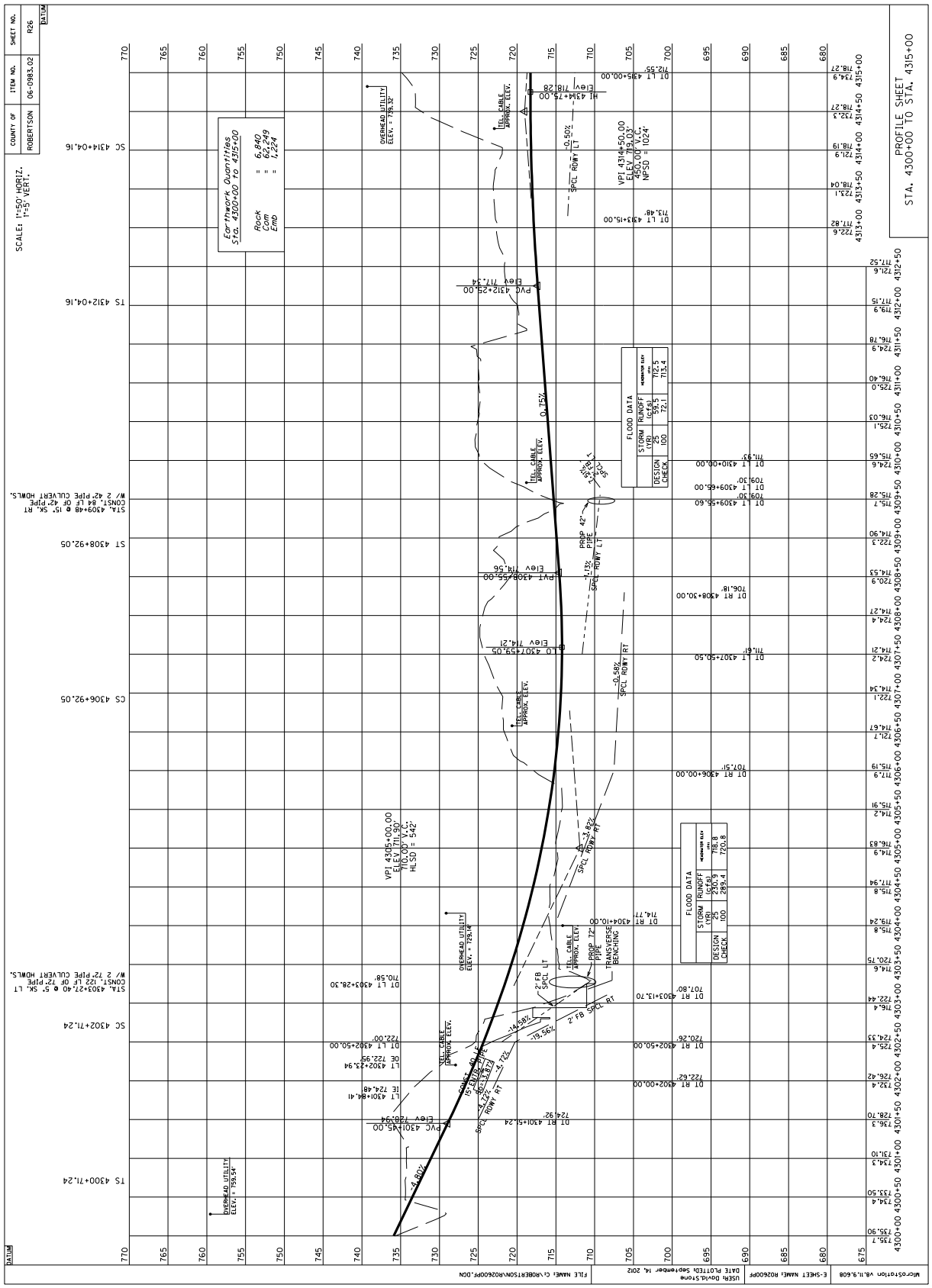


Exhibit 200-19



Plan Sheet

Exhibit 200-19



COUNTY OF	ITEM NO.	SHEET NO.
ROBERTSON	06-0983.02	R80

BASIS OF ELEVATIONS

Elevations were derived from GPS methods and are adjusted to the NAVD88 Vertical Datum. Geoid model used was Geoid96.

PROJECT COORDINATES

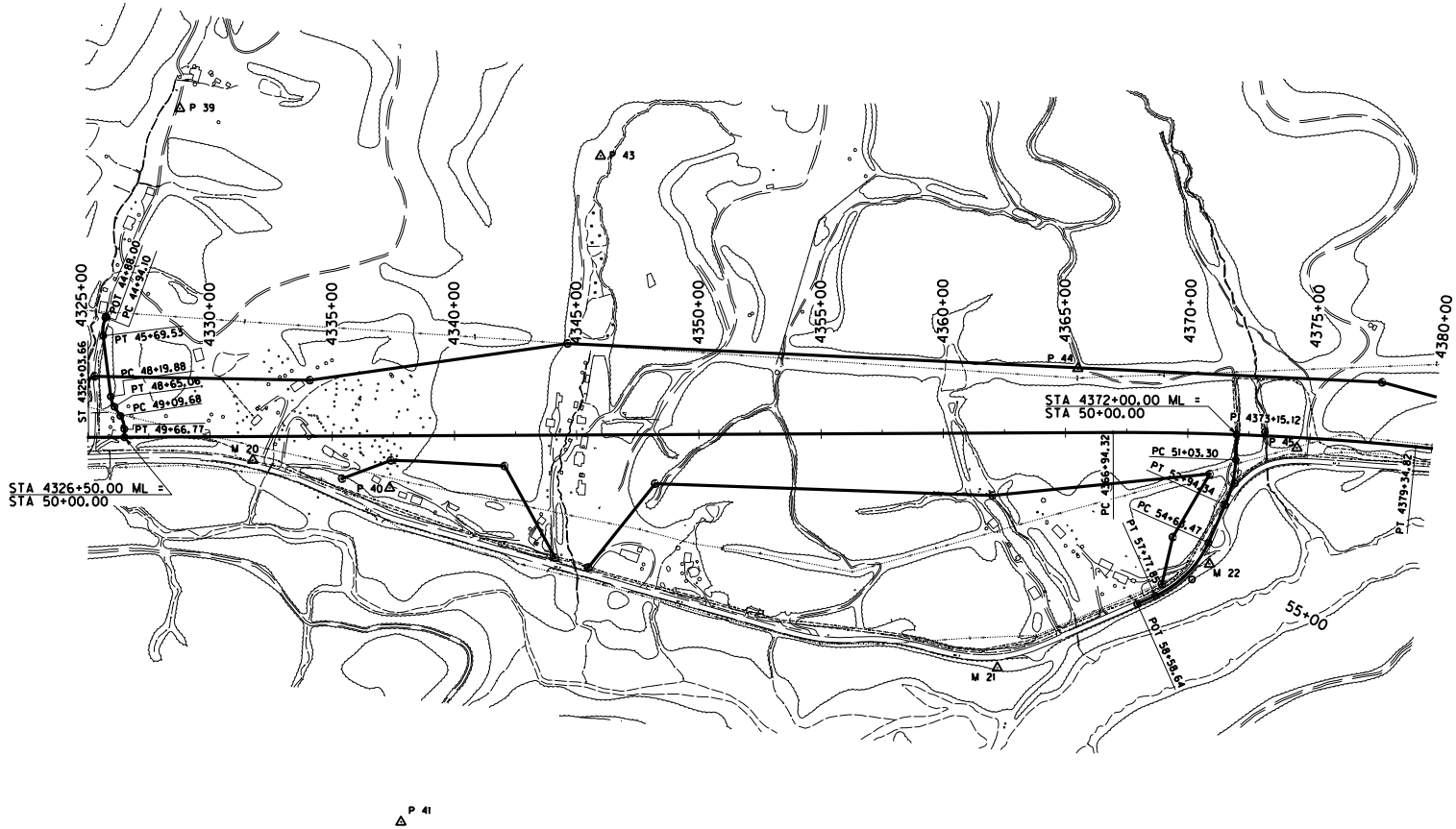
Coordinates for horizontal control were obtained from GPS methods and adjusted to the National NAD83/FBN System.

Coordinates shown are Project Datum of Ground Coordinates and are in U.S. Survey Feet.

A project datum factor of 1.00005427 was computed from the central most point to convert the State Plane Coordinates to Project Coordinates.

If Project Coordinates are needed, multiply the State Plane Coordinates by the Project Datum Factor.

Coordinates are based on State Plane Coordinate System North Zone.

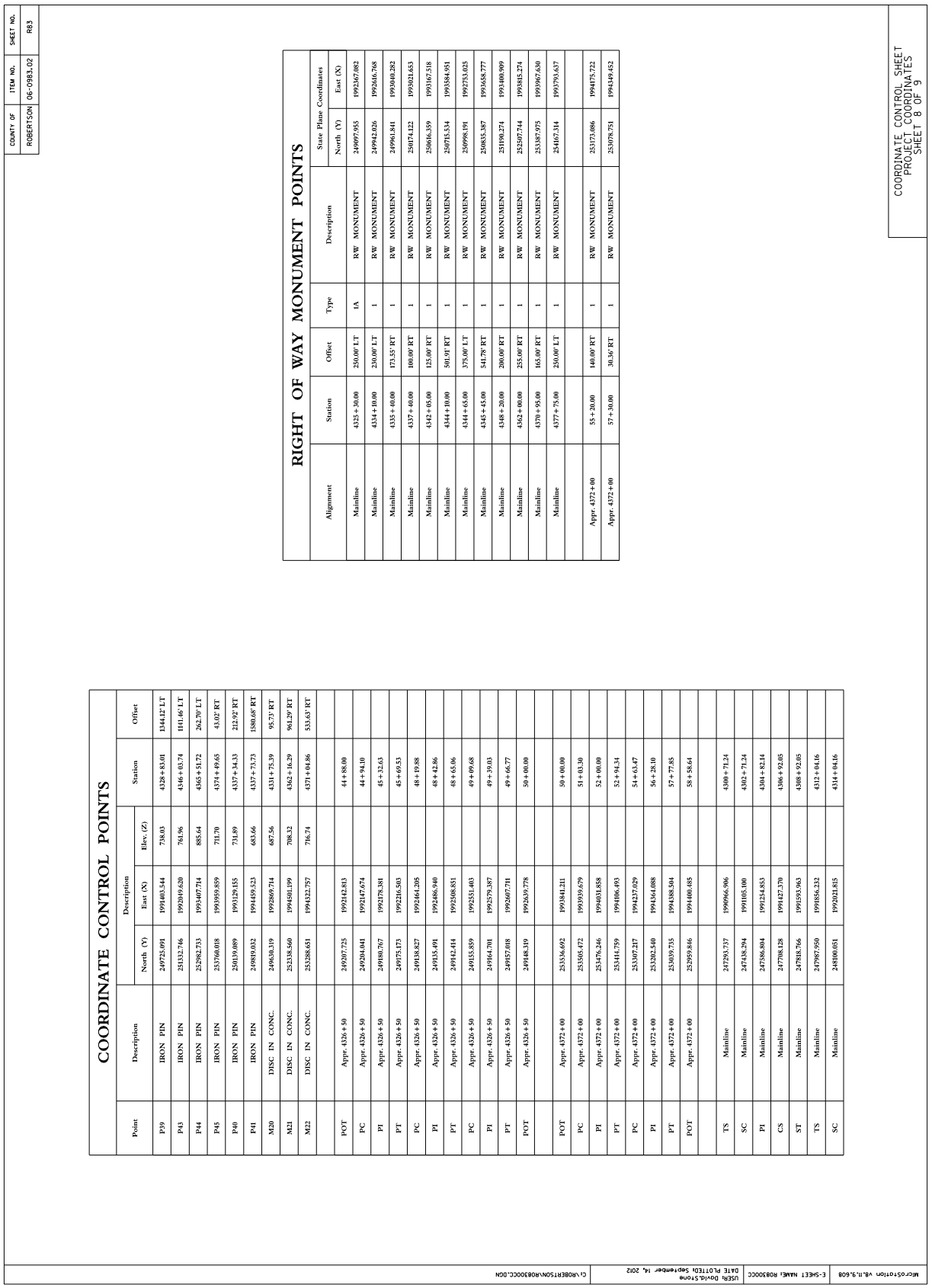


0' 200' 400' 800'

SCALE: 1"=200

COORDINATE CONTROL SHEET
STA 4325+00 TO STA 4380+00
SHEET 4 OF 9

MicroStation v8.11.9.608 | E-SHEET NAME: R080000C | USER: DavidStone DATE PLOTTED: September 14, 2012 | C:\ROBERTSON\R080000C.DGN



COUNTY OF	ITEM NO.	SHEET NO.
ROBERTSON	06-0983.02	R83

COORDINATE CONTROL SHEET
PROJECT COORDINATES
SHEET 8 OF 9

COORDINATE CONTROL POINTS

Point	Description	Description			Station	Offset
		North (Y)	East (X)	Elev. (Z)		
P39	IRON PIN	249725.091	1991403.544	738.03	4328+83.01	1344.12' LT
P43	IRON PIN	251332.746	1992049.620	761.96	4346+03.74	1141.46' LT
P44	IRON PIN	252982.733	1993407.714	885.64	4365+51.72	262.70' LT
P45	IRON PIN	253760.018	1993959.859	711.70	4374+49.65	43.02' RT
P40	IRON PIN	250139.089	1993129.155	731.89	4337+34.33	212.92' RT
P41	IRON PIN	249819.032	1994459.523	683.66	4337+73.73	1580.68' RT
M20	DISC IN CONC.	249638.319	1992869.714	687.56	4331+75.39	95.73' RT
M21	DISC IN CONC.	252338.560	1994501.199	708.32	4362+16.29	961.29' RT
M22	DISC IN CONC.	253388.651	1994322.757	716.74	4371+04.86	533.63' RT
POT	Appr. 4326+50	249207.725	1992142.813		44+88.00	
PC	Appr. 4326+50	249284.041	1992147.674		44+94.10	
PI	Appr. 4326+50	249380.767	1992178.381		45+32.63	
PT	Appr. 4326+50	249475.173	1992216.583		45+69.53	
PC	Appr. 4326+50	249538.827	1992461.205		48+19.88	
PI	Appr. 4326+50	249535.491	1992486.940		48+42.86	
PT	Appr. 4326+50	249542.414	1992508.851		48+63.06	
PC	Appr. 4326+50	249555.859	1992551.403		49+09.68	
PI	Appr. 4326+50	249564.701	1992579.387		49+39.03	
PT	Appr. 4326+50	249457.018	1992607.711		49+66.77	
POT	Appr. 4326+50	249548.319	1992630.778		50+00.00	
POT	Appr. 4372+00	253536.692	1993841.211		50+00.00	
PC	Appr. 4372+00	253505.472	1993939.679		51+03.30	
PI	Appr. 4372+00	253476.246	1994031.858		52+00.00	
PT	Appr. 4372+00	253414.759	1994186.493		52+94.34	
PC	Appr. 4372+00	253307.217	1994257.029		54+63.47	
PI	Appr. 4372+00	253202.540	1994364.088		56+28.10	
PT	Appr. 4372+00	253039.735	1994388.504		57+77.85	
POT	Appr. 4372+00	252959.846	1994400.485		58+58.64	
TS	Mainline	247293.737	1990966.986		4300+71.24	
SC	Mainline	247438.294	1991105.100		4302+71.24	
PI	Mainline	247586.804	1991254.863		4304+82.14	
CS	Mainline	247708.128	1991427.370		4306+92.05	
ST	Mainline	247818.766	1991593.963		4308+92.05	
TS	Mainline	247987.950	1991856.232		4312+04.16	
SC	Mainline	248100.051	1992021.815		4314+04.16	

RIGHT OF WAY MONUMENT POINTS

Alignment	Station	Offset	Type	Description	State Plane Coordinates	
					North (Y)	East (X)
Mainline	4325+30.00	250.00' LT	1A	R/W MONUMENT	249697.955	1992367.082
Mainline	4334+10.00	230.00' LT	1	R/W MONUMENT	249342.026	1992666.768
Mainline	4335+40.00	173.55' RT	1	R/W MONUMENT	249961.841	1993040.282
Mainline	4337+40.00	100.00' RT	1	R/W MONUMENT	250174.122	1993021.653
Mainline	4342+05.00	125.00' RT	1	R/W MONUMENT	250616.359	1993167.518
Mainline	4344+10.00	501.91' RT	1	R/W MONUMENT	250715.534	1993584.951
Mainline	4344+65.00	375.00' LT	1	R/W MONUMENT	250998.191	1992753.025
Mainline	4345+45.00	544.78' RT	1	R/W MONUMENT	250835.387	1993658.777
Mainline	4348+20.00	200.00' RT	1	R/W MONUMENT	251190.274	1993400.909
Mainline	4362+80.00	255.00' RT	1	R/W MONUMENT	252507.744	1993815.274
Mainline	4370+95.00	165.00' RT	1	R/W MONUMENT	253367.975	1993967.630
Mainline	4377+75.00	250.00' LT	1	R/W MONUMENT	254167.314	1995793.637
Appr. 4372+00	55+20.00	140.00' RT	1	R/W MONUMENT	253173.086	1994175.722
Appr. 4372+00	57+30.00	30.36' RT	1	R/W MONUMENT	253078.751	1994349.452

Exhibit 200-22

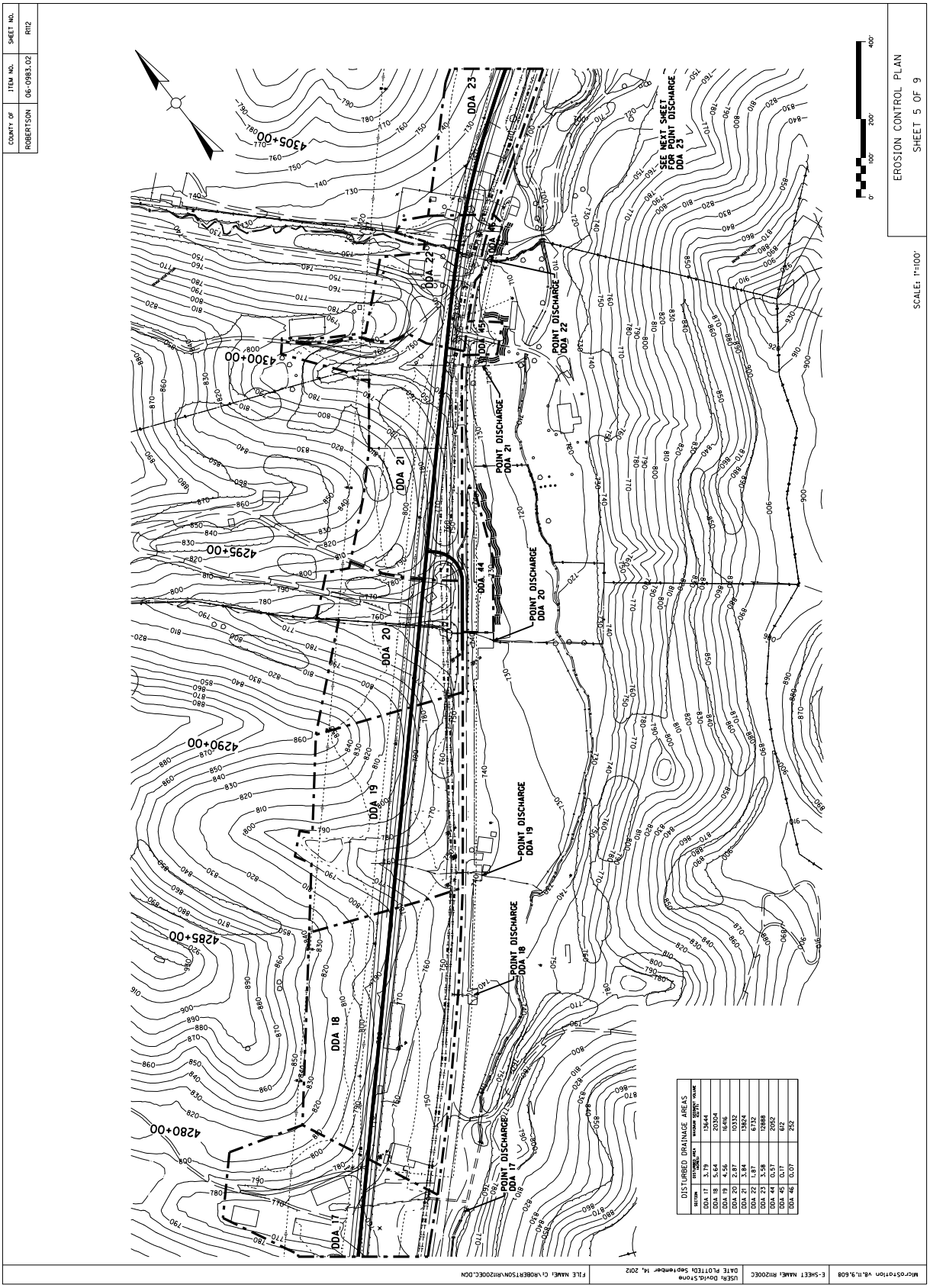
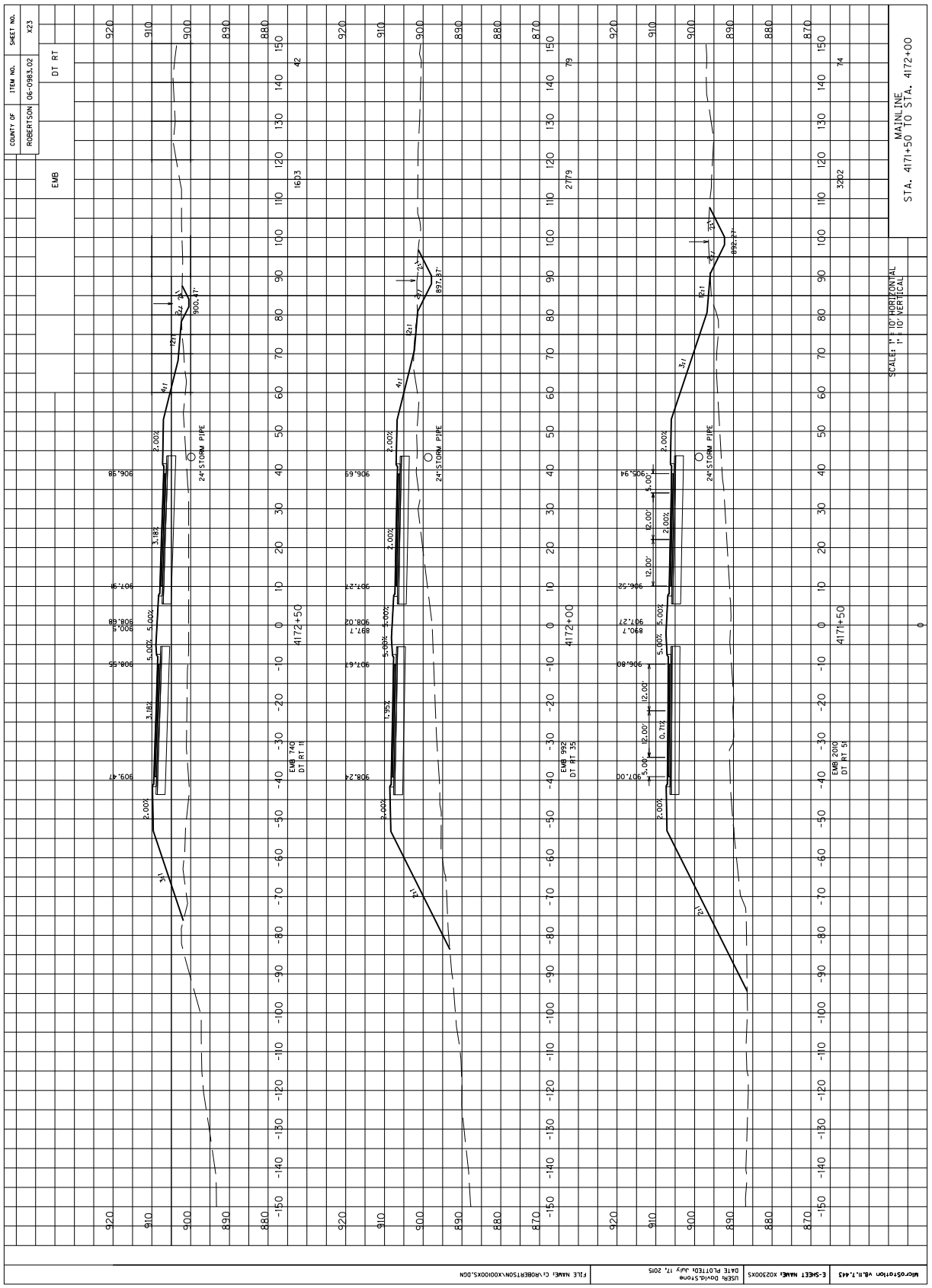


Exhibit 200-23



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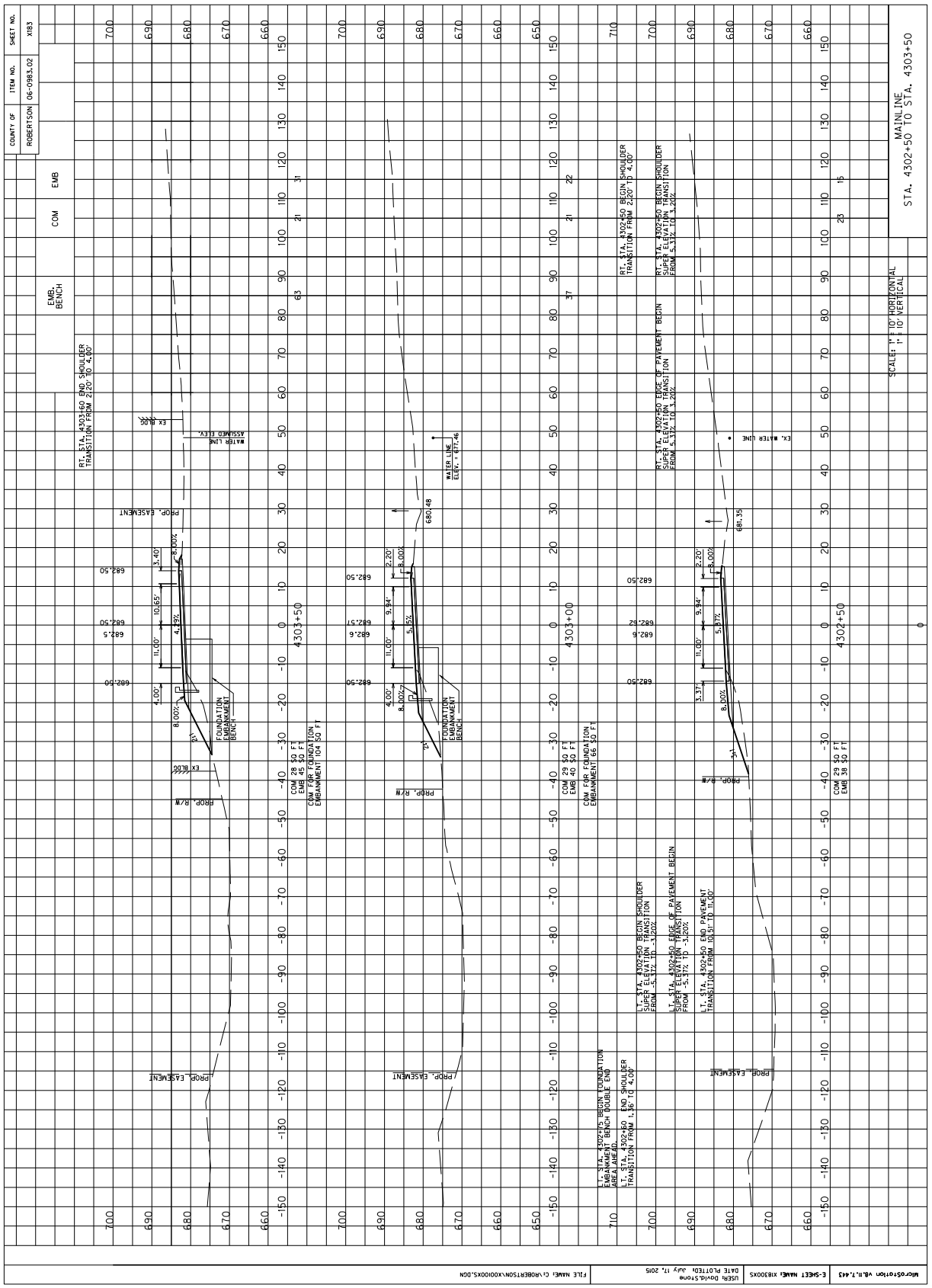

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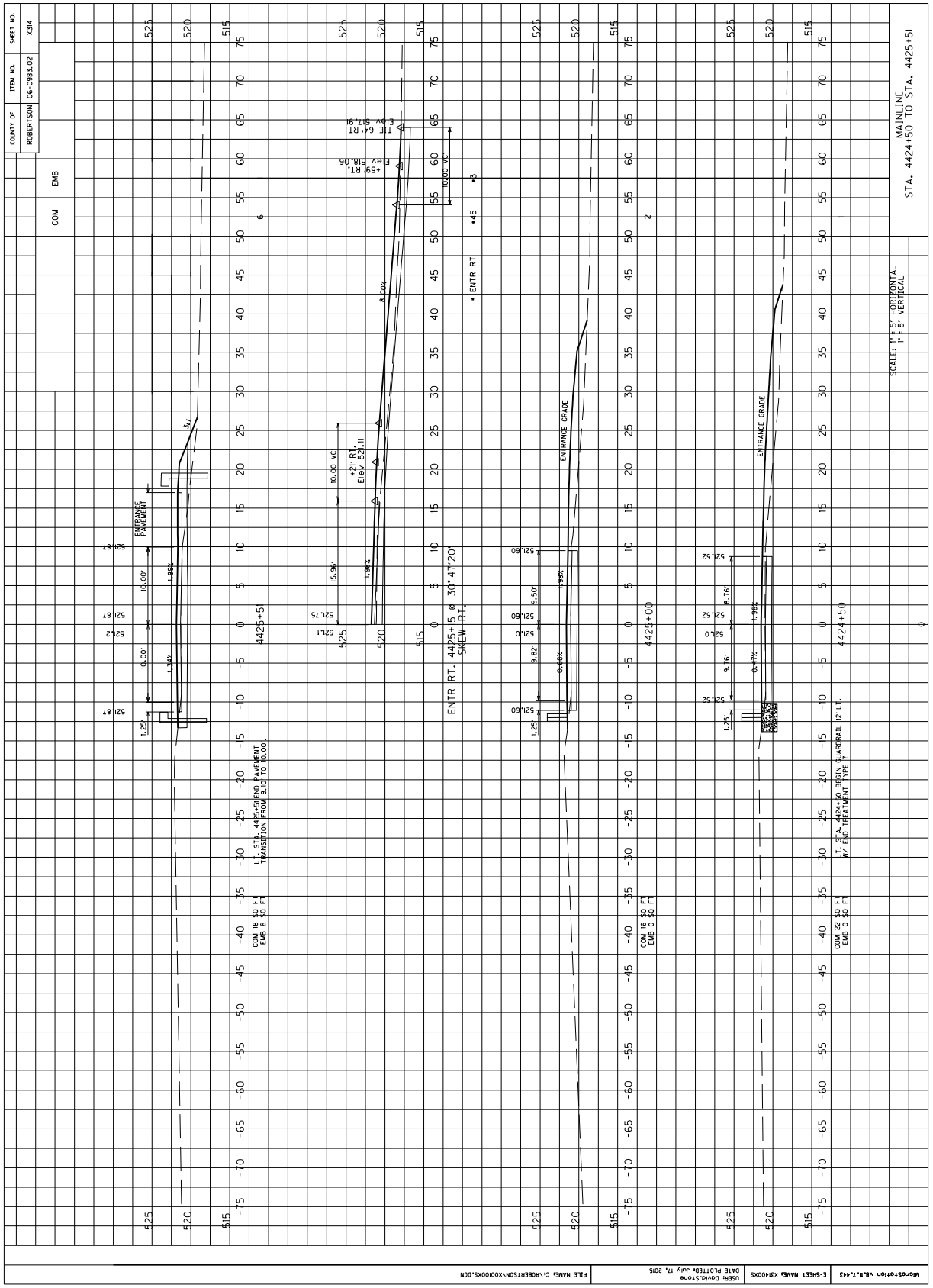

Kentucky Transportation Cabinet
Division of Highway Design
FINAL PLAN SUBMITTAL

3/09/2015
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SYP Item Number:	11-155.00	**County:**	McMartin
Final Plans Due Date:	12/4/2014	**Date Submitted:**	12/2/2014
Authorization Number:	99999	**Project Manager:**	Brad Travis
Link to Data in ProjectWise:	Final Plans		

Submittal	Status	Comments
Contract Plans:		
Roadway	Submitted	
Structures	Submitted	
Traffic:		
Lighting	Not Required	
Signals	Not Required	
Signs	Not Required	
Utility:		
Relocation Plans	Submitted	Includes sewer relocation plans only.
Specifications	Submitted	Includes sewer specs only.
		Water plans to be submitted by end of week.
Misc. Documents:		
Estimate:		
Roadway	Submitted	
Structures	Submitted	
Traffic	Not Required	
Utility	Submitted	
Contract Time: (●) Fixed Completion Date ( ) Working Days ( ) Calendar Days		
Project Development Checklist	Not Required	

NOTE: Highlighted cells require comment.

Kentucky Transportation Cabinet
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FINAL PLAN SUBMITTAL

3/09/2015
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SYP Item Number:	11-155.00	**County:**	McMartin

Submittal	Status	Comments
Proposal Documents:		
Cap Report	Submitted	
Permit/water quality certification/KPDES:	Submitted	
Section 404 Permit (NW, LOP, Individual)	Not Required	
Section 401 Permit (WQC)	Submitted	
KPDES (General, Individual)	Submitted	
Utility impact notes	Submitted	
R/W Certification	Submitted	
Railroad Impact Notes	Submitted	
Project Specific Special Notes and Specifications	Submitted	
BMP/NOI Documents	Submitted	
Asbestos Report	Not Submitted	DEA should finish next week.
Supplemental Files:		
DGN Files	Submitted	
3D Mapping Files (.dgn files)	Submitted	
3D Proposed Manuscript (.dgn files)	Submitted	
Existing Ground Digital Terrain Data (.dtm & .xml files)	Submitted	
Coordinate Control Data (.asc files)	Submitted	
Alignment Geometry (.alg & .xml files)	Submitted	
Earthwork Calculations (Excel File)	Submitted	
Superelevation report (.xml file)	Submitted	
Proposed Model (.dtm & .xml files)	Submitted	
Template Library (.tml or .itl file)	Submitted	
Roadway Library (.rwl or .ird file)	Submitted	

NOTE: Highlighted cells require comment.

Kentucky Transportation Cabinet (KYTC) / Federal Highway Administration (FHWA)

KYTC Project Development Checklist (PDC)

Revised January 21, 2015

Project Information

KYTC Item No.: 11-155

Federal Project No.: NH 67-1(73)30

County: McMartin

Route: I-67

Description: Construction of a new interchange on I-67 and Access Road

Contract ID:

Advertisement for Bids Date:

Letting Date: 11/22/2014

Introduction

This Project Development Checklist (PDC) is intended to assist in development of projects which conform to FHWA Federal-aid regulations, policies, and guidance.

State Administered Federal-aid Projects:
The PDC should be completed and signed by KYTC. Completion of the PS&E Package and PDC will allow the KYTC Division of Program Management to request a FHWA Construction Authorization for the project.

Projects of Corporate Interest (PoCI) and of Division Interest (PoDI) using federal-aid funds:
The PDC should be completed by the KYTC and submitted to the FHWA with the complete Plans, Specifications, and Estimate (PS&E) package for review and approval. Approval of the PS&E package and concurrence with the PDC by the FHWA will allow the KYTC Division of Program Management to request a FHWA Construction Authorization for the project.

The PDC is composed of a series of yes/no questions in categories including Planning, Environment, Right-of-Way & Utilities, Plans & Specifications, Proposal, and Estimate. Answer all questions by checking 'Yes', 'No', or 'N/A' and providing support information. If additional documentation or comments are needed to address a question or satisfy a requirement, please note accordingly in the 'Comments' column and provide attachments as necessary.

Notes:
1. See the current version of the KYTC/FHWA Stewardship Plan for authority, role, and responsibility delegations of program and project activities in implementing the Federal-aid Highway Program.
2. The PDC is not an all inclusive list as it does not address all Federal-aid requirements and regulations. However, the PDC does account for several major Federal-aid requirements and provides references to source documents for further review.

Planning				
Checklist Item	**Yes**	**No**	**N/A**	**Comments**
1. Is the project programmed in the Statewide Transportation Improvement Program and/or approved amendments or modifications? (23 CFR 450.216)	☒	☐		
2. Is this project located within a Metropolitan Planning Organization area and programmed in the Metropolitan Transportation Plan, Transportation Improvement Program, and/or approved amendments or modifications? (23 CFR 450.322 & 450.324)	☒	☐		

Environment				
Checklist Item	**Yes**	**No**	**N/A**	**Comments**
1. Has the environmental documentation for the project been approved? (23 CFR 771) ☐ **Programmatic Categorical Exclusion (PCE)** Date Approved: _____ ☐ **Categorical Exclusion Level 1 (CE-1)** Date Approved: _____ ☐ **Categorical Exclusion Level 2 (CE-2)** Date Approved: _____ ☐ **Categorical Exclusion Level 3 (CE-3)** Date Approved: _____ ☐ **Environmental Assessment / FONSI** Date FONSI Approved: _____ ☒ **Environmental Impact Statement / ROD** Date ROD Approved: 03/13/2011	☒	☐		
2. Is a re-assessment or re-evaluation of the environmental document needed? (23 CFR 771.129) Date of most recent re-assessment/re-evaluation: 12/11/2012	☐	☒		
3. Have environmental commitments been incorporated into the final design and contract documents? Y☐ N☐ N/A☒ **Historic Preservation** (36 CFR 800) Y☐ N☒ N/A☐ **Stream/Wetland Mitigation** (23 CFR 777) Y☐ N☐ N/A☒ **Noise Abatement** (23 CFR 772) Y☐ N☐ N/A☒ **Section 4f** (23 CFR 771.135) Y☒ N☐ N/A☐ **Endangered Species Act** (50 CFR 402.12(c)) Y☐ N☐ N/A☒ **Other:** _____	☒	☐	☐	There could be possible stream/wetland mitigation The consultant is working on jurisdictional delination. There will be a CAP stating Should blasting be required near Moore Cave, KYTC has committed to using the minimum charge necessary with prudence as a measure to minimize potential indirect effects of distrubing the gray bats using this cave during migration.

Checklist Item	Yes	No	N/A	Comments
4. Have all permits for the project been secured? Y☐ N☒ N/A☐ **Section 401 - Water Quality** Y☐ N☒ N/A☐ **Kentucky Pollutant Discharge Elimination System (KPDES)** Y☐ N☐ N/A☒ **Section 404 - USACE Individual Wetlands Permit** (23 CFR 777) Y☐ N☒ N/A☐ **Section 404 - USACE Nationwide Permit** (23 CFR 777) Y☐ N☐ N/A☒ **Coast Guard** (23 CFR 650 Subpart H) Y☐ N☐ N/A☒ **Other: _____**	☐	☒	☐	KYTC is currently working on permit requirements. The Consultant is working on permit application.

Right-of-Way & Utilities

Checklist Item	Yes	No	N/A	Comments
1. Has all Right-of-Way for the project been secured and have all relocates been relocated to decent, safe, and sanitary housing? If 'No', please provide a detailed explanation. (23 CFR 635.309) ☒ **Right-of-Way Certificate** Date Approved: 10/01/2014 ***Provide a copy of the Right-of-Way Certificate with the PDC***	☒	☐		
2. Is the project located within 2 miles of an airport? (23 CFR 620.103) Y☐ N☐ N/A☐ **Coordinated with Federal Aviation Administration**	☐	☒		
3. Does the project require adjustment or relocation of utilities? Y☐ N☒ N/A☐ **All Utility Agreements approved**	☒	☐		
4. Have all utilities affected by this project been relocated or will be relocated prior to advertisement for bids? Y☐ N☒ N/A☐ **Utility work included in this contract**	☐	☒	☐	
5. If all utilities have not been relocated prior to advertisement and are not included in the contract, do contract documents include utility impact notes specifying a relocation completion date and contract administration terms and conditions?	☒	☐	☐	Utility Impact notes have not been submitted yet, but they will be submitted prior to letting.
6. Does the project require use of or adjustment of railroad facilities? (23 CFR 646) Y☐ N☒ N/A☐ **Railroad Agreement approved** Y☐ N☒ N/A☐ **Liability Insurance requirements provided in proposal**	☒	☐		Railroad Agreement is in the works.

Plans & Specifications

Checklist Item	Yes	No	N/A	Comments
1. Are any design exceptions incorporated into this project? (23 CFR 625.3(f)) Y☐ N☐ N/A☒ **Reviewed and Approved by KYTC** Y☐ N☐ N/A☒ **Reviewed and Approved FHWA (if applicable per current KYTC/FHWA Stewardship Plan)** Date Approved: 05/16/2012	☐	☒		The DES was approved by KYTC and FHWA. There were no design exceptions.
2. Does the project involve new or revised Interstate Access? Y☒ N☐ N/A☐ **Interchange Justification/Modification Study Approved by FHWA** Date Approved: _____	☐	☐		
3. Is a Transportation Management Plan (TMP) provided and consistent with regulations on Work Zone Safety & Mobility in Title 23 Code of Federal Regulations Part 630 Subpart J and the KYTC Policy and Procedures for the Safety and Mobility of Traffic Through Work Zones? Y☒ N☐ **Project classified as "Significant"** Y☒ N☐ N/A☐ **TMP Approved by KYTC** Y☐ N☒ N/A☐ **TMP Approved by FHWA (if applicable per current KYTC/FHWA Stewardship Plan)** Date Approved: _____	☒	☐	☐	TMP is currently being submitted to FHWA for review and approval.
4. Are pedestrian facilities and appurtenances designed in accordance with Americans with Disabilities Act requirements? (www.access-board.gov)	☐	☐	☒	
5. Is Value Engineering required for the project? (23 CFR 627) Y☒ N☐ **Project total costs > $50 Million** ($40 Million for bridges) Y☒ N☐ **Value Engineering Study** Date Approved: 11/01/2012	☒	☐		
6. Are any materials (excluding those supplied by a utility company for utility relocation) to be supplied by a public agency? (23 CFR 635.407) Y☐ N☐ N/A☐ **Public Interest Finding Approved by KYTC** Y☐ N☐ N/A☐ **Public Interest Finding Approved by FHWA (if applicable per current KYTC/FHWA Stewardship Plan)** Date Approved: _____	☐	☒		
7. Are patented or proprietary materials shown in the plans or specifications? (23 CFR 635.411) Y☐ N☐ N/A☐ **Use of Material Approved by KYTC** Y☐ N☐ N/A☐ **Use of Material Approved by FHWA (if applicable per current KYTC/FHWA Stewardship Plan)** Date Approved: _____	☐	☒		

Checklist Item	Yes	No	N/A	Comments
8. Is State or local force account construction work to be utilized on this project? (23 CFR 635.204) Y☐ N☐ N/A☐ **Cost Effective Determination Approved by KYTC** Y☐ N☐ N/A☐ **Cost Effective Determination Approved by FHWA (if applicable per current KYTC/FHWA Stewardship Plan)** Date Approved: _____	☐	☒	/	
9. Are experimental features utilized on this project? (Federal-aid Policy Guide G 6042.4) Y☐ N☐ N/A☐ **Work Plan Approved by KYTC** Y☐ N☐ N/A☐ **Work Plan Approved by FHWA (if applicable per current KYTC/FHWA Stewardship Plan)** Date Approved: _____	☐	☒	/	

Proposal

Checklist Item	Yes	No	N/A	Comments
1. Is the Form FHWA-1273 "Required Contract Provisions for Federal-Aid Construction Contracts" included? (23 CFR 633.102)	☒	☐	/	
2. Are Equal Employment Opportunity (EEO) special provisions included?	☒	☐	/	
3. Does the proposal contain a Disadvantaged Business Enterprise (DBE) goal? (23 CFR 635.107 & 49 CFR 26) DBE Goal: 10%	☒	☐	/	
4. Are the minimum wage rates determined by the United States Department of Labor (DOL) included? (23 CFR 635.117(f))	☒	☐	/	
5. Is the contract time/completion date included? (23 CFR 635.121) Y☒ N☐ N/A☐ **Completion Date:** 07/31/2016 Y☐ N☐ N/A☐ **Work Days:** _____ Y☐ N☐ N/A☐ **Calendar Days:** _____	☒	☐	/	

Estimate

Checklist Item	Yes	No	N/A	Comments
1. Has an official Engineer's Estimate been developed based upon all bid items included in the contract documents?	☒	☐	/	

Signatures and Concurrence

State Administered and FHWA *Projects of Corporate or Division Interest* with federal-aid funds:

The information provided on this Project Development Checklist is complete and accurate. The contract documents for this project have been prepared in accordance with FHWA programmatically approved processes and procedures and conform to all applicable Federal-aid laws, regulations, and policies.

Kentucky Transportation Cabinet (KYTC)

Signed: _____ Print: _____

Title: _____ Date: _____

FHWA Concurrence *(Projects of Corporate or Division Interest Only)*:

Signed: _____ Print: _____

Title: _____ Date: _____

Once FHWA has authorized federal-aid funds for the project, the KYTC may advertise the project for construction bids. A project must be advertised for construction bids for a minimum of 21 calendar days prior to opening bids and letting the contract. As a recipient of federal-aid funds, the KYTC is responsible for advertising and administering the construction of the project in accordance with all applicable federal-aid laws and regulations.