

SCOPE OF WORK
Ohio River Trail (ORT) South Shore Phase 1 Project
Coraopolis, Pennsylvania
DRAFT December 2, 2014

Project Purpose and Limits-

The project is the development of an on-road and off-road trail system for pedestrians and bicycles along State Route (SR) 51. The project will extend between Ferree Street in Coraopolis to the Sewickley Bridge. This is Phase 1 of the Ohio River Trail.

The Ohio River Trail is an important connection between the states of Pennsylvania and Ohio. This trail system will connect the Montour Trail System and link to the Great Allegheny Passage Trail, communities westward all along the Ohio River in PA, and tie into the trail systems in Ohio.

Phase 1 route will use SR 51- 4th Avenue and 5th Avenue corridors in Coraopolis (they are 1-way streets and designated PA Bicycle Route A) to make the on-road connection.

The route becomes a separated trail between the signalized intersections of Thorn Run and Ambulance Way and enters back into the State ROW, using the SR51 roadway shoulder between Ambulance Way and the Sewickley Bridge.

General Design Considerations-

The trail alignment will be signed and marked for safety at crossings and for a share the road condition and/or bike lane condition along roadways. The alignment will also be signed for trail way-finding.

The alignment will consider ADA accessibility and safety improvements for trail users, both pedestrians and cyclists, and will consider safety and traffic calming devices for motorists.

Task - Environmental

Objective:

The completion of a Level 1A CEE document; the package documents are to be created by the District and edited by the consultant.

Scope:

Level 1A CEE document completion and submission for approval. This task includes the following sub tasks:

1. Submission of a draft review for approval- notify Mr. Tyler Mercer at District
2. The scope also includes completion of Section 106 resources for P&LE RR and Montour RR, and coordination with the District Cultural Resource Professionals. The project may require completion of Section 4(f) checklist if the project enters Section 106 properties. At this time, the project is not anticipated to enter these properties.

3. Public notification will be mailed to affected municipality to solicit input relative to the project; any public coordination will be provided to the Department.

Task - Field Survey

Objective:

This includes Field survey for utilities, roadways, sidewalks, curb ramps, and pedestrian crossings to establish location, actual road widths (curb to curb and back of walk to back of walk), topography and elevations along 4th, 5th Avenues from Ferree Street to Thorn Run; and along State Route 51 between Thorn Run and the Sewickley Bridge.

Field survey will include the properties along the north shoulder of SR51 between Thorn Run and Ambulance Way, the existing road culvert at 4th Avenue and Thorn Run, and the southern shoulder of SR51 between Ambulance Way and the Sewickley Bridge. Manual field survey will be performed for this project in accordance with Field Survey Manual Publication 122M and Form 442. GPS equipment will be utilized to establish horizontal and vertical control for this project. Horizontal coordinates will be based on North American Datum of 1983 (NAD 83), PA State Plane Coordinate System, South Zone, SPC (3702 PA S). Vertical control will be based on North American Vertical Datum of 1988 (NAVD 88).

Mackin will obtain record highway plans from PennDOT and re-establish the legal right-of-way for 4th Avenue, 5th Avenue and S.R. 0051 as needed for the project. Research will also be performed at the Allegheny County Courthouse if necessary to obtain tax maps, deeds and recorded Plan of Lots that will help determine boundary lines within the project limits. Properties adjacent to the project will be indicated with the Parcel ID No. and/or the owner names.

Scope:

Development of a field survey base map including the following tasks:

1. Field survey and office services to perform and prepare a three dimensional topographic survey for above described alignment
2. Traffic control during field work
3. PA Utility One Call and utility company contact
4. Set permanent control
5. Set survey benchmarks
6. Line and grade
7. Cross sections
8. Thorn Run Culvert Survey

Task - Utilities

Mackin will contact Pennsylvania One-Call for all utility companies having facilities in the subject area to identify their location. Throughout the design phase, utilities will be coordinated with to assure conflict resolution prior to going to construction.

Objective:

This task involves project specific work requirements for utility relocation engineering activities- **NONE ANTICIPATED**

Scope:

PA One Call shall be performed and updated at least every ninety (90) days.

Coordination with public utility company representative shall be maintained throughout the project design duration. Utility coordination begins with the issuance of the project notification letter to the utilities and ends when all utility involvement issues have been adequately settled to allow project construction.

Task - Right Of Way (ROW)

Objective:

This includes completing a property boundary survey for adjacent properties along the north shoulder of SR51 between Thorn Run and Ambulance Way.

The Borough of Coraopolis will complete ROW agreements between the trail and the adjacent property owners. The borough is to supply Mackin with final agreements and copy of the deeds. Mackin will provide boundary plans for the parcel agreements.

Discussions with Mr. Bill Sweterlitsch of the ORT were that ROW agreements are on file for Tri-State Hose and Supply and American Bridge. To date, outstanding agreements remain for the Duquesne Light Company, Ambulance Authority, Moon Township Municipal Authority, and Moon Township. The ORT, Mr. Bill Sweterlitsch, indicated all owners have been contacted and are ready to coordinate agreements once the final trail alignment is known.

Scope:

This task is for the development of ROW and includes the following:

Mackin will provide property boundary plans to the project sponsor for the completion of the land agreements.

Task - Geotechnical Investigation

Objective:

This includes completion of geotechnical investigation of materials at locations of new structures and along the off-road trail alignment. The completed report will provide designers with data and recommendations for foundation and trail pavement design.

New structures are anticipated at the Thorn Run stream crossing and the overhead sign relocation at the south shoulder of SR51 west of Ambulance Way. Additional recommendations will be provided for trail pavement for the off-road trail segment between the intersection at Thorn Run Road and Ambulance Way, along the north shoulder of SR51.

Scope:

This task is for the development of a Geotechnical Investigation and Report and includes the following:

1. 2 borings minimum near back wall area of stream crossing
2. 2 borings minimum for overhead sign relocation
3. 3 borings minimum for trail and pavement recommendation

Deliverables will be submitted via digital reports (.pdf) to Coraopolis and PennDOT.

Task - Preliminary Design

Objective:

This includes safety and ADA accessibility review, trail alignment layout, pavement design, signing and pavement markings, and typical cross-sections.

Below are items to be considered in the trail connector project:

The connector in Coraopolis is an on-road bike route for 4th and 5th Avenues. These roadways are State Route 51 and marked as PA Bicycle Route A. The project would include adding signing and pavement markings for a bicycle shared lane marking system (sharrows) and/or bike lanes. 4th Avenue is a one way, westbound, 2 lane road with parallel parking on each side, and a posted speed of 35 mph. 5th Avenue is a one way eastbound, single lane road with parallel parking on each side, and a posted limit of 25 mph.

- **Speed Management and Traffic Calming**

- The Borough of Coraopolis is to submit a request for a speed study for 4th Avenue to reduce the speed (equal to that of 5th Ave).
5th Avenue is posted at 25 mph; and 4th Ave. is posted as 35 mph. 4th Avenue is part of the same community street system, with same pedestrian crossings, is marked as PA Bicycle Route A, and is planned to be marked with bicycle sharrows and/or bike lanes for the Ohio River Trail Connector.
- Roadway delineation of lane widths and parking spaces is recommended to increase safety, calm traffic, and manage speeds to the posted limits. This is very important for the safety of all people who live in the area- for drivers, walkers and bicyclists.
- According to the Borough Manager, the Borough of Coraopolis has a separate project for the installation of pedestrian facilities at the existing pedestrian crossings along 4th Avenue (this is not part of the ORT South Shore Phase-1 scope). And, that PennDOT does plan on paving 5th Avenue with asphalt in 2015. The delineation of travel lanes on 5th, parking spaces, crosswalks, and bicycle markings should be coordinated with this project.

- **Bike Lane and Bike Shared Lane Markings (SLM's)** The project is to include delineating the roadway with the following:

- Lane width reconfiguration delineated parking spaces, bicycle route markings and signs, regulatory and warning signs. It is recommended that both 4th and 5th Avenues are marked to better delineate travel lanes and adjacent parking spaces.
- Primary Route signing and pavement markings will be considered for both 4th (westbound) and 5th Avenues (eastbound) marked and signed with SLMs. Currently both roadways are designated as PA Bike Route A.
- Alternate Route signing and pavement markings will be considered as an alternate alignment for travelers along lower ADT routes using Broadway to 1st Ave, to Birch to Watt and back to 4th. This will provide a route with less auto traffic for most trail users.

- Along 5th Avenue, an eastbound buffered bike lane may be considered between Thorn Run (park-n-ride) and Chess Street. This would provide safety for cyclist and not impact the current lane configuration.
- Delineation of travel lanes, parking spaces, and a bicycle sharrow marking is proposed for the remaining 5th Avenue to Ferree Street.
- **Pedestrian Crossings and ADA accessibility**
 - Install pedestrian crossing improvements at the following three traffic signals:
 - Thorn Run/SR 51- pavement markings and pedestrian push button signs.
 - Ambulance Way/SR 51- pavement markings and pedestrian push button signs.
 - Sewickley Bridge/SR 51- pavement markings and pedestrian push button signs, new push button, guide rail modifications, curb ramp at bridge sidewalk.
- **Trail Design for a separated two-way bicycle and walking trail; between Thorn Run and Ambulance Way** along the north side of SR51/University Boulevard
 - The separated trail will be designed for pedestrians and cyclists. Safety fencing and/or privacy buffers will be considered between the trail and private property.
 - Paved trail aprons may be installed to eliminate tracking of stone dust onto roadways, to control skidding and stopping distance for cyclists, and to apply safety and travel lane markings at stop conditions.
 - Access treatments may be considered to control vehicle use on trail. Access gate, fence or bollards will be provided for emergency and maintenance use only.
- **2-Way Bicycle Lane Design for a protected/separated bike lane between Ambulance Way and the Sewickley Bridge** along the south side of SR51/University Boulevard
 - The trail will be designed for two-way bicycle traffic to accommodate cyclists.
 - Alternative designs for safety barrier, between the trail and roadway may be considered.
 - This section must consider drainage and the roadway setback for the barrier that divides the road and bike lane.
 - This section of trail may be paved with asphalt to control drainage and to delineate the two-way, separated bike lane.
- **Drainage Design**
 - Drainage improvements are necessary along a portion of SR51 (south side of SR51) between Ambulance Way and the Sewickley Bridge.
 - Alternate typical sections will be explored to provide drainage and bike lane design.
 - Alternate designs will be based on construction methods, roadway impacts, economical solutions, and best practices to accommodate a safe pedestrian-bicycle facility, drainage, and a barrier between road and bike lane.

Scope:

Preliminary Design Activities

This task is for the development of Preliminary Plans and includes the following sub tasks:

1. Typical Sections
2. Cross Sections
3. Drainage Design
4. Preliminary Pavement Marking and Sign Design
5. Preliminary Signal Modification Design
6. Constructability Review
7. Safety Review/Audit/Sight Distances Triangles
8. Complete design exception(s) as Per Appendix F of the Design Manual Part 1A (if needed)

Preliminary Plan sets to include:

- | | |
|--------------------------------------|---|
| 1. Title Sheet- | 1 |
| 2. Index Sheet- | 1 |
| 3. Location and General Notes Sheet- | 1 |
| 4. Typical Sections Sheet- | 1 |
| 5. Details Sheet- | 3 |
| 6. Summary of Quantities Sheet- | 1 |
| 7. Tabulation of Quantities Sheet- | 2 |
| 8. Plan Sheets- | 6 |

Task - Erosion and Sedimentation Control Plan

Objective:

This task is the development of the Erosion & Sedimentation Control Plan. It is our understanding that a National Pollution Discharge Elimination System (NPDES) - A General NPDES permit will not be necessary since the estimated project disturbance is under 1-acre and the project does not include a point source discharge. Most of the project is within road ROW, on-road or in road shoulder.

Scope:

Erosion and Sedimentation Control Plan

The Erosion and Sediment Pollution Control Plans and supporting documentation shall be submitted to the applicable Engineering District for review and approval. Upon acceptance of the plans by the District, the submission will be forwarded to the County Conservation District for review and approval.

Erosion and Sedimentation Control Plans to include:

- Cover sheet
- Location map
- Topography of the area including watershed areas and watercourses receiving runoff from the project
- Proposed alterations to the area/corridor
- Limits of the project
- The location of all temporary and permanent erosion and sediment pollution control

- measures and facilities
- All pertinent erosion control and construction details

Task - Permits

1. Traffic Signal Permits (for pedestrian upgrades and mast arm relocation)
2. Highway Occupancy Agreement for work within ROW and crossing SR ROW
3. PA Department of Environmental Protection General Permit

GP-11 Permit

This task will consist of the preparation of a waterway permit application to be submitted to PADEP in accordance with the general requirements of Chapter 105 Water Obstructions and Encroachment General Permit Registration. A GP-11 permit is anticipated to be applicable because no reduction in the existing waterway opening is expected.

Mackin will produce the following items for attachment to the GP-11 Permit Application:

- General Permit Registration
- PASPGP-4 Impact Form with worksheets
- Location Map
- Color Photographs
- Stream name and Chapter 93 Classification
- Project Description
- Preliminary Structure Plan
- Project Cross Sections
- Project Site Plan
- Erosion and Sedimentation Control Plan (E&S Plan)
- Written directions to project site
- PNDI Search Receipt
- Bog Turtle Habitat Screening Form
- Wetland impacts (or data sheets and photographs if no wetlands are present)
- Project Inventory Worksheet
- Bridge and/or Culvert replacement Projects Worksheet

Task - Traffic Control Plan

Objective:

This task is the development of the final traffic control plan. PennDOT Publication 14M, Design Manual 3: Plans Presentation; the Manual on Uniform Traffic Control Devices (MUTCD); and PennDOT Publication 213 will be utilized for this task.

Scope:

It is our understanding that Traffic Control Plans will not be necessary. Instead, Traffic Control will be completed as a specification which will refer the contractor to utilize PennDOT Publication 213 standard PATA figures.

Task –Structure Design Plans

Objective:

A structure is necessary westbound along 4th Avenue, to span the Thorn Run tributary and create a separated & safe trail adjacent to the narrow roadway. The type of structure will be explored based on construction methods, roadway impacts, economic solutions and best practices for pedestrian-bicycle accommodation.

At this time, possible solutions may include:

1. Concrete culvert extension
2. Pre-cast concrete planking and sleeper slab foundation behind existing wing walls
3. Cast in place (CIP) deck

The relocation of an overhead sign structure and mast arm is also necessary to provide clearance for the proposed bike lane on the south side of SR 51 near Ambulance Way.

- A General Permit (GP-11) may be necessary for culvert extension construction.
- Geotechnical investigation may be necessary for foundation support for culvert and sign relocation.

Scope:

Type, Size and Location (TS&L) Study

Mackin Engineering will prepare drawings (Plan Views and Cross Sections), cost estimates and a brief report describing the costs and benefits for two or three alternative structure types.

In addition, Mackin Engineering will prepare Contract Special Provisions and an Engineer's Cost Estimate for the final structure. These items will also be thoroughly checked.

Once the bid documents are complete, a Senior Engineer will perform a quality assurance review on the entire package, including calculations, drawings, special provisions, quantities and cost estimate.

Final Design

Mackin Engineering will design the culvert extension to carry pedestrian live load only. The existing traffic barrier is to remain in place and access control will be installed on the new structure, therefore vehicular traffic will not have access onto the extension.

Mackin Engineering will prepare Final Structure Plans for the new structure.

The final submission will include:

- General Plan
- Special Details
- Quantities
- Special Provisions
- Cost Estimate

All designs will be thoroughly checked.

It is assumed that eight (8) sheets will be required to fully detail the culvert extension, modifications to existing wing walls and railing.

Construction Consultation

Mackin Engineering will provide Construction Consultation services for the Contractor. Mackin Engineering will develop solutions if there is any field conditions encountered that would prevent the Contractor from constructing the culvert according to the plan. Mackin will also respond to any Requests For Information (RFIs) posed by the Contractor.

Shop Drawings

Mackin will review Shop Drawings for any prefabricated elements that are included on the Structure Plans, including the culvert extension and possibly pedestrian railing.

Task – Final Signing and Pavement Marking Plan

Objective:

Signing and Pavement Marking Plans will be completed as a supplement to the trail alignment plan using MUTCD standards and PennDOT Publication 111 TC standards.

Scope:

Signing and Wayfinding for trail users (walkers and cyclists)

- Signing and pavement markings will be shown on the trail alignment, including stop signs, warning signs, stop bars, center lines, etc.
 - Signing and pavement markings will also be included to provide for safe crossings of roadways, including providing warning signs and pavement markings on cross streets. When the trail is located on an existing roadway, shared lane markings (sharrows), share the road signs and/or bike lane pavement markings and signs will be shown on the plans.
- Wayfinding signs, appropriately marked and placed, are an important component to bring consumers to the local businesses and services.
 - A feature benefit of the trail is to provide economic activity from trail users and cycling commuters.
 - Wayfinding signs will be depicted on the same plan set.
- Alternate routes may be signed for trail users not comfortable traveling along 4th and 5th Avenues. The alternate routes will first be coordinated with the project sponsor. Share the road systems are anticipated along alternative routes since they will be using lower ADT and lower posted speed roadways.

This task is the development of the signing and pavement marking plan.

The final submission will include:

- General Plan
- Special Details
- Quantities
- Specifications

The pavement marking and delineation plan will be incorporated with the signing plan as one plan set.

Task - Final Design and Construction Document Production

Objective:

This task is the preparation of PS&E submission to project sponsor and PennDOT District 11-0. This includes completion of plans, drainage, layout, details, specifications, quantities, cost estimates, and response to review comments by agencies, project sponsor and PennDOT.

The final package will be submitted to Coraopolis and the District for final review; refer to deliverables of products.

Scope:

When final approval is received for typical sections, the construction plans, including tabulation sheets will be prepared. Plans, including general notes and standard drawing references will be submitted to the Coraopolis and the PennDOT for review and approval.

After receipt of final comments, the completion of final plans will commence.

DELIVERABLES:

Preliminary Engineering

Plan Check / Pre-Final Submission

2-sets of draft plans to Coraopolis

2- sets to Coraopolis along with PDF digital set to PennDOT

Final Engineering

Final Submission

2-full size print sets to Coraopolis; and PDF digital set

4 -half size print sets and PDF digital set the Coraopolis and PennDOT

Digital information will be provided in a pdf, or .dxf format or as requested by the Coraopolis and PennDOT.

Contract Documents

Contract Documents will include writing construction technical specifications for the construction items, construction cost estimate based on estimated construction quantities, prepare and write construction contract general conditions, special conditions and bid requirements.

Bidding Services

Mackin will prepare documentation to successfully request bids for the construction of the associated improvements including the conduction of a pre-bid meeting, the receipt and opening of the bids, review of the bids to confirm bidding compliance and recommend to the Client, the award to the successful bidder.

Construction Management and Construction Inspection (CM-CI) Services-

Mackin Engineering Company can provide a scope of work to conduct CM-CI services for the project once the final design and engineering contract is underway and the final construction items and

methods are understood.

Task - Project Management/Administration

Objective:

This task consists of the administrative effort required by project manager, and involved personnel to complete the project on time and within budget, and to provide a quality product. The project includes submission of construction documents for purposes of public bidding for the construction of the trail alignment improvement project.

Scope:

Project Management involves the planning, scheduling, organizing and controlling of resources to achieve specific objectives within established schedule, budget and quality standards. The Project Manager is responsible for the tasks outlined below:

Detailed Task - Project Management/Administration

Project management duties will be in accordance with main task.

- It is our understanding that one (1) meeting will be necessary for the Preliminary Engineering phase and two (2) meetings for Final Engineering phase.

- Additional meetings and management coordination will be completed through phone conferences and/or emails for project status, coordination and document review.

- One (1) additional meeting is proposed for the Pre-Bid meeting.

- If design consultation services are required during construction, this work will be negotiated once the final documents are complete.

PROPOSAL UNDERSTANDING

1. It is anticipated that the Coraopolis (the project sponsor) and/or the State DOT is the landowner or a qualified agent of the landowner and can provide Mackin with access to the land for survey and investigation. This Scope of Work does not include negotiations for land access, right-of-way, or easements with neighboring properties.
2. The project sponsor is responsible for payment of permit fees, regulatory agency review fees, or other associated costs.
3. The scope of work does not include retaining wall design, structural repairs, or geotechnical investigation services unless otherwise listed and described herein.
4. The scope of work does not include hazardous waste investigation, mitigation, or removal; or wetland investigation services.