

CITY OF HIGH POINT

AGENDA ITEM



Title: Ray/Hospital Stormwater Study & Preliminary Design

From: Terry Houk – Public Services Director
Robby Stone – Asst. Director Public Services

Meeting Date: March 18, 2019

Public Hearing: N/A

Advertising Date: N/A
Advertised By: On-Call

Attachments: Attachment A – Scope of Services
Attachment B – Fee Summary

PURPOSE:

The City has focused on stormwater improvement projects to address excessive flooding. There is significant data indicating severe flooding within this stormwater basin. Preliminary engineering analysis has been performed to identify the optimal solution. This project will allow for final engineering analysis and design for construction improvements to best serve those impacted within the stormwater basin.

BACKGROUND:

The professional engineering services to be provided for this project involve work associated with project administration, field surveys, subsurface engineering, geotechnical subsurface investigations, design of recommended storm drainage improvements, utility coordination and design, traffic control plans and approvals, erosion control plans, contract document preparation, stormwater permits, property and storm drainage acquisition, preliminary design and real estate submittals, public meetings, final design submittals, and structural engineering. These tasks are anticipated to take approximately one year and nine months to complete.

BUDGET IMPACT:

Funds for the construction administration are in the Stormwater Funds.

RECOMMENDATION / ACTION REQUESTED:

The Public Services Department is requesting that City Council award the professional engineering services to WK Dickson & Co., Inc. in the amount of \$690,189.00 for this project.



Ray Street flooding



Fee Summary

Consultant: WK Dickson

Project: Task Order #2 - West Ray Drainage Improvements

Date: 3/07/2019

Task Number	Task Description	Task Total
	Total Fee	\$ 690,189.00
1.0	Project Administration	\$ 40,260.00
2.0	Field Surveys	\$ 115,145.00
3.0	Subsurface Engineering Work	\$ 46,380.00
4.0	Geotechnical Subsurface Investigations	\$ 19,890.00
5.0	Design of Recommended Storm Drainage Improvements	\$ 23,080.00
6.0	Utility Coordination and Design	\$ 58,188.00
7.0	Traffic Control Plans and Approvals	\$ 14,100.00
8.0	Erosion Control Plans, Details, Narrative, and Specifications	\$ 13,620.00
9.0	Contract Document Preparation	\$ 28,770.00
10.0	Stormwater Permits	\$ 8,360.00
11.0	Property and Storm Drainage Acquisition Assistance	\$ 49,740.00
12.0	Preliminary Design and Real Estate Submittals	\$ 88,256.00
13.0	Public Meeting	\$ 27,750.00
14.0	Final Design Submittal	\$ 81,650.00
15.0	Specified Structural Services	\$ 30,000.00
16.0	Unspecified Additional Services	\$ 30,000.00
17.0	Project Reimbursables	\$ 15,000.00



March 8, 2019

Robby D. Stone, PE
Public Services Assistant Director
211 South Hamilton Street
High Point, NC

RE: Supplemental Project Authorization
Task Order #2
West Ray Design Phase

Dear Mr. Stone:

W.K. Dickson & Co., Inc. (WKD) is pleased to submit this scope of services for the supplemental project authorization for the West Ray Drainage Improvements. This letter includes a project description, scope of services, schedule and compensation.

In accordance with the Master Agreement for On-Call Professional Engineering Services dated March 29, 2018, between City of High Point (hereinafter called 'the OWNER') and W.K. Dickson & Co., Inc., (hereinafter called 'the ENGINEER'), the OWNER hereby authorizes ENGINEER to proceed and ENGINEER agrees to perform in accordance with the terms of the Master Agreement and this Supplemental Agreement, the following services for the following Task Order #2:

PROJECT DESCRIPTION:

The City of High Point selected WK Dickson to review previously completed studies for the West Ray project area that included large scale system improvements. The purpose was to identify an innovative modeling approach to help find the optimum balance of improvements to the storm drainage system while keeping capital expenditures down. The current report evaluated existing storm drainage systems that were close to meeting the system requirements and carefully choosing portions of the system to remain if the minor flooding was acceptable.

Currently, the southeastern portion of the West Ray project area is being redeveloped as part of a separate project, the High Point Multi-Use Stadium Utilities Improvement Project. The predicted increases to peak flows downstream of the Stadium project were considered as part of the Design Alternative Analysis for the West Ray Study.

The final alternative for drainage improvements includes:

- Installation of a bypass network connecting the existing drainage network at the High Point Regional Hospital northern parking lot (Ambulance Entrance) with the newly installed 60" RCP crossing North Lindsay Street, continuing with a 60" RCP along West Ray Avenue and discharging downstream of the Council Street culvert crossing.
- Only minimal maintenance improvements will be completed in the High Point Medical Center parking lot system; therefore, minimal to no disruption to the professional offices.
- No changes to the existing culvert at Council Street are recommended.
- Minor stream bank grading will be required from the downstream end of Council Park through the Central Friends Church at 800 Quaker Lane.
- Both driveway culverts at 901 and 909 will need to be replaced by twenty-foot span bridges.
- Raise the roadway elevation of West Ray Avenue between the driveway connections for 901 and 909 West Ray Avenue.
- No changes to the existing culvert at West Rotary Drive are recommended.

The scope for Task Order 2 will include the following:

SCOPE:

TASK 1. PROJECT ADMINISTRATION

The following project management efforts will be conducted in coordination with the Engineer:

1.1 MONTHLY STATUS MEETINGS

- a. Monthly status meetings shall be held by the Project Manager and the ENGINEER during the course of the Project. Items discussed during the monthly status meetings include, but are not limited to, progress reports, invoices, technical/policy interpretations, anticipated project goals/challenges, etc. The meetings may also be used to present, discuss, and/or review work-in-progress as required by the Project Manager. The ENGINEER or

Project Manager shall schedule the meetings. The Project Manager reserves the right to cancel or call for additional meetings as deemed necessary.

b. The ENGINEER shall prepare and submit minutes of these meetings to the Project Manager within ten (10) calendar days.

1.2 MONTHLY STATUS REPORTS

Monthly progress reports are due at the end of each month and shall accompany each invoice. The ENGINEER shall prepare monthly status reports and deliver the reports to the Project Manager a minimum of three (3) business days prior to the monthly status meeting or by the last working day of the month, if a meeting is not held. The status report shall summarize work completed, percent of work complete to date compared to the ENGINEER's current estimate of total work required, the work scheduled to be completed for the upcoming month and identify any outstanding issues or decisions that must be resolved by City staff or the project team. The OWNER will provide the ENGINEER with a standard format for the progress report. At the request of the Project Manager, the ENGINEER shall make all plans and Project work available for review and examination by City staff.

1.3 PROJECT SCHEDULE

Prepare and submit a project schedule for review and approval by the OWNER. The schedule shall be broken down by work tasks and submittal events. This schedule will be used as a project control system and as a basis for status reporting.

TASK 2. FIELD SURVEYS

The Engineer shall perform a survey of the drainage system and surrounding area along the proposed work corridor as necessary for the completion for the base survey to be used for the proposed design plans for the West Ray Drainage Improvements. All horizontal surveys shall be tied to the North Carolina State Plane Coordinate System (North American Datum 1983) and all vertical surveys shall be based on the North American Vertical Geodetic Datum of 1988 (Sea Level). The survey shall comply with the standards of a Class A survey as detailed in the Standards of Practice for Land Surveying in North Carolina, Amended August 1, 2000, or latest revision.

2.1 SURVEY NOTIFICATIONS

ENGINEER shall provide a list of properties affected by field surveys. The OWNER will notify the citizens in the Project area of upcoming survey work. Should property owners ask questions about the project the ENGINEER shall refer the property owners to the Project Manager:

Trevor Spencer, PE
Project Manager
City of High Point
Public Services
Office: 336.883.4744
Email: trevor.spencer@highpointnc.gov

2.2 DETAILED LOCATION AND DESIGN SURVEY

The ENGINEER shall be responsible for identifying field survey data necessary to complete the Design Phase of the Project. The detailed survey shall include sufficient data within the agreed limits of the existing drainage system area as described above and labeled to:

- a. Model the existing systems;
- b. Coordinate public and private existing above and below ground utilities;
- c. Propose and analyze alternatives;
- d. Produce base mapping for final design plans;
- e. Produce easement exhibits and plats; and
- f. Produce a digital topographic map with contours at a minimum of 1' intervals.

At a minimum, the survey shall include the following:

- a. Elevations at all inverts and other dimensions of any significant hydraulic restriction or system element including culverts, bridges, pedestrian bridges, aerial utility lines, and low water crossings;
- b. Location, height, and profiles of all elements, such as guardrail or handrail, adequate to perform overtopping analysis on all significant hydraulic elements;
- c. Channel/floodplain information including centerline, low point (thalweg), toe and top of bank elevation, any major change in slope of bank at locations (minimum every 50 feet) such that an accurate channel/floodplain plan view and profile can be generated (all major changes in slope, cross-section, and direction of the channel/floodplain must be captured). Each channel cross-section shall have at least five points within and inclusive of the channel banks and shall have a minimum of two points outside the channel banks on each side of the channel;
- d. Elevations along the road centerlines, edge of pavement, and curb lines (left and right) adequate to produce profiles suitable for accurate modeling and design;
- e. Locations of storm drain pipes and drainage structures including sizes, shapes, material, invert elevations, and rim/grate elevations;
- f. Locations of sanitary sewer pipes and sewer structures including sizes, materials, invert elevations, and rim elevations, including the next upstream or downstream manholes;

- g. Horizontal locations and sizes of all underground and overhead utilities (water, sewer, gas, electric, telephone, cable, fiber optic, etc.) that may impact the planning and preliminary design analysis including: poles, lines, boxes, etc.;
- h. Vertical locations of underground utilities (water, sewer, gas, electric, telephone, cable, fiber optic, etc.), at agreed locations that may impact the final design plans will be performed shall be covered under scope for Subsurface Engineering Work.
- i. Include corners of all buildings and driveways for properties within the survey limits.
- j. Locations of other physical features that may be affected by construction of possible alternatives including driveways (type), fences (type), walls, signs, planters, sheds, rock outcroppings, etc. For sheds, note whether the structure is a permanent structure and if it has electricity;
- k. Locations of all trees greater than, or equal to, 6" diameter (labeled with size and variety), ornamental trees of any size, any landscaped areas and/or any forested areas/tree lines within the projected work area;
- l. Locations of property lines to the extent necessary for purposes of overlaying and verifying legal descriptions and plats; and
- m. Description, book, and page number of the official registry of all properties affected by the Project, including current property owner name(s), tax parcel identification number, street address, existing property acquisitions, right-of-ways, and all existing recorded easements associated with the Project from the Register of Deeds. Results of deed research will be provided to the OWNER as part of the survey submittal.

2.3 FIELD SURVEY PROJECT ADMINISTRATION

Prior to acceptance and use of the survey, the ENGINEER shall perform a field review of the survey to verify that it is complete, accurate, and meets the requirements of the Project scope. ENGINEER will manage the project in a manner so as to be responsive to the needs and schedule of the OWNER and the ENGINEER and assure the quality of the product.

2.4 FINAL SURVEY SUBMITTAL

The ENGINEER shall submit draft hard copy survey drawings at a 1" = 20' scale (as an amendment to the current base files if applicable) and an electronic copy of the survey drawing to the OWNER for review and comment. The ENGINEER shall address OWNER comments and provide the final survey data to the OWNER in an electronic format and a reproducible copy. The electronic form shall be compatible with AutoCAD Civil 3D 2018 and shall include the digital drawing files, digital terrain model, and the points ASCII file.

A Professional Land Surveyor shall seal the reproducible copy and certify that it is a Class A survey. The drawing shall include all surveyed information, including control points. Information shall be distinguished by an adequate number of layers in accordance with the OWNER's standard layers and symbols.

TASK 3. SUBSURFACE ENGINEERING WORK

Subsurface Engineering work shall be completed as shown on Exhibit 2 (as shown in Exhibit 2, Areas A, B and C).

Subsurface Utility Designation and Location Services

The ENGINEER shall provide "Quality Level B" horizontal subsurface utility location data for the underground utilities. This includes Utility Research, Utility designating, Surveying and Mapping of the existing utilities within the project limits. The ENGINEER will use conventional conductive utility designating methods in order to detect and mark the location(s) of conductive lines. The ENGINEER will use Ground Penetrating Radar to attempt to detect and mark the location(s) of non-conductive lines.

Subsurface Utility Location (Vacuum Excavation)

The ENGINEER shall provide "Quality Level A" (vacuum excavations or soft digs) services for up to twenty (20) locations to be determined upon completion of the preliminary design. Precise horizontal and vertical information of the specified utility shall be provided to the OWNER as Certified Vacuum Excavation Reports for the specified test hole locations.

Survey Delivery Items

Final survey of Subsurface Engineering work shall be included in the effort for scope item Final Survey Submittal.

TASK 4. GEOTECHNICAL SUBSURFACE INVESTIGATIONS

The ENGINEER shall perform geotechnical subsurface investigations including foundation evaluation necessary for completion of the final construction plans and supporting documents after receiving written authorization from the Project Manager. These investigations shall include soil borings, analysis, laboratory testing, and engineering recommendations. A maximum of five (5) soil borings, six (6) hand augurs, ten (10) asphalt cores, and six (6) rock probes will be completed.

TASK 5. DESIGN OF RECOMMENDED STORM DRAINAGE IMPROVEMENTS

The ENGINEER shall update the previously sealed engineering report providing recommendations, concerns, and recommended improvements and project phasing. After meeting with the OWNER, the ENGINEER will finalize the engineering report which will include the chosen proposed improvements. See Project Assumptions specified within the Fee Breakout for further detail.

Once the OWNER has selected the chosen improvements, the ENGINEER shall develop construction plans and supporting documents that incorporate the chosen recommended improvements and the results of Tasks 2, 3, and 5 through 13 of this scope.

The recommended storm drainage improvements and limits of improvement areas are as summarized in Alternative 2 of the Sealed West Ray Study and Preliminary Design (January 2019).

5.1 STORM DRAINAGE IMPROVEMENTS DESIGN

The ENGINEER shall update the hydrologic and hydraulic analysis and calculations completed as part of the West Ray Study for the existing conditions and recommended storm drainage improvements based on the design survey completed in Task 2. The ENGINEER shall avoid modeling private drainage systems unless critical to the accuracy of the upstream or downstream public drainage system. Anticipated drainage improvements include the following:

- Install approximately 400 linear feet of 60" RCP along West Ray Avenue east of Lindsay Street;
- Install approximately 1,400 linear feet of 60" RCP along West Ray Avenue between Lindsay Street and Council Street and along Council Street to tie to existing system;
- Install approximately 300 linear feet of floodplain benching along West Ray Avenue;
- Replace driveway bridge 901 West Ray Avenue;
- Replace driveway bridge at 909 West Ray Avenue. This bridge replacement will be reevaluated to determine if bridge can be left in place
- Raise roadway elevation approximately 18" along a portion of West Ray Avenue west of Vera Court; and
- Replace drainage infrastructure south of Vera Court to confluence with drainage system along West Ray Avenue.

5.2 STORM DRAINAGE CONSTRUCTION PLANS & SUPPORTING DOCUMENTS

The ENGINEER shall prepare and complete construction plans and supporting documents for the recommended storm drainage improvements based on the refinement of the improvements during the Planning Phase and the results of subtasks 5.1. The improvements shall be identified on 1/2 plan and 1/2 profile sheets at a scale of 1"=20' horizontal and 1"=4' vertical, and cross-sections sheets

at a scale of 1" = 5', or as directed by the OWNER. Preliminary and Final Submittals of these construction plans and documents are included in Tasks 12 and 14. Changes to existing subdivision streets, storm drainage and City owned utilities as required for the construction of the Project shall be designed by the ENGINEER to assure a level of service acceptable to the OWNER. The proposed storm drainage improvement construction plans and documents (including restoration and enhancement improvements) shall be sealed by a registered Professional Engineer and shall include, but not limited to, the following:

- a. Cover Sheet listing the project name, City project number, vicinity map, project features, public improvement quantities, scale, legend, sheet layout, index of sheets, specification reference; and approvals;
- b. General Notes sheet including general notes for physical features, materials, etc.; abbreviations; standards; any standard notes provided by the OWNER; etc.;
- c. Finalize and complete the location and design of storm drainage structures including details for non-standard structures. All storm drainage structure design shall conform to current City of High Point and NCDOT Specifications.
- d. The ENGINEER shall use City of High Point Standard Detail Drawings for normal culverts and roadway storm drainage systems. The ENGINEER can use NCDOT details if no appropriate City of High Point standard detail is available, or when designing in the NCDOT right of way.
- e. The ENGINEER shall develop drainage details and other design items for endwalls, junction boxes, footings, channel improvement typical details, driveway tie-in, asphalt replacement, pipe trench, etc. Structural details for proposed non-NCDOT standard drainage structures shall be excluded from the main scope items. Upon approval by the City Project Manager, specific structural engineering services will be provided under the unspecified additional services phase.
- f. Plan and Profile sheets with the location (plan and profile) of all proposed storm drainage features (channels, pipes, structures, manholes, drop inlets, energy dissipaters, etc.). All proposed storm drainage alignments shall include an independent profile. Plans to include:
 - 1) Existing and proposed improvements identified and labeled on the plans shall include length, size, inverts, rims, structure dimensions, and type of material, slope, and detail number. The method of construction, either brick / block, precast concrete or cast-in-place concrete, shall be stated on the plans.
 - 2) For culverts or bridges, the culvert opening size or span arrangement for the site shall be indicated on the plans, along with overall plan and elevation views and typical section(s);
 - 3) All existing and proposed conditions including construction work areas, roadways, structures, public and private utilities, vegetation, fences, etc. Plans shall

also indicate which existing features may be impacted by construction (fences, trees, sheds, etc.) and the party responsible for removal and/or re-establishment.

4) Identification of proposed removal, replacements, or installations for existing and proposed features that will be affected by the construction of proposed improvements such as curb and gutter, sidewalk, fence, driveway, asphalt replacement, vegetation, sheds, etc. Labels must be included indicating the responsible party for removal and/or re-establishment that include length, size, material, and detail number (if applicable). Vegetation and trees greater than 6" in diameter and all ornamental vegetation within the easement and work areas shall be designated as removed or protected.

5) Update property owner information per the best available data and shall include the updated information on the construction plans. The plans shall show the existing deed title lines, existing and proposed right-of-way lines, proposed property lines, existing and proposed easements, and proposed temporary construction easements. Fee simple, right-of-way and/or easements shall be sufficient to encompass all improvements, including landscaping. For each property, the City tax code designation, the deed book and page number, parcel number, and street address as well as names of all property owners shall be shown.

6) Establish and complete the limits of construction, cut/fill lines, temporary construction easements, and permanent easements.

- g. Cross-sections and typical cross sections of open channels showing existing and proposed dimensions, including oversized modular block walls and other bank stabilization techniques to determine cut and fill quantities;
- h. Planting Plans and Details: Plans and all associated details for vegetative planting plans, number, species, etc.
- i. Refined and completed hydrologic/hydraulic analysis for the recommended improvements. The refined analysis shall include the supplemental survey data as necessary and as directed by the Project Manager.

TASK 6. UTILITY COORDINATION AND DESIGN

The Utility Coordination efforts during the Design Phase shall at a minimum identify, address, and/or resolve all utility conflicts and required public utility easements associated with the construction of the recommended drainage improvements. This task also includes the design of public utilities relocations, the development of construction plans and supporting documents if required, along with the coordination of private utilities.

The OWNER's Project Manager should be copied on all correspondence or communications between the ENGINEER and any agency or utility owner or representative.

6.1 PUBLIC UTILITY COORDINATION

The ENGINEER shall coordinate with City of High Point Public Services when both existing and proposed utilities may be affected by the Project. The recommended storm drainage improvements and public utility relocations shall be designed with the goal of minimizing conflicts with all utilities. All utility conflicts shall be resolved in a timely manner prior to the completion of the construction plans.

6.2 UTILITY RELOCATION DESIGN

The ENGINEER shall coordinate and design the resolution of minor and major relocations and all incidental adjustments for existing City-owned utilities (i.e., water, sewer) as required for construction of the recommended improvements for the Project and as directed by the Project Manager. The design of water and sewer improvements shall adhere to City of High Point Policies, Procedures, Standards and Specifications.

6.3 UTILITY RELOCATION CONSTRUCTION PLANS & SUPPORTING DOCUMENTS

The ENGINEER shall prepare construction plans and supporting documents for all existing City-owned water and sewer public utilities that will be relocated, removed, or adjusted as part of the Project. The construction plans and documents will be submitted for OWNER and agency review to gain approvals and permits.

The ENGINEER shall include all proposed water and sewer public utility relocations, installations, removals, and adjustments on the construction plans and obtain approval from the OWNER. Preliminary and Final Submittals of these plans and documents are described in Tasks 12 and 14.

The utility relocation plans and supporting documents shall be sealed by a registered Professional Engineer and shall include, but are not limited to, the following:

- a. Minor relocations, installations, removals, and adjustments for City-owned water and sewer utilities shall be included on the storm drainage improvements plan and profile sheets or as required by City of High Point Public Services. Minor relocations do not include changes in the utility capacity or provide new service.
- b. Major relocations, installations and removals, for City-owned water and sewer utilities shall be shown on separate plan and profile sheets as required by City of High Point Public Services. The construction plans and supporting documents for major water and sewer relocations and installations shall include plan sheets at a scale of 1" = 20' horizontal and

profile sheets at a scale of 1" = 4' vertical (if required), and as directed by the City of High Point Public Services.

- c. Detail sheets for the proposed City-owned utilities as required by the Public Services and/or the Project Manager.
- d. A construction cost estimate for the City-owned relocations including quantity take-offs in the City Standard format (included in overall construction estimate).

6.4 PRIVATE UTILITY AND CITY OWNED ELECTRICAL COORDINATION

The ENGINEER shall attempt to identify all private utilities, agencies, and City-owned electrical infrastructure whose facilities (both existing and proposed) may be affected by the Project. The recommended storm drainage improvements and water and sewer utility relocations shall be designed with the goal of minimizing conflicts with all services. All utility conflicts shall be resolved in a timely manner prior to the completion of the construction plans. Private utility coordination shall include, but is not limited, to the following tasks:

- a. The ENGINEER shall attend a minimum of three (3) field meetings with the private utilities and City-owned electrical infrastructure: one meeting after the Preliminary Submittal, 70% Submittal and the Final Submittal.
- b. The ENGINEER shall request existing utility data/maps from the utility owners that define the location or description of existing utilities, easements of record, within the Project limits.
- c. The ENGINEER shall furnish information pertaining to recommended construction limits of disturbance and project improvements to utility owners. The ENGINEER shall consider the needs of the utilities during the design of the improvements.
- d. The ENGINEER shall work to resolve any conflicts (both private and public) identified. These resolutions shall be included in the design and/or shown on the construction plans, right-of-way plats, and easements exhibits.

TASK 7. TRAFFIC CONTROL PLANS AND APPROVALS

The ENGINEER shall coordinate with City of High Point Transportation Department to develop construction traffic control plans and supporting documents. The ENGINEER shall assist the OWNER in obtaining approval for the project and/or securing a NCDOT Encroachment or Municipal Agreement.

7.1 CITY OF HIGH POINT TRANSPORTATION DEPARTMENT COORDINATION

The ENGINEER shall coordinate with City of High Point Transportation Department to design proposed improvements with the goal of minimizing conflicts and disruption to existing roadways and maintaining ingress and egress to public and private properties during construction of the

recommended improvements. Coordination for traffic control shall include a minimum of one (1) meeting with City of High Point Transportation Department to discuss the recommended improvements and conceptual plan to perform traffic control during construction activities. The meeting shall occur during the development and design of the recommended improvements and before Task 11 - Preliminary Design and Real Estate Submittals. The Project Manager shall attend all meetings and shall be included on all correspondence or communications between the ENGINEER and City of High Point Transportation Department.

7.2 TRAFFIC CONTROL DESIGN

The ENGINEER shall prepare traffic control plans that include a phasing sequence listing work to be done in each phase, traffic control diagrams and details of each phase (NCDOT or consultant prepared drawing), and any special considerations, such as time limitations, hour of day limitations, or intermediate completion times/liquidated damages to construct the proposed improvements. The design must also address and include all traffic control devices, signs, restrictions, and pavement markings required during construction of the recommended improvements. The construction traffic control plans and documents will be submitted for OWNER and agency review to gain approvals and permits. Preliminary and Final Submittals of these plans and documents are included in Tasks 12 and 14.

The traffic control construction plans shall be sealed by a registered Professional ENGINEER and conform to the following:

- Manual of Uniform Traffic Control Devices for Streets and Highways (MUTCD), current as of the date Final Traffic Control plans are begun as prepared by the National Advisory Committee on Uniform Traffic Control Devices, including subsequent revisions;
- The current edition of the "North Carolina Supplement to the MUTCD, Part VI; NCDOT;
- "The State Policy and Procedure for Traffic Control Through Construction Work Zones"; and
- The current edition of the "Highway Design Branch Roadway Design Standards", with all subsequent revisions.

7.3 TRAFFIC CONTROL PLANS & SUPPORTING DOCUMENTS

The proposed traffic control construction plans and supporting documents shall include, but are not limited to, the following:

- a. Traffic Control General Notes sheet;
- b. Traffic Control Phasing sheet(s); and
- c. Traffic Control diagrams, symbols, and details at a scale to be approved by the Project Manager.

7.4 NCDOT ENCROACHMENT/MUNICIPAL AGREEMENT Omitted from the Scope.

TASK 8. EROSION CONTROL PLANS, DETAILS, NARRATIVE, AND SPECIFICATIONS

The ENGINEER shall coordinate with the City's Erosion Control Program to develop Erosion and Sedimentation Control construction plans and obtain approvals and applicable permit for the project.

8.1 COORDINATION

The ENGINEER shall coordinate with the City's Erosion Control Program with the goal of developing construction plans that will meet or exceed all applicable regulatory requirements and minimize erosion and control sedimentation during construction of the recommended improvements. Coordination for erosion control shall include a minimum of one (1) meeting and/or discussions with City staff discuss the proposed improvements and conceptual plan for addressing erosion control. The meetings shall occur during the development and design of the recommended improvements and before Task 11 - Preliminary Design and Real Estate Submittals. The Project Manager shall be included in the meetings and/or on all correspondence or communications between the ENGINEER and City Erosion Control staff.

8.2 EROSION CONTROL DESIGN

The ENGINEER shall design, specify, and include in the construction plans erosion control measures that meet or exceed all applicable regulatory requirements and prevent off-site sedimentation during construction of the Project. The design shall be in accordance with the requirements of the City's Erosion Control Program, NCDEQ, NC Erosion and Sediment Control Planning and Design Manual, and all applicable regulations.

8.3 EROSION CONTROL CONSTRUCTION PLANS & SUPPORTING DOCUMENTS

The ENGINEER shall prepare erosion control construction plans, calculations, and supporting documents for the team and agency review to gain approvals and permits. The ENGINEER shall show all erosion control measures and details on the plans. Preliminary and Final Submittals of these plans and documents are included in Task 11 and 13.

The erosion control plans and supporting documents shall be sealed by a registered Professional Engineer and include the following:

- a. Proposed Storm Drainage Improvement Plans;

- b. Erosion and Sedimentation Control Plans at a minimum scale of 1" = 40' or as approved by the Project Manager;
- c. Detail drawings and specifications;
- d. Vegetative Plan;
- e. Maintenance Plan;
- f. Construction schedule;
- g. Brief Narrative of the proposed improvements and erosion control measures;
- h. Project topographic map and soils data;
- i. Supporting calculations;
- j. Financial responsibility/ownership form;
- k. Checklist; and
- l. A construction cost estimate for erosion control including quantity take-offs in the City Standard format.

TASK 9. CONTRACT DOCUMENT PREPARATION

9.1 CONTRACT DOCUMENTS

The ENGINEER shall prepare thorough and complete Contract Documents to cover those items of material, work, and other conditions special to the Project. The OWNER shall provide the front-end contract, General Conditions, and Standard General Provisions to the ENGINEER. The ENGINEER shall prepare the Technical Specifications and Project Special Provisions. Contract documents shall be submitted with the Preliminary Design (70% plans), Draft Final Design (90% Plans) and Final Design Submittal (100% Plans).

TASK 10. STORMWATER PERMITS

10.1 401/404

The ENGINEER shall prepare submittals and approvals required by the US Army Corps of Engineers and the Division of Water Resources for stream and wetland impacts.

The ENGINEER will coordinate with the regulators to present information including mapping, conceptual design with associated impacts, statement of project purpose and project description.

The ENGINEER will submit a Joint Pre-Construction Notification (PCN) for 404 Nationwide Permit and 401 Water Quality General Certification. The PCN submittal will include:

- Jurisdictional Determination Request and associated data forms;
- Completed PCN form;
- Project narrative;

- 70 percent design plans; and
- Additional information requested by regulatory agencies during pre-application coordination.

The ENGINEER will respond to one (1) round of comments from the regulator and submit final documents as required. An individual 404 permit and environmental mitigation is excluded from this scope.

TASK 11. PROPERTY AND STORM DRAINAGE ACQUISITION ASSISTANCE

The ENGINEER shall prepare all appropriate documents and provide all required information to support the Real Estate Acquisition Phase. Plats and/or exhibits need to be submitted and approved prior to the public meetings.

The OWNER will perform all easement acquisitions.

For permanent storm drainage easement acquisition and temporary construction easement (TCE) acquisition, exhibits (8.5 x 14 individual property) and plats (24 x 18 multiple properties as needed) will be required (with signature and seal). The ENGINEER shall provide draft exhibits and plats in electronic form (PDF) and final documents shall be sealed and scanned PDFs. The requirements for exhibit and plat production are outlined in section 11.2 below. (For TCEs on parcels with permanent easements, both easements shall be shown on the same plat.)

After review by the Project Manager during the Preliminary Submittal, the ENGINEER shall finalize all plats and submit them per the requirements included in this section. All major preliminary plan review comments must be addressed prior to submitting the plats and plan sheets for easement acquisition.

The scoped effort will include up to forty-five (45) separate properties that may need easements.

11.1 EASEMENT ACQUISITION TABLE

The ENGINEER shall prepare a table listing all parcels that require easement acquisition. Included in the table shall be each property owner's name, address, tax code, real estate ID number, parcel number, square footage of storm drainage easement and temporary construction easement. The table shall comply with the digital format of the City's Real Estate Acquisition tracking system and shall be submitted digitally to the City's Project Manager.

11.2 REAL ESTATE PLATS AND EXHIBITS

The ENGINEER shall prepare a list of all properties that require easements, or right-of-way/property acquisition before deed research is updated from the Planning Phase for approval by the Project Manager.

Following approval of the list by the OWNER, the ENGINEER shall update all property survey data, record information - including easements, deeds, and plats previously acquired and/or prepared and supplement them as necessary to complete the Project. The ENGINEER shall make all necessary surveys to determine all property lines, areas maintained as right-of-way, and/or existing right-of-way along the Project and to establish the cut/fill lines, limits of construction easements, drainage easements, guy wire easements, and any other easements deemed necessary by the Project Manager.

The ENGINEER shall verify existing property corners to ensure the accuracy of the final survey exhibits and plats. All plats and exhibits shall comply with the NC Board of Examiners for Engineers and Surveyors "Standards of Practice for Land Surveying in North Carolina." All plats shall match exactly the final construction plans with respect to right-of-way, property lines, and easements.

The ENGINEER shall stake out right-of-way and easements as required by the Project Manager. The scoped effort will include up to fifteen (15) separate properties. Easement staking beyond fifteen (15) will be considered additional services.

The ENGINEER shall obtain from all public records and indicate on plats the current owners, tax identification number, description, book and page number of the official registry of all properties affected by the proposed acquisition, right-of-way, or easement. Where subdivision plats are available, the property lines at the corners of complete blocks and intersecting streets of properties affected by the property acquisition, right-of-way, or easement shall be referenced to the survey line by station, angle, and distance. In other areas, each affected property corner shall be referenced to the survey line by station, angle, and distance.

The exhibits shall be prepared on 8.5" x 14" standard sheets or combined on recorded map size plat and shall have parcel numbers assigned to each piece of property. Each exhibit and plat shall conform to the Standards of Practice for Land Surveying in North Carolina, Section 1600.

The ENGINEER shall submit written legal descriptions as directed by the Project Manager. These shall only be required for the condemnation process. The scoped effort will include up to fifteen (15) separate legal descriptions. Legal descriptions beyond fifteen (15) will be considered additional services. The following information shall be included in each legal description:

- a. A title block indicating the Project name, Project number, parcel number and property owner's name and tax code number
- b. A description of each area taken (fee simple, permanent and/or temporary easements remaining area) sufficient for the identification thereof. This shall be a description of each area taken and include the exact area in square feet and acres and reference the plat.

All of the above descriptions can be on the same page. All exhibits, plats, and legal descriptions must comply with the Guilford County Register of Deed recordation requirements at the time the documents are recorded.

TASK 12. PRELIMINARY DESIGN AND REAL ESTATE SUBMITTALS

12.1 PRELIMINARY ALIGNMENT SUBMITTAL (30% PLANS)

The task includes the submittal of preliminary design plan and profile sheets to review the preliminary design.

The ENGINEER shall submit two (2) full-size sets of the construction plans to the Project Manager for review and approval. The submittal shall also include a digital copy of the construction plan drawings in PDF format. The Project Manager will return to the ENGINEER all pertinent comments. The plan and profile sheets must be at an appropriate level of completeness to accurately identify at a minimum:

- Proposed stormwater alignments;
- Profiles stormwater profile with cover and conflicts shown;
- Potential utility conflicts;
- Constructability concerns and limitations;
- Potential custom structures required;
- Anticipated easement limits and affected properties;
- Potential water and sewer relocations required;
- Potential private utility conflicts (i.e. large fiber optic duct banks);
- Potential key stake holders;
- Potential traffic control concerns (major detours, dead end road access etc.);
- Any proposed items that may exceed the typical cost expectations; and
- Any other concerns which may affect the remainder of planning and construction (wetlands, stream impacts, graveyards, railroads etc.).

The task also includes one (1) review meeting with the appropriate City staff to receive and discuss review comments.

12.2 PRELIMINARY DESIGN SUBMITTAL (70% PLANS)

The task includes the submittal of the construction design plans, supporting documents, and the real estate acquisition table identifying properties impacted by the construction of the project as described in Tasks 4 through 10 for the review and comment by the OWNER, utilities, and the appropriate permitting agencies.

The improvement plans and supporting documents must be at an appropriate level of completeness to accurately identify, address, and resolve critical impacts to utilities, traffic, erosion control, permitting, private property, methods of construction, project special provisions, and associated costs. The Preliminary Submittal must include improvement plans, supporting calculations, and documents, etc. to sufficient detail and completion that City staff, utilities, and permitting agencies can review and provide detailed comments or approval.

The task also includes one (1) review meeting with the appropriate City staff to receive and discuss review comments.

The ENGINEER shall submit four (4) full-size sets and 1 half size set of the construction plans to the Project Manager for review and approval. The submittal shall also include a digital copy of the construction plan drawings in PDF format. The ENGINEER shall submit the required number of revised construction plans and supporting documents that are needed for utility coordination, real estate, and development review activities to the Project Manager, the City's Real Estate Division, and development review services for review, comment, approval and use.

The Preliminary Construction Plans shall include, but not be limited to, the following:

- Proposed Storm Drainage Improvement Construction Plans;
- Proposed Utility Relocation Plans;
- Proposed Traffic Control Plans; and
- Proposed Erosion Control Plans.

The Preliminary Supporting Documents shall include, but not be limited to, the following:

- Project Special Provisions;
- Stormwater Permitting Documents;
- Property and Storm Drainage Easements Table and Easement Exhibits;
- Storm Drainage Calculations;

- Utility Relocation Calculations;
- Transportation Operations or NCDOT Permits & Encroachment Agreements;
- Erosion Control Narrative, Calculations, and Specifications; and
- A construction cost estimate for all improvements listed above including Quantity take-off in the City standard format.

TASK 13. PUBLIC MEETINGS AND CITIZEN INVOLVEMENT

13.1 PUBLIC MEETINGS

After the Preliminary Submittal and after the 70% design stage, at the direction of the Project Manager, the ENGINEER shall attend neighborhood public meetings to present the design of the recommended improvements and to begin Real Estate Kick Off. Information gathered at the public meetings shall be incorporated into the Final Design Plans and supporting documents, if appropriate, after discussions with the Project Manager.

Under the direction of the Project Manager, the ENGINEER shall:

- a. Attend up to two public meetings (including facility setup).
- b. Prepare/update up to three (3) unique exhibits to appropriate scale as approved by the Project Manager including, but not limited to, streets, buildings, tree lines, drainage system, proposed drainage improvements, drainage complaint locations, citizen questionnaire results, and flooding limits at appropriate locations. In addition, the proposed improvement plan sheets and traffic control plans shall be presented.
- c. Participate and conduct up to two (2) public meetings to present the storm drainage improvements including the following:
 - 1) Solicit input from citizens;
 - 2) Answer technical questions from citizens; and
 - 3) Prepare and record all discussions for meeting minutes and submit them to the Project Manager within ten (10) days of the meeting.

The first public meeting will present the 70% design plans including anticipated easements and impacts to private property. The second public meeting, if needed, will include construction limits, traffic control phasing and estimated construction schedules.

13.2 CITIZEN INVOLVEMENT PROCESS

The ENGINEER shall provide services for the citizen involvement process as directed by the City's Project Manager, hereafter referred to as Project Manager. These services shall include but are not limited to:

- a. Participate in up to six (6) informal meetings with property owners making recommendations to minimize negative impacts, as directed by the Project Manager. The ENGINEER shall not initiate contact with citizens without OWNER approval.
- b. Provide written minutes to the Project Manager from all conversations and meetings involving property owners within five (5) working days.

TASK 14. FINAL DESIGN SUBMITTALS

14.1 DRAFT DESIGN SUBMITTAL (90% PLANS)

Following the review of the preliminary design plans (70% design), the ENGINEER shall finalize the design incorporating all review comments as appropriate. The ENGINEER will submit four (4) full-size copies and one (1) half-size copy of the draft final design (90% Plans). This submittal shall include all items listed in Task 12.0 and any other items that were noted during the preliminary design plan review and easement acquisition process.

The ENGINEER shall provide plans and/or text documents that address and/or respond to all comments made by City staff.

The ENGINEER shall submit the 90% plans for the erosion control permit if required.

14.2 DRAFT FINAL DESIGN SUBMITTAL (95% PLANS)

Following the review of the draft final design (90% design), the ENGINEER shall update/revise the design incorporating all review comments from the 90% submittal as appropriate. The ENGINEER will submit three (3) full-size copies of the draft final design (95% Plans). This submittal shall include all items listed in Task 12.0 and any other items that were noted during the preliminary design plan review (i.e., sanitary sewer and/or water application sheet, etc...).

The ENGINEER shall provide plans and/or text documents that addresses and/or respond to all comments made by City staff.

14.3 FINAL DESIGN SUBMITTAL (100% PLANS)

The ENGINEER shall develop final design plans and specifications in sufficient form and detail for the OWNER to let construction contracts. The final design shall include the final version of all

items required in the Draft Final Design (95%) submittal. The ENGINEER shall submit the final plans to the OWNER for review and sign-off. The submittal shall include up to three 'sets' of plans:

Set One

- a. One (1) sealed & signed bond copy of all sheets;
- b. One (1) sealed & signed copy of the project special provisions;
- c. One (1) copy of the quantity take-off in the City standard format;
- d. One (1) copy of the ENGINEER's construction cost estimate; and
- e. One (1) PDF copy each of the plans (not sealed & signed), SPs and quantity take-off.

After the OWNER has verified that all revisions are complete and has obtained all signatures required. The ENGINEER shall submit the following (the final 100% submittal):

- a. Four (4) full size copies of the plan set;
- b. Four (4) copies of the contract documents;
- c. One (1) half size copy of the plan set;
- d. Four (4) copies of the project special provisions;
- e. Four (4) copies of the quantity take-off;
- f. Four (4) copies of the ENGINEER's construction cost estimate;
- g. One (1) digital copy of the project special provisions; and
- h. One (1) digital copy of the quantity take-offs in the City standard format.

The ENGINEER shall also submit a digital copy of all final design plans, traffic control plans, erosion control plans and details (electronic files shall be in the current version compatible with AutoCAD), specifications and computations, models, and "PDF" files for other written documents.

OWNER review and approval of the final submission shall not relieve the ENGINEER of liability or the responsibility to correct any errors in the plans, details, specifications or computations. The ENGINEER shall also be held liable for errors discovered after the construction phase of the Project begins.

TASK 15. SPECIFIED ADDITIONAL SERVICES FOR STRUCTURAL ENGINEERING

Structural Engineering services are anticipated for bridge footers, custom junction boxes, endwalls, and one (1) driveway bridge. The second driveway bridge is anticipated to be prefabricated. Specific structural requirements will be determined after 70% design. The ENGINEER will provide

a scope and fee for the structural services and will only proceed upon receipt of written authorization from the Owner.

TASK 16. UNSPECIFIED ADDITIONAL SERVICES

Engineering services described in this Scope do not include certain categories of work, which are usually referred to as "Unspecified Additional Services." The ENGINEER will provide Unspecified Additional Services only upon receipt of written authorization from the Owner. To the extent possible, the ENGINEER will notify the Owner in advance if the need for Unspecified Additional Services is anticipated. Additional Unspecified Services include:

- Additional Hourly Services not listed above under "Scope of Services."
- Other professional services related to the Project, but not specifically described in this Scope of Services, which are identified and authorized in writing by the Owner.

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SCHEDULE

ENGINEER shall expeditiously execute its Scope of Services so as not to cause any delay or disruption in ENGINEER's services, the services of other consultants retained by OWNER, or to the Project. A survey, design and permitting schedule is included as Attachment A.

COMPENSATION

OWNER shall compensate ENGINEER for providing the services set forth herein in accordance with the terms of the Agreement. The total budgeted level of Lump Sum effort associated with this Project Authorization, is as follows:

Task Number	Task Description	Lump Sum Total
	Total Task Authorization	\$ 690,189.00
1.0	Project Administration	\$ 40,260.00
2.0	Field Surveys	\$115,145.00
3.0	Subsurface Engineering Work	\$ 46,380.00
4.0	Geotechnical Subsurface Investigations	\$ 19,890.00
5.0	Design of Recommended Storm Drainage Improvements	\$ 23,080.00
6.0	Utility Coordination and Design	\$ 58,188.00
7.0	Traffic Control Plans and Approvals	\$ 14,100.00
8.0	Erosion Control Plans, Details, Narrative, and Specifications	\$ 13,620.00
9.0	Contract Document Preparation	\$ 28,770.00
10.0	Stormwater Permits	\$ 8,360.00
11.0	Property and Storm Drainage Acquisition Assistance	\$ 49,740.00
12.0	Preliminary Design and Real Estate Submittals	\$ 88,256.00
13.0	Public Meeting	\$ 27,750.00
14.0	Final Design Submittal	\$ 81,650.00
15.0	Specified Structural Services	\$ 30,000.00
16.0	Unspecified Additional Services	\$ 30,000.00
17.0	Project Reimbursables	\$ 15,000.00

City of High Point, NC
West Ray Design Phase
2018 On-Call Task Order 2
March 8, 2019
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We appreciate the opportunity to assist on this project and we look forward to getting started.

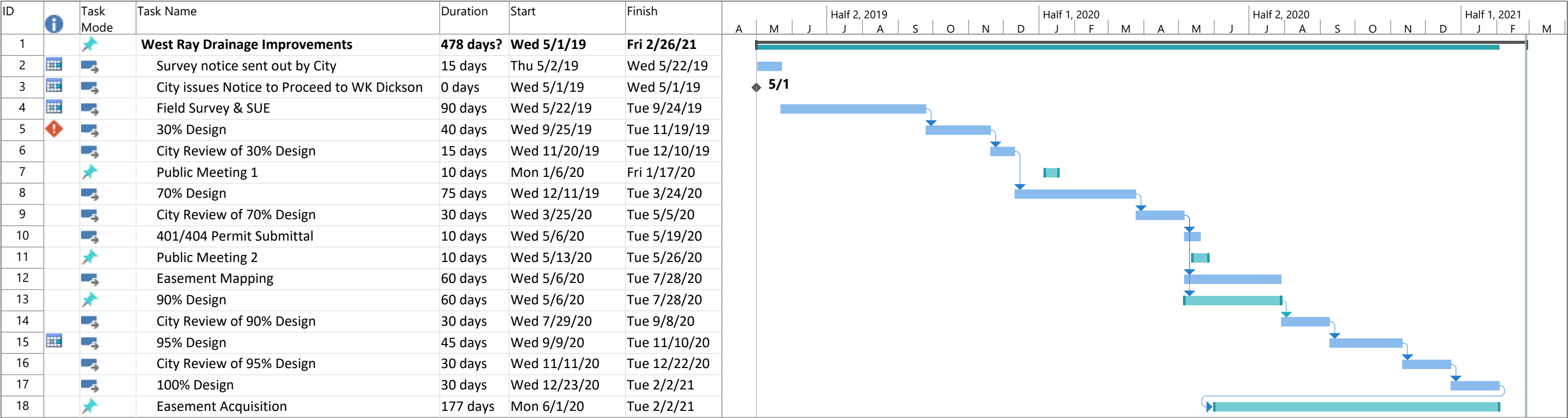
Sincerely,

W.K. DICKSON & CO., INC.

Scott Sigmon

Scott Sigmon, PE

Vice President



Project: West Ray Drainage Imp
Date: Thu 3/7/19

Task

Split

Milestone

Summary

Project Summary

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

External Tasks

External Milestone

Deadline

Progress

Manual Progress