

DESIGN-BUILDER DESIGN SERVICES

A. SCOPE OF SERVICES

DESIGN-BUILDER shall provide engineering and other professional services to the OWNER as described below.

1.01 Detailed Design Services

The DESIGN-BUILDER shall provide engineering design services for the Snow Hill Road Pump Station (SHRPS) and Force Main. A summary of the primary elements included in the design are as follows:

- Snow Hill Road Pump Station (approximately 8 mgd firm capacity expandable to 13.4 mgd firm capacity)
- SHRPS FM (24-inch diameter @ ~14,400 feet)
- Treyburn 3 and 4 hydraulic analysis and any upgrades required to the force main or pump stations.
- Downstream outfall capacity sizing and design

The pump station will be designed to include the following:

- Designed in accordance with current City of Durham Lift Station Design Standards
- Wet pit/ Dry Pit arrangement with vertical centrifugal non-clog pumps
- Confined inlet wet well
- Channel grinders for pump protection
- Biofilter for vapor phase odor control
- Bioxide chemical feed system for liquid phase odor control
- Pump controls consistent with the City of Durham's Southeast Regional Lift Station

A. Initial Design Tasks

The DESIGN-BUILDER will initially conduct the following design tasks to define the design parameters of the project:

- Final flow projections
- Finalize pump station siting
- Confirm force main alignment
- Preliminary right-of-way analysis

The DESIGN-BUILDER will present the results of these tasks to the OWNER and City of Durham for confirmation prior to completion of the 30% Design Submittal.

B. Detailed Design – Snow Hill Road Pump Station

1. Submit design review documents at 30%, 60%, 90%, and 100% and attend a project review meeting with the OWNER for each of the design review milestones. Documents shall be submitted a minimum of 1 week prior to review meetings. The content of each design review submittal shall include the following:

The 30% submittal shall primarily consist of Process Mechanical, Civil/Site work and Structural components of the project with major equipment specifications.

The 60% design submittal shall consist of draft plans for all disciplines and a draft set of technical specifications.

The 90% (Bid Ready) design submittal shall consist of a complete set of contract documents with complete designs from all disciplines and ready to submit for state approval.

The 100% submittal shall be a complete set of contract documents revised to reflect comments from permit reviews to include Permit Certificates/Approvals.

The scope and fee reflects a level of effort corresponding to approximately one hundred and seventeen (117) plan sheets, to include Cover, General Notes, twelve (12) civil sheets, twenty-five (25) process mechanical sheets, twenty-one (21) structural sheets, eight (8) architectural sheets, six (6) HVAC sheets, twenty (20) electrical sheets, four (4) instrumentation and control sheets, and eighteen (18) details sheets.

The scope and fee assumes a basic architectural design, i.e. the architectural language will be minimal with no flourishes or attempts to blend the building or ancillary facilities with the surrounding neighborhood aesthetic. The building will be in accordance with City of Durham Planning/Public Works UDO.

Provide required technical specifications.

2. Attend 30%, 60%, 90% and 100% design complete meetings to address and resolve design questions between design phases.
3. QA/QC – Review Contract Drawings and Technical Documents for quality assurance and quality control, and address comments

C. Detailed Design: SHRPS Force Main

1. Submit design review documents at 30%, 60%, 90% and 100% milestones and attend a project review meeting with the OWNER for each of the design review milestones. The general content of each design review submittal shall be as follows:

30% - horizontal alignment; and

60% - horizontal alignment and vertical alignment, draft technical specifications; and

90% - content of 60% design plus any OWNER requested revisions, final adjustments to the design, required design details, complete bid documents, application for City of Durham permit to construct.

The 100% submittal shall be a complete set of contract documents revised to reflect comments from permit reviews to include Permit Certificates/Approvals.

The scope and fee reflect a level of effort consistent with approximately thirty-two (32) plan sheets, to include two (2) property identification sheets, two (2) detailed construction access sheets, three (3) traffic control sheets, seventeen (17) plan and profile sheets for SHRPS FM, four (4) erosion and sedimentation control sheets, three (3) for gravity sewer extensions, and one (1) for demolition of the existing SHRPS.

2. Attend 30%, 60%, 90% and 100% design meetings to address and resolve design questions between design phases, and for stakeholder meetings.
3. QA/QC – Review Contract Drawings and Technical Documents for quality assurance and quality control, and address comments.

D. Field Evaluations

1. DESIGN-BUILDER shall field evaluate the proposed pipeline route and assess where adjustments are needed to avoid conflicts prior to finalizing the horizontal alignment for the 30% design.
2. The proposed force main alignment will cross wetlands and streams and encroach on riparian buffers in some locations. Scientists qualified for wetland and stream delineations in NC shall perform a field survey to confirm the presence or absence of wetlands, streams, and the extent of the riparian buffers. DESIGN-BUILDER shall flag environmental features for an approximately 100 ft wide corridor for force main. In addition, DESIGN-BUILDER shall review the corridor for the presence of any threatened and endangered species and provide recommendations for appropriate route adjustments or constraints on construction where warranted. The DESIGN_BUILDER will also assess the condition of the existing 30-inch lines under the streams for use.

E. Survey

1. DESIGN-BUILDER shall provide all necessary survey for development of the final design.

F. Subsurface Utility Excavation (SUE)

1. Subsurface Utility Engineering (SUE) shall be provided for Quality Level A and Quality Level B services at the Snow Hill Road Crossing along the force main alignment.
2. Existing record data for known underground utilities shall be collected and reviewed.
3. Quality Level B SUE locating and marking shall be performed of identified buried utilities at the indicted areas. Geophysical prospecting methods are used to indicate the presence and surface position of buried utilities. Utilities are identified and marked in the field in order to be surveyed and mapped. Quality Level B information can not be relied upon for construction purposes or when exact horizontal and vertical information is required.
4. Quality Level A SUE services shall be performed to provide vertical information on known existing buried utilities at the indicated areas. Quality Level A allows for direct visual observation of underground utilities. A non-destructive and minimally intrusive vacuum excavation method shall be employed to expose utilities at critical points. Verification of type and location of each utility is recorded and reported in a document describing the utility and the surrounding work site.
5. A maximum of 1 day for traffic control has been provided for support of SUE data collection.

G. Geotechnical Services

1. DESIGN-BUILDER shall provide all necessary geotechnical evaluations for development of the final design.

H. Easements

1. Complete necessary property tie surveys along the interceptor alignments.
2. Preparation of strip easement maps without written descriptions on 8-1/2"x14" (plat) to be used as attachments to the easement document between the property owners and OWNER. For budget purposes the following number of parcels have been assumed:
 - i. SHRPS FM: 28 Parcels
 - ii. SHRPS Site: 1 Parcel
3. Draft easement maps shall be submitted to the OWNER for review. Recordation fees shall be paid by the DESIGN-BUILDER to be reimbursed by the OWNER.
4. Easements shall be marked as required by relevant statutes, and also flagged at intersections with property lines, at any deflection points, and every 100 ft throughout each construction corridor, as necessary for easement negotiations. Marking and flagging the easements in the field shall be completed upon authorization by the DESIGN-BUILDER.

I. Permitting and Encroachments

DESIGN-BUILDER shall prepare and submit documents to obtain approvals for the following permits and encroachments. DESIGN-BUILDER will coordinate with reviewers and provide revisions, as needed, until permits have been received. NOTE: All application fees, permit fees, and encroachment fees to be paid by the DESIGN-BUILDER who shall be reimbursed by the OWNER.

1. SHRPS and Force Main:

- i. NCDOT Driveway Permit
- ii. NCDOT Encroachments
- iii. 401/404 Permit
- iv. Neuse River Riparian Buffer Permit
- v. NCDEQ Sediment and Erosion Control
- vi. NCDEQ Sewer Extension Permit
- vii. City of Durham Construction Drawing Review
- viii. City of Durham Site Plan Review
- ix. Duke Energy Encroachments

J. Progress Meetings/Program Management

DESIGN-BUILDER shall schedule and conduct in person progress meetings with the OWNER to occur once a month during the project design. The scope and fee reflects a level of effort consistent with approximately 10 conference calls, to include a brief follow-up email of action items as warranted.

C. Deliverables

The DESIGN-BUILDER agrees to deliver to the OWNER in a timely and proper manner the items set forth below, which shall become the property of Owner and may be used by the Owner without restriction or limitation and at no additional cost to the Owner:

1. Contract documents including drawings and specifications at the 30%, 60%, 90% and 100% Design Submittals. Six (6) half size copies, three (3) full size copies, and electronic copies in PDF shall be provided. Specifications shall be provided in searchable PDF format. A signed and sealed existing conditions survey will be included in the 60% submittal.
2. Geotechnical Report to accompany the Contract Documents as a reference.
3. Copies of all permits. Permits shall be included in the Contract Documents.
4. Strip easements for all affected properties.