

Attachment F – Excerpt from CM/GC Construction Scope of Work

2.3.2 Task C2– Mobilization and Staging Site Preparation

A portion of the property at 459 Smith Street will be available for use as a Staging Site. Anticipated activities at the site include staging of trailers and administrative facilities, staging of equipment, material storage, dredge water treatment, and debris washing and sorting on the existing asphalt pad. The CM/GC will prepare the Staging Site in accordance with the Construction Drawings, Specifications, and applicable permit requirements including, but not limited to, performing the following actions:

1. Completion of pre-construction photographic surveys and assessments;
2. Installation of sediment and erosion controls and temporary construction fencing;
3. Staging trailers for project personnel;
4. Installation of systems for handling and disposal of dredge water;
5. Preparation of material and equipment storage and laydown areas; and,
6. Accessing marine facilities for on-water work.

A portion of Huntington Street may be closed for use as a temporary staging area and controlling access to the waterfront of the Canal.

The CM/GC is responsible for Staging Site maintenance, which includes the following.

1. Rodent control;
2. Snow and ice removal from within the site and sidewalks along the perimeter of the site;
3. Trash/recycling removal from the site;
4. Weed whacking within the site and sidewalks along the perimeter of the site;
5. Providing and servicing Portajohns;
6. Handling of ponding within the site during heavy rainfall;
7. Trailer internet connection and phone service;
8. Maintaining green fencing along perimeter of the site; including ensuring such fencing is free from graffiti; and

9. Pickup of trash/litter along perimeter sidewalks of site.

2.3.3 Task C3 – Hydrographic Surveys

The Contractor is to perform hydrographic surveys to document conditions before, during, and after construction. Hydrographic surveys are to be conducted in accordance with Technical Specification 01 71 23.

Dredging Surveys

As described in Technical Specification 35 20 23.13, the Trust's Representative will contract an independent hydrographic surveyor to complete a before dredge (BD) survey prior to the start of Work. The CM/GC is to perform a BD survey also, and the CM/GC is to perform weekly hydrographic surveys to maintain a record of the Work and to support requests for progress payments. In addition, the CM/GC is to perform after dredge (AD) hydrographic surveys to verify the completion of each phase of dredging as described in Technical Specifications 07 71 23 and 35 20 23.13. Following the completion of each phase of dredging and notification from the CM/GC, the Trust's Representative will have a hydrographic survey performed by an independent hydrographic surveyor for quality assurance and for measurement for payment.

Capping Surveys

As described in Technical Specification 35 43 00, the CM/GC is required to conduct hydrographic surveys during capping activities to: (i) document the areal coverage of the leveling layer, each component of the treatment layer, and final cap; and (ii) for purposes of measurement for payment for the leveling layer. The CM/GC is to conduct hydrographic surveys after: (i) placement of the leveling layer, (ii) placement of the combined Granular Activated Carbon (GAC) and sand layer, and (iv) after completion of the cap and placement of backfill at the southern termination of the cap. Hydrographic surveys are conducted in accordance with Technical Specification 01 71 23.

Placement of the structural concrete for underwater applications is verified by probing in accordance with Technical Specification 35 43 00.

2.3.4 Task C4 – Sediment and Floatables Management

Sediment and floatables containment is being used for the duration of sheet pile installation (Technical Specification 31 41 16), dredging (Technical Specification 35 20 23.13), ISS (Technical Specification 03 11 00), and capping (Technical Specification 35 43 00), in accordance with Technical Specification 02 60 16.

The CM/GC is to control floating debris, turbidity, and sheens in accordance with Technical Specification 02 60 16. Both air and turbidity curtains are required for managing resuspended sediment and floatable material at different times during construction, as described herein and in Technical Specification 02 60 16. The air and turbidity curtains are installed prior to beginning dredging or sheet pile installation.

During working hours, as defined in the specifications, the air curtain must be operational and follow the performance specifications outlined in Technical Specification 02 60 16. After working hours (nights and weekends), the turbidity curtain is used to control resuspended sediment, sheen, or other floatables.

If threshold turbidity criteria are exceeded (as defined in Technical Specification 01 57 19) during Work in the Canal, the CM/GC is to implement water quality controls in accordance with Technical Specifications 01 57 19 and 02 60 16, including but not limited to, slowing or halting operations, modifying operational procedures, and modifying turbidity control measures.

When turbidity or air curtains are deployed, the CM/GC is collecting and removing floating debris and visual surface sheen resulting from project activities in accordance with Technical Specifications 02 60 16 and 02 51 19. Any adsorbent materials are to remain in place until appropriate to remove as specified in Technical Specification 02 60 16. The CM/GC is to discard spent materials in accordance with Technical Specification 02 51 19.

2.3.5 Task C5 – Dredging

General

Dredging is completed in three phases:

1. Phase I Dredging – Removal of large debris and dredging of an access channel along a portion of the centerline of the Canal to provide access for installation of bulkhead support.
2. Phase II Dredging – Intended as high production dredging throughout RTA1, but not beneath the bridges, to provide a relatively level bottom for ISS treatment.
3. Phase III Dredging – Dredging and backfilling of the final surface presented in the Construction Drawings. ISS treatment is implemented between Phase II and Phase III dredging.

Bulkhead stabilization (Technical Specification 31 41 16) is performed following Phase I dredging. ISS (Technical Specification 03 11 00) is performed following Phase II dredging. Bulkhead stability is monitored during dredging, in accordance with Technical Specifications 31 41 16 and 35 20 23.13.

As presented on the Construction Drawings, some areas of Phase III dredging require dredging by the slotted excavation method and daily backfilling of dredged areas. The sequence for removing sediment and backfilling by the slotted excavation method is shown in the Construction Drawings.

The CM/GC should limit propeller wash during Phase III dredging to avoid soft sediment resuspension and possible recontamination of areas previously dredged and/or undergoing capping operations.

Hydrographic surveys are conducted during dredging in accordance with this Plan and Technical Specification 01 71 23. Environmental monitoring is conducted in accordance with this Plan and Technical Specification 01 57 19.

Canal Restrictions

Several areas along the Canal, such as bridge crossings, have restricted horizontal and vertical clearances. The CM/GC is to demonstrate that all equipment and materials to be used can pass through these areas in accordance with Technical Specification 35 20 23.13. The CM/GC is responsible for coordination with the bridge operators and keeping the Trust's Representative informed of these coordination activities in accordance with Technical Specification 01 32 00. Information on the bridges is provided on Construction Drawing G-3.

Dredge Equipment

The CM/GC furnishes equipment necessary to perform debris removal, dredging, and dewatering operations in accordance with Technical Specification 35 20 23.13 and the Construction Drawings.

Dredging is to be performed with an environmental bucket unless site conditions necessitate the use of a conventional clamshell bucket in accordance with Technical Specification 35 20 23.13. The environmental clamshell bucket is designed to completely enclose the captured dredged sediment and water and is equipped with valves that close when the bucket is withdrawn from the water column. If the CM/GC deems a conventional clamshell bucket is necessary, they will provide the basis of the request to the Trust's Representative, including field demonstration, for recommending the use of a conventional clamshell bucket. The design objective is to use the environmental clamshell bucket to the greatest extent practical and to reserve the conventional clamshell bucket for use where debris or other site conditions interfere with the operation of the environmental bucket to a degree that control of sediment resuspension is ineffective or production is greatly affected.

On-Barge Sediment and Debris Handling

As sediment is removed via mechanical dredging, small debris may be commingled with the sediment. The CM/GC uses 6-inch grizzly bars or smaller to sort debris from sediment according to Technical Specification 35 20 23.13. If spray water is required to wash the material through the grizzly bars or remove oversize debris from the grizzly bars, the water must be from a potable source. All resulting wash water must be collected and sent to the dredge water treatment system.

Large debris should be removed separately from sediment and segregated from the sediment following retrieval from the Canal and placed on the asphalt pad at the staging site. The large debris is then to be rinsed with wash water on the asphalt pad and kept on the pad until reviewed by an archaeologist. All debris, both large and small, removed from the Canal and separated from the sediment must be screened by an archaeologist, who will be retained by the Trust, for cultural significance as further detailed in Task C12.

2.3.6 Task C6 – Bulkhead and Bridge Support

As part of this Scope of Work, various bulkhead and bridge support and/or replacement structures are to be installed within the Canal to facilitate the dredging, ISS, and capping components of the Work.

The approach for bulkhead support is outlined below.

1. The CM/GC may perform Building Condition Assessments of existing structures, including bridges, within approximately 200 feet of bulkhead support and other RA activities along the Canal, according to Technical Specification 02 22 00. Baseline Building Condition Assessments are performed prior to the commencement of the Work to establish the existing conditions. Interim Building Condition Assessments and Post-Construction Building Condition Assessments are performed to monitor for potential damage caused by construction-related activities. The Baseline Building Condition Assessment provided by the Trust with the RFP should be considered representative for the time the assessment was conducted; the CM/GC may elect to perform an additional Baseline Building Condition Assessment to confirm conditions in the buildings have not changed given the elapsed time expected between the Trust's assessments (July/August/September 2018) and the implementation of the work. As described previously, additional subsurface investigations (Task PS6) should be performed if appropriate.
2. The CM/GC performs both a pre-Work and post-Work photographic survey from within the Canal at low tide of: (i) bulkheads surrounding RTA1 and (ii) bulkheads along the Staging Site.
3. The CM/GC installs optical survey markers along the top edge of the existing bulkheads along RTA1 to monitor for movements in accordance with Technical Specification 31 41 16. A baseline survey of these survey markers is performed prior to the commencement of the Work. After the baseline survey is completed, weekly surveys of the markers are performed, and the measured incremental and cumulative movements are recorded. This monitoring is performed throughout bulkhead support installation, dredging, ISS, and capping activities. In addition to the surveying requirements in the Specifications, the CM/GC will also set up total station surveying (TSS) for near real-time survey monitoring of the work areas. The TSS system requires several reference stations that should be completely stationary and should be set on locations and structures that are significantly beyond the area of influence of Work, which can be as far as 40 ft. The TSS should be set up a minimum one week before the start of work to get baseline measurements and to observe if there is any potential ongoing creep along the bulkheads.
4. The CM/GC installs bulkhead support in accordance with designs to be developed by the CM/GC under Task PCS6 and the bridge support in accordance with the designs developed by the Trust. The CM/GC is to assume all bulkheads will be

installed using the Giken silent press method. (NOTE to BIDDERS: See Line Items 37-41 and 54 for design assumptions to be used in bidding bulkhead construction line items on bid form).

5. The CM/GC is to install any necessary structural support developed as part of Task PSC7.
6. The CM/GC retains the services of a vibration monitoring specialist and perform vibration monitoring during sheet pile installation and bulkhead support construction. The CM/GC will establish acceptable vibration and bulkhead movement tolerances to protect structures and adjacent areas from damage. If vibration or movement levels exceed the established thresholds, or damage and/or excessive movements are observed at properties at vibration levels below the threshold, it is the determination of the CM/GC whether to continue installation, change construction operations, conduct shoring of buildings for stabilization, or other alternatives as developed by the CM/GC.

The CM/GC provides all survey and TSS results to the Trust's Representative. If excessive movements or property damages are observed, the Trust's Representative is to be notified and alterations may be made by the CM/GC to dredging operations or the bulkhead support systems to arrest and limit the potential for continued movements. In the case that excess movements of an existing bulkhead are observed, contingent bulkhead support measures may be implemented by the CM/GC. Such measures are to be developed by the CM/GC and may include installation of a dead man sheet pile and tie rod systems or prestressed tieback anchor system.

The CM/GC will provide optional bulkhead support construction estimates for the properties where optional designs may be prepared. The cost will assume a tieback anchor will be installed. Assumptions for the wall are summarized in the Measurement and Payment section of the specifications. The construction cost will assume a tieback anchor is installed.

2.3.7 Task C7 – In Situ Stabilization/Solidification (ISS)

The CM/GC supplies, receives, stores, and mixes ISS reagents to stabilize and solidify impacted sediment within the ISS Area limits in RTA1 to elevations indicated on the Construction Drawings and in accordance with Technical Specification 03 11 00. ISS treatment is implemented after Phase II Dredging and prior to Phase III Dredging. ISS Columns are implemented from the final Phase III Dredging elevation to the target depth or to refusal as described in Technical Specification 03 11 00. If obstructions are encountered, the CM/GC removes the obstruction to the extent practical prior to ISS implementation. Note that some swell is expected to occur during/following ISS Work. Swell material above the Phase III dredge elevation is expected to be removed by the CM/GC during Phase III dredging.

Startup/Demonstration Evaluation. Approximately two to four weeks prior to full-scale ISS operations, the CM/GC performs a Startup/Demonstration Evaluation as described in Technical

Specification 03 11 00 to confirm a range of application parameters. These application parameters may include grout mix design percentages, grout flows and pressures, water-to-reagent ratios, auger/tool advance and retraction rates, and grout specific gravity. Construction Quality Assurance (CQA) samples are collected and evaluated, to confirm the ISS application meets the Performance Requirements as defined in Technical Specification 03 11 00.

Exploration of Phase III Sediment and Removal of Obstructions. After completion of Phase II Dredging, the CM/GC shall explore the sediment to be removed by Phase III Dredging in ISS Areas to locate debris and other obstructions to ISS. The CM/GC shall remove the obstructions encountered in accordance with Technical Specification 03 11 00, 3.01, G.4 and as indicated on the Construction Drawings.

In situ Stabilization (ISS) Treatment of Sediment. After CQA confirmation and approval of the grout mix design for full-scale implementation and following obstruction removal, the CM/GC implements ISS by mixing grout with targeted sediments within the ISS Area limits to produce a homogenous monolith that will meet the Performance Requirements as defined in Technical Specification 03 11 00. ISS treatment is laid out in a manner to solidify all areas specified for treatment and provide a “neat line” overlap between adjacent passes. Overlap for adjacent ISS treatment areas completed with equipment other than a large diameter auger should be a minimum of one foot. The CM/GC will establish survey controls for each ISS Column. The Trust’s Engineer of Record will collect discrete CQA ISS samples from either the top, middle, or bottom of the selected ISS Column to verify that the ISS operation meets the Performance Requirements as defined in Technical Specification 03 11 00.

2.3.8 Task C8 – Capping

A multilayered capping system (“cap”) is constructed within the Canal after dredging and preparation for the capping surface is complete according to Technical Specification 35 20 23.13, Technical Specification 01 71 23, and the Construction Drawings.

The cap will consist of four primary layers as follows from the base layer to the surface: (i) sand-based levelling layer (in some areas this layer will be comprised of a low permeability material), (ii) an adsorptive treatment layer designed to sequester contaminants; (iii) a sand isolation and filter layer; and (iv) an armor layer. The treatment layer will incorporate active (e.g., activated carbon, oleophilic clay) and passive (e.g., sand) capping materials as described in the Construction Drawings and Technical Specification 35 43 00. The isolation and filter layer, along with gravel integrated into the armor layer, will also serve as an ecological habitat layer. The armor layer will consist of open articulated concrete block (ACB) mats. A structural concrete for underwater applications is placed between the edge of the armor layer and the bulkheads.

Capping materials are staged and mixed in accordance with Technical Specifications 01 60 00 and 35 43 00. The CM/GC will track volume of material delivered and perform quality control checks of the delivered materials in accordance with Technical Specification 35 43 00.

Cap installation will not begin until all dredging and backfilling operations are complete; however, capping is conducted as soon as practically feasible after dredging. The CM/GC performs installation of each cap layer in accordance with the approved Cap Construction Work Plan. The lateral limits and final elevations of the cap are provided on the Construction Drawings. The thickness of the treatment layers and the isolation and filter layer is verified by collecting *in situ* samples in accordance with Technical Specification 35 43 00. Hydrographic surveys will also be conducted to confirm coverage of the treatment layers and final cap.

2.3.9 Task C9 – Sediment Processing and Dewatering

General

Dredged sediment from the Canal is processed to meet acceptance criteria at beneficial use end-placement facilities. Dredged material will undergo S/S in accordance with Technical Specification 02 51 19. The CM/GC performs all testing and inspections required to evaluate compliance with end-placement acceptance criteria for beneficial use according to Technical Specification 02 51 19. Water resulting from dredging activities is treated and discharged into the Canal (Technical Specification 44 08 40).

Site Staging

The asphalt pad at the Staging Site is shown in the Construction Drawings and will be used for temporary storage of debris to allow for inspection by the Trust's archaeologist in accordance with the Cultural Resources Programmatic Agreement (in development by EPA). The CM/GC may choose to wash debris on the asphalt pad and/or temporarily stockpile PDM on the asphalt pad prior to transport off-site. The CM/GC may also choose to perform decontamination activities on the asphalt pad.

Dewatering

The CM/GC decants excess water from the dredged material and pumps it to a Dredge Water Treatment System established on the Staging Site for treatment prior to discharging the treated water back into the Canal in accordance with Technical Specifications 02 51 19 and 44 08 40.

Dredged Sediment Management

Option A: In-Barge S/S Mixing

The CM/GC shall perform in-barge S/S mixing in accordance with the Construction Drawings and Specifications. A dosage of 8 Percent Portland cement was utilized as part of the TB4 Pilot Study and should be assumed for bidding purposes. The CM/GC shall keep records of effectiveness and efficiencies of mixing as described in Section 02 51 19. The CM/GC may offload PDM from in-barge S/S mixing to the Staging Site for temporary stockpiling and transport by truck or may transport PDM off-site via barge.

Environmental monitoring for air/odor and noise will be conducted by others during the mixing process. However, the CM/GC shall monitor air in the breathing zone during in-barge mixing in accordance with the CM/GC's Health and Safety Plan (HASp).

Option B: Off-site Dredged Material S/S

Dredged material that is transported off-site to a commercial sediment processing facility must undergo S/S in accordance with Technical Specification 02 51 19. A dosage of 8 Percent Portland cement was utilized as part of the TB4 Pilot Study and should be assumed for bidding purposes. The CM/GC may transport dredged material away from the Site via truck or barge. If the CM/GC chooses to transport dredged material via truck from the Site, the CM/GC must treat dredged material to pass the Paint Filter Test in accordance with Technical Specification 02 51 19. It is the responsibility of the CM/GC to ensure that dredged material meets any requirements for transport and acceptance to the commercial processing facility.

2.3.10 Task C10 – PDM End-Placement

The CM/GC is responsible for identifying facilities accepted by EPA and the Trust to beneficially use PDM and providing the information about the proposed facilities as part of the Dredged Sediment Management Work Plan for review by the Trust's Representative. End-placement options for PDM will be evaluated as an integral part of the CM/GC's Dredged Sediment Management Work Plan.

After S/S treatment, depending on a review of the waste characterization testing of the PDM, PDM will either be transported directly to an end-placement facility for beneficial use or transported to a thermal processing facility for thermal treatment prior to beneficial use end-placement.

The CM/GC is responsible for treating the PDM adequately through S/S alone or S/S followed by thermal treatment such that PDM meets the acceptance criteria of the end-placement facility for beneficial use. Waste characterization sampling is the responsibility of the CM/GC. The Predesign Treatability Study Report (PD-10/21) is provided in Exhibit M.11 along with waste characterization profiles from the TB4 Pilot Study. This treatability study includes laboratory analytical testing results for untreated soft and native sediment as well as soft and native sediment treated with Portland cement. The addendum to the report provides a list of potential thermal treatment and end-placement facilities that may accept Gowanus-dredged material. The CM/GC may use the PD-10/21 Treatability Study Report and TB4 profiles as a reference. However, waste profiling and identifying facilities for end placement is the responsibility of the CM/GC, and the CM/GC shall demonstrate that the facility is approved by EPA for acceptance of waste per the Off-Site Rule for Superfund sites.

The CM/GC transports PDM to end-placement facilities in accordance with all applicable laws and regulations.

2.3.11 Task C11 – Water Treatment

Effluent from the dredge water treatment system (DWTS) is discharged to the Gowanus Canal, provided it meets discharge requirements in accordance with Technical Specification 44 08 40.

Performance Criteria

The CM/GC designs the water treatment system to meet the following performance criteria:

1. **Sizing Treatment System.** The treatment system accommodates the anticipated volume of dredge water and additional inputs generated during dredging activities so as to not adversely impact production.
2. **Dredging Rate.** The treatment system is designed to treat the volume of water generated during dredging with built-in redundancy as described in Technical Specification 44 08 40. The CM/GC considers local restrictions regarding operational hours during design.
3. **Additional Inputs.** The treatment system accommodates stormwater that comes into contact with contaminated sediment on the barge/scow and on the Staging Site. The system also accommodates water from equipment decontamination.
4. **Pollutant Discharge Requirements.** The CM/GC designs the treatment system to meet the permit equivalency requirements presented in the Contract Documents. Responsibilities for monitoring by the CM/GC and the Trust's Representative are described in Technical Specification 44 08 40.
5. **Operational Constraints.** Operational constraints may include restrictions on daily operating times and number of days of operation per week based on local ordinances. Additional operational constraints include scheduled maintenance times. The treatment system is designed for a minimum anticipated dredging period of 8 hours per day, Monday through Friday.
6. **Redundancy.** The system is designed with sufficient redundancy to accommodate system maintenance and unanticipated failure of a single component. Providing redundancy may require extra dredge water equalization storage and backwash water, oversized treatment units, and/or parallel treatment units to allow for repairs/maintenance during operation.

2.3.12 Task C12 – Waste Management

Management of waste is the responsibility of the CM/GC. Waste streams generated during the Work are disposed of in compliance with all applicable local, state, and federal regulations. Waste includes debris removed from the Canal that has been cleared for disposal, dredge water treatment system waste such as solid waste and sludge, oil from the oil/water separator, and spent treatment media, and other waste generated from day-to-day operations.

Debris removed from the Canal that meets facility acceptance criteria may be recycled in accordance with Technical Specification 02 51 19. Debris not meeting recycling criteria is discarded as nonhazardous waste at a permitted Construction and Demolition Debris landfill or Subtitle D landfill, subject to the conditions of the operating permits of the facility. The CM/GC is responsible for identifying permitted recycling, treatment, and disposal facilities.

Specifications regarding management of waste from the dredge water treatment system and other waste generated from day-to-day operations are provided in Technical Specification 02 51 19.

2.3.13 Task C13 – Cultural Resources Management

Cultural resources refer to archaeological remains located within the Canal that are potentially eligible for the National Register of Historic Places (NRHP) designation. In general, properties (including objects and vessels) that are in excess of 50 years old are eligible for the NRHP.

Training by the on-site Archaeologist is provided for CM/GC staff working on sediment and debris sorting and management in accordance with Technical Specification 35 20 23.13. This training will help non-archaeological staff to identify potential cultural resources and understand the protocol in the event any cultural resources are encountered during debris removal activities. The CM/GC is responsible for reviewing the requirements listed in the Cultural Resource Monitoring Plan, expected to be consistent with the forthcoming Programmatic Agreement in development by EPA, and coordinating construction activities with inspections by the on-site Archeologist. No separate payment or schedule allowance will be made for coordinating work and inspection activities.

The CM/GC may encounter previously unknown potential cultural resources during dredging activities. Should debris be removed that is deemed to potentially be a cultural resource by either the trained CM/GC staff or on-site Archaeologist, it is stored in coordination with the Trust's Representative. This debris is further evaluated for cultural significance by an on-site Archaeologist provided by the Trust's Representative. Debris is not discarded until approved by the on-site Archaeologist and the regulatory agencies in accordance with Technical Specification 35 20 23.13.

2.3.14 Task C14 – Environmental Management

Environmental monitoring for air emissions, odor, and water quality is conducted by others throughout the Work, but the CM/GC is to implement appropriate controls at the direction of the Trust's Representative in accordance with Technical Specifications 01 57 19 and 02 60 16. Discharges of sediment, fuel, oil, or other materials into the Canal are prohibited. The CM/GC notifies the Trust's Representative immediately if accidental discharge occurs and takes appropriate actions to mitigate the spill/release.

The CM/GC complies with all applicable local, county, and municipal rules, ordinances, codes, and regulations. The CM/GC is not responsible for obtaining Federal and State permits. The Trust's Representative will work directly with EPA to obtain permit equivalency for federal and state permits in accordance with Technical Specification 01 41 00.