Green Infrastructure Project Completion Report
Project C-01: City Parking Lot #21

PREPARED BY: CH2M HILL

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Contractor: Ruston Paving

The purpose of this memorandum is to document a summary of the important information noted during the design and construction of the City Parking Lot 21 green infrastructure project.

Item #1: Stormwater Details and Specifications

1A. Structure Size. All stormwater control structures in future projects should be large enough for a person to enter; the preferred size is either 4'x4' (square) or 4' diameter (round). Precast concrete structures are City Standard.

Further Action Needed: The use of plastic stormwater structures at shallow, non-roadway locations is to be introduced to the City at future meetings as a lower-cost, reliable alternative to precast concrete.

1B. Inlet Grates. All inlet grates that will be subject to pedestrian traffic in future projects will be both ADA compliant and bicycle safe.

1C. Overflow Weirs. Weir plates should be removable and located in such a way as to allow the outlet pipe to be maintained. In addition, the top of the weir should not be located so close to the inlet grate such that large debris or trash may affect the weir's functionality. The weir design has been modified to address all these concerns.

1D. Inlet Filter Inserts. There is currently no official agreement in-place regarding who will maintain (empty/clean) the filter inserts specified. The City strongly feels that the filter inserts will be very high maintenance and will clog frequently, and prefer the use of stainless steel traps to settle out solids and debris. The trap design provides additional benefit to a catch basin sump; however, there may still be unsettled fines that will clog the infiltration bed stone over time.

Further Action Needed: More research into the amount and type of fines entering catch basins, as well as their implications on infiltration practice, is necessary prior to discontinuing the use of filter inserts permanently. If the sump design with or without trap is ultimately accepted, the sumps must be more regularly maintained than previously done.

Item #2: Trees and Plantings

2A. Species Selection. Primary selection criteria for trees/plantings selection include shade and/or stormwater capture requirements, as well as selecting a native species that is salt and pH tolerant with a porous pavement-friendly seed/fruit (if necessary). These criteria were met at City Lot 21 after some iteration. This process will be streamlined with the City Arborist.

2B. Temporary Maintenance. As noted in the standard tree pit detail for City Lot 21, trees were to be temporarily irrigated by the contractor and initially pruned (if necessary) per City standards. Contractors should be made aware of this throughout construction and particularly after tree installation. The City Arborist will handle maintenance beyond these requirements.

Further Action Needed: Integrate the City Arborist into the design-construction process as necessary to streamline species selection and monitor construction means and methods and temporary maintenance. The Arborist must inspect all tree stock prior to installation.

Item #3: Subsurface Materials

3A. Infiltration Bed Stone Availability. Washed NYSDOT No. 3 stone was specified; however, local quarries typically do not stock No. 3 stone. Permission was given to use No. 3A stone as an alternative; however, the quarry used could not meet the wash-loss requirement, and washed No. 2 stone was ultimately used. Further investigation revealed that other quarries can meet the wash-loss requirement with unwashed No. 3A stone; in addition, washing of stockpiled stone can be completed. In the future, only NYSDOT No. 3A stone will be accepted.

3B. CU-Soil Structural Handling/Acceptance. The initial material submittal had multiple items in conflict with respect to the CU-Soil specification, including a higher stone-to-soil ratio, lower moisture content, higher percent sand, lower percent clay, higher pH, and the use of limestone for aggregate. After consultation with CU-Soil experts, all items except the stone-to-soil ratio can be adjusted on a project-specific basis dependent on climate and tree species. The stone-to-soil ratio range specified is not adjustable and must be verified by the material submittal and by testing the gradation of the field stockpile if requested by the Engineer. In addition, contractors must be reminded to take appropriate care of the CU-Soil stockpile prior to installation, including remoistening and providing adequate cover.

Item #4: Paving Materials

4A. Porous Paver Pattern and Edge Termination. The pattern for porous pavers was not specified and consequently, the City Lot 21 pavers were laid in a basic straight pattern. Consequently, edge terminations were made such that small widths or “slivers” of pavers abutted the edging, creating an unfinished appearance. Also, the top asphalt course was paved over the porous paver edging with little effort given to providing a smooth, finished transition to the pavers.

Further Action Needed: The porous paver and asphalt specifications will be revised in future applications to address these concerns. Paver and adjacent asphalt pavement placement should be closely monitored and inspected prior to acceptance.

Project Metrics Summary

Bid Price	$179,300
Change Order Total	$8,746
Total Project Cost	$188,046
Total Estimated CSO Reduction	328,000 gallons
Cost per CSO Reduction	$0.57 per gallon