Transmittal Memorandum

Date: September 26, 2017

To: Damaris Hanson, Environmental Program Manager

From: Dr. Darla Inglis, Central Coast Low Impact Development Initiative (LIDI)

Re: Transmittal of green Infrastructure concept designs for the City of Morro Bay

This memorandum describes the completion of green infrastructure concept designs completed by LIDI in collaboration with AmeriCorps CivicSpark, Cannon Corp Engineering and staff from the City of Morro Bay. Transmittal of the concept designs includes files for concept design siting, sizing, performance and cost estimates. Project renderings (images, photos, drawings) are also included for each design and vary in detail depending on design complexity.

The Central Coast Low Impact Development Initiative is a program designed to support stormwater mitigation through LID designs and hydromodification controls with the broader vision of a healthy watershed in mind. As part of the 2016-2107 LIDI Work Plan, LIDI developed green infrastructure (e.g., LID) designs to improve stormwater management and provide ancillary economic, social and environmental benefits. Selection of design projects was focused primarily on the municipalities' existing Capital Improvement Program to identify opportunities to cost-effectively integrate stormwater quality improvements using a green infrastructure approach.

In collaboration with the City of Morro Bay, three projects were selected for green infrastructure concept design:

1. Boat Wash Biofiltration Project
2. Embarcadero / Surf Biofiltration Project
3. Cloisters Infiltration Basin

A brief description of each project is provided in this memorandum. Table 1 includes a summary of project characteristics including estimated project performance. Detailed information including sizing, performance calculations and cost estimates are included as part of the transmittal files. Files are provided in the native file format (e.g., Excel) to allow for project design adjustments.

Boat Wash Biofiltration Project

Located on Embarcadero St. in Morro Bay, the seaside boat wash allows the opportunity for boat owners to clean their vessels in an open parking lot area. Currently, runoff from the boat wash area is routed via a valley gutter to a storm drain inlet that outfalls to the Bay. The concept designs we created allow for modification of the landscape strip adjacent to the inlet into a biofiltration Stormwater Control Measure

(SCM). Runoff would be routed into the biofiltration SCM, infiltrated through bioretention soil media with treated runoff exiting the SCM via an underdrain to the existing piped stormwater conveyance system.

Embarcadero / Surf Street Biofiltration Project

Surf Street is located at the North end of the City of Morro Bay. This project addresses stormwater runoff from the drainage area including Surf Street and the surrounding neighborhood. There is an existing drain inlet at the west end of Surf Street, which currently routes untreated stormwater down to the Embarcadero and then through a subsurface conveyance pipe to an outfall that discharges directly into the Bay. This green infrastructure concept design would re-route runoff into a raised biofiltration planter located in an area that will also contain the proposed Maritime Museum. These planters would not only be aesthetically pleasing landscaping, but they would effectively treat up to 140,070 ft^3 in a 24-hr storm event.

Cloisters Infiltration Basin

The Cloisters area is located in the northern portion of Morro Bay on the west side of Highway 1. The Cloisters area was developed as part of a subdivision and includes open space, a park and playground area and a natural wetland. Currently, large stormwater runoff volumes are directed to the Cloisters area via five Drainage Management Areas on the east side of Highway 1. The DMAs are predominantly single family residential with some multi-family residential and light commercial land uses. The DMAs total approximately 14,312,064 square feet. The green infrastructure concept design would retrofit an existing swale on the west side of Highway 1 to create a series of infiltration cells. This centralized BMP would be considered a centralized infiltration basin. The basin would provide stormwater runoff infiltration and water quality treatment (via infiltration). The per square foot cost of $6.50 makes the Cloisters project the most cost-effective of the three concept designs.

Table 1. Summary of Green Infrastructure Designs for the City of Morro Bay

Green Infrastructure Project Concept Design Summary			
Project Name	Boat Wash Biofiltration	Embarcadero / Surf Street Biofiltration	Cloisters Basin
Project Catchment(s)	A-13	A-11	B-01, B-02
Receiving Water	Morro Bay Estuary	Morro Bay Estuary	Natural Wetland, groundwater basin
Design Type	Biofiltration	Biofiltration	Infiltration basin
Design Footprint (ft^2)	616 ft^2	1,654 ft^2	69,785
Drainage Management Area (DMA) (ft^2)	15,397 ft^2	147,931 ft^2	14,312,064 ft^2
Stormwater Volume Treated (event-based)	1,329 ft^3	2,812 ft^3	76,764 ft^3
Stormwater Volume Infiltrated (ft3)	Negligible, treatment focus.	Negligible, treatment focus.	76,764
Stormwater Pollutant Removal (average annual) Total Suspended Solids (TSS)	118 lbs.	Calculated as volume treated (above)	Calculated as volume treated (above)
Percentage of the 85th percentile, 24-hr. storm event managed	100%	31%	11%
Estimated Cost (plan, design, construct)	$27,720	$84,610	$486,341
Concept level designs are intended for planning purposes. Thorough engineering design and calculations are required to design and construct a Stormwater Control Measure (SCM) that will meet performance objectives.			

Files provided via Dropbox include:

LIDI_GIP_Boatwash_final.xlsx	9/11/2017 3:59 PM	Microsoft Excel W...	15,318 KB

LA170119EX_Cloisters-Retention.dwg	8/29/2017 1:15 PM	DWG File	539 KB
LA170119SP_Cloisters-Site-Plan_2017-09-05.jpg	9/18/2017 4:22 PM	JPEG image	3,662 KB
LA170119XS_Cloisters-Profile_2017-09-05.jpg	9/18/2017 4:22 PM	JPEG image	1,075 KB
LA170119XS_Cloisters-Profile_2017-09-05.pdf	9/5/2017 1:43 PM	Adobe Acrobat D...	693 KB
LIDI_Cloisters-Site-Plan_2017-08-23.pdf	8/29/2017 1:16 PM	Adobe Acrobat D...	1,017 KB
LIDI_GIP_Cloisters_final_Sept2617.xlsx	9/27/2017 1:29 PM	Microsoft Excel W...	3,836 KB
Morro_cloisters_DMA_090517.pptx	9/5/2017 2:08 PM	Microsoft PowerP...	1,695 KB
Retention Calcs_Cloisters_2017-09-11.xlsx	9/18/2017 4:45 PM	Microsoft Excel W...	13 KB

LA170119EX_Surf-St-Planter.dwg	8/30/2017 12:09 PM	DWG File	313 KB
LIDI_GIP_Embarc_final_092617.xlsx	9/26/2017 12:48 PM	Microsoft Excel W...	9,079 KB
LIDI_GIP_Surf-St-Planter-20 SCALE-C1.pdf	9/5/2017 2:24 PM	Adobe Acrobat D...	816 KB
LIDI_GIP_Surf-St-Planter-20 SCALE-C2.pdf	9/11/2017 3:08 PM	Adobe Acrobat D...	791 KB
LIDI_Surf_Max.pdf	8/30/2017 12:10 PM	Adobe Acrobat D...	903 KB
Morro_Surf_DMA_090517.pptx	9/5/2017 2:08 PM	Microsoft PowerP...	1,596 KB
Surf-St-Planter_PS_2017-07-17.pdf	8/30/2017 12:10 PM	Adobe Acrobat D...	1,956 KB