

# Resiliency Through Restoration: West Harbor Road/East Chew Avenue Flood Mitigation Feasibility Assessment and Concept Plan

Introduction:

Roy Myers, Chairman

Climate Change & Sea Level Rise Commission

**St. Michaels Floodwatch Map  
at 4-foot Sea Level Rise  
by Dr. Andrew Thaler**



**Flooding Projections for Miles and  
San Domingo Creek  
as per Annapolis Tide Gauge  
by Dr. William Boicourt**

Present and Projected Annual Tidal Level Exceedances  
Assuming Average Tidal Behavior 2019 -2021  
(No Hurricanes) and Annapolis Tide Gauge

Ft. above Present MSL	Present	2050	2075
6	0	0	1
5	0	3	6
4	1	5	83
3	2	64	Most Tides
2	35	Most Tides Under Water	



# West Harbor Rd/ East Chew Public Slip Area Flood Mitigation



- Mitigate flooding in the study area.
- Improve area for all users.
- Assess protections and green techniques.
- Provide conceptual plans for future grant funding.

**GMB**

ARCHITECTS  
ENGINEERS

Brent Jett, P.E., CFM, CC-P Coastal Resiliency Group Leader,  
Senior Project Engineer with GMB, Seaford office.

# Concept Plan Objectives:

- Mitigate flooding in the study area.
- Improve area for all users.
- Assess protections and green techniques.
- Provide conceptual plans for future grant funding.

# Public Meetings:

- Open House in March, gathering public input, interactions, pros/cons of the vicinity from residents, slip holders, users of the area
- On-site discussion with the Watermen that dock here in the summer in April
- Public presentation of options in June at Library
- Various CC/SLR open meetings discussing the project and various options

# Existing Conditions:

- Bulkhead at approx. el. 3.0'
- 48 parking spaces (not including potential w shed)
- Hardpacked parking surface...not pervious.
- Lots of grey-scape
- No pedestrian paths
- Lighting is intense in some areas, dull in others

# Existing Conditions







December 2022



# Proposed Improvements:

- New bulkhead raised to elevation 5.0' for flood mitigation
- New piers and piles in the basin raised above current elevation
- Provide boardwalk/walkway/promenade along waters edge at top of new bulkhead for pedestrian safety
- Reduce Parking spaces from 48 to 42
  - Introduce green space between parking groups and at head of spaces

# Proposed Improvements:

- Close the small boat ramp (lowest spot and rarely used) and improve the big boat ramp
- Provide kayak launch off East Chew
- SWM (Raingardens) for Critical Area and treatment
- Area for a new PARK (+/- 3,300sf)
- Low—level lighting for entire pathway



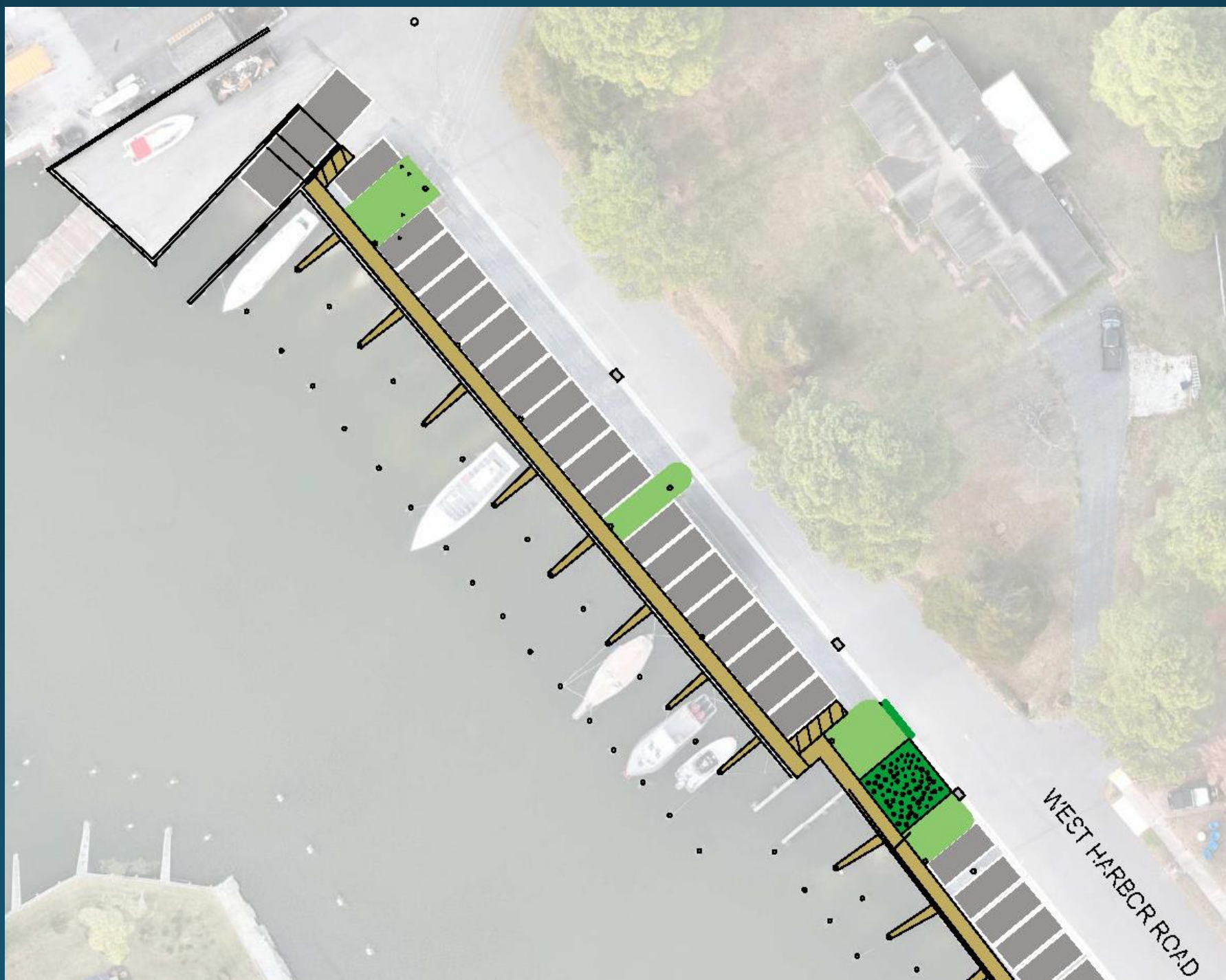
EAST CHESTNUT STREET

WEST HARBOR ROAD

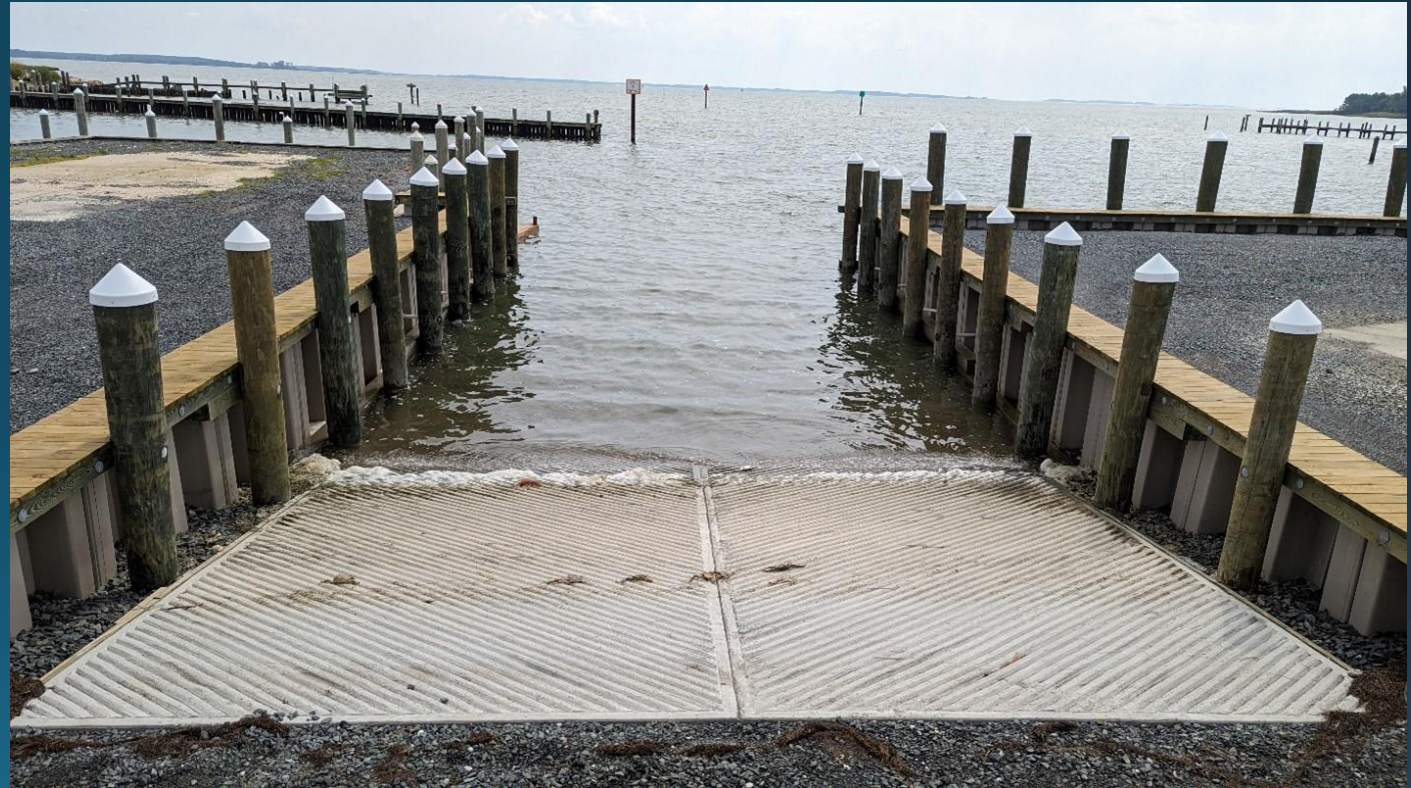
DOUGLASS LANE

EAST CHEW AVE.

MEADOW S



# Existing and Proposed Boat Ramp Improvements







# Proposed Parking, Impervious Area Reduction, and Rain garden Improvements

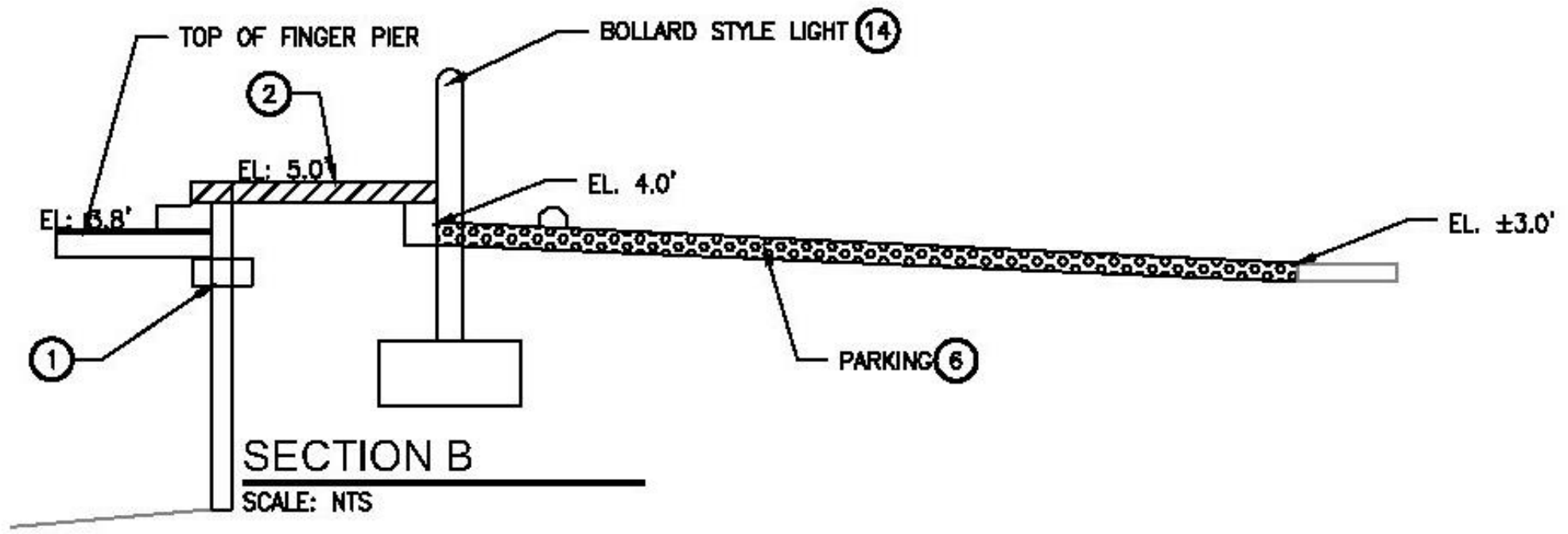
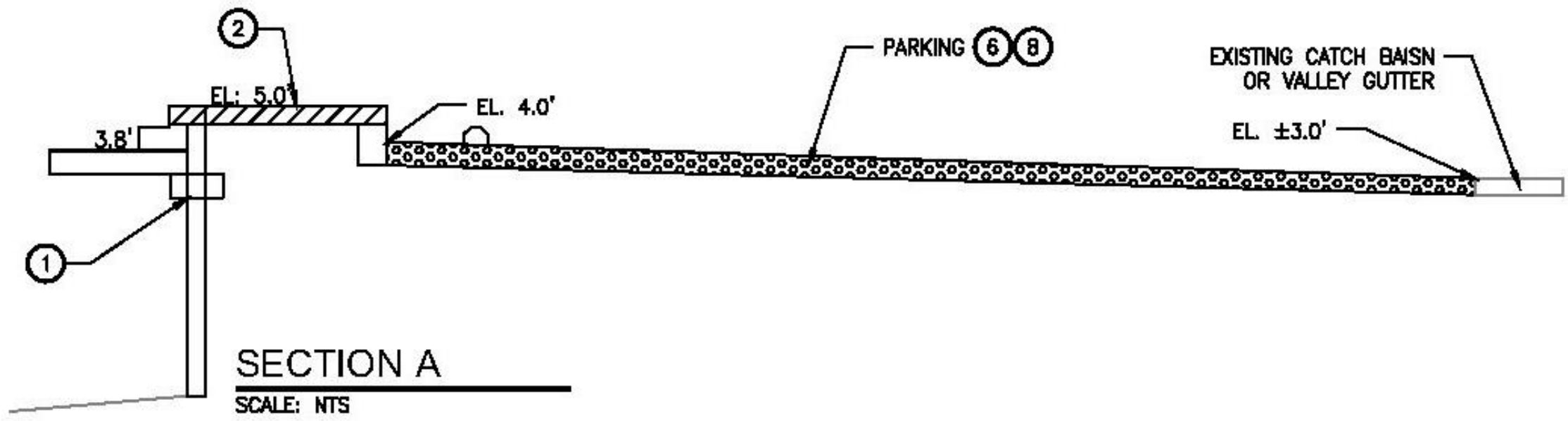


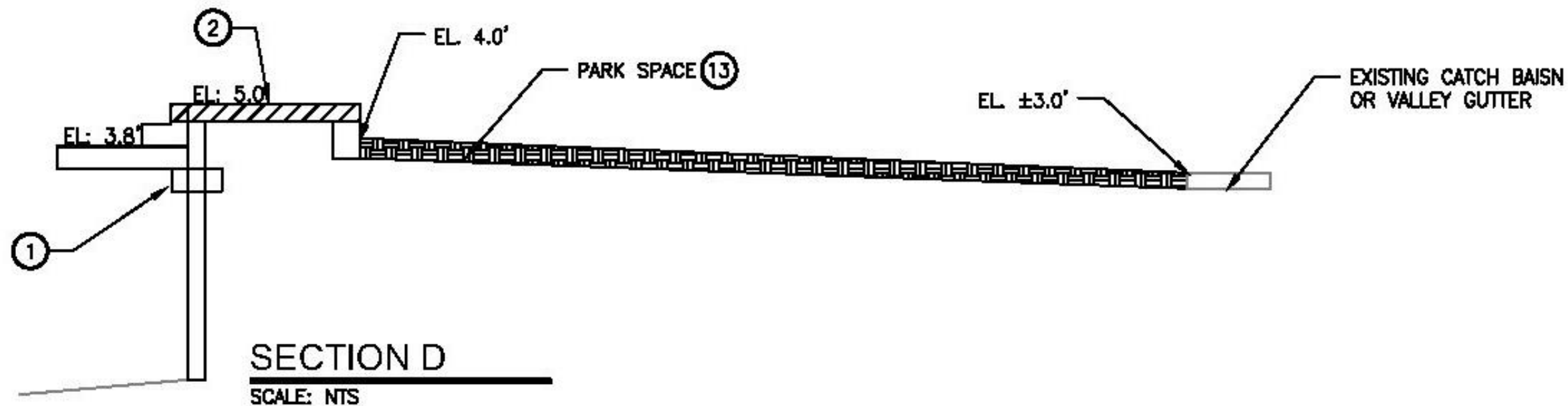
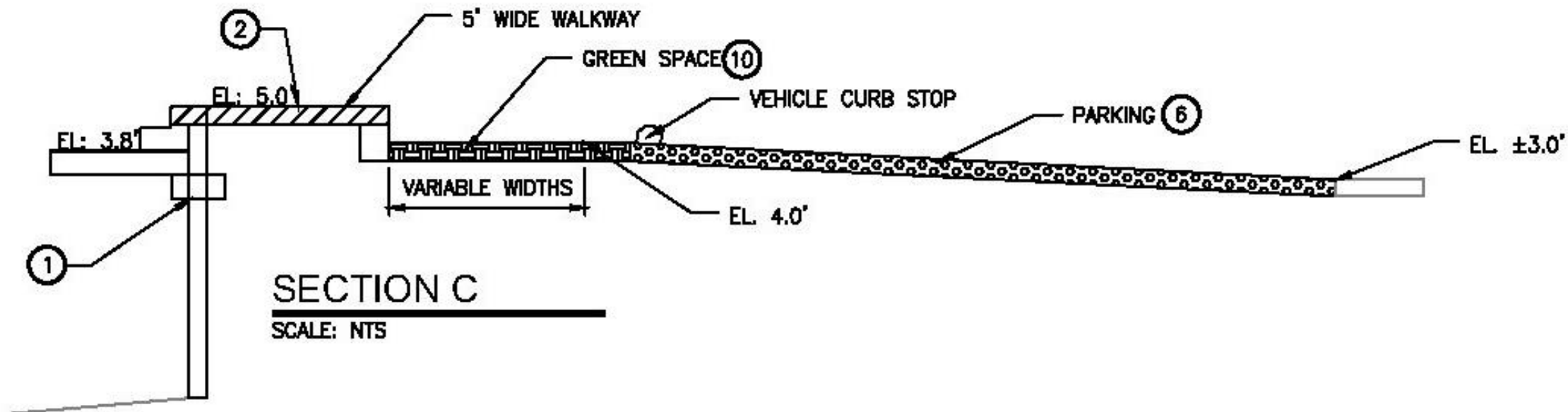
# Existing and Proposed Bulkhead Improvements



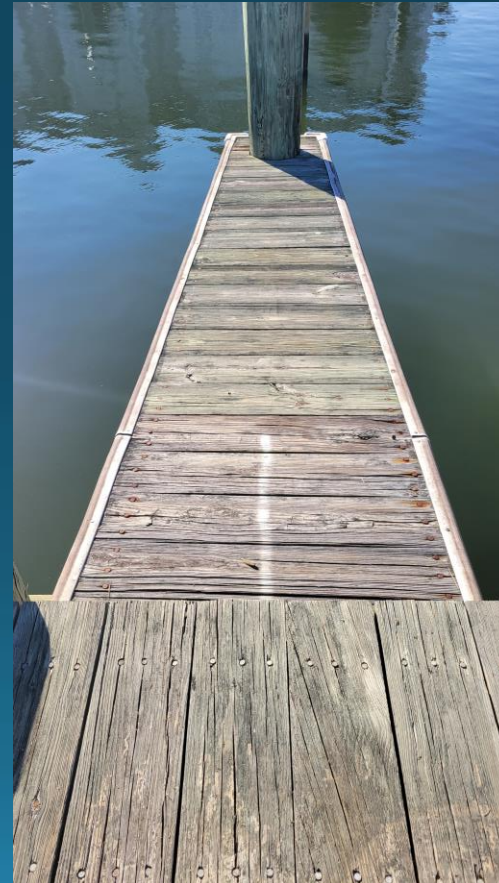
# Existing and Proposed Lighting Improvements







# Proposed Pier Improvements



# Proposed Tide Gate Improvements



# Proposed Individual SWM Pumpstation Improvements





# Proposed Kayak Launch on East Chew



# Questions?

Brent Jett, P.E., CFM, CC-P

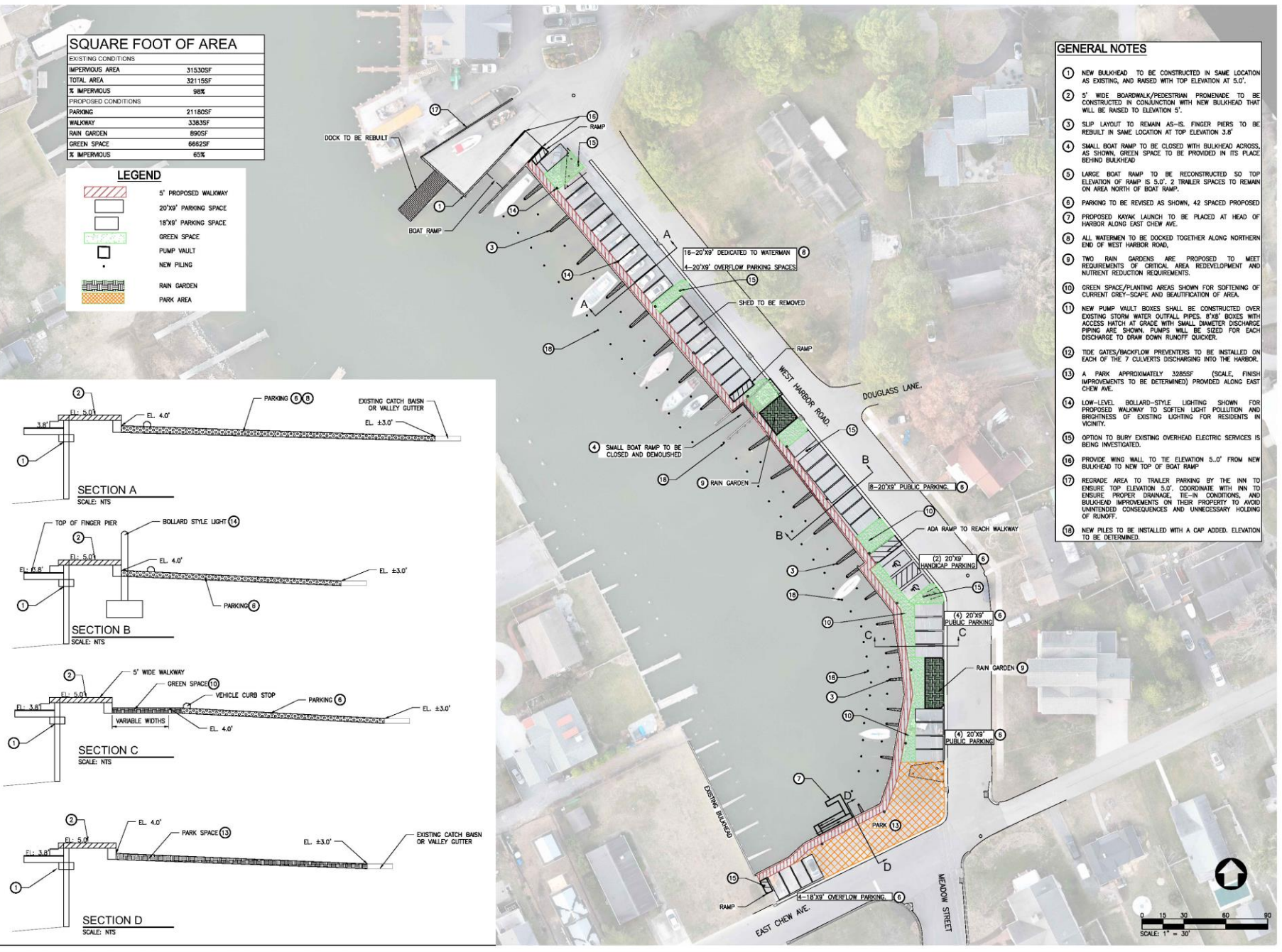
[bjett@gmbnet.com](mailto:bjett@gmbnet.com)

### SQUARE FOOT OF AREA

EXISTING CONDITIONS	
IMPERVIOUS AREA	315,305SF
TOTAL AREA	321,155SF
% IMPERVIOUS	98%
PROPOSED CONDITIONS	
PARKING	211,800SF
WALKWAY	336,935SF
RAIN GARDEN	890SF
GREEN SPACE	666,25SF
% IMPERVIOUS	65%

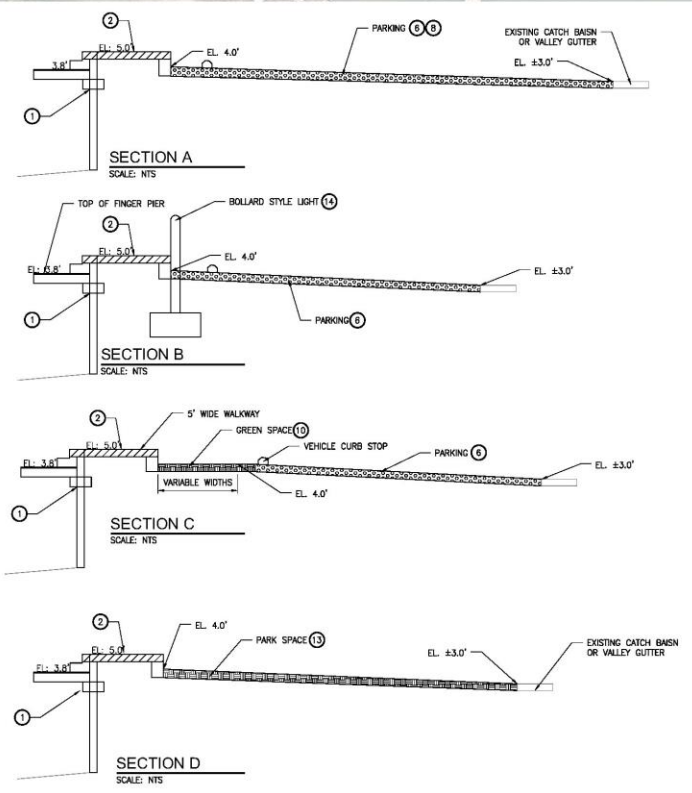
#### LEGEND

	5' PROPOSED WALKWAY
	20'X9' PARKING SPACE
	18'X9' PARKING SPACE
	GREEN SPACE
	PUMP VAULT
	NEW PILING
	RAIN GARDEN
	PARK AREA



### GENERAL NOTES

- NEW BULKHEAD TO BE CONSTRUCTED IN SAME LOCATION AS EXISTING, AND RAISED WITH TOP ELEVATION AT 5.0'.
- 5' WIDE BOARDWALK/PEDESTRIAN PROMENADE TO BE CONSTRUCTED IN CONJUNCTION WITH NEW BULKHEAD THAT WILL BE RAISED TO ELEVATION 5.0'.
- SLIP LAYOUT TO REMAIN AS-IS. FINGER PIERS TO BE REBUILT IN SAME LOCATION AT TOP ELEVATION 3.8'.
- SMALL BOAT RAMP TO BE CLOSED WITH BULKHEAD ACROSS, AS SHOWN. GREEN SPACE TO BE PROVIDED IN ITS PLACE BEHIND BULKHEAD.
- LARGE BOAT RAMP TO BE RECONSTRUCTED SO TOP ELEVATION OF RAMP IS 5.0'. 2 TRAILER SPACES TO REMAIN ON AREA NORTH OF BOAT RAMP.
- PARKING TO BE REVISED AS SHOWN, 42 SPACES PROPOSED.
- PROPOSED KAYAK LAUNCH TO BE PLACED AT HEAD OF HARBOR ALONG EAST CHEW AVE.
- ALL WATERMEN TO BE DOCKED TOGETHER ALONG NORTHERN END OF WEST HARBOR ROAD.
- TWO RAIN GARDENS ARE PROPOSED TO MEET REQUIREMENTS OF CRITICAL AREA REDEVELOPMENT AND NUTRIENT REDUCTION REQUIREMENTS.
- GREEN SPACE/PLANTING AREAS SHOWN FOR SOFTENING OF CURRENT GREY-SCAPE AND BEAUTIFICATION OF AREA.
- NEW PUMP VAULT BOXES SHALL BE CONSTRUCTED OVER EXISTING STORM WATER OUTFALL PIPES. 8" DIAMETER BOXES WITH ACCESS HATCH AT GRADE WITH SMALL DIAMETER DISCHARGE PIPING ARE SHOWN. PUMPS WILL BE SIZED FOR EACH DISCHARGE TO DRAW DOWN RUNOFF QUICKER.
- TIDE GATES/BACKFLOW PREVENTERS TO BE INSTALLED ON EACH OF THE 7 CULVERTS DISCHARGING INTO THE HARBOR.
- A PARK APPROXIMATELY 32855SF (SCALE, FINISH IMPROVEMENTS TO BE DETERMINED) PROVIDED ALONG EAST CHEW AVE.
- LOW-LEVEL BOLLARD-STYLE LIGHTING SHOWN FOR PROPOSED WALKWAY TO SOFTEN LIGHT POLLUTION AND BRIGHTNESS OF EXISTING LIGHTING FOR RESIDENTS IN VICINITY.
- OPTION TO BURY EXISTING OVERHEAD ELECTRIC SERVICES IS BEING INVESTIGATED.
- PROVIDE WING WALL TO TIE ELEVATION 5.0' FROM NEW BULKHEAD TO NEW TOP OF BOAT RAMP.
- REGRADE AREA TO TRAILER PARKING BY THE INN TO ENSURE TOP ELEVATION 5.0'. COORDINATE WITH INN TO ENSURE PROPER DRAINAGE, TIE-IN CONDITIONS, AND BULKHEAD IMPROVEMENTS ON THEIR PROPERTY TO AVOID UNINTENDED CONSEQUENCES AND UNNECESSARY HOLDING OF RUNOFF.
- NEW PILES TO BE INSTALLED WITH A CAP ADDED. ELEVATION TO BE DETERMINED.



PRINTS ISSUED FOR REVIEW

DATE	REVISIONS	NO.

**GMB**  
 GEORGE, MILES & BUHR, LLC  
 ARCHITECTS & ENGINEERS  
 SUITE 100 - WILKINS ROAD - SUITE 100  
 SALISBURY, MARYLAND 21801  
 410-742-2115 FAX 410-742-2121

## WEST HARBOR AND EAST CHEW FEASIBILITY

ST. MICHAELS, MARYLAND

**PROPOSED IMPROVEMENTS**

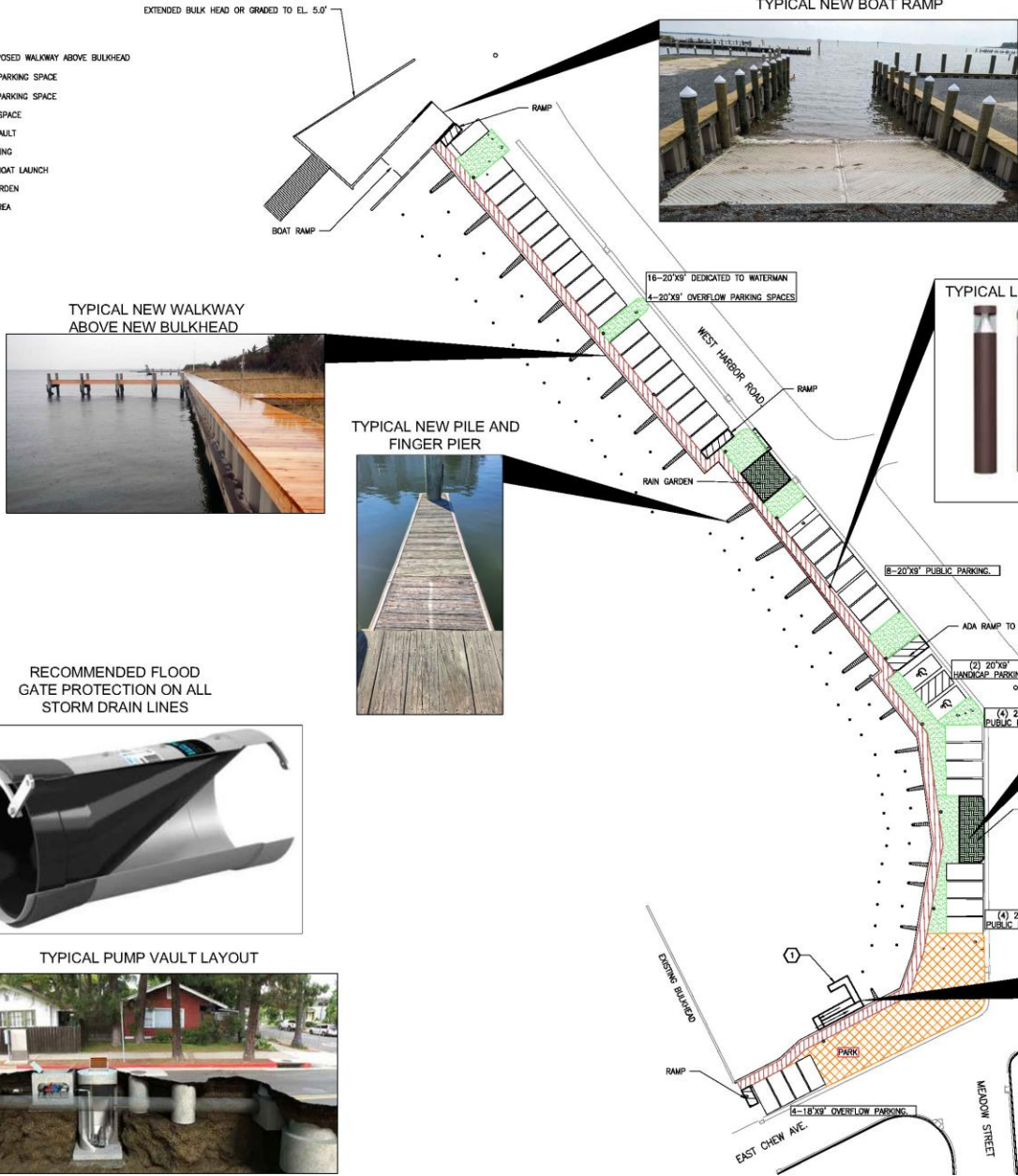
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DATE: JUN 2023	

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**LEGEND**

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-  20'X9' PARKING SPACE
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-  PUMP VAULT
-  NEW PILING
-  KAYAK BOAT LAUNCH
-  RAIN GARDEN
-  PARK AREA

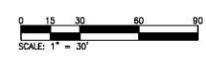


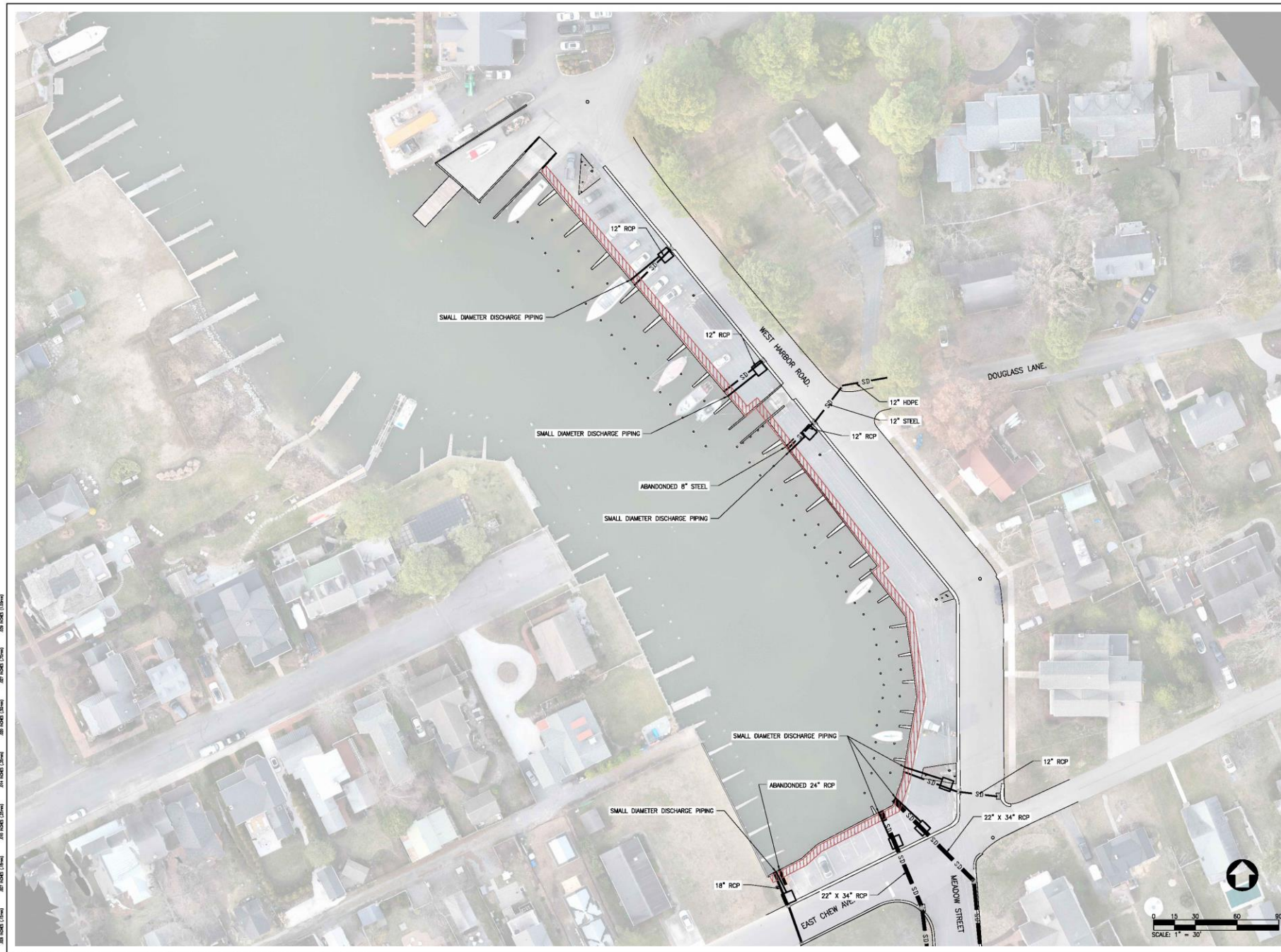
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PRINTS ISSUED FOR REVIEW	
DATE	
REVISIONS	
NO.	
 GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS 20 SALISBURY MARYLAND 21101 410-724-9200	
<b>WEST HARBOR AND EAST CHEW FEASIBILITY</b>  ST. MICHAELS, MARYLAND	
PROPOSED SITE	
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DESIGN BY: BRJ	C1.2
DRAWN BY: CMB	
CHECKED BY:	
DATE: 2/20/23	
DATE: JUN 2023	

PROJECT: 2022 WEST HARBOR AND EAST CHEW FEASIBILITY STUDY  
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 TIME: 2:10pm





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CHECKED BY: CMB  
DATE: 06/01/2023 10:02:30 AM  
SCALE: 1" = 30'

PRINTS ISSUED FOR REVIEW

DATE

REVISIONS

NO.

**GMB**  
GEORGE, MILES & BUHR, LLC  
ARCHITECTS & ENGINEERS  
1605 W. MARYLAND AVENUE  
SALISBURY, MARYLAND 21801  
410-741-2200 FAX 410-741-2290  
www.gmbonline.com

WEST HARBOR AND EAST  
CHEW FEASIBILITY

ST. MICHAELS, MARYLAND

PROPOSED  
STORMWATER

SCALE: AS NOTED

DRAWN BY: BRJ

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DATE: 06/01/2023

DATE: JUN, 2023

SHEET NO.

C.13

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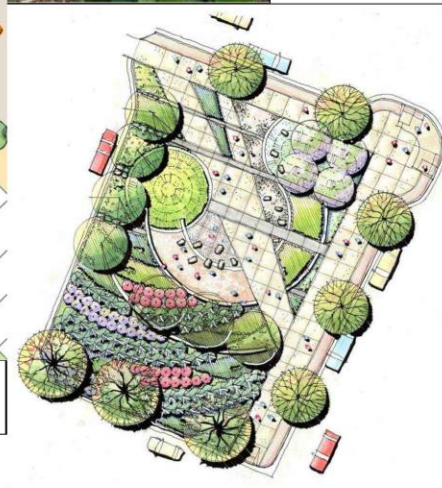
## KAYAK BOAT LAUNCH OPTIONS



## PARK AREA OPTIONS AND IDEAS



- 1 GATHERING SPACE
- 2 OPEN LAWN SPACE
- 3 NATURE PLAY SPACE
- 4 RAIN GARDEN
- 5 POLLINATOR GARDEN



PRINTS ISSUED FOR:	
NO.	DATE

**GMB**  
 GEORGE, MILES & BUHR, LLC  
 ARCHITECTS & ENGINEERS  
 202 BRADDOCK STREET  
 SALISBURY, MARYLAND 21801  
 410-741-1100 FAX 410-741-1021

WEST HARBOR AND EAST  
 CHEW FEASIBILITY

ST. MICHAELS, MARYLAND

DETAILS

SCALE:	AS NOTED	SHEET NO.
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