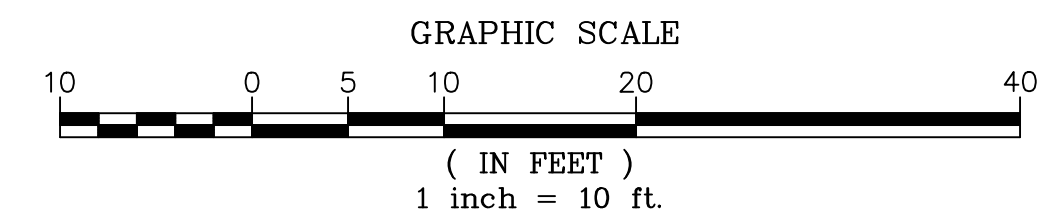


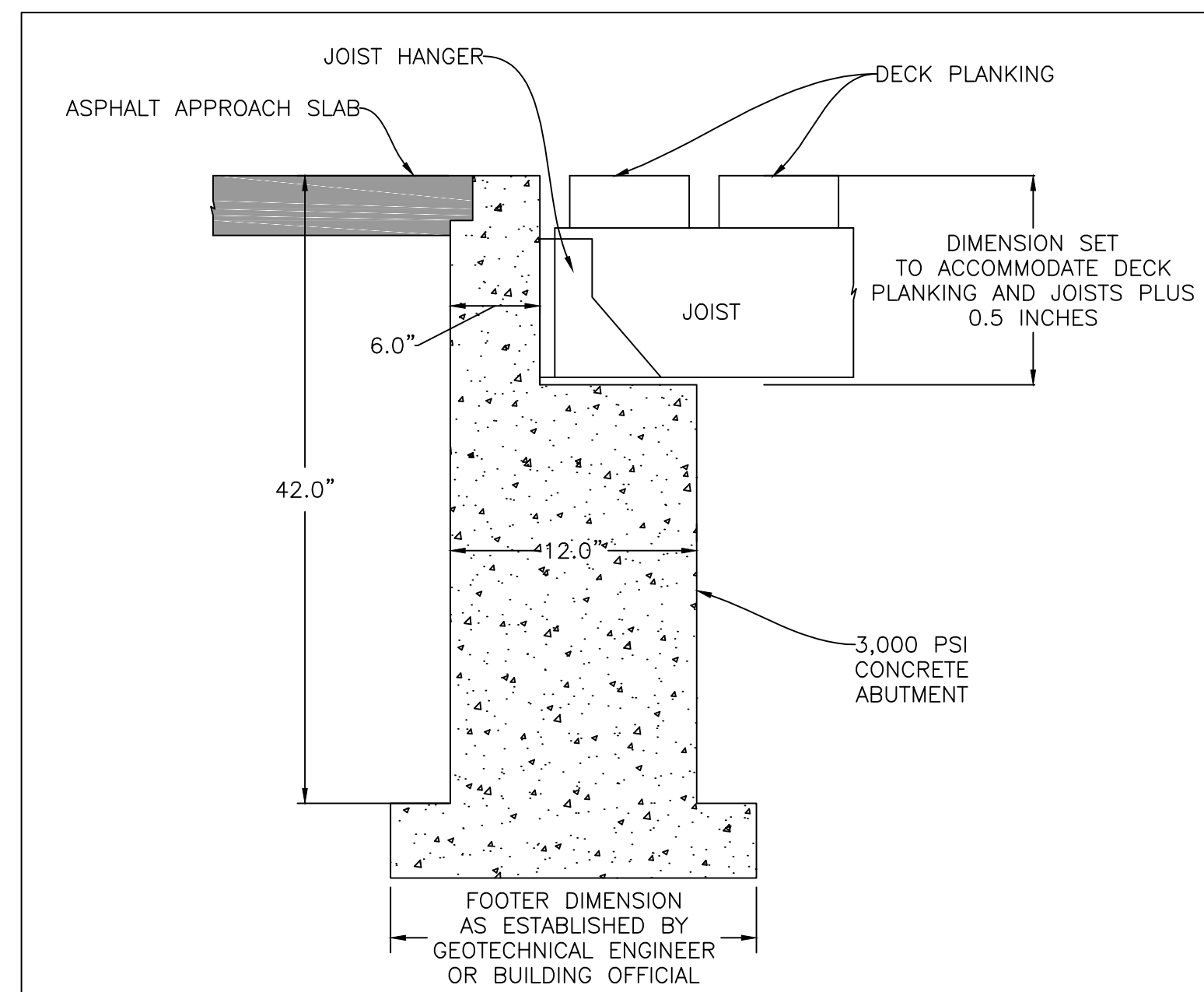
LEGEND
 [Hatched Box] WOODEN DECK



NOTES:

- MUST COMPLY WITH VIRGINIA SEED LAW TO ASSURE NO NOXIOUS SEEDS ARE INTRODUCED INTO THE PROJECT AREA.
- SEE APPROVED SITE PLAN FOR EROSION & SEDIMENT CONTROL.

DECK TO PARKING TRANSITION DETAIL N.T.S.



FLOATING DOCK, KAYAK LAUNCH, AND GANGWAY

PART 1 - GENERAL

- SUMMARY**
 - FLOATING DOCK SYSTEM.
 - KAYAK AND CANOE LAUNCH WITH ACCESSIBLE TRANSFER SYSTEM.
 - GANGWAY.
- SUBMITTALS**
 - Submit the following in accordance with conditions of the contract and necessary product specifications.
 - Product data for each listed component and component accessory.
 - Shop drawing showing the layout of the floating dock system, kayak and canoe launch with gangway, and attachments to other work.
 - Include details of each component and component accessory including connections.
 - Samples for each exposed finish and profile.
 - Material certifications.
 - Product test reports.
 - Maintenance data.
 - Warranty.
- QUALITY ASSURANCE**
 - Installer qualifications: An employer of workers trained and approved by town of Occoquan.
 - Installer's responsibilities include fabricating and installing and providing professional engineering services needed to assume engineering responsibility.
 - The dock system, anchorage, and connections shall be designed according to the recommendations of the American Society of Civil Engineers Manual and Report on Engineering Practice Number 30, "Planning and Design Guidelines for Small Craft Harbors", the revised edition.
- WARRANTY**
 - Floating dock (8 years) - Modular dock units and lifts are warranted against cracks, breakage, leaks, and ultraviolet deterioration caused by defects in material and manufacturing workmanship for a period of eight (8) years from the date of final acceptance by the owner.
 - Hardware and accessories (1 year) - Hardware and accessories are warranted against defects in material and manufacturing workmanship for a period of one (1) year from the date of final acceptance by the owner.

PART 2 - COMPONENTS

- FLOATING DOCK SYSTEM**
 - Float and Deck Design**
 - The docking surface and float structure shall be constructed as a single, integrated component. Each section shall support the dead load plus a live load of 62.5 lbs./sq. ft.
 - Individual dock stations shall consist of a specified number of interior, air-filled pylons. Each pylon shall support the dead load plus a live load of 55 pounds and have a volume of no less than 1540 cubic inches (in³).
 - Individual dock sections shall be constructed of virgin polymers, thermoplastic, and rotational molding grade linear low density polyethylene (LLDPE) with an ultraviolet inhibitor system (UVI) or better, spectrometer specifications.
 - Standard color: beige.
 - The density of the section shall be approximately 0.932 grams per cubic centimeter (g/cm³) or 0.0338 pounds per cubic inch (lbs./in³), per ASTM 792-00.
 - The dock section shall have a cold brittleness temperature equal to, or less than, -130° Fahrenheit (F), per ASTM D-746.
 - Dock section exterior wall thickness properties:
 - The mean exterior material thickness shall be no less than 0.210 inches (in).
 - The corners shall be no less than 0.650 inches (in).
 - The exterior edge thickness shall be no less than 0.50 inches (in) at any particular point.
 - The walls of the dock sections shall resist a shear of no less than 1900 pounds per square inch (lb./in²) per ASTM D-732, as well as having the capability of resisting a mean minimum impact of no less than 207 foot-pounds (ft.-lb.) per ASTM D-5420.
 - The tensile strength at average failure shall be no less than 2500 pounds per square inch (lb./in²) width 14% elongation at yield, per ASTM D-638-03.
 - The decking surface shall be composed of a textured surface with a grid pattern. The decking surface shall have 0.5 inch (in.) wide by 0.5 inch (in.) deep drainage troughs positioned at intervals no less than 45 inches and no greater than 65 inches over the entire length of the dock.
 - The deck shall have coefficient of friction equal to 0.35 during dry conditions and 0.61 during wet conditions per ASTM D2394.
 - The mean deck thickness shall be no less than 0.315 inches (in).
 - The deck thickness shall be no less than 0.290 inches (in) at any particular point.
 - The deck shall resist a punching shear no less than 1900 pounds per square inch (lb./in²), per ASTM D-732.
 - The deck shall resist a minimum impact of no less than 120 foot-pounds (ft.-lb.) at the center, or at the point where the deck is thinnest, per ASTM D-3029.
 - The deck shall resist a minimum impact of no less than 150 foot-pounds (ft.-lb.) within 16 inches (in) of the outside of the dock, per ASTM D-3029.
 - Floating Dock Structure**
 - The dock structure, as a whole, shall consist of the individual sections, which are to be coupled together. Any material used in the dock structure shall provide for resistance to rust, corrosion, and the effects of any fuel or gasoline.
 - The dock structure shall act as one unit when assembled, so that wave and/or wind action shall produce a minimum amount of motion. The structure shall be secured with piles, securing shall allow the structure to rise and fall freely with any water level changes and allow the structure to span waves from crest to crest.
- Connections of Dock Sections**
 - Each dock section shall have molded-in female-type pockets spaced symmetrically along the top and bottom edges, around the entire perimeter of the dock section. Pockets shall be spaced at 18 inch (in) intervals, center line to center line, from each other. All un-used pockets are to be filled with the manufacturer's pocket filler.
 - The molded-in female-type pockets shall accept a male-type coupler which shall be secured into the female pocket with the use of a 0.625 inch (in) x 13 (in) coupler bolt and nut.
 - Each connection point shall allow for some slippage that will allow for disconnection without causing damage either to the male-type couplers of the female-type pockets.
 - The dock sections shall be connected at increments of 19.2 inches (in) in relation to each other. These connections may be made from any one side of any dock section to any other side of another dock section.
 - The male-type coupler shall be constructed of recycled post-/pre-consumer recycled tire rubber, and shall withstand a pullout force of no less than 2500 pounds (lb.) before failure of coupler occurs.
 - Each of the molded-in female connection pockets shall provide for a pullout strength of no less than 3000 pounds (lb.), before damage is caused to the dock station.
 - The accessories shall be connected to the dock system through the use of molded-in coupler pockets around the perimeter of the dock sections by the use of either male or female type half-couplers. The male-type half-coupler shall have a 3/625 inch (in) bolt embedded within it. The female-type half-coupler shall have a 3/625 inch (in) nut embedded within it. Both types of half-coupler shall withstand a pullout force of no less than 2600 pounds (lb.) before failure occurs.
- ANCHORAGE**
 - The dock system shall be designed to allow for the use of proper anchorage based on the environmental and water conditions at the installation site.
- SECURITY CURBING**
 - Security curbing shall be provided around the perimeter of floating dock. COLOR: BROWN

F. LOAD DESIGN

- DEAD LOAD**
 - The dead load shall consist of the entire dock system plus any additional attachments to the dock system.
 - Each dock section, without additional attachments, shall provide a freeboard of approximately 12.75 inches (in).
 - The surfaces of adjacent deck surfaces shall have an elevation difference of no more than 0.125 inches (in).
 - The deck surface of each 80 inch (in) x 10 foot (ft.) dock section shall not slope more than 0.35 inches (in) over the width of dock section.
 - LIVE LOAD DUE TO VERTICAL LOADS**
 - Under dead load conditions plus an additional 30 pounds per square foot (lb./ft²) of uniform live load, flotation shall provide for a minimum of 7 inches (in) of freeboard.
 - The dock structure shall support a concentrated vertical load of up to 400 pounds (lb.) at any particular point on the surface of the deck. The structure shall accomplish this while maintaining flotation.
 - LIVE LOAD DUE TO HORIZONTAL LOADS**
 - The dock system shall sustain the stated design loads applied by normal current and/or debris which are normal to a particular location.
 - The dock system shall be capable of sustaining continuous wave action of up to 1 foot and occasional wave action not in excess of 3 feet during storm conditions.
 - The dock sections shall sustain any loads applied by non-moving ice without damage.
 - The dock system shall be compatible for the use of any boat or vessel size with a properly designed anchorage/mooring system.
 - The dock system and anchorage shall be capable of withstanding sustained wind loads of 77 miles per hour (MPH), or 15 pounds per square foot (lb./ft²), at 100% boat occupancy, unless otherwise specified.
- KAYAK AND CANOE LAUNCH ACCESSIBLE TRANSFER SYSTEM**
 - ENTRY LAUNCH**
 - The body of the entry launch shall be constructed of the same material as the floating dock system. See section 2.1. A for all applicable material properties.
 - The entry launch shall have rollers to allow for water soft movement.
 - The entry launch shall have anodized aluminum side rails mounted on each side.
 - All hardware shall be stainless steel or anodized aluminum rated for marine grade.
 - Provide a stainless steel connection kit compatible with the launch and dock systems.
 - ACCESSIBLE TRANSFER BENCH AND GRAB RAIL**
 - The accessible transfer bench and its components shall be constructed of marine grade anodized aluminum.
 - The accessible transfer bench shall provide two vertical heights.
 - The accessible transfer bench shall provide two projecting transfer slide boards that land securely on the grab rail.
 - The grab rail shall be constructed of marine grade anodized aluminum and mounted to the entry launch.
 - GANGWAY**
 - GANGWAY DESIGN**
 - All construction is to be in accordance with the minimum provisions of states organizations for boating access (SOBA) and the guidelines stated by "MARINES AND SMALL CRAFT HARBORS".
 - Gangway shall be constructed of marine grade 6061-T6 aluminum. All welds shall conform to the American Welding Society structural welding code for aluminum.
 - Non-self-drilling fasteners shall be 300 series stainless steel.
 - Gangways shall be designed to support 90 pounds per linear foot (lbs./lf). The deck and structural components shall be designed to support a concentrated load of 400 pounds applied to any 12 inch x 12 inch square. Lateral designed wind loads shall not exceed 7MPH.
 - Handrails shall be continuous along both sides of the walking surface and shall extend 12 inches past the walking surface on both ends. The top rail portion shall not be less than 34 inches more than 38 inches above the walking surface. The ends of the handrails shall be returned into the handrail body or terminate with no sharp or catching edges. The mounting and components of the handrails shall be capable of withstanding a lateral load of 50 pounds per linear foot.
 - BOARDWALK**
 - BOARDWALK DESIGN**
 - Timbers shall be pressure treated southern yellow pine or coastal douglas fir, grade 1 or better with a minimum Fc of 1200 psi and shall conform to AASHTO STANDARD M 168 FOR WOOD PRODUCTS.
 - Preservatives and pressure treatment process shall be in accordance with AASHTO STANDARD M 133 AND AMERICAN WOOD-PRESERVERS ASSOCIATION (AWPA) STANDARDS. ALL PRESSURE TREATED TIMBER COMPONENTS SHALL BE FREE OF ARSENIC AND SHALL BE AN APPROPRIATE ALKALINE COPPER QUATERNARY (ACQ) FORMATION FOR THE SELECTED WOOD MATERIALS WITH MINIMUM RETENTIONS OF 4 KG/M3 (0.23 LBS/FT3) OR 6.4 KG/M3 (0.4 LBS/FT3) FOR WOOD USED ABOVE GROUND OR IN GROUND CONTACT, RESPECTIVELY.
 - All timber should be select structural material dressed cut 54S (SURFACED FOUR SIDES), EXCEPT TIMBER DECKING SHALL BE CUT SIZE WITH ROUGH FACE PLACED UPWARD TO IMPROVE TRACTION. WHERE ADJACENT TO A PEDESTRIAN BRIDGE, TIMBER DECKING MATERIALS SHALL MATCH MATERIALS USED FOR PEDESTRIAN BRIDGE DECKING.
 - All fasteners to be in accordance with AASHTO STANDARD M 253 AND SHALL BE APPROPRIATE FOR SELECTED TIMBER AND ASSOCIATED TREATMENT METHODS.
 - Final decking and railings to be consistent with existing riverwalk in town.
 - Shop drawings of boardwalk are to be provided to the town prior to construction.

PART 3 - EXECUTION

- EXPERIENCE**
 - The contractor of the floating dock system, kayak launch, and gangway shall have evidence of satisfactory experience for a minimum of five years in design, manufacturing, and installation of all components herein specified.
- FABRICATION**
 - All components specified herein shall be manufactured red at a facility adequately equipped to accomplish the manufacturing process and delivered ready for assembly at the site.
- SHIPPING**
 - Shoring for transit shall be provided. Contractor shall incur all costs for the replacement of all damaged components.
- INSTALLATION**
 - All components specified herein shall be carefully unloaded and kept in orderly piles or stacks until installed.
 - All components specified herein shall be securely tied to avoid wind damage until permanent connections are made.
 - Wherever possible, parts shall be mounted so that they can be removed and replaced without interference from, injury to, or removal of other parts.
- CONTRACTOR'S SUPERVISION**
 - The contractor shall provide a qualified representative at the job site during the assembly, installation, and anchorage of all components specified herein.
- CLEANING AND PROTECTION**
 - Remove temporary protective coverings and strippable films, if any, as the floating dock, kayak launch, and gangway are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, clean finished surfaces as recommended by the manufacturer. Maintain in a clean condition during construction.

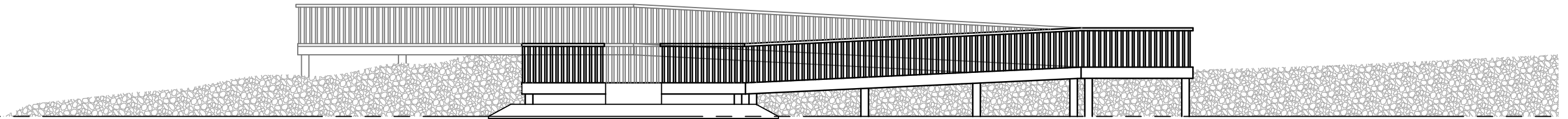
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 FREDERICKSBURG, VA 22401
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**EXHIBIT SHOWING PROPOSED
 FLOATING DOCK, KAYAK LAUNCH
 & GANGWAY**

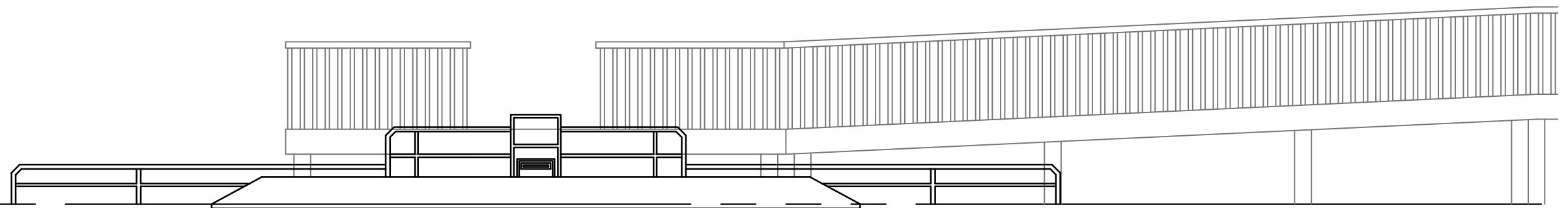
DATE	REVIEW STATUS	REVISION	NO

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FILE NO.	SHEET
DATE	1
5/31/17	OF 2
SCALE	1"=10'



DETAIL DEPICTING GANGWAY IMPROVEMENTS
SCALE 1"=10'



DETAIL DEPICTING EZ DOCK CANOE LAUNCH
SCALE 1"=5'