

An aerial photograph of a waterfront marina. On the left, a tall, modern building with many balconies stands on the shore. In the center, a large white motorboat is docked at a floating dock. To the right, a smaller boat is moving through the water, leaving a wake. Further right, a long pier with palm trees and a small building is visible. In the foreground, a concrete floating dock system is shown with a car parked on it and a large motorboat docked. The water is dark and calm.

# GOLDEN<sup>®</sup>

CONCRETE FLOATING DOCK SYSTEM





# CONCRETE SYSTEM

# **CONCRETE SYSTEM**

**PATENT # 6,250,945**

**PATENT # 10,967,941**

## **FLOTATION MODULE**

- Design is a polyethylene plastic shell encasing a closed-cell EPS (expanded polystyrene) core.
- The polyethylene is specially treated to resist UV deterioration.
- The EPS foam core has a weight of .95-1.10 lb. per cubic ft. conforming to ASTM standard specification C-578.
- The EPS foam has a water absorption rate of less than 1 percent in twenty-four hours, with a maximum of three (3) the percent by volume as tested by ASTM method C-272.

## **CONCRETE SURFACE**

- Air-entrained Portland Cement Type I conforming to ASTM C 150.
- The reinforced concrete surface has a minimum thickness of 2 inches with structural ribs 5 ½" thick.
- The walking deck is poured in one monolithic pour over a galvanized welded wire reinforcement that meets ASTM standard A-185 or polymerized glass fiber reinforced concrete is used with a compression strength of 5,000 psi. at 28-days with flexural strength minimum of 1,500psi when tested in accordance with ASTM C 1018.
- The surface is trowel finished with a broom non-skid texture that is applied transversely to the walking surface creating a long-lasting slip-resistant finish.
- The floating module allows for an individual concrete pour or the insertion of a pre-stressed, pre-cast concrete slab.
- Concrete design options also include the choice of concrete colors and stamped patterns.

## **UTILITY RACE COVERS**

- Service trough covers are custom knurled 6061-T6 grade aluminum. Service troughs are secured with a 300 series stainless screw.

# **CONCRETE SYSTEM**

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## **ALUMINUM WHALER**

- 6061-T6 grade aluminum
- The extrusion is designed with track systems to allow for adjustable cleats, pile guides, and finger piers
- Aluminum whalers come predrilled at 12" intervals to accept the thru rods
- The extrusion measure at 8" h x 3.5" w. To further reinforce the extrusion a 2" x 2" custom channel is inserted then bolted in by thru rods
- All whalers, fascia, or any other member which is subject to foot traffic, will be flush with the concrete walking surface. US Patent #6,205,945

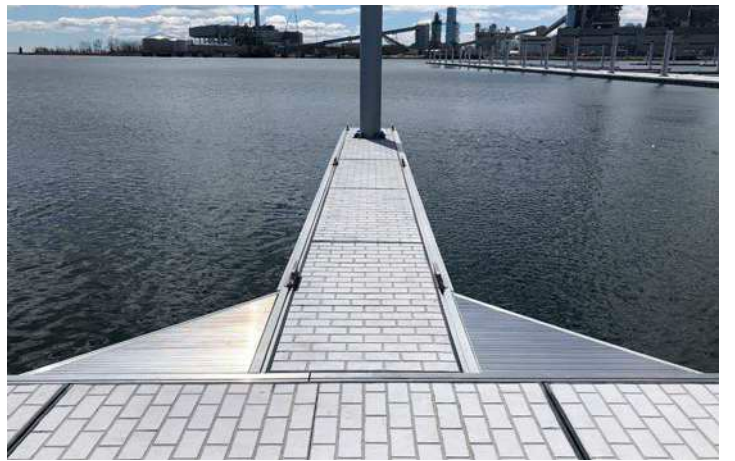
## **THRU-ROD CONNECTIONS**

- All thru-rods are  $\frac{3}{4}$ " thread diameter, hot-dipped galvanized steel (Stainless Steel rods can also be used as an additional cost)
- The rods travel through the floatation module at 12-inch intervals encased in  $\frac{3}{4}$ " inch PVC sleeves cast in the concrete
- Thru-rods are also placed through each module within six (6) inches of each end of the unit and within six (6) inches of each aluminum whaler splice.

## **PILE GUIDES**

- 300 series stainless steel with stainless steel pins and cotter keys
- The rollers are comprised of UHMW
- External pile guides options are 300 series stainless steel or 6061-T6 aluminum construction
- All hardware for each is a 300 series stainless steel.





## CONCRETE MIX DESIGN SUBMITTAL

### MATERIAL:

CEMENT	ASTM C150 TYPE II
FINE AGGREGATE	ASTM C33
COARSE AGGREGATE	ASTM C33
ADMIXTURES EUCON AIR MIX	ASTM 260
ADMIXTURES PLASTOL 431	ASTM C494

### CEMENT:

STRENGTH (ASTM C31 LAB CURED): 5000 PSI

#### BATCH WEIGHT PER CUBIC YARD

• CEMENT (ASTM C150 TYPE II)	752 LBS
• SAND (ASTM C-33) SSD	13665 LBS
• 1/2" NORLITE AGGREGATE	675 (DRY) LBS
• FIBER REINFORCEMENT	1LB
• WATER	36.9 GAL
• EUCON AIR MIX - 250	.02+/- .02 OZ/CWT
• PLASTOL 341	4.0 OZ/CWT
• AIR CONTENT	6.5%
• SLUMP	5+/-1"
• EQUILIBRIUM AIR DRY UNIT WEIGHT	113+/-4PCF

COMPRESSION STRENGTH 28 DAYS 6450

### REINFORCING STEEL:

WELDED WIRE MESH: CONFORMS TO ASTM A496 GRADE 60

- HOT DIPPED GALVANIZED
- 3" CLEAR COVER
- 10" OVERLAP

WHALER SYTEM: 6061-T6 MARINE GRADE ALUMINUM

PILE GUIDE: 316 SERIES STAINLESS STEEL STRUCTURE AND HDW  
W/ HPDM ROLLERS

RUB RAIL: 4" X 6" PT LUMBER/STAINLESS STEEL HDW\

PSF 100PSF

FREEBOARD 20" NOMINAL DD

FREEBOARD 18" NOMINAL LL

BERTHING LOAD 6000 LBS IMPACT

MOORING LOAD 4000 LBS LATERAL LOAD

CONCENTRATED LOAD 500LBS OVER 10' X 10' AREA

WIND/WAVE LOAD 2000 LBS PER LF OVER 20

20" NOMINAL DL

18" NOMINAL LL

6000 LBS IMPACT

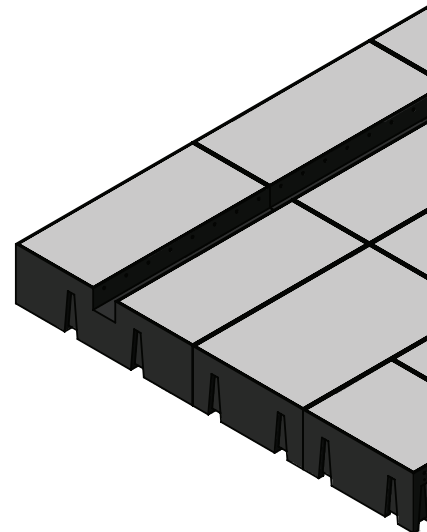
4000 LBS LATERAL LOAD

500 LBS OVER 100 SQFT AREA

2000LBS PER LF OVER 20

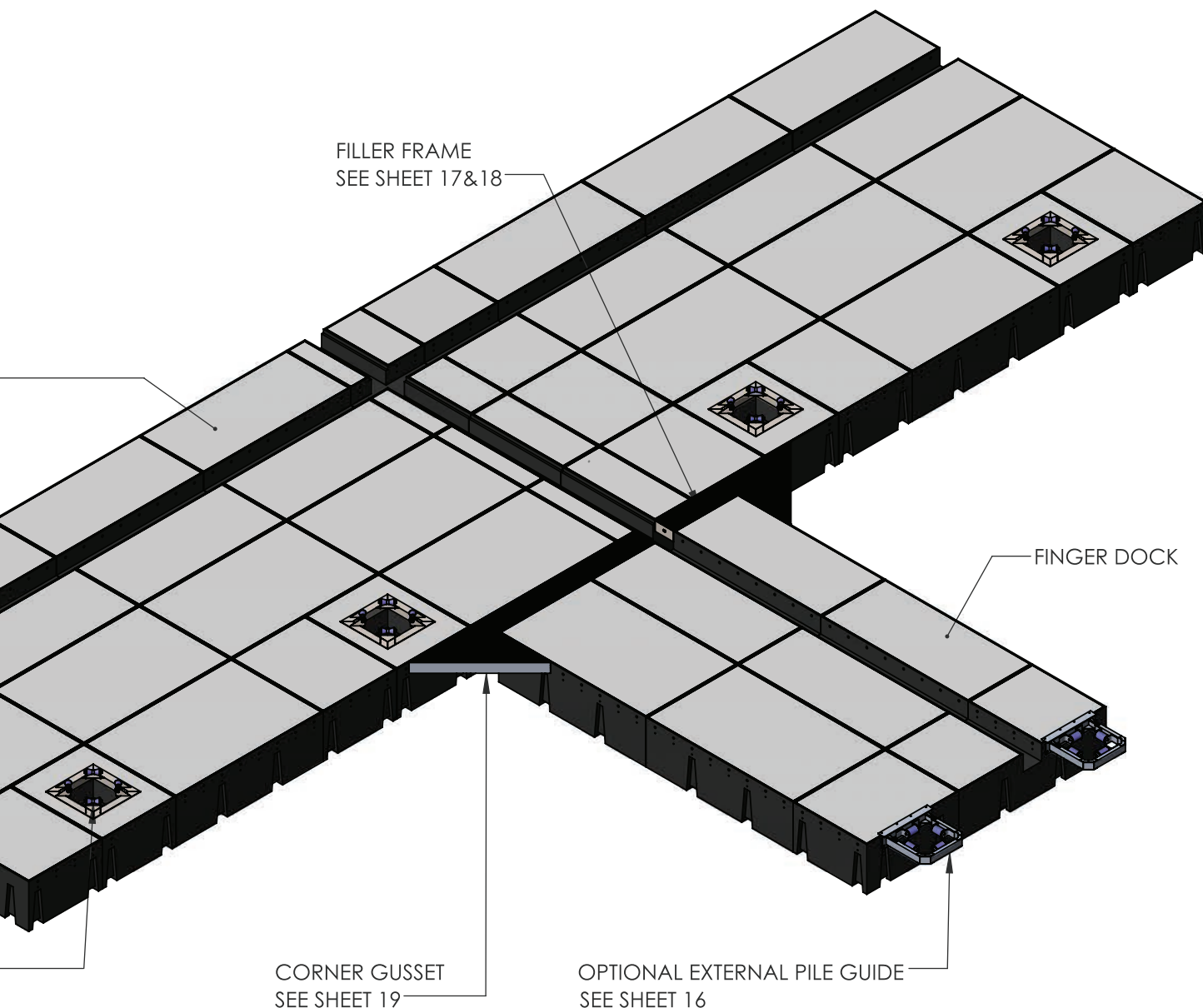
POINT LOAD NOT TO EXCEED 6" WITH 1500 LBS VERTICAL LL APPLIED TO EDGE

MAIN DOCK  
SHOWN FILLED

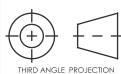


INTERNAL PILE GUIDE  
SEE SHEET 15





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17611 EAST STREET  
N. FORT MYERS, FL 33917  
239-337-4141  
MSHANLEY@GOLDENMARINESYSTEMS.COM

DESCRIPTION

COMPREHENSIVE OVERVIEW

PROJECT

CONCRETE DOCK

GBL NO

CUSTOMER

GMS

MATERIAL

SEE BOM

FINISH

NONE

PART NUMBER

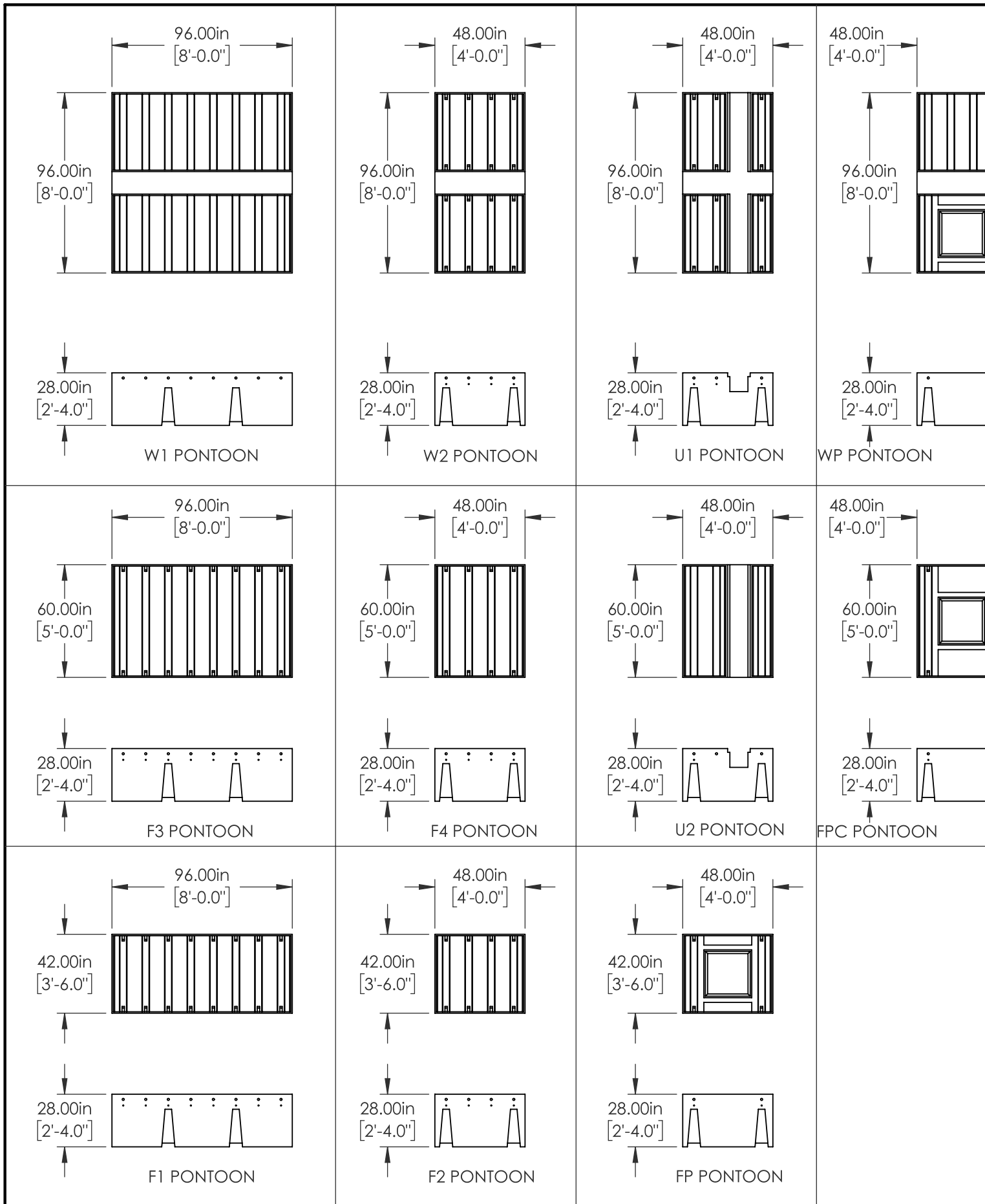
LAYOUT

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## FLOAT SPECIFICATIONS

### FLOAT ENCASEMENT:

DENSITY (ASTM D-1505)	0.937 G/CC
MELT INDEX (190DEG/2.16 KG, ASTM D-1238)	125 G/10 MIN
ESCR (100/LGEPAL, F-50, ASTM D-1693 B)	1000 HRS
TENSILE STRENGTH AT YIELD, 2"/MIN (ASTM-638)	2750 PSI
ELONGATION AT BREAK (ASTM D-638)	600%
FLEXURAL MODULUS (1% SECANT, ASTM D-790)	109000 PSI
LOW TEMPERATURE IMPACT (ARM STD -40DEG F.)	68 FT.LBS
BRITTLINESS TEMPERATURE (ASTM D-746)	-90 C
HEAT DISTORTION TEMPERATURE (ASTM D-648)	63 C

ALL UNITS ARE ROTATIONALLY MOLDED FOR SEAMLESS, ONE-PIECE CONSTRUCTION AND A NOMINAL WALL THICKNESS OF 0.200 INCHES. UNITS ARE MADE USING LINEAR LOW DENSITY VIRGIN POLYETHELENE RESIN CONTAINING UV RAY INHIBITORS AND CARBON BLACK PIGMENT TO PROTECT AGAINST UV DETERIORATION IN COMPLIANCE WITH FDA TITLE 21.

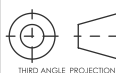
UNITS ARE SUITABLE FOR OUTDOOR USE WITH RESPECT TO EXPOSURE TO UV LIGHT, WATER EXPOSURE, IMMERSION AND FIRE IN ACCORDANCE WITH THE UNDERWRITERS LABORATORY'S CLASS 746C AND FLAME CLASS UL-94HB. THEY ALSO MEET ASTM D1988-04 FALLING DART IMPACT TEST.

### EPS FOAM:

DENSITY (ASTM C-303)	0.90 MIN LB/FT. 3
THERMAL RESISTANCE (ASTM C-177 OR C-518)	
@ 25 DEG F.	4.20 MIN R FOR 1 INCH
@ 40 DEG F.	4.00 MIN R FOR 1 INCH
@ 75 DEG F.	3.60 MIN R FOR 1 INCH
@ 110 DEG F.	3.25 MIN R FOR 1 INCH
COMPRESSION RESISTANCE AT YIELD OR 10% DEFORMATION (ASTM D-1621)	10.0 PSI MIN
FLEXURAL STRENGTH (ASTM C-203)	25.0 PSI MIN
WATER VAPOR PERMEABILITY (ASTM E-96)	5.0 MAX PERM-IN
WATER ABSORPTION (ASTM C-272)	4.0% BY VOL MAX
DIMENSIONAL STABILITY	2.0% MAX
OXYGEN INDEX (ASTM D-2863)	24.0% MIN
COEFFICIENT OF THERMAL EXPANSION (ASTM D-696)	0.000035 IN/IN/DEG F.
FLASH IGNITION TEMPERATURE (ASTM D-1929)	824 DEG F
AUTO-IGNITION TEMPERATURE (ASTM D-1929)	896 DEG F
BTU CONTENT (ASTM NFPA 259)	17425 BTU/LB

ALL UNITS ARE FILLED WITH POLYSTYRENE (EPS) BEADS STEAMED TOGETHER TO LIMIT WATER ABSORPTION AND PROVIDE A SOLID CORE FOR STRUCTURAL INTEGRITY. EPS CONTENTS HAVE A 0.9-1.2LBS/CU.FT DENSITY WITH A WATER ABSORPTION NOT TO EXCEED 3LBS/CU.FT IN ACCORDANCE WITH THE HUNT 7 DAY WATER ABSORPTION TEST. EPS CONTENTS CONFORM TO ASTM C-578 UL STANDARDS. ALSO PASSES UL 1975 AND ASTM E84 TESTS IN REGARDS TO FIRE RESISTANCE.

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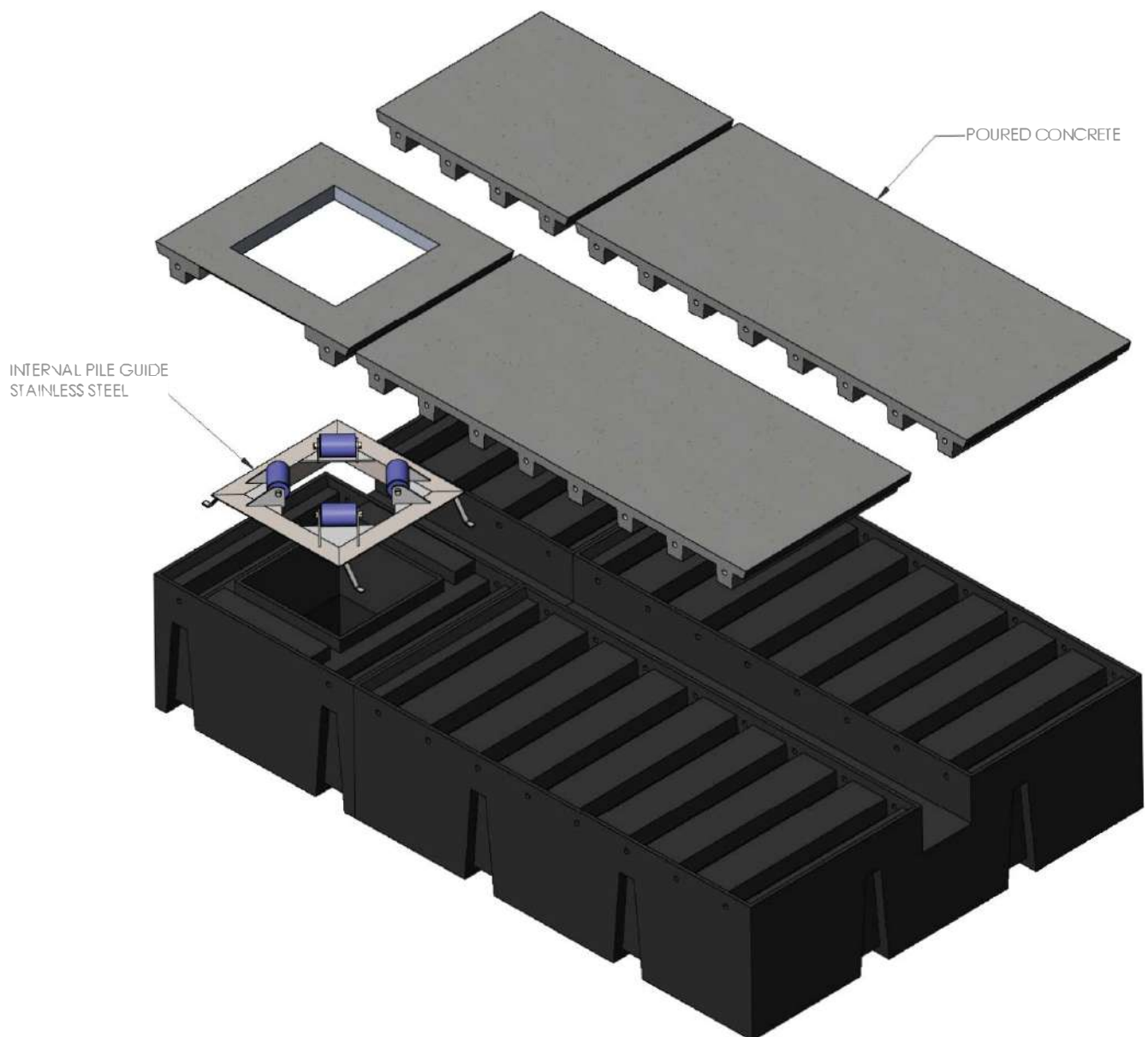
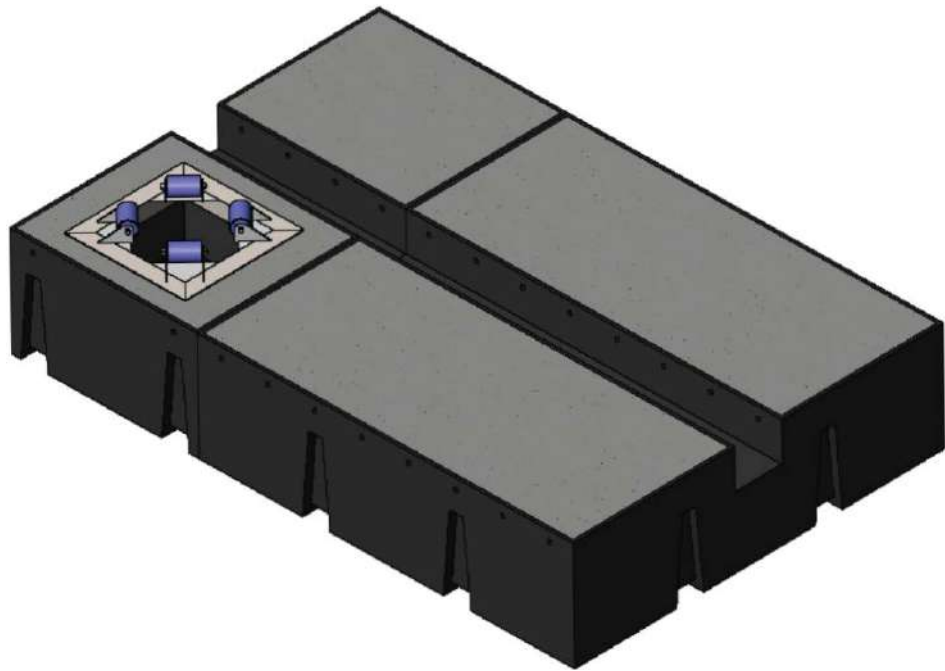
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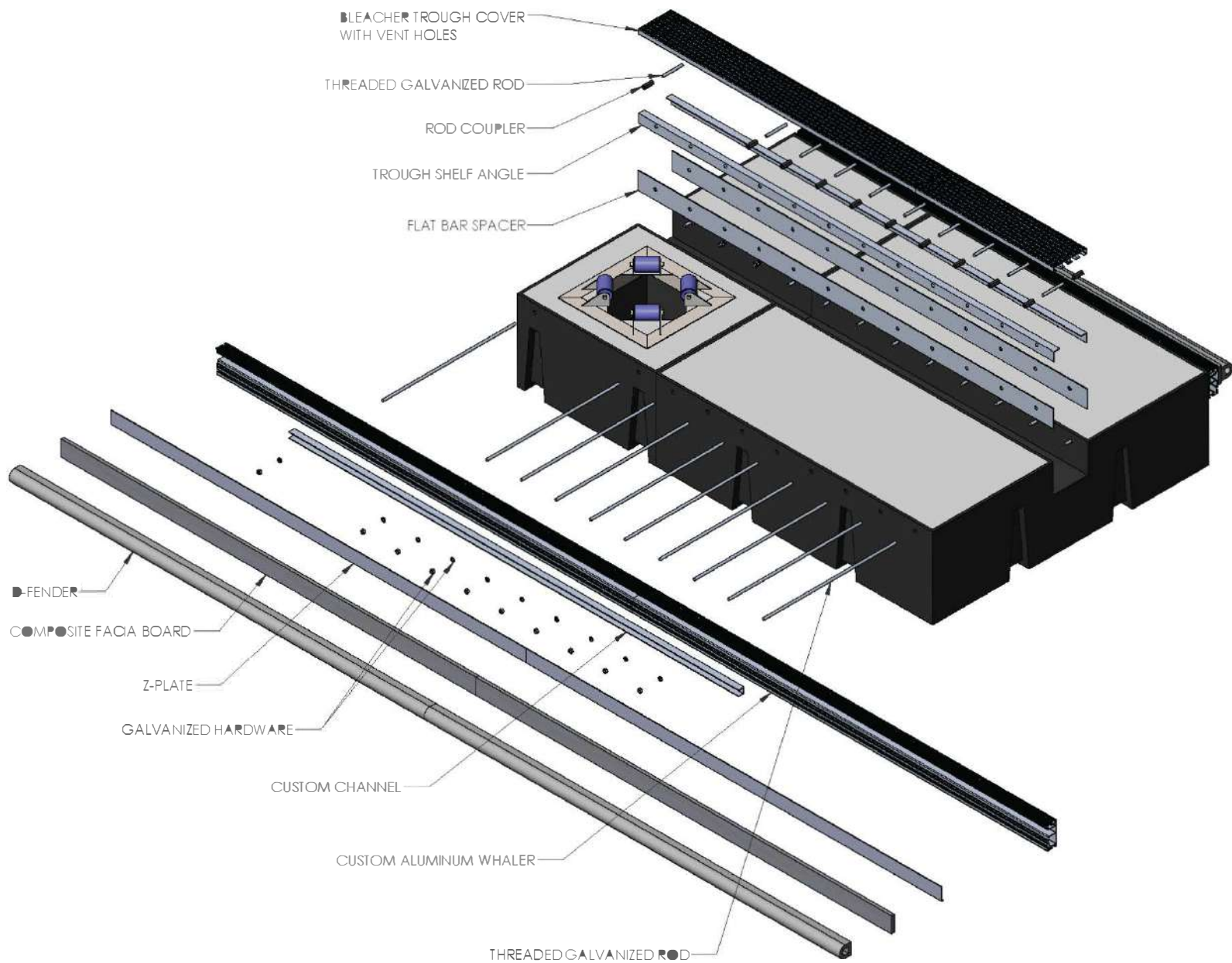
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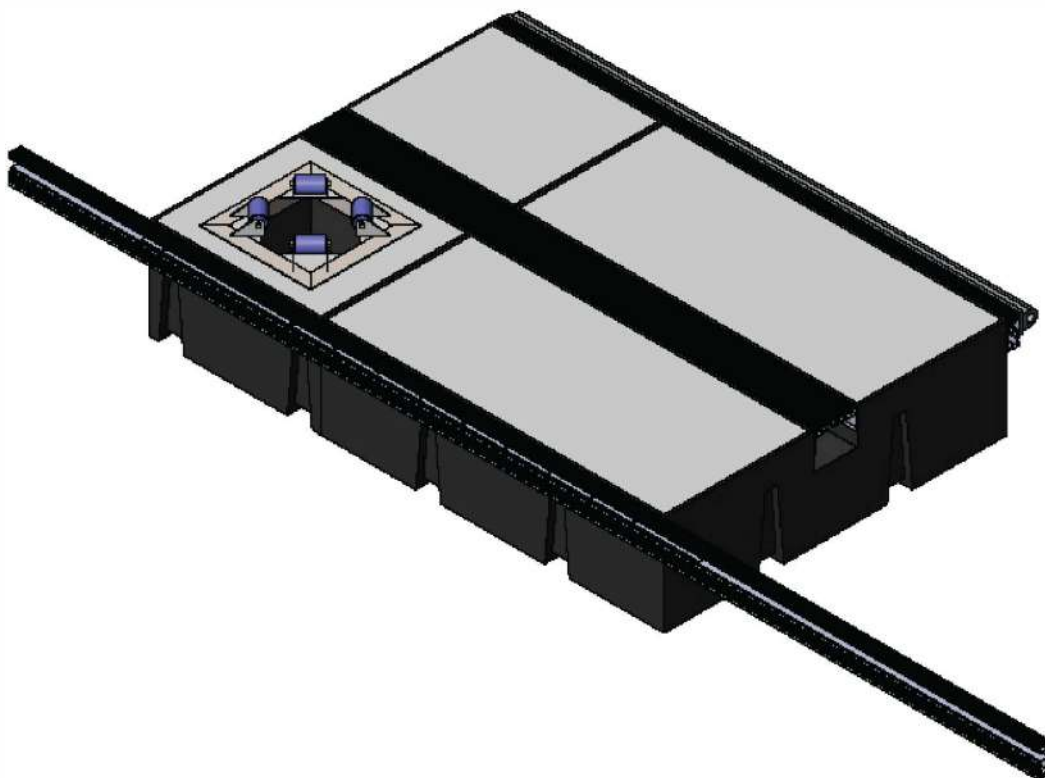
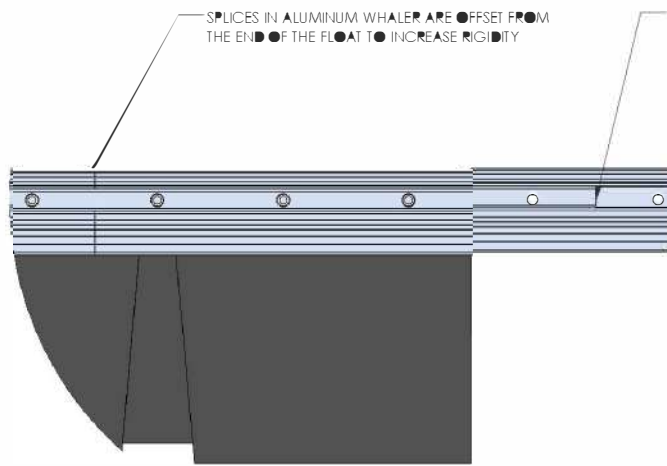
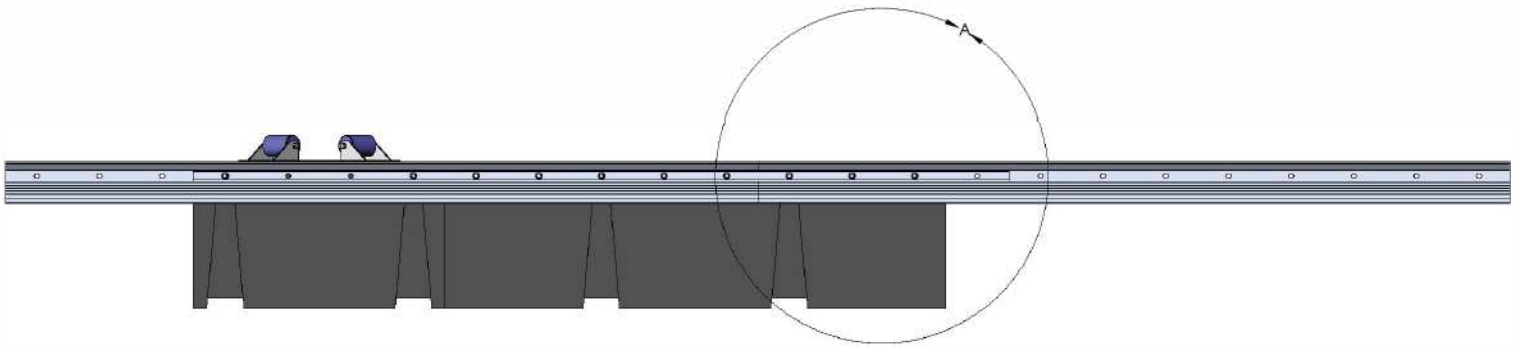
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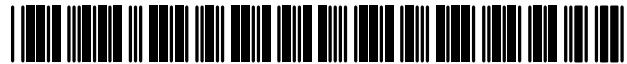












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(12) **United States Patent**  
**Golden et al.**

(10) **Patent No.: US 10,967,941 B2**  
(45) **Date of Patent: Apr. 6, 2021**

(54) **WALER ASSEMBLY**

(56)

**References Cited**

(71) Applicants: **William Golden**, North Fort Myers, FL

**U.S. PATENT DOCUMENTS**

(72) Inventors: **William Golden**, North Fort Myers, FL

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **16/516,655**

(22) Filed: **Jul. 19, 2019**

(65) **Prior Publication Data**

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403/22

**Related U.S. Application Data**

(60) Provisional application No. 62/703,753, filed on Jul. 26, 2018.

(51) **Int. Cl.**  
**B63C 1/02** (2006.01)

(52) **U.S. Cl.**  
CPC ..... **B63C 1/02** (2013.01)

(58) **Field of Classification Search**  
CPC ..... B63C 1/02; B63B 35/53; B63B 35/38;  
B63B 35/34; B63B 3/02; B63B 3/04;  
B63B 3/06; B63B 3/08  
USPC ..... 114/266  
See application file for complete search history.

\* cited by examiner

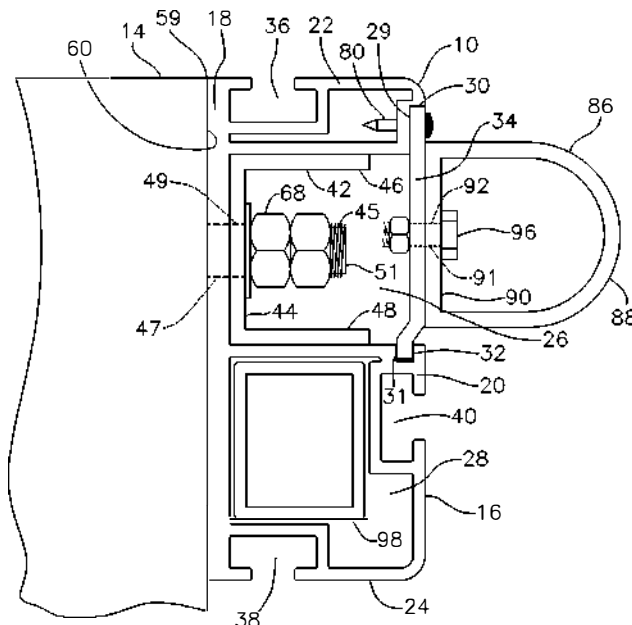
*Primary Examiner* — Anthony D Wiest

(74) *Attorney, Agent, or Firm* — William E. Noonan

(57) **ABSTRACT**

A waler assembly for floating docks and walkways includes an elongate metal extrusion for engaging the side of a series of adjoining float components. The extrusion includes a compartment for conformably receiving an elongate wedge. Connector rods join the extrusion and wedge to the float components. The extrusion carries an elongate strengthening plate that extends across the compartment of the extrusion. Each of the extrusion, wedge and strengthening plate includes a plurality of discrete segments that are aligned end to end. The joints between adjoining segments of the waler assembly are offset to provide improved structural integrity of the waler assembly and the floating dock or walkway.

**20 Claims, 5 Drawing Sheets**





(19) **United States**

<sup>(12)</sup> **Patent Application Publication**  
**Golden et al.**

(10) Pub. No.: US 2020/0047862 A1

(43) **Pub. Date:** **Feb. 13, 2020**

(54) **WALER ASSEMBLY**

## Publication Classification

(71) Applicants: **William Golden**, North Fort Myers, FL

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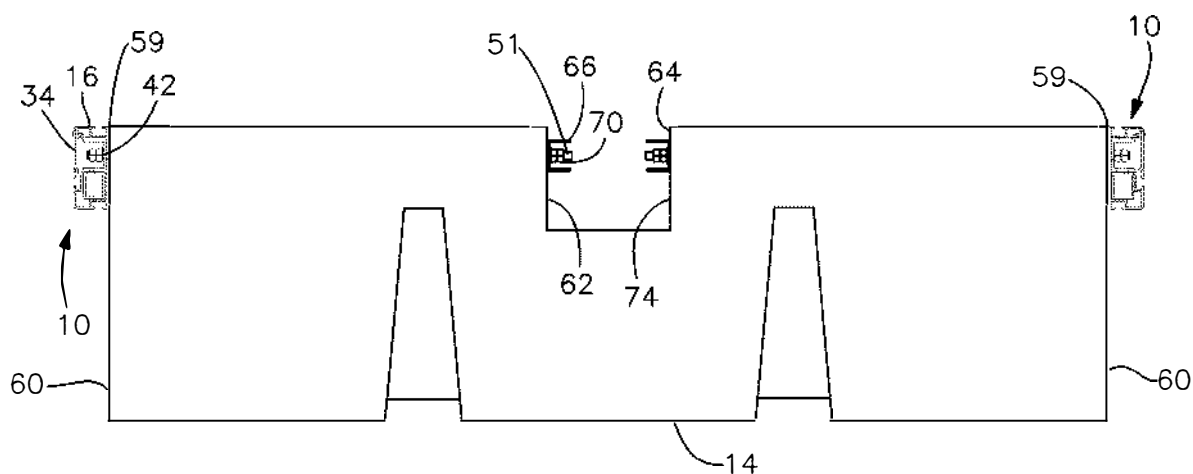
(57) **ABSTRACT**

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A water assembly for floating docks and walkways includes an elongate metal extrusion for engaging the side of a series of adjoining float components. The extrusion includes a compartment for conformably receiving an elongate wedge. Connector rods join the extrusion and wedge to the float components. The extrusion carries an elongate strengthening plate that extends across the compartment of the extrusion. Each of the extrusion, wedge and strengthening plate includes a plurality of discrete segments that are aligned end to end. The joints between adjoining segments of the water assembly are offset to provide improved structural integrity of the water assembly and the floating dock or walkway.

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ISO 9001:2015 Certified and CE Approved Manufacturer

17611 East Street, North Fort Myers, FL 33917

Tel: 239. 337. 4141 | Fax: 239.337.4482 | Toll Free: 888.909.5438

[www.goldenmarinesystems.com](http://www.goldenmarinesystems.com)

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