

Final Submittal

1736 W. 28th Street Variance

Deadline Date:

7/27/2017

Scope Of Work:

- Installation of a L-shaped dock with mooring piles, and new boatlift
- Proposed dock and mooring piles to extend a maximum of 63ft 10inches waterward from wet face of seawall.

Zoning Information

Sec. 66-113. - Limitation on *projection* of structures; public hearing.

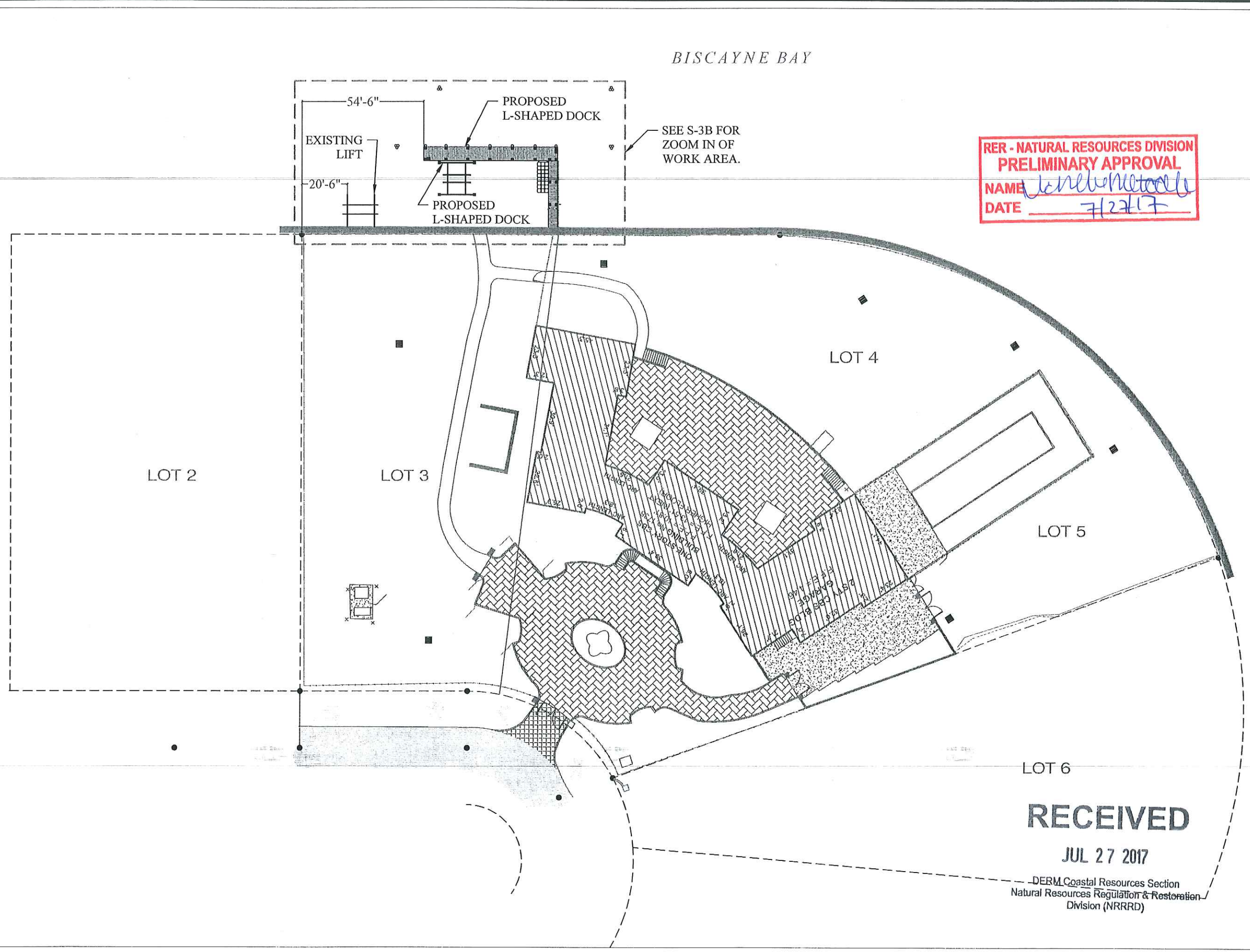
(a)

Boat slips, docks, wharves, dolphin poles, mooring piles or structures of any kind shall not be constructed or erected that extend into any canal or *waterway* in the city more than ten percent of the width of such canal or *waterway* at a specific location measured from the seawall or property as shown by recorded plat line if no seawall exists; but if a canal or *waterway* is more than 100 feet in width, the structure may extend into such canal or *waterway* a distance not greater than 15 percent of the width of such canal or *waterway* at that specific location, but not to exceed a distance greater than 40 feet. However, subject to the review and approval of the applicable state and county authorities, a dock, wharf, dolphin pole, mooring pile or other structure may extend from a lot zoned for residential use into any part of Biscayne Bay or other *waterway* in excess of 1,000 feet in width, a distance no greater than 125 feet and may extend from a lot zoned for business use into Biscayne Bay or other *waterways* a distance not greater than 250 feet. It is further provided that any boat, ship or vessel of any kind shall not be docked or moored so that its *projection* into the *waterway* would be beyond the permissible *projections* for such docks, wharves, dolphin poles, mooring piles or other structures, and the mooring of any type of vessel or watercraft shall be prohibited along either side of the walkway leading from the seawall to a boat dock. Notwithstanding the foregoing, in the event any dock, wharf, dolphin pole, mooring pile or other structure is proposed to extend greater than 40 feet from a seawall adjacent to, or abutting the WD-1 or WD-2 district, conditional use approval from the planning board, in accordance with [chapter 118](#), article IV of the City Code, shall also be required.

(b)

Permits for erection of any of the above facilities must be obtained from the building division, the state internal improvement fund, if necessary, and if abutting navigable streams, the approval of the U.S. Corps of Engineers must be secured.

(Code 1964, § 7-66; Ord. No. 2014-3852, § 1, 4-23-14)



BISCAYNE BAY

EXISTING
LIFT

PROPOSED
L-SHAPED DOCK

SEE S-3B FOR
ZOOM IN OF
WORK AREA.

PROPOSED
L-SHAPED DOCK

RER - NATURAL RESOURCES DIVISION
PRELIMINARY APPROVAL
NAME *John H. Omslaer*
DATE *7/27/17*

LOT 2

LOT 3

LOT 4

LOT 5

LOT 6

RECEIVED

JUL 27 2017

DERM Coastal Resources Section
Natural Resources Regulation & Restoration
Division (NRRRD)

1736 W. 28th STREET
DOCK & BOAT LIFT
PROJECT

Miami Beach, Florida

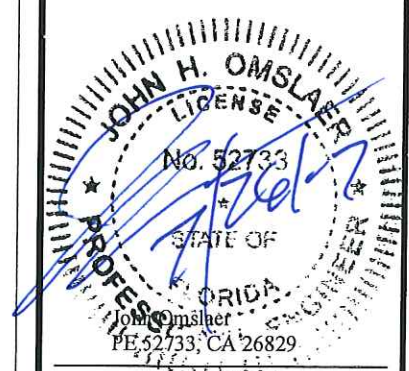
CLIENT:
Mr. Aaron Pepper
Sunset Aqua 1736, LLC
1736 W 28th St
Miami Beach, FL 33140

ENVIRONMENTAL CONSULTANT:
OCEAN
CONSULTING, LLC
340 Minorca Avenue, Suite 7
Coral Gables, Florida 33134
Tel: (305) 921-9344
Fax: (305) 677-3254

CONTRACTOR:

PROJECT ENGINEER:
DYNAMIC ENGINEERING
SOLUTIONS, INC.
351 S. Cypress Road, Suite 303
Pompano Beach, FL 33060
Tel: (954) 545-1740
Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



PERMIT DRAWINGS

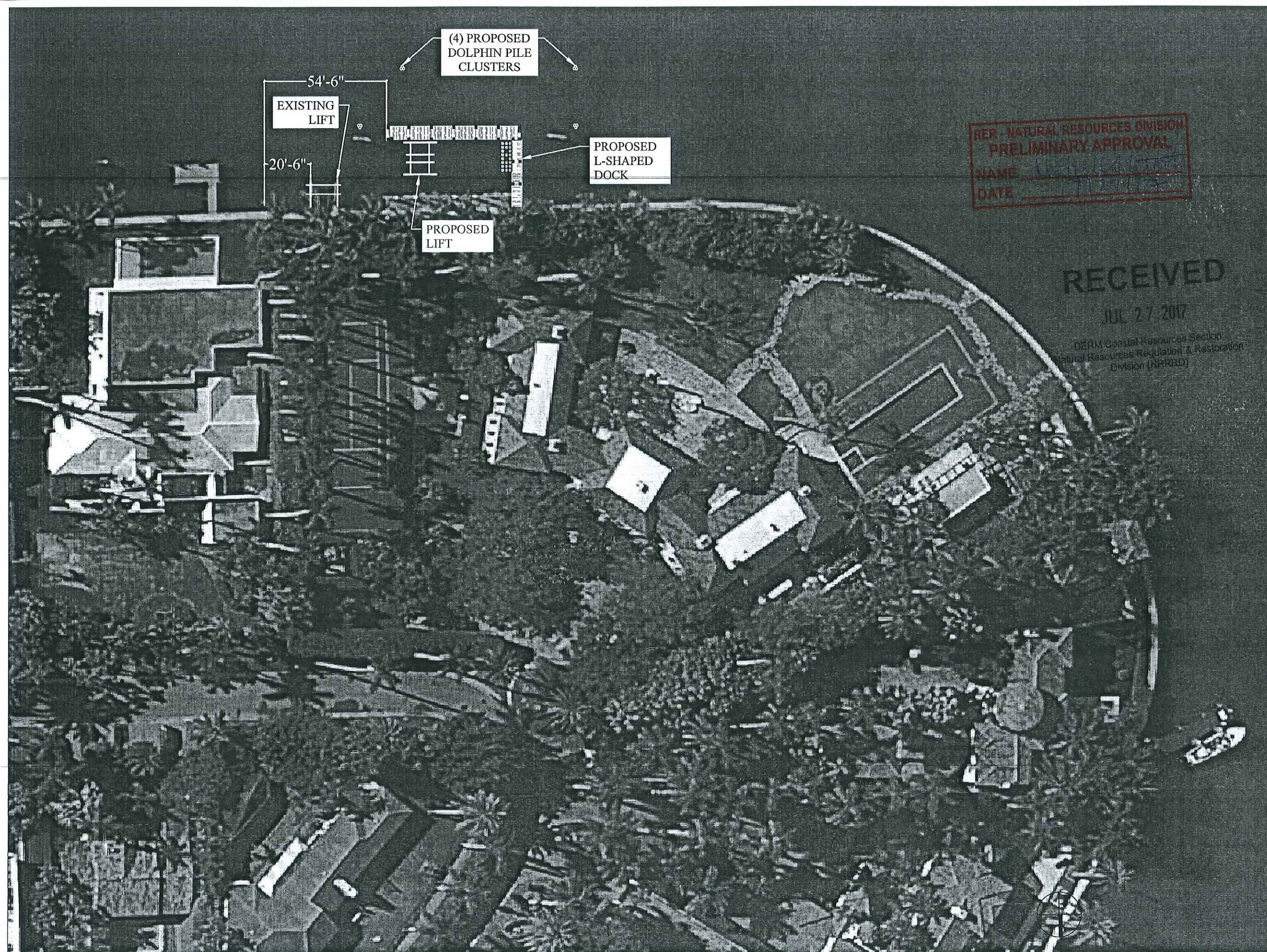
Issue #	Issue Date
③	April 11, 2017
④	April 12, 2017
⑤	July 17, 2017
⑥	July 25, 2017

PROJECT: 16-5385

PROPOSED SITE
PLAN

SCALE: AS SHOWN
SHEET NO.

S-3



**1736 W. 28th STREET
DOCK & BOAT LIFT
PROJECT**
Miami Beach, Florida

CLIENT:
Mr. Aaron Pepper
Sunset Aqua 1736, LLC
1736 W 28th St
Miami Beach, FL 33140

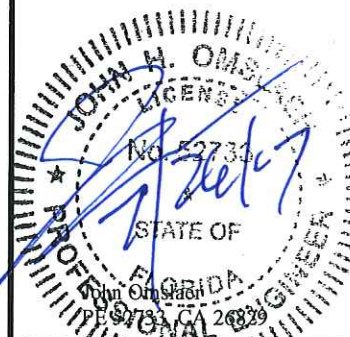
ENVIRONMENTAL CONSULTANT:
OCEAN
CONSULTING, LLC
340 Minorca Avenue, Suite 7
Coral Gables, Florida 33134
Tel: (305) 921-9344
Fax: (305) 677-3254

CONTRACTOR:

PROJECT ENGINEER:

**DYNAMIC ENGINEERING
SOLUTIONS, INC.**
351 S. Cypress Road, Suite 303
Pompano Beach, FL 33060
Tel: (954) 545-1740
Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



PERMIT DRAWINGS

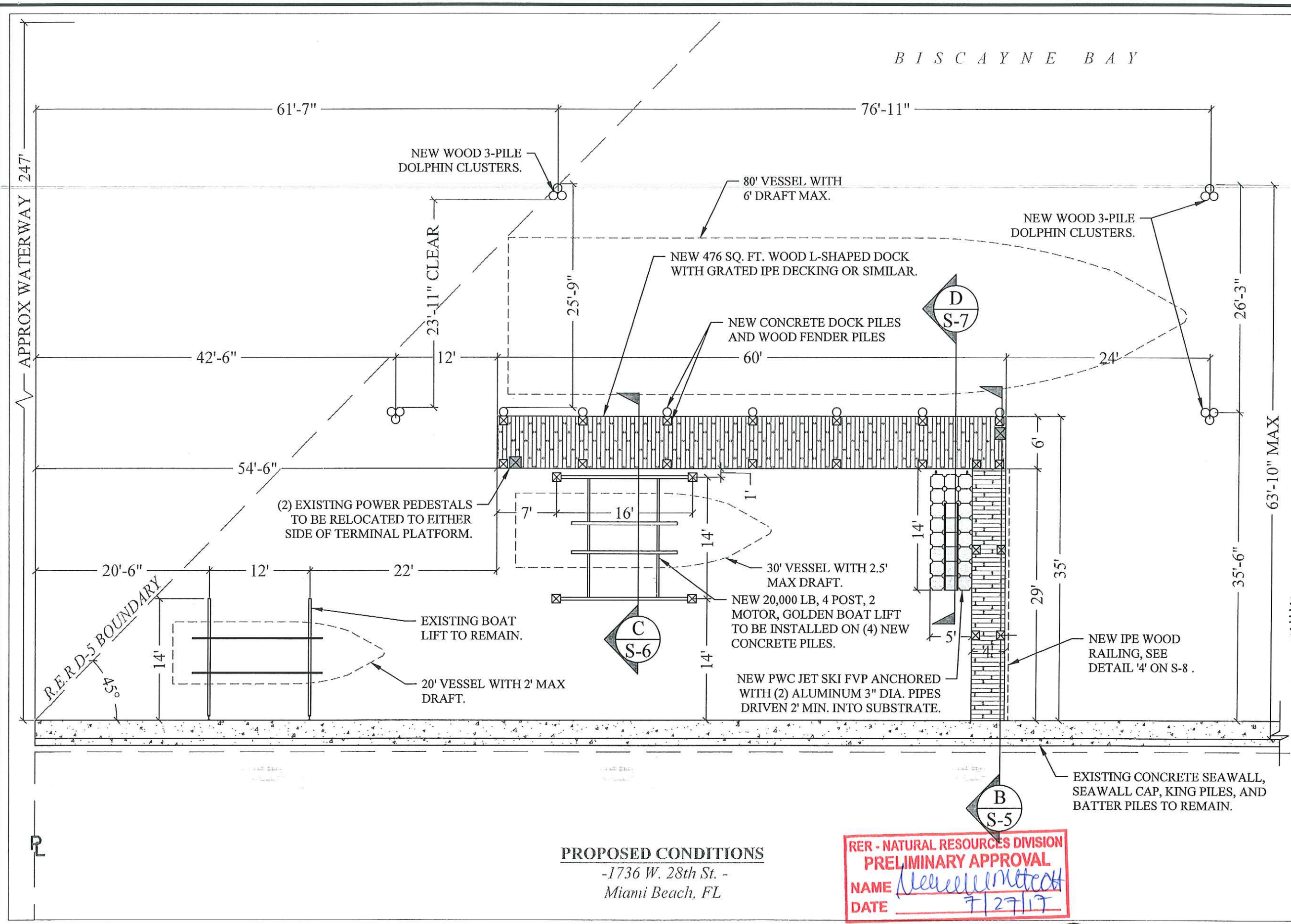
Issue #	Issue Date
③	April 11, 2017
④	April 12, 2017
⑤	July 17, 2017
⑥	July 25, 2017

PROJECT: 16-5385

**PROPOSED AERIAL
SITE PLAN**

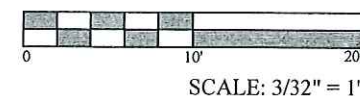
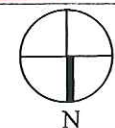
SCALE : AS SHOWN
SHEET NO.

S-3A



PROPOSED CONDITIONS
 -1736 W. 28th St. -
 Miami Beach, FL

RER - NATURAL RESOURCES DIVISION
PRELIMINARY APPROVAL
 NAME *Heather Metcalf*
 DATE *7/27/17*



**1736 W. 28th STREET
 DOCK & BOAT LIFT
 PROJECT**
 Miami Beach, Florida

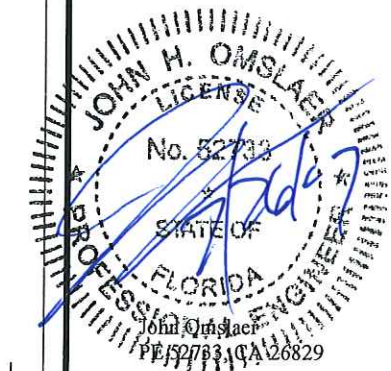
CLIENT:
Mr. Aaron Pepper
Sunset Aqua 1736, LLC
 1736 W 28th St
 Miami Beach, FL 33140

ENVIRONMENTAL CONSULTANT:
OCEAN CONSULTING, LLC
 340 Minorca Avenue, Suite 7
 Coral Gables, Florida 33134
 Tel: (305) 921-9344
 Fax: (305) 677-3254

CONTRACTOR:

PROJECT ENGINEER:
DYNAMIC ENGINEERING SOLUTIONS, INC.
 351 S. Cypress Road, Suite 303
 Pompano Beach, FL 33060
 Tel: (954) 545-1740
 Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



PERMIT DRAWINGS

Issue #	Issue Date
③	April 11, 2017
④	April 12, 2017
⑤	July 17, 2017
⑥	July 25, 2017

PROJECT: 16-5385

**PROPOSED
 CONDITIONS**

SCALE: AS SHOWN
 SHEET NO.

S-3B

RECEIVED
JUL 27 2017

DERM Coastal Resources Section
Natural Resources Regulation & Restoration
Division (NRRRD)

**1736 W. 28th STREET
DOCK & BOAT LIFT
PROJECT**
Miami Beach, Florida

CLIENT:
Mr. Aaron Pepper
Sunset Aqua 1736, LLC
1736 W 28th St
Miami Beach, FL 33140

ENVIRONMENTAL CONSULTANT:
**OCEAN
CONSULTING, LLC**
340 Minorca Avenue, Suite 7
Coral Gables, Florida 33134
Tel: (305) 921-9344
Fax: (305) 677-3254

CONTRACTOR:

PROJECT ENGINEER:
**DYNAMIC ENGINEERING
SOLUTIONS, INC.**
351 S. Cypress Road, Suite 303
Pompano Beach, FL 33060
Tel: (954) 545-1740
Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



PERMIT DRAWINGS

Issue #	Issue Date
③	April 11, 2017
④	April 12, 2017
⑤	July 17, 2017
⑥	July 25, 2017

PROJECT: 16-5385

**DOCK FRAMING
PLAN AND HANGER
BLOCK DETAIL.**

SCALE: AS SHOWN
SHEET NO.

S-4

(7) NEW 12" DIA. CCA TREATED WOOD FENDER PILES
DRIVEN 12' MIN. INTO FIRM MATERIAL OR 15-TON
MIN. BEARING CAPACITY. AT EACH WATER-WARD
DOCK PILE. TO EXTEND 8' ABOVE DOCK.

NEW 3"x 8", P.T. WOOD STRINGERS AT 16" O.C. MAX,
SECURED TO SUB-STRINGER. USE S.S. HURRICANE
STRAPS WITH 10d S.S. NAILS (TYP.)

NEW 3"x10", P.T. WOOD SUB-STRINGER
SECURED WITH (2) 3/4" DIA S.S. THROUGH
BOLTS WITH WASHERS AT EACH END. (TYP.)

NEW IPE, BRAZILIAN HARDWOOD
GRATED DECKING. SEE DETAILS ON S-9.

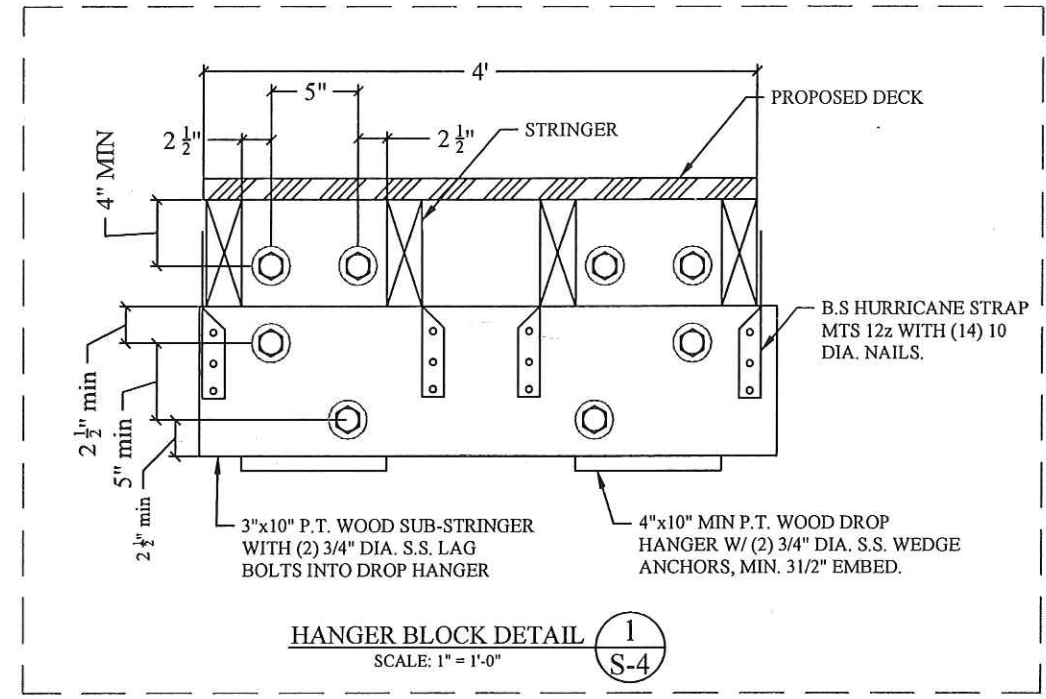
NEW IPE WOOD POSTS AND
DECORATIVE NON-STRUCTURAL ROPE
RAILING. SEE DETAILS ON SHEET S-7

(20) NEW 12" x 12" P.S. CONCRETE PILES
DRIVEN 12' MIN. INTO FIRM MATERIAL OR
25-TON MIN. BEARING CAPACITY. ALL
CONCRETE DOCK PILES TO BE CUT BELOW
DECK.

NEW 3"x 8", P.T. WOOD STRINGERS AT 16" O.C.
MAX, SECURED TO SUB-STRINGER. USE S.S.
HURRICANE STRAPS WITH 10d S.S. NAILS (TYP.)

NEW BLOCK HANGERS SECURED
TO CONCRETE SEAWALL. SEE
DETAIL '1' ON THIS SHEET.

EXISTING SEAWALL
TO REMAIN.



TYPICAL DOCK FRAMING PLAN

**DER - NATURAL RESOURCES DIVISION
PRELIMINARY APPROVAL**
NAME *M. M. M. M. M.*
DATE *7/27/17*

0 5' 10'
SCALE: 3/16" = 1"

**1736 W. 28th STREET
DOCK & BOAT LIFT
PROJECT**

Miami Beach, Florida

CLIENT:

**Mr. Aaron Pepper
Sunset Aqua 1736, LLC**

1736 W 28th St
Miami Beach, FL 33140

ENVIRONMENTAL CONSULTANT:

**OCEAN
CONSULTING, LLC**

340 Minorca Avenue, Suite 7
Coral Gables, Florida 33134
Tel: (305) 921-9344
Fax: (305) 677-3254

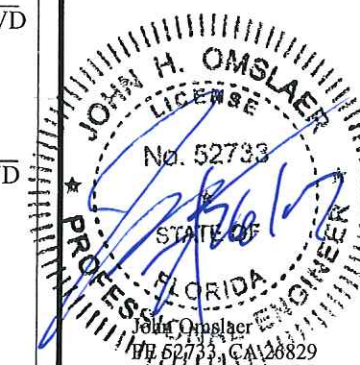
CONTRACTOR:

PROJECT ENGINEER:

**DYNAMIC ENGINEERING
SOLUTIONS, INC.**

351 S. Cypress Road, Suite 303
Pompano Beach, FL 33060
Tel: (954) 545-1740
Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



PERMIT DRAWINGS

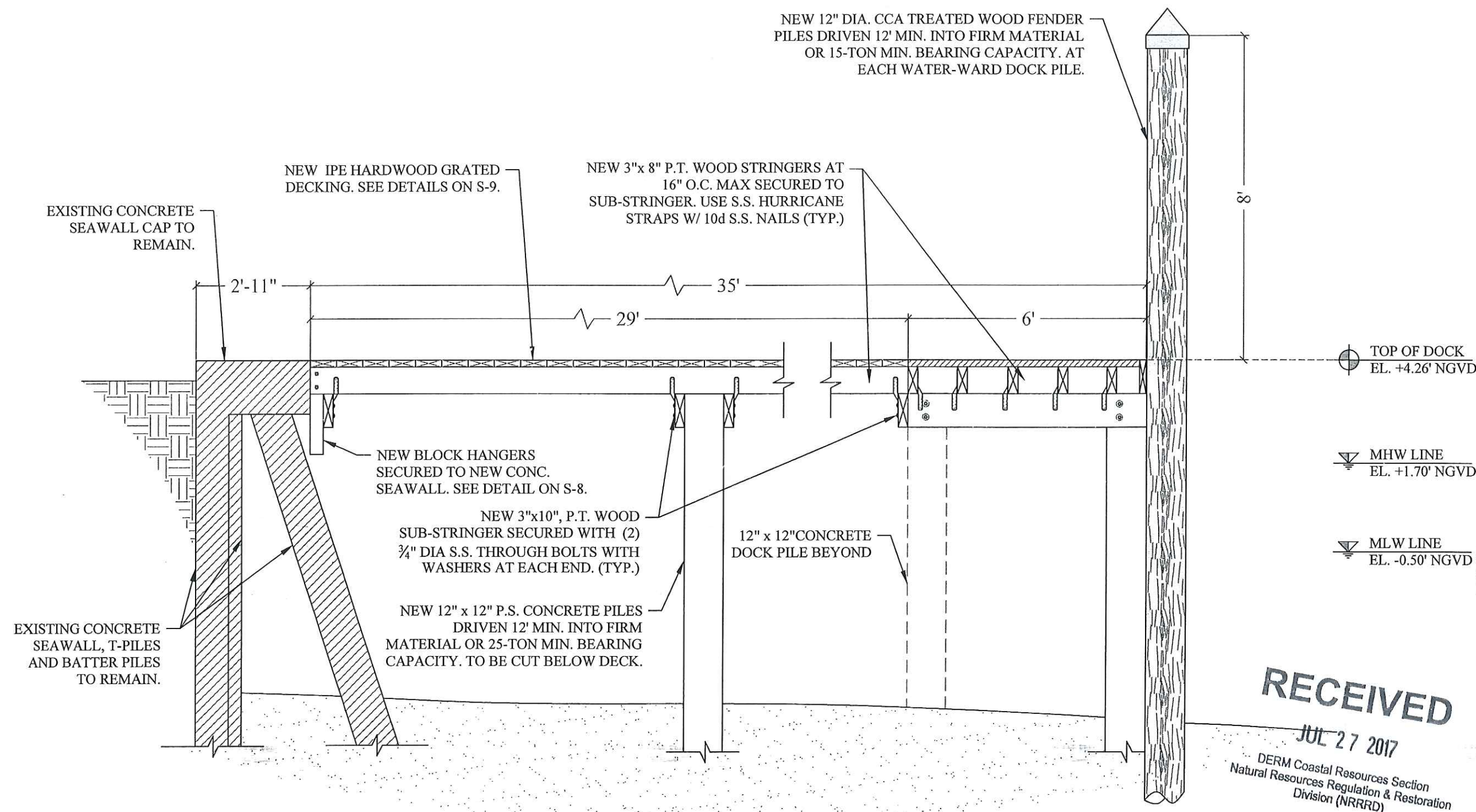
Issue #	Issue Date
③	April 11, 2017
④	April 12, 2017
⑤	July 17, 2017
⑥	July 25, 2017

PROJECT: 16-5385

TYPICAL DOCK
SECTION

SCALE : AS SHOWN
SHEET NO.

S-5

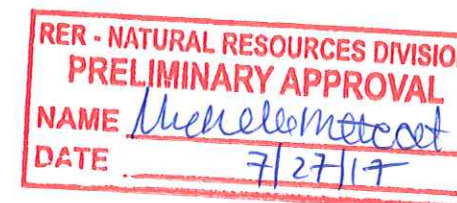


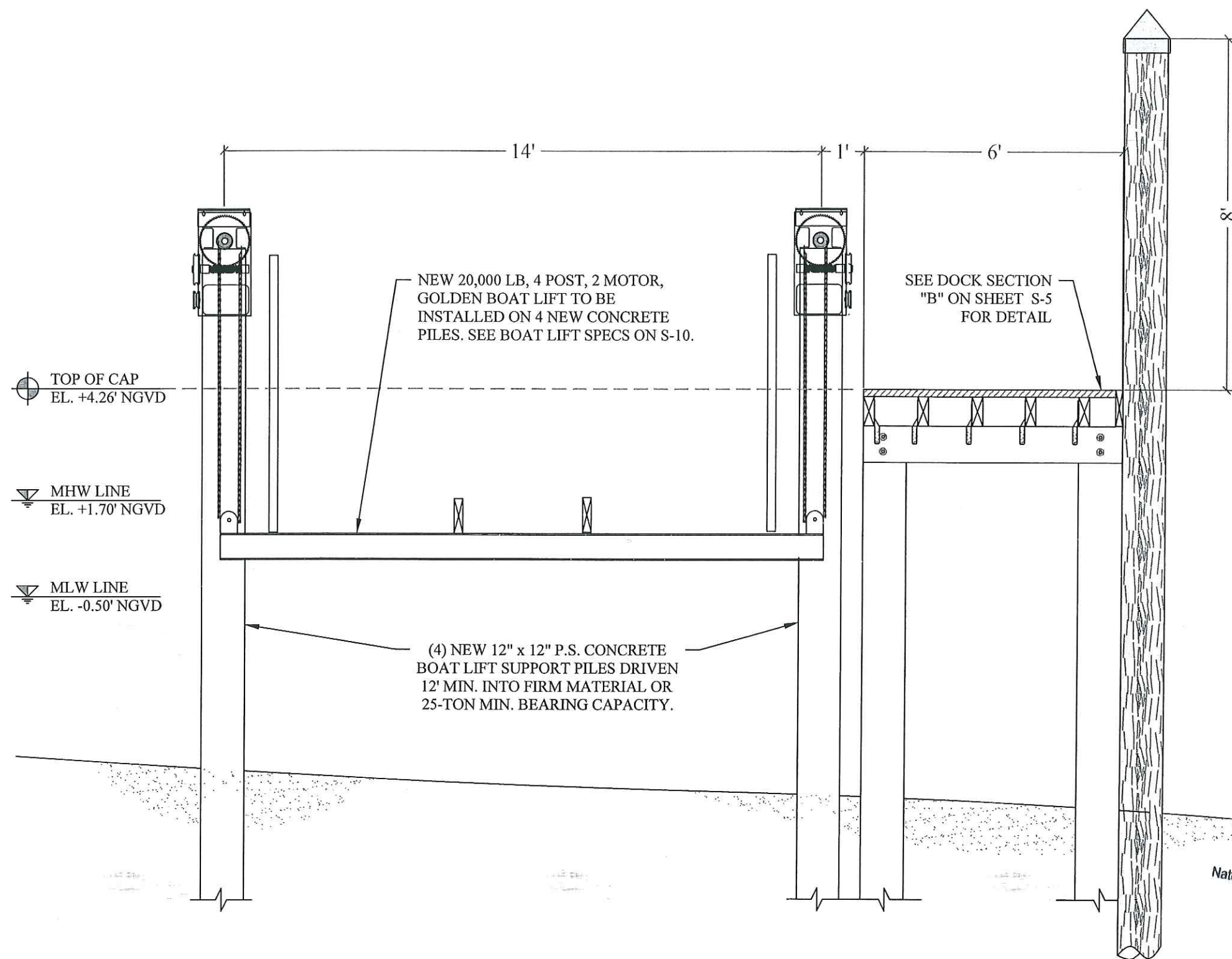
PROPOSED DOCK TO SEAWALL CONNECTION SECTION

SCALE: 3/8" = 1'-0"

B

S-5





PROPOSED BOAT LIFT SECTION **C**
SCALE: $\frac{3}{8}$ " = 1'-0" **S-6**

RER - NATURAL RESOURCES DIVISION
PRELIMINARY APPROVAL
NAME *Micelle Motoko*
DATE *7/27/17*

RECEIVED
JUL 27 2017
DERM Coastal Resources Section
Natural Resources Regulation & Restoration
Division (NRRRD)

**1736 W. 28th STREET
DOCK & BOAT LIFT
PROJECT**

Miami Beach, Florida

CLIENT:

Mr. Aaron Pepper
Sunset Aqua 1736, LLC

1736 W 28th St
Miami Beach, FL 33140

ENVIRONMENTAL CONSULTANT:

**OCEAN
CONSULTING, LLC**

340 Minorca Avenue, Suite 7
Coral Gables, Florida 33134
Tel: (305) 921-9344
Fax: (305) 677-3254

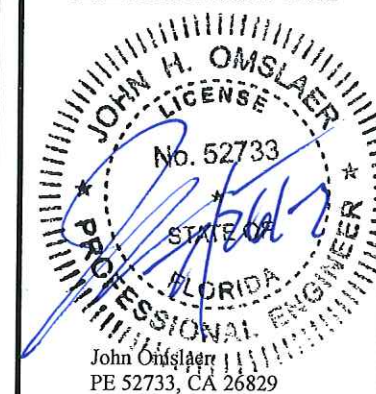
CONTRACTOR:

PROJECT ENGINEER:

**DYNAMIC ENGINEERING
SOLUTIONS, INC.**

351 S. Cypress Road, Suite 303
Pompano Beach, FL 33060
Tel: (954) 545-1740
Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



PERMIT DRAWINGS

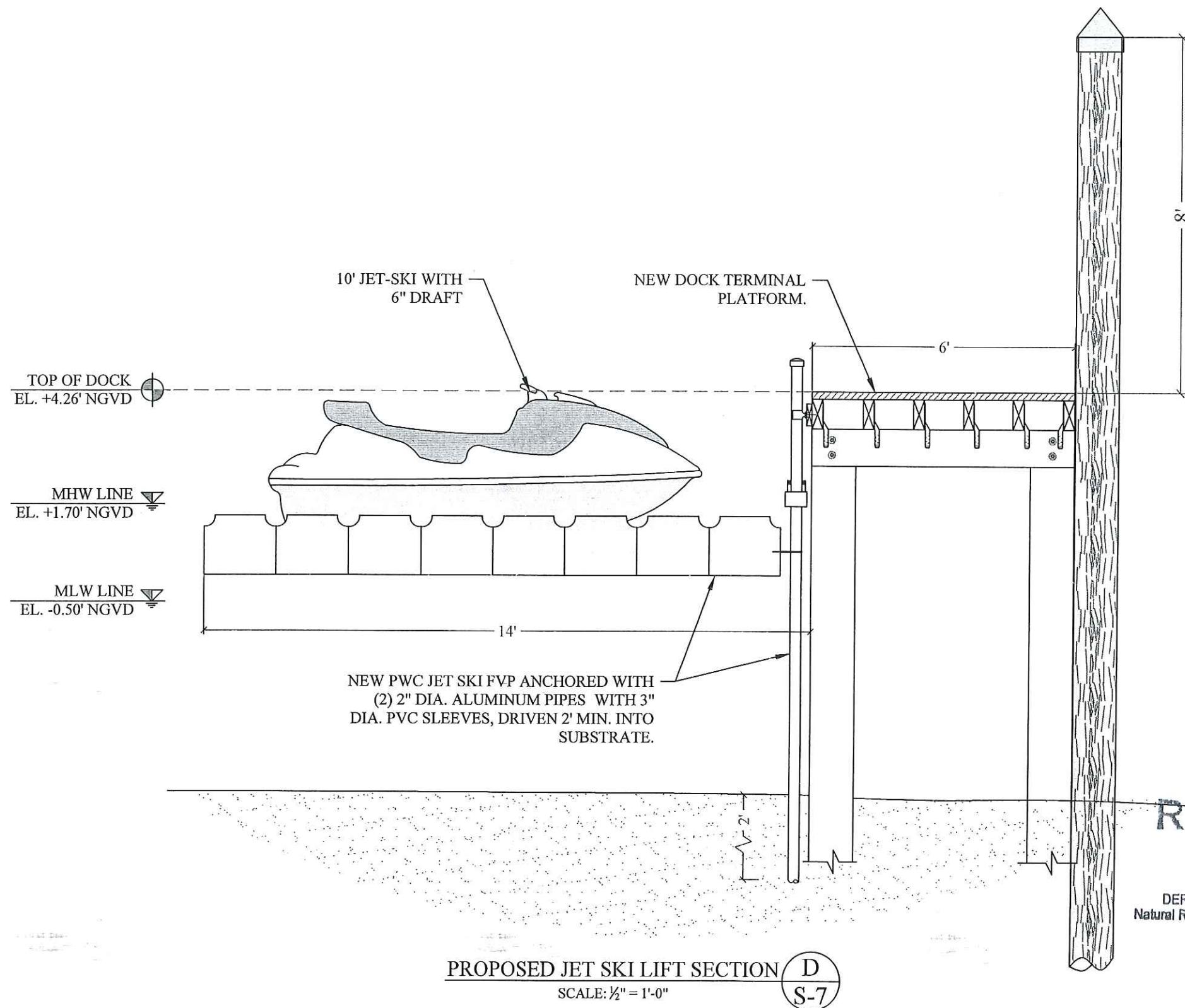
Issue #	Issue Date
③	April 11, 2017
④	April 12, 2017
⑤	July 17, 2017
⑥	July 25, 2017

PROJECT: 16-5385

**BOAT LIFT AND DOCK
SECTION**

SCALE : AS SHOWN
SHEET NO.

S-6



PROPOSED JET SKI LIFT SECTION D
S-7
SCALE: 1/2" = 1'-0"

RER - NATURAL RESOURCES DIVISION
PRELIMINARY APPROVAL
NAME Heather Metcalf
DATE 7/27/17

1736 W. 28th STREET DOCK & BOAT LIFT PROJECT

Miami Beach, Florida

CLIENT:

Mr. Aaron Pepper
Sunset Aqua 1736, LLC

1736 W 28th St
Miami Beach, FL 33140

ENVIRONMENTAL CONSULTANT:

**OCEAN
CONSULTING, LLC**

340 Minorca Avenue, Suite 7
Coral Gables, Florida 33134
Tel: (305) 921-9344
Fax: (305) 677-3254

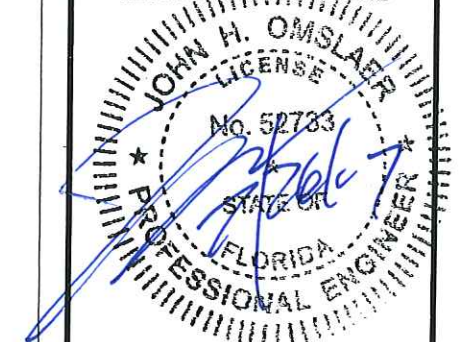
CONTRACTOR:

PROJECT ENGINEER:

**DYNAMIC ENGINEERING
SOLUTIONS, INC.**

351 S. Cypress Road, Suite 303
Pompano Beach, FL 33060
Tel: (954) 545-1740
Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



John Omslaer
PE 52733, CA 26829

PERMIT DRAWINGS

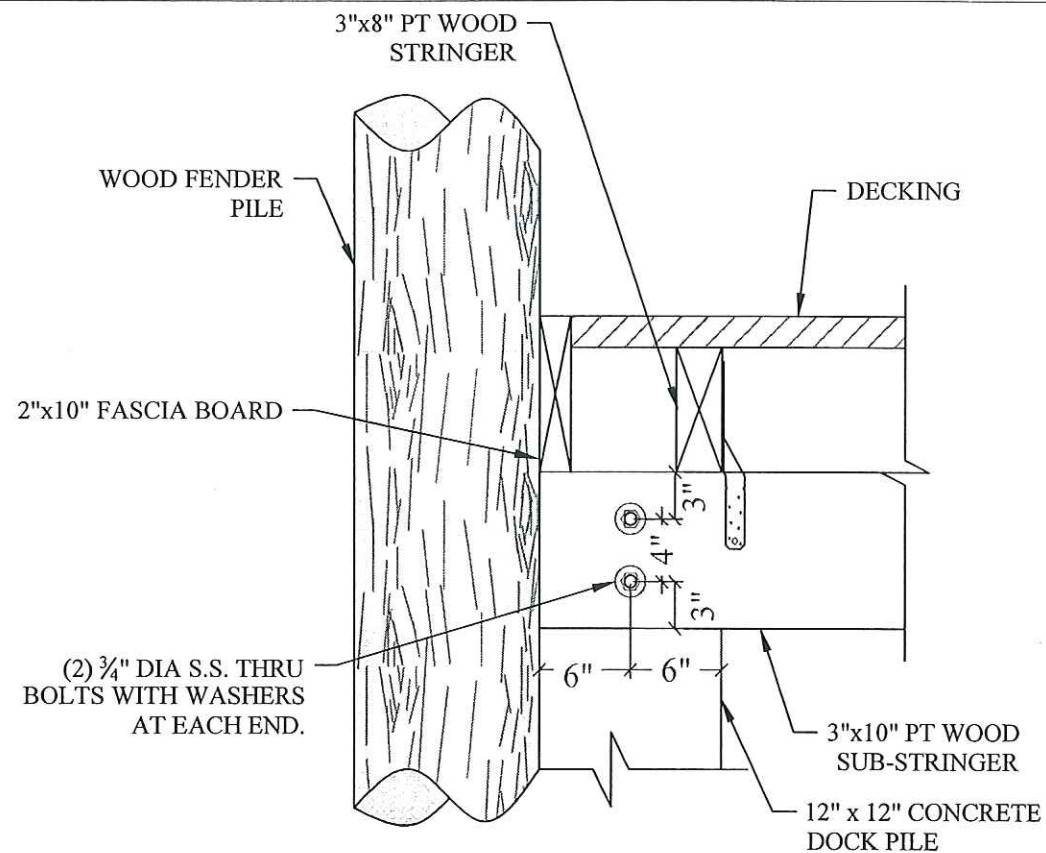
Issue #	Issue Date
③	April 11, 2017
④	April 12, 2017
⑤	July 17, 2017
⑥	July 25, 2017

PROJECT: 16-5385

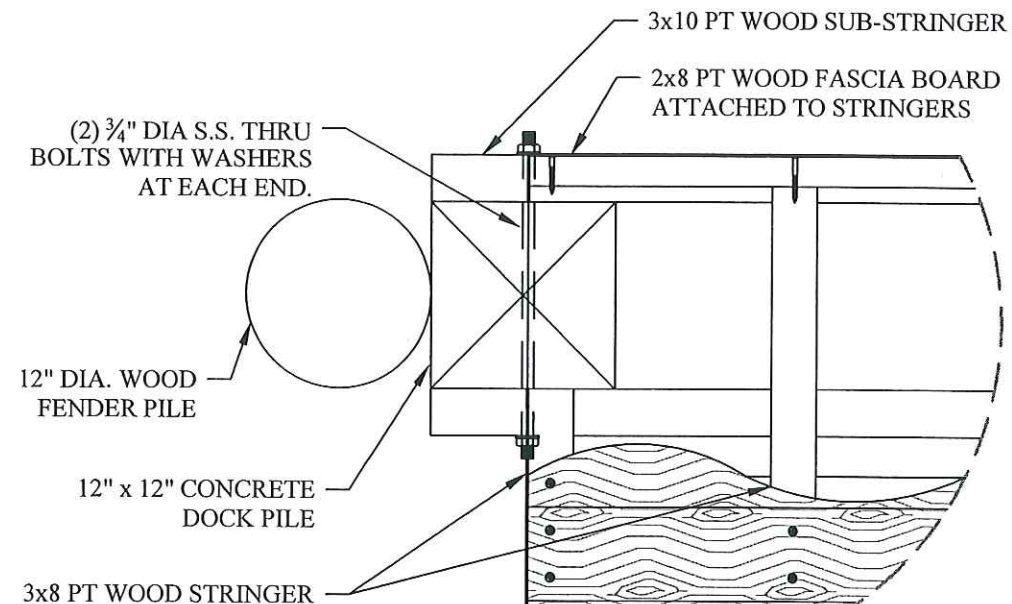
JET SKI LIFT
SECTION

SCALE : AS SHOWN
SHEET NO.

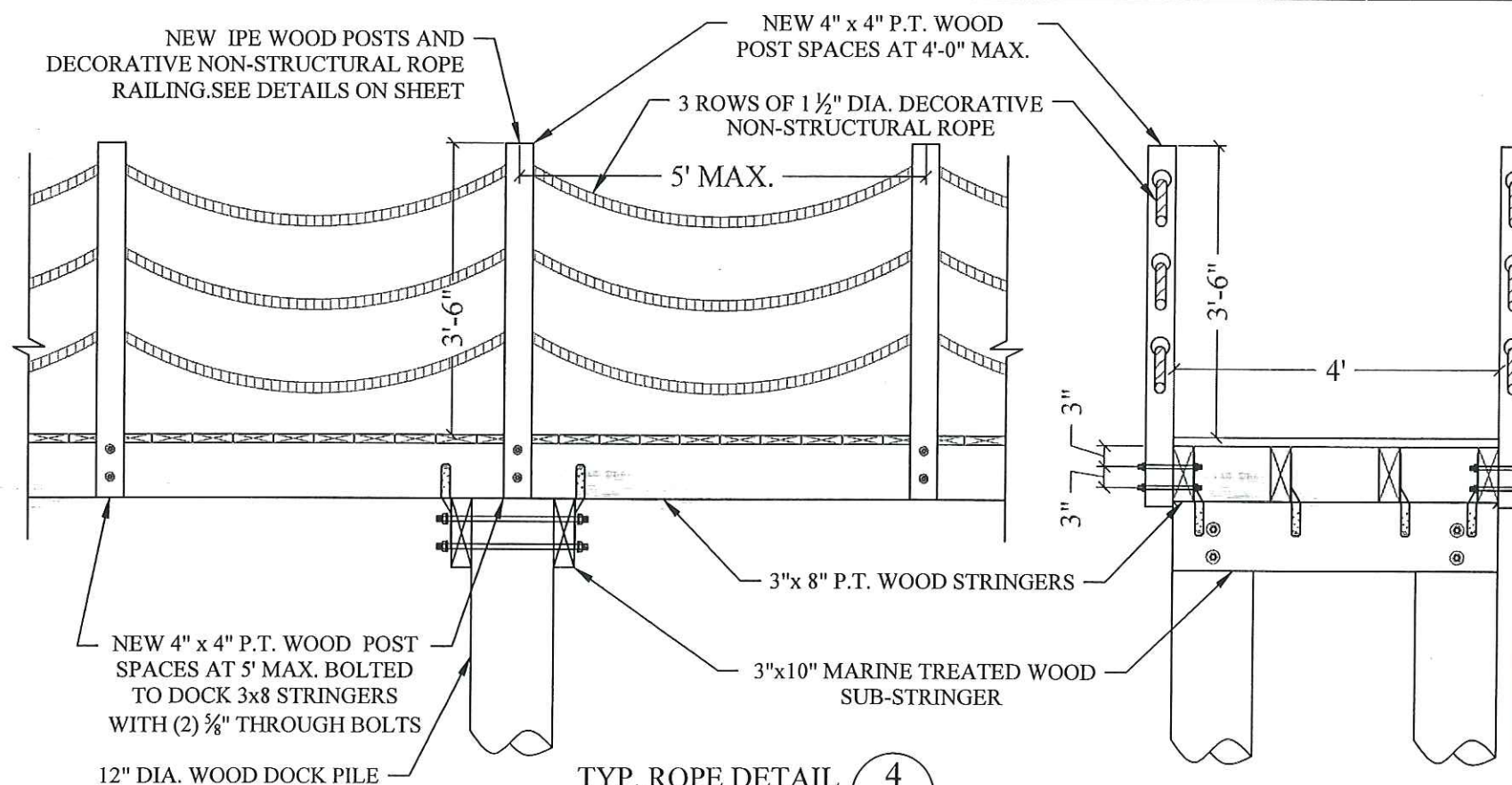
S-7



TYPICAL DOCK EDGE DETAIL 2
SCALE: 1" = 1'-0"



TYPICAL DOCK EDGE PLAN DETAIL 3
SCALE: 1" = 1'-0"



TYP. ROPE DETAIL 4
SCALE: 1/2" = 1'-0"

RECEIVED

JUL 27 2017

DERM Coastal Resources Section
Natural Resources Regulation & Restoration
Division (NRRRD)

RED - NATURAL RESOURCES DIVISION
PRELIMINARY APPROVAL
NAME *Bluehepmetcab*
DATE *7/27/17*

1736 W. 28th STREET DOCK & BOAT LIFT PROJECT

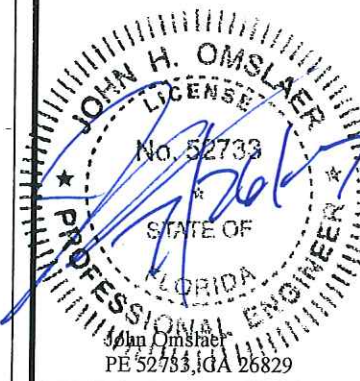
CLIENT:
Mr. Aaron Pepper
Sunset Aqua 1736, LLC
1736 W 28th St
Miami Beach, FL 33140

ENVIRONMENTAL CONSULTANT:
**OCEAN
CONSULTING, LLC**
340 Minorca Avenue, Suite 7
Coral Gables, Florida 33134
Tel: (305) 921-9344
Fax: (305) 677-3254

CONTRACTOR:

PROJECT ENGINEER:
**DYNAMIC ENGINEERING
SOLUTIONS, INC.**
351 S. Cypress Road, Suite 303
Pompano Beach, FL 33060
Tel: (954) 545-1740
Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



PERMIT DRAWINGS

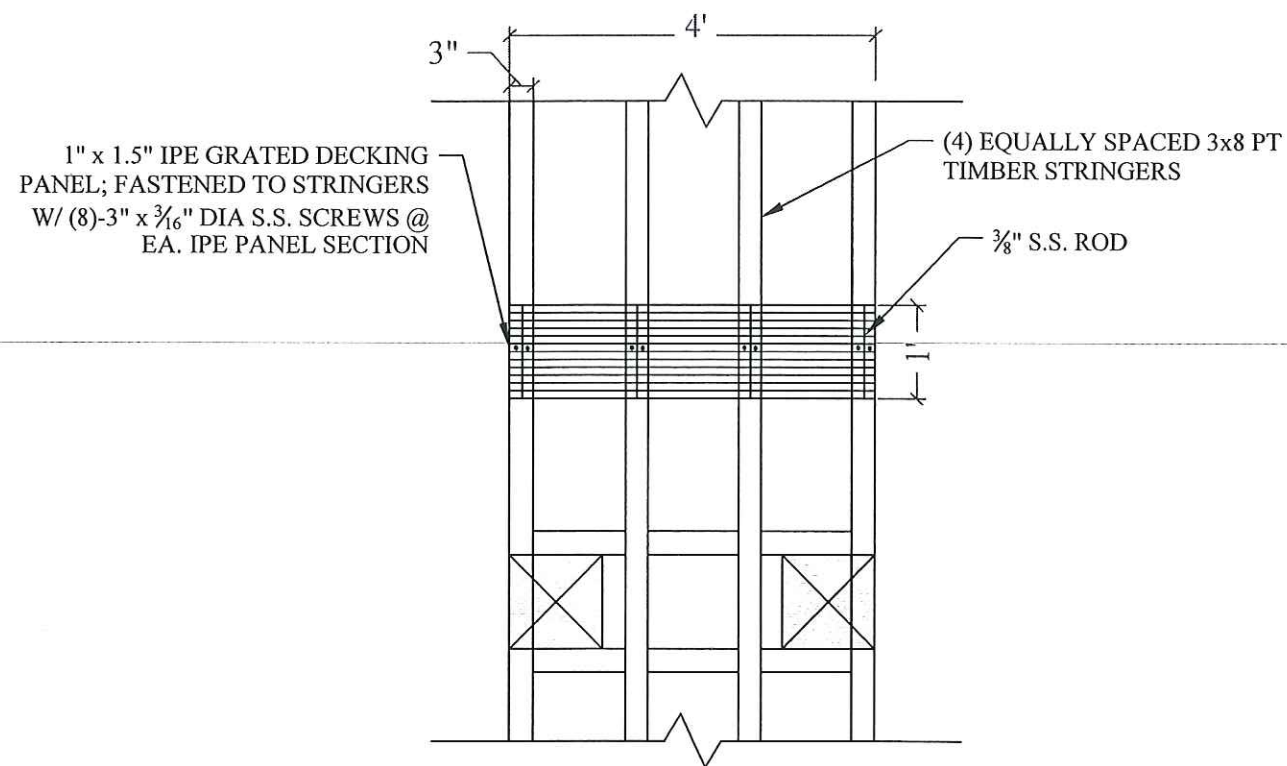
Issue #	Issue Date
③	April 11, 2017
④	April 12, 2017
⑤	July 17, 2017
⑥	July 25, 2017

PROJECT: 16-5385

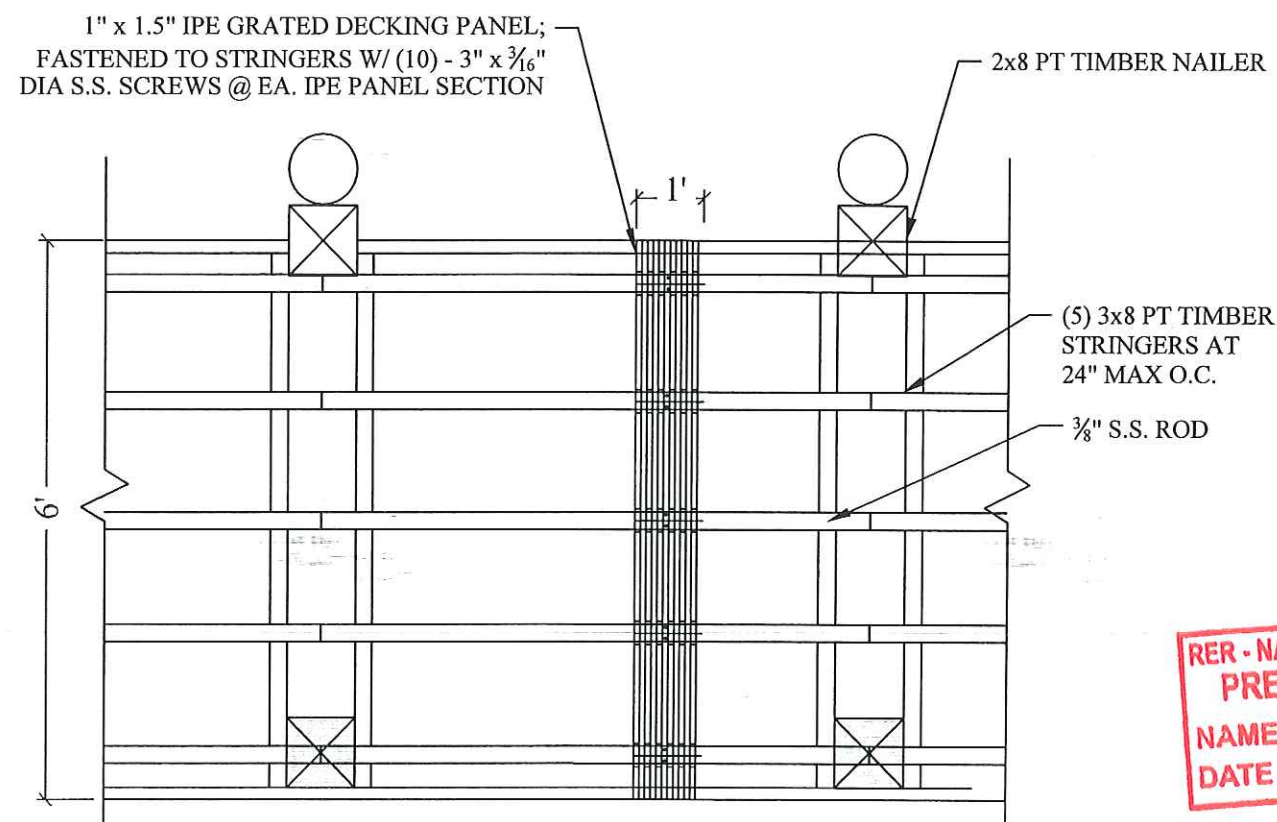
DOCK PILE, WOOD
FENDER, AND RAILING
DETAILS

SCALE: AS SHOWN
SHEET NO.

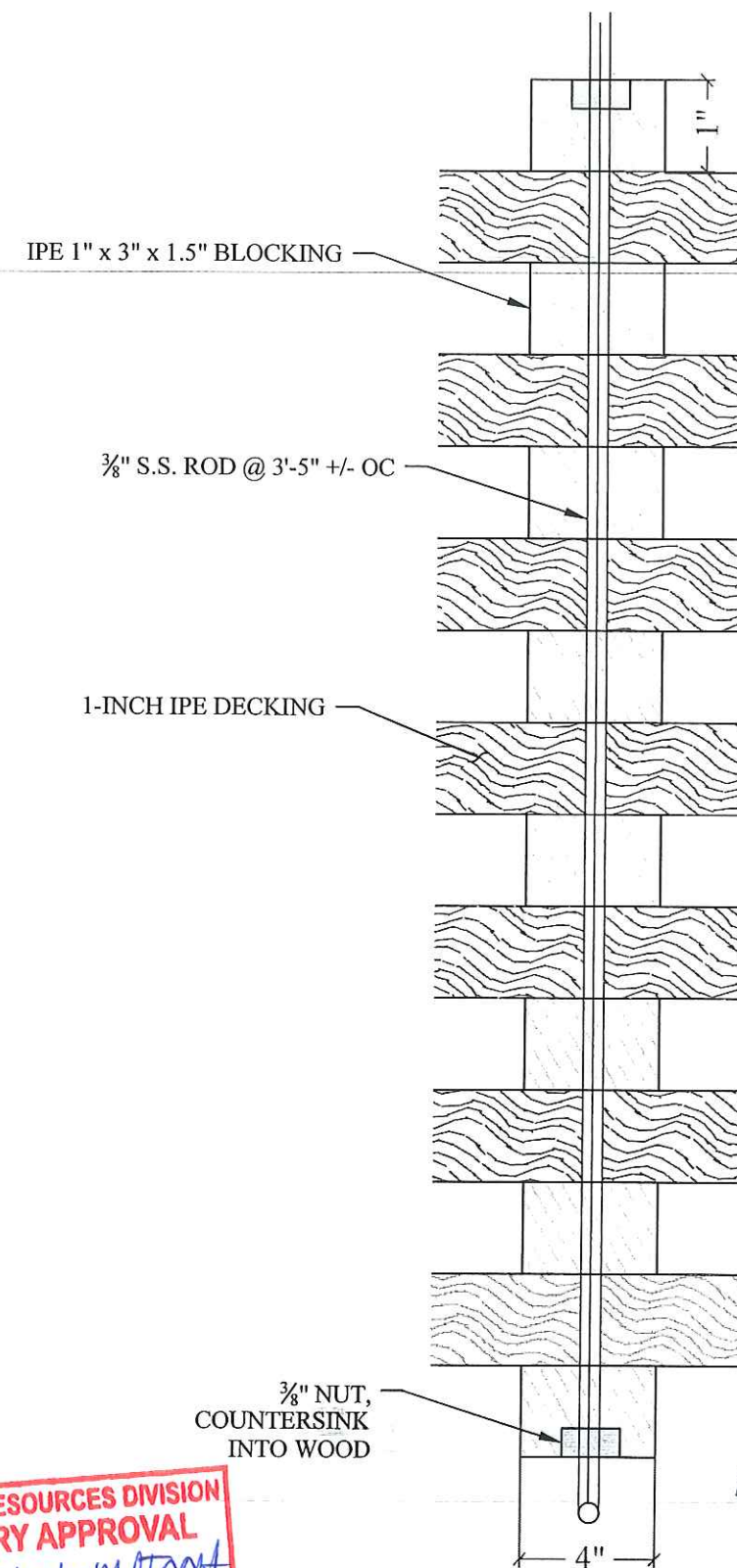
S-8



ACCESS WALKWAY IPE GRATED SPACE DETAIL 5
SCALE: $\frac{1}{2}$ " = 1'-0"



TERMINAL PLATFORM IPE GRATED SPACER DETAIL 6
SCALE: $\frac{3}{8}$ " = 1'-0"



IPE GRATING SPACER DETAIL 7
SCALE: $\frac{1}{4}$ " = 1'-0"

RER - NATURAL RESOURCES DIVISION
 PRELIMINARY APPROVAL
 NAME Isenehmet
 DATE 7/27/17

RECEIVED
 JUL 27 2017
 DERM Coastal Resources Section
 Natural Resources Regulation & Restoration
 Division (NRRRD)

1736 W. 28th STREET DOCK & BOAT LIFT PROJECT

Miami Beach, Florida

CLIENT:
Mr. Aaron Pepper
Sunset Aqua 1736, LLC
 1736 W 28th St
 Miami Beach, FL 33140

ENVIRONMENTAL CONSULTANT:
OCEAN

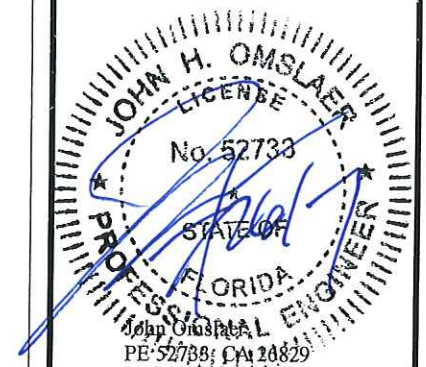
CONSULTING, LLC
 340 Minorca Avenue, Suite 7
 Coral Gables, Florida 33134
 Tel: (305) 921-9344
 Fax: (305) 677-3254

CONTRACTOR:

PROJECT ENGINEER:

DYNAMIC ENGINEERING
SOLUTIONS, INC.
 351 S. Cypress Road, Suite 303
 Pompano Beach, FL 33060
 Tel: (954) 545-1740
 Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



PERMIT DRAWINGS

Issue #	Issue Date
③	April 11, 2017
④	April 12, 2017
⑤	July 17, 2017
⑥	July 25, 2017

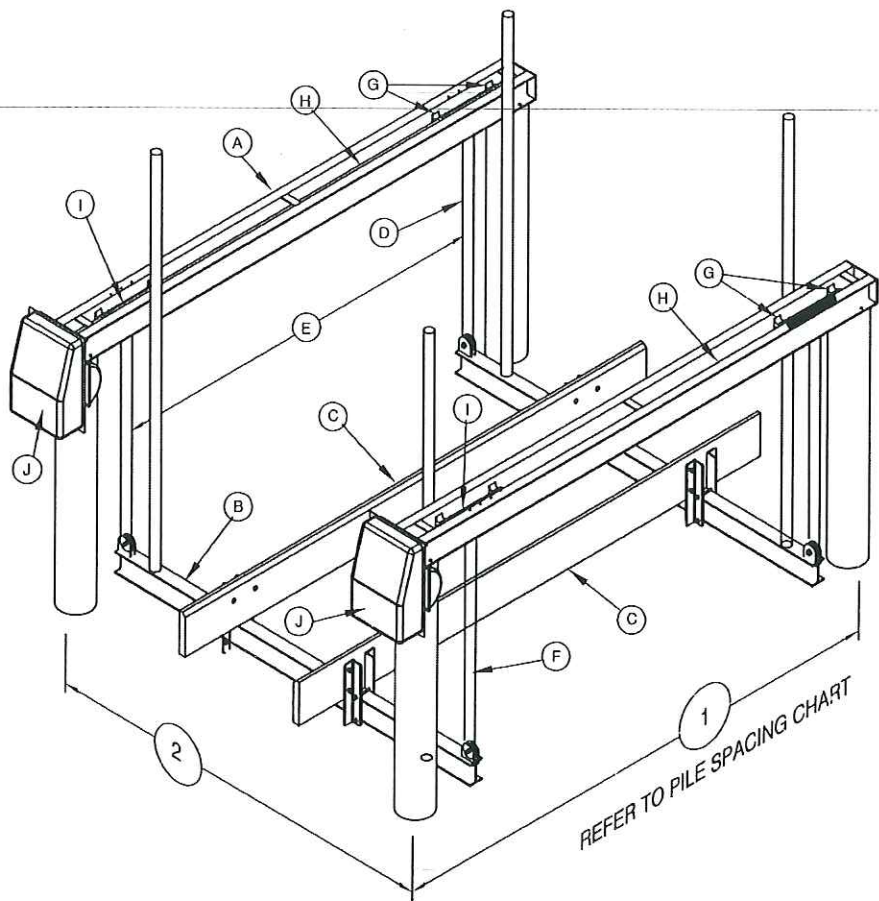
PROJECT: 16-5385

GRATED DECKING DETAILS

SCALE: AS SHOWN
 SHEET NO.

S-9

GOLDEN ENGINEERED 4 POST, 2 MOTOR BOAT LIFTS



PILE SPACING CHART
The boat center of gravity needs to be set in the center of the top beam

Lift Capacity	1" Dimension	2" Dimension	Recommended Pile Diameters
Lb.	Ft.	Ft.	In.
4,500	11	10	8
7,000		12	
10,000	12	12.5	10
14,000		14	
16,000		16	
20,000	14		12
24,000	16		

THIS CONSTRUCTION HAS BEEN DESIGNED AS A MAIN WIND FORCE RESISTING SYSTEM, WITH CALCULATED GRAVITY AND WIND LOADS IN COMPLIANCE WITH THE FLORIDA BUILDING CODE 2014, SECT. 1609, ADM 2005, AND ASCE 7-10 "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES" TO WITHSTAND THE WIND LOADS ASSOCIATED WITH AN ULTIMATE WIND SPEED OF 175 MPH, EXPOSURE "C". RISK CATEGORY = II AND DESIGN PRESSURE IS 45 PSF. DYNAMIC ENGINEERING SOLUTIONS HAS NO CONTROL OF THE MANUFACTURING, PERFORMANCE, OR INSTALLATION OF THIS PRODUCT. THESE GENERIC PLANS WERE ENGINEERED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICES AND DATA PROVIDED BY THE MANUFACTURER.

Dynamic Engineering Solutions, Inc.
John Omslaer
PE 52733, EB 26829
351 S. Cypress Road, Suite 303
Pompano Beach, FL 33062
(954) 545-1740 Fax: (954) 545-1721

STAINLESS STEEL PILING MOUNT BRACKET, 4-3/8" STAINLESS STEEL LAG SCREWS USED TO CONNECT THE BRACKETS TO THE PILING AND 2-3/8" CARRIAGE BOLTS USED TO CONNECT THE BRACKETS TO THE LIFT CHANNELS



	A	B	C	D	E	F	G	H	I	J		
	TOP BEAM CHANNEL	CRADLE I-BEAM	BUNK	CABLE	CABLE	GUIDE	BRGS	DRIVE	WINDER	MOTOR	INCHES	RECOM
LIFT CAPACITY	2 EACH	2 EACH	BOARDS	SIZE	SPREAD	POST		SHAFT	DIA	HP	OF LIFT	PILE
Lbs	INCHES	INCHES	(PT)	INCHES	IN	HGTH				VOLTAGE	PER MIN	SIZES
4,500#	4 H x .15 2 W x .23 140" OAL	6 H x .19 4 W x .29 120" LGTH	2x8x144 ROUGH SAWN CARPETED	4 - 5/16" x15" ST ST 1 PART	98"	80"	8 - 2" EXTRUDED 6061-T6 ALUM.	1-15/16" DIA. SCH 40 GALV PIPE	2-3/8" DIA SCH 80 ALUM PIPE	2 - 3/4 HP 120V/20A 240V/10A	27"	8" DIA
7,000#	5 H x .15 2.25 W x .28 x 153" OAL	6 H x .19 4 W x .29 144" LGTH								2 - 1 HP 120V/20A 240V/10A		
10,000#	6 H x .17 2.5 W x .29 x 153" OAL	8 H x .23 5 W x .35 150" LGTH		4 - 5/16" x30" ST ST 2 PART	110"					2 - 3/4 HP 120V/20A 240V/10A	12 1/2"	10" DIA
14,000#	7 H x .17 2.75 W x .29 x 153" OAL	8 H x .25 5 W x .41 150" LGTH								2 - 1 HP 120V/20A 240V/10A		
16,000#	8 H x .19 3 W x .35 x 153" OAL	10 H x .25 6 W x .41 168" LGTH	3x10x92 ROUGH SAWN CARPETED	4 - 5/16" x45" ST ST 3 PART	122"	120"	8 - 2" EXTRUDED 6061-T6 ALUM.	1-15/16" DIA. SCH 80 GALV PIPE	2-3/8" DIA SCH 80 ALUM PIPE			
20,000#	8 H x .25 3.75 W x .41 x 177" OAL	10 H x .25 6 W x .41 192" LGTH										
24,000#	8 H x .25 3.75 W x .41 x 201" OAL	10 H x .29 6 W x .50 192" LGTH			134"							12" DIA

Golden Manufacturing, Inc. 17661 East Street, N. Fort Myers Florida 33917 Pub 0903

1736 W. 28th STREET
DOCK & BOAT LIFT
PROJECT

Miami Beach, Florida

CLIENT:

Mr. Aaron Pepper
Sunset Aqua 1736, LLC

1736 W 28th St
Miami Beach, FL 33140

ENVIRONMENTAL CONSULTANT:

OCEAN

CONSULTING, LLC

340 Minorca Avenue, Suite 7
Coral Gables, Florida 33134
Tel: (305) 921-9344
Fax: (305) 677-3254

CONTRACTOR:

PROJECT ENGINEER:

DYNAMIC ENGINEERING
SOLUTIONS, INC.

351 S. Cypress Road, Suite 303
Pompano Beach, FL 33060
Tel: (954) 545-1740
Fax: (954) 545-1721

SEAL / SIGNATURE / DATE



RECEIVED

JUL 27 2017

DERM Coastal Resources Section
Natural Resources Regulation & Restoration
Division (NRRRD)

PERMIT DRAWINGS

Issue # Issue Date

③ April 11, 2017

④ April 12, 2017

⑤ July 17, 2017

⑥ July 25, 2017

PROJECT: 16-5385

BOAT LIFT
SPECIFICATIONS

SCALE: AS SHOWN
SHEET NO.

S-10



MAXIMUM STRESS IN TIMBER DECK

Residence : Pepper
Location : 1736 W 28th Street
Municipality: Miami Beach, FL
Drawing Ref:
Date: 4/12/17

Specific Data

LL - Live Load 60 psf
DL - Dead Load 8 psf

Joist Calculations

jw Joist Width (in) 2.5 in
jd - Joist Depth (in) 7.25 in
ZJ - Joist Section Modulus (in³) 21.901 in³
jwl - Width of Load / Joist (ft) 1.333333 ft
Fb - Bending 1200 psi, T 4B, NDS
Cf - Size Fact. - (12/jd)^(1/9) 1.057587
Cfu - Flat Use Fact. 1
Cr - Repetitive Fact.(joist only) 1
Cm - Wet Service Factor 0.85 CCA Treated
Ch - Shear Factor 1
Fb' - Fb x Cf x Cfu x Cr x Cm x Ch 1078.738 psi
Cd - Duration Factor 1.25 7 days per appendix B
cl - Centerline Dist. between Piles (ft) 10 ft
d - Pile Dia. (in) 12 in
 $W = ((LL + DL) \times jwl) / (Cd) =$ 72.53333 lbf/ft
span = cl - d - b = 8.79 ft
 $M = ((span)^2 \times W) / 8 =$ 700.79 ft.lbf
Fb = (M x 12) / (ZJ) = 383.98 psi
383.98 < 1078.74

Substringer Calculations

b Substringer Width (in) 2.5 in
sd - Substringer Depth (in) 9.25 in
ZS - Substringer Section Modulus (in³) 35.651 in³
swl - Width of Load / Substringer (ft) 5.00 ft
a - Max Length of Substringer (ft) 5.00 ft
Fb - Bending 1200 psi, T 4B, NDS
Cf - Size Fact. - (12/sd)^(1/9) 1.029343
Cfu - Flat Use Fact. 1
Cr - Repetitive Fact.(joist only) 1
Cm - Wet Service Factor 0.85 CCA Treated
Ch - Shear Factor 1
Fb' - Fb x Cf x Cfu x Cr x Cm x Ch 1049.929 psi
Cd - Duration Factor 1.25 7 days per appendix B
 $W = ((LL + DL) \times jwl) / (Cd) =$ 272 lbf/ft
span = a = 5.00 ft
 $M = ((span)^2 \times W) / 8 =$ 850.00 ft.lbf
Fb = (M x 12) / (ZS) = 286.11 psi
286.11 < 1049.93

nom	s - in ³	Fb-psi
2x6	7.563	1200
2x8	13.141	1200
2x10	21.391	1200
2x12	31.641	1200
3x6	12.604	1200
3x8	21.901	1200
3x10	35.651	1200
3x12	52.734	1200

1200 psi, T 4B, NDS

1.057587

1

All Adjustment Factors from
Table 4B of NDS (pg 31, 1997 ed.)

1

0.85 CCA Treated

1

1078.738 psi

1.25 7 days per appendix B

10 ft

12 in

72.53333 lbf/ft

8.79 ft

700.79 ft.lbf

383.98 psi

Fb' < SA, O.K.

Joist Shear Calculations

fv - Allowable 90 psi
 $V = (span \times jwl \times (LL + DL)) / 2$ 398.6 lbf
 $Fv = (3 \times V) / (2 \times jw \times jd)$ 32.98 psi
32.98391 < 90 Fv < fv, OK

John H. Omslaer, P.E.
FL License #52733, EB#26829
Dynamic Engineering Solutions, Inc.
351 S Cypress Rd, Suite 303
Pompano Beach, FL 33060

[Handwritten signature and date 4/13/17]

MAXIMUM STRESS IN TIMBER DECK

Residence : Pepper
Location : 1736 W 28th Street
Municipality: Miami Beach, FL
Drawing Ref: 0.00
Date: 4/12/17

Specific Data

LL - Live Load 60 psf
DL - Dead Load 8 psf

Check Stringers For Deflection

$L = \text{span} = cl - d - b = 105.50 \text{ in}$
 $W = ((LL + DL) \times jw) / (Cd) = 6.04 \text{ lbf/in}$
 $E = \text{Mod of Elasticity} = 1760000 \text{ lbf/in}^2$
 $jw = \text{Joist Width (in)} = 2.50 \text{ in}$
 $jd = \text{Joist Depth (in)} = 7.25 \text{ in}$
 $I = (jw \times jd^3) / 12 = 79.39128 \text{ in}^4$
 $\delta = (5 \times W \times L^4) / (384 \times E \times I) = 0.069778 \text{ in}$
 $L / 360 = 0.293056 \text{ in}$
delta <<< L/360 O.K. in Deflection

Fastener Specifications - Double Shear at Piling/Hanger

Fastener Type at Piling 3/4 Thru Bolt
n - Number of Fasteners at Piling 2
Cap - Capacity 1620 lbf, per t 8.3A

A - Supported Area 30.00 ft²
Cm - Wet Service in Shear 0.85
Load = $((LL + DL) \times A) / (Cm \times n) = 1200 \text{ lbf}$
1620 lbf > 1200 lbf, O.K

Double Shear@ Pile			
Thru Bolts - Z perpendicular - T8.3A			
	0.625	0.75	1
1.5	1130	1330	1530
2.5	1345	1620	2155
3.5	1560	1910	2780

Fastener Specifications - Single Shear

Fastener Type at Drop Hanger 3/4" Wedge Anchors
n - Number of Fasteners 2
Cap - Capacity 1680 lbf, for per t 8.2E

A - Supported Area 10.00 ft²
Cm - Wet Service in Shear 0.97
Load = $((LL + DL) \times A) / (Cm \times n) = 350.5155 \text{ lbf}$
1680 lbf > 350.5155 lbf, O.K

Single Shear			
Wedge Anchors - Z parallel - T8.2E			
	0.5	0.625	0.75
1.5	660	930	1270
2.5	750	1170	1560
3.5	750	1170	1680

John H. Omslaer, P.E.
FL License #52733, EB#26829
Dynamic Engineering Solutions, Inc.
351 S Cypress Rd, Suite 303
Pompano Beach, FL 33060

[Handwritten signature]
4/13/17