



January 13, 2023

Roshanak Amirazizi P.E.
Civil Engineer
OC Development Services / Building and Safety
Orange County, CA

RE: BNR21-0604 Dana Point Harbor, 80 ft. Gangway Deferred Submittal

Dear Roshanak,

Please find the attached revised drawings and calculations for the 80' aluminum gangway ramps to be used in the Dana Point Harbor Revitalization Project (permit number BNR21-0604). The drawings and calculations are dated 1/13/2023 and 1/4/2023 respectively.

The gangways are a manufactured product from Topper Industries and have been engineered and sealed by Grantham Engineering. As Engineer-of-Record for the marina portion of the redevelopment, I have reviewed the drawings and calculations for general conformance with the project requirements. This includes review of the attachment of the gangways to the existing seawall.

Sincerely,

Bellingham Marine Engineering

A blue ink handwritten signature, appearing to read "Craig S. Funston".

Craig S. Funston, P.E., S.E.

Attachments:

- Topper 80' Gangway Drawing
- Topper 80' Gangway Calculation Set

DRAWING INDEX	
DWG NO.	TITLE
8115-CS	COVER SHEET
8115-SP1	SHIPPING PAGE
8115-B100	SITE ELEVATIONS
8115-B200	PLAN, ELEVATION AND SECTION VIEWS
8115-B201	PARTS LIST
8115-B210	WELD DETAILS
8115-B220	BOSS, HANDRAIL, MIDRAIL, TOERAIL AND DECK DETAILS
8115-B230	WHEEL AND RUN-OFF PLATE DETAILS
8115-B240	SLPED END DETAILS
8115-B300	TRANSITION PLATES
8115-B400	SHORE MOUNT DETAILS
8115-B700	LIGHTRAIL DETAILS

2

Zoning: CanningK 1/18/2023

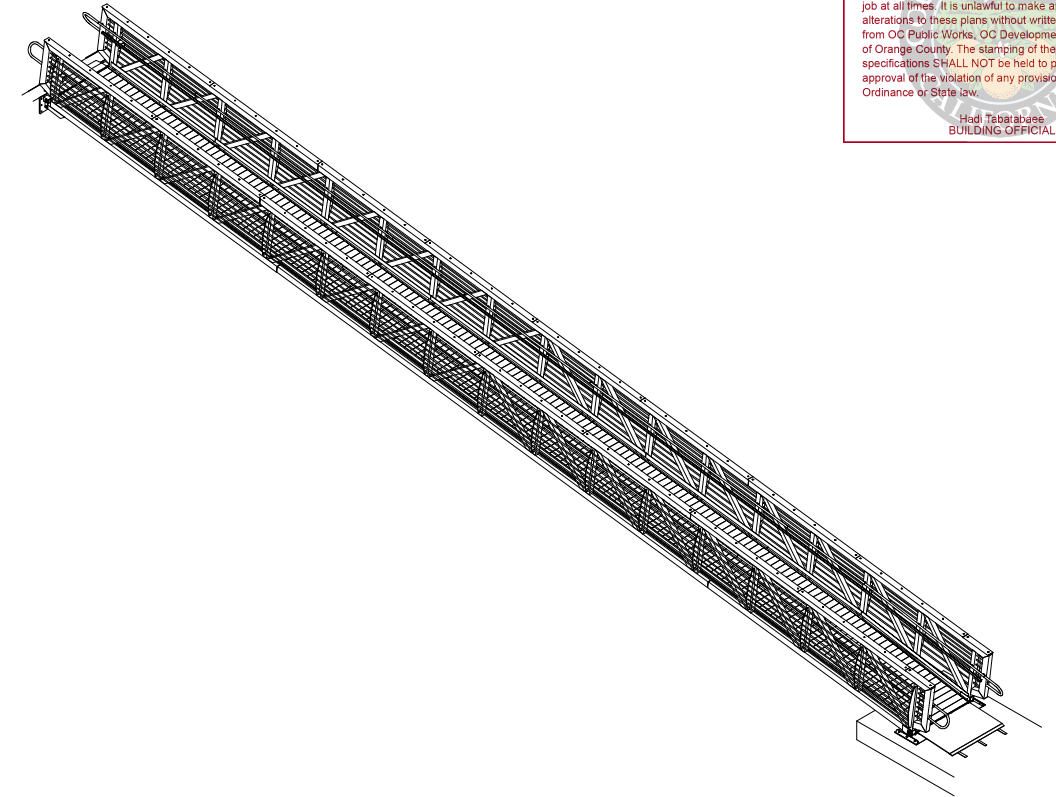
Building&Safety: Roshanak Amirazizi 1/18/2023

Revision: 5
Permits: BNR21-0604.R5

County of Orange - OC Public Works
OC Development Services
APPROVED

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Hadi Tabatabaee
BUILDING OFFICIAL



FABRICATION NOTES

- BREAK ALL SHARP EDGES.
- PROVIDE 1/4" DRAIN HOLES IN BOTTOM END OF ALL POSTS & SIDE DIAGONALS AND AT BOTTOM OF BOTH ENDS OF ALL CHORDS, BRIDGES, BOTTOM DIAGONALS AND HANDRAILS.

GENERAL STRUCTURAL NOTES

CONFORMS TO 2015 AND 2020 ADM AND 2019 CA BUILDING CODE STANDARDS (TITLE 24) EFFECTIVE 1-1-19.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR STRUCTURAL STABILITY DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY IN THE FINAL CONFIGURATION ONLY.

LIVE LOAD: 100 PSF
DEFLECTION: L/240

STRUCTURAL MATERIAL (UNLESS OTHERWISE SPECIFIED):

ALUMINUM SHAPES AND PIPE: 6061-T6, MILL FINISH.
ALUMINUM TRANSITION PLATES: 5052-H32.
ALUMINUM HANDRAIL AND RETURNS: 6063-T563.
STEEL PLATE, CHANNEL AND ANGLE: ASTM A36.
STEEL HSS: ASTM A500 GRADE B (Fy = 46 KSI).
STEEL W-BEAM: ASTM A992 GRADE 50.
STEEL PIPE: ASTM A53 GRADE B.
GALVANIZING: ASTM A123.
SANDBLASTING: SSPC SP 6-63.

STRUCTURAL WELDING FABRICATION SHALL BE IN ACCORDANCE WITH THE AA SPECIFICATIONS FOR ALUMINUM STRUCTURES. WELD USING ALUMINUM FILLER METAL ER5356. FABRICATION, WELDING, WELDING PROCEDURES AND INSPECTION SHALL CONFORM TO AWS D1.2:2014 AND AWS D1.1:2010, AS APPLICABLE, UNLESS OTHERWISE NOTED.

UHMW INDICATES ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE.
NYLATRON INDICATES NYLATRON GSM NYLON, TYPE 6, MoS2 FILLED, CAST.

CUSTOMER SIGNATURE:	DATE:
SIGN AND DATE ABOVE INDICATING ACCEPTANCE AND APPROVAL OF THE PROJECT SUBMITTAL PACKAGE IN ITS ENTIRETY. THIS MUST BE SIGNED AND DATED IN ORDER FOR TOPPER INDUSTRIES 1 LLC. TO PROCEED WITH FABRICATION. ANY AND ALL CHANGES NOT INITIATED BY TOPPER INDUSTRIES LLC AFTER ACCEPTANCE WILL RESULT IN A CHANGE ORDER AND MAY RESULT IN THE DELAY OF THE PROJECT.	1/13/2023



1/13/2023

BELLINGHAM MARINE INDUSTRIES, INC.

NO EXCEPTIONS TAKEN
 REVISE AND RESUBMIT (RAR)
 OTHER: _____

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Craig Funston P.E., S.E.

01/13/2023

NO.	DATE	BY	CHK	REVISION DESCRIPTION
2	1/9/2023	JC		PER RETURN SUBMITTAL
1	12/29/2022	TW		SHORE MOUNT UPDATED
0	11/10/2022			FOR APPROVAL

TOPPER

PO BOX 2930 WOODLAND, WA 98674 (360) 841-8320 (800) 332-DOCK FAX (360) 841-8021 3625

PROPRIETARY DESIGNS AND DATA THAT ARE THE SOLE PROPERTY OF TOPPER INDUSTRIES, INC. ARE INCLUDED IN THIS DRAWING. DATA AND INFORMATION CONTAINED HEREIN SHALL, OUTSIDE OF THE RECIPIENT COMPANY, NOT BE USED FOR ANY PURPOSE EXCEPT AS SPECIFICALLY AUTHORIZED BY TOPPER INDUSTRIES, INC.

5'-0" x 80'-0" GANGWAY
COVER SHEET
BMI DANA PIONT GANGWAYS
BELLINGHAM MARINE INDUSTRIES, INC
DIXON, CA

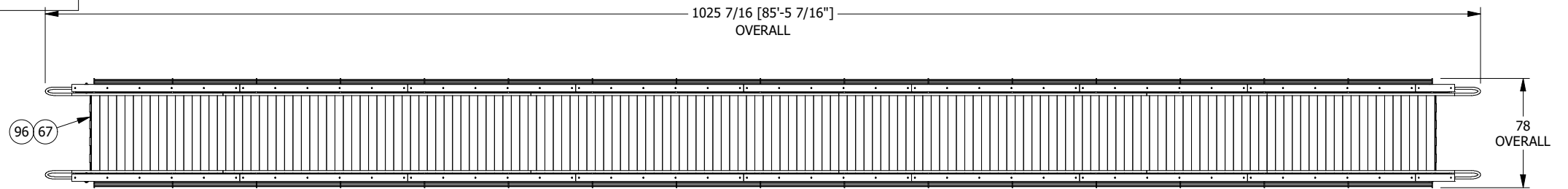
SIZE	DWG NO.	JOB NO.
B	8115-CS	8115

PARTS LIST						
ITEM	DESCRIPTION	QTY	MATERIAL	SIZE	LENGTH	COMMENTS
28	PIPE	28	ALUMINUM	1/2" SCH 40	8 in	
54	TRANS PLATE	1	ALUM 5052-H32	3/8x36	57 1/2 in	DWG B300
55	TRANS PLATE, 1/2" BREAK	1	ALUM 5052-H32	1/4x12	57 1/2 in	DWG B300
65	UTILITY CHANNEL, TOPPER	14	ALUMINUM	1 5/8x1 5/8	54 in	DWG A210
67	TRANS AXLE	2	ALUMINUM	1/2" DIA	59 in	DWG B300
69	TRANS NOSE, 3/8" TRANS PLT, 00095	1	UHMW, BLK	3/4x4	57 1/2 in	DWG B300
80	FLAT BAR	2	STEEL A36	3/8x15FB	12 in	
81	DROP LINK, 00001	4	STEEL, HDG	1/2x3FB	8 in	DWG A201
82	FLAT BAR	2	STEEL GR,50	7/8x15FB	12 in	
83	HINGE PIN, 4" CHORD, 00006	4	STEEL 4142	1" DIA	7 in	DWG A201
84	WASHER, F436	8	STEEL, HDG	1"		DWG A201
86	BOLT, HEX	6	316SS	3/8-16 UNC	1 1/4 in	
88	NUT, HEX	6	316SS	3/8-16 UNC		
92	WASHER, FLAT	6	316SS	3/8"		
94	WASHER, LOCK	6	316SS	3/8"		
96	COTTER PIN	4	316SS	3/16"	1 1/2 in	

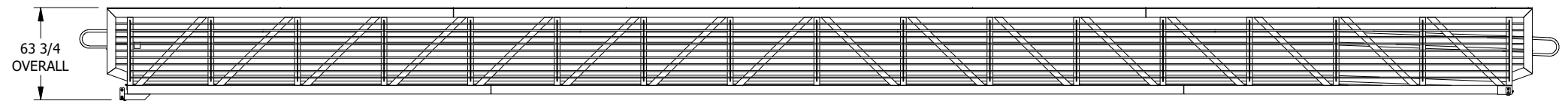
Zoning: CanningK 1/18/2023

Building&Safety: Roshanak Amirazi 1/18/2023

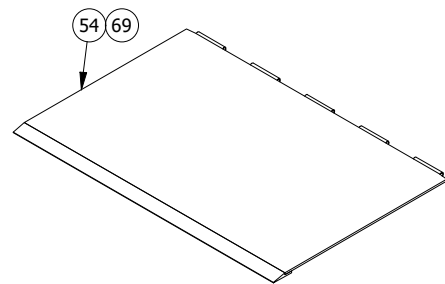
Revision: 5
Permits: BNR21-0604.R5



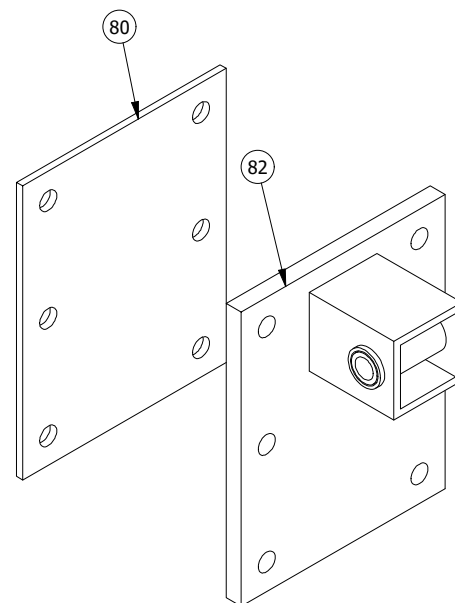
PLAN VIEW



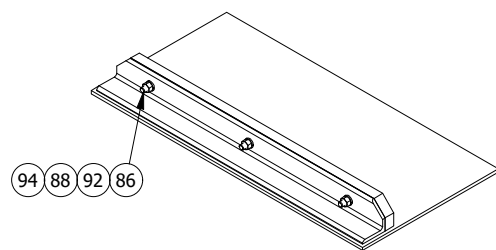
ELEVATION VIEW



TRANS PLATE
WATER END
REQ: 1



SHORE MOUNT
REQ: 2



RUNOFF PLATE
QTY: 2

BELLINGHAM MARINE INDUSTRIES, INC.

NO EXCEPTIONS TAKEN

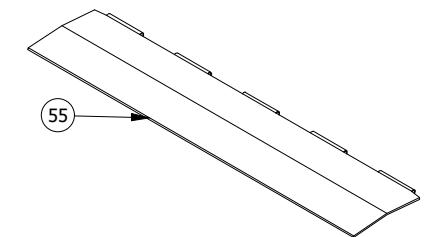
REVISE AND RESUBMIT (RAR)

OTHER: _____

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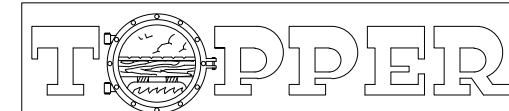


TRANS PLATE
SHORE END
REQ: 1



1/13/2023

GANGWAY APPROX
SHIPPING WT = 6315 LBS
(NOT INCLUDING SHORE MOUNTS)
(2) SHORE MOUNTS APPROX WT = 38 LBS



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1	12/29/2022	TW		SHORE MOUNT UPDATED
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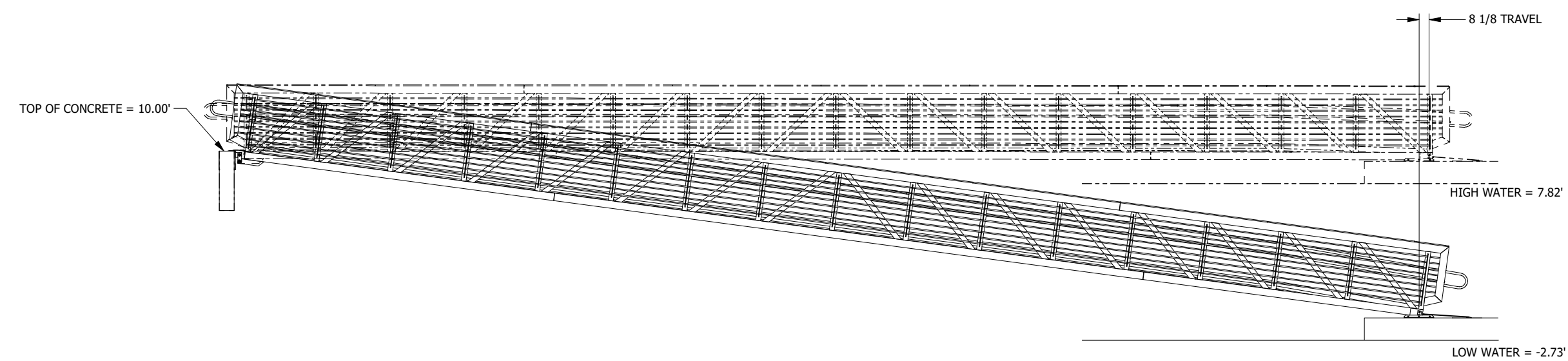
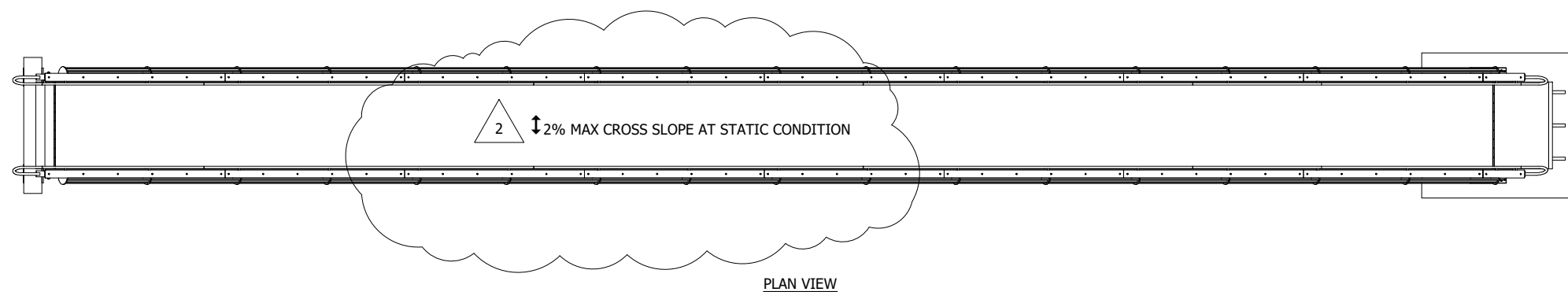
5'-0" x 80'-0" GANGWAY
SHIPPING PAGE
BMI DANA PIONT GANGWAYS
BELLINGHAM MARINE INDUSTRIES, INC
DIXON, CA

SIZE B	DWG NO. 8115-SP1	JOB NO. 8115
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County of Orange - OC Public Works
OC Development Services
APPROVED

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Hadi Tabatabaee
BUILDING OFFICIAL



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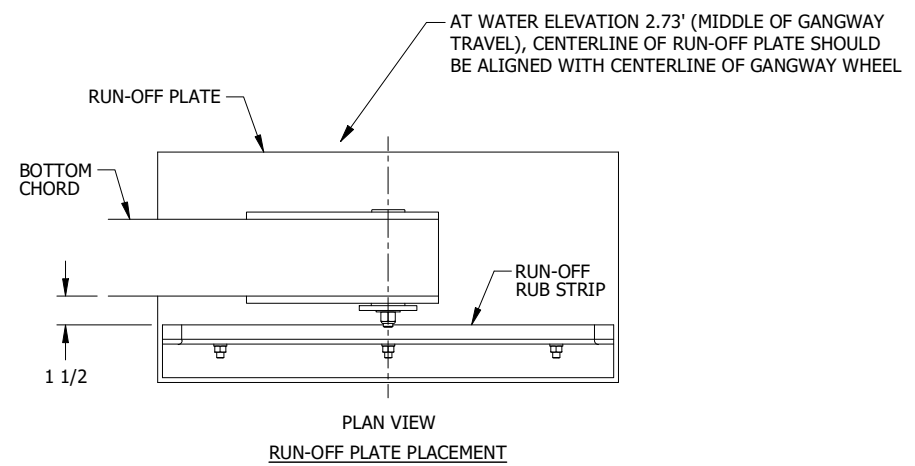
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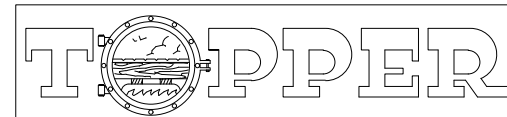
01/13/2023

INSTALLATION
THIS PROJECT IS BIDDER DESIGN.
APPROVED TOPPER DRAWINGS
SUPERCEDE BID DRAWINGS.



1/13/2023

NOTES
1. CUSTOMER IS RESPONSIBLE FOR PLACING WHEEL RUN-OFF PLATES AT CORRECT LOCATIONS.



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0	11/10/2022			FOR APPROVAL

5'-0" x 80'-0" GANGWAY
SITE ELEVATIONS
BMI DANA PIONT GANGWAYS
BELLINGHAM MARINE INDUSTRIES, INC
DIXON, CA

SIZE B	DWG NO. 8115-B100	JOB NO. 8115
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MAJOR COMPONENT LIST					
ITEM	COMPONENT	DESCRIPTION	MATERIAL	SIZE	NOTE
11	BRIDGE	SQUARE TUBE	ALUMINUM	4x4x.188	
12	BOTTOM DIAGONAL	SQUARE TUBE	ALUMINUM	4x4x.125	
14	SIDE DIAGONAL	SQUARE TUBE	ALUMINUM	4x4x.125	WAA (4) BAYS EACH END
15	POST	SQUARE TUBE	ALUMINUM	4x4x.125	WAA, TO BOTTOM CHORD
17	DECK SUPPORT	SQUARE TUBE	ALUMINUM	2x2x.125	
27	MIDRAIL	PIPE	ALUMINUM	1/2" SCH 40	
31	HANDRAIL	PIPE	ALUMINUM	1 1/4" SCH 40	
45	TOERAIL	FLAT BAR	ALUMINUM	1/4x4FB	
52	POST PLATE	PLATE POST	ALUMINUM	1/2x5	
56	DECK, SANDBLASTED	DECK, TOPPER	ALUMINUM	3/4x6	
62	LIGHTRAIL	LIGHTRAIL	ALUMINUM	TOPPER	
76	TOP CAP	TOP RAIL	IPE	3/4x5 1/4	

2

Zoning: CanningK 1/18/2023

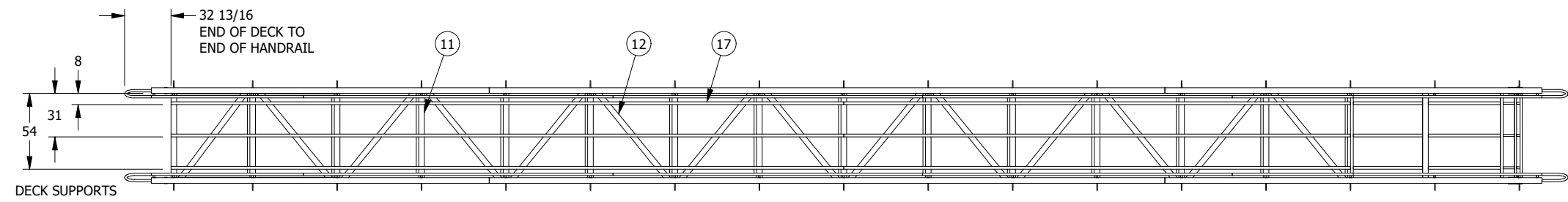
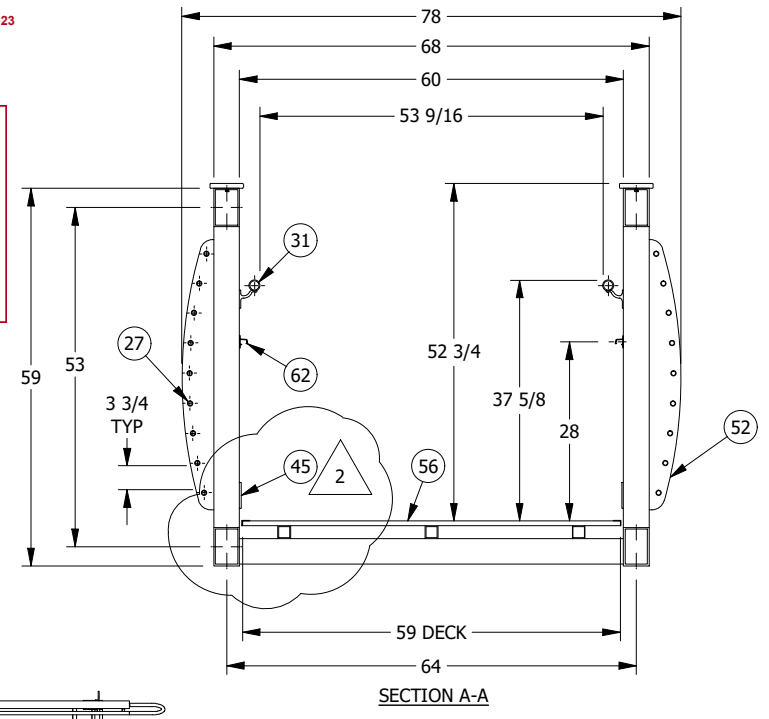
Building&Safety: Roshanak Amirazizi 1/18/2023

Revision: 5
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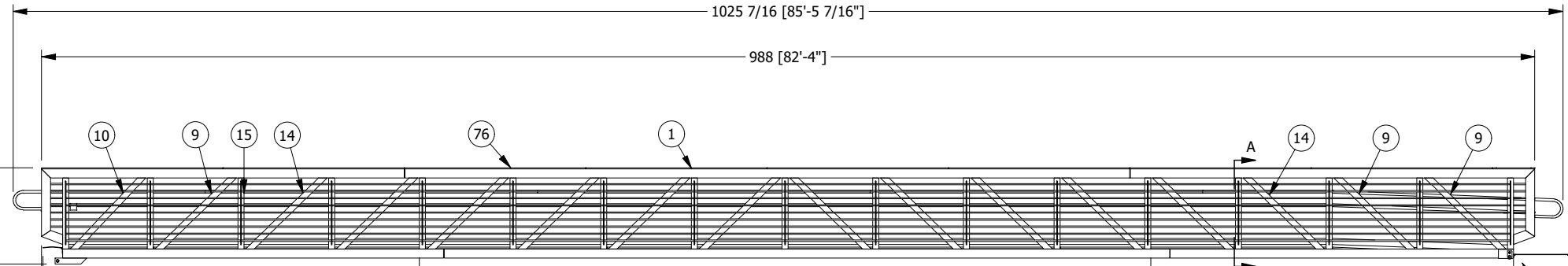
Hadi Tabatabaee
BUILDING OFFICIAL



SHORE END

PLAN VIEW
DECK AND MIDRAILS
NOT SHOWN

WATER END



ELEVATION VIEW

MFG NAMEPLATE
BOTH ENDS

SHORE END, DWG B220
TRANSITION PLATE, DWG B300
SHORE MOUNTS, DWG B400

1" END OF TRANSITION PLATE
TO END OF EXTENSION POST

2

WHEEL, DWG B230
SLOPED END, DWG B240
TRANSITION PLATE, DWG B300

2

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 OTHER: _____

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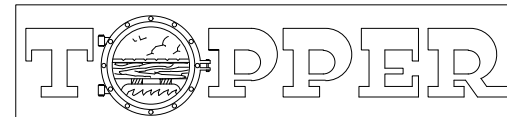
01/13/2023

- NOTES
- UNLESS OTHERWISE SPECIFIED:
 - DIMENSIONS ARE IN INCHES.
 - WELD DETAILS ARE SHOWN ON DWG A210.
 - REFERENCE DWG A201 FOR PARTS LIST.

GANGWAY APPROX
SHIPPING WT = 6315 LBS
(NOT INCLUDING SHORE MOUNTS)
(2) SHORE MOUNTS APPROX WT = 44 LBS



1/13/2023



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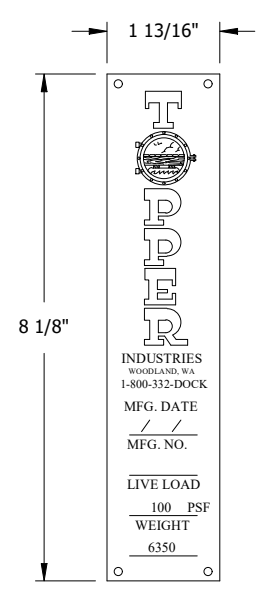
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5'-0" x 80'-0" GANGWAY
PLAN, ELEVATION AND SECTION VIEWS
BMI DANA PIONT GANGWAYS
BELLINGHAM MARINE INDUSTRIES, INC
DIXON, CA

SIZE	DWG NO.	JOB NO.
B	8115-B200	8115

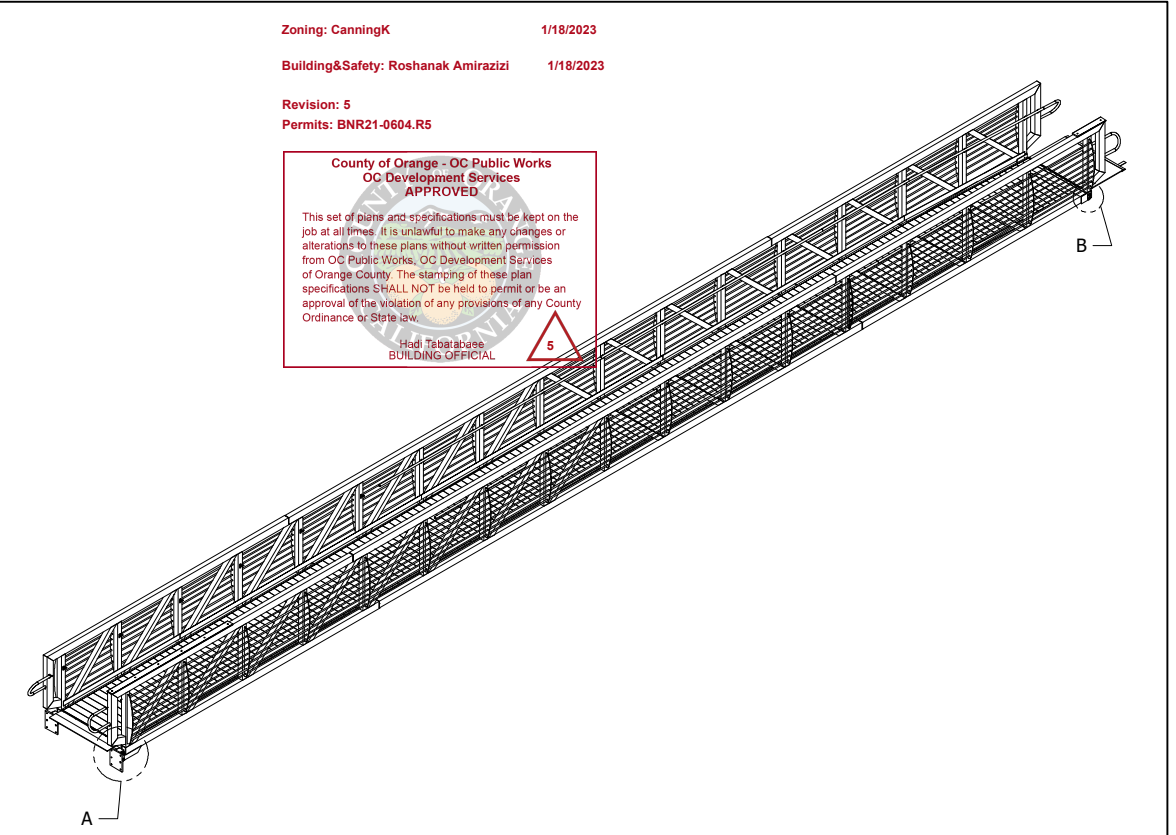
PARTS LIST					PARTS LIST				
ITEM	DESCRIPTION	MATERIAL	SIZE	BOLT LENGTH	ITEM	DESCRIPTION	MATERIAL	SIZE	BOLT LENGTH
1	RECT TUBE	ALUMINUM	6x4x.250		63	LIGHTRAIL	ALUMINUM	TOPPER	
2	RECT TUBE	ALUMINUM	6x4x.250		64	LIGHTRAIL	ALUMINUM	TOPPER	
3	RECT TUBE	ALUMINUM	6x4x.250		65	UTILITY CHANNEL, TOPPER	ALUMINUM	1 5/8x1 5/8	
4	RECT TUBE	ALUMINUM	6x4x.250		66	HANDRAIL BRACKET, 1 1/4, 00011	ALUMINUM	TOPPER	
5	RECT TUBE	ALUMINUM	6x4x.250		67	TRANS AXLE	ALUMINUM	1/2" DIA	
6	RECT TUBE	ALUMINUM	6x4x.250		68	BUSHING, ISO, 4" CHORD, 00009	UHMW, WHT	1 1/2"ODx1 1/16"ID	
7	RECT TUBE	ALUMINUM	6x4x.250		69	TRANS NOSE, 3/8" TRANS PLT, 00095	UHMW, BLK	3/4x4	
8	SQUARE TUBE, DROP CHORD	ALUMINUM	4x4x.250		70	RUN-OFF RUB STRIP	UHMW, BLK	3/4x2	
9	SQUARE TUBE	ALUMINUM	4x4x.188		71	WHEEL, 00023	NYLATRON	4"ODx1 1/2"ID	
10	SQUARE TUBE	ALUMINUM	4x4x.188		72	BEARING, R20-2RS	STEEL	2"ODx1 1/4"ID	
11	SQUARE TUBE	ALUMINUM	4x4x.188		73	WHEEL BUSHING, 00024	NYLATRON	2"ODx1 5/16"ID	
12	SQUARE TUBE	ALUMINUM	4x4x.125		74	WHEEL AXLE/TAB, 00022	316SS	1 1/4" DIA	
13	SQUARE TUBE	ALUMINUM	4x4x.125		75	WASHER, ISOLATOR	UHMW, WHT	1/2	
14	SQUARE TUBE	ALUMINUM	4x4x.125		76	TOP RAIL	IPE	3/4x5 1/4	
15	SQUARE TUBE	ALUMINUM	4x4x.125		77	TOP RAIL	IPE	3/4x5 1/4	
16	SQUARE TUBE	ALUMINUM	2x2x.250		78	JUNCTION BOX, 00092	PVC	4"x4"	
17	SQUARE TUBE	ALUMINUM	2x2x.125		79	SHORE MT TUBE, 4" CHORD, 00007	STEEL, HDG	TOPPER	
18	SQUARE TUBE	ALUMINUM	2x2x.125		80	FLAT BAR	STEEL A36	3/8x15FB	
19	SQUARE TUBE	ALUMINUM	2x2x.125		81	DROP LINK, 00001	STEEL, HDG	1/2x3FB	
20	SQUARE TUBE	ALUMINUM	2x2x.125		82	FLAT BAR	STEEL GR,50	7/8x15FB	
21	SQUARE TUBE	ALUMINUM	2x2x.125		83	HINGE PIN, 4" CHORD, 00006	STEEL 4142	1" DIA	
22	SQUARE TUBE	ALUMINUM	1 1/2x1 1/2x.250		84	WASHER, F436	STEEL, HDG	1"	
23	SQUARE TUBE	ALUMINUM	1 1/2x1 1/2x.125		85	SCREW, MACH, PAN HD, PHILP	18-8SS	8-32 UNC	1/2 in
24	SQUARE TUBE	ALUMINUM	1 1/2x1 1/2x.125		86	BOLT, HEX	316SS	3/8-16 UNC	1 1/4 in
25	PIPE	ALUMINUM	1/2" SCH 40		87	BOLT, HEX	316SS	1/2-13 UNC	2 in
26	PIPE	ALUMINUM	1/2" SCH 40		88	NUT, HEX	316SS	3/8-16 UNC	
27	PIPE	ALUMINUM	1/2" SCH 40		89	NUT, NYLOC	18-8SS	8-32 UNC	
28	PIPE	ALUMINUM	1/2" SCH 40		90	NUT, NYLOC	316SS	1/2-13 UNC	
29	TRANS BARREL	ALUMINUM	1/2" SCH 40		91	WASHER, FLAT	18-8SS	#8	
30	TRANS BARREL	ALUMINUM	1/2" SCH 40		92	WASHER, FLAT	316SS	3/8"	
31	PIPE	ALUMINUM	1 1/4" SCH 40		93	WASHER, FLAT	316SS	1/2"	
32	PIPE	ALUMINUM	1 1/4" SCH 40		94	WASHER, LOCK	316SS	3/8"	
33	PIPE, R6" CL 180 RETURN	ALUMINUM	1 1/4" SCH 40		95	WASHER, LOCK	316SS	1/2"	
34	PIPE, R6" CL 180 RETURN	ALUMINUM	1 1/4" SCH 40		96	COTTER PIN	316SS	3/16"	
35	PIPE, BOSS	ALUMINUM	1 1/2" SCH 40		97	COTTER PIN	316SS	1/4"	
36	RUN-OFF ANGLE	ALUMINUM	L2x2x1/4		98	316 Stainless Steel Hex Drive Flat Head Screw	SS	3/8	
37	HANDRAIL RETURN TAB, 00013	ALUMINUM	1/4x1FB						
38	TRANS PLATE RUN-OFF STRIP	ALUMINUM	1/8x2FB						
39	BACKER PLATE	ALUMINUM	1/8x2FB						
40	BACKER PLATE	ALUMINUM	1/8x2FB						
41	TRANS MOUNT	ALUMINUM	1/4x2FB						
42	FLAT BAR, END CAP	ALUMINUM	1/4x3 1/2FB						
43	FLAT BAR, END CAP	ALUMINUM	1/4x3 1/2FB						
44	FLAT BAR, END CAP	ALUMINUM	1/4x3 1/2FB						
45	FLAT BAR	ALUMINUM	1/4x4FB						
46	FLAT BAR	ALUMINUM	1/4x4FB						
47	FLAT BAR	ALUMINUM	1/4x4FB						
48	TRANS MOUNT	ALUMINUM	1/4x4FB						
49	INTERNAL END CAP	ALUMINUM	1/4x4FB						
50	WHEEL PLATE, 6" OR 8" CHORD, 00078	ALUMINUM	3/8x6FB						
51	WHEEL RUN-OFF PLATE	ALUMINUM	1/4x12						
52	PLATE POST	ALUMINUM	1/2x5						
53	PLATE POST	ALUMINUM	1/2x5						
54	TRANS PLATE	ALUM 5052-H32	3/8x36						
55	TRANS PLATE, 1/2" BREAK	ALUM 5052-H32	1/4x12						
56	DECK, TOPPER	ALUMINUM	3/4x6						
57	DECK TRIM	ALUMINUM	TOPPER						
58	DECK TRIM	ALUMINUM	TOPPER						
59	DECK TRIM	ALUMINUM	TOPPER						
60	DECK TRIM	ALUMINUM	TOPPER						
61	DECK TRIM	ALUMINUM	TOPPER						
62	LIGHTRAIL	ALUMINUM	TOPPER						



NAMEPLATE SPECIFICATIONS:
1. MATERIAL IS ANODIZED ALUMINUM, .020" THICK, ADHESIVE BACKED & RIVETED, BACKGROUND COLOR BLUE.
2. GANGWAY DATA STAMPED.



1/13/2023

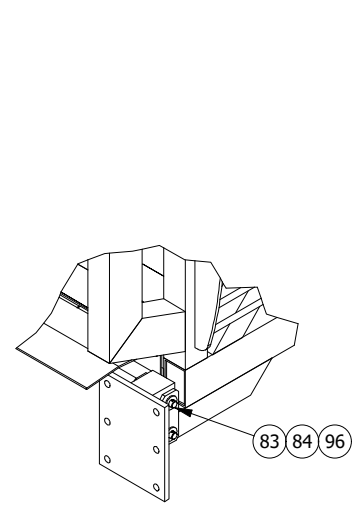


Zoning: CanningK 1/18/2023
Building&Safety: Roshanak Amirazizi 1/18/2023
Revision: 5
Permits: BNR21-0604.R5

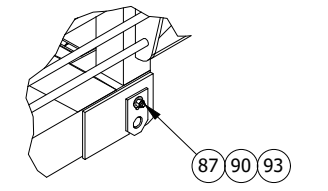
County of Orange - OC Public Works
OC Development Services
APPROVED

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Hadi Tabatabaee
BUILDING OFFICIAL



DETAIL A



DETAIL B

BELLINGHAM MARINE INDUSTRIES, INC.

NO EXCEPTIONS TAKEN
 REVISE AND RESUBMIT (RAR)
 OTHER: _____

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Craig Funston P.E., S.E.

01/13/2023

TOPPER

PO BOX 2930 WOODLAND, WA 98674 (360) 841-8320 (800) 332-DOCK FAX (360) 841-8021 3625

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2	1/9/2023	JC		PER RETURN SUBMITTAL
1	12/29/2022	TW		SHORE MOUNT UPDATED
0	11/10/2022			FOR APPROVAL

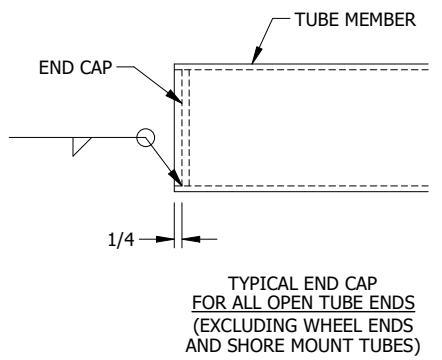
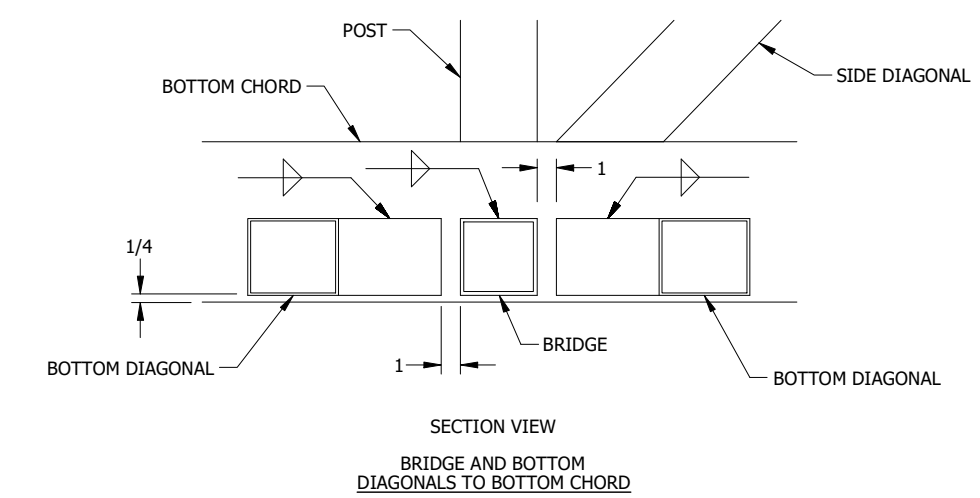
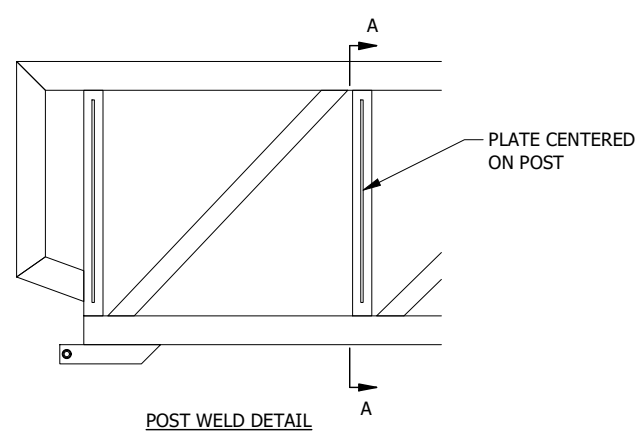
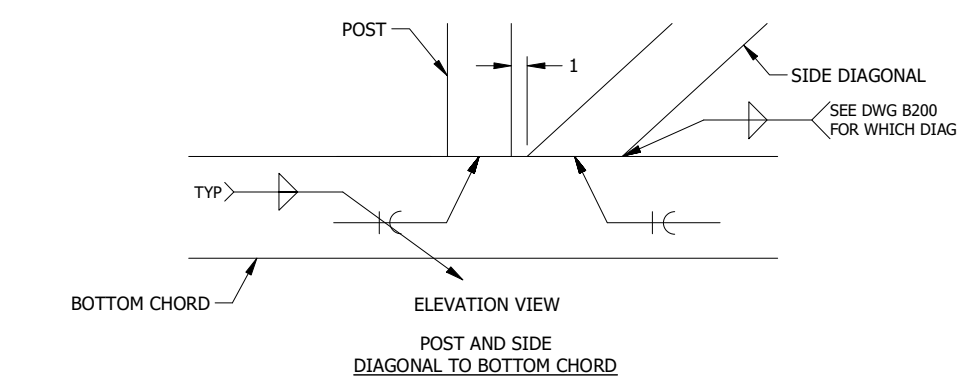
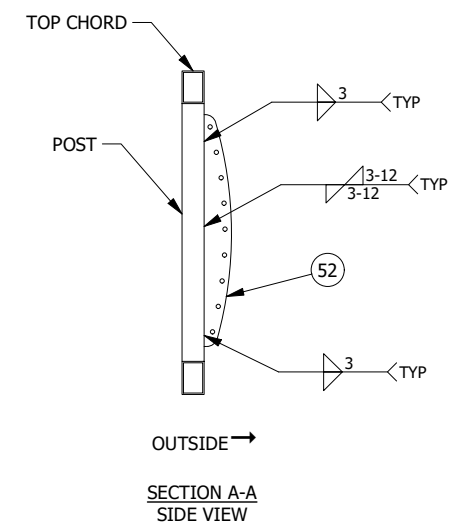
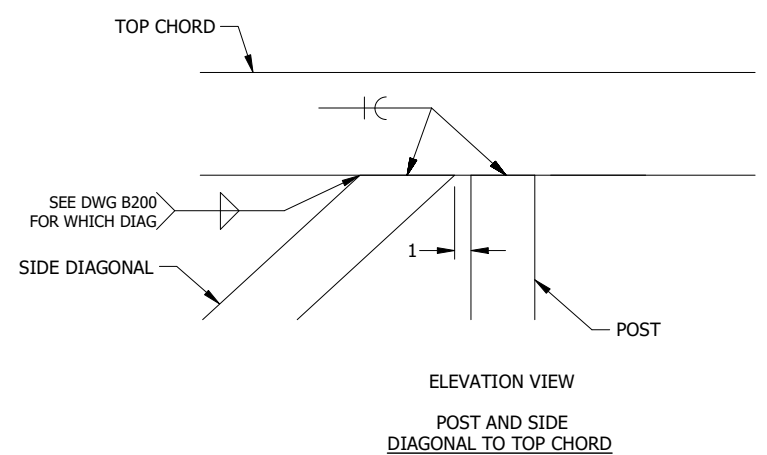
5'-0" x 80'-0" GANGWAY PARTS LIST
BMI DANA PIONT GANGWAYS
BELLINGHAM MARINE INDUSTRIES, INC
DIXON, CA

SIZE B	DWG NO. 8115-B201	JOB NO. 8115
--------	-------------------	--------------

County of Orange - OC Public Works
OC Development Services
APPROVED

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Hadi Tabatabaee
BUILDING OFFICIAL



BELLINGHAM MARINE INDUSTRIES, INC.

NO EXCEPTIONS TAKEN

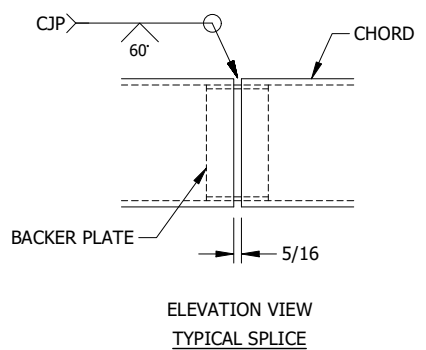
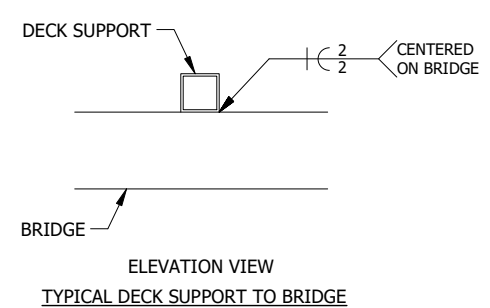
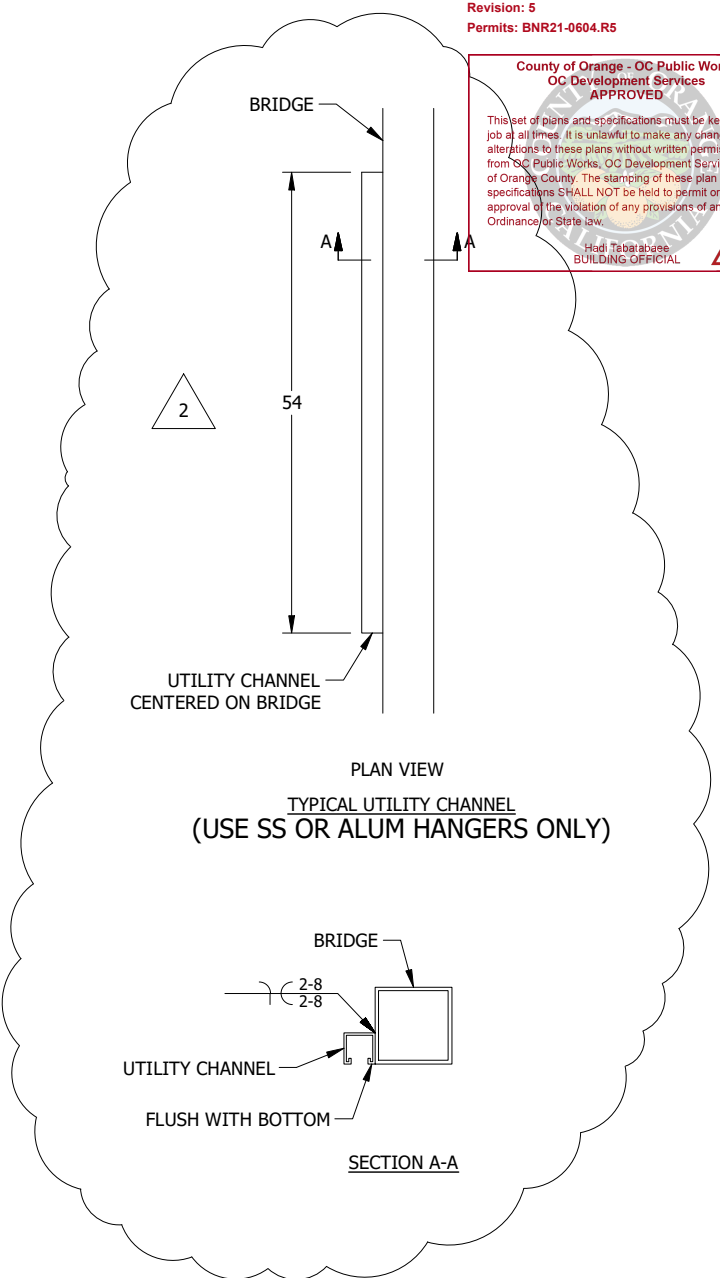
REVISE AND RESUBMIT (RAR)

OTHER: _____

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Craig Funston P.E., S.E.

01/13/2023



- NOTES
- UNLESS OTHERWISE SPECIFIED:
 - DIMENSIONS ARE IN INCHES.
 - WELD SIZE IS EQUAL TO THICKNESS OF THINNER PART WELDED, MAX 5/16".
 - IF BOTTOM & SIDE MEMBERS INTERSECT AT CHORD, APPLY FILLET WELD.
 - REFERENCE DWG B201 FOR PARTS LIST.



1/13/2023

TOPPER

PO BOX 2930 WOODLAND, WA 98674 (360) 841-8320 (800) 332-DOCK FAX (360) 841-8021 3625

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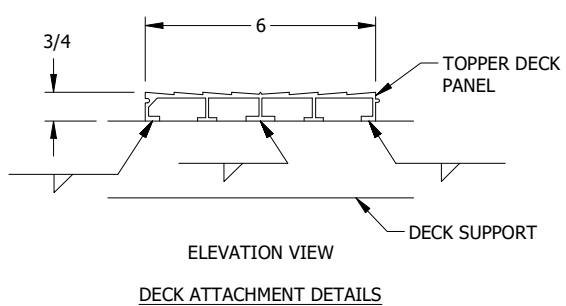
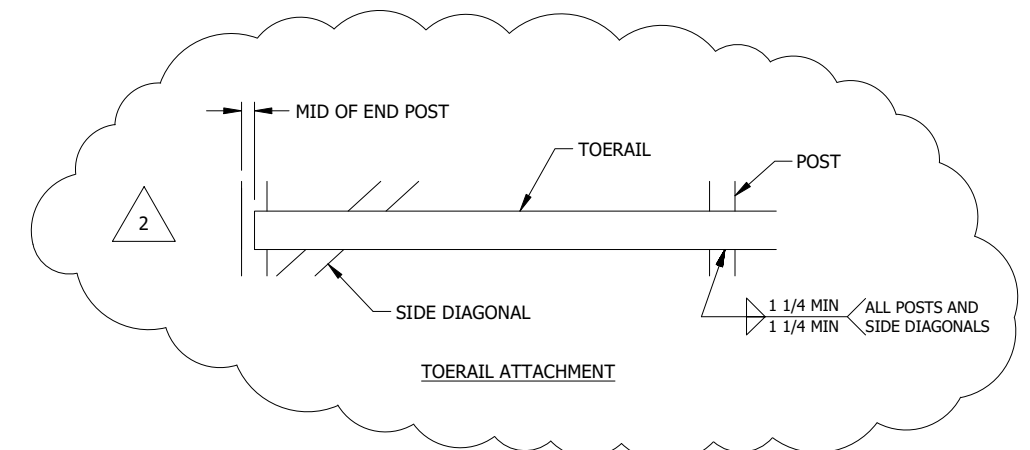
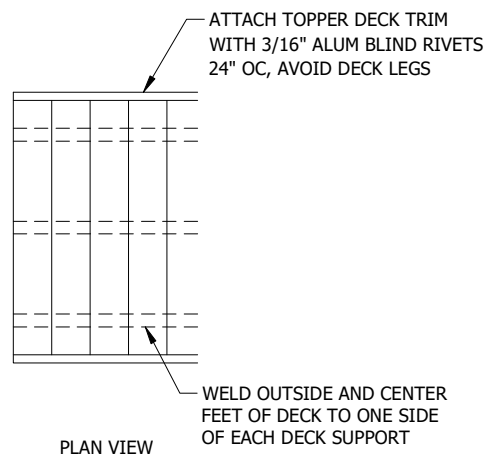
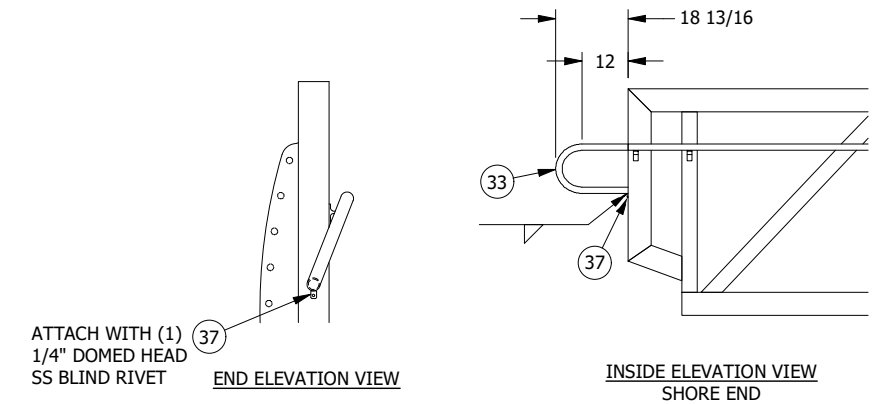
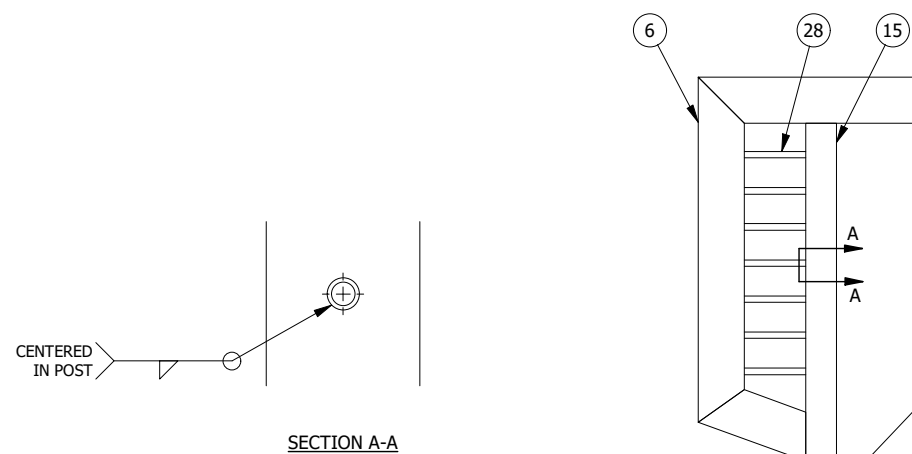
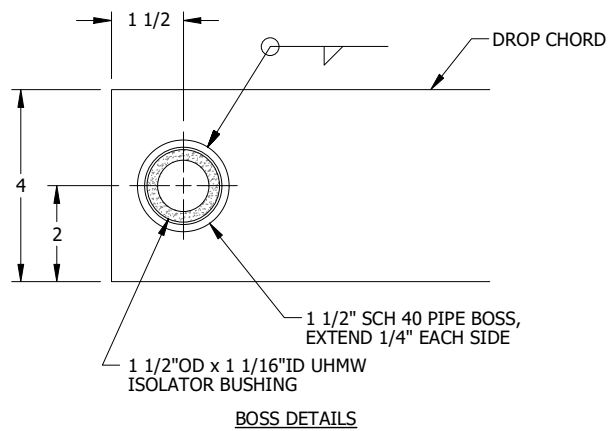
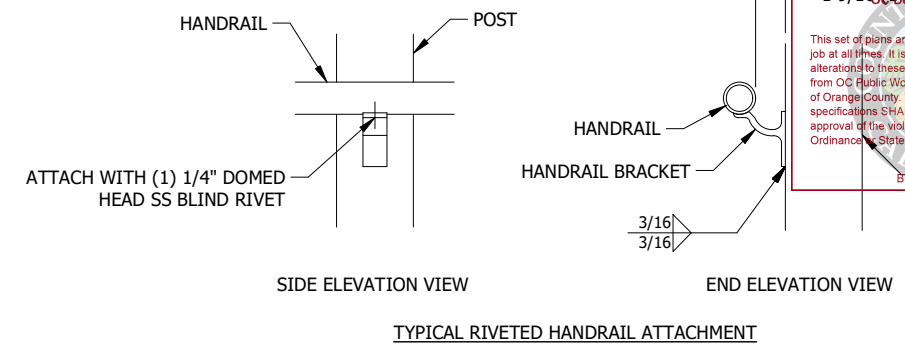
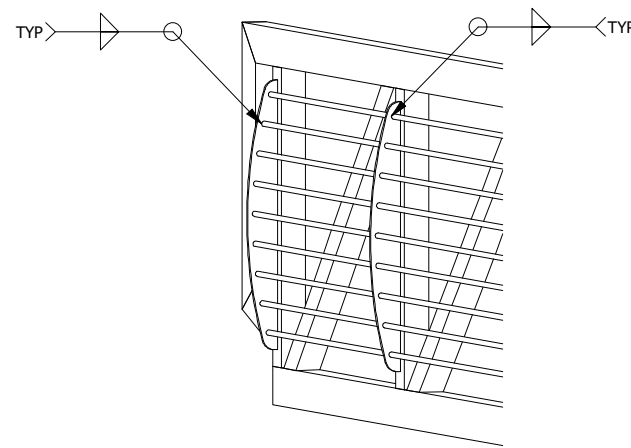
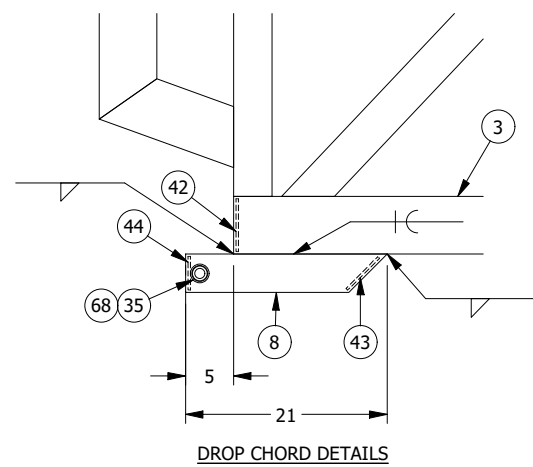
NO.	DATE	BY	CHK	REVISION DESCRIPTION
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1	12/29/2022	TW		SHORE MOUNT UPDATED
0	11/10/2022			FOR APPROVAL

5'-0" x 80'-0" GANGWAY
WELD DETAILS
BMI DANA PIONT GANGWAYS
BELLINGHAM MARINE INDUSTRIES, INC
DIXON, CA

SIZE B	DWG NO. 8115-B210	JOB NO. 8115
--------	-------------------	--------------

Revision: 5
 Permits: BNR21-0604.R5

1 11/16 (1" PIPE)
 1 9/16 (1" PIPE)
 County of Orange Public Works
 OC Development Services
 APPROVED
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 Mark P. Osborne
 COUNTY OFFICIAL



BELLINGHAM MARINE INDUSTRIES, INC.

NO EXCEPTIONS TAKEN
 REVISE AND RESUBMIT (RAR)
 OTHER: _____

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Craig Funston P.E., S.E.

01/13/2023



1/13/2023

- NOTES**
- UNLESS OTHERWISE SPECIFIED:
 - DIMENSIONS ARE IN INCHES.
 - WELD SIZE IS EQUAL TO THICKNESS OF THINNER PART WELDED, MAX 5/16".
 - ALL HANDRAIL SPLICES HAVE AN INTERNAL PIPE SPLICE CONNECTOR, PLUG WELDED ONE SIDE ON BOTTOM.
 - REFERENCE DWG A201 FOR PARTS LIST.

TOPPER

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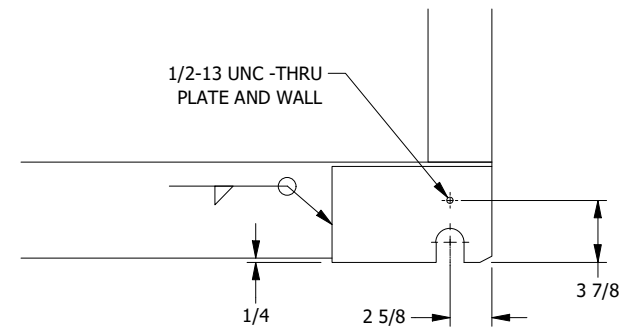
5'-0" x 80'-0" GANGWAY - BOSS, HANDRAIL MIDRAIL, TOERAIL AND DECK DETAILS
 BMI DANA PIONT GANGWAYS
 BELLINGHAM MARINE INDUSTRIES, INC
 DIXON, CA

SIZE B	DWG NO. 8115-B220	JOB NO. 8115
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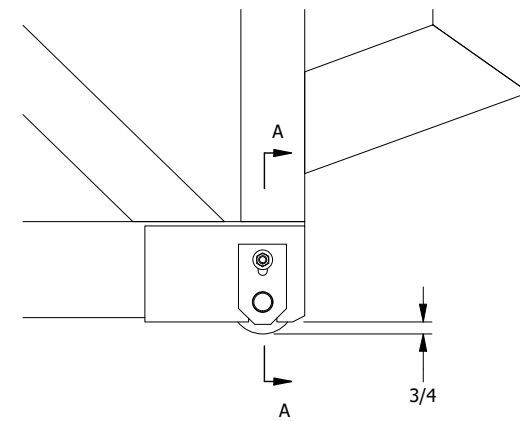
Zoning: CanningK 1/18/2023

Building&Safety: Roshanak Amirazizi 1/18/2023

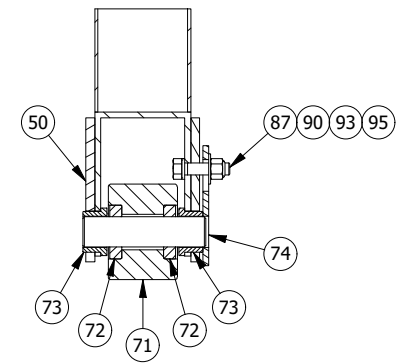
Revision: 5
Permits: BNR21-0604.R5



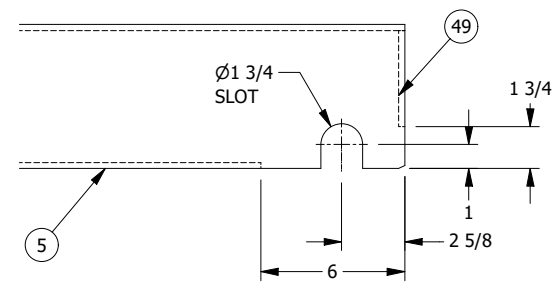
WHEEL PLATE WELDING



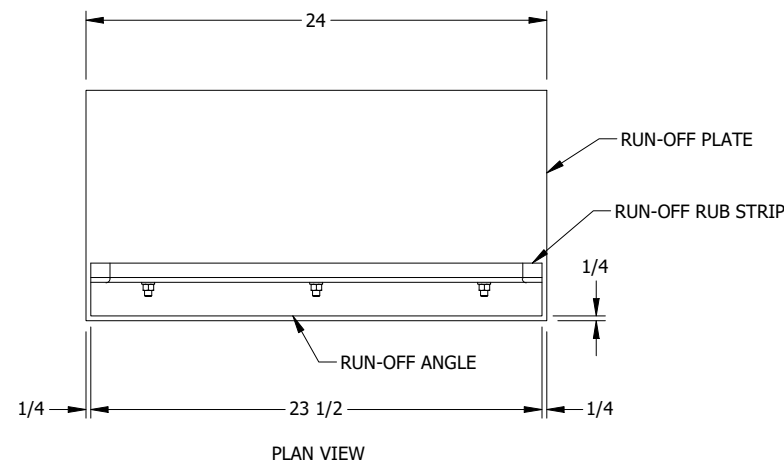
WHEEL DETAIL



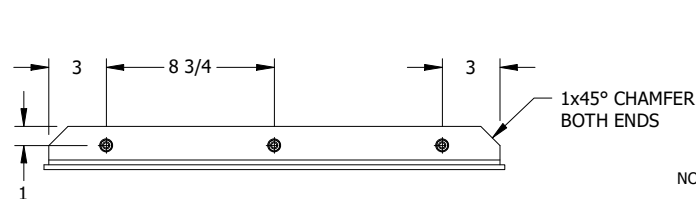
SECTION A-A



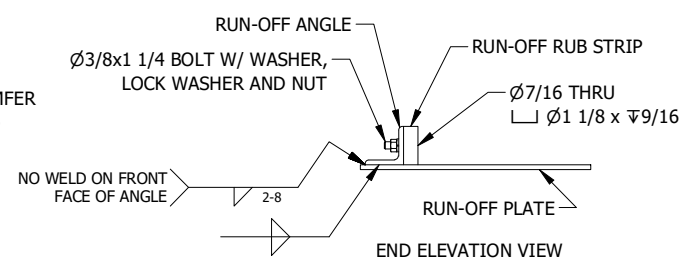
BOTTOM CHORD NOTCH



PLAN VIEW



SIDE ELEVATION VIEW



RUN-OFF PLATE ASSEMBLY ATTACHED WITH EPOXY OR FASTENED WITH BOLTS, EPOXY/BOLTS/HOLES NOT BY TOPPER



1/13/2023

NOTES

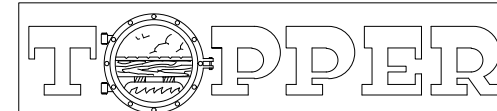
- UNLESS OTHERWISE SPECIFIED:
- DIMENSIONS ARE IN INCHES.
- WELD SIZE IS EQUAL TO THICKNESS OF THINNER PART WELDED, MAX 5/16".
- GALVANIZE STEEL TO ASTM A123.
- USE OVERSIZED TAP FOR STEEL TO BE GALVANIZED.
- REFERENCE DWG A201 FOR PARTS LIST.

BELLINGHAM MARINE INDUSTRIES, INC.

NO EXCEPTIONS TAKEN
 REVISE AND RESUBMIT (RAR)
 OTHER: _____

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 Craig Funston P.E., S.E.

01/13/2023



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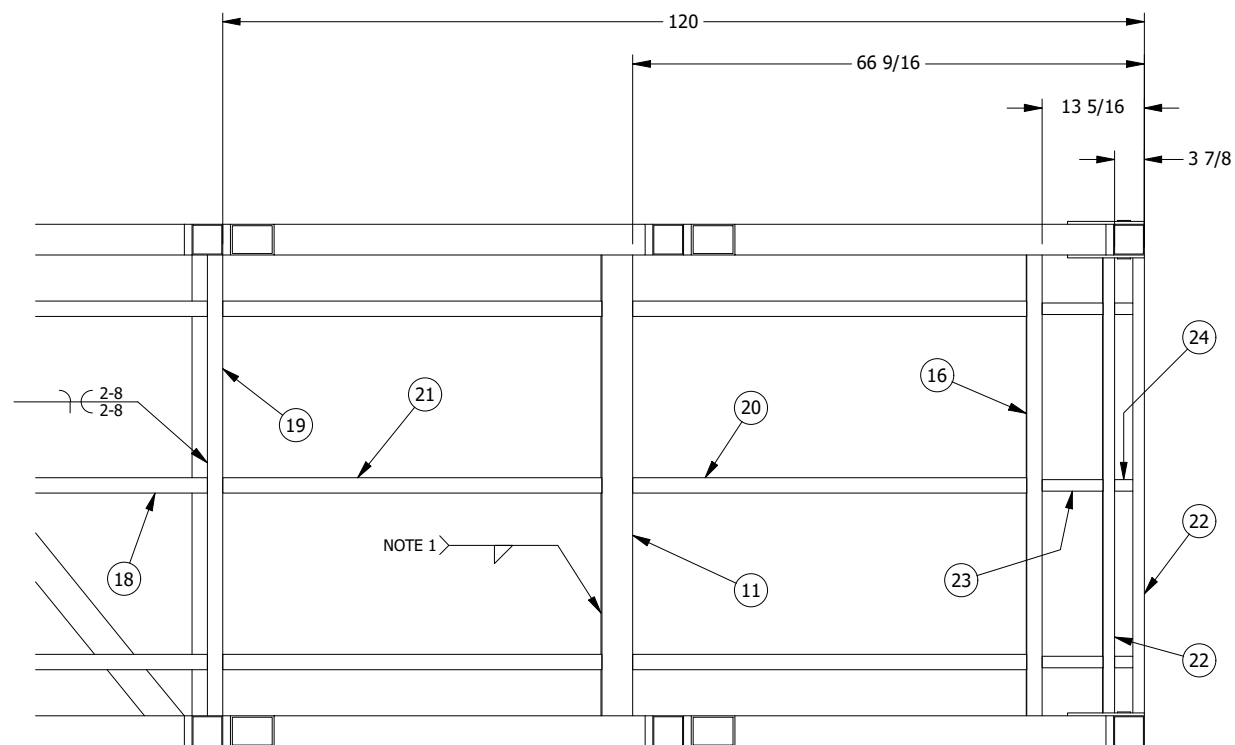
5'-0" x 80'-0" GANGWAY
 WHEEL DETAILS
 BMI DANA PIONT GANGWAYS
 BELLINGHAM MARINE INDUSTRIES, INC
 DIXON, CA

SIZE B	DWG NO. 8115-B230	JOB NO. 8115
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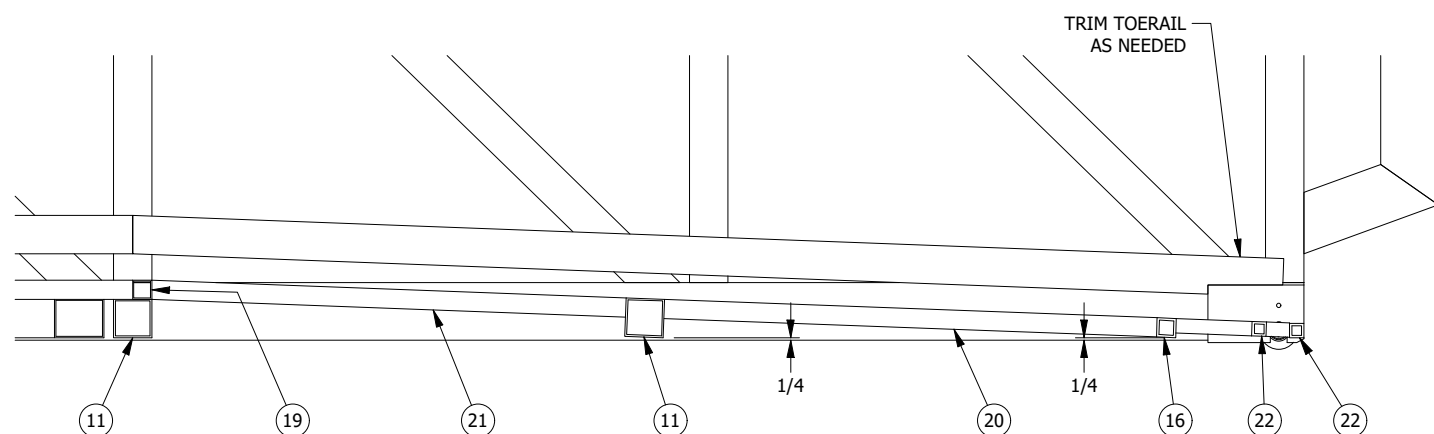
County of Orange - OC Public Works
OC Development Services
APPROVED

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Hadi Tabatabaee
BUILDING OFFICIAL



PLAN VIEW
(TOP CHORD, SIDE DIAGONALS, HANDRAIL,
MIDRAIL, POST, TOERAIL & DECK NOT SHOWN)



INSIDE ELEVATION VIEW
DECK NOT SHOWN

BELLINGHAM MARINE INDUSTRIES, INC.

NO EXCEPTIONS TAKEN
 REVISE AND RESUBMIT (RAR)
 OTHER: _____

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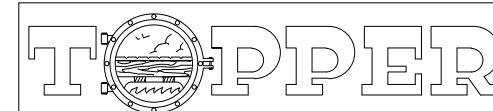
Craig Funston P.E., S.E.

01/13/2023

- NOTES
- UNLESS OTHERWISE SPECIFIED:
 - ALL SLOPED END DECK SUPPORT TO BRIDGE WELDS ARE 3 SIDES - NOT WELDED ON TOP.
 - WELD SIZE IS EQUAL TO THICKNESS OF THINNER PART WELDED, MAX 5/16".
 - DIMENSIONS ARE IN INCHES.
 - REFERENCE DWG A201 FOR PARTS LIST.



1/13/2023



PO BOX 2930 WOODLAND, WA 98674 (360) 841-8320 (800) 332-DOCK FAX (360) 841-8021 3625

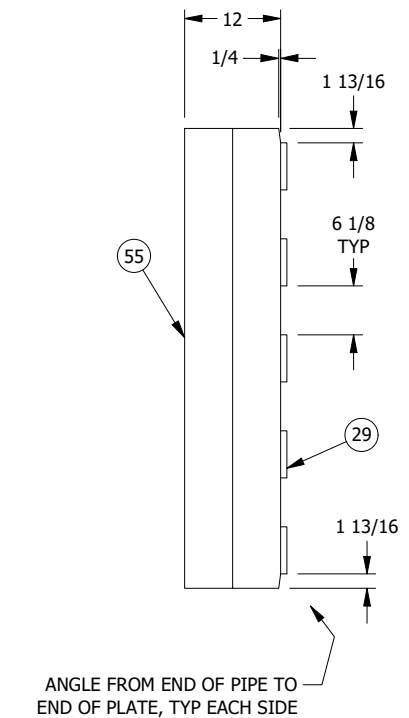
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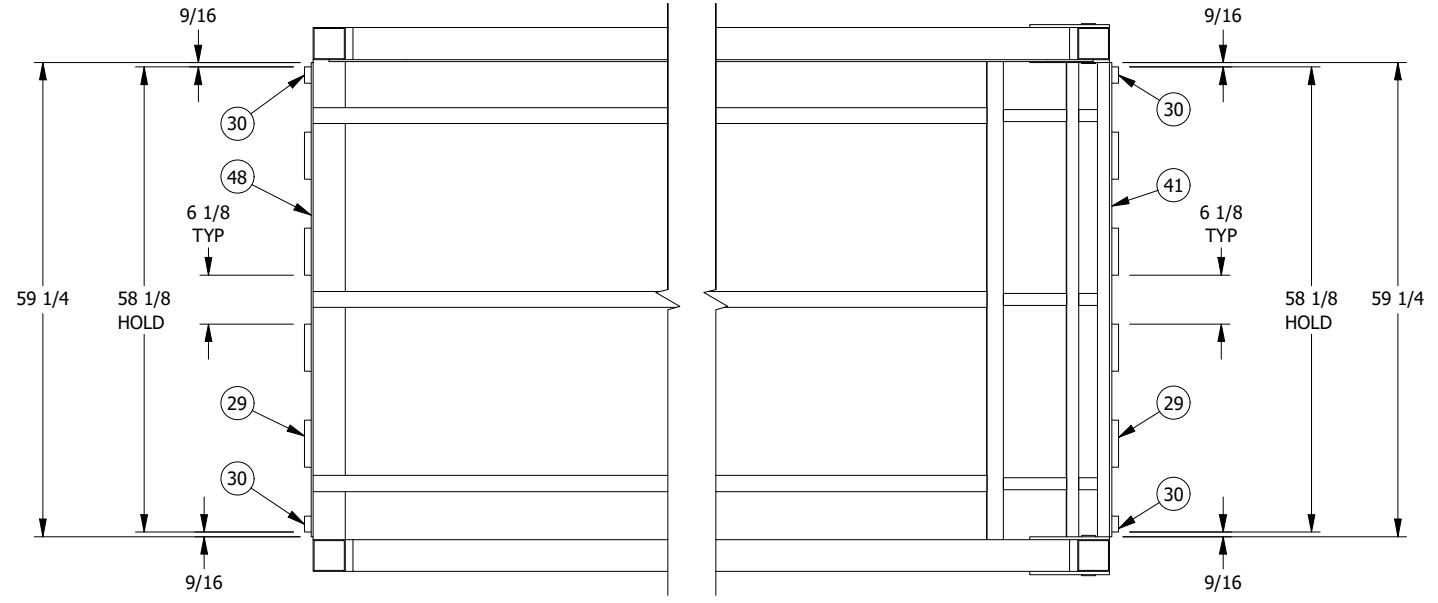
5'-0" x 80'-0" GANGWAY
SLOPED END DETAILS
BMI DANA PIONT GANGWAYS
BELLINGHAM MARINE INDUSTRIES, INC
DIXON, CA

SIZE	DWG NO.	JOB NO.
B	8115-B240	8115

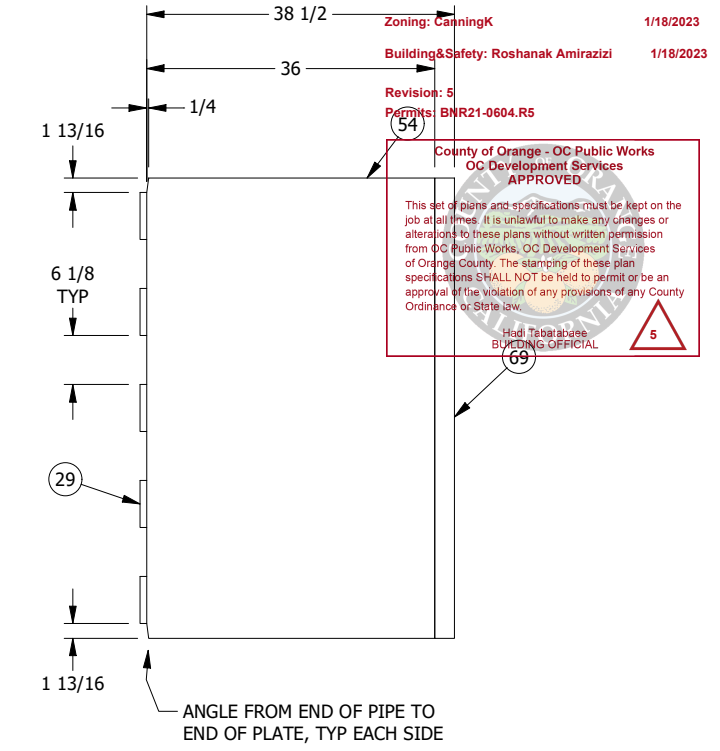
Zoning: CanningK 1/18/2023
 Building & Safety: Roshanak Amirazizi 1/18/2023
 Revision: 5
 Part: BNR21-0604.R5
 County of Orange - OC Public Works
 OC Development Services
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 Hadi Tabatabaee
 BUILDING OFFICIAL



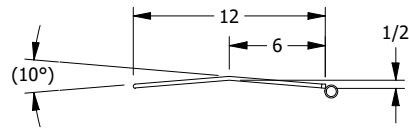
TRANS PLATE SHORE END



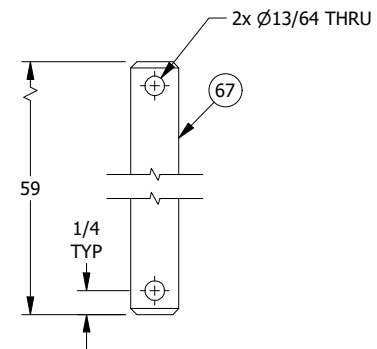
PLAN VIEW



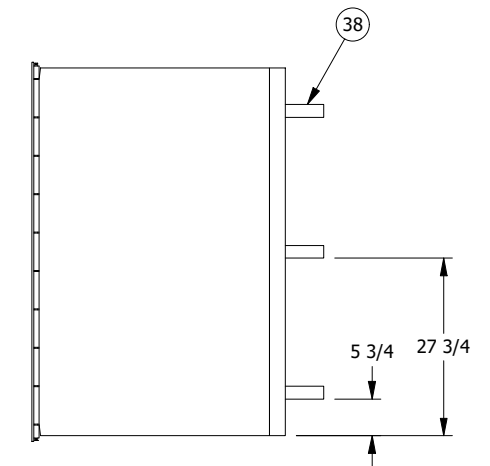
TRANS PLATE WATER END



ELEVATION VIEW



TRANS AXLE

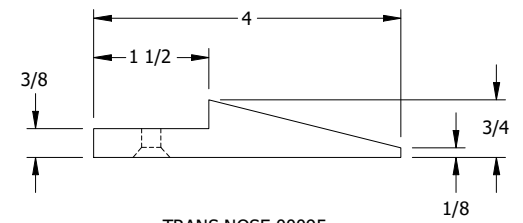


RUN-OFF STRIP
 ATTACHED WITH EPOXY OR FASTENERS,
 EPOXY/FASTENERS/HOLES
 NOT BY TOPPER

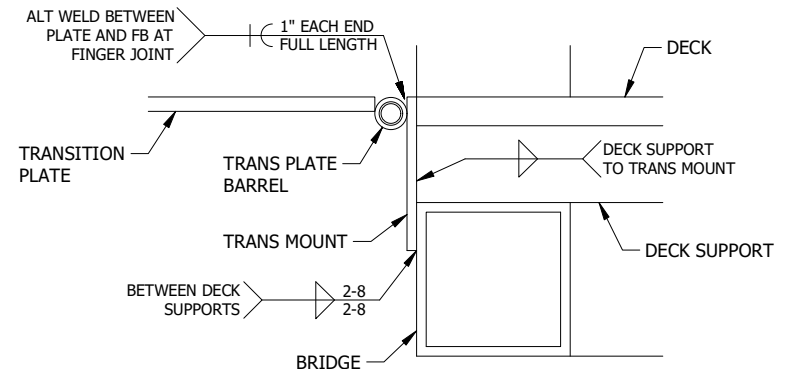
BELLINGHAM MARINE INDUSTRIES, INC.

NO EXCEPTIONS TAKEN
 REVISE AND RESUBMIT (RAR)
 OTHER: _____

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 Craig Funston P.E., S.E.
 01/13/2023



TRANS NOSE 00095
 FASTEN WITH 1/4-20 FH SS
 SCREWS AT 6" OC, GRIND
 FLUSH WITH TOP OF PLATE



TYPICAL WELD DETAILS

- NOTES
- UNLESS OTHERWISE SPECIFIED:
 - DIMENSIONS ARE IN INCHES.
 - WELD SIZE IS EQUAL TO THICKNESS OF THINNER PART WELDED, MAX 5/16".
 - METALIZE TOP SURFACE OF TRANSITION PLATES:
 GRADE 2, MEDIUM.
 - IF TRANSITION PLATE HAS BREAK, RADIUS IS 1/2".
 - UNLESS UHMW NOSE IS USED, BULLNOSE LEADING EDGE OF TRANSITION PLATE.
 - REFERENCE DWG A201 FOR PARTS LIST.



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2	1/9/2023	JC		PER RETURN SUBMITTAL
1	12/29/2022	TW		SHORE MOUNT UPDATED
0	11/10/2022			FOR APPROVAL

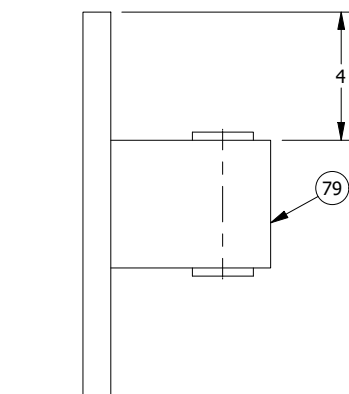
5'-0" x 80'-0" GANGWAY
 TRANSITION PLATES
 BMI DANA PIONT GANGWAYS
 BELLINGHAM MARINE INDUSTRIES, INC
 DIXON, CA

SIZE B	DWG NO. 8115-A300	JOB NO. 8115
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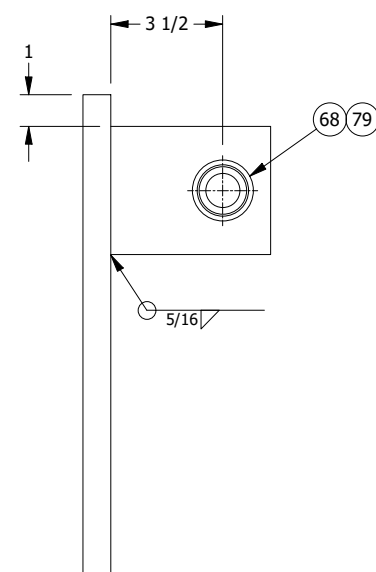
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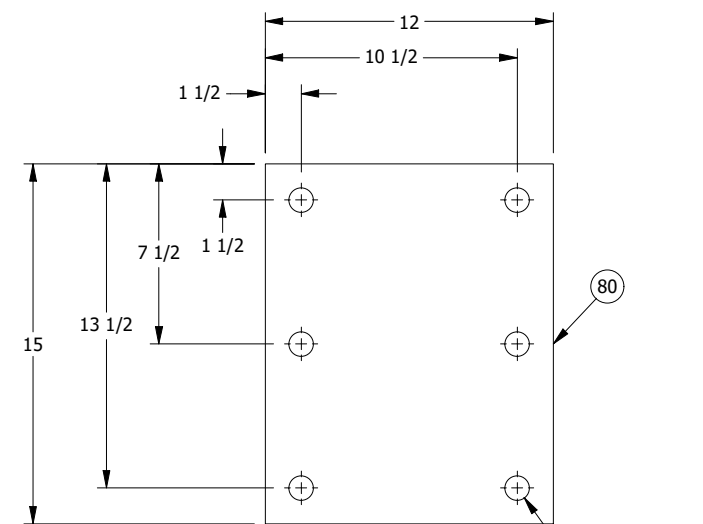
Hadi Tabatabaee
 BUILDING OFFICIAL



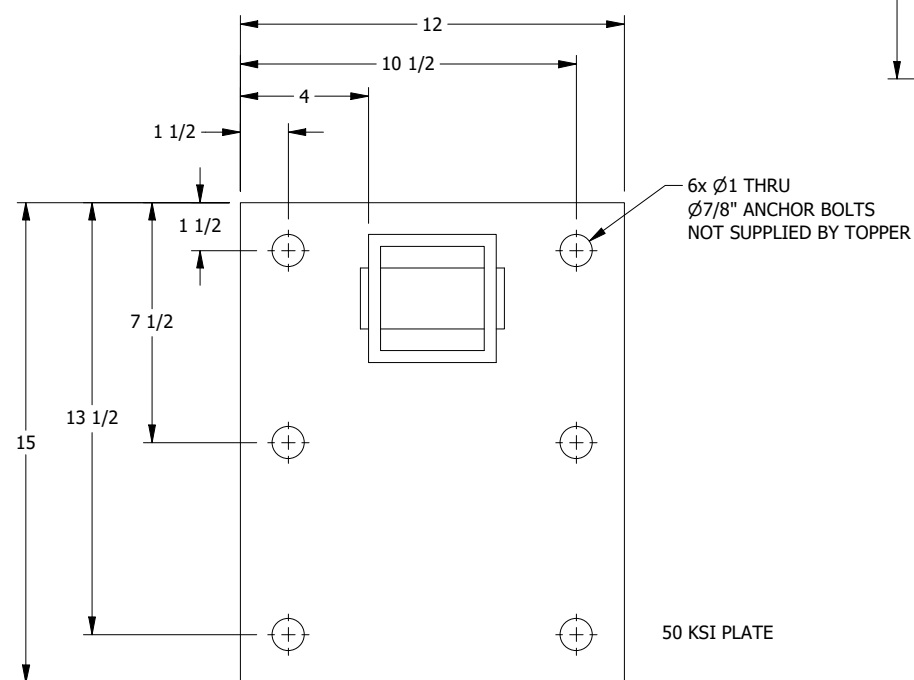
PLAN VIEW



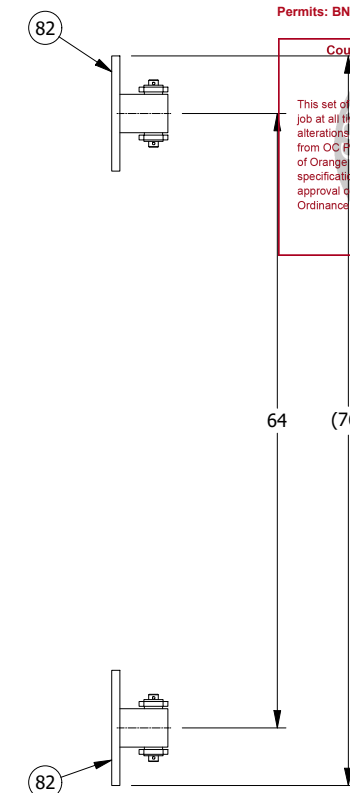
SIDE ELEVATION VIEW



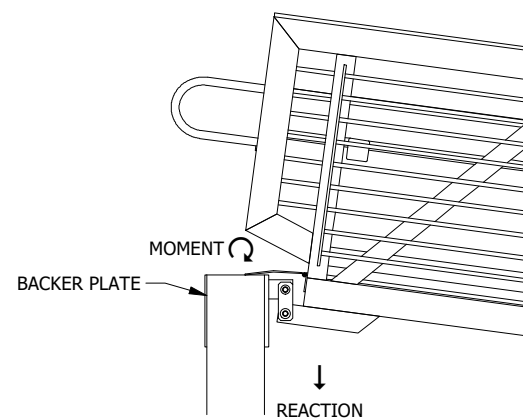
BACKER PLATE



END ELEVATION VIEW



PLAN VIEW



SITE ELEVATION VIEW
 (AT LOW WATER)

DEAD LOAD + LIVE LOAD
 REACTION = 13.23 KIPS
 MOMENT = 46.31 KIP INCHES
 EACH SIDE (UNFACTORED)

**CUSTOMER IS RESPONSIBLE FOR VERIFYING
 ABUTMENT IS ADEQUATE TO SUPPORT THE
 STATED REACTION AND MOMENT**

**NOTE: SHORE MOUNT SHOWN
 IS BOLT ON, FOR
 VERTICAL FACE OF ABUTMENT**



1/13/2023

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- GALVANIZE STEEL TO ASTM A123.
- USE OVERSIZED TAP FOR STEEL TO BE GALVANIZED.
- REFERENCE DWG A201 FOR PARTS LIST.

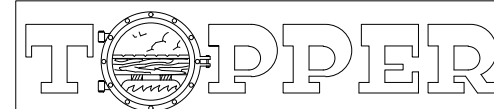
BELLINGHAM MARINE INDUSTRIES, INC.

NO EXCEPTIONS TAKEN
 REVISE AND RESUBMIT (RAR)
 OTHER: _____

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Craig Funston P.E., S.E.

01/13/2023



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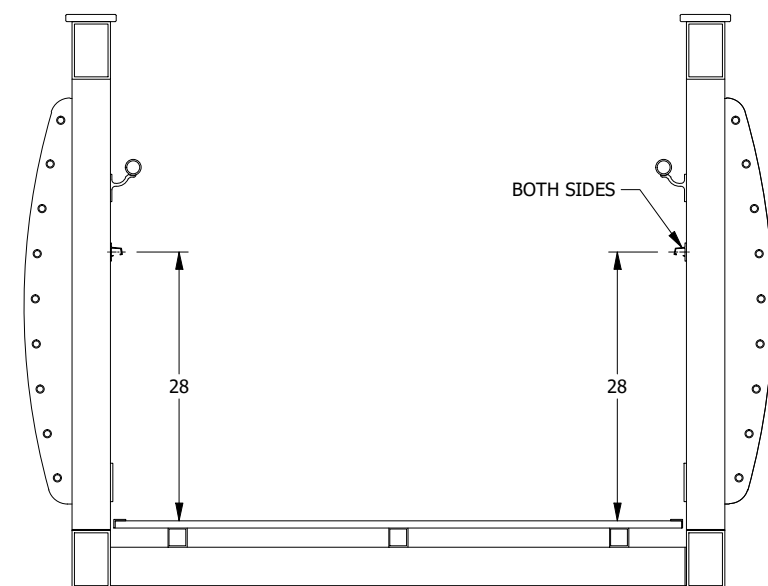
5'-0" x 80'-0" GANGWAY
 SHORE MOUNTS
 BMI DANA PIONT GANGWAYS
 BELLINGHAM MARINE INDUSTRIES, INC
 DIXON, CA

SIZE B	DWG NO. 8115-B400	JOB NO. 8115
--------	-------------------	--------------

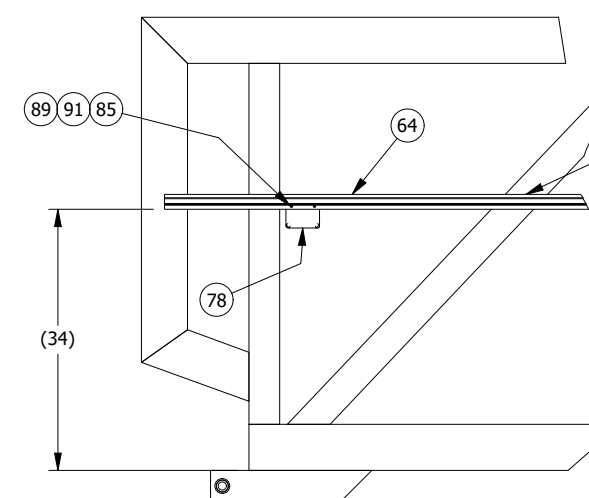
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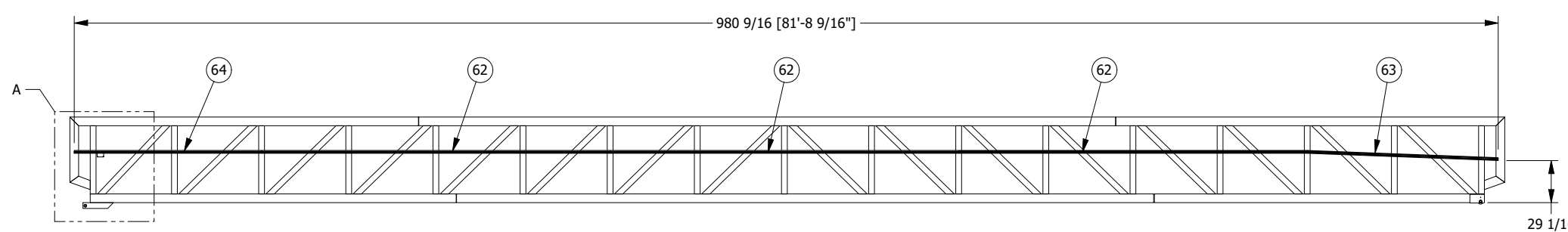
ATTACHED AT ALL POSTS AND DIAGONALS WITH 3/16" ALUM BLIND RIVETS, TOP AND BOTTOM FLANGE, CENTERED ON MEMBER, SEE DWG LTRAIL-01 FOR ADDITIONAL DETAILS



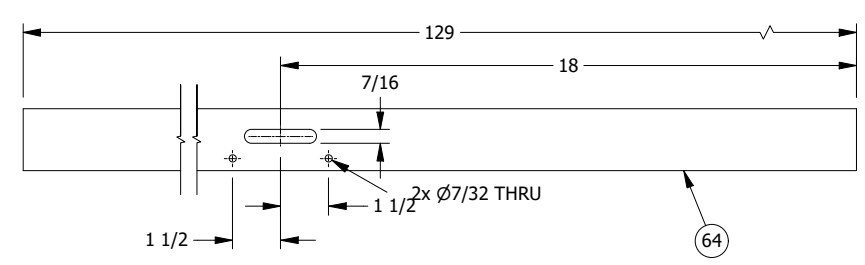
SECTION VIEW



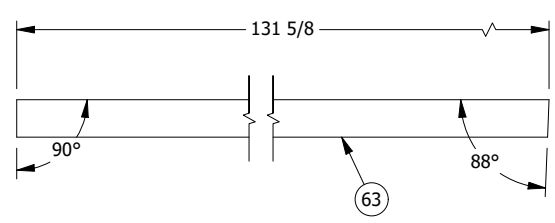
DETAIL A



INSIDE ELEVATION VIEW



LIGHTRAIL CUT FAR SIDE
(SLOT & HOLES THRU BACK FLANGE ONLY,
SHORE END OF LIGHTRAIL)



- FLEXIBLE LED STRIP LIGHT SPECS:**
- LED TYPE: 5050 SMD LED
 - LED QUANTITY (UNITS/M): 60
 - RATED LIFETIME (HRS): 50,000
 - BRIGHTNESS (LM): 720LM/M
 - INPUT VOLTAGE (V): 110-120 AC
 - CERTIFICATION: CE, RoHS
 - PROTECTION RATING: IP65
 - WATERPROOF: IP65 FOR OUTDOOR USE
 - LIGHT COLOR: WARM WHITE
 - DAYLIGHT COLOR TEMPERATURE (K): WARM - 2800-3200
 - WATTAGE (W/M): 14.4



1/13/2023

NOTES

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- WELD SIZE IS EQUAL TO THICKNESS OF THINNER PART WELDED, MAX 5/16".
2. REFERENCE DWG LTRAIL-01 FOR ADDITIONAL DETAILS.
3. REFERENCE DWG A201 FOR PARTS LIST.

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5'-0" x 80'-0" GANGWAY
LIGHTRAIL DETAILS
BMI DANA PIONT GANGWAYS
BELLINGHAM MARINE INDUSTRIES, INC
DIXON, CA

SIZE B	DWG NO. 8115-B700	JOB NO. 8115
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Craig Funston P.E., S.E.

01/13/2023



Zoning: CanningK 1/18/2023

Building&Safety: Roshanak Amirazizi 1/18/2023

Revision: 5

(360) 841-8021 (360) 332-DOCK

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Woodland, WA 98674

www.topperfloats.com

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Hadi Tabatabaee
BUILDING OFFICIAL



TOPPER DECK®



Topper Industries designed and engineered a solid, skid resistant, low profile aluminum deck for use on aluminum gangways, platforms, fixed ramps, pedestrian bridges and floating docks. The deck has been in successful use on projects in the United States, Mexico, Central America, and several Pacific Islands for more than ten (10) years. The deck has a ribbed surface that provides superior skid resistance, in both, wet and dry conditions.

The deck is available in ¾" tall x 6" wide planks that are dovetailed together to increase the strength of the deck. The Topper design will span 42" with a deflection of only .22" at 100psf live load. This span is achieved due to the multiple ribs engineered into the design.

In applications where the slope is always one direction we use the standard Topper Deck®. In applications where the gangway can slope up or down depending upon the tidal elevations we also utilize the reverse Topper Deck® with the standard Topper Deck®. That alternates the skid resistant surface on every other plank so that the gangway is skid resistant regardless of the direction of the slope. We also use the reverse deck on level applications such as platforms, level bridges and floating docks.

Topper Deck® Span Table				
Span Inches	100 psf Uniform Load		400 lb Concentrated Load	
	Stress ksi	Deflection inches	Stress ksi	Deflection Inches
12	0.5	0	2.5	0.00
18	1.1	0	3.8	0.02
24	2	0.02	5	0.05
30	3.1	0.06	6.3	0.09
36	4.4	0.12	7.5	0.16
42	6.0	0.22	8.75	0.26
48	7.9	0.37	10	0.38

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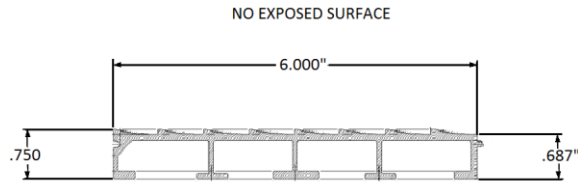
Revision: 5
 Permits: BNR21-0604.R5

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Hadi Taharaboue
 BUILDING OFFICIAL

5



6060-T6 Aluminum: $b := 1.5 \text{ in}$ $t := 0.094 \text{ in}$ $b/t = 15.957$

2010 Aluminum Design Manual, Table 2-18:

Allowable Stresses: Tension: $F_t := 21.2 \text{ ksi}$

Compression: $S := b/t = 15.957 < S_1$ $F_c := 21.2 \text{ ksi}$

6" Section of Topper Deck®: $S_{top} := 0.26 \text{ in}^3$ $S_{bottom} := 0.16 \text{ in}^3$

$I := 0.08 \text{ in}^4$

The sample was subjected to slip resistance testing referencing ASTM C1028-89 *Standard Test Method for Determining the Static Coefficient of Friction...* Testing was conducted in dry and wet conditions in the flat position.

Testing was conducted in 4 directions perpendicular to each other on the sample. These directions are described as the following and depicted in Photos 1-4:

- 1) With-lay
- 2) Parallel to lay
- 3) Against-lay
- 4) Parallel to lay

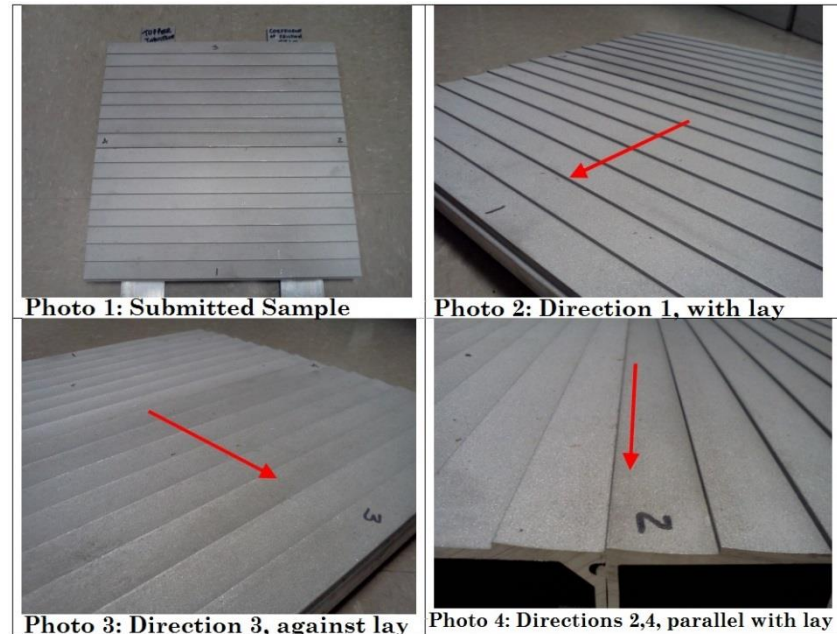


Table 1: COF Results

Condition	Direction			
	1	2	3	4
Fd (Dry)	0.97	0.77	1.01	0.73
Fw (Wet)	0.97	0.81	0.99	0.77