

City of Portsmouth
Public Works Department
June 27, 2014
Addendum #3
Bid #44-14

South Dock Replacement – Prescott Park

This addendum forms part of the original document marked: Bid#44-14 South Dock Replacement – Prescott Park.

- 1) The bid due date has been changed to July 7, 2014 @ 2:00 p.m.
- 2) The **attached** electrical plans replace the original electrical plans in the bid specifications.

Additionally the **Cable Voltage Drop**, and the **Receptacle Electrical Load Schedule** are attached and become part of the original document marked: Bid#44-14 South Dock Replacement – Prescott Park.

Also, it has been noted that there is an error in the submittal register and some submittals are not noted for review. **All submittals listed in the submittal register require approval by the Owner.**

Please acknowledge this addendum within your proposal, failure to do so may subject a bidder to disqualification.

End of Addendum 3

Continue for the attachments: Electrical plans, Cable Voltage Drop, and the Receptacle Electrical Load Schedule.

OAK POINT ASSOCIATES
VOLTAGE DROP

PROJECT: Prescott Park Dock

06/27/14

FEEDER for DOCK PEDESTAL	PHASE	CABLE SIZE	NO.	PER UNIT VOLTAGE DROP	DIST. FEET	AMPS per NEC 555 calcs	VOLTS DROP	VOLTS at Pedestal	% DROP
A1	1	1	1	0.032	50	85	1.36	238.6	0.57
A1 TO A2	1	1	1	0.032	30	85	0.82	237.3	0.34
A2 TO A3	1	1	1	0.032	40	85	1.09	236.5	0.46
Total % V drop									1.37
B1	1	2/0	1	0.022	90	139	2.75	237.2	1.16
B1 TO B2	1	2/0	1	0.022	55	139	1.68	234.5	0.72
B2 TO B3	1	2/0	1	0.022	55	139	1.68	232.8	0.72
Total % V drop									2.60
B4	1	2/0	1	0.022	125	139	3.82	236.2	1.62
B4 TO B5	1	2/0	1	0.022	55	139	1.68	232.4	0.72
B5 TO B6	1	2/0	1	0.022	45	139	1.38	230.7	0.60
Total % V drop									2.94
C1	1	3/0	1	0.018	180	151	4.89	235.1	2.08
Total % V drop									2.08

Notes:

1. Presumes worst case where total ampere load is at most remote Pedestal for each of four feeders.
2. Type G cables out to Dock Pedestals are oversized to address Voltage Drop.
3. Voltage at panel presumed to be 240 volts from PSNH. Vdrop from Transformer to Panel not included in above.
4. Branch Circuit Vdrop from breakers within Pedestals to Receptacles within same Pedestals is negligible.
5. Total Vdrop of feeders plus negligible branch circuit Vdrop is less than 3% (NEC 215.2 (A), (1) (b) info note 2.

Main Panel Load Calculations					Prescott Park : South Floating Dock Replacement												250		volts	
					Electrical Load and Demand Calculations - 120/250 Volt, Single Phase Power Source															
Pedestal Type		NON SHORE POWER			SHORE POWER RECEPTACLE LOADS - SUBJECT TO NEC TABLE 555.12 DEMAND FACTORS															
		GFCI , Duplex, Straight Blade			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Pin-Sleeve						
		20 Amp, 125 Volt			30 Amp, 125 Volt			50 Amp, 125 Volt			50 Amp, 125/250 Volt			100 Amp, 125/250 Volt			Total Connected			
Type	Qty	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	VA Load	A, 250 /1		
A1	1	2	180	360	2	3,750	7,500	-	6,250	-	-	12,500	-	-	25,000	-	7,500	30		
A2	1	2	180	360	2	3,750	7,500	-	6,250	-	-	12,500	-	-	25,000	-	7,500	30		
A3	1	2	180	360	2	3,750	7,500	-	6,250	-	-	12,500	-	-	25,000	-	7,500	30		
B1	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B2	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B3	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B4	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B5	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B6	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
C1	1	2	180	360	-	3,750	-	-	6,250	-	2	12,500	25,000	2	25,000	50,000	75,000	300		
Connected Subtotal >>																	172,500	690		
Shore Receptacle Quantities >>					6	12	2	2	= >	22								70%	70%	
Shore Demand Subtotal >>																	120,750	483		
NON shore Receptacle Total >>				3,600	Not subject to SHORE POWER Demand Factor, carry at 100 % >>												3,600	14		
Calculated Demand																	124,350	497		

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NEC Table 555.12	
# Recpt	Demand %
1-4	100
5-8	90
9-14	80
15-30	70
31-40	60
41-50	50
51-70	40
>70	30

Next Standard size Panel board rating above calculated demand is 600 amps. Provide 600 A, 120/250 v, single phase panel

CALCULATION NOTES:	
1	Receptacle quantities, types and ampere ratings based upon AMEI Sheet U-101 Utility Plan.
2	VA load for SHORE POWER receptacles based upon Nameplate value (ie, 30 amp x 125 v) with a continuous use factor of 100 %.
3	Demand Factors for Shore Power Receptacles based upon NFPA 70, NEC, 2013 . Article 555 Marinas, Table 55.12 (See left) .
4	125 v, 20 amp, GFCI NON shore service receptacle load carried at 180 watts each, per NEC 220.14 (I).
5	125 v, 20 amp, GFCI NON shore service receptacles NOT counted for NEC Table 555.12 Quantity of Receptacles.
6	All shore power receptacles carried in calculations, NEC Table 555.12, Note 1 and Note 2 not applicable.
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Feeder A Cable Load Calcs					Prescott Park : South Floating Dock Replacement										250		volts			
					Electrical Load and Demand Calculations - 120/250 Volt, Single Phase Power Source															
Pedestal Type		NON SHORE POWER			SHORE POWER RECEPTACLE LOADS - SUBJECT TO NEC TABLE 555.12 DEMAND FACTORS															
		GFCI , Duplex, Straight Blade			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Pin-Sleeve						
		20 Amp, 125 Volt			30 Amp, 125 Volt			50 Amp, 125 Volt			50 Amp, 125/250 Volt			100 Amp, 125/250 Volt			Total Connected			
Type	Qty	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	VA Load	A, 250 /1		
A1	1	2	180	360	2	3,750	7,500	-	6,250	-	-	12,500	-	-	25,000	-	7,500	30		
A2	1	2	180	360	2	3,750	7,500	-	6,250	-	-	12,500	-	-	25,000	-	7,500	30		
A3	1	2	180	360	2	3,750	7,500	-	6,250	-	-	12,500	-	-	25,000	-	7,500	30		
B1	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B2	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B3	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B4	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B5	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B6	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
C1	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
														Connected Subtotal >>		22,500	90	**		
Shore Receptacle Quantities > >					6	0	-	-	= >	6	90%	90%								
														Shore Demand Subtotal >>		20,250	81			
NON shore Receptacle Total >>				1,080	Not subject to SHORE POWER Demand Factor, carry at 100 % >>														1,080	4
														Calculated Demand		21,330	85			

NEC Table 555.12	
# Recpt	Demand %
1-4	100
5-8	90
9-14	80
15-30	70
31-40	60
41-50	50
51-70	40
>70	30

**

Feeder Circuit Breaker is 100 amp, 2 Pole. Feeder Cable is # 1 copper, Type G

CALCULATION NOTES:	
1	Receptacle quantities, types and ampere ratings based upon AMEI Sheet U-101 Utility Plan.
2	VA load for SHORE POWER receptacles based upon Nameplate value (ie, 30 amp x 125 v) with a continuous use factor of 100 %.
3	Demand Factors for Shore Power Receptacles based upon NFPA 70, NEC, 2013 . Article 555 Marinas, Table 55.12 (See left) .
4	125 v, 20 amp, GFCI NON shore service receptacle load carried at 180 watts each, per NEC 220.14 (I).
5	125 v, 20 amp, GFCI NON shore service receptacles NOT counted for NEC Table 555.12 Quantity of Receptacles.
6	All shore power receptacles carried in calculations, NEC Table 555.12, Note 1 and Note 2 not applicable.
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Feeder B Cable Load Calcs					Prescott Park : South Floating Dock Replacement										250		volts			
					Electrical Load and Demand Calculations - 120/250 Volt, Single Phase Power Source															
Pedestal Type		NON SHORE POWER			SHORE POWER RECEPTACLE LOADS - SUBJECT TO NEC TABLE 555.12 DEMAND FACTORS															
		GFCI , Duplex, Straight Blade			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Pin-Sleeve						
		20 Amp, 125 Volt			30 Amp, 125 Volt			50 Amp, 125 Volt			50 Amp, 125/250 Volt			100 Amp, 125/250 Volt			Total Connected			
Type	Qty	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	VA Load	A, 250 /1		
A1	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
A2	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
A3	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B1	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B2	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B3	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B4	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B5	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B6	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
C1	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
														Connected Subtotal >>		37,500	150	**		
Shore Receptacle Quantities >>					6										- = >		6		90%	90%
														Shore Demand Subtotal >>		33,750	135			
NON shore Receptacle Total >>				1,080	Not subject to SHORE POWER Demand Factor, carry at 100 % >>													1,080	4	Calculated Demand
																	34,830	139		

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NEC Table 555.12	
# Recpt	Demand %
1-4	100
5-8	90
9-14	80
15-30	70
31-40	60
41-50	50
51-70	40
>70	30

Feeder Circuit Breaker is 150 amp, 2 Pole. Feeder Cable is # 2/0 copper, Type G

CALCULATION NOTES:

1

Receptacle quantities, types and ampere ratings based upon AMEI Sheet U-101 Utility Plan.

2

VA load for SHORE POWER receptacles based upon Nameplate value (ie, 30 amp x 125 v) with a continuous use factor of 100 %.

3

Demand Factors for Shore Power Receptacles based upon NFPA 70, NEC, 2013 . Article 555 Marinas, Table 55.12 (See left) .

4

125 v, 20 amp, GFCI NON shore service receptacle load carried at 180 watts each, per NEC 220.14 (I).

5

125 v, 20 amp, GFCI NON shore service receptacles NOT counted for NEC Table 555.12 Quantity of Receptacles.

6

All shore power receptacles carried in calculations, NEC Table 555.12, Note 1 and Note 2 not applicable.

Feeder B Cable Load Calcs					Prescott Park : South Floating Dock Replacement												250		volts	
					Electrical Load and Demand Calculations - 120/250 Volt, Single Phase Power Source															
Pedestal Type		NON SHORE POWER			SHORE POWER RECEPTACLE LOADS - SUBJECT TO NEC TABLE 555.12 DEMAND FACTORS															
		GFCI , Duplex, Straight Blade			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Pin-Sleeve						
		20 Amp, 125 Volt			30 Amp, 125 Volt			50 Amp, 125 Volt			50 Amp, 125/250 Volt			100 Amp, 125/250 Volt			Total Connected			
Type	Qty	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	VA Load	A, 250 /1		
A1	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
A2	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
A3	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B1	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B2	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B3	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
B4	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B5	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
B6	1	2	180	360	-	3,750	-	2	6,250	12,500	-	12,500	-	-	25,000	-	12,500	50		
C1	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-		
															Connected Subtotal >>		37,500	150		
Shore Receptacle Quantities >>					- 6 - = >												6	90%	90%	
															Shore Demand Subtotal >>		33,750	135		
NON shore Receptacle Total >>				1,080	Not subject to SHORE POWER Demand Factor, carry at 100 % >>														1,080	4
																	Calculated Demand			
																	34,830	139		

NEC Table 555.12	
# Recpt	Demand %
1-4	100
5-8	90
9-14	80
15-30	70
31-40	60
41-50	50
51-70	40
>70	30

**

Feeder Circuit Breaker is 150 amp, 2 Pole. Feeder Cable is # 2/0 copper, Type G

CALCULATION NOTES:	
1	Receptacle quantities, types and ampere ratings based upon AMEI Sheet U-101 Utility Plan.
2	VA load for SHORE POWER receptacles based upon Nameplate value (ie, 30 amp x 125 v) with a continuous use factor of 100 %.
3	Demand Factors for Shore Power Receptacles based upon NFPA 70, NEC, 2013 . Article 555 Marinas, Table 55.12 (See left) .
4	125 v, 20 amp, GFCI NON shore service receptacle load carried at 180 watts each, per NEC 220.14 (I).
5	125 v, 20 amp, GFCI NON shore service receptacles NOT counted for NEC Table 555.12 Quantity of Receptacles.
6	All shore power receptacles carried in calculations, NEC Table 555.12, Note 1 and Note 2 not applicable.
-	

Feeder C Cable Load Calcs					Prescott Park : South Floating Dock Replacement												250		volts						
					Electrical Load and Demand Calculations - 120/250 Volt, Single Phase Power Source																				
Pedestal Type		NON SHORE POWER			SHORE POWER RECEPTACLE LOADS - SUBJECT TO NEC TABLE 555.12 DEMAND FACTORS																				
		GFCI , Duplex, Straight Blade			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Twist Lock			Non-GFCI, Single, Pin-Sleeve											
		20 Amp, 125 Volt			30 Amp, 125 Volt			50 Amp, 125 Volt			50 Amp, 125/250 Volt			100 Amp, 125/250 Volt			Total Connected								
Type	Qty	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	Quantity	VA Load	Ext, VA	VA Load	A, 250 /1							
A1	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-							
A2	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-							
A3	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-							
B1	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-							
B2	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-							
B3	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-							
B4	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-							
B5	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-							
B6	-	-	180	-	-	3,750	-	-	6,250	-	-	12,500	-	-	25,000	-	-	-							
C1	1	2	180	360	-	3,750	-	-	6,250	-	1	12,500	12,500	1	25,000	25,000	37,500	150							
																	Connected Subtotal >>		37,500	150					
Shore Receptacle Quantities >>					-												0	1			1	= >	2	100%	100%
																	Shore Demand Subtotal >>		37,500	150					
NON shore Receptacle Total >>				360	Not subject to SHORE POWER Demand Factor, carry at 100 % >>													360	1						
																	Calculated Demand		37,860	151					

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NEC Table 555.12	
# Recpt	Demand %
1-4	100
5-8	90
9-14	80
15-30	70
31-40	60
41-50	50
51-70	40
>70	30

Feeder Circuit Breaker is 200 amp, 2 Pole. Feeder Cable is # 3/0 copper, Type G

CALCULATION NOTES:

1

Receptacle quantities, types and ampere ratings based upon AMEI Sheet U-101 Utility Plan.

2

VA load for SHORE POWER receptacles based upon Nameplate value (ie, 30 amp x 125 v) with a continuous use factor of 100 %.

3

Demand Factors for Shore Power Receptacles based upon NFPA 70, NEC, 2013 . Article 555 Marinas, Table 55.12 (See left) .

4

125 v, 20 amp, GFCI NON shore service receptacle load carried at 180 watts each, per NEC 220.14 (I).

5

125 v, 20 amp, GFCI NON shore service receptacles NOT counted for NEC Table 555.12 Quantity of Receptacles.

6

ONE 100 amp and ONE 50 amp shore power receptacles carried in calculations, NEC Table 555.12, Note 1 used at Type C Pedestal