

**FORT FISHER  
AQUARIUM  
RENOVATION  
& EXPANSION:  
PHASE 1**

SCO #17-18042-02A  
CODE: 42014-4G02  
ITEM: 41144-4Y4A

900 LOGGERHEAD RD.  
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF  
NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.

ARCHITECT  
310 1/2 WEST FRANKLIN STREET  
CHARLES HILL, NORTH CAROLINA 27014  
TEL: 919.791.4000  
FAX: 919.791.2000  
WWW.SZOSTAKDESIGN.COM  
LICENSE # 8107

TJP ENGINEERING, INC.  
LEIS SUPPORT SYSTEMS ENGINEER  
5680 VERBEEKE LANE SUITE 205H  
REID, NC 27708  
TEL: 919.425.0300  
WWW.TJPEENGINEERING.COM  
LICENSE # C-3505

ROTO GROUP, LLC.  
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7001 DISCOVERY BOULEVARD  
DURHAM, NC 27707  
TEL: 919.760.8900  
WWW.ROTOGROUP.COM  
LICENSE # 8107

BENNETT & PLESS  
STRUCTURAL ENGINEER  
5405 WADE PARK BOULEVARD SUITE 400  
DURHAM, NC 27707  
TEL: 919.832.2587  
WWW.BENNETT&PLESS.COM  
LICENSE # F-1105

CBHF ENGINEERS, PLLC  
MEP ENGINEER  
2248 YAUPON DRIVE  
WILMINGTON, NC 28401  
TEL: 910.791.4000  
FAX: 910.791.2000  
WWW.CBHFENGINEERS.COM  
LICENSE # 8107

LIGHTSWITCH  
LIGHTING DESIGNER  
10505 RYANIA COURT  
RANCHO CUCAMONGA, CA 91730  
TEL: 909.363.2000  
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC  
CIVIL ENGINEER  
2605 HURON DRIVE SUITE 102  
WILMINGTON, NC 28412  
WWW.TUNSTALL.COM  
FAX: 910.343.9044  
WWW.TUNSTALL.COM  
LICENSE # F-1105

SURFACE 678, PA  
LANDSCAPE ARCHITECT  
215 MOORE STREET SUITE 150  
DURHAM, NC 27703  
TEL: 919.419.1199  
WWW.SURFACE678.COM  
LICENSE # C-1008

CHEATHAM & ASSOCIATES, PA  
IRRE PROTECTION ENGINEER  
4015 FARMHOUSE ROSSLEVARD SUITE 400  
DURHAM, NC 27703  
TEL: 919.485.8800  
WWW.CHEATHAMPA.COM  
LICENSE # C-1073

PALACIO COLLABORATIVE  
COS ESTIMATOR  
4015 FARMHOUSE ROSSLEVARD SUITE 400  
DURHAM, NC 27703  
TEL: 919.485.8800  
WWW.PALACIOCOLLABORATIVE.COM  
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NOTE: IF THIS DRAWING IS NOT 30" X 42" IT IS A  
REDUCED PRINT. REFER TO GRAPHIC SCALE.

**NOT FOR  
CONSTRUCTION**

**NOT FOR  
CONSTRUCTION**

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

MECHANICAL SCHEDULES

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**M-6.1**

**AIR COOLED HEAT PUMP CHILLER SCHEDULE**

DRAWING CODE	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFR	NOMINAL CAPACITY (Y TONS)	PERFORMANCE - HEATING MODE							REFRIGERANT		COMPRESSOR		EVAPORATOR		CONDENSER				SOUND AT FULL LOAD				ELECTRICAL			PHYSICAL DIMS (IN)			WEIGHT (LBS)	NOTES	ACCESS																	
					CAPACIT (Y TONS)	TEMP (°F)	MIN FLOW (GPM)	MAX FLOW (GPM)	MIN COP	MAX COP	MAX POWER INPUT (KW)	MAX POWER TEMP (°F dbw)	AMBIENT TEMP (°F)	EWT (°F)	LWT (°F)	DESIGN HX HEAD LOSS (FT H2O)	STRAINER (FT H2O)	TYPE	CIRCUIT SQT	CHARGE PER CT (LBS)	TYPE	QTY	FLUID	TYPE	FOULING FACTOR (IN.)	PIPE SIZE (IN.)	EAT (°F)	NUMBER OF FANS	POWER LEVEL (DBA)	PRESS. LEVEL (DBA)	VOLTAGE (V/PHHZ)				MCA (A)	MOP (A)	COMP (KW)	FANS (KW)	COMP. RLA CT1A/B/C (EA.)	COMP. RLA CT2A/B/C (EA.)	PHYSICAL DIMS (IN) L	PHYSICAL DIMS (IN) W	PHYSICAL DIMS (IN) H								
ACCH-1	TRANE	ACXA230	PETRA, CLIMACOOL	230	200.10	10.28	17.76	233.5	95.0	54.00	44.00	478.6	12.80	2.07	301.90	1.769	2.17	238.7	21.0	20.0	107.50	120.00	285.9	3.09	0.40	R-454B	2	189.0	SCREW	2	WATER	BRAZED PLATE	0.00010	4	95.0	12	99	68	460/3/60	466.0	500	224.0	14.3	69.0	69.0	338	88	98	13,311	1-7	A-M
ACCH-2	TRANE	ACXA230	PETRA, CLIMACOOL	230	200.10	10.28	17.76	233.5	95.0	54.00	44.00	478.6	12.80	2.07	301.90	1.769	2.17	238.7	21.0	20.0	107.50	120.00	285.9	3.09	0.40	R-454B	2	189.0	SCREW	2	WATER	BRAZED PLATE	0.00010	4	95.0	12	99	68	460/3/60	466.0	500	224.0	14.3	69.0	69.0	338	88	98	13,311	1-7	A-M

**AIR COOLED MODULAR CHILLER WITH HEAT RECOVERY SCHEDULE**

DRAWING CODE	UNIT LOCATION	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFRS	CITY OF ASSEMB.	NUMBER OF MODULES IN ASSEMB.	SIMULTANEOUS HEATING AND COOLING CAPACITY				MAX POWER INPUT (KW)	COOLING ONLY MIN EER	SIMULTANEOUS SEER / COP	MIN UNLOADING (TONS)	REFRIG. TYPE	COMPR. TYPE	QTY (EPR MOD)	EVAPORATOR (SIMULTANEOUS MODE - COOLING)				EVAPORATOR (SIMULTANEOUS MODE - HEATING)				CONDENSER				ELECTRICAL PER POWER SUPPLY				WEIGHT OPERATING (LBS)	NOTES	ACCESS					
							COOLING (TONS)	HEATING (MBH)	COOLING (TONS)	HEATING (MBH)								HEATING (TONS)	FLUID	EWT (°F)	LWT (°F)	FLOW RATE (GPM)	WPD (FT. H2O) G..	FLUID	EWT (°F)	LWT (°F)	FLOW RATE (GPM)	WPD (FT. H2O)	FOULING	EAT (°F)	ALTITUDE (FT. ASL)	NUM. POWER SUPPLIES	MODULES PER POWER SUPPLY				VOLTAGE (V/PHHZ)	MCA (A)	MOP (A)	COMP (KW)	FANS (KW)
HRCH-1	MECH PLANT	TRANE	5XAMC50-HR	JETSON, CLIMACOOL	1	5	208.1	N/A	209.3	3243.3	270.3	234.25	10.66	11.04	4 / 18	20.8	R-454B-2	SCROLL	2	WATER	54.0	44.0	500.64	13.1	.0001	WATER	100.0	120.0	326.98	5.31	.0001	95.0	0	1	5	460/3/60	459	500	25,000	1-13	A-G

**DIFFUSERS, REGISTERS AND GRILLES SCHEDULE**

DRAWING CODE	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFRS	TYPE	SERVICE	NECK SIZE (IN.)	BRANCH CONN. SIZE (IN.)	MODULE MATERIAL	FINISH	MOUNTING	NOTES	ACCESS
S1	PRICE	ASPD	GREENHECK, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	6%NC		24 X 24 ALUMINUM	WHITE	T-BAR	1,2	A
S2	PRICE	ASPD	GREENHECK, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	8%NC		24 X 24 ALUMINUM	WHITE	T-BAR	1,2	A
S3	PRICE	ASPD	GREENHECK, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	10%NC		24 X 24 ALUMINUM	WHITE	T-BAR	1,2	A
S5	PRICE	620	GREENHECK, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	6%NC		12 X 12 ALUMINUM	WHITE	CEILING	1,2	A
S8	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	12 X 6		14 X 8 ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S9	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 X 10		18 X 12 ALUMINUM	MATCH	WALL SURFACE	1,2,3	B
S10	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	12 X 6		14 X 8 ALUMINUM	MATCH	WALL SURFACE	1,2,3	B
S11	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 X 10		18 X 12 ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S12	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	20 X 10		22 X 12 ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S13	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	28 X 12		30 X 14 ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S14	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	12 X 8		14 X 10 ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S15	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	14 X 6		16 X 8 ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S16	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	8 X 8		10 X 10 ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S17	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 X 16		18 X 18 ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S18	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	10 X 10		12 X 12 ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S19	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	6 X 6		8 X 8 ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S20	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	20 X 10		ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S21	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	12 X 8		ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S23	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	18 X 12		ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S25	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 X 6		16 X 8 ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S26	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 X 16		18 X 18 ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S27	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	14 X 10		16 X 12 ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S28	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	10 X 4		12 X 8 ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S29	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	48 X 12		50 X 14 ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S30	PRICE	ARCD	GREENHECK, TITUS	ROUND CONE DIFFUSER	SUPPLY	6%NC		ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S31	PRICE	ARCD	GREENHECK, TITUS	ROUND CONE DIFFUSER	SUPPLY	8%NC		ALUMINUM	MATCH	DUCT SURFACE	1,2	A
T1	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	TRANSFER	22 X 22	8%NC	24 X 24 ALUMINUM	WHITE	T-BAR	1,2,3	-
T2	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	TRANSFER	22 X 22	10%NC	24 X 24 ALUMINUM	WHITE	T-BAR	1,2,3	-
T3	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	10 X 10		12 X 12 ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
T4	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	TRANSFER	10 X 10	6%NC	12 X 12 ALUMINUM	WHITE	T-BAR	1,2,3	-
R1	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	6%NC	24 X 24 ALUMINUM	WHITE	T-BAR	1,2,3	-
R2	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	8%NC	24 X 24 ALUMINUM	WHITE	T-BAR	1,2,3	-
R3	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	10%NC	24 X 24 ALUMINUM	WHITE	T-BAR	1,2,3	-
R4	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	12%NC	24 X 24 ALUMINUM	WHITE	T-BAR	1,2,3	-
R5	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	NOTE 2	24 X 24 ALUMINUM	WHITE	T-BAR	1,2,3	-
R10	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	10 X 10		12 X 12 ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R11	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	16 X 16		18 X 18 ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R12	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	14 X 14		16 X 16 ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R13	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	20 X 16		22 X 18 ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R16	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	18 X 10		20 X 12 ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R17	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	40 X 24		40 X 26 ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R18	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	30 X 14		32 X 16 ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R19	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	8 X 8		10 X 10 ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R20	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	72 X 16		72 X 16 ALUMINUM	MATCH	WALL SURFACE	1,2	-
R21	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	28 X 28		ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R24	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	16 X 8		ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R25	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	12 X 6		ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R26	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	36 X 20		ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R28	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	48 X 20		ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R29	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	28 X 12		30 X 14 ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R30	PRICE	ARCD	GREENHECK, TITUS	ROUND CONE DIFFUSER	RETURN	6%NC		ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R31	PRICE	ARCD	GREENHECK, TITUS	ROUND CONE DIFFUSER	RETURN	8%NC		ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R34	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	8 X 8		10 X 10 ALUMINUM	MATCH	DUCT SURFACE	1,2	-
E1	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	22 X 22	6%NC	24 X 24 ALUMINUM	WHITE	T-BAR	1,2,3	A
E2	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	22 X 22	8%NC	24 X 24 ALUMINUM	WHITE	T-BAR	1,2,3	A
E3	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	22 X 22						

