## ATTACHMENT B

## **CONTRACT DRAWINGS**

**Entitled:** 

"ROCK HARBOR COMMERCIAL WHARF IMPROVEMENT PROJECT" TOWN OF ORLEANS, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS

Issued for Bid: 03/08/2024 (57 total sheets, including cover sheet)

**Prepared By:** Foth Infrastructure & Environment, LLC

## **Stamped By:**

Alex I. Mora P.E. & Scott Skuncik, P.E. (Foth) Robert P. Coluccio, P.E. (Web Engineering Associates, Inc.) David P. Columbo, P.E. (Power Engineers, LLC)

# **ROCK HARBOR COMMERCIAL WHARF IMPROVEMENTS** TOWN OF ORLEANS, MASSACHUSETTS





SHEET NUMBER G-001 G-002 G-003

LOCATION MAP SCALE: 1"=1000'

GRAPHIC SCALE

(IN FEET) 1 INCH = 1,000 FEET

# DEPARTMENT OF PUBLIC WORKS

# **ISSUED FOR BID** MARCH 8, 2024

Prepared by



## PROJECT NUMBER: 00190004.10

DRAWING LIST		STRUCTURAL
SHEET TITLE	SHEET NUMBER	SHEET TITLE
COVER SHEET & INDEX	S-101	COMMERCIAL WHARF STRUCTURAL SITE PLAN
NOTES	S-201	COMMERCIAL WHARF PILE LAYOUT PLAN
NOTES, LEGEND AND ABBREVIATIONS	S-202	COMMERCIAL WHARF PILE CAP LAYOUT PLAN
CIVIL	S-203	COMMERCIAL WHARF PRECAST PLANKS LAYOUT PLAN
SHEET TITLE	S-204	COMMERCIAL WHARF CIP DECK LAYOUT PLAN
EXISTING CONDITIONS	S-205	TOWN PIER PLAN, PROFILE, & SECTION
EXISTING SECTIONS	S-206	COMMERCIAL LANDING PIER PLAN, PROFILE, & SECTION
KEY PLAN	S-207	TIMBER PIER DETAILS
DEMOLITION PLAN 1 OF 2	S-501	SECTION VIEWS 1 OF 4
DEMOLITION PLAN 2 OF 2	S-502	SECTION VIEWS 2 OF 4
DEMOLITION SECTIONS	S-503	SECTION VIEWS 3 OF 4
SITE PLAN 1 OF 2	S-504	SECTION VIEWS 4 OF 4
	S-701	STRUCTURAL DETAILS 1 OF 8
LAYOUT PLAN 1 OF 2	S-702	STRUCTURAL DETAILS 2 OF 8
LAYOUT PLAN 2 OF 2	S-703	STRUCTURAL DETAILS 3 OF 8
UTILITY PLAN 1 OF 2	S-704	STRUCTURAL DETAILS 4 OF 8
UTILITY PLAN 2 OF 2	S-705	STRUCTURAL DETAILS 5 OF 8
GRADING AND DRAINAGE PLAN 1 OF 2	S-706	STRUCTURAL DETAILS 6 OF 8
GRADING AND DRAINAGE PLAN 2 OF 2	S-707	STRUCTURAL DETAILS 7 OF 8
STANDARD CIVIL DETAILS	S-708	STRUCTURAL DETAILS 8 OF 8
DRAINAGE AND WATER SERVICE DETAILS 1 OF 2	S-709	JIB CRANE DETAILS
DRAINAGE AND WATER SERVICE DETAILS 2 OF 2	S-710	LIGHT POLE BASE DETAILS
DRAINAGE DETAILS		FUEL
INFILTRATION SYSTEM DETAILS	SHEET NUMBER	SHEET TITLE
WATERLINE VAULT UNIT	A-1	SITE DETAIL - PROPOSED MODIFICATIONS
PUMPOUT STATION DETAILS	M-1	MECHANICAL
		DETAILS
	S-1	CONCRETE
	E-1	ELECTRICAL SCHEMATIC- POWER, DATA, AND SIGNAL CONDUITS
		ELECTRICAL
	SHEET NUMBER	SHEET TITLE
	E-001	ELECTRICAL SITE PLAN
	E-102	ELECTRICAL LEGEND
	E-103	NOTES & SCHEDULES
	E-104	ELECTRICAL DETAILS
	F-105	
	E-106	



VICINITY MAP

DEPARTMENT OF PUBLIC WORKS		TOWN OF ORLEANS, MASSACHUSETTS		ROCK HARROR COMMERCIAL WHARF	IMPROVEMENTS					
REVISIONS	NO. BY DATE DESCRIPTION		$\overline{\mathbb{A}}$	8	A					
SURVE	YED	E OF F BY MEC/	PREF , JAH	PARA	TION DATE 4/19 & 3	3/2/21				
DESIGN CHECK SHEET	NED ED TITL	SR PSI E:	s R	06 12	/28/20 /24/20	 )21 )23				
	SHEET TITLE: COVER SHEET & INDEX									
PRO. SHEE	JECT	T NO: JMBEF	001 ? _ <b></b> _	19000 <b>) 1</b>	4.10					

SL	JRVEY NOTES:					
					7.	PILE TIP ELEVATIONS & CAPACITIES
2	. SURVEYOR: 2. VESSEL:	CLE OLAF	COUNT, H. Cr	IOUINARD		GROUND ANCHORS
3	. TRANS./FATH.:	ODOM CVM, 200 KHZ T	RANSDUCER,	TRIMBLE RTK W/		AZ19-700 SHEET PILES
4	. WEATHER COND:	SUNNY, 63 DEGREES,	WIND 0-5 KTS	& SUNNY, 35		AZ 14-770 SHEET PILES 12"Ø GREENHEART SOUTH FLOAT F
5		DEGREES, WIND 5-10 P	KTS			
6	6. RESULTS OF HYDR	OGRAPHIC & TOPOGRAP	HIC SURVEY E	BY FOTH INFRASTRUCTURE &		12"Ø GREENHEART GANTRY PILES
7	ENVIRONMENT, LLC FLEVATIONS AND S	C. (FOTH) ON 10/24/2019 (1 OUNDINGS ARE IN FEFT	HYDRO) , 10/2 AND TENTHS	5/2019, 4/2/2021, & 5/10/2022 (TOPO). AND REFER TO THE MI W DATUM		12"Ø GREENHEART FENDER PILES
8	DATUM CONVERSIO	ONS SHOWN WERE CALC	ULATED USIN	G VDATUM 4.1.2 AT THE PROJECT SITE		12"Ø CCA PIER BATTERED PILES
g	(LAT: -70.00566, LON COORDINATES ARE	NG: 41.80346) E BASED ON NAD83 MASS	ACHUSETTS I	MAINLAND STATE PLANE GRID SYSTEM.		* CONTRACTOR SHALL CONFI
1	0. PROJECT BENCHM	ARK IS DISK LOCATED AT	ROUTE 6 RO	TARY STAMPED "424 G" PUBLISHED EL.	8.	THE STRUCTURES HAVE BEEN DESIGNED
1	+13.23' NAVD88 (+18 1. SITE BENCHMARK I	3.94' MLW). S DRILLHOLE IN CONCRE	ETE SIDEWALK	K EL. +9.81 NAVD88 (+15.52' MLW) (HELD)		CONSTRUCTION IS COMPLETE. THE STAI SOLELY THE RESPONSIBILITY OF THE CO
1	2. RTK CORRECTIONS	RTK CORRECTIONS FO		EY PROVIDED BY KEYNET - VRS.	A	ASPECTS OF THE CONSTRUCTION ACTIV
	ELLIPSOID TO ORTH	HOMETRIC NAVD88 USE (	GEOID 12A.	RTK TIDES IN HTPACK. ELEVATIONS FROM	1	ERECTION SEQUENCE, CONNECTIONS, II EQUIPMENT, AND SIMILAR CONSTRUCTION
1	<ol> <li>PROJECT SITE IS IN #25001C04171 EEEI</li> </ol>	I FEMA ZONE VE 17 AND 2 ECTIVE DATE JULY 16, 20	ZONE AE 14 N	AVD88 IN ACCORDANCE TO FEMA FIRM		OWNER AND ENGINEER OF RECORD IS FO
1	5. PROPERTY LINES A	RE REPRESENTED BY TH	HE LATEST FR	OM THE DATABASE INFORMATION BASED	)	TO CONSTRUCTION PROCEDURES SHALL
1	ON MA GIS AS OF N 6. THE INFORMATION	IARCH 31, 2021 AND HAV	E NOT BEEN L NSET REPRES	OCATED BY SURVEY. SENTS THE RESULTS OF SURVEYS ON THE	=	OF SUCH PROCEDURES.
	DATES SHOWN, AN	D CAN ONLY BE CONSIDE	ERED AS INDI	CATING THE GENERAL CONDITIONS AT	GEN	IERAL CONDITIONS:
	SHOALS, OBSTRUC	TIONS OR OTHER DIFFE	ROM BETWEE	ONS MAY EXIST BETWEEN THESE RUNS.	1.	NO GUARANTEE TO THE ACCURACY OF T
1	CONSULT WITH FO	TH ENGINEERING FOR M	ORE DETAILE	D INFORMATION.	0	THE CONTRACTOR SHALL RELY ON HIS C
	CONNECTION WITH	ITS USE AS IT RELATES	TO THE TITLE	D PROJECT, ANY OTHER USE,	Ζ.	REQUIREMENTS AND ADDITIONAL INFOR
		R DISCLOSURE OF THE IN		CONTAINED HEREON IS EXPRESSLY	3.	DATA COLLECTED ASSOCIATED WITH THI
1	8. DIMENSIONS ARE IN	N FEET AND INCHES OR T	TENTHS OF A	FOOT UNLESS OTHERWISE NOTED.		TO THE BID DOCUMENTS.
DF	SIGN CRITERIA				4.	SEE ATTACHMENT "A" IN THE CONTRACT
					-	2023, AND RH-2023-B2 TAKEN AUGUST 22
1	. STRUCTURAL WOR CODE, NINTH EDITION	K SHALL CONFORM TO T ON. WORK SHALL COMPL	HE REQUIREN	/IENTS OF THE MASSACHUSETTS BUILDIN RAL, STATE, AND LOCAL PERMITS ISSUED	G 5.	THE CONTRACTOR IS ADVISED THAT THE CONTRACT DOCUMENTS ALL WORK SHA
	FOR THE PROJECT					CONTRACT DOCUMENTS. THE CONTRACT
	LOADS APPLIED IN	CONJUNCTION WITH DES	LOIGNED TO V SIGN DREDGE	WITHSTAND THE FOLLOWING DESIGN	E 6	SPECIFICATIONS, AND PERMITS ONSITE / THE CONTRACTOR SHALL VERIFY THE LC
		NGS:				SUBMERGED UTILITIES WITHIN THE LIMIT
	BUILDING RIS	K CATEGORY	II			EAGAVATION OR GROUND PENE (RATING (1-888-344-7223) AT LEAST 3 BUSINESS DA
	2.2. LIVE LOADS:	WHARE 640		MIGAD	7	GROUND PENETRATING ACTIVITY.
	CONCENTRAT	TED LIVE LOAD: 32,	000 LBS		1.	AS REQUIRED BY STATE, LOCAL, AND FEI
	PUBLIC WHAF	RF: 250 FED LIVE LOAD <sup>.</sup> 8.0	) PSF UNIFORI	M LOAD	Q	WITHIN EXISTING PERMITS AND APPROVA
	BULKHEAD:	250	) PSF UNIFOR	M LOAD	9.	SECTIONS, DETAILS, NOTES, DIMENSION
	CONCENTRAT TIMBER PIER:	TED LIVE LOAD: 32, 100	000 LBS ) PSF UNIFORI	M LOAD		LOCATION WHERE CONDITIONS AND DET
	ACCESS GAN	GWAYS: 50	PSF FOR 4 FT	WIDE	10.	THE CONTRACTOR SHALL PERFORM THE
	2.3. WIND LOAD	100	PSF FOR WIL	DER THAN 4 FT	11.	OWNER'S OPERATIONS ON SITE OR THE THE CONTRACTOR PRIOR TO CONSTRUCT
		SPEED 140	MPH			SHALL VERIFY EXISTING CONDITIONS AN
	2.4. SNOW LOAD	URE CATEGORY: D				ENGINEER.
	GROUND SNC	W LOAD 50	PSF		12.	IF, DURING THE PERFORMANCE OF THE V
	SEISMIC IMPO	DRTANCE FACTOR		le=1.0		ENGINEER OF RECORD IN WRITING AT ON
	MCE <sub>R</sub> GROUN	ID MOTION (PERIOD=0.2s	)	S <sub>S</sub> =0.15 S-=0.048		THEREBY, THE CONTRACTOR SHALL OBT
	SITE-MODIFIE	D SPECTRAL ACCELERA	TION	S <sub>MS</sub> =0.239		HIS DECISION IS AT THE CONTRACTOR'S
	SITE-MODIFIE	D SPECTRAL ACCELERA	TION 0.2S SA	S <sub>M1</sub> =0.115 SDS=0 16	13.	THE WORK SHALL BE PERFORMED IN A G
	NUMERID SEI	SMIC DESIGN VALUE AT	1.0S SA	SD1=0.077		REQUIREMENTS OF THE CONTRACT. THE
	SITE CLASS SEIMIC DESIG	SN CATEGORY		D B	14.	AND METHODS OF CONSTRUCTION AND I
	DESIGN PROC	CEDURE:		EQUIVALENT LATERAL FORCE		EQUIPMENT AND APPLIANCES FOR DEMC
	2.6. VESSEL LOADS	ODIFICATION FACTOR		R=2	15.	THE OWNER HAS SECURED CERTAIN PER
	PILE MOORIN	G LOAD: 1.1	KIP			FOR THE PROPOSED ACTIVITIES. IT IS THE
	PILE PULLOU	T LOAD: 8 K	IP			BUT NOT LIMITED TO, THE CLEAN WATER
3						OCCUPATIONAL SAFETY, HEALTH ACT, 40
	REQUIRED SC	DIL BEARING CAPACITY		1500 PSF		CONTRACTOR SHALL POST COPIES OF TI
	SUCH BEARIN	IG STRATA IS ANTICIPAT	ED AT THE BC	TTOM OF FOOTING ELEVATIONS NOTED		THE WORK. THE CONTRACTOR IS RESPO
	STRATA PRIO	R TO CASTING CONCRE	TE IN ORDER	TO VERIFY THE PRESUMPTIVE BEARING		LOCAL AUTHORIZATIONS AND PERMITS.
4	VALUE.				16.	SPECIAL INSPECTION REQUIREMENTS PE
	CAST-IN-PLAC		f'c=5,000 PS	SI (UNLESS OTHERWISE NOTED)		OWNER OF THE PROGRESS OF WORK AN
	W/CM RATIO	XPUSURE	0.40	-3, 51, W2, C2	17.	INSPECTIONS ARE TO OCCUR SUCH AS T THE CONTRACTOR SHALL FURNISH MATE
			ASTM A615	GR. 60		SPECIFIED HEREINAFTER. THE CONTRAC
	WELDED WIR	E REINFORCEMENT	ASTM A106	, 64		STORAGE AREA.
	PROVIDE THE	FOLLOWING COVER FO	R REINFORCE	MENT: LEAR COVER OF 3 INCHES	18.	THE CONTRACTOR WILL INDEMNIFY AND
5	5. STEEL					RECOVERIES, AND JUDGMENTS OF EVER
1	STEEL WAND OTHER STEEL	, VVI SHAPES SHAPES	ASTM A992 ASTM A572	: 2 GR 50		AGAINST THE OWNER AND ENGINEER OF CONTRACTOR. OR OF ANY SUBCONTRAC
	STEEL PLATE	S	ASTM A572	2 GR 50		OR INDIRECTLY EMPLOYED BY THE CONT
	STEEL HSS STEEL PIPE		ASTM A500 ASTM A252	2, fy=50KSI OR API 5LX52	19.	PERFORMANCE OF ANY WORK FOR, OR T THE CONTRACTOR AGREES THAT, AT ITS
	STEEL SHEET		ASTM A572	2 GR 60, fy=60KSI		CONTINUE IN FORCE; INSURANCE COVER
	BOLIEDCON	NECTIONS	SNUG TIGH	17 U.N.O.		GENERAL LIABILITY INSURANCE IN THE S
	ANCHOR BOL	TS	ASTM F155	4 GR 36 HDG OR HILTI KWIK BOLT #3		AND THERE SHALL BE DELIVERED TO THI
	WASHERS (E)	CEPT AGAINST TIMBER)	ASTM F436	, ,		INSURANCE COMPANIES. GOOD AND RES
	WASHERS AG THREADBAR	AINST TIMBER	COMMON E ASTM A615	DOCK WASHERS	20	THE OWNER, SHALL WRITE SUCH INSURA
1	WELDING ELE	ECTRODES	E70XX		20.	LIABILITY INSURANCE POLICY AS ADDITIC
6	. TIMBER		AVVS D1.1,	AVVƏ AƏ.1 AND AVVS A5.5		BASIS. SUBMIT CERTIFICATES OF INSURA
			12" Ø GREE		21.	THE CONTRACTOR SHALL BE SOLELY RE
		S - FIER	SOUT کو ۲۷ SYP NO. 2	OR BETTER		DIMENSIONS, AND LEVELS AND NO PLEA SOURCES OTHER THAN INFORMATION CO
			SYP NO. 2	OR BETTER		IN WRITTEN ORDERS OF THE OWNER OR
	TIMBER DECK	KING	SYP NO. 20			SHALL MAINTAIN ADEQUATE SURVEY CO
1	PRESERVATI	/ES PIER		Δ		LINES AND ELEVATIONS SHOWN ON THE
1	BRACES		2.5 PCF CC	A	22.	THE CONTRACTOR SHALL TAKE HIS OWN THE CONTRACT DRAWINGS AND EXISTIN
	PILE CA	PS AND STRINGERS	2.5 PCF CC 0 23 PCF M	CA	00	PROPER FIT AND ALIGNMENT OF COMPLE
1	DECKIN	G	0.23 PCF M	CA	23	ORIGINAL DEFECTS, OR AGAINST INJURY
	HARDWARE HARDW	ARE FOR TIMBER CONST	RUCTION SH	ALL BE HOT DIPPED GALVANIZED OR		PURPOSE INTENDED, FOR TWELVE (12) N AND SHALL MAINTAIN ITEMS IN PERFECT
	STAINLE	ESS STEEL IN COMPLIAN	CE WITH AISI	316, U.N.O. SEE TIMBER CONSTRUCTION		DEFECTS APPEARING DURING THE PERIC
<u>.</u> .	SECTIO	N UO 1333.				CONTRACTOR AT HIS EXPENSE UPON DE SHALL BE IN PERFECT CONDITION WHEN
atior						THE EVENT OF DEFAULT BY THE CONTRA
000					24	GOOD DEFECTS AND BILL THE CONTRAC
er L					<b>_</b> T	DAY-TO-DAY BASIS, WITH RUBBISH REMO

## 275 TON ULTIMATE CAPACITY 403.30 KIPS DESIGN LOAD MIN. TIP EL. = -35.50' MIN. TIP EL. = -28.75' OAT PILES MIN. TIP EL. = -32.50 LOAT PILES MIN. TIP EL. = -31.50 **PILES** MIN. TIP EL. = -27.00 MIN. TIP EL. = -27.00

- MIN. TIP EL. = -23.70' 11 TON ULTIMATE CAPACITY 6 TON ULTIMATE CAPACITY CONFIRM REQUIRED PILE LENGTHS
- IGNED TO BE SELF-SUPPORTING AND STABLE AFTER E STABILITY OF THE STRUCTURES PRIOR TO COMPLETION IS HE CONTRACTOR. THIS RESPONSIBILITY EXTENDS TO RELATED ACTIVITY INCLUDING, BUT NOT LIMITED TO, ERECTION METHODS, NS, TEMPORARY BRACING, FORMS, SHORING, USE OF UCTION PROCEDURES. REVIEW OF CONSTRUCTION BY THE D IS FOR GENERAL CONFORMANCE WITH THE CONTRACT MENT BY THE OWNER AND ENGINEER OF RECORD WITH REGARD SHALL NOT BE INTERPRETED AS APPROVAL OR ACCEPTANCE
- Y OF THE REFERENCE DOCUMENTS IS PROVIDED HEREIN AND HIS OWN FIELD VERIFICATION FOR ITEMS SO REQUIRED. TO REPLACE SPECIFICATIONS. SEE SPECIFICATIONS FOR NFORMATION.
- TH THIS PROJECT IS CONTAINED WITH THE DOCUMENT RCIAL WHARF IMPROVEMENTS" PROVIDED AS AN ATTACHMENT
- RACT DOCUMENTS FOR GEOTECHNICAL BORING LOG "H ON DECEMBER 19-23, 2019, RH-2023-B1 TAKEN MARCH 16,
- IST 22, 2023. AT THE DRAWINGS AND SPECIFICATIONS FORM A PART OF THE RK SHALL BE PERFORMED IN ACCORDANCE WITH THE TRACTOR SHALL KEEP A COPY OF THE DRAWINGS,
- ISITE AT ALL TIMES DURING THE PROJECT. THE LOCATION OF ALL UNDERGROUND UTILITIES AND
- LIMITS OF THE WORK PRIOR TO COMMENCING ANY ATING WORK. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" ESS DAYS PRIOR TO COMMENCEMENT OF THE EXCAVATION OR
- BILITY TO PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS ND FEDERAL REGULATION AND LAW, AS WELL AS REQUIRED PROVALS.
- ING AVAILABLE MAGIS DATA. ISIONS AND CONDITIONS ARE APPLICABLE AT ANY OTHER D DETAIL ARE SIMILAR BUT ARE NOT SPECIFICALLY NOTED AS
- M THE WORK IN A MANNER THAT DOES NOT IMPEDE THE THE OWNER'S ON-SITE OPERATING EQUIPMENT. STRUCTION AND FABRICATION OF CONSTRUCTION MATERIALS NS AND DIMENSIONS. LENGTHS SHOWN ON THE DRAWINGS ARE THE ACTUAL LENGTHS MAY VARY WHEN SO ACCEPTED BY THE
- THE WORK. THE CONTRACTOR FINDS A CONFLICT, ERROR, OR OCUMENTS, THE CONTRACTOR SHALL SO REPORT TO THE AT ONCE. BEFORE PROCEEDING WITH THE WORK AFFECTED L OBTAIN A WRITTEN INTERPRETATION OR CLARIFICATION WORK DONE BEFORE THE ENGINEER OF RECORD RENDERS OR'S SOLE RISK.
- IN A GENERAL SEQUENCE DEVELOPED BY THE CONTRACTOR OF RECORD FOR REVIEW, IN ACCORDANCE WITH THE THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND FOR THE SEQUENCES AND PROCEDURES TO BE USED. AND COORDINATE PLANT, LABOR, SUPERVISION, MATERIALS,
- DEMOLITION AND/OR CONSTRUCTION WORK IN CONNECTION NSTRUCTION OF THE WATERFRONT FACILITIES. IN PERMITS REQUIRED BY FEDERAL, AND STATE AUTHORITIES
- I IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM THE TERMS AND CONDITIONS OF THE PERMITS. THIS INCLUDES ATER ACT, THE FEDERAL DEPARTMENT OF LABOR, CT, 401 WATER QUALITY CERTIFICATION, CHAPTER 91 LICENSE,
- TIONS, AND U.S. ARMY CORP OF ENGINEERS PERMIT. THE OF THE PERMITS AT THE SITE THROUGHOUT THE COURSE OF RESPONSIBLE TO OBTAIN PERMITS ASSOCIATED WITH THE ON DEBRIS. THE CONTRACTOR SHALL SECURE REQUIRED
- ITS PER LOCAL AND/OR STATE BUILDING CODES SHALL BE JATED BY THE OWNER. THE CONTRACTOR SHALL INFORM THE RK AND PROVIDE ADEQUATE NOTICE AS TO WHEN SPECIAL AS TO NOT DELAY THE SCHEDULE.
- I MATERIALS FOR INSTALLATION IN THE COMPLETED WORK AS NTRACTOR SHALL HANDLE THESE MATERIALS AS THEY ARE TE WORK AREAS AND SHALL STORE THEM IN A DESIGNATED
- AND SAVE HARMLESS THE OWNER AND ENGINEER OF RECORD ND ALL CLAIMS, DEMANDS, PAYMENTS, SUITS, ACTIONS, EVERY NATURE AND DESCRIPTION BROUGHT OR RECOVERED ER OF RECORD BY REASON OF ANY ACT OR OMISSION OF THE ITRACTOR TO THE CONTRACTOR, OR OF ANY PERSON DIRECTLY CONTRACTOR OR ANY SUCH SUBCONTRACTOR, IN THE , OR THE RENDERING OF ANY SERVICES TO, THE OWNER. AT ITS OWN COST AND EXPENSE, IT SHALL PROCURE AND COVERAGE AS REQUIRED BY THE OWNER. SUCH INSURANCE OR COMPANIES AUTHORIZED TO ENGAGE IN THE BUSINESS OF THE STATE IN WHICH THE DEMISED PREMISES ARE LOCATED, TO THE OWNER WITH THE BID CUSTOMARY CERTIFICATES ANCE, WHICH CERTIFICATES ARE TO BE ISSUED BY THE ID RESPONSIBLE COMPANIES, REASONABLY ACCEPTABLE TO
- SURANCE. ULTANTS SHALL BE ADDED TO THE CONTRACTOR'S GENERAL DDITIONAL INSURED ON PRIMARY AND CON-CONTRIBUTORY NSURANCE TO THE ENGINEER AS EVIDENCE OF THIS
- LY RESPONSIBLE FOR THE ACCURACY OF LOCATIONS, PLEA AS TO INSTRUCTIONS OR ORDER RECEIVED FROM OTHER ION CONTAINED ON CONTRACT DRAWINGS, SPECIFICATIONS OR ER OR ENGINEER OF RECORD SHALL JUSTIFY DEPARTURE FROM REQUIRED BY THE CONTRACT DRAWINGS. THE CONTRACTOR EY CONTROL AT ALL TIMES TO ESTABLISH AND MAINTAIN ALL THE CONTRACT DRAWINGS.
- SOWN MEASUREMENTS AT THE SITE, VERIFYING THE SAME WITH (ISTING FACILITIES, AND WILL BE HELD RESPONSIBLE FOR THE OMPLETED WORK IN POSITION.
- TEE TO THE OWNER MATERIALS AND WORKMANSHIP AGAINST JURY FROM PROPER AND USUAL WEAR WHEN USED FOR THE (12) MONTHS AFTER DATE OF FINAL PAYMENT CERTIFICATIONS RECT CONDITION DURING THE PERIOD OF GUARANTEE. PERIOD OF GUARANTEE SHALL BE MADE GOOD BY THE ON DEMAND OF THE OWNER, IT BEING REQUIRED THAT WORK
- WHEN THE PERIOD OF GUARANTEE SHALL HAVE ELAPSED. IN ONTRACTOR, THE COMPANY SHALL HAVE THE RIGHT TO MAKE TRACTOR COST PLUS 15% FOR ADMINISTRATION FEES. THE CONTRACTOR'S WORKING AREAS SHALL BE CLEANED ON A REMOVED FROM THE SITE AND WORK AREAS CLEANED AT THE END OF EACH DAY. AT FINAL COMPLETION OF WORK THE CONTRACTOR SHALL LEAVE THE ENTIRE PREMISES, WITHIN THE SITE OF HIS OPERATIONS, CLEAN AND FREE FROM THE RUBBISH
- RESULTING FROM HIS CONSTRUCTION OPERATIONS. 25. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE AND MAINTAIN UTILITIES AS DEEMED NECESSARY

TO AFFECT THE WORK.

- 26. THE CONTRACTOR SHALL PROVIDE FIELD ENGINEERING SERVICES REQUIRED FOR PROPER COMPLETION OF THE WORK INCLUDING, BUT NOT NECESSARILY LIMITED TO: ESTABLISHING AND
- MAINTAINING LINES AND LEVELS; STRUCTURAL DESIGN OF SHORES, FORMS, AND SIMILAR ITEMS PROVIDED BY THE CONTRACTOR AS PART OF HIS MEANS AND METHODS OF CONSTRUCTION. 27. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN AT HIS EXPENSE REQUIRED FIRE PROTECTION SYSTEMS AND DEVICES AS NECESSARY TO SAFELY PERFORM THE WORK IN ACCORDANCE WITH THE APPLICABLE REGULATIONS. IT SHALL BE OPERATIONAL THROUGHOUT THE PERIOD OF
- CONSTRUCTION. 28. THE OWNER SHALL HAVE THE RIGHT TO WITHHOLD WITHOUT PENALTY PAYMENT DESCRIBED ABOVE, OR SECTIONS REFERENCED HEREIN, FOR COMPLETED WORK SHOULD THE CONTRACTOR FAIL TO MEET OBLIGATIONS OR REQUIREMENTS OF THE CONTRACT. WITHHELD PAYMENT SHALL
- BE PROMPTLY MADE UPON THE CONTRACTOR'S FULL COMPLIANCE WITH THE CONTRACT. 29. COMPLY WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR PROTECTION OF THE ENVIRONMENT DURING THE WORK. ENSURE THAT PERSONNEL ARE PROPERLY TRAINED AND THAT SUFFICIENT EQUIPMENT AND MATERIALS ARE READILY AVAILABLE FOR USE IF REQUIRED. ABIDE BY STATE AND FEDERAL SPILL REPORTING REQUIREMENTS. NO LATER THAN 21 DAYS
- FOLLOWING AWARD OF CONTRACT, SUBMIT A COMPREHENSIVE PLAN DESCRIBING THE MEANS AND METHODS TO BE EMPLOYED FOR PROTECTION, CONTAINMENT, AND CLEAN UP. 30. THE OWNER RESERVES THE RIGHT TO CHARGE THE CONTRACTOR FOR ADDITIONAL ENGINEERING
- SERVICES IF REQUIRED DUE TO THE CONTRACTOR'S ACTIONS OR INACTIONS. 31. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF HIS OPERATIONS. THE CONTRACTOR SHALL TAKE REASONABLE PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE
- REASONABLE PROTECTION TO PREVENT DAMAGE, INJURY, OR LOSS TO PERSONS EMPLOYED BY THE CONTRACTOR IN PERFORMANCE OF THE WORK, AND PERSONS NEARBY THAT MAY BE AFFECTED BY THE CONTRACTOR'S OPERATIONS OR THE WORK, INCLUDING EQUIPMENT AND MATERIALS WHICH WILL BE INCORPORATED IN THE WORK, AND OTHER PROPERTIES AND STRUCTURES AT THE SITE, OR ON ADJACENT PROPERTIES.
- 32. OBSTRUCTIONS ARE DEFINED AS UNFORESEEN OBJECTS, WHICH IMPEDE PROGRESS. OBJECTS, WHICH ARE MADE KNOWN TO THE CONTRACTOR, WILL NOT BE CONSIDERED TO BE OBSTRUCTIONS. NOTIFY THE ENGINEER OF RECORD IMMEDIATELY UPON ENCOUNTERING OBSTRUCTIONS. NO CONSIDERATION WILL BE GIVEN FOR ADDITIONAL COMPENSATION ON THIS ACCOUNT WITHOUT THIS TIMELY NOTIFICATION.
- 33. SUBSTITUTIONS MAY BE FURNISHED FOR MATERIALS SPECIFIED HEREIN PROVIDED THE CONTRACTOR SECURES ACCEPTANCE FROM THE ENGINEER OF RECORD.

## ALUMINUM GANGWAY:

- 1. ALUMINUM RAMP AND ALL INCIDENTAL PARTS INCLUDING FASTENERS AND CONNECTORS SHALL BE MANUFACTURED BY ALUMINDOCK, RANDOLF, NY, OR AN EQUIVALENT ACCEPTED BY THE ENGINEER OF RECORD. THE RAMP SHALL HAVE A MINIMUM CLEAR WALKWAY OF 48 INCHES AND BY 40 FEET IN TOTAL WALKWAY LENGTH.
- 2. ALL ALUMINUM EXTRUSIONS SHALL BE ALUMINUM ALLOY 6061-T6 EXTRUDED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF FEDERAL SPECIFICATION QQ-A-200.
- 3. BOLTS, RODS, NUTS, WASHERS, SCREWS, AND OTHER FASTENERS SHALL BE TYPE 304 STAINLESS STEEL.
- 4. ROLLERS FOR RAMP SHALL BE UHMW POLYURETHANE WITH BLACK ULTRAVIOLET LIGHT INHIBITOR ADDED, OR AN EQUIVALENT ACCEPTED BY THE ENGINEER OF RECORD. 5. METAL FOR DECKING AND HANDRAILS SHALL BE 6063-T6 ALUMINUM ALLOY. EXTRUDED PIPE FOR
- HANDRAILS AND STRUCTURES SHALL BE 1-1/2" DIAMETER MINIMUM PIPE. 6. DECKING SHALL BE EXTRUDED ALUMINUM SLATS, EMBOSSED TO PROVIDE A NON-SLIP SURFACE,
- AND SHALL NOT EXCEED NINE (9) INCHES IN WIDTH WITH NOT MORE THAN 3/8-INCH AIR SPACE BETWEEN ADJACENT SLATS. THE LEGS OF EACH DECKING SLAT SHALL BE WELDED TO THE SIDE MEMBERS AND TO ANY LONGITUDINAL MEMBERS WITH A MINIMUM OF 1-1/4 INCHES OF WELD PER LEG. THE DECKING SLATS SHALL BE PLACED TRANSVERSELY ON THE GANGWAY OR DOCK.
- 7. HANDRAILS ARE REQUIRED ALONG EACH SIDE OF EACH GANGWAY. REMOVABLE HANDRAILS SHALL BE MOUNTED WITHIN SLEEVES FASTENED TO THE GANGWAY, SECURED WITH STAINLESS STEEL BOLTS.
- 8. GANGWAYS SHALL HAVE A DETACHABLE HINGE MOUNT FOR SECURING THE GANGWAY TO A WALL OR FIXED STRUCTURE. HINGE MOUNT EXTRUSIONS SHALL BE WELDED TO THE FRAME OF THE GANGWAY WITH A CONTINUOUS FILLET WELD UNLESS OTHERWISE SHOWN ON THE DRAWINGS. NON-HINGED DECK MODULE CONNECTORS SHALL BE SHOWN ON THE DRAWINGS.
- 9. ANY INSTALLATION OF DISSIMILAR MATERIALS SHALL BE PROPERLY INSULATED TO AVOID CONTACT OF DISSIMILAR METALS AND TO MINIMIZE OR ELIMINATE CORROSION IN A MARINE ENVIRONMENT.
- 10. GANGWAYS SHALL BE SECURELY FASTENED TO CERTAIN FIXED STRUCTURES. DETAIL SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MASSACHUSETTS AND BE PROVIDED TO THE OWNERS REPRESENTATIVE FOR APPROVAL. UTILITIES RUNNING ON THE GANGWAY SHALL BE INSTALLED SO AS NOT TO INTERFERE WITH THE ACCESS AREA OF THE GANGWAY OR TO BE DAMAGED DURING NORMAL OPERATION.

## BITUMINOUS CONCRETE PAVING:

- 1. BITUMINOUS CONCRETE PAVING SHALL CONFORM TO THE REQUIREMENTS OF THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR HIGHWAYS AND BRIDGES.
- 2. ASPHALT MIXTURE SHALL MATCH EXISTING.

## CATHODIC PROTECTION:

- 1. ALUMINUM ANODES FOR PASSIVE CATHODIC PROTECTION OF STEEL STRUCTURES IN MARINE ENVIRONMENTS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM B418.
- 2. ANODES SHALL BE INSTALLED BY AN EXPERIENCED CONTRACTOR, MINIMUM 5 YEARS OF
- EXPERIENCE, UNDER THE SUPERVISION OF A CORROSION SPECIALIST CERTIFIED BY NACE. 3. CATHODIC PROTECTION SYSTEM SHALL BE TESTED AFTER INSTALLATION. SUBMIT TEST RESULTS IN A REPORT TO THE ENGINEER FOR REVIEW AND ACCEPTANCE.
- 4. CONTRACTOR SHALL SUBMIT, FOR THE REVIEW OF THE ENGINEER, INSTALLER AND TESTER QUALIFICATIONS, NACE INTERNATIONAL CORROSION CERTIFICATIONS, METHODS, AND PROCEDURES FOR TESTING CORROSION CONTROL SYSTEM, INCLUDING DESCRIPTION OF
- INSTRUMENTS AND EQUIPMENT TO BE USED. 5. ANODES SHALL BE ROTOMETALS ALUMANODE AHC20 (2" X 4" X 24") OR EQUIVALENT ACCEPTED BY THE ENGINEER.
- 6. ANODES SHALL BE INSTALLED AS SHOWN ON SHEET S-703.

## CONCRETE:

- 1. CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI-318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", & SECTION 13 OF ACI-320 FOR PRECAST CONCRETE, AS ADOPTED BY THE AMERICAN CONCRETE INSTITUTE.
- 2. NO WATER SHALL BE ADDED TO THE MIX AT THE JOB SITE.
- 3. CONCRETE SHALL BE CONTROLLED CONCRETE, MIXED AND PLACED IN THE PRESENCE OF THE APPROVED TESTING AGENCY. 4. STRUCTURAL JOINTS SHOWN ON THE DRAWINGS ARE MANDATORY. ADDITIONAL STRUCTURAL
- JOINTS AND MODIFICATIONS AS REQUIRED TO EXECUTE THE CONSTRUCTION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- 5. DO NOT PLACE CONCRETE UNTIL REINFORCEMENT AND EMBEDDED ITEMS HAVE BEEN APPROVED BY THE ENGINEER AND/OR THE APPROVED TESTING AGENCY (IF/WHEN DIRECTED). PROVIDE A MINIMUM OF 24 HOURS NOTIFICATION TO THE ENGINEER.

## DEMOLITION NOTES:

- 1. NOTIFY OWNER/OWNER'S PROJECT ENGINEER OF DISCREPANCIES BETWEEN EXISTING
- CONDITIONS AND DRAWINGS BEFORE PROCEEDING WITH DEMOLITION. 2. LIMITS DEPICTED ON THE CONTRACT PLANS CAN ONLY BE CONSIDERED AS APPROXIMATE FIELD CONDITIONS. IT IS NOT THE INTENT OF THE PLANS TO SHOW THE EXACT LOCATION OR EXTENT OF EXISTING DETERIORATION ON STRUCTURES. THE CONTRACTOR IS TO FULLY APPRISE HIMSELF OR
- HERSELF OF THE SITE CONDITIONS PRIOR TO START OF WORK. 3. DO NOT BEGIN DEMOLITION UNTIL NOTIFIED TO PROCEED BY THE OWNER OR PROJECT ENGINEER AND ALL REQUIRED PERMITS & PERMISSIONS FROM THE TOWN OF ORLEANS ARE OBTAINS.
- 4. SELECTIVE DEMOLITION AND DISPOSAL SHALL BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL PERMIT AND BUILDING CODE REQUIREMENTS.
- 5. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THOSE STRUCTURES AND DERELICT COMPONENTS AS REQUIRED TO PERFORM THE WORK. THIS WORK INCLUDES BUT IS NOT LIMITED TO TIMBER OR STEEL BULKHEAD, CONCRETE PLATFORMS, TIMBER PILES, CONCRETE AND TIMBER DEBRIS. STEEL DEBRIS, UTILITIES, AND OTHER ITEMS AS INDICATED ON THE DRAWINGS.
- 6. SELECTIVE DEMOLITION INCLUDES BUT IS NOT LIMITED TO REMOVAL AND REUSE (WHERE POSSIBLE) OF EXISTING MATERIALS, UTILITIES, AND OTHER COMPONENTS ESSENTIAL FOR A
- COMPLETE PROJECT. 7. ITEMS TO BE REMOVED AND REUSED SHALL BE PLACED IN A STAGING AREA ACCESSIBLE FOR INSPECTION BY THE OWNER.
- 8. PRIOR TO COMMENCEMENT OF SELECTIVE DEMOLITION, THE CONTRACTOR SHALL SUBMIT A DISPOSAL PLAN FOR ITEMS TO BE DEMOLISHED. DEMOLITION MATERIAL DESIGNATED BY THE OWNER TO BE REMOVED FROM THE SITE SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE DEBRIS DISPOSAL PLAN SHALL ACKNOWLEDGE THIS OWNERSHIP AND SHALL IDENTIFY THE MEANS AND METHODS AND FINAL DISPOSITION FOR DISPOSAL MATERIALS.

- 9. PRIOR TO COMMENCEMENT OF DEMOLITION, THE CONTRACTOR SHALL CLEARLY MARK THE LIMITS OF THE DEMOLITION FOR REVIEW AND APPROVAL BY THE OWNER. 10. COMPLETELY REMOVE ITEMS DESIGNATED LEAVING SURFACES CLEAN, SOUND, AND READY TO
- RECEIVE NEW MATERIALS AS SPECIFIED IN THE CONTRACT DOCUMENTS. 11. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE
- DURING THE COURSE OF DEMOLITION. 12. THE CONTRACTOR SHALL SUBMIT A DISPOSAL CERTIFICATE TO THE OWNER'S REPRESENTATIVE
- CERTIFYING LEGAL AND PROPER DISPOSAL. 13. THE CONTRACTOR SHALL TAKE REASONABLE CARE IN REMOVING ELEMENTS SELECTED TO BE DEMOLISHED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. IF THE CONTRACTOR'S EQUIPMENT OR METHODS RESULT IN DAMAGE TO ADJACENT STRUCTURES OR ELEMENTS TO REMAIN OR CAUSE DEMOLITION BEYOND INDICATED LIMITS OR ACCEPTABLE LIMITS NECESSARY TO COMPLETE SUCCESSFUL REPAIRS, OR RESULTS IN DAMAGE TO OTHER PROPERTY OF THE OWNER, THEN THE PROJECT ENGINEER WILL DIRECT THE CONTRACTOR TO MODIFY DEMOLITION OPERATIONS. SUCH MODIFICATION SHALL BE PERFORMED AT NO ADDITIONAL EXPENSE TO THE OWNER AND/OR FOTH. DEMOLITION BEYOND ACCEPTED LIMITS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. DAMAGE OR DESTRUCTION BY THE CONTRACTOR TO EXISTING ELEMENTS DESIGNATED TO REMAIN SHALL BE REPAIRED OR REPLACED IN-KIND AT THE DISCRETION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER AND/OR FOTH.
- 14. APPLICABLE FOR AREAS WHERE NEW CONCRETE ABUTS EXISTING CONCRETE SURFACES. CONTRACTOR SHALL COMPLETELY REMOVE ALL LOOSE, DELAMINATED AND WEAK CONCRETE, OIL, GREASE, LAITANCE, MARINE GROWTH AND OTHER CONTAMINANTS FROM THE SURFACE IN PREPARATION FOR NEW CONCRETE. PREPARE CONCRETE SURFACE USING ACCEPTABLE MECHANICAL MEANS AND CONCRETE CLEANERS AND DEGREASERS AS NECESSARY TO OBTAIN CLEAN, SOUND AND ROUGH SURFACES. COARSE AGGREGATE SHALL BE EXPOSED AND ALL MARINE GROWTH REMOVED.

## EARTHWORK NOTES:

- 1. DO NOT BEGIN BACKFILLING UNTIL CONSTRUCTION BELOW FINISH GRADE HAS BEEN APPROVED AND THE EXCAVATION IS CLEAN OF TRASH AND DEBRIS.
- 2. HEAVILY SURFACE COMPACT SUBGRADE IN UPLAND AREA WITH A MINIMUM OF 6 PASSES OF A VIBRATORY ROLLER HAVING A DRUM WEIGHT OF AT LEAST 10,000 POUNDS AND A DYNAMIC FORCE OF AT LEAST 20,000 POUNDS PRIOR TO PLACING FILL.
- 3. PLACE AND COMPACT FILL AND BACKFILL TO INDICATED FINISH GRADE WITHIN A TOLERANCE OF ONE FOOT HORIZONTALLY AND 1 INCH VERTICALLY.
- 4. STRUCTURAL FILL SHALL CONSIST OF BROKEN OR CRUSHED STONE, BANK OR CRUSHED GRAVEL, OR MIXTURES THEREOF. BROKEN OR CRUSHED STONE SHALL CONSIST OF WELL-GRADED, SOUND, TOUGH, DURABLE STONE. BANK OR CRUSHED GRAVEL SHALL CONSIST OF WELL-GRADED, SOUND, TOUGH, DURABLE PARTICLES OF CRUSHED OR UNCRUSHED GRAVEL FREE FROM SOFT, THIN, ELONGATED OR LAMINATED PIECES AND ORGANIC OR OTHER DELETERIOUS SUBSTANCES. STRUCTURAL FILL SHALL WELL GRADED WITH 100% MASS PASSING THE 90 mm (3.5") SQUARE MESH SIEVE. SUBMIT AN INDEPENDENT GRADATION ANALYSIS AND MODIFIED PROCTOR TEST FOR ENGINEER OF RECORD'S REVIEW. INCLUDE A REPRESENTATIVE SAMPLE OF THE FILL MATERIAL WITH THE SUBMITTAL
- 5. THE CONTRACTOR SHALL EXCAVATE UNSUITABLE MATERIALS, BACKFILL, COMPACT AND GRADE THE SITE TO THE ELEVATIONS AND LIMITS SHOWN AND AS NEEDED TO MEET THE REQUIREMENTS OF THE CONSTRUCTION.
- 6. STRUCTURAL FILL SHALL BE PLACED IN LAYERS NOT MORE THAN 8" IN LOOSE DEPTH. DO NOT PLACE FILL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN OR CONTAINING FROST AND/OR ICE. PLACE FILL MATERIALS EVENLY ADJACENT TO STRUCTURES, TO REQUIRED ELEVATIONS. TAKE CARE TO PREVENT WEDGING ACTION OF BACKFILL AGAINST STRUCTURES BY CARRYING THE MATERIAL UNIFORMLY AROUND THE STRUCTURE TO APPROXIMATELY THE SAME ELEVATION IN EACH LIFT.
- 7. CONTROL STRUCTURAL FILL COMPACTION DURING CONSTRUCTION TO PROVIDE THE MINIMUM PERCENTAGE OF DENSITY SPECIFIED FOR EACH AREA AS DETERMINED ACCORDING TO ASTM D1557. STRUCTURAL FILL AREAS SHALL NOT FALL BELOW 95% OF ITS DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE ABOVE TEST. 8. GRADE THE AREAS ADJACENT TO BUILDINGS TO ACHIEVE DRAINAGE AWAY FROM THE
- STRUCTURES, AND TO PREVENT PONDING.

## EROSION AND SEDIMENTATION CONTROL:

- 1. SITE WORK SHALL NOT BE PERFORMED UNTIL SEDIMENT AND EROSION CONTROL DEVICES ARE INSTALLED AND WRITTEN APPROVAL IS SECURED FROM THE TOWN OF ORLEANS AND/OR OWNERS REPRESENTATIVE.
- 2. EROSION AND SEDIMENTATION CONTROL DEVICES AND PROVISIONS SHALL BE MAINTAINED IN OPERATIONAL CONDITION BY THE CONTRACTOR AND SHALL BE REMOVED AND LEGALLY DISPOSED AT THE COMPLETION OF THE PROJECT.
- 3. STRAW WATTLES SHALL CONSIST OF BIOROLL FILLED WITH GRAIN STRAW FREE FROM SEED BEARING STALKS AND NOXIOUS GRASSES AND PLANTS. 4. HAY BALES SHALL CONSIST OF FIRM, NEW BALES OF SALT HAY OR SMALL GRAIN STRAW, JUTE
- TIED, WITH AN AVERAGE DRY WEIGHT OF 10 TO 40 POUNDS PER BALE AND SHALL BE PLACED AS DIRECTED BY THE ENGINEER. 5. SILT FENCE SHALL BE MIRAFI 600X AS MANUFACTURED BY MIRAFI INC., GEOTEX 300ST AS
- MANUFACTURED BY SYNTHETIC INDUSTRIES, INC., PROPEX 2004 AS MANUFACTURED BY AMOCO FABRICS & FIBERS CO. OR EQUIVALENT. 6. FABRIC FENCE MATERIAL SHALL BE SUPPLIED IN ROLLS WITH APPROVED STAKING ATTACHMENTS
- FROM AN APPROVED SUPPLIER AND SHALL BE PLACED AS DIRECTED BY THE ENGINEER. 7. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE INSPECTED WEEKLY
- DURING THE CONSTRUCTION PERIOD. 8. STOCKPILING OF MATERIALS IS NOT PERMITTED.
- 9. WORKING OR PLACING MATERIAL ON EXISTING WETLAND VEGETATION IS PROHIBITED. 10. VEGETATION PROTECTION FENCE SHALL BE SAFETY ORANGE FABRIC FENCE WITH TEMPORARY SUPPORT POSTS. POSTS MAY BE SUPPORTED ON THE LEDGE ROCK BY MEANS OF SANDBAGS OR OTHER ACCEPTABLE METHOD. THE FENCE IS TO REMAIN IN PLACE AT ALL TIMES WHILE CONSTRUCTION IS UNDERTAKEN.

## FLAGPOLE:

- 1. FLAGPOLE SHALL BE A FIBERGLASS REINFORCED COMPOSITE (FRC) NAUTICAL DOUBLE MASTED FLAGPOLE WITH YARDARM/GAFF AS MANUFACTURED BY PLP COMPOSITE TECHNOLOGIES OR APPROVED EQUAL. COLOR SHALL BE STANDARD WHITE AND BASE TO BE PROVIDED PER MANUFACTURERS RECOMMENDATIONS.
- 2. FLAGPOLE SHALL HAVE A MINIMUM MOUNTING HEIGHT OF 25-FEET, ALONG WITH A MINIMUM BUTT DIAMETER OF 6-INCHES.
- 3. LOAD CALCULATIONS SHALL BE BASED ON AASHTO AND NAAMM STANDARDS DESIGNED FOR 150 M.P.H. WINDS, UNFLAGGED WITH A 1.3 GUST FACTOR.
- 4. FLAGPOLE: FLAGPOLE SHALL BE MOUNTED TO THE CAST-IN-PLACE CONCRETE TOPPING SLAB DECK IN THE LOCATION SHOWN ON THE CONTRACT DRAWINGS. INSTALLATION DETAIL SHOWN ON THE CONTRACT DRAWINGS SHALL BE USED TO SECURE THE ITEMS TO THE DECK SECTION AS REQUIRED, OR WITH THE MANUFACTURERS RECOMMENDATIONS UPON COORDINATION AND APPROVAL WITH THE ENGINEER.

## GEOTEXTILE FABRIC:

- 1. GEOTEXTILE FABRIC SHALL BE MIRAFI FILTERWEAVE FW-700 GEOTEXTILE FABRIC OR AN EQUIVALENT ACCEPTED BY THE ENGINEER OF RECORD.
- 2. INSTALL GEOTEXTILE FABRIC IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. MAINTAIN MINIMUM 12-INCH LAP AT ADJACENT SECTIONS.
- 3. PROVIDE ADEQUATE SLACK IN FABRIC DURING INSTALLATION BY PROVIDING CONTINUOUS 12 INCH FOLDS AT 15 FOOT CENTERS PARALLEL TO THE SHORELINE.
- 4. PROPERLY ANCHOR FABRIC TO PREVENT SLIDING OR TEARING DURING INSTALLATION OF OVERBURDEN MATERIAL.

## GROUND ANCHORS:

- 1. GROUND ANCHORS SHALL BE INSTALLED TO A 45 DEGREE INCLINATION WITH RESPECT TO THE
- HORIZONTAL 2. THE GROUND ANCHOR DESIGN LOAD IS 403.3 KIPS. THE SPACING OF THE GROUND ANCHOR IS 9.2 FEET +/- UNO.
- 3. GROUND ANCHORS AND THEIR COMPONENTS SHALL CONFORM TO THE REQUIREMENTS OF THE RECOMMENDATIONS FOR PRESTRESSED ROCK AND SOIL ANCHORS, LATEST EDITION, ADOPTED BY THE POST-TENSIONING INSTITUTE.
- 4. GROUND ANCHORS AND THEIR COMPONENTS SHALL BE PROTECTED FROM CORROSION. CORROSION PROTECTION SHALL INCLUDE DELIVERY AND STORAGE METHOD OF TENDONS OR BARS, ADEQUATE BOREHOLE DIAMETER, PVC SHEATHING IN FREE LENGTH, TEMPORARY AND PERMANENT LUBRICANTS, PERMANENT SHEATHING OF TENDON, COVER BOX FOR ANCHORAGE HEAD, CORRUGATED PVC PIPE FOR CASING, IF REQUIRED, AND CONSOLIDATION GROUT FOR ANCHOR ZONE.
- 5. GROUND ANCHOR DESIGN IS BY CONTRACTOR. GROUND ANCHOR ASSEMBLY INCLUDING GROUND ANCHOR, STAND-OFF PLATES, AND CAP PLATES SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS.

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## GUARDRAIL

- STANDARD GUARDRAIL AND POST SHALL BE SINGLE FACE, AS SPECIFIED IN MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES 1988 EDITION, AND ALL AMENDMENTS; - CONSTRUCTION STANDARDS; SUBSECTION 601 GUARDRAIL AND SECTION E.401.1 - AND E.401.11.0.
- POSTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36. GALVANIZING SHALL MEET THE REQUIREMENTS OF M7.10.0: GALVANIZED COATINGS.
- POSTS SHALL BE SET PLUMB, IN HAND OR MECHANICALLY DUG HOLES, OR DRIVEN, THEN
- BACKFILLED WITH ACCEPTABLE MATERIAL PLACED IN LAYERS AND THOROUGHLY COMPACTED. STEEL BEAM RAIL: THE RAIL SHALL BE ERECTED SO AS TO FORM A SMOOTH CONTINUOUS RAIL CONFORMING TO THE REQUIRED LINE AND GRADE. THE RAIL ELEMENTS AND SPLICES SHALL BE PER THE PLANS. ALL BOLTS, EXCEPT WHERE OTHERWISE REQUIRED AT EXPANSION JOINTS, SHALL BE DRAWN TIGHT.
- THE STEEL RAIL ELEMENT, TRANSITION PANELS, TERMINAL SECTIONS AND CONNECTING
- HARDWARE SHALL CONFORM TO AASHTO M 180, TYPE II, CLASS A. GUARDRAIL END TREATMENT: PROPRIETARY END TREATMENT SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS' SPECIFICATIONS AND RECOMMENDATIONS. EACH END OF THE STEEL RAIL FOR EVERY STRETCH OF GUARD SHALL BE FITTED WITH A
- TERMINAL SECTION AS SHOWN ON THE PLANS. 8. ALL STEEL COMPONENTS AND HARDWARE SHALL CONFORM TO M8.07.0: GUARDRAIL. ALL METAL
- WORK SHALL BE DONE IN THE SHOP. . THE APPROACH END SHALL HAVE TYPE 3 OBJECT MARKER SHEETING THAT CONFORMS TO THE REQUIREMENTS OF THE MUTCD. THE SHEETING MATERIAL SHALL MEET THE REQUIREMENTS OF M9.30.0: RETROREFLECTIVE SHEETING.

## JIB CRANE:

- LIFT CAPACITY: JIB CRANE SHALL HAVE A LIFT CAPACITY OF 1-TON.
- 2. MAST: MAST SHALL BE FREESTANDING WITH A CLEAR HEIGHT OF THE MAST SHALL BE 16'-0", MEASURED FROM THE BOTTOM OF THE BASE PLATE TO THE BOTTOM OF THE BOOM. BOOM: TOTAL BOOM LENGTH SHALL BE 12'-0", MEASURED FROM THE CENTERLINE OF THE MAST
- TO THE END OF THE BOOM. DISTANCE FROM THE FACE OF THE STOP TO THE END OF THE BOOM SHALL BE 11'-6". 4. ROTATION: JIB CRANE SHALL HAVE 180-DEGREE ROTATION; BOOM WILL NOT DRIFT WHEN AT
- REST. . ROTATION STOPS: SHALL BE FIELD MOUNTED WELDED OR BOLTED AS APPROVED BY THE
- ENGINEER. DEFLECTION: DEFLECTION WHEN LOADED TO THE MAXIMUM CAPACITY AT THE FURTHEST PICK POINT SHALL BE LIMITED TO A DEFLECTION OF APPROXIMATELY L/150.
- ANCHOR BOLTS: SHALL BE 1-INCH DIAMETER J-BOLTS TO THE LENGTH RECOMMENDED BY THE MANUFACTURER MATERIALS: JIB CRANE BOOM, MAST AND BASE SHALL BE FABRICATION FROM STEEL MEETING
- ASTM STANDARDS. 9. FINISH: JIB CRANE BOOM, MAST AND BASE SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE
- WITH ASTM STANDARDS. 10. PROVIDE ALL ENGINEERING DESIGN, LABOR, MATERIALS, EQUIPMENT AND SUPERVISION NECESSARY TO MANUFACTURE AND INSTALL A 1-TON JIB CRANE.

## NON-SHRINK GROUT:

NON-SHRINK GROUT SHALL BE FIVE STAR GROUT, HIGH PERFORMANCE PRECISION GROUT OR EQUIVALENT ACCEPTED BY ENGINEER, CONFORMING TO ASTM C827 AND SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 8000 PSI, AS MANUFACTURED BY FIVE STAR PRODUCTS, INC., FAIRFIELD, CT.

## REINFORCEMENT:

- REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60, OR 75 AS CALLED FOR.
- DETAILING, FABRICATION, AND ERECTION OF REINFORCING STEEL SHALL BE EPOXY COATED AND CONFORM TO THE REQUIREMENTS OF ACI-318 AND ACI-315 'DETAILS AND DETAILING OF CONCRETE REINFORCEMENT'.
- REINFORCEMENT SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318), ACI DETAILING MANUAL (SP-66), CRSI MANUAL OF STANDARD PRACTICE (MSP) AND THE STRUCTURAL WELDING CODE-REINFORCING STEEL (AWS D1.4), ELECTRODES TO BE E-80.
- PROVIDE SUPPLEMENTAL BARS AND ACCESSORIES AS REQUIRED TO HOLD REINFORCEMENT SECURELY IN POSITION. 5. ALL CONTINUOUS REINFORCEMENT SHALL BE EXTENDED AROUND CORNERS AND LAPPED AT
- NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS. USE STANDARD HOOKS UNLESS OTHERWISE INDICATED.
- LAPS SHALL BE CLASS B TENSION LAP SPLICES, UNLESS NOTED OTHERWISE. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS. PROVIDE MECHANICAL COUPLERS WHERE REQUIRED CONTINUOUS REINFORCEMENT EXCEEDS AVAILABLE LENGTHS.

## STEEL:

- 1. STRUCTURAL STEEL SHALL COMPLY WITH THE "STEEL CONSTRUCTION MANUAL" FIFTEENTH
- EDITION PUBLISHED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION. CONNECTIONS SHALL BE DESIGNED AND DETAILED BY THE STEEL FABRICATOR EXCEPT FOR
- THOSE SPECIFICALLY DETAILED IN THE CONTRACT DOCUMENTS.

## PILES - TIMBER:

- 1. TIMBER PILES SHALL BE DRIVEN TO A MINIMUM CAPACITY OR MINIMUM EMBEDMENT LENGTH AS INDICATED ON THE CONTRACT DRAWINGS.
- CUT AND DRILLED EXPOSED SURFACES SHALL BE LIBERALLY RECOATED BY BRUSH WITH A FIELD TREATMENT ACCEPTED BY THE ENGINEER OF RECORD.
- TIMBER PILES SHALL HAVE A MINIMUM BUTT DIAMETER OF 12 INCHES, MINIMUM TIP DIAMETER OF 8 INCHES (12-3-8), CLASS B PILE. MATERIAL, TAPER, STRAIGHTNESS, AND ALLOWABLE DEFECTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-25.
- TIMBER PILES SHALL BE FREE FROM DEFECTS THAT MAY IMPAIR STRENGTH, DURABILITY OR DRIVABILITY; CUT FROM SOLID, SOUND LINE, CLOSED GRAINED TREES, FREE FROM INJURIOUS RINGS AND LARGE UNSOUND KNOTS OR DECAY. USE TREES THAT HAVE A UNIFORM STRAIGHT TAPER FROM BUTT TO TIP.
- HANDLE TIMBER PILES CAREFULLY, WITHOUT SUDDEN DROPPING, BREAKING OF OUTER FIBERS, BRUISING OR PENETRATING THE SURFACE WITH TOOLS.

## PILE DRIVING:

- DRIVE PILES WITH AN AIR OR DIESEL OPERATED HAMMER WITH SUFFICIENT ENERGY AND ENERGY TRANSFER CHARACTERISTICS TO DRIVE THE PILES TO THE REQUIRED CAPACITY AND TOE ELEVATIONS WITHOUT DAMAGING THE PILE HEAD. USE CAUTION NOT TO DAMAGE THE PILES BY OVER DRIVING AS WOULD BE INDICATED BY REBOUND OF HAMMER OR STAGGERING OF PILE. CUT OFF HEADS OF PILES ACCURATELY IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AFTER COMPLETION OF DRIVING.
- DRIVE THE PILES STRAIGHT AND TRUE AT INDICATED LOCATIONS, WITH DEVIATION FROM THE LONGITUDINAL AXIS OF NOT MORE THAN 1/4 INCH PER FOOT. LOCATE THE PILES WITHIN 3 INCHES OF THE POSITIONS INDICATED ON THE DRAWINGS.
- CONTINUOUSLY DRIVE EACH PILE TO REACH THE CAPACITY AND/OR FULL EMBEDDED LENGTH CALLED FOR ON THE DRAWINGS.
- WITHDRAW PILES THAT ENCOUNTER UNDERGROUND OBSTRUCTIONS SUFFICIENT TO IMPEDE PILE DRIVING. REDRIVE AS CLOSE AS POSSIBLE TO ORIGINAL POSITION, SUBJECT TO REVIEW BY THE ENGINEER AND OWNER. REMOVE PILES WHICH SPLIT, BROOM, BREAK OR DRIVE OUT OF LINE. DRIVE ANOTHER PILE IN ITS PLACE. PROVIDE AND MAINTAIN NECESSARY LIGHTING AND BARRIERS TO ADEQUATELY ASSURE PUBLIC SAFETY. PROVIDE ADEQUATE SAFEGUARDS TO PROTECT FROM DAMAGE IMPROVEMENTS ON THE WORK SITE AND ON ADJACENT PROPERTIES.
- LENGTHS SHOWN ON THE DRAWINGS ARE CONSIDERED AVERAGE VALUES, AND THE ACTUAL LENGTHS MAY VARY WHEN SO ACCEPTED BY THE ENGINEER OF RECORD. PROVIDE DRIVING RESISTANCE PENETRATION AND REFUSAL VALUES AS ACCEPTED BY THE
- ENGINEER OF RECORD. ALL SHEET PILES AND PIPE PILES DRIVEN TO REFUSAL IN ROCK TO HAVE HARDENED CUTTING
- SHOES INSTALLED BEFORE DRIVING. USE SUITABLE CUSHIONS OR DRIVING HEADS TO AVOID DAMAGE TO THE PILES, DEVELOPING PROPER TOTAL DRIVING ENERGY, AND DIRECTING THE ENERGY ALONG THE LONGITUDINAL
- CENTER OF GRAVITY OF THE PILE. 10. DRIVE PILES TO THEIR FULL PENETRATION WITHOUT BENDING, RUPTURING, OR SEVERELY DAMAGING THE PILES. IF FAILURE IN THE ABOVE RESPECTS IS ENCOUNTERED, PULL THE PILE AND DRIVE A NEW PILE AT NO ADDITIONAL COST TO THE OWNER. IF A REPLACEMENT PILE FAILS TO DEVELOP FULL DRIVING RESISTANCE, PULL THE REPLACEMENT PILE AND DRIVE A NEW PILE WITH LARGER DIAMETER AT NO ADDITIONAL COST TO THE OWNER.

- 11. JETTING TO ASSIST PENETRATION WILL NOT BE ENGINEER OF RECORD. PRE-DRILLING WILL NO ENGINEER OF RECORD, WHEREBY ACCEPTED USED WHERE EXTREME DRIVING RESISTANCE DRIVING MAY BE DETRIMENTAL TO ADJACENT
- 12. WHERE PILES ARE PUSHED UP BY PRESSURE
- REQUIRED AND AT NO ADDITIONAL COST TO TH 13. THE CONTRACTOR SHALL PROVIDE THE OWNE DATE OF FINAL INSTALLATION AND TIP ELEVATI WEEKLY AND SIGNED BY A REPRESENTATIVE C KEEP AN ACCURATE SET OF PILE RECORDS IND INSTALLED LENGTH, TYPE OF HAMMER AND RA
- ELEVATION, AND CONTRACTOR'S REPRESENTA 14. STEEL PIPE PILES MUST BE DRIVEN TO AN ULTI PILES MUST BE TESTED WITH PILE DRIVING ANA REQUIREMENTS AND ULTIMATE CAPACITY. PRO AND ACCEPTANCE PRIOR TO CUTTING PILES TO SELECTED BY THE ENGINEER.

## PROTECTIVE COATING:

- ALL STEEL SHEET PILES EXPOSED TO SALT WA ACCORDANCE WITH SPECIFICATIONS AND TO 2 2. COATING SHALL BE APPLIED IN ACCORDANCE
- WITH SURFACE PREPARATION FOR IMMERSION WHITE FINISH (SSPC-SP10 OR NACE). 3. NO COATING SHALL BE APPLIED WITHIN THE LI
- REMAIN FREE SLIDING. 4. MATERIAL USED FOR FACTORY EPOXY COATIN
- EPOXY COATING AS MANUFACTURED BY DEVO PROJECT ENGINEER FOR STEEL SHEET PILES. 5. MATERIAL USED FOR FACTORY EPOXY COATIN
- COATING 6233 AS MANUFACTURED BY 3M OR E ENGINEER FOR STEEL PIPE PILES.
- 6. FIELD TOUCH\_UP COATING SHALL BE IDENTICA ACCORDANCE WITH THE MANUFACTURER'S RE
- PROTECTIVE COATING TOPCOAT SHALL BE BLA DRAWINGS OR BY THE OWNER.
- 8. SURFACES SHALL BE PREPARED IN STRICT AC SYSTEM MANUFACTURER'S WRITTEN INSTRUC ABRASION BLASTED TO A NEAR WHITE SURFA SSPC SP 10. BLAST PROFILE ON STEEL SHALL JAGGED NATURE AS OPPOSED TO A "PEEN" PA BE SOUND, DRY, CLEAN, FREE OF OIL, GREASE COMPOUNDS, LOOSE AND FLAKING PAINT, GRIT ROTO BLASTED SURFACES ARE NOT ACCEPTA
- 9. THE PROTECTIVE COATING SHALL BE INSTALLE MANUFACTURER'S WRITTEN INSTRUCTIONS. CO ACHIEVE A MINIMUM OVERALL DRY FILM THICK
- 10. ALL HOLIDAYS OR OTHER IMPERFECTIONS IN T AT THE CONTRACTORS EXPENSE PRIOR TO FIN

## TEMPORARY WORK:

- 1. LABOR, EQUIPMENT, AND MATERIALS REQUIRE COMPLETION, ARE NOT A PART OF THE WORK, SUBSEQUENTLY REMOVED FROM THE SITE BY
- 2. TEMPORARY WORK SHALL BE SUBJECT TO THE LOCAL BUILDING CODES.
- 3. THE CONTRACTOR SHALL SAFERGUARD AND P DURING EXECUTION OF THE WORK, THE CONTI REQUIRED SEDIMENTATION AND EROSION CON WATERWAYS, STREETS, AND PROPERTIES. MEA TEMPORARY BERMS, STRAW WATTLES, HAY BA TURBIDITY CURTAINS. IN ACCORDANCE WITH S CONTRACTOR SHALL FURNISH, INSTALL, MAINT CONSTRUCTION. TEMPORARY MATERIALS AND FOR TEMPORARY WORK.

## TIMBER:

- 1. VISUALLY GRADED STRUCTURAL LUMBER AND ASTM D245-06 STANDARD PRACTICE FOR ESTA
- ALLOWABLE PROPERTIES FOR VISUALLY GRAD 2. MECHANICAL STRENGTH OF TIMBER SHALL BE D4761-16.
- 3. HARDWARE USED TO CONNECT CCA TREATED ETC., SHALL BE HOT DIP GALVANIZED STEEL CO GALVANIZING SHALL CONFORM TO THE REQUIP
- 4. HARDWARE AND FASTENERS USED TO CONNEC NUTS AND WASHERS, ETC., SHALL BE GRADE 3 REQUIREMENTS OF THE RESPECTIVE ASTM ST FINISH WHERE APPLICABLE.

## TIMBER FLOATS:

- 1. WOOD FRAMING SHALL BE SOUTHERN YELLOW MINIMUM CCA CONTENT OF 2.5 PCF AND SHALL MOISTURE CONTENT SHALL NOT EXCEED 19% /
- 2. WOOD DECKING SHALL BE SOUTHERN YELLOW MINIMUM MCA CONTENT OF 0.23 PCF AND SHAL
- 3. CLEATS SHALL BE COMPOSED OF ALMAG 35 CA
- REQUIREMENTS OF THE FEDERAL SPECIFICATI 4. DECKING SHALL BE FASTENED TO THE FLOAT F
- GALVANIZED WOOD SCREWS. 5. FLOATATION MATERIAL SHALL BE CONTAINED I PROPERTIES TO SUPPORT THE DEAD LOAD OF
- LOAD OF 20 PSF WITHOUT LIST. 6. REFER TO THE CONTRACT SPECIFICATIONS SE
- SYSTEM FOR APPLICABLE DESIGN & LOAD CON
- 7. ALL STRUCTURAL STEEL CONNECTORS, BRACK
- TO BE FABRICATED FROM ASTM A 36 GRADE ST 8. PILE GUIDES SHALL BE REMOVABLE TO ALLOW

## UTILITY NOTES:

- 1. THE SUBSURFACE UTILITY INFORMATION SHOV SURVEY INFORMATION, RECORD INFORMATION COMPANIES, AND PLAN INFORMATION SUPPLIE GUARANTEE IS MADE AS TO THE ACCURACY OF ANY CERTAIN DEGREE OF STATED TOLERANCE UTILITY FEATURES FALL WITHIN NORMAL STAN
- 2. THE LOCATIONS OF UNDERGROUND PIPES, CO DETERMINED FROM SAID INFORMATION, AND A OF ANY UNDERGROUND STRUCTURES, NOT VIS THEIR ACTUAL LOCATIONS.
- 3. ADDITIONAL BURIED UTILITIES/STRUCTURES M THE STATUS OF UTILITIES, WHETHER ACTIVE, A
- CONDITION AS FAR AS OUR COMPILATION OF T 5. IT IS INCUMBENT UPON INDIVIDUALS USING THI
- COMPILING UTILITY INFORMATION IS NOT EXAC VARYING PLAN INFORMATION RECEIVED AND A THE ACCURACY OF MEASURED UTILITY INVERT
  - CONDITIONS, THE ABILITY TO MAKE VISUAL OB ELEMENTS AND OTHER MATTERS.
    - © COPYRIGHT 2024, FOTH INFRAS

JETTING TO ASSIST PENETRATION WILL NOT BE PERMITTED UNLESS ACCEPTED BY THE			1		
ENGINEER OF RECORD. PRE-DRILLING WILL NOT BE PERMITTED UNLESS ACCEPTED BY THE ENGINEER OF RECORD, WHEREBY ACCEPTED PRE_DRILLING TO ASSIST PENETRATION MAY BE	LEGEI	ND	LEGE		
USED WHERE EXTREME DRIVING RESISTANCE IS ENCOUNTERED, OR WHERE VIBRATIONS FROM DRIVING MAY BE DETRIMENTAL TO ADJACENT STRUCTURES. WHERE PILES ARE PUSHED UP BY PRESSURE FROM DRIVING OF ADJACENT PILES, RE-DRIVE AS					
REQUIRED AND AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A COMPLETE DRIVING RECORD WITH THE	DESCRIPTION	CALLOUT	DESCRIPTION	CALLOUT	
DATE OF FINAL INSTALLATION AND TIP ELEVATIONS. THIS RECORD SHALL BE SUBMITTED WEEKLY AND SIGNED BY A REPRESENTATIVE OF THE CONTRACTOR. THE CONTRACTOR SHALL KEED AN ACCURATE SET OF DUE RECORDS INDICATING DUE NUMBER, DUE TYPE AND	CATCH BASIN		RM ELEVATION EQUALS	R=	
INSTALLED LENGTH, TYPE OF HAMMER AND RATED ENERGY, DATE OF INSTALLATION, FINAL TIP ELEVATION, AND CONTRACTOR'S REPRESENTATIVE NAME AND SIGNATURE.	CABLE TELEVISION MANHOLE	©	INVERT ELEVATION EQUALS	l=	
STEEL PIPE PILES MUST BE DRIVEN TO AN ULTIMATE CAPACITY OF 275 TONS. AT LEAST TWO PILES MUST BE TESTED WITH PILE DRIVING ANALYZER (PDA) TO CONFIRM PILE DRIVING	DRAIN MANHOLE	D	TOP OF HOOD ELEVATION EQUALS	TH=	
REQUIREMENTS AND ULTIMATE CAPACITY. PROVIDE PDA REPORT TO ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO CUTTING PILES TO GRADE. THE PILES FOR TESTING WILL BE SELECTED BY THE ENGINEER	ELECTRIC MANHOLE	E	NO PIPES VISIBLE	NPV	
TECTIVE COATING:	MISCELLANEOUS MANHOLE	M	TOP OF WATER	TOW=	
ALL STEEL SHEET PILES EXPOSED TO SALT WATER TO BE EPOXY COATED (BOTH SIDES) IN	SEWER MANHOLE	<b>(S)</b>	TRAFFIC CONTROL BOX	тсв	
ACCORDANCE WITH SPECIFICATIONS AND TO 10 FEET BELOW DREDGED MUDLINE. COATING SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURES RECOMMENDATION WITH SURFACE PREPARATION FOR IMMERSION SERVICE WITH MINIMUM GRIT BLASTING TO NEAR	TELEPHONE MANHOLE		UNDERGROUND LOOP DETECTOR	ULD	
WHITE FINISH (SSPC-SP10 OR NACE). NO COATING SHALL BE APPLIED WITHIN THE LIMITS OF THE INTERLOCK. INTERLOCKS SHALL	WATER MANHOLE	$\bigotimes$	DETECTABLE WARNING PANEL	DWP	
REMAIN FREE SLIDING. MATERIAL USED FOR FACTORY EPOXY COATING SHALL BE BAR-RUST 235 MULTI-PURPOSE	GAS SHUT-OFF	O GG	TOP OF WALL ELEVATION	601×43TW	
PROJECT ENGINEER FOR STEEL SHEET PILES. MATERIAL USED FOR FACTORY EPOXY COATING SHALL BE SCOTCHKOTE FUSION BOND EPOXY	WATER SHUT-OFF	O WG	TOP OF WATER ELEVATION	601×43TOW	
COATING 6233 AS MANUFACTURED BY 3M OR EQUIVALENT ACCEPTED BY THE PROJECT ENGINEER FOR STEEL PIPE PILES.	WATER GATE	O WG	TOP OF PIPE ELEVATION	601×43TP	THE MITH SEMILAR
FIELD TOUCH_UP COATING SHALL BE IDENTICAL TO FACTORY COATING AND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. PROTECTIVE COATING TOPCOAT SHALL BE BLACK UNLESS OTHERWISE INDICATED ON THE	CLEANOUT	O CLEANOUT	TOP OF RAILROAD TRACK ELEVATION	60 1×43 TR	ALEX I. MORA
DRAWINGS OR BY THE OWNER. SURFACES SHALL BE PREPARED IN STRICT ACCORDANCE WITH THE PROTECTIVE COATING	FIRE HYDRANT	\$P	CHAIN LINK FENCE	X	NO. 55309
SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS. SURFACES ARE TO BE ABRASION_BLASTED TO A NEAR_WHITE SURFACE CLEANLINESS IN ACCORDANCE WITH	GATE VALVE	$\bowtie$	STRAW WATTLE		ORESSIONAL ENGINE
JAGGED NATURE AS OPPOSED TO A "PEEN" PATTERN (FROM SHOT BLASTING). SURFACES MUST BE SOUND, DRY, CLEAN, FREE OF OIL, GREASE, DIRT, MILDEW, FORM RELEASE AGENTS, CURING	UTILITY POLE	۵۳ UP	EXISTING UNDERGROUND CABLE TV LINE	CATV	7 March 2024
COMPOUNDS, LOOSE AND FLAKING PAINT, GRIT DUST, AND OTHER FOREIGN SUBSTANCES. ROTO BLASTED SURFACES ARE NOT ACCEPTABLE.	UTILITY POLE WITH CONDUIT LINE TO GRADE	UP W/ UE ு	EXISTING UNDERGROUND DRAIN LINE	D	
THE PROTECTIVE COATING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. COATING IS TO BE APPLIED IN TWO COATS TO	LIGHT POLE	*	EXISTING UNDERGROUND ELECTRIC LINE	E	RF   13
ACHIEVE A MINIMUM OVERALL DRY FILM THICKNESS OF 15 MILS. ALL HOLIDAYS OR OTHER IMPERFECTIONS IN THE COATING SHALL BE REMOVED OR REPAIRED AT THE CONTRACTORS EXPENSE PRIOR TO FINAL ACCEPTANCE OF THE WORK	LIGHT BOLLARD	-수 LB	EXISTING UNDERGROUND GAS LINE	G	HA SEI
PORARY WORK:	LANDSCAPE LIGHT	-& LL	EXISTING UNDERGROUND SEWER LINE	S	
LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO PERFORM THE WORK THAT, UPON	HAND HOLE	□ HH	EXISTING UNDERGROUND TELEPHONE LINE	T	
SUBSEQUENTLY REMOVED FROM THE SITE BY THE CONTRACTOR. TEMPORARY WORK SHALL BE SUBJECT TO THE REQUIREMENTS OF THE STATE AND APPLICABLE	TRASH CAN	тс О	UNDERGROUND WATER LINE	w	ATS SS
LOCAL BUILDING CODES. THE CONTRACTOR SHALL SAFERGUARD AND PROTECT EXCAVATIONS.	FIRE ALARM CALL BOX	FACB	PROPOSED STRAW WATTLE LINE	sw	
REQUIRED SEDIMENTATION AND EROSION CONTROL MEASURES TO PROTECT ADJACENT WATERWAYS, STREETS, AND PROPERTIES, MEASURES INCLUDE BUT ARE NOT LIMITED TO	METAL POST	• MP	OVERHEAD WIRES	ОНЖ	NEN S, L
TEMPORARY BERMS, STRAW WATTLES, HAY BALES, SILT FENCES, CONTAINMENT BOOMS, AND TURBIDITY CURTAINS. IN ACCORDANCE WITH STATE REGULATORY AUTHORIZATIONS, THE	CONCRETE POST	• CP	UNDERGROUND LIGHTING CIRCUIT	UGE	AN AN AN
CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN TEMPORARY TURBIDITY CURTAINS DURING CONSTRUCTION. TEMPORARY MATERIALS AND EQUIPMENT SHALL CONFORM TO REQUIREMENTS	SIGN POST	• SP	MONITORING WELL	\$	U U U U U U U U U U U U U U U U U U U
VER:	DECIDUOUS TREE WITH TRUNK DIAMETER	12" දී. 12" දී.	BENCHMARK		M R B R
VISUALLY GRADED STRUCTURAL LUMBER AND WOOD CONSTRUCTION SHALL CONFORM TO	CONIFEROUS TREE WITH DIAMETER	12"	SILT CURTAIN		AR OF H
ASTM D245-06 STANDARD PRACTICE FOR ESTABLISHING STRUCTURAL GRADES AND RELATED ALLOWABLE PROPERTIES FOR VISUALLY GRADED LUMBER. MECHANICAL STRENGTH OF TIMBER SHALL BE DETERMINED IN ACCORDANCE WITH ASTM	HANDICAP PARKING	Ę,	NAVIGATIONAL CHANNEL LIMIT		E Z Z
D4761-16. HARDWARE USED TO CONNECT CCA TREATED TIMBER, INCLUDING BOLTS, NUTS AND WASHERS,	SPOT ELEVATION	601×43	APPROXIMATE PROPERTY LINE		
ETC., SHALL BE HOT DIP GALVANIZED STEEL CONFORMING TO ASTM A307 GRADE A. GALVANIZING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A153. HARDWARE AND EASTENERS USED TO CONNECT MCA TREATED TIMBER INCLUDING BOLTS.	BITUMINOUS CONCRETE BERM	BB	MEAN HIGH WATER		
NUTS AND WASHERS, ETC., SHALL BE GRADE 316 STAINLESS STEEL AND CONFORM TO THE REQUIREMENTS OF THE RESPECTIVE ASTM STANDARD. HARDWARE SHALL PROVIDE A FLUSH	SLOPED GRANITE CURB	SGC	MEAN LOW WATER		
FINISH WHERE APPLICABLE.	VERTICAL GRANITE CURB	VGC	ANNUAL HIGH TIDE LINE	·	
WOOD FRAMING SHALL BE SOUTHERN YELLOW PINE NO. 1 STRUCTURAL STRESS GRADE WITH A	VERTICAL CONCRETE CURB	VCC	PROPOSED FUEL LINE		
MINIMUM CCA CONTENT OF 2.5 PCF AND SHALL BE KILN DRIED AFTER TREATMENT (KDAT). MOISTURE CONTENT SHALL NOT EXCEED 19% AFTER TREATMENT.	WHEELCHAIR RAMP	WCR	PROPOSED WATER LINE	W	z
WOOD DECKING SHALL BE SOUTHERN YELLOW PINE NO. 1 STRUCTURAL STRESS GRADE WITH A MINIMUM MCA CONTENT OF 0.23 PCF AND SHALL BE KILN DRIED AFTER TREATMENT (KDAT).	LANDSCAPE TIMBER	LST	PROPOSED STORM DRAIN LINE	SD	ONS
CLEATS SHALL BE COMPOSED OF ALMAG 35 CAST ALUMINUM ALLOY CONFORMING TO THE REQUIREMENTS OF THE FEDERAL SPECIFICATION QQ-A-571F AND QQ-A-601E. DECKING SHALL BE FASTENED TO THE FLOAT FRAMEWORK WITH 2-INCH LONG HOT DIPPED	SALT MARSH	* * * * * * *	HISTORICAL BORING	<u> </u>	DESC
GALVANIZED WOOD SCREWS. FLOATATION MATERIAL SHALL BE CONTAINED IN A CLOSED CELL WITH SUFFICIENT MATERIAL	PHRAGMITES	┍╤━╤╼╤╾╤╶╤┓ ╚╼╧╺╧╸╧╺╧╸╝	BORING	$\bullet$	
PROPERTIES TO SUPPORT THE DEAD LOAD OF THE FLOAT AND RAMP PLUS A UNIFORM LIVE LOAD OF 20 PSF WITHOUT LIST. DEFENTION THE CONTRACT SPECIFICATIONS SECTION 25 51 13 23 TIMPED FLOATING DOCK					ATE
SYSTEM FOR APPLICABLE DESIGN & LOAD CONDITIONS. ALL STRUCTURAL STEEL CONNECTORS, BRACKETS, PILE GUIDES AND MISCELLANEOUS PARTS					
TO BE FABRICATED FROM ASTM A 36 GRADE STEEL. PILE GUIDES SHALL BE REMOVABLE TO ALLOW THE FLOATING DOCKS TO BE DISCONNECTED					<u> </u>
FROM THE ANCHOR PILES FOR SEASONAL AND MAINTENANCE PURPOSES.					DATE OF PREPARATION
THE SUBSURFACE UTILITY INFORMATION SHOWN HEREON IS COMPILED BASED ON FIELD	ALTERNATE - AL	KIPS PER SQUAF	REINCH - KSI		BY         DATE           SURVEYED         MEC/JAH         10/24/19 & 3/2/21
SURVEY INFORMATION, RECORD INFORMATION AS SUPPLIED BY THE APPROPRIATE UTILITY COMPANIES, AND PLAN INFORMATION SUPPLIED BY THE OWNER, IF ANY; THEREFORE NO	AMERICAN ASSOCIATION OF STATE - AA & HIGHWAY TRANSPORTATION OFFICIALS	LENGTH	- L		DRAWN BAM 12/05/2023
ANY CERTAIN DEGREE OF STATED TOLERANCE. ONLY PHYSICALLY LOCATED SUB-SURFACE UTILITY FEATURES FALL WITHIN NORMAL STANDARD OF CARE ACCURACIES.	BENCHMARK - BN BOTTOM OF SLOPF - BC	APROX LINEAR FOOT MANHOLE DS MASS HIGHWAY	- LF - MH DEPARTMENT - MHD	OFFSETS	CHECKED         PSR         12/24/2023
THE LOCATIONS OF UNDERGROUND PIPES, CONDUITS, AND STRUCTURES HAVE BEEN DETERMINED FROM SAID INFORMATION, AND ARE APPROXIMATE ONLY. COMPILED LOCATIONS	BOTTOM OF CURB - BC BUILDING - BL	DC MAXIMUM DG MEAN HIGH WAT	- MAX FER - MHW	MLW <u>NAVD88</u>	SHEET TITLE:
OF ANY UNDERGROUND STRUCTURES, NOT VISIBLY OBSERVED AND LOCATED, CAN VARY FROM THEIR ACTUAL LOCATIONS. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED.	CATCH BASIN - CE CAST IN PLACE - C.I.	B MEAN LOWER LO I.P. MINIMUM	OW WATER - MLLW - MIN	12.11 — 6.40 AHTL 10.48 — 4.77 MHHW	NOTES LEGEND
THE STATUS OF UTILITIES, WHETHER ACTIVE, ABANDONED, OR REMOVED, IS AN UNKNOWN CONDITION AS FAR AS OUR COMPILATION OF THIS INFORMATION.	CENTERLINE - CL CENTER TO CENTER - C- CHAIN LINK FENCE - CL	C MISCELLANEOUS C NOT TO SCALE F ORGANIC MATER	S - MISC. - NTS RIAI - OI	10.03 - 4.32 MHW	AND
IT IS INCUMBENT UPON INDIVIDUALS USING THIS INFORMATION TO UNDERSTAND THAT COMPILING UTILITY INFORMATION IS NOT EXACT, AND IS SUBJECT TO CHANGE BASED UPON	CONTROLLED LOW-STRENGTH MATERIAL - CL CONTROL POINT - CF	SM OUTSIDE DIAME OVERDREDGE	TER - OD - OD		ABBREVIATIONS
VARYING PLAN INFORMATION RECEIVED AND ACTUAL LOCATIONS. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES IS SUBJECT TO FIELD CONDITIONS. THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS	CUBIC FEET PER SECOND - CF CUBIC YARDS - CY	S POUNDS PER SG PROPOSED	QUARE INCH - PSI - PROP.	5.71 ┿ 0 NA∨D88	
ELEMENTS AND OTHER MATTERS.	EDGE OF PAVEMENT - EC ENVIRONMENTAL PROTECTION AGENCY - FP	NP     REMOVE & DISPO       PA     SPECIFICATION	ET - R&R - SPEC		
© COPYRIGHT 2024, FOTH INFRASTRUCTURE & ENVIRONMENT, LLC.	EXISTING - EX FEET - FT	EXIST STATION SQUARE FOOT	- STA - SF	0 + -5.71 MLW	
	GALVANIZED - GA HIGH DENSITY POLYETHYLENE - HE HOT DIPPED GAI VANIZED -	ALVTOP OF CURBDPETOP OF SLOPEDGTRENCH DRAWN	- TOC - TOS	$-0.31 \perp -6.02$ MLLW OFFSETS TAKEN FROM	PROJECT NO: 00190004.10
	INCHES - IN	TYPICAL UNDERGROUND	ELECTRICAL - UGE	NOAA TIDAL STATION BOSTON #8443970	SHEET NUMBER
		WALL THICKNES	SS - WT	AND VDATUM V4.1.2	G-003



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N N						CHECI SHEET	KED F TITL	PSR E:	1	2/24/202	23
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					<ol> <li><u>NOTE:</u></li> <li>ALL EXISTING PAVEMENT AND GRAVEL WITHIN LIMITS OF NEW FULL DEPTH PAVEMENT TO BE REMOVED.</li> <li>R &amp; D - REMOVE AND DISPOSAL .</li> <li>R &amp; R - REMOVE AND RESET.</li> <li>EXISTING BACKFILL TO BE REMOVED/DREDGED TO ELEVATION -3.0 MLW WITH 1' OF ALLOWABLE OVERDIG/OV/ERDREDGE TO -4 MI W (+ 2 300 CY) SEE MADEP</li> </ol>	issua <b>IS</b> PRC	NCE: SL	JED	<b>FOI</b>	<b>R BI</b>	D
					401WQC 22-WW08-0018-AAP FOR REUSE/DISPOSAL REQUIREMENTS.	SHE	ET N	UMBER			
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			DEPARTMENT OF PUBLIC WORKS		TOWN OF ORLEANS, MASSACHUSETTS		ROCK HARBOR COMMERCIAL WHARF	
K HARBOR RD.			SURVI DRAW DESIG SHEET	Date Description	E OF F MEC/J BAM SRS PSF	A PREPA	ARATION     DAT     10/24/19     8     12/05/2     06/28/2     12/24/2	E 3/2/21 2023 2021 2023
	<u>N</u> 1 2 3 4	OTE: ALL EXISTING PAVEMENT AND GRAVEL WITHIN LIMITS OF NEW FULL DEPTH PAVEMENT TO BE REMOVED. R & D - REMOVE AND DISPOSAL R & R - REMOVE AND RESET CONTRACTOR TO REMOVE EXISTING REVETMENT STONE & REUSE TO FILL IN THE EXISTING NORTH REVETMENT LOCATION AS REQUIRE. UNUSED STONE TO BE HAULED TO TOWN DPW YARD. TOWN TO COORDINATE DISPOSAL LOCATION & HAUL ROUTE WITH CONTRACTOR POST AWARD. APPROXIMATE HAUL 5 MILE ROUND TRIP.	DE ISSUA IS PRC SHE		DLIT 2 C JED T NO: UMBER C-	-10 DF FC	N PL 2 <b>DR B</b> 00004.10	.AN .ID

![](_page_9_Figure_0.jpeg)

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![](_page_10_Figure_0.jpeg)

![](_page_10_Figure_2.jpeg)

![](_page_10_Figure_3.jpeg)

CONTRACTOR TO DESIGN GROUND ANCHOR ASSEMBLY INCLUDING GROUND ANCHOR, STAND-OFF PLATES AND CAP PLATES. CONTRACTOR SHALL SUBMIT CALCULATIONS AND DRAWINGS FOR GROUND ANCHOR DESIGN, STAMPED BY AN ENGINEER REGISTERED IN THE STATE OF MA. FOR SOILS INFORMATION SEE ATTACHMENT "A" OF THE CONTRACT DOCUMENTS.

![](_page_11_Figure_0.jpeg)

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![](_page_12_Figure_0.jpeg)

![](_page_12_Figure_1.jpeg)

![](_page_12_Figure_2.jpeg)

![](_page_12_Figure_3.jpeg)

2. LINES SHALL BE A MINIMUM OF 4" WIDE AND SHALL BE ONE CONSISTENT COLOR, REFLECTIVE WHITE PAINT.

![](_page_13_Figure_0.jpeg)

![](_page_14_Figure_0.jpeg)

	GRAPHIC SCALE GRAPHIC SCALE (IN FEET) I INCH = 10 FEET			
×       ×		DEPARTMENT OF PUBLIC WORKS	TOWN OF ORLEANS, MASSACHUSETTS	ROCK HARBOR COMMERCIAL WHARF IMPROVEMENTS
		SURVEY DRAWN DESIGNI CHECKE SHEET T		OU190004.10

![](_page_15_Figure_0.jpeg)

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GROUND AREA (BY OTHERS) NGS FOR CONNECTION TO LOCATION	Image: constraint of the constra			
		DEPARTMENT OF PUBLIC WORKS	TOWN OF ORLEANS, MASSACHUSETTS	ROCK HARBOR COMMERCIAL WHARF IMPROVEMENTS
		SURVE DRAWN DESIGN CHECK	DESCRIPTION DESCRIPTION DATE OF L DED MEC/V DED SES DED SES DED SES DED SES	Image: Second system       Image: Second system         Image: Secon
		ISSUAN ISSUAN ISSUAN SHEE	TITLE: JTILIT 2 C ICE: SUED IECT NO: T NUMBER	Y PLAN DF 2 <b>FOR BID</b>
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![](_page_16_Figure_0.jpeg)

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DEPARTMENT OF PUBLIC WORKS		TOWN OF ORLEANS, MASSACHUSETTS		ROCK HARBOR COMMERCIAL WHARF IMPROVEMENTS					
REVISIONS	VO. BY DATE DESCRIPTION			<b>3</b>					
SURVE DRAWI DESIGI CHECK SHEET	Image: Image								
GRADING AND DRAINAGE PLAN 1 OF 2 ISSUANCE: <b>ISSUED FOR BID</b> PROJECT NO: 00190004.10 SHEET NUMBER									

	GRA	APHIC SCALE						
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(IN FEET) 1 INCH = 10 FEET								

ROCK HARBOR DRAINAGE INVERT TABLE									
RE ID	DESCRIPTION	RIM	INV. IN	INV. OUT	SUMP				
	48" I.D. CATCH BASIN W/ SUMP & HOOD	14.40	-	11.20	3'-0"				
A	48" I.D. OIL / WATER SEPARATOR	14.40	11.04	5.98	-				
В	48" I.D. OIL / WATER SEPARATOR	14.40	5.98	11.00	-				
	12-UNIT INFILTRATION SYSTEM	-	10.96	-	-				
	INFILTRATION SYSTEM STONE	-	10.46	-	-				

![](_page_17_Figure_0.jpeg)

ursday, March 7, 2024 11:36:36 AM NG Filename: c-207 grading and drainage plan.dwg Layout: c-208 grading and drair

DEPARTMENT OF PUBLIC WORKS TOWN OF ORLEANS, MASSACHUSETTS ROCK HARBOR COMMERCIAL WHARF			IMPROVEMENTS			
REVISIONS	NO. BY DATE DESCRIPTION	$\overline{\nabla}$		8		
[ SURVE	DATE YED	E OF E MEC	PREI 3Y 2/JAH	PARA 10/2	TION DATE 4/19 & 3	3/2/21
DRAWN DESIGNED		B/ SI PS	AM RS SR	12 06 12	/05/20 6/28/20 2/24/20	)23 )21 )23
SHEET TITLE: GRADING AND DRAINAGE PLAN 2 OF 2 ISSUANCE: ISSUED FOR BID						
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C-208						

![](_page_17_Figure_3.jpeg)

	ROCK HARBOR	DRAINAGE IN	VERT TABLE		
RE ID	DESCRIPTION	RIM	INV. IN	INV. OUT	SUMP
2	48" I.D. CATCH BASIN W/ SUMP & HOOD	14.40	-	11.58	3'-0"
2A	48" I.D. OIL / WATER SEPARATOR	14.40	11.51	6.48	-
2B	48" I.D. OIL / WATER SEPARATOR	14.40	6.48	11.47	-
2	10-UNIT INFILTRATION SYSTEM	-	11.40	-	-
2	INFILTRATION SYSTEM STONE	-	10.90	-	-
	12-INCH WIDE TRENCH DRAIN	14.25	-	10.70	-
	48" I.D. CATCH BASIN W/ SUMP & HOOD	14.30	10.70	10.60	3'-0"
	48" I.D. CATCH BASIN W/ SUMP & HOOD	14.66	10.25	10.18	3'-0"
BA	48" I.D. OIL / WATER SEPARATOR	14.66	10.08 (CB-4) 10.11 (DMH-1)	5.04	-
BB	48" I.D. OIL / WATER SEPARATOR	14.66	5.04	10.04	-
}	28-UNIT INFILTRATION SYSTEM	-	10.00	-	-
5	INFILTRATION SYSTEM STONE	-	9.50	-	-
1	60" I.D. DRAIN MANHOLE	14.66	11.40	10.25	-
В	EXISTING CATCH BASIN	14.80	-	11.67	-

![](_page_18_Figure_0.jpeg)

. AM dwg ch 7, 2024 11:36:47 / e: c-701 civil details.d С И С И С И С

![](_page_18_Figure_3.jpeg)

![](_page_19_Figure_0.jpeg)

Thursday, March 7, 2024 11:36:51 AM DWG Filename: c-701 civil details.dwg Layout: drainage and water service details 1 of 2 DWG Folder Location

![](_page_20_Figure_0.jpeg)

AM 55 Is.( 7, 2024 11:36: 701 civil detail ion: Ч,  $\tilde{Q}$ 

DEPARTMENT OF PUBLIC WORKS	DEPARTMENT OF PUBLIC WORKS			ROCK HARBOR COMMERCIAL WHARF IMPROVEMENTS		
SURVE DRAWN	DESCRIPTION	✓ OF BA	PREF Y JAH M	PARA	TION DATE 4/19 & 3 /05/20	S/2/21 023
	DESIGNED SRS 06/28/2021 CHECKED PSR 12/24/2023 SHEET TITLE: DRAINAGE AND WATER SERVICE DETAILS 2 OF 2 ISSUANCE: ISSUED FOR BID PROJECT NO: 00190004.10 SHEET NUMBER C_703					

![](_page_21_Figure_0.jpeg)

PRECAST CONCRETE OIL / WATER SEPARATOR SCALE: N.T.S.

![](_page_21_Picture_3.jpeg)

## INFILTRATION CHAMBER SPECIFICATIONS

## GENERAL

- 1. THE CHAMBER WILL HAVE 16 CORRUGATIONS. 2. THE NOMINAL STORAGE VOLUME OF A JOINED CHAMBER SHALL BE 27.16 FT3 / UNIT - WITHOUT STONE FOR CHAMBERS #1 & #2 AND 42.5 FT3 / UNIT - WITHOUT STONE FOR CHAMBER #3.
- 3. THE CHAMBERS SHALL BE VACUUM THERMOFORMED OF BLACK HIGH MOLECULAR WEIGHT HIGH DENSITY POLYETHYLENE (HMWHDPE) IN AN ISO-9001:2000 CERTIFIED FACILITY.
- 4. CHAMBERS ARE TO BE MANUFACTURED WITH AN OPEN BOTTOM, INTEGRALLY FORMED END WALLS AND PERFORATED SIDEWALLS.
- 5. ALL CHAMBERS SHALL BE ARCHED IN SHAPE AND HAVE SIXTY ¾ INCH ROUND DISCHARGE HOLES BORED INTO THE SIDEWALLS OF THE UNIT'S CORE TO PROMOTE INFILTRATION/EXFILTRATION.
- 6. CHAMBERS SHALL BE DESIGNED TO WITHSTAND AASHTO H-20 LOAD RATING (32,000 LBS. /AXLE) WHEN INSTALLED ACCORDING TO THE MANUFACTURER INSTALLATION INSTRUCTIONS.
- 7. THE UNITS MAY BE TRIMMED TO CUSTOM LENGTHS BY CUTTING BACK TO ANY CORRUGATION.
- 8. REPEATING SUPPORT PANELS AND END WALLS OF THE ELONGATED CHAMBER SHALL BE SPACED EVERY 7.5 FEET.

![](_page_22_Figure_9.jpeg)

![](_page_22_Figure_10.jpeg)

![](_page_22_Figure_11.jpeg)

## SCALE: N.T.S.

![](_page_22_Figure_14.jpeg)

![](_page_22_Figure_15.jpeg)

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SCALE: N.T.S.

![](_page_22_Figure_19.jpeg)

![](_page_22_Figure_20.jpeg)

![](_page_23_Figure_0.jpeg)

Thursday, March 7, 2024 11:37:23 AM DWG Filename: c-701 civil details.dwg Layout: c-706 waterline vault unit DWG Folder Location:

DEPARTMENT OF PUBLIC WORKS		TOWN OF ORLEANS, MASSACHUSETTS		ROCK HARROR COMMERCIAL WHARF	IMPROVEMENTS	
SURVE	DATE DESCRIPTION		PREF 37	2ARA 10/2	▼ TION DATE 4/19 & 3	S/2/21
DRAWN DESIGN CHECK SHEET	DRAWN BAM 12/05/2023 DESIGNED SRS 06/28/2021 CHECKED PSR 12/24/2023 SHEET TITLE: WATERLINE VAULT UNIT					
ISSUAN ISS PRO SHEE	ISSUANCE: ISSUED FOR BID PROJECT NO: 00190004.10 SHEET NUMBER					

![](_page_24_Figure_0.jpeg)

![](_page_24_Figure_1.jpeg)

![](_page_24_Picture_2.jpeg)

![](_page_25_Figure_0.jpeg)

Thursday, March 7, 2024 11:37:43 AM DWG Filename: s-101 commercial wharf structural site plan.dwg Layout: s-101 commercial wharf structural site pl DWG Folder I ocation

![](_page_26_Figure_0.jpeg)

Thursday, March 7, 2024 11:37:53 AM DWG Filename: s-201 precast pile cap plan.dwg Layout: s-201 commercial wharf pile layout DWG Folder Location:

![](_page_27_Figure_0.jpeg)

![](_page_28_Figure_0.jpeg)

=

![](_page_29_Figure_0.jpeg)

![](_page_30_Figure_1.jpeg)

1. CROSS BRACING NOT SHOWN FOR CLARITY. 2. TIMBER RIM JOIST & CONNECTION NOT SHOWN FOR CLARITY.

MLW=0.00'.

PILE (TYP)

12" Ø -TIMBER

EMERGENCY LADDER

4x10 TIMBER STRINGER (TYP)

SEE S-207

MHW=10.03' 💙

(A) (B)

0.71' 🗕 🖛

11.00'

╶┱╢╌┓

BATTER PILE (TYP)

- 12" Ø TIMBER

20 -15

-30

25

-10

TIMBER RAILING

– 4x12 TIMBER SPLIT CAP (TYP)

SEE S-704

![](_page_30_Figure_12.jpeg)

![](_page_30_Figure_14.jpeg)

![](_page_30_Picture_15.jpeg)

![](_page_31_Figure_1.jpeg)

![](_page_31_Figure_4.jpeg)

:47 AM p&p&s , 2024 11:38:4 205 town pier J ~ С С

N       N         3-3-3-3       N         T POLE BASE CONNECTION       N         S-710       N         S.E. CONDUIT       N         E. CONDUIT       N         E. CONDUIT       N         E. CONDUIT       N         M       N						
ET PILE CONC. CAP C-201 (TIMBER ING, STEEL SHEETING, CLOSURE WALL NOT WN FOR CLARITY)	U THE	COMMONT COMMON	NO RESIDENT	JEAN MORA CIVIL 55309 STERE STERE NAL EN Aarch 20	Det userts of the second	
30 DWARD RETREAT OF EX. BULKHEAD WITH REMOVAL OF EX. BACKFILL E-USED ONSITE AND/OR DISPOSED AT A SUITABLE UPLAND FACILITY; BOTTOM DEPTH EL. OF EX./ AUTHORIZED NAVIGATIONAL CHANNEL 3 FT MLW +1' O.D. ALONG FACE OF NEW BULKHEAD FENDER LINE FACE OF NEW STEEL BULKHEAD FACE OF NEW STEEL BULKHEAD 20	PARTMENT OF PUBLIC WORKS		<b>OF ORLEANS, MASSACHUSETTS</b>		(HARBOR COMMERCIAL WHARF	<b>IMPROVEMENIO</b>
CAP EL. ±15.00' FINISH GRADE FLUSH WITH TOP OF CONC. CAP 15	DEI		TOWN		ROCK	
10	REVISIONS	ATE DESCRIPTION				
5 	[ SURVE DRAWN DESIGN		OF B <sup>T</sup> MEC BA	PREF Y JAH M RS	✓ ✓ ✓ ARATIOI ✓ 10/24/19 12/05/ 06/28/	N TE & 3/2 /202
	CHECK SHEET C L		MN IDI , P SE(	<sup>R</sup> NG RC CTI	RCIA FIE FILE ON	L R =,
GRAPHIC SCALE 0 2 4 8 (IN FEET) 1 INCH = 4 FEET	ISSUAN IS PRO SHEE	ICE: SU JECT	NO: JMBE	) F( 	OR E	<b>3</b>

![](_page_32_Figure_0.jpeg)

7, 2024 11:39:11 AM -205 town pier p&p&se tion . h 7,  $\mathcal{O}$ 

![](_page_33_Figure_0.jpeg)

AM

h 7,

![](_page_34_Figure_0.jpeg)

![](_page_35_Figure_0.jpeg)

<u>NOTE:</u>
 NOT ALL OF THE PILE PLUG REINFORCEMENT IS SHOWN FOR CLARITY. SEE S-504 FOR PILE PLUG DETAIL.
 PRECAST PILE CAP BEAM SUPPORT NOT SHOWN FOR CLARITY.

![](_page_35_Picture_5.jpeg)

GRAPHIC SCALE

(IN FEET)

1 INCH = 4 FEET

![](_page_36_Figure_0.jpeg)

hursday, March 7, 2024 11:40:31 AM WG Filename: s-501 structural sections.dwg Layout: s-504 section views WG Folder Location:

![](_page_37_Figure_0.jpeg)

Thursday, March 7, 2024 11:40:57 AM )WG Filename: s-701 structural details.dwg Layout: s-701 structural detail )WG Folder Location:

Ω

![](_page_38_Figure_0.jpeg)

ursday, March 7, 2024 11:41:23 AM /G Filename: s-701 structural details.dwg Layout: s-702 structural det /G Folder Location:

![](_page_39_Figure_0.jpeg)

day, March 7, 2024 11:42:14 AM Filename: s-701 structural details.dwg Layout: s-703 str

![](_page_40_Figure_0.jpeg)

38 42 7 , 2024 <sup>-</sup> 701 stru Q Q

(IN FEET)

1 INCH = 2 FEET

S-704

(IN FEET)

1 INCH = 1 FEET

![](_page_41_Figure_0.jpeg)

![](_page_42_Figure_0.jpeg)

ursday, March 7, 2024 11:43:15 AM /G Filename: s-701 structural details.dwg Layout: s-706 structural de

![](_page_43_Figure_0.jpeg)

rch 7, 2024 11:43:32 AM e: s-701 structural details.c ame: er Loc Ŝ ШĽ 5 0 0 0 0 0 0 0

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	DEPARTMENT OF PUBLIC WORKS		TOWN OF ORLEANS. MASSACHUSETTS		ROCK HARROR COMMERCIAL WHARE	IMPROVEMENTS		
	REVISIONS	INO. BY DATE DESCRIPTION		PRE	■ PARA		<b>⑤</b>	
	SURVE DRAWN DESIGN CHECK SHEET	YED NED ŒD TITL	E MEC B/ SI P(	3Y C/JAH AM RS SR	10/24 12 06 12	DATE 4/19 & 3 /05/20 5/28/20 /24/20	3/2/21 023 021 023	
	D		RU <sup>-</sup> All	CT LS	UR 7 C	RAL DF	8	
4	PRO			<b>D F</b>	<b>OR</b> 19000	<b>8 B</b>	D	
				•				

S-707

![](_page_44_Figure_0.jpeg)

Thursday, March 7, 2024 11:43:58 AM DWG Filename: s-701 structural details.dwg Layout: s-708 structural de DWG Folder Location:

![](_page_44_Figure_2.jpeg)

![](_page_45_Figure_0.jpeg)

![](_page_45_Figure_2.jpeg)

![](_page_45_Figure_3.jpeg)

JIB CRANE NOTES:

- 1. JIB CRANE MANUFACTURER NOT RESPONSIBLE FOR ANCHORAGE TO CONCRETE CAP. ALL OTHER COMPONENTS INCLUDING BASE PLATE SHALL BE DESIGNED BY JIB CRANE MANUFACTURER.
- JIB CRANE MANUFACTURE TO PROVIDE DESIGN FORCES FOR FOUNDATION ANALYSIS BY OTHERS.
- CONTRACTOR SHALL UTILIZE JIB CRANE BASE PLATE AND ANCHORAGE TEMPLATE TO LAYOUT ANCHOR BOLTS IN THE FIELD.
- 4. JIB CRANE WARRANTY SHALL COVER ALL JIB CRANE COMPONENTS EXCEPT CONCRETE FOUNDATION.
- JIB CRANE TO BE HOT DIPPED GALVANIZED OR APPROVED EQUAL COATING.
   JIB CRANE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
- 7. CONTRACTOR TO INSTALL CONDUIT FOR ELECTRICAL SERVICE CONNECTION TO ELECTRIC WINCH AT MANUFACTURERS RECOMMENDED LOCATION.
- 8. CONTRACTOR SHALL INSTALL ROTATION STOPS AND CHAIN HOIST IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

![](_page_45_Figure_12.jpeg)

		GRAPHI	C SCALE			
) 		1 2	<u>2</u> I	4 1		
(IN FEET)						
		1 INCH =	2 FEET			

SHEET NUMBER

S-709

![](_page_46_Figure_0.jpeg)

Q Q

![](_page_46_Figure_1.jpeg)

![](_page_46_Figure_2.jpeg)

SCALE: 1" = 1'

SCALE: 1" = 1'

NOTE

![](_page_46_Figure_4.jpeg)

## LIGHT POLE BASE CONCRETE CAP CONNECTION DETAIL SCALE: 1" = 1'

- TIMBER RAILINGS AND PIER NOT SHOWN FOR CLARITY. 2. CONTRACTOR TO TOUCH-UP EPOXY COATING AS REQUIRED AT
- ANY COMPROMISED AREAS. 3. CONTRACTOR SHALL INSTALL SPLASHZONE EPOXY AROUND OPENINGS THROUGH STEEL SHEET PILES FOR UTILITY PENETRATIONS.

## LIGHT POLE BASE CONCRETE DECK CONNECTION DETAIL

LOCATED ADJACENT TO PILE #3A

![](_page_46_Figure_11.jpeg)

## SCALE: 1" = 1'

NOTE: 1. REINFORCEMENT FOR CAST-IN-PLACE CURB, DECK, AND PRECAST PLANKS NOT SHOWN FOR CLARITY.

![](_page_46_Figure_15.jpeg)

LIGHT POLE BASE CONCRETE DECK CONNECTION DETAIL

GRAPHIC SCALE

(IN FEET)

1 INCH = 2 FEET

GRAPHIC SCALE

(IN FEET)

1 INCH = 1 FEET

LOCATED ADJACENT TO PILE #7E

![](_page_46_Figure_23.jpeg)

![](_page_47_Picture_0.jpeg)

# WEB ENGINEERING DRAWING LIST:

A-I SITE DETAIL - PROPOSED MODIFICATIONS M-I MECHANICAL

## E-I ELECTRICAL SCHEMATIC: POWER, DATA, AND SIGNAL CONDUITS

## CONTRACTOR RESPONSIBITIES:

- I) PROVIDE ENTIRE FUNCTIONING SYSTEM
- 2) PREPARE AND PROVIDE AN OPERATIONS AND MAINTENANCE MANUAL (IN PDF FORMAT PRIOR TO STARTUP).
- 3) STARTUP TROUBLESHOOTING AND OWNER TRAINING
- 4) DEMOLISH, DISMANTLE, AND DISPOSE OF OFFSITE IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS, ALL EXISTING PIPING, CONDUIT, EQUIPMENT, FITTINGS, DISPENSERS, CONTAINMENT SUMPS, EXCAVATION SOILS, ETC. NOT SPECIFICALLY DESIGNATED FOR RE-USE OR RETENTION BY THE OWNER. THE CONTRACTOR SHALL REMOVE SUCH ITEMS FROM THE PROPERTY PRIOR TO THE COMPLETION OF THE PROJECT.

## TESTING NOTES:

- I) ANY ABOVEGROUND PIPING AFFECTED BY INSTALLATION OF NEW BURIED
- PIPING TO BE PRESSURE TESTED TO 50 PSI MIN. FOR I HOUR. SOAP ALL JOINTS. 2) PRIOR TO BACKFILLING, ALL BURIED PIPING TO BE HYDROSTATICALLY OR
- PNEUMATICALLY TESTED IN ACCORDANCE WITH API 1615 OR NFPA 30 AND IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION MANUAL.
- 3) CONTRACTOR TO HYDROSTATICALLY TEST ALL DISPENSER SUMPS AS DESCRIBED IN 310 CMR 80.00
- 4) CONTRACTOR TO PROVIDE WRITTEN CERTIFICATION OF ALL TESTING RESULTS

## GENERAL NOTES:

- I) ALL CONSTRUCTION TO MEET OR EXCEED:
- A) NFPA I "FIRE CODE" 2021 EDITION
- B) NFPA 30 "FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE" 202I EDITION
   C) NFPA 30A "CODE FOR MOTOR FUEL DISPENSING FACILITIES AND REPAIR GARAGES" - 202I EDITION
- D) 527 CMR I.00 "MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE"
- E) NATIONAL ELECTRICAL CODE FOR HAZARDOUS CLASSIFICATION.

![](_page_47_Figure_23.jpeg)

THIS DRAWING TAKEN FROM PLANS OF LAND BY FOTH INFRASTRUCTURE & ENVIRONMENT, LLC OF MARION, MASSACHUSETTS, DATED JULY 25, 2023 AND SHOULD NOT BE USED FOR THE DETERMINATION OF PROPERTY LINES, METES, BOUNDS, ETC.

![](_page_47_Picture_25.jpeg)

![](_page_48_Figure_0.jpeg)

![](_page_49_Figure_0.jpeg)

![](_page_49_Figure_8.jpeg)

![](_page_50_Figure_0.jpeg)

![](_page_50_Figure_1.jpeg)

# PLAN VIEW

NOT TO SCALE

![](_page_50_Picture_4.jpeg)

GENERAL GEOTECHNICAL AND CONCRETE NOTES:

- I) ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE LATEST STATE OF NEW MASSACHUSETTS BUILDING CODE.
- 2) ALL CONCRETE WITH MAX WC=0.45 SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT THE END OF 28 DAYS EXCEPT AS NOTED. PROVIDE PROOF OF COMPRESSION THROUGH A MINIMUM OF FIVE FIELD SAMPLES CYLINDERS PER CONCRETE POUR. (CRACK FIRST AT 7 DAYS AND THREE AT 28, AND ONE HELD) ALL EXTERIOR EXPOSED CONCRETE SHALL BE AIR ENTRAINED. (NOMINAL 6%) ALL PROPOSED CONCRETE MIXES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. ALL APPROVED MIX DESIGNS SHALL BE IN STRICT CONFORMANCE TO CHAPTER 4 OF ACI 318. ALL CONCRETE SHALL CONFORM TO ACI 350R CONCRETE SANITARY ENGINEERING STRUCTURES. PROVIDE PROCEDURES FOR CURING CONCRETE TO ENGINEER FOR APPROVAL.
- 3) ALL REINFORCING STEEL, EXCEPT AS OTHERWISE NOTED, SHALL BE DEFORMED BARS CONFORMING TO ASTM DESIGNATION A615 GRADE 60.
- 4) SHORE, SHEET AND BRACE EXCAVATIONS AS REQUIRED TO ASSURE COMPLETE SAFETY AGAINST COLLAPSE OF EARTH AND DAMAGE TO ADJACENT PROPERTY INCLUDING BUT NOT LIMITED TO EXISTING STREETS, OF EARTH AND DAMAGE TO ADJACENT PROPERTY INCLUDING BUT NOT LIMITED TO EXISTING STREETS, BUILDING AND UTILITY LINES. ALL SHORING, SHEETING AND BRACING SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER.
- 5) ALL EXCAVATIONS SHALL BE CARRIED DOWN TO UNDISTURBED MATERIAL HAVING A MINIMUM BEARING CAPACITY OF 2500 PSF OR SHALL BEAR ON COMPACTED FILL WHICH SHALL BE PREPARED IN THE FOLLOWING MANNER:
- A) REMOVE ALL EXISTING FILL AND ORGANIC LOAMY MATERIAL TO ELEVATIONS SHOWN ON DESIGN DRAWINGS AS BEING UNSUITABLE.
- B) STRUCTURAL FILL BACKFILLING FOR EXCAVATIONS AT COLUMNS AND SLAB ON GRADE UNDERLAYMENT (TO WITHIN 6" OF THE BOTTOM OF SLAB BOTTOM).

SIEVE SIZE	% PASS
3-1/2"	100
3/4"	50-100
NO. 4	25-75

C) THE 6" IMMEDIATELY BELOW THE CONCRETE TO BE PROCESSED STONE BASE MEETING CTOOT 817 SECTION M.05.01 WITH MAX GRAIN SIZE 1.25".

- D) COMPACTION SHALL BE CARRIED OUT ONLY WHILE A COMPETENT INSPECTOR, APPROVED BY THE ENGINEER, IS ON THE PROJECT. COMPACT TO AT LEAST 95% OF MODIFIED OPTIMUM DENSITY, PER ASTM DI557.
- E) DEPTH OF EXCAVATION REQUIRED IS ESTIMATED AND NOT TO BE CONSTRUED AS LIMITING IN ANY WAY THE AMOUNT OF EXCAVATION REQUIRED TO REACH GOOD BEARING. NO FOOTINGS OR CONCRETE ARE TO BE PLACED IN WATER OR ON FROZEN GROUND.
- 6) SHOP DRAWINGS, REVIEWED BY THE GENERAL CONTRACTOR, FOR REINFORCING, AND POUR SCHEDULES SHALL BE SUBMITTED TO THE ENGINEER AND A STAMPED APPROVAL RECEIVED BEFORE FABRICATION CAN PROCEED. ERECTION SHALL BE MADE FROM SHOP DRAWINGS ONLY.
- 7) ALL TYPES OF SLABS AND BEAMS SHALL BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS. VERTICAL CONSTRUCTION JOINTS AND STOPS IN CONCRETE WORK SHALL BE MADE AT THE MIDSPAN OR AT POINTS OF MINIMUM SHEAR. PROVIDE DOWELS AT VERTICAL SLAB CONSTRUCTION JOINTS OF AN EQUIVALENT OF 0.5% OF THE VERTICAL CONCRETE JOINT AREA.
- 8) CONSTRUCTION JOINTS MAY NOT BE ADDED, EXCEPT WITH THE APPROVAL OF AN ENGINEER. 9) ALL SHORING SHALL REMAIN IN PLACE UNTIL CONCRETE HAS ATTAINED 75% OF ITS 28 DAY
- STRENGTH. 10) ALL REINFORCING, INCLUDING COLUMN AND PIER TIES, SHALL BE DETAILED IN ACCORDANCE WITH ACI MANUAL AS AMENDED TO DATE.
- II) WHERE CONTINUOUS BARS ARE CALLED FOR, INDICATED, OR REQUIRED, THEY SHALL BE RUN CONTINUOUSLY AROUND CORNERS, LAPPED AT NECESSARY SPLICES, SPLICES STAGGERED WHEREVER POSSIBLE, AND HOOKED AT DISCONTINUOUS ENDS. LAPS SHALL BE CLASS B.
- 12) PROVIDE AND SCHEDULE WITH REBAR PLACEMENT SHOP DRAWINGS, ACCESSORIES TO HOLD THE REINFORCING PER ACI 318 CODE AND ACI 315 DETAILING MANUAL.
- 13) CLEARANCE OF MAIN REINFORCING BARS FROM ADJACENT CONCRETE SURFACES SHALL BE: 14) WHERE UNFORMED FACE OF CONCRETE IS IN CONTACT WITH EARTH, 3"
- I5) WHERE FORMED FACE OF CONCRETE IS IN CONTACT WITH EARTH, OR EXPOSED TO WEATHER, 2" 16) THE MAXIMUM ALLOWABLE DEVIATION FROM THE FIGURES ABOVE, WHEN PLACING REINFORCING
- IN THE FORMS, SHALL BE I/4" FOR ALL SHAPES. 17) COORDINATE ALL CONCRETE CONSTRUCTION WITH EQUIPMENT LOCATIONS AND MANUFACTURER'S
- REQUIREMENTS.
- 18) ALL EXPOSED CONCRETE EDGES TO HAVE CHAMFER (ENGINEER TO APPROVE ALL CHAMFER STRIPS) 19) ALL CONCRETE TO BE CONTINUOUSLY AND ADEQUATELY VIBRATED DURING PLACEMENT.

XX.X PROPOSED ELEVATION FOOTPRINT OF DISPENSERS AND HOSE REELS

![](_page_50_Picture_30.jpeg)

![](_page_51_Picture_0.jpeg)

![](_page_51_Picture_11.jpeg)

- I) WORK SHALL BE PERFORMED IN CONFORMANCE TO THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC)
- 2) EQUIPMENT AND DEVICES ARE TO BE INSTALLED AS INDICATED IN THEIR
- MANUFACTURERS' INSTRUCTIONS AND NOTE I ABOVE. 3) FEEDER AND CONTROL RACEWAYS ARE TO CONTAIN COPPER CONDUCTORS OF A
- MINIMUM SIZE OF #12 AWG AND USE CONDUITS OF A MINIMUM SIZE OF 3/4 INCH.
- 4) CONDUCTOR INSULATION COLORS ARE TO FOLLOW THE GENERAL ELECTRIC "GEOTROL" COLOR CODE.
- 5) PANEL SCHEDULES ARE TO BE UPDATED BY TYPING IN THE INFORMATION FOR CIRCUITS CONNECTED
- 6) ABOVEGROUND RACEWAYS SHALL BE RIGID GALVANIZED STEEL WITH RIGID GALVANIZED STEEL FITTINGS INSTALLED PER MANUFACTURERS' INSTRUCTIONS TO CREATE A WATER-TIGHT CORROSION RESISTANT RACEWAY. ALL RIGID GALVANIZED STEEL CONDUIT AND FITTINGS TO BE PVC COATED (ROBROY OR EQUAL). ALL EXPOSED GALVANIZED STEEL TO BE TOUCHED UP IN FIELD AFTER INSTALLATION.
- ) UNDERGROUND RACEWAYS SHALL BE SCHEDULE 40 PVC ELECTRICAL CONDUIT. PVC SHALL CONVERT TO GALVANIZED STEEL UNDERGROUND A MINIMUM 2 FEET BEFORE CONVERTING BACK TO ABOVE GRADE OR INSIDE A SUMP
- 8) FUEL ISLAND ELECTRICAL EQUIPMENT IS TO BE FED FROM SWITCHED NEUTRAL BREAKERS THROUGH A CONTACTOR THAT DISCONNECTS POWER, NEUTRAL, AND GROUND CONDUCTORS FOR EACH ITEM. THE CONTRACTOR IS TO BE ACTIVATED IN A FAILSAFE MODE BY THE E-STOP BUTTONS.
- 9) ALL BURIED ELECTRICAL TO HAVE CAUTION TAPE INSTALLED JUST BELOW GRADE AS SHOWN IN DETAIL A ON DRAWING M-2

ALL ELECTRICAL EQUIPMENT TO HAVE LOCK OUT TAG OUT CAPABLE DISCONNECT SWITCHES.

EMERGENCY SHUTOFF DEVICES OR ELECTRICAL DISCONNECTS SHALL DISCONNECT POWER TO ALL DISPENSING DEVICES. ALL REMOTE PUMPS SERVING THE DISPENSING DEVICES. ALL ASSOCIATED POWER, CONTROL, AND SIGNAL CIRCUITS, AND ALL OTHER ELECTRICAL EQUIPMENT IN THE HAZARDOUS (CLASSIFIED) LOCATIONS SURROUNDING THE FUEL DISPENSING DEVICES. WHEN MORE THAN ONE EMERGENCY SHUTOFF DEVICE OR ELECTRICAL DISCONNECT IS PROVIDED, ALL DEVICES SHALL BE INTERCONNECTED. RESETTING FROM AN EMERGENCY SHUTOFF CONDITION SHALL REQUIRE MANUAL INTERVENTION AND THE MANNER OF RESETTING SHALL BE APPROVED BY THE AUTHORITY HAVING JURISDICTION.

NOTE: CONTRACTOR TO DEMONSTRATE PROPER INSTALLATION OF SPARE ELECTRICAL CONDUITS BY BLOWING STRING THROUGH CONDUITS. STRING SHALL BE LEFT IN PLACE AND SUITABLY ACCESSIBLE FOR FUTURE ELECTRICAL WORK

J	JUNCTION BOX - SIZED PER NEC BY CONTRACTOR
~J	JUNCTION BOX WITH FLEXIBLE CONDUIT CONNECTION
P	UNDERGROUND CONDUIT (POWER)
S	UNDERGROUND CONDUIT (SIGNAL)
P	ABOVEGROUND CONDUIT (POWER)
s	ABOVEGROUND CONDUIT (SIGNAL)
X	UNDERGROUND CONDUIT (X-SPARE, XP-SPARE POWER, XS-SPARE SIGNAL)
0	CONDUIT "STUB UP" (TRANSITION FROM BURIED TO ABOVE GRADEX)

Ľ WORKS S **UB** 0 DEPARTMENT G ORLEANS ORI 4D, RO C OF Q TOWN ROCK H INC. Ś Ĩ 020 ENGINEERING ASSOCIA MER STREET, SCITUATE, MASSACHUSETTS 020 WEB 111 SUMN DATE REVISION FILE: ELECTRICAL A DRAWN BY: JAS DATE: 2/6/24 JOB #: 22-E-012

WEB DRAWING NO. 24007

SCALE: 1/4" = 1'

IGNAL S AND DA TIC: SCI RICAL ELECT

*TIUUN* 

Ю СО

![](_page_52_Figure_0.jpeg)

![](_page_52_Figure_1.jpeg)

- 1. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH THE LATEST APPLICABLE STANDARDS OF ANSI, NEMA, UL, NFPA-70, AND THE MASSACHUSETTS ELECTRICAL CODE WITH REGARDS TO MATERIAL, DESIGN, AND CONSTRUCTION.
- 2. THIS DRAWING IS FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY ALL LOCATIONS, DEVICES, MATERIALS, AND EQUIPMENT, PRIOR TO THE START OF ANY WORK.
- 3. CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE, AT LEAST 72 HOURS PRIOR TO BEGINNING ANY EXCAVATION.
- 4. PVC CONDUIT AND FITTINGS SHALL CONFORM TO ANSI/NEMA SPECIFICATIONS, TC-2, TC-3 AND UL-651.
- 5. CONTRACTOR SHALL OBTAIN ALL NECESSARY INSPECTIONS AND COORDINATE ALL WORK WITH THE OWNER AND THE CITY OF WORCESTER. TRENCHES SHALL BE INSPECTED PRIOR TO BACKFILLING.
- 6. LOCATIONS OF ALL UTILITIES ARE APPROXIMATE AND ARE PROVIDED FOR INFORMATION ONLY.
- 7. CONTRACTOR TO BALANCE THE NUMBER OF LIGHTING FIXTURES ON EACH CIRCUIT
- 8. CONTRACTOR TO LOCATE ALL ELECTRICAL EQUIPMENT AS DIRECTED BY THE OWNER, ARCHITECT & ENGINEER.

![](_page_52_Figure_10.jpeg)

![](_page_52_Figure_11.jpeg)

![](_page_52_Figure_12.jpeg)

SYMBOL			OTES		SYMBOL	
FP	WALL OR CEILING MOUNTED LIGHTING	UPPER CASE LETTERS	NDICATE FIXTURE TYPE.		$\square^1$	V
1a FP	FIXTURE	SUBSCRIPT LOWER CA INDICATE SWITCH CON	ASE LETTERS TIROL ASSOCIATIONS		<u>Щ</u>	Ň
1a					Φ	
		FR FP	FP FP		$\Phi_{\rm lc}$	
L 1a		INDICATES FIXTURE ON OR EMERGENCY BATTE APPLICABLE, CONTRAC	I NIGHT/EMERGENCY CIRCUIT RY BACK UP BALLAST WHERE TOR SHALL CONFIRM LOCATION		₽	v c
└───┘		PRIOR TO PURCHASE EMERGENCY BALLAST B30ST OR B30 WITH	AND INSTALLATION. SHALL BE SIMILAR TO BODINE INTEGRAL INDICATOR LIGHT TEST			
1a		SWITCH. PROVIDE 2 L/ APPLICABLE. CONTRACTOR SHALL P HARDWARF APPLICABLE	AMP APPLICATION WHERE ROVIDE ALL MOUNTING TO CEILING, WALL, AND FLOOR		Φ	V C
		TYPE INTO WHICH FIXT CONTRACTOR SHALL C WITH ARCHITECTURAL I	URE IS INSTALLED OORDINATE MOUNTING HEIGHT INTERIOR/EXTERIOR ELEVATIONS		USB	
		CONTRACTOR SHALL C K RATING OF LAMPS 1 PER ARCHITECT	OORDINATE AND CONFIRM TO ACHIVE COLOR AS		<u> </u>	v v
•	EXTERIOR POLE MOUNTED FIXTURE	CONTRACTOR SHALL F STEP DOWN TRANSFOR VOLTAGE LIGHTING	URNISH AND SUPPLY ANY MERS FOR ANY LOW		НЭ	F
		RGENCY LIGHTI	NG	ŗ		F
EB	WITH BATTERY UNIT	REMOTE HEAD CAPAE OTHERWISE	BILITY UNLESS NOTED		ᡰ₽∕∙	
\$	EMERGENCY LIGHTING HEAD					2 F
H	EMERGENCY LIGHTING					
₩P	CEILING MOUNTED	EXIT SIGNS	L BE FURNISHED WITH			
<b>9</b> 1		APPLICATION OF SHAL	DED QUADRANTS AND		₽₩₽	2 5
⊢⊗ <sub>1</sub> <sup>wP</sup>	EXIT SIGN					
		UPPER CASE LETTERED F	ACE AND DIRECTIONAL IRED S INDICATE REFERENCE		$\blacksquare \nabla$	F
	WIRING DE	VICES-SWITCHE	ES			
s <sub>wp</sub>	SINGLE POLE SWITCH	20A 120–277V AC "WP" – INDICATES WEATHER PROOF	SUBSCRIPT LOWER CASE LETTERS INDICATE SWITCH CONTROL ASSOCIATIONS			
SP	SINGLE POLE SWITCH WITH PILOT LIGHT	-	SUBSCRIPT UPPER CASE LETTERS DENOTE			
S2	DOUBLE POLE SWITCH	-	LISTED IN NON- STANDARD SWITCHES		J	
S3		-	UNLESS NOTED OTHERWISE SWITCHES SHALL BE MOUNTED 48" TO CENTER LINE AFF		нJ	V J
S4	SPRING WOUND	TORK OR EQUAL			J	5
ST	INTERVAL TIME SWITCH	30 MINUTE MAX 1500W-120 VOLT				F
D	DIMMER SWITCH	RATING UNLESS NOTED OTHERWISE				F
	CEILING MOUNTED CORRIDOR OCCUPANCY SENSOR (80' oc)	WATT STOPPER: W-2000H	CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY POWER PACKS, RELAYS, CABLES,			J
	CEILING MOUNTED DUAL TECHNOLOGY SENSOR (1,600 sf)	WATT STOPPER: DT-300	AND CONTROL MODULES TO COMPLETE SYSTEM SUBSCRIPT LOWER CASE			ŕ
os	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR	WATT STOPPER: DW-100	SWITCH LEG CONTROL		$\bigcirc$	1
os	WALL MOUNTED DUAL TECHNOLOGY DUAL RELAY SENSOR	WATT STOPPER: DW-200				
	CEILING MOUNTED ON/OFF DAYLIGHT SENSOR	WATT STOPPER: LMLS-105			\$	
	LIGHTING	CONTROL SYS	TEM			
ТС	7 DAY ASTRONOMICAL TIME CLOCK	TORK OR EQUAL				
PC	WALL MOUNTED PHOTOCELL					
	LIGHTING CONTACTOR					
[KS]	KEY SWITCH LINE VOLTAGE					
	MASTER CONTROL SWITCH				TVSS	+
	TELECOM	MUNICATION S`	YSTEMS			
MHNC	MODULAR HOME NETWORK CENTER PROVIDE (1) DEDICATED	PASS & SEYMOUR	OR EQUAL			
	120V CIRCUIT & DOUBL DUPLEX RECEPTACLE WALL MOUNTED				<u> </u>	
$\vee$	DATA OUTLET	BACK TO TELEPH	ONE CLOSET BLIC PAY PHONE		M)	
$\mathbf{V}$	COMBINATION TEL/DATA OUTLET	W – DENOTES PO F – DENOTES M (2)VOICE,(2)	WER FEED DDULAR FURNITURE BEZEL IDATA OUTLETS BY OTHERS			
▼	WALL MOUNTED					
Ţ~•	FIRE RATED FURNITUR FOR TEL/DATA CONNE	E FEED POKE THROU CTIONS TO ELECTRIFI	IGH DEVICE ED FURNITURE			
ӈҵѵ	4" SQUARE OUTLET B HOLE COVERPLATE FO ELECTRIFIED FURNITUE	OX WITH 1 1/2" GRO R TEL/DATA CONNEC RE PARTITIONS MOUNT	DMMETTED TION TO TED 8" AFF			
τν	WALL MOUNTED CABLE TV OUTLET	4"x4" SQUARE OU STUBBED 6" ABO	JTLET BOX WITH 1" CONDUIT VE ACCESSIBLE CEILING			
⊥ ∰	CEILING MOUNTED CABLE TV OUTLET	SEE ARCH PLAN	FOR MOUNTING HEIGHT			
-ст-	CABLE TRAY	12" WIDE, 4" DEEF	P, CENTER SPLINE EQUAL			
++++++++		CONNECTORS AND INSTALLATION OF L	HARDWARE FOR AYOUT SHOWN		H	
	•	i.				1

SYMBOL	DESCRIPTION	NOTES
_ 1	WIRING DEVIC	CES — RECEPTACLES 20a/125v, 2p, 3w, gndg., nema 5–20r
₽'	MALL DOFLEX CONVENIENCE OUTLET MTD 18" AFF	SHADING ÓF SYMBÓL THUS:
•		INDICATES RECEPTACLE WITH EACH HALF SEPARATELY WIRED. (HALF CONSTANT HALF SWITCH CONTROLLED.) "1"- INDICATES CIRCUIT NUMBER
₽ <sup>°°</sup>	ISOLAIED GROUND DUPLEX CONVENIENCE OUTLET	SUBSCRIPT LOWER CASE LETTERS INDICATE SWITCH CONTROL ASSOCIATIONS SHADING OF SYMBOL THUS:
₽	WALL DOUBLE DUPLEX CONVENIENCE OUTLET	INDICATES RECEPTACLE MTD 6" ABOVE
	HOSPITAL GRADE DUPLEX CONVENIENCE OUTLET	UNLESS NOTED OTHERWISE 'WP' – INDICATES WEATHER PROOF 'GFI' DENOTES GROUND FAULT
Φ	WALL MTD SINGLE CONVENIENCE OUTLET	INTERRUPTING TYPE RECEPTACLE ALL POWER OUTLET FACEPLATES SHALL BE LABELED WITH CIRCUIT NUMBER AND PANEL DESIGNATION FEEDING OUTLET
	DUPLEX CONVENIENCE OUTLET PROVIDED WITH USB OUTLET	
НЭ	WALL MOUNTED SPECIAL PURPOSE POWER RECEPTACLE	NUMERAL WITHIN SQUARE DENOTES RECEPTACLE TYPE AS LISTED IN SCHEDULE OF NON-STANDARD RECEPTACLES
₽∕•	FIRE RATED FURNITURE FOR POWER CONNECTION	FEED POKE THRIUGH DEVICE DNS TO ELECTRIFIED FURNITURE
ᡰᢪᠵ•	4" SQUARE OUTLET BO IN FURNITURE PARTITIO	X TO OUTLETS LOCATED NS (SEE FLOOR PLANS)
	WIRING DEVICE 2 channel pwr/data	ES — MISCELLANEOUS WIREMOLD AMDPT SERIES OR EQUAL
PP	POWER POLE WITH ELEC DEVICES AND PLATES	
₽₽	2 PIECE SURFACE MTD RACEWAY WITH 20A DUPLEX RECEPTACLES SPACING AS SHOWN ON ELECTRICAL PLANS	WIREMOLD OR EQUAL
₽₩	2 PIECE MULTI-CHANNEL RACEWAY WITH 20A DUPLEX RECEPTACLES AND DATA OUTLETS SPACING AS SHOWN ON ELECTRICAL PLANS	WIREMOLD OR EQUAL
	FLUSH FLOOR MOUNTED POWER/DATA CONVIENCE RECEPTACLES	POKE THRU APPLICATION: 2 HOUR RATED. WIREMOLD RC SERIES
		OR EQUAL. COORDINATE FINAL POWER AND TEL/DATA TERMAINTIONS WITH TENANT
		DEEP RECTANGULAR CAST IRON BOX WIREMOLD OR EQUAL
		PROVIDE 1°C FROM TEL/DATA TO 6° AFF. CONTRACTOR SHALL SUPPLY ALL COVERS AND FACE PLATES SPECIFIC TO SERIES
		CTION BOXES
9	WALL MOUNTED	-
Ð	JUNCTION BOX	-
	JUNCTION BOX	-
	PULL BOX	-
	JUNCTION BOX WITH	P – DENOTES POWER FEED
	MOTORS	AND CONTROLS
$\Diamond$	MOTOR	COMPLETE INFO. FOR MOTOR IS INDICATED BY APPLICATION OF INDEXING SYMBOLS REFERENCE TO SCHEDULE OF MECHANICAL EQUIPMENT
	MAGNETIC MOTOR STARTER COMPLETE W/ THERMAL OVERLOAD PROTECTION	SUBSCRIPT INDICATES NEMA SIZE INDICATED BY THE APPLICATION OF
\$	MANUAL MOTOR STARTER (THERMAL OVERLOAD SWITCH)	INDEXING SYMBOL REFERENCE APPLIED TO ASSOCIATED EQUIP.
[VFD]	VARIABLE FREQUECY DRIVE	REFER TO HVAC SCHEDULE FOR MOTOR LOAD HORSEPOWER SIZE
CP]	CONTROL PANEL (MECHANICAL EQUIP)	FURNISHED AND INSTALLED BY OTHERS. WIRED BY THE ELECTRICAL CONTRACTOR
	DISTRIBU SURFACE MOUNTED PANEL	TION EQUIPMENT
	FLUSH MOUNTED PANEL	
TVSS	SURGE SUPPRESSION	PROVIDE PER SPECIFICATIONS
Т	TRANSFORMER	SEE ELECTRICAL PLANS FOR KVA RATING
<u>•</u>	GROUNDING PER SPECIFICATION	
M	METER SOCKET AND METER	METER SOCKET PROVIDED BY CONTRACTOR PROVIDED BY LOCAL UTILITY CO.
	OVERCURRENT AND/OR SWITCHING DEVICE "WP" - INDICATES	COMPLETE INFORMATION FOR DEVICES IS INDICATED BY APPLICATION OF TAG SYMBOLS
	WEATHER PROOF	30 INDICATES UNFUSED SWITCH 30 - FRAME SIZE
		15 - FUSE SIZE
		$ \begin{array}{c c} 30 \\ 15 \\ \hline 15 \\ 15 \\ \hline 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\$
		INDICATES COMBINATION ENCLOSED CIRCUIT BREAKER AND STARTER
	WALL MOUNTED	
⊢	EMERGENCY POWER	

SYMBOL	DESCRIPTION	notes H CIRCUITRY
×	LIGHTING AND APPLIANCE BRANCH CIRCUITRY CONCEALED ABOVE	ARROW HEAD INDICATES HOME RUN CIRCUITRY TO 20A-1P CIRCUIT BREAKER (UNLESS NOTED OTHERWISE) NUMBER OF ARROW HEADS INDICATE NUMBER OF BRANCH POLES REQUIRED
×	LIGHTING AND APPLIANCE BRANCH CIRCUITRY CONCEALED BELOW	IN PANEL CROSS MARKS INDICATE NUMBER OR NO. 12 WIRES IN 3/4" CONDUIT PLUS GROUND. ABSENCE OF CROSSMARKS INDICATES 2#12, 1#12 GROUND
×	LIGHTING AND APPLIANCE BRANCH RUN EXPOSED	HOME RUNS ARE INDICATED THUS:
2	INDIVIDUAL RUN TURNING UP	"LL2" DENOTES PANEL DESIGNATION. "1,3,5" DENOTES CIRCUIT NO'S 1,3,5 CONTAINING 20A. 1P. CB'S IN PANELBOARD
	INDIVIDUAL RUN TURNING DOWN	CONDUIT RUNS REQUIRING CIRCUIT BREAKER GREATER THAN 20A-1P WIRE SIZE GREATER THAN NO. 12 AND CONDUIT
	INDIVIDUAL RUN TURNING UP&DOWN	SIZE GREATER THAN 3/4" ARE NOTED NOTED THUS:
		50A 3P 4 #4, 1 #8 GROUND 1–1/4" CONDUIT
	GENEF	RAL CIRCUITRY
ý miš	BUSWAY	
	CIRCUIT BREAKER BUS PLUG, BREAKERS AS INDICATED	
	BUSWAY FEED/ LUG CONNECTION	
<i>۶</i> −₽Ε <del>−</del> -⊀	IDENTIFICATION OF INDIVIDUAL RUN OTHER THAN BRANCH CIRCUITRY OR SECONDARY FEEDERS	$\begin{array}{l} PE & - PRIMARY ELECTRIC \\ SE & - SECONDARY ELECTRIC \\ TEL & - TELEPHONE \\ TV & - TELEVISION \\ CATV & - CABLE TELEVISION \\ E & - EMERGENCY \end{array}$
	SECONDA FEEDER RUN	ARROW HEAD INDICATES HOME RUN TO
	FEEDER RUN	PANEL BOARD
	FEEDER RUN AS PER	RISER DIAGRAM
	TAG	SYMBOLS
$\bigcirc$	INDEX SYMBOL	HEXAGONAL SYMBOLS CONTAINING TWO UPPER CASE LETTERS INDICATE REFERENCE
		HEXAGONAL SYMBOLS CONTAINING UPPER CASE LETTERS AND NUMERICALS INDICATE REFERENCE TO SCHEDULE OF MECHANICAL
		EQUIPMENT HEXAGONAL SYMBOLS CONTAINING NUMERICALS ONLY INDICATE REFERENCE
	GANGING CROSS	TO AN EXPLANATION OF ELECTRICAL WORK REQUIREMENT THE NOTED INDICATION ADJACENT TO A
$ \  \  \  \  \  \  \  \  \  \  \  \  \ $	REFERENCE	DEVICE DENOTES THAT THE DEVICE IS TO BE GANGED IN A BOX WITH ANOTHER DEVICE SIMILARLY NOTED AT THE SAME LOCATION ON ANOTHER DRAWING
()	SPECIAL MOUNTING HEIGHT INDICATIONS	DIMENSION NOTED IN PARENTHESIS ADJACENT TO ANY ITEM OF THE DRAWINGS INDICATES THE HEIGHT OF IT'S HORIZONTAL CENTERLINE ABOVE FINISHED FLOOR
*	MOUNTING HEIGHT REFERENCE TO ARCHITECTURAL DRAWINGS	
	LINE INDICATING PHYSICAL SIZE OF ELECTRICAL ITEMS	INDICATION USED CIRCUMSCRIBING OTHER SYMBOLS TO DELINEATE PHYSICAL SIZE
0	DETAIL TITLE ANNOTATION INDICATING DETAIL NUMBER	
	WIRING DEVICE GANGING SYMBOL	GANGING SYMBOL SHOWN IN CIRCUITRY RUN IN COMBINATION WITH ANY WIRING DEVICE SYMBOL THUS:
		DENOTES WIRING DEVICES WHICH ARE TO BE GANGED IN A COMMON PLATE OUTLET
	NURSE / EMER	RGENCY CALL SYSTEMS
Ŭ	NURSE CALL	
	NURSE CALL DUTY STAFF STATION	
	NURSE CALL ANNUNCIATOR PANEL	
EC	EMERGENCY CALL PULL CHORD	
	EMERGENCY CALL DOME LIGHT	
EC	EMERGENCY CALL REMOTE STATION	
ECCP	EMERGENCY CALL COMMUNICATION PANEL	

SYMBOL	DESCRIPTION		NOTES
	FIRE AL	ARM S I	SYSTEM
F	PULL STATION		
V	FIRE FIGHTER FIRE EMERG PHONE		
8	VISUAL ONLY FIRE ALARM DEVICE		
¥ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	COMBINATION AUDIO		
Ē	AND VISUAL FIRE ALARM DEVICE		
F C	AUDIO AND VISUAL FIRE ALARM DEVICE		
S	WALL MOUNTED FIRE ALARM SPEAKER		
<b>S</b>	WALL MOUNTED FIRE ALARM SPEAKER AND		
M	WALL MOUNTED MINI-HORN		
S M	WALL MOUNTED FIRE ALARM MINI-HORN & STROBE		
F	FIRE ALARM MASTER BOX		
К	KNUX BUX		
H®	ROTATING FIRE ALARM BEACON LIGHT		
EB	ELECTRIC BELL PROVIDE (1) DEDICATED		
	120V CIRCUIT	57	COMBINATION SMOKE DETECTOR/
FACP	CONTROL PANEL	Ś	IMPAIRED.
FAA	FIRE ALARM ANNUNCIATOR PANEL	Ĥ	VISUAL ALARM FOR HEARING IMPAIRED.
RTS	REMOTE TEST STATION	0	CEILING MOUNTED CARBON MONOXIDE DETECTOR
	REMOTE INDICATOR	H@	WALL MOUNTED CARBON MONOXIDE DETECTOR
	SMOKE DETECTOR	DETECT	OR TYPE SUBSCRIPT
(S)		L R	LOCAL 120V DETECTOR RECEIVER UNIT
H	HEAT DETECTOR	T   D   F	TRANSMITTER UNIT IN DUCT DETECTOR ELEVATOR RECALL
HS	WALL MOUNTED SMOKE OR HEAT DETECTOR	B SA	BEAM TYPE PHOTOELECTRIC SUPPLY AIR DUCT DETECTOR
HH		CO	COMBINATION SMOKE/CARBON
FS	SPRINKLER SYSTEM MONITOR		R TYPE:
TS	FS WATER FLOW TS TAMPER SWITCH	и ими Исми си	ONITORING MODULE
PS	PS DRY ALARM PRESSURE SWITCH		
DH	MAGNETIC DOOR HOLDER	PROVIDE   INTEGRA	E CONNECTION TO DOOR HARDWAR L HOLDERS
SК	SMOKE EXHAUST FAN KEY SWITCH		
	ADDRESSABLE CONTROL	MODULE	E SUBSCRIPT TYPE:
		M	MONITOR MODULE
	EXISTING ELEC	TRICA	L EQUIPMENT
ETR		SHALL	BE CLEANED AND RELAMPED
×	EXISTING EQUIPMENT TO BE REMOVED	EXISTIN ARE OF DEVICES	G TO REMAIN ELECTRICAL DEVICES PERATIONAL & FUNCTIONAL. IF ETR ARE NOT OPERATIONAL, IT SHALL
XR	EXISTING EQUIPMENT	BE REF THAT T SHALL	2LACED WITH A NEW DEVICE OF YPE. ALL REPLACED DEVICES MATCH EXISTING
			CTOR SHALL EXTEND AND CT EXISTING WIRING TO NEW IN OF RELOCATED FOUIPMENT.
	EQUIPMENT	CONTRA WIRING	CTOR SHALL REPLACE EXISTING BACK TO SOURCE IF NECESSARY TING WIRING DOES NOT REACH
RR	AND REINSTALL NEW DEVICE IN SAME LOCATION	RELOCA SHALL WIRING	TED EQUIPMENT. CONTRACTOR EVALUATE CONDITION OF EXISTING AND REPLACE IF NECESSARY.
公司	DOTTED DENOTES EXISTING ELECTRICAL FOUIPMENT		
	SECURITY/INTERC	L :OM/A	CCESS SYSTEMS
DBPB	DOOR BELL PUSH BUTTON		OR APPLICATION:
	DOOR BELL		
CR			
KP	KEY PAD		
	DOOR CONTACT		
	ELECTRIC DOOR STRIKE		
ES	LOCAL DOOR ALARM		
IS	TALK/ACCESS		
INTP			
	WALL MOUNTED MOTION DETECTOR		
	CEILING MOUNTED		
SP	ADDRESS SPEAKER		
	CLOSED CIRCUIT TELEVISION CAMERA		
	SECURITY CONTROL		
IAP	PANEL		AREA_OF RESCUE
НС	HANDICAP ACCESS PUSH BUTTON		ARA ASSISTANCE INDICATOR LIGHT W/ BATTERY BACKU SIMILAR TO HOUSING DEVICES
			RB AREA OF RESCUE SYSTEM SIMILAR TO HOUSING DEVICES ADA 1000 PHONE LINE.
L	1		1 - ·=·

## GENERAL NOTES

- ALL CONDUITS AND EQUIPMENT SHALL BE INSTALLED AND GROUND IN ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF THE APPLICABLE LOCAL AND NATIONAL CODES.
- 2. CONDUIT RUNS ARE SHOWN DIAGRAMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS SHALL BE INSTALLED PARRALEL TO BEAMS AND WALLS. EMPTY CONDUITS SHALL HAVE NYLON PULL LINE
- . CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTIONS TO MOTORS AND OTHER EQUIPMENT.
- 4. NO CONDUIT SMALLER THAN 3/4", NOR WIRE SIZE SMALLER THAN NO. 12 A.W.G. FOR POWER SHALL BE USED UNLESS OTHERWISE NOTED.
- 5. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF THE WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE CONSTRUCTION MANAGER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
- THE DRAWINGS AND/OR SPECIFICATIONS. S. SWITCHES SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. RECEPTACLES SHALL BE MOUNTED 18" AFF
- ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INSIDE OF EXTERIOR WALLS ABOVE GRADE OR IN OTHER LOCATIONS CONSIDERED AS DAMP, SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4" AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
- 8. ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE TOP CIRCUIT BREAKER OPERATING HANDLE TO THE FLOOR SHALL NOT EXCEED 6'-6"
- 9. LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS, WITH THE DISTANCE BEING MEASURED FROM THE BOTTOM OF THE LIGHTING FIXTURE TO THE FINISHED FLOOR.
- 10. FOR LOCATION OF HVAC, PLUMBING, FIRE PROTECTION, AND MISCELLANEOUS EQUIPMENT SEE RESPECTIVE TRADE DRAWINGS.
- 1. ALL CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS AS REQUIRED. FOR EXACT LOCATIONS OF EXPANSION JOINTS SEE STRUCTURAL DRAWINGS.
- 12. ALL MOTOR STARTER CONTROL TRANSFORMERS SHALL BE SIZED TO PROVIDE SUFFICIENT VOLT-AMPERE CAPACITY FOR OPERATING ALL ELECTRICAL DEVICES ASSOCIATED WITH CONTROL OF THE MOTOR, IN ADDITION TO THE STARTER COIL. IT SHALL INCLUDE RELAYS, TIMERS, MOTOR HEATERS, INDICATING LIGHTS, ETC. 13. CONDUIT AND WIRE (NOT SHOWN) FOR FIXTURES, SWITCHES AND/OR
- RECEPTACLES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AND SHALL BE: a. 3/4" (MIN.) CONDUIT RUN 1. EXPOSED IN UNFINISHED AREAS.
- 2. CONCEALED ABOVE HUNG CEILINGS AND IN WALLS IN FINISHED AREAS.
- NO.12 (MIN.) Cu WIRE (MIN.) TYPE "THWN/THNN" NO. OF WIRES AS REQUIRED.
- 14. FOR EQUIPMENT PAD CONSTRUCTION DETAILS SEE STRUCTURAL DRAWINGS. 15. ALL 120V BRANCH CIRCUITS GREATER THAN 100 LINEAR FEET SHALL BE #10AWG MIN.
- 16. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LAYOUTS FOR ALL ELECTRICAL ROOMS BASED ON ACTUAL EQUIPMENT OF MANUFACTURER SELECTED, SUBMIT FOR REVIEW PRIOR TO INSTALLATION.
- 17. PROVIDE ELECTRICAL OUTLET PLATE GASKET SEALS AT RECEPTACLES, SWITCHES AND OTHER ELECTRICAL BOXES ON EXTERIOR WALLS AND ON INTERIOR WALLS BETWEEN CONDITIONED AND NON-CONDITIONED SPACES.
- 18. THE ELECTRICAL CONTRACTOR SHALL SUBMIT A PLAN FOR APPROVAL SHOWING ALL ELECTRICAL TELEPHONE, SECURITY, FIRE ALARM, COMMUNICATION AND OTHER SYSTEMS CONDUITS IN SLAB AND ABOVE CEILING ETC.. COORDINATE WITH OTHER TRADES AND BUILDING'S STRUCTURE TO AVOID ANY CONFLICT.
- 19. ALL TERMINATION LUGS SHALL BE SIZED ACCORDINGLY TO ACCOMMODATE INDICATED CONDUCTORS. 20. THE ELECTRICAL CONTRACTOR SHALL SUBMIT PLANS FOR APPROVAL SHOWING ALL COMMUNICATIONS EQUIPMENT AND DEVICES THROUGHOUT THE BUILDING. THE ELECTRICAL CONTRACTOR SHALL ALSO LABEL AND IDENTIFY ALL CONDUITS THAT
- SERVE DIFFERNT SYSTEMS. 21. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS
- FOR EXACT LOCATIONS OF ALL LIGHT FIXTURES. 22. COORDINATE LOCATIONS OF ALL LIGHT FIXTURES IN MECHANICAL AND ELECTRICAL ROOMS WITH LAYOUT OF EQUIPMENT, PIPING AND DUCTWORK.
- 23. ALL EXIT SIGNS SHALL BE UNSWITCHED. 24. ALL SWITCHED LIGHT FIXTURES CIRCUITED TO A NORMAL/EMERGENCY CIRCUIT
- ARE TO BE WIRED WITH AN EMERGENCY BY-PASS RELAY. 25. ALL 20 AMPERE, SINGLE POLE CIRCUITS SHALL BE PROVIDED WITH A SEPARATE FULL SIZE NEUTRAL CONDUCTOR.
- 26. CONFIRM EXACT POWER REQUIREMENTS AND CONNECTION LOCATIONS FOR ALL EQUIPMENT WITH THE PLUMBING, FIRE PROTECTION, HVAC AND GENERAL CONTRACTOR
- 27. PROVIDE AN SOU KIT FOR ALL MECH EQUIPMENT RATED LESS THAN 1/2HP (TYP) 28. CERTAIN SYMBOLS IN THE SYMBOL LIST DO NOT APPEAR ELSEWHERE IN THE DRAWINGS. SUCH SYMBOLS ARE INCLUDED TO PERMIT INTERPRETATIONS TO BE MADE IN
- THE EVENT OF DESIGN CHANGES. 29. ELECTRICAL CONTRACTOR SHALL MAINTAIN RATING OF ANY CEILING, WALL, FLOOR OR ANY BUILDING STRUCTURE THAT ANY ELECTRICAL SYSTEM PENETRATES. SEE ARCHITECTURAL PLAN FOR RATINGS.

HPS HVAC

JB KV KVA

	ABBREVIA	TIONS	
ABBR A/AMP AC A/C AFF	ABBREVIATIONS AMPERE ALTERNATING CURRENT AIR CONDITIONING ABOVE FINISHED FLOOR	L LA LP LTG LV	LENGTH LIGHTNING ARRESTOR LIGHTING PANEL LIGHTING LOW VOLTAGE
AFG ARCH ATC ATS AUTO	ABOVE FINISHED GRADE ARCHITECTURAL AUTOMATIC TEMPERATURE CONTROL AUTOMATIC TRANSFER SWITCH AUTOMATIC	M MM MCB MEC MECH MER	METER MILLIMETER MAIN CIRCUIT BREAKEF MASS ELECTRIC COMP/ MECHANICAL MANUEACTURER
BAT BIS	BATTERY BYPASS ISOLATOR SWITCH	MLO MISC MTD	MAIN LUG ONLY MISCELLANEOUS MOUNTED
C CATV CAB CB CCTV CKT CL CM CLG CO COL	CONDUIT CABLE TELEVISION CABINET CIRCUIT BREAKER CLOSED CIRCUIT TELEVISION CIRCUIT CENTERLINE CENTERLINE CEILING COMPANY COLUMN	N N/C NEC NEMA NIC NL N/O	NEUTRAL NORMALLY CLOSED NATIONAL ELECTRIC CODE NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION NOT IN CONTRACT NIGHT LIGHTING CKT NORMALLY OPEN
CW DET DIA	CORRENT TRANSFORMER COOL WHITE DETAIL DIAMETER	NU OC O/C OL	NUMBER ON CENTER OVERCURRENT OVERLOAD
DISC DN DP DPDT DPST	DISCONNECT DOWN DISTRIBUTION PANEL DOUBLE POLE DOUBLE THROW DOUBLE POLE SINGLE THROW	PB PH PNL PP PRI P/T	PULL BOX PHASE PANEL PUMP PRIMARY POTENTIAL TRANSFORM
DT DWG	DUST TIGHT DRAWING	PVC PWR	POLYVINYL CHLORIDE POWER
EA EC EL ELEC ELEV ES EX	EACH ELECTRICAL CONTRACTOR ELEVATION ELECTRIC ELEVATOR ENERGY SAVING EXISTING	RECEPT REC RPA	RECEPTACLE RECESSED RELAY PANEL
FDR FLR FLUO	FEEDER FLOOR FLUORESCENT	SEC SP SPECS SPKLR SW	SECONDARY SPARE SPECIFICATIONS SPRINKLER SWITCH
GEN GFI GFP GND	GENERATOR GROUND FAULT INTERRUPTER GROUND FAULT PROTECTOR GROUND	TB TEL TV TVSS	TERMINAL BOARD TELEPHONE TELEVISION TRANSIENT VOLTAGE
HC HGT HID HO HP HPS HVAC	HUNG CEILING HEIGHT HIGH INTENSITY DISCHARGE LAMP HIGH OUTPUT HORSE POWER HIGH PRESSURE SODIUM HEATING, VENTILATION AND AIR CONDITIONING	TYP U.N.O. V VA VAC VENT VFD VT	SURGE SUPPRESSION TYPICAL UNLESS NOTED OTHER VOLTS VOLT AMPERAGE VACUUM VENTILATING VARIABLE FREQUENCY DRIVE VAPOR TIGHT
HZ HV INCAND JB KV KVA KW	HIGH VOLTAGE INCHES INCANDESCENT JUNCTION BOX KILOVOLT KILOVOLT-AMPERES KILOWATT	W W/ WP	WATT ON WIRE WITH WEATHERPROOF

![](_page_53_Figure_34.jpeg)

- REFER TO THE ARCHITECTS ELEVATION DETAILS FOR EXACT HEIGHT AND LENGTH OF SURFACE RACEWAYS.
- 5.) THE ENTIRE LENS OF A FIRE ALARM A/V SIGNAL OR VISUAL-ONLY SIGNAL SHALL BE LOCATED ABOVE 6'-8" A.F.F. OR 6" BELOW CEILING
- WHICHEVER IS LOW. 6.) ALL LOAD CENTERS LOCATED WITHIN HANDICAPPED UNITS SHALL BE MOUNTED WITH BREAKER A MAXIMUM OF 54" A.F.F.

G DLTAGE ETER DIRCUIT BREAKER ELECTRIC COMPANY NICAL ACTURER JUG ONLY LANEOUS ED

BOX NTIAL TRANSFORMER

NOTED OTHERWISE MPERAGE \_ATING vBLE FREQUENCY

Ele V NAMA DAVID J. COLOMBO ELECTRICAL No. 40426 03-06-2024 S S MASSACHUSE **WORK** CIA  $\mathbf{O}$ PUBLIC ົ່ ΰÓ LL HARBOR **ORLEAN** Ο . Z Ш Σ 21 ROCK WH/ TOWN OI DEPAF DATE OF PREPARATION ΒY DATE 3/6/2024 SURVEYED DRAWN 3/6/2024 DJC DESIGNED DJC 3/6/2024 CHECKED AIM/DHA XX/XX/2024 SHEET TITLE: ELECTRICAL LEGEND ISSUANCE: **ISSUED FOR BID** 

PROJECT NO: 0021M087.00

E - 102

SHEET NUMBER

GENERAL NOTES

- 1. IN THIS DOCUMENT, "CONTRACTOR" SHALL REFER TO GENERAL CONTRACTOR AND "SUBCONTRACTOR" SHALL REFER TO THE ELECTRICAL CONTRACTOR AND THEIR SUBCONTRACTORS.
- 2. THE SYSTEM DESIGN SHALL BE INSTALLED IN ACCORDANCE WITH THESE DOCUMENTS AND SPECIFICATIONS AND IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), THE UTILITY, AND THE AUTHORITY HAVING JURISDICTION (AHJ). ANY LOCAL CODE THAT SUPERSEDES THE NEC SHALL GOVERN.
- 3. SUBCONTRACTORS SHALL HAVE A MINIMUM OF TWO PEOPLE WORKING TOGETHER AT ALL TIMES.
- 4. THESE DOCUMENTS AND SPECIFICATIONS ARE THE MINIMUM REQUIRED FOR PROJECT COMPLETION. SUBCONTRACTOR SHALL ENSURE THAT THESE REQUIREMENTS ARE MET OR EXCEEDED WITH HIGH QUALITY EQUIPMENT, MATERIALS, AND WORKMANSHIP.
- 5. THE EQUIPMENT AND COMPONENTS SHALL BE MARKED IN ACCORDANCE WITH THE APPLICABLE ARTICLES OF THE NEC AND AS SHOWN IN THESE DOCUMENTS.
- 6. ALL EQUIPMENT AND MATERIALS SHALL BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS. ANY METHODS AND MATERIALS NOT SPECIFIED SHALL BE SUBMITTED AND APPROVED PRIOR TO INSTALLATION.
- 7. ALL EQUIPMENT AND ENCLOSURES SHALL BE FREE FROM DEBRIS AND ANY MATERIALS THAT MAY CAUSE DAMAGE.
- 8. SUBCONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL EQUIPMENT AND MATERIALS. SUBMITTALS SHALL BE APPROVED PRIOR TO ANY WORK PERFORMED. SUBCONTRACTOR WILL BE AT RISK FOR WORK PERFORMED WITH ANY SUBMITTALS THAT ARE NOT APPROVED.
- 9. SUBCONTRACTOR SHALL CALL "811" PRIOR TO ANY GROUND PENETRATION AND PROVIDE TICKET NUMBER TO CONTRACTOR.
- 10. ALL EXISTING UTILITIES SHALL BE FIELD VERIFIED AND MARKED. SUBCONTRACTOR SHALL COORDINATE WITH UTILITY FOR REQUIRED SHUTDOWN SERVICES. ANY UTILITIES THAT REMAIN SHALL BE PROTECTED DURING CONSTRUCTION. ANY DAMAGE SHALL BE REPAIRED TO THE UTILITY OWNER'S SATISFACTION.
- 13. SUBCONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS AND MEASUREMENTS AND SHALL NOTIFY CONTRACTOR AND DOCUMENT ANY DISCREPANCIES PRIOR TO ANY WORK.
- 14. ALL FORMING, BRACING, AND SHORING FOR EQUIPMENT SHALL BE SUPPLIED AND INSTALLED BY THE SUBCONTRACTOR.
- 15. ANY CHANGES INITIATED BY SUBCONTRACTOR SHALL BE SUBMITTED FOR APPROVAL PRIOR TO ANY WORK. APPROVED CHANGES SHALL BE INCLUDED IN THESE DOCUMENT REVISIONS AND PROVIDED TO THE ENGINEER OF RECORD. SUBCONTRACTOR WILL BE AT RISK FOR WORK PERFORMED WITHOUT APPROVAL.
- 16. SUBCONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL EQUIPMENT MOUNTING, MATERIALS, AND HARDWARE AND MOCK-UP IMAGES FOR APPROVAL PRIOR TO ANY WORK.
- 17. SUBCONTRACTOR SHALL RECORD ALL CHANGES AND PROVIDE REDLINED DRAWINGS TO THE CONTRACTOR AT THE COMPLETION OF THE PROJECT.

## GENERAL ELECTRICAL NOTES

- 1. DRAWINGS ARE NECESSARILY DIAGRAMMATIC BY THEIR NATURE AND ARE NOT INTENDED TO SHOW EVERY CONNECTION IN DETAIL OR EVERY PIPE OR CONDUIT IN ITS EXACT LOCATION. CAREFULLY INVESTIGATE STRUCTURAL AND FINISH CONDITIONS AND COORDINATE THE WORK. ORGANIZE AND LAY OUT WORK SO THAT IT WILL BE CONCEALED IN FURRED CHASES AND SUSPENDED CEILINGS, ETC., IN FINISHED PORTIONS OF THE BUILDING, UNLESS SPECIFICALLY NOTED TO BE EXPOSED. INSTALL ALL WORK PARALLEL OR PERPENDICULAR TO BUILDING LINES UNLESS OTHERWISE NOTED.
- 2. THE INTENT OF THE DRAWINGS IS TO ESTABLISH THE TYPES OF SYSTEMS AND FUNCTIONS; NOT TO SET FORTH EACH ITEM ESSENTIAL TO THE FUNCTIONING OF THE SYSTEM. INSTALL THE WORK COMPLETE INCLUDING MINOR DETAILS NECESSARY TO PERFORM THE FUNCTION INDICATED REVIEW PERTINENT DRAWINGS, MANUFACTURERS' INSTALLATION MANUALS, ETC., AND ADJUST THE WORK TO CONDITIONS SHOWN WHERE DISCREPANCIES OCCUR BETWEEN DRAWINGS SPECIFICATIONS, MANUFACTURER INSTALLATION AND OPERATION MANUALS AND ACTUAL FIELD CONDITIONS, NOTIFY THE OWNER & ENGINEER PRIOR TO BEGINNING ANY WORK.
- 3. COORDINATE THE ACTUAL LOCATIONS OF ELECTRICAL EQUIPMENT WITH BUILDING FEATURES AND OTHER EQUIPMENT IN THE FIELD. REVIEW ANY PROPOSED CHANGES IN ELECTRICAL EQUIPMENT LOCATION WITH THE OWNER.
- 4. ALL DIMENSIONAL INFORMATION RELATED TO NEW STRUCTURES SHALL BE TAKEN FROM THE APPROPRIATE DRAWINGS. ALL DIMENSIONAL INFORMATION RELATED TO EXISTING FACILITIES SHALL BE TAKEN FROM ACTUAL MEASUREMENTS MADE BY THE CONTRACTOR ON THE SITE.
- 5. WORK, MATERIALS AND EQUIPMENT SHALL COMPLY WITH THE RULES AND REGULATIONS SPECIFIED IN THE EDITION OF NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) ADOPTED BY THE JURISDICTION OF THE PROJECT.
- 6. ALL EQUIPMENT AND MATERIALS SHALL BE DELIVERED TO THE PROJECT SITE CLEAN AND SEALED FOR PROTECTION. TAKE SUCH PRECAUTIONS AS ARE NECESSARY TO PROTECT APPARATUS AND MATERIALS FROM DAMAGE. PROTECT FACTORY FINISH FROM DAMAGE DURING CONSTRUCTION UNTIL ACCEPTANCE OF THE PROJECT. RESTORE ANY FINISHES THAT BECOME STAINED OR DAMAGED TO OWNER & ENGINEER'S SATISFACTION.
- 7. PROVIDE NEW PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN PRODUCTION OF SUCH EQUIPMENT. PROVIDE THE MANUFACTURER'S LATEST STANDARD DESIGN FOR THE TYPE OF PRODUCT SPECIFIED.
- 8. PRODUCTS SHALL CONFORM TO REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE. WHERE UNDERWRITERS' LABORATORIES HAVE SET STANDARDS, LISTED PRODUCTS AND ISSUED LABELS, PRODUCTS USED SHALL BE LISTED AND LABELED TO THOSE STANDARDS BY UL OR ANOTHER AGENCY ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION. PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE LISTING OF THE EQUIPMENT. 9. SUPPLY SIDE CONNECTIONS AS PERMITTED BY NEC ARTICLE 690.64 SHALL BE MADE IN
- 10. DESIGNATIONS: EXTERNALLY MARK ALL EQUIPMENT, DEVICES, FEEDERS, BRANCH CIRCUITS AND SIMILAR ITEMS WITH NAMEPLATES AS INDICATED ELSEWHERE IN THESE DRAWINGS AND SPECIFICATIONS.
- 11 MATERIALS AND FOURPMENT TO BE REMOVED EXCEPT ITEMS SPECIFICALLY NOTED TO BE RELOCATED OR RETURNED TO THE OWNER BECOME PROPERTY OF THE SUBCONTRACTOR AND SHALL BE IMMEDIATELY REMOVED FROM THE PROJECT SITE. IF THE OWNER IDENTIFIES OTHER ITEMS DURING CONSTRUCTION, THOSE ITEMS BECOME OWNER PROPERTY AND SHALL BE TURNED OVER TO THE OWNER.
- 12. COORDINATE THE SCHEDULING OF ALL WORK REQUIRING ELECTRICAL SHUTDOWNS WITH THE OWNER. THIS MAY REQUIRE PERFORMING THE WORK OUTSIDE OF NORMAL WORKING HOURS. AND/OR PROVIDING TEMPORARY POWER WITH A PORTABLE GENERATOR OR BY OTHER APPROVED MEANS. COORDINATE TEMPORARY POWER REQUIREMENTS AND POSSIBLE ALTERNATE POWER SOURCES WITH THE OWNER.
- 13. EQUIPMENT INSTALLATION SHALL BE IN ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S PUBLISHED RECOMMENDATIONS.
- 14. OBSERVE ALL CLEARANCES REQUIRED BY NEC 110.26.
- 15. EQUIPMENT SHALL BE SET LEVEL AND PLUMB.

ACCORDANCE WITH NEC ARTICLE 230.

- 16. SEAL OPENINGS INTO EQUIPMENT TO PREVENT ENTRANCE OF ANIMALS, BIRDS AND INSECTS.
- 17. ALL UNUSED OPENINGS SUCH AS, BUT NOT LIMITED TO, KNOCKOUTS ON PANELS AND BOXES, SURFACE WIREWAY OPENINGS, BUSWAY OPENINGS, AND CIRCUIT BREAKER EMPTY SLOTS SHALL BE COVERED WITH APPROVED COVER PLATES.
- 18. ON ROOF MOUNTED INSTALLATIONS WITH A PARAPET LESS THAN 54" IN HEIGHT, SERVICEABLE EQUIPMENT SHALL BE SET BACK AT LEAST 10' FROM THE EDGE OF THE ROOF.
- 19. COOPERATE WITH TRADES OF ADJACENT, RELATED OR AFFECTED MATERIALS OR OPERATIONS, AND WITH TRADES PERFORMING CONTINUATIONS OF THIS WORK IN ORDER TO EFFECT TIMELY AND ACCURATE PLACING OF WORK AND TO COORDINATE, IN PROPER AND CORRECT SEQUENCE, THE WORK OF SUCH TRADES.
- 20. WORK SHALL BE PERFORMED BY COMPETENT WORKERS SKILLED IN THEIR TRADE.
- 21. THIS INSTALLATION SHALL BE COMPLETE AND FUNCTIONAL.
- 22. COORDINATE SYSTEM TURNOVER WITH OWNER & ENGINEER.
- 23. SUBCONTRACTOR SHALL FOLLOW OWNER & ENGINEER SEQUENCE AND PROCEDURES FOR QUALITY ASSURANCE TESTING AND SYSTEM COMMISSIONING DURING INSTALLATION; INCLUDING MEGGER TESTING OF ALL CONDUCTORS AFTER BEING PULLED THROUGH CONDUIT BUT PRIOR TO TERMINATION.
- 24. OWNER & ENGINEER RESERVES THE RIGHT TO APPROVE OR DISAPPROVE ANY PRODUCTS OR WORK NOT IN CONFORMANCE WITH THESE SPECIFICATIONS.

## DRY TYPE TRANSFORMER SCHEDULE

ID	KVA	480 VOLT OVERCURRENT	208 VOLT OVERCURRENT	480V FEEDER	120/208V FEEDER
T1	9	20A, 3P	30A, 3P	3#12 & 1#12G - 3/4"C.	4#10 & 1#10G - 3/4"C.
T2	15	30A, 3P	50A, 3P	3#10 & 1#10G - 3/4"C.	4#6 & 1#10G - 1"C.
Т3	30	60A, 3P	100A, 3P	3#4 & 1#10G - 1"C.	4#1 & 1#8G - 1 1/4"C.
T4	45	80A, 3P	150A, 3P	3#3 & 1#8G - 1 1/4"C.	4#1/0 & 1#6G - 2"C.
T5	75	150A, 3P	250A, 3P	3#1/0 & 1#6G - 1 1/2"C.	4-250kcmil & 1#4G - 3"C.
T6	112.5	200A, 3P	400A, 3P	3#250 & 1#4G - 2"C.	4-500kcmil & 1#3G - 4"C.
T7	150	300A, 3P	500A, 3P	3-350kcmil & 1#4G - 3"C.	8-250kcmil & 2#2G 2-3"C.
Т8	225	400A, 3P	800A, 3P	3-500kcmil & 1#3G - 3 1/2"C.	8-500kcmil & 2#1/0G 2-4"C.
Т9	300	600A, 3P	1000A, 3P	6-350kcmil & 2#1G 2-3"C.	12-400kcmil & 3#3/0G 3-3"C.
T10	500	900A, 3P	1600A, 3P	9-400kcmil & 3#2/0G	16-600kcmil & 4#300G

## CONDUIT NOTES:

- 1. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH THE LATEST APPLICABLE STANDARDS OF ANSLINEMA, ULINEPA-70 WITH REGARDS TO MATERIAL, DESIGN, AND CONSTRUCTION.
- 2. THIS DRAWING IS FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY ALL LOCATIONS, DEVICES, MATERIALS, AND EQUIPMENT, PRIOR TO THE START OF ANY WORK.
- 3. CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE, AT LEAST 72 HOURS PRIOR TO BEGINNING ANY EXCAVATION.
- 4. PVC CONDUIT AND FITTINGS SHALL CONFORM TO ANSI/NEMA SPECIFICATIONS, TC-2, TC-3 AND UL-651.
- 5. CONTRACTOR SHALL OBTAIN ALL NECESSARY INSPECTIONS AND COORDINATE ALL WORK WITH THE OWNER AND THE ENGINEER TRENCHES SHALL BE INSPECTED PRIOR TO BACKFILLING. 6. LOCATIONS OF ALL UTILITIES ARE APPROXIMATE AND ARE
- PROVIDED FOR INFORMATION ONLY.
- 7. CONTRACTOR TO LOCATE ALL ELECTRICAL EQUIPMENT AS DIRECTED BY THE OWNER, ARCHITECT & ENGINEER

## LIGHTING NOTES:

- 1. SEE DRAWING FOR ELECTRICAL LEGEND AND GENERAL NOTES. 2. COORDINATE LIGHTING FIXTURE MOUNTING HEIGHTS WITH ARCHITECTURAL CASEWORK AND INTERIOR
- ELEVATION DRAWINGS. 3. COORDINATE EXACT LIGHTING FIXTURE LOCATIONS AND LENGTHS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
- 4. ALL NEW EQUIPMENT SHALL MATCH BASE BUILDING STANDARDS AND SPECIFICATIONS, UNLESS NOTED OTHERWISE. ALL NEW EQUIPMENT SHALL BE COMPATIBLE WITH THE EXISTING SYSTEM
- 5. CIRCUIT NUMBER DESIGNATIONS ARE INTENDED TO ILLUSTRATE BRANCH WIRING CONFIGURATION ONLY. 6. ELECTRICAL CONTRACTOR SHALL COORDINATE AND CONFIRM K RATING (TEMPERATURE) OF FIXTURE
- LAMPS TO ACHIEVE COLOR AS PER ARCHITECT. LAMPS SHALL BE 3500K UNLESS NOTED OTHERWISE. 7. PROVIDE "HOT" UNSWITCHED POWER AT ALL LIFE SAFETY BATTERY BALLASTS AND EXIT SIGNS. BRANCH CIRCUITS SHALL BE 3 WIRE WHERE REQUIRED. ALL EXIT SIGNS SHALL BE SUPPLIED WITH INTERNAL, 90 MINUTE, EMERGENCY BATTERY.
- 8. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ANY STEP DOWN TRANSFORMERS, WIRING, AND CONTROLS FOR LOW VOLTAGE LIGHTING WHERE NECESSARY. 9. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MOUNTING HARDWARE APPLICABLE TO FIXTURE AND
- CEILINGS TYPE INTO WHICH FIXTURE IS TO BE INSTALLED. REFER TO ARCHITECTS REFLECTED CEILING PLAN FOR CEILING MATERIALS. 10. ALL EMERGENCY BATTERY PACKS SHALL BE SUPPLIED WITH CONTACTS TO ACCEPT REMOTE EMERGENCY HEADS.
- 11. CONTRACTOR SHALL COORDINATE ALL LIGHTING WITH NEW SYSTEMS ABOVE CEILING PRIOR TO INSTALLATION. CONTRACTOR SHALL RESOLVE ANY INSTALLATION CONFLICTS IN FIELD AND NOTIFY ARCHITECT AND ENGINEER OF CHANGE.
- WHERE LIGHT FIXTURES ARE LOCATED WITHIN RATED CEILINGS OR WALLS, THE THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A UL APPROVED FIRE RATED ENCLOSURE. PROVIDE ELCO FIRE BOX OR APPROVED EQUAL.
- 13. COORDINATE WITH THE ARCHITECTURAL DRAWING THE CEILING TYPES AND PROVIDE IC RATINGS WERE REQUIRED.
- 14. ALL EXPOSED AND SURFACE MOUNTED CONDUIT SHALL BE GALVANIZED RIGID STEEL. 15. PROVIDE A 7 DAY PROGRAMMABLE ASTRONOMICAL TIME CLOCK WITH INTEGRAL PHOTOCELL FOR ALL EXTERIOR
- LIGHTING (TYPICAL). 16. ALL FIXTURES UTILIZING HID LAMPS SHALL MEET THE ENERGY INDEPENDENT AND SECURITY ACT "EISA"

GROUNDING
1#6 - 3/4"C
1#2 - 3/4"C
1#1/0 - 3/4"C.
1#2/0 - 3/4"C
1#2/0 - 3/4"C
1#3/0 - 3/4"C
1#3/0 - 3/4"C

	LEGEND OF FEEL	DER SIZES	5 - COPPER CONDUCTORS		
FEEDER SYMBOL	CONDUCTORS (3 PHASE, 3 WRE) WITH GROUND	MINIMUM RACEWAY SIZE	CONDUCTORS (3 PHASE, 4 WIRE) WITH GROUND	MINIMUM RACEWAY SIZE	NOMINAL AMPERE RATING
1	3-6 AWG & 1-10 AWG GND.	3/4"			
2			4-6 AWG & 1-10 AWG GND.	1"	60
3	3-4 AWG & 1-8 AWG GND.	1"			70
4			4-4 AWG & 1-8 AWG GND.	1 1/4"	70
5	3-1 AWG & 1-8 AWG GND.	1 1/4"			100
6			4-1 AWG & 1-8 AWG GND.	1 1/2"	
$\bigcirc$	3-1 AWG & 1-6 AWG GND.	1 1/2"			125
8			4-1 AWG & 1-6 AWG GND.	2"	
(9) (0)	3-1/0 AWG & 1-6 AWG GND.	1 1/2"			150
			4-1/0 AWG & 1-6 AWG GND.	2″	
	3-2/0 AWG & 1-6 AWG GND.	2″		- "	175
		0"	4-2/0 AWG & 1-6 AWG GND.	2"	
 	3-3/0 AWG & $1-6$ AWG GND.	2			200
<u>(4</u> )		0"	4-3/0 AWG & 1-6 AWG GND.	2	
	3-4/0 AWG & 1-4 AWG GND.	2		0.1/0"	225
 	3-250 KCMII & 1-4 AWC CND	2 1/2"	4-4/0 AWG & 1-6 AWG GND.	21/2	
 	5-250 KCMIL & 1-4 AWG. GND.	2 1/2	4-250 KCMII & 1-4 AWC CND	7"	250
 	3-350 KCNII & 1-4 AWC CND		4-230 KOMIL & 1-4 AWG GND.	5	
ල න			4-350 KCMII & 1-4 AWG GND	3"	300
 67	3-500 KCMIL & 1-3 AWG GND				
 			4-500 KCMII & 1-3 AWG GND.	4"	350
 3	3-600 KCMIL & 1-3 AWG GND.	3"			
2 <b>4</b>		-	4-600 KCMIL & 1-3 AWG GND.	4"	400
25)	6-250 KCMIL & 2-2 AWG GND.	2-2 1/2"			
 20		,	8-250 KCMIL & 2-2 AWG GND.	2-3"	500
Ø	6-350 KCMIL & 2-1 AWG GND.	2-3"			
<b>2</b> 3			8-350 KCMIL & 2-1 AWG GND.	2-3 1/2"	600
29	6-600 KCMIL & 2-1/0 AWG GND.	2-3 1/2"			800
<b>1</b>			8-600 KCMIL & 2-1/0 AWG GND.	2-4"	800
ব্য	9-400 KCMIL & 3-2/0 AWG GND.	3–3"			1000
<u>3</u> 2			12-400 KCMIL & 3-2/0 AWG GND.	3-3 1/2"	1000
<b>3</b>	9-600 KCMIL & 3-3/0 AWG GND.	3-3 1/2"			1200
€₽			12-600 KCMIL & 3-3/0 AWG GND.	3-3 1/2"	.200
<u>(5)</u>	12-600 KCMIL & 4-4/0 AWG GND.	4-3 1/2"			1600
<u></u>			16-600 KCMIL & 4-4/0 AWG GND.	4-3 1/2"	
<u></u>	15-600 KCMIL & 5-250 KCMIL GND.	5-3 1/2"			2000
<u> (89</u>			20-600 KCMIL & 5-250 KCMIL GND.	5-3 1/2"	
<u>(99)</u>	18-600 KCMIL & 6-350 KCMIL GND.	6-3 1/2"			2500
(40) (1)		0.7.4 (0"	24-600 KCMIL & 6-350 KCMIL GND.	6-3 1/2"	
<u>(</u> )	24-500 KCMIL & 8-400 KCMIL GND.	8-3 1/2		<b>0</b> 4"	3000
<u>*</u>	24 600 KONII & 8 500 KONII OND	9 Z 1/0"	32-500 RCMIL & 8-400 RCMIL GND.	8-4	
 ∡⋧	ZT-UUU KUMIL & O-JUU KUMIL GND.	0-51/2	32-600 KCMII & 8-500 KCMII CND	8-3 1 /0"	3200
 43	27-600 KCMII & 9-500 KCMII CND	9_3 1/2"	UZ-UU NUMIL & O-UU NUMIL GIND.	0-5 1/2	
<u>سع</u> هم	27 GOU NOMIE & 9-300 NOMIE GND.	3-3 1/2	36-600 KCMII & 9-500 KCMII CND	9-31/2"	3500
•بع 47>	30-600 KCMII & 10-500 KCMII CND	10-3 1/2"	UUU NOMIL & J-JUU NOMIL GIND.	3 3 1/2	
 (478)	US US NOME & 10-300 NOME GND.	10-0 1/2	40-600 KCMII & 10-500 KCMII CND	10-3 1/2"	4000
	L	L	VIRE REQUIRED	10 0 1/2	
_	FOR ALL FEEDERS TO PANELBOARDS SEI GROUND RECEPTACLES REFER TO ISOLAT DETAIL FOR ADDITIONAL INFORMATION	RVING ISOLATI TED GROUNDIN	ED IG DEI 2C	NOTES SINGLE -W/GND.	-PHASE

BRANCH CIRCL	ITS SCHEDULE
120 OR 277 VOLT	1ø, 2W. CIRCUITS
CIRCUIT BREAKER	CONDUCTOR
30A-1P	2#10+1#10 GND - 3/4"C
40A-1P	2#8+1#10 GND 3/4"C
50A-1P	2#6+1#10 GND 3/4"C
60A-1P	2#6+1#10 GND 3/4"C
208 VOLT 1ø,	2W. CIRCUITS
CIRCUIT BREAKER	CONDUCTOR
20A-2P	2#12+1#12 GND 3/4"C
30A-2P	2#10+1#10 GND 3/4"C
40A-2P	2#8+1#10 GND 3/4"C
50A-2P	2#6+1#10 GND 3/4"C
60A-2P	2#6+1#10 GND 3/4"C
208/120 VOLT, 1	10, 3W CIRCUITS
CIRCUIT BREAKER	CONDUCTOR
20A-2P	3#12+1#12 GND 3/4"C
30A-2P	3#10+1#10 GND 3/4"C
40A-2P	3#8+1#10 GND 3/4"C
50A-2P	3#6+1#10 GND 3/4"C
60A-2P	3#6+1#10 GND 3/4"C
208 OR 480 VOI	TS, 3Ø, 3W CIRCUITS
CIRCUIT BREAKER	CONDUCTOR
20A-3P	3#12+1#12 GND 3/4"C
30A-3P	3#10+1#10 GND 3/4"C
40A-3P	3#8+1#10 GND 3/4"C
50A-3P	3#6+1#10 GND 3/4"C
60A-3P	3#6+1#10 GND 3/4"C
208Y/120 & 480Y/277	VOLT, 30,4W CIRCUITS
CIRCUIT BREAKER	CONDUCTOR
20A-3P	4#12+1#12 GND 3/4"C
30A-3P	4#10+1#10 GND. – 3/4"C
40A-3P	4#8+1#10 GND 3/4"C
50A-3P	4#6+1#10 GND. – 1"C
60A-3P	4#6+1#10 GND. – 1"C

	NEMA ENCLOSURE SCHEDULE
TYPE	DESCRIPTION
1	GENERAL PURPOSE
2	DRIP-TIGHT
3	WATERPROOF(WEATHER RESISTANT)
4	RAINTIGHT
5	WATERTIGHT
6	DUST-TIGHT
7	SUBMERSIBLE
8	A,B,C OR D HAZARDOUS LOCATIONS CLASS 1-AIR BREAK
9	A,B,C OR D HAZARDOUS LOCATIONS CLASS 1-OIL IMMERSED
10	E,F, OR G HAZARDOUS LOCATIONS CLASS 2
11	BUREAU OF MINES-EXPLOSION PROOF
12	ACID OR FUME RESISTANT OIL IMMERSED
1	INDUSTRIAL USE
2	DUST PROOF

DENOTES ADDITIONAL NEUTRAL CONDUCTOR REQUIRED (200%) FOR ALL FEEDERS TO PANELBOARD

EXAMPLES

■ <2> 4-6 AWG, 1-10 AWG IG & 1-10 AWG GND. - 1" CONDUIT

\* <2 3-6 AWG, 1-1 AWG NEUTRAL & 1-10 AWG GND. - 1 1/2" CONDUIT

				DISTRIBUT	ION PANEL SCHEDULE		
PHASE: 1 WIRES: 3		3	VOLTAGE: 120/240VMAIN: 400A MAIN C.B.		42 CIRCUIT PANEL MINIMUM		
CIRCUIT		BREAKER					
NO.	FRAME	POLES	TRIP	DESCRIPTION OF LOAD	CONDUIT & WIRE S	SIZE	COMMENTS
М	400	2	400	MAIN BREAKER	3W#600MCM W/#1/0GND CU	4" PVC	
1	80	2	80	FUEL DISPENSING EQUIPMENT	3W#2AWG W/#8GND CU	1.5" PVC	FUEL ISLAND / DISPENSER
2	50	2	50	SHORE POWER PEDESTAL	3W#4AWG W/#8GND CU	1.5" PVC	50A/2P POWER PEDESTAL (9 TOTAL)
3	50	2	50	SHORE POWER PEDESTAL	3W#4AWG W/#8GND CU	1.5" PVC	50A/2P POWER PEDESTAL
4	50	2	50	SHORE POWER PEDESTAL	3W#4AWG W/#8GND CU	1.5" PVC	50A/2P POWER PEDESTAL
5	50	2	50	SHORE POWER PEDESTAL	3W#4AWG W/#8GND CU	1.5" PVC	50A/2P POWER PEDESTAL
6	50	2	50	SHORE POWER PEDESTAL	3W#4AWG W/#8GND CU	1.5" PVC	50A/2P POWER PEDESTAL
7	50	2	50	SHORE POWER PEDESTAL	3W#4AWG W/#8GND CU	1.5" PVC	50A/2P POWER PEDESTAL
8	50	2	50	SHORE POWER PEDESTAL	3W#4AWG W/#8GND CU	1.5" PVC	50A/2P POWER PEDESTAL
9	50	2	50	SHORE POWER PEDESTAL	3W#4AWG W/#8GND CU	1.5" PVC	50A/2P POWER PEDESTAL
10	50	2	50	SHORE POWER PEDESTAL	3W#4AWG W/#8GND CU	1.5" PVC	50A/2P POWER PEDESTAL
11	20	2	20	BULKHEAD LIGHTING CIRCUIT #1	2W#10AWG W/#10GND CU	1" PVC	5 X 175W FIXTURES (NORTH)
12	20	2	20	BULKHEAD LIGHTING CIRCUIT #2	2W#10AWG W/#10GND CU	1" PVC	2 X 175W FIXTURES (SOUTH)
13	20	2	20	OFFLOAD HOIST	2W#10AWG W/#10GND CU	1" PVC	3HP, 240V
14	20	1	20	FLAG POLE LIGHT	2W#10AWG W/#10GND CU	1" PVC	VIA TIME CLOCK IN CABINET
15	20	2	20	LIGHT POLE CIRCUIT #1	3W#8AWG W/#10GND CU	2" PVC	2 FIXTURES (NORTH)
16	20	2	20	LIGHT POLE CIRCUIT #2	3W#8AWG W/#10GND CU	2" PVC	3 FIXTURES (MIDDLE)
17	20	2	20	LIGHT POLE CIRCUIT #3	3W#8AWG W/#10GND CU	2" PVC	2 FIXTURES (SOUTH)
18	20	2	20	PUMPOUT CIRCUIT	3W#10AWG W/#10GND CU	1" PVC	1.5HP X200
19	20	1	20	GFCI RECEPTACLE, TC POWER & LIGHT	2W#12AWG W/#12GND CU	1" EMT	INSIDE CABINET
20	20	1	20	SPARE			
21	20	1	20	SPARE			
22	20	2	20	SPARE			

**E103** PROPOSED ELECTRICAL PANELBOARD SCHEDULE NOT TO SCALE

![](_page_54_Figure_76.jpeg)

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![](_page_55_Figure_0.jpeg)

1. HANDHOLE ORIENTATION TO BE SUCH THAT ALL SUPPLY DUCTS ENTER ON SAME SHORT SIDE.

2. SIZE AND NUMBER OF CONDUITS AS REQUIRED. 3. CONDUIT LOCATIONS SHOWN ARE TYPICAL.

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(E104 3) PRECAST ELECTRIC HANDHOLE DETAIL

![](_page_55_Figure_7.jpeg)

## ▤ਾ⇒-DISTRIBUTION PANEL

![](_page_55_Picture_9.jpeg)

- TYPICAL NAMEPLATE DETAIL

- BREAKER FEED NAMEPLATE SHALL INDICATE WHAT IT IS SERVING AND SIZE OF CIRCUIT BREAKER.

> TYPICAL NAMEPLATE DETAIL

			Power Engineers, LLC Electric Power Engineering www.PowerEngineersLLC.com
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![](_page_56_Picture_1.jpeg)

![](_page_56_Figure_2.jpeg)

![](_page_56_Figure_3.jpeg)

![](_page_56_Figure_4.jpeg)

5. CONTRACTOR SHALL PLACE MARKING TAPE 18" ABOVE DUCT STRUCTURE. 6. DEPTH OF SUB BASE AND MATERIAL USED SHALL CONFORM TO STANDARD STATE AND/OR MUNICIPAL SPECIFICATIONS.

TO GROUND BUS

- SUBGRADE/CONCRETE

1" X 45 CHAMFER

ELECTRICAL EQUIPMENT

ENCLOSURE-

CONCRETE PAD -

RIGID STEEL CONDUIT (FOR

3. ALL BACKFILL SHALL BE THOROUGHLY COMPACTED IN LAYERS OF NOT MORE THAN 6 INCHES. 4. IN ROCK EXCAVATION, PROVIDE 6" DEAD SAND CUSHION AROUND STRUCTURES.

MATERIALS.

1. THE FIRST 12" OF FILL SHOULD BE SAND OR OTHER GRANULAR MATERIAL (NOT TO EXCEED  $\frac{1}{2}$ ") TAMPED USING LIGHTWEIGHT EQUIPMENT SUCH AS PNEUMATIC OR VIBRATING TAMPERS. 2. BACKFILL SHALL BE FREE FROM LARGE STONES, FROZEN MATERIAL, WOOD, AND OTHER EXTRANEOUS

ELECTRIC MH INSTALLATION NOTES:

![](_page_56_Figure_11.jpeg)

![](_page_56_Figure_12.jpeg)

# 2 PRECAST MANHOLE PULLING IRON DETAILS

![](_page_56_Figure_14.jpeg)

![](_page_56_Figure_15.jpeg)

![](_page_56_Picture_16.jpeg)

![](_page_56_Picture_17.jpeg)

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![](_page_57_Figure_0.jpeg)

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![](_page_57_Picture_3.jpeg)

5 TYPICAL LIGHT POLE WIRING DETAIL

## ELECTRICAL NOTES

- (1.) INSTALL A MAIN SERVICE DISCONNECT DEVICE, PANEL BOARD, C/T CABINET AND UTILITY SERVICE METER ON NEW CONCRETE HOUSEKEEPING PAD. THE PANELBOARD SHALL BE RATED AT 400 AMP, 120/ 240 VOLT, SINGLE PHASE, 60 HZ, MOUNTED IN TYPE 4X ENCLOSURES.
- 2.) TYPICAL CONDUIT OUT TO SHORE POWER CENTERS AND RELOCATED SHED.
- (3.) EXISTING UTILITY POLE.
- (4.) ONE (1), 4" SCHED. 40, PVC CONDUIT, WITH 3# 600 MCM ´ + 1#`ĴAWG CU GND., IN EACH.
- 5. PROVIDE NEW UTILITY COMPANY APPROVED PULL BOX AT BASE OF EXISTING UTILITY POLE.
- 6. 1 4" C., WITH 3#600 MCM + 1#3AWG CU GND., IN EACH FROM PULL BOX TO MAIN SERVICE DISCONNECT DEVICE TO C/T CABINET AND TO PANELBOARD. PIPING BETWÉEN ENCLOSURES TO BE SCH 80 PVC.
- (7.) PANEL BOARD, C/T CABINET AND MAIN DISCONNECT DEVICE TO BE LOCATED IN NEMA 4X, TYPE 304, CORROSION RESISTANT, STAINLESS STEEL ENCLOSURES (SIZE AS REQUIRED) PER APPROVED MANUFACTURER, WITH LOCKING HANDLE, INTERNAL FRAME FOR MOUNTING PANELBOARD AND THE C/T EQUIPMENT AND ALL NECESSARY ACCESSORIES INCLUDING AN EXTERNALLY MOUNTED PHOTOCELL AND INTERNALLY MOUNTED TIME CLOCKS FOR CONTROL OF THE WALL LIGHTS & FLAG POLE LIGHT (TYPE A) AN INTERNAL LIGHT KIT WITH LIGHT SWITCH AND 20A, 120 VOLT, GFI PROTECTED DUPLEX RECEPTACLES.
- 8. ALL CONDUITS INDICATED ARE RUN UNDERGROUND FROM THE PANEL BOARD TO THE SHORE POWER CENTERS AND LIGHTING.
- 9. REINFORCED HOUSEKEEPING PAD (SIZE AS REQUIRED). (10) EXISTING GROUND RODS TO REMAIN AND TO BE REUSED, AFTER TESTING FOE GROUND INTEGRITY, FOR NEW PANEL GROUND AS REQUIRED BY NFPA-70, ARTICLE 250.
- (1) 1 # 2/0 GROUND WIRE TO EXISTING GROUND ROD COUNTERPOISE.
- (12) EXISTING SERVICE CONDUITS TO BE REROUTED TO THE ENCLOSURE
- OF THE NEW MAIN SERVICE DISCONNECT DEVICE AS INDICATED. (13) NEW 400A, 120/240V 42 CIRCUIT PANELBOARD.

**ELECTRICAL SERVICE CABINET DETAIL** 6 / <u>N.T.S.</u>

## -LIGHTING BALLAST AND BULB IN FIXTURE (BY CONTRACTOR)

## IN-LINE WATER-PROOF FUSE HOLDER. (TYP. BUSSMAN OR APPROVED EQUAL) FUSE SIZE: 3A FOR 240V FIXTURE

![](_page_57_Figure_22.jpeg)

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