REQUEST FOR PROPOSAL
for
CREC Operations Building Generator Addition
Bid #19-104

for

Capitol Region Education Council
147 Charter Oak Ave
Hartford CT, 06106

Issue Date: April 3, 2019
Site Visits: April 10, 2019, 10:00 AM
Written Proposals Due: April 23, 2019, 11:00 AM

Request for Proposal

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INVITATION TO BID

CAPITOL REGION EDUCATION COUNCIL

FOR GENERATOR PROJECT BID #19-105

The Capitol Region Education Council (CREC) of Hartford, Connecticut requests proposals from qualified Contractors for Generator Installation. Proposals will be received in the Purchasing office until 11:00 a.m. on Tuesday April 23, 2019 at which time no further proposals will be considered.

Please see CREC web site at www.crec.org/rfp or the DAS web site www.das.ct.gov for packets and all information regarding this RFP.

Mandatory Pre Bid Site Visits will be April 10, 2019, 10:00 AM at
147 Charter Oak Ave Hartford CT.

Questions concerning the proposal shall be directed to Kate Rotella krotella@crec.org

CREC reserves the right to reject any or all proposals, and in particular, to reject a proposal incomplete or irregular. CREC reserves the right to waive any informality or irregularity in any proposal received, to negotiate changes to offered terms and to accept the proposal that, in its judgment, will be in the best interest of CREC.

The Capitol Region Education Council is an Equal Opportunity Employer.

INTRODUCTION

ABOUT CREC: CREC is a Regional Education Service Center ("RESC") established under Connecticut General Statute 10-66a-n.

CREC is a public non-profit organization and is tax exempt under section 170 c (1) of the Internal Revenue Code.

SCOPE OF WORK

PURPOSE OF RFP: This RFP is requesting proposals for services necessary and/or required to perform the work and provide construction services set forth in this RFP and accompanying blueprint documents for **147 Charter Oak Ave. Hartford CT.** to install a generator that will provide backup power to the CREC operations building.

The Capitol Region Education Council (CREC) is seeking bid proposals for all labor, materials and equipment required to provide, install, and acceptance test a complete and operable standby electrical generating system, including all devices and equipment specified within the following CREC Operations Center Generator Addition Project documents dated March 29, 2019.

The scope of work shall include, but is not limited to, management and execution of: site, civil, demolition, concrete, masonry, electrical, plumbing, record keeping, coordination of trades, special inspections, schedule adherence, shop drawing and close out document turnover.

Work, materials, and equipment shall comply with the most restrictive of local, state, and federal authorities' codes and ordinances for these plans and specifications. The contractor is responsible for all permits and fees related to the project and the subsequent Certificate of Occupancy from the City of Hartford.

SUBMITTING A PROPOSAL

1. A Proposal Packet must be submitted in a sealed envelope(s) or package(s), bearing on the outside the wording "Generator Project Bid #19-105"

2. Vendors shall only rely upon the written instructions of this RFP and any written addendums to the RFP, which addendums shall be provided to all vendors. Vendor shall not rely upon, nor will CREC be responsible for, any verbal instructions given to vendors.

3. Responses may be dropped of or returned by mail to the address below. Responses submitted by mail, must be in a sealed envelope(s) or package(s) containing the Proposal (marked as directed above) must be enclosed in another envelope, addressed as specified to:

Kate Rotella
Purchasing Manager
Capitol Region Education Council
111 Charter Oak Avenue
Hartford, CT 06106
Generator Project Bid #19-105

REQUIREMENTS TO BID

MANDATORY SITE VISIT

In order to be eligible to submit a Proposal, each vendor shall have participated in a visit.

Mandatory site visit is scheduled for April 10, 2019 at 10:00 AM at 147 Charter Oak Ave. Hartford, CT. During the site visit, vendors will be provided with a set of blueprints.

Vendors are required to attend the site visit and to familiarize themselves with the areas involved and the conditions under which the work is to be performed. Failure to do so will not relieve the successful vendor of the obligation to furnish all labor, material, and equipment in accordance with the requirements of this RPF and the Contract.

DOCUMENTS TO BE PROVIDED IN PROPOSAL

A Proposal shall contain all information required by this RFP. Otherwise the Proposals may be considered non-conforming and subject to rejection.

1. **Bid Submittal Form.** A printed copy of the Bid Submittal Form.

2. **Insurance.** Each vendor must include a printed and signed copy of the entire Insurance and Property Requirements section of the RFP along with a printed and signed copy of and any additional materials the vendor wishes to include.

3. **Independence.** Please see Exhibit E for the vendor independence statement. A signed copy of this must be included in the Proposal.

4. **Affidavit.** Please see Exhibit F for the vendor affidavit. A signed copy of the vendor affidavit must be included in the Proposal.

5. **Other.** Information which a vendor desires to present that does not fall within any of the above categories may be presented in this section.

Should a vendor desire clarification or interpretation of any item in the RFP, such request shall be made, in writing, to krotella@crec.org. Such inquiry and the response in writing will be provided to all prospective vendors via an anddendum.

CAPITOL REGION EDUCATION COUNCIL
INFORMATION AND GENERAL REQUIREMENTS TO BIDDERS

1. Sealed proposals three copies and one original will be received at the Office of the Purchasing Manager. Please address all packages Capitol Region Education Council, **Attn: Purchasing Manager** 111 Charter Oak Ave. Hartford, Ct 06106. At the designated time of opening, they will be publicly opened, read, recorded and placed on file. Bids may be mailed or hand-delivered by the specified time, please address as stated to ensure delivery to the correct office. **Packets received after designated time will not be accepted.**

2. The envelope enclosing your bid should be clearly marked on its front by Bid number, Bid Name, time of bid opening and date.

3. Whenever it is deemed to be in the best interest of the agency, The Capitol Region Education Council reserves the right to reject any or all bids, completely or in part, and to waive technical defects, irregularities or any informality in any bid when such action is deemed in the best interest of the agency. Their decision is final.

4. The Bid Documents contain the provisions required for the requested item. Information obtained from an officer, agent, or employee of CREC, any other person shall not affect the risks, or obligations assumed by the Bidder or relieve him/her from fulfilling any of the conditions of the Bid.

5. Each bidder is held responsible for the examination and/or to have acquainted themselves with any conditions at the job site, which would affect their work before submitting a bid. Failure to meet these criteria shall not relieve the Bidder of the responsibility of completing the Bid without extra cost to CREC.

6. The bidder agrees and warrants that in the submission of this sealed bid, they will uphold CREC commitment to following Connecticut State and Federal law ensuring full compliance. CREC prohibits harassment and discrimination on the basis of race, color, religious creed, age, marital status, military or veteran status, national origin, sex, ancestry, sexual orientation, or past or present physical or mental disability in accordance with Titles VI, VII of the Civil Rights Act of 1964,which affirms that no person or group of persons is excluded from participation, denied benefits, or otherwise subjected to discrimination or permits discrimination under any program or activity or any service rendered to the public, on the grounds of race, color, creed, religion, national origin, sex, age or disability. Title IX of the Education Amendments Act of 1973; Section 504 of the Rehabilitation Act of 1973; the Americans with Disabilities Act of 1991; and applicable state laws. Unless it is shown by such bidder that such disability prevents performance

of that which must be done to successfully fulfill the terms of this sealed bid or in any manner which is prohibited by the laws of the United States or the State of Connecticut.

The bidder further agrees to provide the Connecticut Commission on Human Rights and Opportunities with such information requested by the Commission concerning the employment practices and procedures of the bidder. An Affirmative Action Statement may be required by the successful bidder.

7. Bidder agrees to comply with all of the latest Federal and State Safety Standards and Regulations and certifies that all work required in this bid will conform to and comply with said standards and regulations. Bidder further agrees to indemnify and hold harmless CREC for all damages assessed against CREC as a result of Bidder's failure to comply with said standards and/or regulations.

8. The Capitol Region Education Council is exempt from Excise, Transportation and Sales taxes imposed by the Federal Government and/or State of Connecticut. Such taxes must not be included in proposal prices. Exemption certificates will be provided upon request.

9. By submitting a proposal, Vendors/Bidders certify that the proposal is made independently and without collusion, agreement, understanding, or planned course of action with any other Vendor/Bidder and that the contents of the proposal shall not be disclosed to anyone other than their employees, agents, or sureties prior to the official opening. Non-Collusion Statement to be filled out.

10. Vendors shall observe and comply with all Federal, State and local laws, ordinances and regulations. Vendors shall indemnify and save harmless CREC, all of its officers, agents and servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation or negligence whether by the bidder, his employees, his consultant and/or their employees.

11. Bidders are responsible for checking the Capitol Region Education Council website at www.crec.org/coop for any addendums and updates to the Bid.

Additional Information:

All Questions must be submitted in writing to the purchasing manager via email at krotella@crec.org

Rights Reserved CREC

The Capitol Region Education Council reserves the right to award in part, to reject any and all, in whole or in part, for misrepresentation or if the respondent is in default of any prior CREC contract, or if the Respondent limits or modifies any of the terms and conditions and/or specifications of the Request. CREC also reserves the right to waive technical defects, irregularities and omissions if, in its judgment, the best interest of CREC will be served.

Instructions: CREC Insurance Requirements

All contractors and vendors are required to provide proof of the required insurance coverage before entering the premises or commencing any work at any CREC facility. Contractors and vendors must obtain, at their own expense, all the insurance required here from an insurance company A.M. Best rated as “A-VII” or better, and acceptable evidence of such insurance must be properly furnished to, and approved by, CREC.
All subcontractors are subject to the same requirements. It the responsibility of the primary contractor or vendor to obtain acceptable evidence of insurance from subcontractors.
CREC also requires that they be named as an additional insured on your general liability policy(ies). Your general liability policy must be specifically endorsed with ISO Endorsement CG 20 10 (or equivalent) *or* ISO Endorsement CG 20 26 (or equivalent), *and* ISO Endorsement CG 20 37 (or equivalent). Where these forms require a description of locations or projects, enter "All CREC locations or projects." These form numbers must be specifically referenced on the certificate of insurance, and copies of these endorsements naming CREC as additional insured must be furnished with the required certificate of insurance. If your insurance company uses a different form to provide CREC with additional insured status on your policies, copies of those forms must be provided in advance with the insurance certificate for review and approval by CREC.

The amounts of insurance available to CREC as additional insured must be equal to the full policy limits carried by the contractor or vendor, including primary and excess (umbrella) liability policies. Coverage provided under excess or umbrella policies must be at least as broad as that found in required underlying policies. All coverage must be primary and noncontributory as to CREC.

The proper name for the entity to be named as additional insured is: “Capitol Region Education Council, and/or related or affiliated entities.”

Evidence of compliance with these requirements is with the ACCORD form 25, “Certificate of Liability Insurance”, plus copies of any required additional insured endorsements. Certificates should be sent to: **Capitol Region Education Council,** Jeffrey E. Ivory, Comptroller, Business Services, 111 Charter Oak Ave., Hartford, CT 06106-1912. Tel.: (860) 524-4068, Fax: (860) 247-1949, Email: jivory@crec.org .

Current insurance certificates must be furnished to CREC at all times. Replacement certificates must be furnished ten (10) days *prior to the expiration or replacement* of referenced policies.

CREC reserves the right to make commercially reasonable changes in these requirements during the term of any work or project.

Required		
√	**Commercial General Liability**	Limits carried must be sufficient to satisfy required underlying limits for the umbrella policy (see below). Policy form must be ISO CG 00 01, or equivalent acceptable to CREC. The CGL policy must include coverage for: · liability from premises and operations. · liability from products or completed operations. · liability from actions of independent contractors. · liability assumed by contract. All coverage provided to CREC under this section must be primary and non-contributory with any other insurance available to CREC. CREC must be specifically named as "additional insured" on your CGL policy with ISO form CG 20 10 or CG 20 26 *and* form CG 20 37, *or equivalent acceptable to CREC.* Any Aggregate limit must apply per job/project. Products/completed operations must be carried for 2 years after completion of job and acceptance by CREC.
√	**Automobile Liability**	Covering owned, hired & non-owned vehicles. Limits carried must be sufficient to satisfy required underlying limits for the umbrella policy (see below),
√	**Workers' Comp.** **Employers Lia.**	Statutory Limits carried must be sufficient to satisfy required underlying limits for the umbrella policy (see below).
√	**Umbrella or Excess Liability**	Coverage must be excess over underlying policies described above. All coverage provided to CREC under this section must be at least as broad as that found in the underlying policies, and must be primary and non-contributory with any other insurance available to CREC.
ÿ	**Professional Liability**	$1,000,000 per occurrence/ $1,000,000 aggregate
ÿ	**Contractors Pollution Liability**	$1,000,000 per occurrence/ $1,000,000 aggregate

Insurance Requirements

Contractors or vendors working for and/or doing business with the Capital Region Education Council (CREC), or using CREC facilities, agree as a condition of acceptance to furnish and perpetually maintain, at their own expense, for the duration of any project, work, contract or use of CREC facilities the required policies of insurance. Insurance must be primary and endorsed to be noncontributory by CREC, must be written in an insurance company A.M. Best rated as "A-VII" or better, and CREC must be endorsed to the policy as an additional insured (except Worker's Compensation and Professional Liability) unless this requirement is specifically waived in writing by CREC. Contractors further agrees that any subcontractor they intend to use on CREC assigned work will be required to submit to the same indemnity and insurance requirements described here, and Contractor shall obtain insurance certificates evidencing such coverage.

Indemnification

The contractor/vendor shall save harmless, indemnify, and in the event of claim, notification or suit will immediately defend CREC and any related or subsidiary entities, their officers, employees and volunteers, from and against all loss, costs, damage, expense, claims or demands arising out of or caused or alleged to have been caused in any manner by the performance of work or use of facilities herein provided, including all suits, claims or actions of every kind or description brought against the CREC either individually or jointly with the entity or organization for or on the account of any damage or injury to any person or persons or property, including the entity or organization's employees or their property, caused or occasioned, or alleged to have been caused or occasioned in whole or in part by the entity or organization, including any subcontractor, their employees or agents.

Certificates of Insurance

Before starting any work, or commencing any use or occupancy of CREC premises, the contractor or vendor shall furnish to CREC a certificate of insurance indicating, specifically, the existence of those coverage's and limits required. CREC must be named on the insurance certificate as "additional insured" for the coverage's afforded, and a copy of the actual policy endorsement that adds CREC as an additional insured must be attached to the certificate (Blanket additional insured endorsements are deemed acceptable). It is also the duty of contractor or vendor to provide renewal or replacement certificates and endorsements to CREC ten (10) days prior to renewal or new placement of any insurance policy which may expire or renew during the term of any project or engagement, and to give CREC thirty (30) days notice of any cancellation or change in the terms of such policy or policies during the periods of coverage. Upon request of CREC, the contractor or vendor shall furnish to CREC for its examination and approval such policies of insurance with all endorsements, or copies thereof, certified by the authorized producer of the insurance company.

The contractor or vendor agrees to forward a signed original of this Insurance Requirement signed by an authorized Officer or Agent for the contractor or vendor, to the care of**: Capitol Region Education Council,** Jeffrey E. Ivory, Comptroller, Business Services, 111 Charter Oak Ave., Hartford, CT 06106-1912. Tel.: (860) 524-4068, Fax: (860) 247-1949,
Email: jivory@crec.org as an acknowledgement and acceptance to the terms and conditions stated herein and prior to the commencement of any work being performed.

_____ _____

Signed by (contractor or vendor) (type/print name of contractor or vendor)

_____

Date

Exhibit A
BID SUBMITTAL FORM

PROJECT: CREC Operation Building Generator Addition Project **#19-105**

The undersigned_____ doing business in the Town of_____, County of_____, State of_____, submits herewith, in conformity with the specifications dated March 29, 2019, the following proposal.

The Capitol Region Education Council is entertaining bids for a standby electrical generating system located at the CREC Operations Center, 147 Charter Oak Ave., Hartford, CT.

1. BASE BID

$_____

(_____)
Written figures

1a) the cost for Materials and Labor to install the standby electrical generating system;

$_____

(_____)
Written figures

1b) the cost for Materials and Labor to install the perimeter fencing, gate, and bollards;

$_____

(_____)
Written figures

2. The Contractor shall provide in this Bid Proposal the following unit price for an annual service agreement for the generation equipment.

$_____

3. Name of Subcontractor(s) to be utilized.

_____

_____

_____

_____

Name of
Bidder:_____

By _____

Title_____

Address of
Bidder_____

_____

_____

Telephone No._____

4. Receipt of Addenda: Receipt of the following Addenda is hereto acknowledged:

Addendum Date Signature

No. 1_____

No. 2_____

No. 3_____

No. 4_____

No. 5_____

APPENDIX B

Kate Rotella
Purchasing Manager, CREC
111 Charter Oak Avenue
Hartford, CT 06106

Dear Ms Rotella :
We have read the Request for Proposal and fully understand its intent and contents. We certify that we have adequate personnel, insurance, equipment, and facilities to fulfill the specified requirements. We understand that our ability to meet the criteria and provide the required services shall be judged solely by the Selection Committee. It is further understood and agreed that all information included in, attached to, or required by the Request for Proposal shall be public record upon delivery to CREC.
Under penalty of perjury, and other remedies available to the Capitol Region Education Council, the undersigned certifies this bid is submitted without collusion and all responses are true and accurate. If awarded this bid, it is agreed this forms a contractual obligation to provide services at fees specified in this Bid Form, subject to and in accordance with all instructions and contract documents, including any addenda, which are all made part of this bid.

_____ _____

Signature of Authorized Person Date

Printed Name of Authorized Person

Company Title of Authorized Person

Name of Company

Address of Company

City, State, and Zip Code

_____

Telephone Number

APPENDIX C

CAPITOL REGION EDUCATION COUNCIL

NON-COLLUSION STATEMENT

"The undersigned affirms that they are duly authorized to execute this contract, that this company, corporation, firm, partnership or individual has not prepared this bid in collusion with any other bidder, and that the contents of this bid as to prices, terms or conditions of said bid have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the official opening of this bid."

We understand that this proposal must be signed by an authorized agent of our company to constitute a valid proposal.

Date: _____

Name of Company: _____

Name and Title of Agent: _____

By (SIGNATURE): _____

Address: _____

_____

Telephone Number: _____

GENERATOR ADDITION
CREC OPERATIONS
BUILDING

CREC
Expert Solutions

CREC (CAPITOL REGION EDUCATION COUNCIL)
147 CHARTER OAK AVENUE
HARTFORD, CT 06106

CES
Consulting Engineering Services, Inc.
811 Middle Street
Middletown, CT 06457
Tel. (860) 632-1682
Fax. (860) 632-1768
CES #2018317.00

DRAWING LIST:

COVER TITLE SHEET

CIVIL:
C-101 SITE PLAN
C-102 SITE DETAILS

PLUMBING:
P-1.0 PLUMBING FIRST FLOOR PLAN, DETAILS AND SPECIFICATIONS

ELECTRICAL:
E-0.1 ELECTRICAL LEGENDS AND SPECIFICATIONS
E-0.2 ELECTRICAL GENERATOR SPECIFICATIONS
E-1.0 FIRST FLOOR ELECTRICAL PLAN
E-2.0 ELECTRICAL DETAILS
E-3.0 ELECTRICAL POWER RISER DIAGRAM

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES
36 John Street
Hartford, CT 06106
Tel. (860) 251-9550
Fax. (860) 986-7161

DATE: 03/29/2019

SITE PLAN NOTES

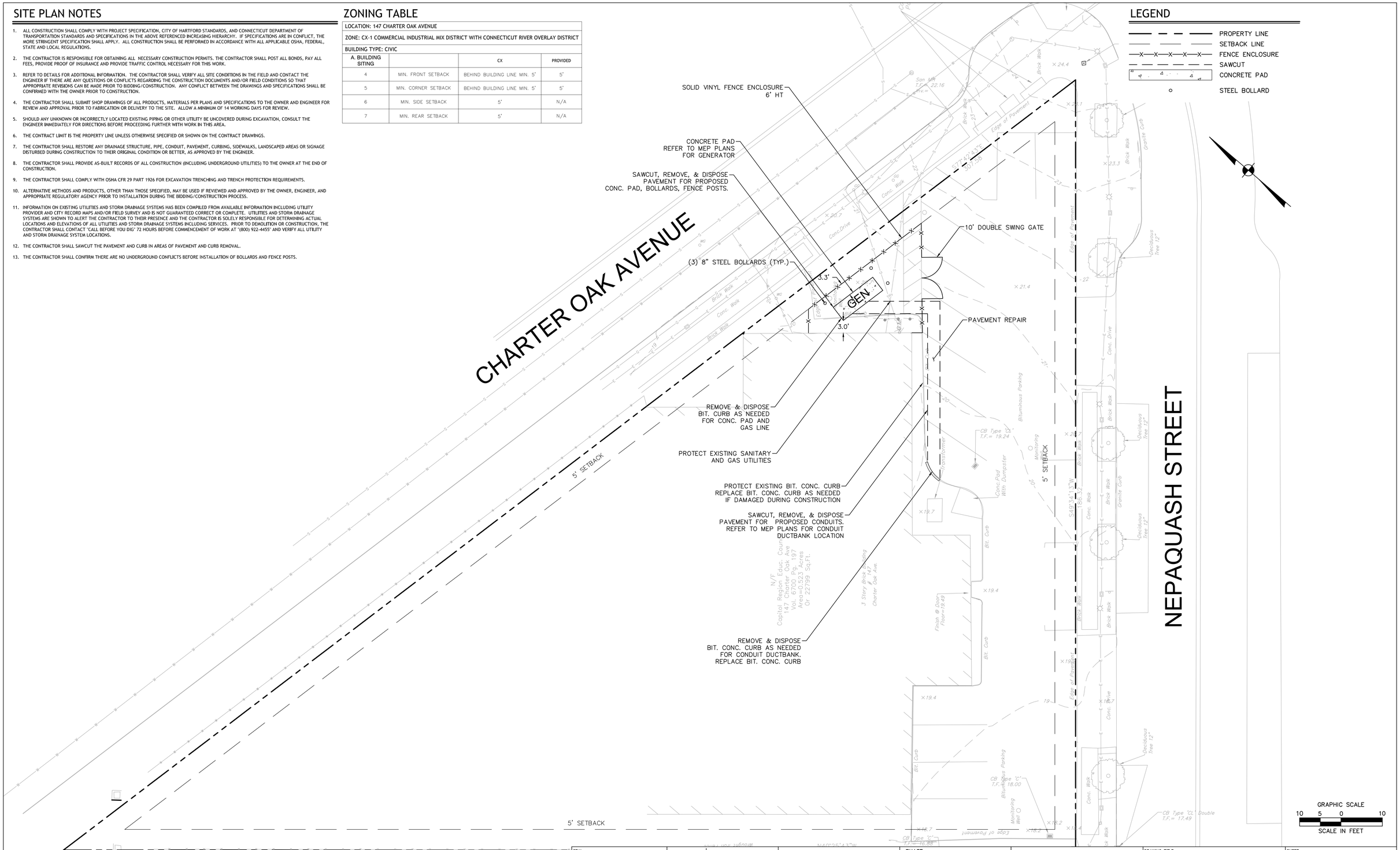
1. ALL CONSTRUCTION SHALL COMPLY WITH PROJECT SPECIFICATION, CITY OF HARTFORD STANDARDS, AND CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS IN THE ABOVE REFERENCED INCREASING HIERARCHY. IF SPECIFICATIONS ARE IN CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL REGULATIONS.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
3. REFER TO DETAILS FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS IN THE FIELD AND CONTACT THE ENGINEER IF THERE ARE ANY QUESTIONS OR CONFLICTS REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS SO THAT APPROPRIATE REVISIONS CAN BE MADE PRIOR TO BIDDING/CONSTRUCTION. ANY CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL BE CONFIRMED WITH THE OWNER PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL PRODUCTS, MATERIALS PER PLANS AND SPECIFICATIONS TO THE OWNER AND ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OR DELIVERY TO THE SITE. ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
5. SHOULD ANY UNKNOWN OR INCORRECTLY LOCATED EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONSULT THE ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
6. THE CONTRACT LIMIT IS THE PROPERTY LINE UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE CONTRACT DRAWINGS.
7. THE CONTRACTOR SHALL RESTORE ANY DRAINAGE STRUCTURE, PIPE, CONDUIT, PAVEMENT, CURBING, SIDEWALKS, LANDSCAPED AREAS OR SIGNAGE DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, AS APPROVED BY THE ENGINEER.
8. THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES) TO THE OWNER AT THE END OF CONSTRUCTION.
9. THE CONTRACTOR SHALL COMPLY WITH OSHA CFR 29 PART 1926 FOR EXCAVATION TRENCHING AND TRENCH PROTECTION REQUIREMENTS.
10. ALTERNATIVE METHODS AND PRODUCTS, OTHER THAN THOSE SPECIFIED, MAY BE USED IF REVIEWED AND APPROVED BY THE OWNER, ENGINEER, AND APPROPRIATE REGULATORY AGENCY PRIOR TO INSTALLATION DURING THE BIDDING/CONSTRUCTION PROCESS.
11. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND CITY RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" 72 HOURS BEFORE COMMENCEMENT OF WORK AT "(800) 922-4455" AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
12. THE CONTRACTOR SHALL SAWCUT THE PAVEMENT AND CURB IN AREAS OF PAVEMENT AND CURB REMOVAL.
13. THE CONTRACTOR SHALL CONFIRM THERE ARE NO UNDERGROUND CONFLICTS BEFORE INSTALLATION OF BOLLARDS AND FENCE POSTS.

ZONING TABLE

LOCATION: 147 CHARTER OAK AVENUE			
ZONE: CX-1 COMMERCIAL INDUSTRIAL MIX DISTRICT WITH CONNECTICUT RIVER OVERLAY DISTRICT			
BUILDING TYPE: CIVIC			
A. BUILDING SITING		CX	PROVIDED
4	MIN. FRONT SETBACK	BEHIND BUILDING LINE MIN. 5'	5'
5	MIN. CORNER SETBACK	BEHIND BUILDING LINE MIN. 5'	5'
6	MIN. SIDE SETBACK	5'	N/A
7	MIN. REAR SETBACK	5'	N/A

LEGEND

- PROPERTY LINE
- SETBACK LINE
- FENCE ENCLOSURE
- SAWCUT
- CONCRETE PAD
- STEEL BOLLARD



SEAL

FREEMAN COMPANIES
LAND DEVELOPMENT · ENGINEERING DESIGN · CONSTRUCTION SERVICES

CES Consulting Engineering Services, Inc.
811 Middle Street
Middletown, CT 06457
Tel. (860) 632-1682
Fax. (860) 632-1768
CES #2018317.00

GENERATOR ADDITION FOR CREC OPERATIONS BUILDING

147 CHARTER OAK AVENUE HARTFORD, CT

PHASE:

NO.	DATE	DESCRIPTION

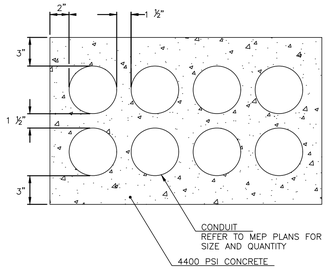
REVISIONS:

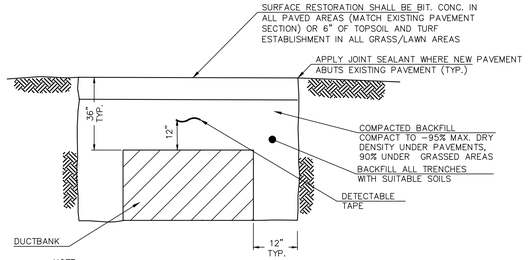
DRAWING TITLE: **SITE PLAN**

SCALE: AS SHOWN | DATE: 03/29/2019

DRAWN: MK | CHECKED: PAR

SHEET: **C-101**

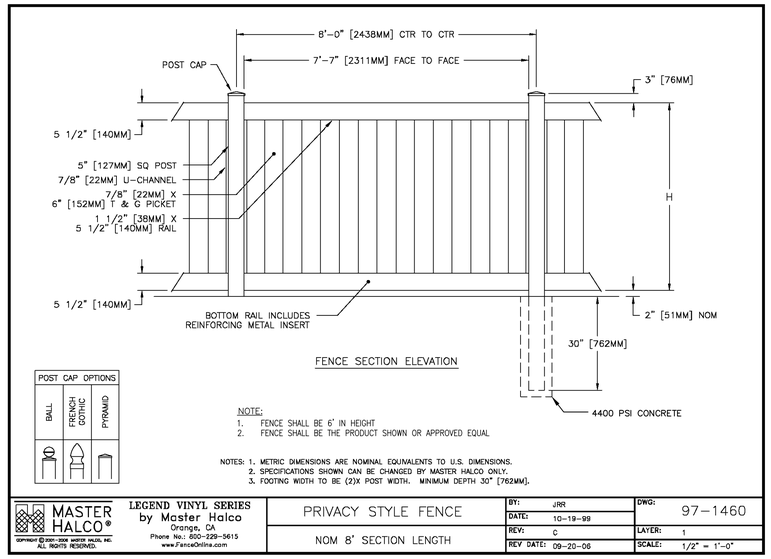




NOTE:
1. DUCTBANKS SHALL BE FORMED ON ALL SIDES PRIOR TO POURING CONCRETE ENCASEMENT.
2. COVER CAN BE REDUCED TO 30" MIN. WHERE NEEDED TO PROVIDE CLEARANCE CROSSING EXISTING UTILITIES.
3. REPLACE ALL EXISTING PAVEMENT, GRASS, AND CURBING OVER THE DUCTBANK WITH MATCHING MATERIAL.
4. SUITABLE SOILS SHALL MEET:
   - ASTM D 2487 SOIL CLASSIFICATION GROUPS GW, GP, GM, SW, SP, AND SM, OR A COMBINATION OF THESE GROUPS
   - FREE OF ROCK OR GRAVEL LARGER THAN 3 INCHES
   - FREE OF DEBRIS, WASTE, FROZEN MATERIALS,VEGETATION, RECLAIMED OR RECYCLED MATERIALS, AND OTHER DELETERIOUS MATTER.
5. JOINT SEALANT FOR PAVEMENT SHALL BE A RUBBER COMPOUND OF THE HOT-POURED TYPE AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 324 TYPE II.

CT DOT FORM 817 NOTES
1. ALL CONCRETE SHALL MEET CLASS "F" PER SECTION M.03.02
2. GRANULAR FILL SHALL MEET GRADING "A" PER SECTION M.02.06
3. MATERIALS FOR BIT. CONC. CURB, INCLUDING TACK COAT, SHALL MEET THE REQUIREMENTS OF SECTION M.04

1 CONCRETE ENCASED DUCTBANK
N.T.S.



FENCE SECTION ELEVATION

NOTE:
1. FENCE SHALL BE 6' IN HEIGHT
2. FENCE SHALL BE THE PRODUCT SHOWN OR APPROVED EQUAL

NOTES: 1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO U.S. DIMENSIONS.
2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MASTER HALCO ONLY.
3. FOOTING WIDTH TO BE (2)X POST WIDTH. MINIMUM DEPTH 30" [762MM].

MASTER HALCO® COPYRIGHT © 2001-2006 MASTER HALCO, INC. ALL RIGHTS RESERVED.	LEGEND VINYL SERIES by Master Halco Orange, CA Phone No.: 800-229-5615 www.FenceOnline.com	PRIVACY STYLE FENCE NOM 8' SECTION LENGTH	BY: JRR DATE: 10-19-99 REV: C REV DATE: 09-20-06
			DWG: 97-1460 LAYER: 1 SCALE: 1/2" = 1'-0"

2 SOLID VINYL FENCE ENCLOSURE
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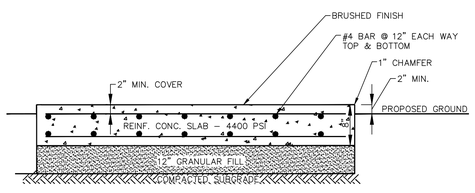

3 CONCRETE PAD
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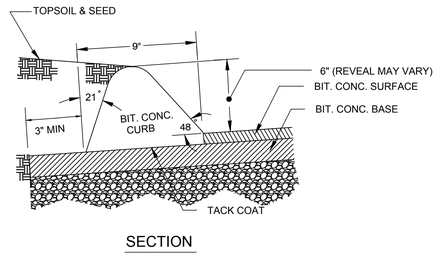

SECTION

4 BIT. CONC. CURB
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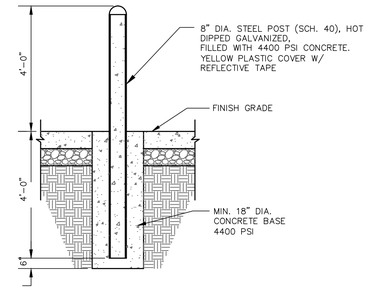

5 STEEL BOLLARD
N.T.S.

FREEMAN COMPANIES
LAND DEVELOPMENT · ENGINEERING DESIGN · CONSTRUCTION SERVICES

SEAL

CES Consulting Engineering Services, Inc.
811 Middle Street
Middletown, CT 06457
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CES #2018317.00

GENERATOR ADDITION FOR CREC OPERATIONS BUILDING

147 CHARTER OAK AVENUE
HARTFORD, CT

PHASE:

NO.	DATE	DESCRIPTION

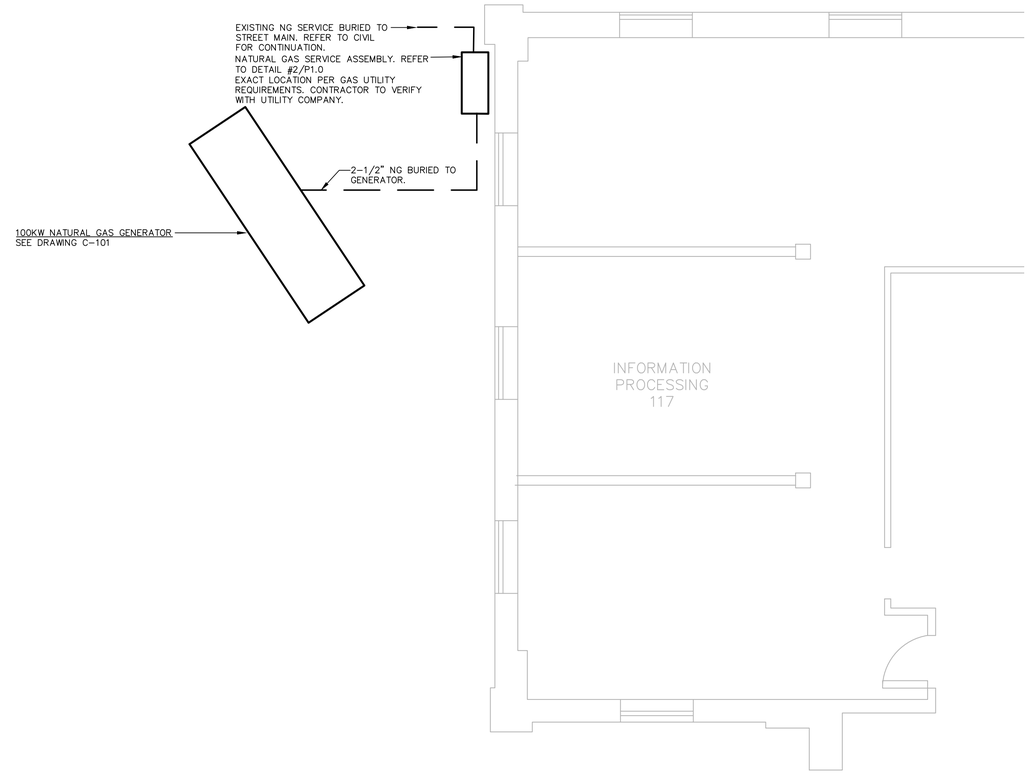
REVISIONS:

DRAWING TITLE: SITE DETAILS

SCALE: N.T.S. DATE: 03/29/2019

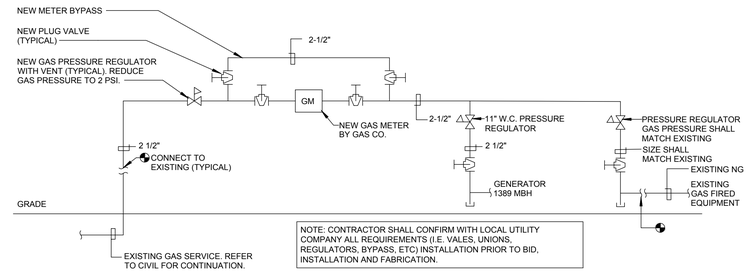
DRAWN: MK CHECKED: PAR

SHEET: C-102



1 FIRST FLOOR PLUMBING PLAN

SCALE: 1/4" = 1'-0"



2 NATURAL GAS SERVICE RISER

SCALE: N.T.S.

PLUMBING SPECIFICATIONS

1. PROVIDE ALL NECESSARY LABOR, MATERIALS AND OTHER MISCELLANEOUS EQUIPMENT WHICH ARE NOT SHOWN ON THE CONTRACT DOCUMENTS BUT ARE NECESSARY TO COMPLETE THE WORK. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST STATE OF
2. CONNECTICUT ACCEPTED REVISION OF BOCA PLUMBING CODES.
3. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION (AHJ). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING ALL INSPECTIONS BY THE AHJ. THE CONTRACTOR SHALL BE RESPONSIBLE FOR BEING AVAILABLE FOR INSPECTIONS BY THE AHJ.
4. PROVIDE FIRESTOPPING AROUND MECHANICAL PENETRATIONS IN ACCORDANCE WITH FIRESTOPPING REQUIREMENTS. PROVIDE ASBESTOS FREE FIRESTOPPING SYSTEM CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME AND GASES. SYSTEM SHALL BE UL LISTED AND COMPLY WITH ASTM E 814.
5. PRIOR TO ORDERING ANY MATERIALS AND EQUIPMENT, THOROUGHLY REVIEW THE SITE CONDITIONS TO DETERMINE IF ADEQUATE CLEARANCES AND ACCESS IS ALLOWED TO INSTALL THE COMPONENTS. ORDER EQUIPMENT BROKEN DOWN AS NECESSARY TO ALLOW FOR PROPER HANDLING THROUGH THE PROJECT AREA. PROVIDE ALL NECESSARY ALTERATIONS TO THE STRUCTURE OF THE BUILDING AS NECESSARY TO RIG THE EQUIPMENT IN PLACE. CAREFULLY INSPECT ALL BUILDING ELEMENTS PRIOR TO CUTTING OR DRILLING INTO WALL, FLOORS OR CEILINGS. PATCH AND PAINT SURFACES DISTURBED BY WORK UNDER THIS CONTRACT AS REQUIRED TO RESTORE THEM TO THEIR ORIGINAL CONDITION.
6. NATURAL GAS PIPING OR LP PIPING SHALL BE SCHEDULE 40, CARBON STEEL PIPE, WITH THREADED JOINTS AND FITTINGS. WRAP AND PROTECT PIPING AS REQUIRED BY NFPA 54.
7. PLUG VALVES: DEZURIK, UNIT OF SPX CORP., TUFLINE , NIBCO , VICTAULIC , OR WATTS. CAST IRON, PRESSURE LUBRICATED, TEFLON PACKING.
8. PRESSURE REGULATOR: INVENSYS , MAXITROL , OR DORMONT. SPRING LOADED, GENERAL PURPOSE, SELF-OPERATING SERVICE REGULATOR INCLUDING INTERNAL RELIEF TYPE DIAPHRAGM ASSEMBLY AND VENT VALVE. DIAPHRAGM CASE CAN BE ROTATED 360 DEGREES IN RELATION TO BODY. COMPLY WITH ANSI Z21.80.
9. STRAINERS SHALL BE KECKLEY MODEL 777, BRASS BODY, Y PATTERN, WITH 1/32 INCH STAINLESS STEEL SCREEN.
10. INSTALL PIPING IN ACCORDANCE WITH ALL APPLICABLE CODES AND GOOD PRACTICES.
11. ANCHOR PIPING TO ENSURE PROPER DIRECTION OF EXPANSION AND CONTRACTION.
12. PIPE HANGERS AND SUPPORTS SHALL MEET THE REQUIREMENTS OF MSS SP-69 AND SP-89 DEVELOPED BY THE MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVES AND FITTINGS INDUSTRY INC.
13. MECHANICAL IDENTIFICATION
    - 13.1. MECHANICAL IDENTIFICATION WORK SHALL COMPLY WITH ANSI A13.1. NAMES, ABBREVIATIONS AND OTHER DESIGNATIONS USED IN MECHANICAL IDENTIFICATION WORK, SHALL CORRESPOND WITH DESIGNATIONS SHOWN, SPECIFIED OR SCHEDULED.
    - 13.2. VALVE TAGS SHALL BE 1-1/2" DIAMETER, 19-GAGE POLISHED BRASS WITH STAMP-ENGRAVED LETTERING.
    - 13.3. ATTACH VALVES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROVIDE VALVE TAG ON EVERY VALVE, EXCLUDING DRAIN VALVES.
    - 13.4. PIPE IDENTIFICATION, PLASTIC PIPE MARKERS, FACTORY FABRICATED, FLEXIBLE, SEMI-RIGID PLASTIC, PERFORMED TO FIT AROUND PIPE OR PIPE COVERING, MINIMUM INFORMATION INDICATING FLOW DIRECTION ARROW AND IDENTIFICATION OF FLUID BEING CONVEYED.
14. SHOP DRAWINGS: SUBMIT NEWLY PREPARED INFORMATION, DRAWN TO ACCURATE SCALE. HIGHLIGHT, ENCIRCLE, OR OTHERWISE INDICATE DEVIATIONS FROM THE CONTRACT DOCUMENTS. DO NOT REPRODUCE CONTRACT DOCUMENTS OR COPY STANDARD INFORMATION AS THE BASIS OF SHOP DRAWINGS. STANDARD INFORMATION PREPARED WITHOUT SPECIFIC REFERENCE TO THE PROJECT IS NOT CONSIDERED SHOP DRAWINGS.
15. TESTING AND ADJUSTING A. ALL GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH INTERNATIONAL FUEL GAS CODE.
16. AS-BUILTS: A. ONCE ALL WORK IS COMPLETED, CONTRACTOR SHALL SUBMIT FOR APPROVAL "AS-BUILT" DRAWINGS REFLECTING ALL CHANGES MADE DURING CONSTRUCTION. ALSO PROVIDE COPIES OF ALL TEST CERTIFICATES, EQUIPMENT AND MAINTENANCE INSTRUCTIONS ALL BOND IN A THREE RING BINDER.
17. PREPARE 6 MAINTENANCE MANUALS BOUND IN BOOKLET FORM, PROVIDE WITH INDEX. INCLUDE THE FOLLOWING INFORMATION, SHOP DRAWING DATA, MANUFACTURERS PRINTED PROCEDURES AND INSTRUCTIONS AND ROUTINE MAINTENANCE PROCEDURES.

SEAL

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GENERATOR ADDITION FOR CREC OPERATIONS BUILDING

147 CHARTER OAK AVENUE HARTFORD, CT

PHASE:

NO.	DATE	DESCRIPTION
	11/28/18	ISSUED FOR BIDDING

REVISIONS:

DRAWING TITLE: PLUMBING FIRST FLOOR PLAN DETAILS AND SPECIFICATIONS

SCALE: AS SHOWN | DATE: 03/29/2019

DRAWN: KAB | CHECKED: DTB

SHEET: P-1.0

ELECTRICAL ABBREVIATIONS

A/AMP	AMPERE	JB	JUNCTION BOX
AC	ALTERNATING CURRENT	KCMIL	THOUSAND CIRCULAR MILS
ACU	AIR CONDITIONING UNIT	KVA	KILOVOLT AMPERE
AFF	ABOVE FINISHED FLOOR	KW	KILOWATT
AFG	ABOVE FINISHED GRADE	MAX	MAXIMUM
AHU	AIR HANDLING UNIT	MAU	MAKE UP AIR UNIT
AIC	AMPS INTERRUPTING CURRENT	MCC	MOTOR CONTROL CENTER
ATS	AUTOMATIC TRANSFER SWITCH	MCCB	MOLDED CASE CIRCUIT BREAKER
AWG	AMERICAN WIRE GAUGE	MH	METAL HALIDE
BSMT	BASEMENT	MIN	MINIMUM
C	CONDUIT	MLO	MAIN LUGS ONLY
CATV	CABLE TELEVISION	NA	NOT APPLICABLE
C/B	CIRCUIT BREAKER	NEC	NATIONAL ELECTRIC CODE
CKT	CIRCUIT	NIC	NOT IN CONTRACT
COMP	COMPRESSOR	NL	NEW LOCATION OF EXISTING RELOCATED
CP	CONDENSATE PUMP	NR	NEW TO REPLACE EXISTING
CT	CURRENT TRANSFORMER	NTS	NOT TO SCALE
CU	CONDENSING UNIT, COPPER	P	POLE
CUH	CABINET UNIT HEATER	PE	PRIMARY ELECTRICAL SERVICE
°	DEGREE	PF	POWER FACTOR
DIA/ø	DIAMETER	PH/ø	PHASE
DN	DOWN	PNL	PANEL
DWG	DRAWING	PVC	POLYVINYL CHLORIDE CONDUIT
E	EXISTING TO REMAIN	RE	REMOVE EXISTING
EF	EXHAUST FAN	RGS	RIGID GALVANIZED STEEL CONDUIT
ELEC	ELECTRICAL	RL	RELOCATE EXISTING
ELEV	ELEVATOR	RM	ROOM
EMT	ELECTRIC METALLIC TUBING	RR	REMOVE AND REPLACE ON NEW SURFACE
EUH	ELECTRIC UNIT HEATER	RTU	ROOFTOP UNIT
EWC	ELECTRIC WATER COOLER	SE	SECONDARY ELECTRICAL SERVICE
EWH	ELECTRIC WATER HEATER	SPEC	SPECIFICATION
F	FAHRENHEIT	SWBD	SWITCHBOARD
FA	FIRE ALARM	TELE	TELECOMMUNICATIONS/TELEPHONE
FACP	FIRE ALARM CONTROL PANEL	TV	TELEVISION
FC	FOOT CANDLE	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
FCU	FAN COIL UNIT	T/TX	TRANSFORMER
G	GROUND	TYP	TYPICAL
GFI	GROUND FAULT INTERRUPTER	UH	UNIT HEATER
HP	HORSE POWER	V	VOLTS
HPS	HIGH PRESSURE SODIUM	VA	VOLT AMPERE
HR	HOUR	VAC	VOLTS ALTERNATING CURRENT
HZ	HERTZ	W	WATT, WIRE
IG	ISOLATED GROUND	WG	WIRE GUARD
IN	INCHES	WP	WEATHERPROOF

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION
▬	SURFACE MOUNTED PANELBOARD
▬	RECESSED PANELBOARD
□	DISCONNECT SWITCH
▨	FUSED DISCONNECT SWITCH
———	CONDUIT RUN ON SURFACE OF WALLS/CEILING
— — —	CONDUIT RUN BELOW GRADE
⊢D	GENERATOR EMERGENCY SHUTDOWN MUSHROOM SWITCH
ATS	AUTOMATIC TRANSFER SWITCH IN WEATHERPROOF ENCLOSURE

WARNING - UNDERGROUND UTILITIES

THE CONTRACTOR SHALL CONTACT THE LOCAL CABLE TELEVISION COMPANY, POWER COMPANY, TELEPHONE COMPANY, GAS COMPANY, WATER AND SEWER COMPANY AND ANY OTHER UTILITY COMPANY WITHIN THE AREA PRIOR TO PROCEEDING WITH ANY EXCAVATION. BY LAW, THE CONTRACTOR IS REQUIRED TO CALL BEFORE DOING ANY EXCAVATION, DIGGING HOLES OR DRIVING POSTS REGARDLESS OF WHETHER IT IS WITHIN THE STREET LINE OR ON PRIVATE PROPERTY. OBTAIN INFORMATION REGARDING THE EXISTENCE AND LOCATION OF ANY UNDERGROUND FACILITIES BY CALLING 811 OR VISITING WWW.CALL811.COM FOR STATE SPECIFIC INFORMATION AND PHONE NUMBERS.

ELECTRICAL SPECIFICATIONS

1. THIS PROJECT COMPRISES ALTERATIONS AND RENOVATIONS TO THE EXISTING BUILDING. THE EXISTING BUILDING IS CURRENTLY OCCUPIED AND THE PROJECT WILL PROCEED IN A MANNER WHICH WILL MINIMIZE ANY INCONVENIENCE TO THE BUILDING OCCUPANTS.
2. PRIOR TO SUBMITTING BID, VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK TO BE PERFORMED. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY IDENTIFIED BY EXPERIENCED OBSERVERS. INCLUDE IN THE BID ALL DEMOLITION WORK REQUIRED.
3. SCOPE OF WORK CONSISTS OF INSTALLATION OF MATERIALS TO BE FURNISHED UNDER THE CONTRACT DOCUMENTS AND WITHOUT LIMITING GENERALITY THEREOF CONSISTS OF FURNISHING LABOR, MATERIALS, EQUIPMENT, HOISTING, PLANT, TRANSPORTATION, RIGGING, STAGING, APPURTENANCES, AND SERVICES NECESSARY AND/OR INCIDENTAL TO PROPERLY COMPLETE ALL ELECTRICAL WORK AS SHOWN ON THE DRAWINGS AS DESCRIBED HEREIN.
4. THE FOLLOWING DEFINITIONS APPLY TO THIS CONTRACT:
   A. FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION AND SIMILAR OPERATIONS."
   B. INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."
   C. PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."
   D. REMOVE: THE TERM "REMOVE" MEANS " TO DISCONNECT FROM ITS PRESENT POSITION, REMOVE FROM THE PREMISES AND TO DISPOSE OF IN A LEGAL MANNER."
5. PROVIDE ALL NECESSARY MATERIALS, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THE WORK OUTLINED ON THESE CONTRACT DOCUMENTS. THE CONTRACTOR IS TO NOTE THAT THESE DOCUMENTS ARE DIAGRAMMATIC ONLY AND THAT FINAL PLACEMENT OF EQUIPMENT OR DEVICES IN THE FIELD MAY NOT DIRECTLY CORRESPOND TO THAT IN WHICH IS SHOWN ON THE DRAWINGS. IF A CONFLICT IN POSITIONING OCCURS THE CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY TO ASCERTAIN WHAT THE INTENT WAS BY THE DESIGN PROFESSIONAL.
6. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST STATE OF CONNECTICUT BUILDING CODES: CONNECTICUT STATE BUILDING CODE: INTERNATIONAL BUILDING CODE; 2011 EDITION NATIONAL ELECTRICAL CODE.
7. OBTAIN IN OWNER'S NAME WRITTEN EQUIPMENT AND MATERIAL WARRANTIES OFFERED IN MANUFACTURER'S PUBLISHED PRODUCT DATA WITHOUT EXCLUSION OR LIMITATION.
8. GUARANTEE WORK OF THESE CONTRACT DOCUMENTS IN WRITING FOR NOT LESS THAN ONE YEAR FROM DATE OF FINAL NOTICE OF ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPT AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.
9. SUPPLY TO THE OWNER AN OFFICIAL CERTIFICATE OF INSURANCE FOR THEIR RECORDS.
10. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING AND BEING AVAILABLE FOR INSPECTIONS BY THE AUTHORITY HAVING JURISDICTION.
11. USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK.
12. ARRANGE INSTALLATION OF ELECTRICAL DEVICES TO PROVIDE ACCESS TO EQUIPMENT FOR EASY MAINTENANCE AND REPAIR.
13. DO NOT SCALE DRAWINGS. SCALE INDICATED ON DRAWINGS IS FOR ESTABLISHING REFERENCE POINTS ONLY. ACTUAL FIELD CONDITIONS SHALL GOVERN ALL DIMENSIONS.
14. MATERIALS AND EQUIPMENT SHALL BE UL LISTED WHERE STANDARD HAS BEEN ESTABLISHED.
15. DO NOT BURN WASTE MATERIALS. DO NOT BURY DEBRIS OR EXCESS MATERIALS ON THE OWNER'S PROPERTY. DO NOT DISCHARGE VOLATILE, HARMFUL OR DANGEROUS MATERIALS INTO DRAINAGE SYSTEMS. REMOVE AND DISPOSE OF ALL WASTE MATERIALS, PACKAGING MATERIAL, SKIDS ETC. FROM THE SITE AND DISPOSE OF IN A LAWFUL MANNER IN ACCORDANCE WITH MUNICIPAL, STATE AND FEDERAL REGULATIONS.
16. THE CONTRACTOR SHALL BE REQUIRED TO PROPERLY STORE MATERIALS AND EQUIPMENT SO AS TO AVOID THEFT OR VANDALISM. IF THEFT OR VANDALISM OCCURS, THE CONTRACTOR SHALL REPAIR OR REPLACE SUCH ITEMS AT THE DIRECTION OF THE ENGINEER.
17. THE CONTRACTOR MUST COORDINATE ALL INTERRUPTIONS OF SERVICES AND LIMITATIONS OF ACCESS WITH THE OWNER NO LESS THAN 5 WORKING DAYS PRIOR TO THE INTERRUPTION.
18. MOUNT PANELBOARDS, CIRCUIT BREAKERS, AND DISCONNECTING SWITCHES SO HEIGHT OF OPERATING HANDLE AT ITS HIGHEST POSITION IS MAXIMUM 78 INCHES ABOVE FLOOR.
19. PROVIDE LAMINATED PLASTIC NAMEPLATES FOR EACH EQUIPMENT ENCLOSURE, AUTOMATIC TRANSFER SWITCH. EACH NAMEPLATE INSCRIPTION SHALL IDENTIFY THE FUNCTION AND, WHEN APPLICABLE, THE POSITION. NAMEPLATES SHALL BE MELAMINE PLASTIC, 0.125-INCH THICK, WHITE WITH BLACK CENTER CORE. SURFACE SHALL BE MATTE FINISH. CORNERS SHALL BE SQUARE. ACCURATELY ALIGN LETTERING AND ENGRAVE INTO THE CORE. MINIMUM SIZE OF NAMEPLATES SHALL BE 1 BY 2.5 INCHES. LETTERING SHALL BE A MINIMUM OF 0.25-INCH HIGH NORMAL BLOCK STYLE.
20. GROUNDING SHALL BE COMPLETED IN ACCORDANCE WITH NFPA 70. GROUND EXPOSED, NON-CURRENT-CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, METALLIC RACEWAY SYSTEMS, GROUNDING CONDUCTOR IN METALLIC AND NONMETALLIC RACEWAYS, AND NEUTRAL CONDUCTOR OF WIRING SYSTEMS.
21. CONDUCTORS NO. 8 AWG AND LARGER DIAMETER SHALL BE STRANDED ANNEALED COPPER. CONDUCTORS NO. 10 AWG AND SMALLER DIAMETER SHALL BE SOLID ANNEALED COPPER, EXCEPT THAT CONDUCTORS FOR REMOTE CONTROL, ALARM, AND SIGNAL CIRCUITS, CLASSES 1, 2, AND 3, SHALL BE STRANDED UNLESS SPECIFICALLY INDICATED OTHERWISE. CONDUCTOR SIZES AND AMPACITIES SHOWN ARE BASED ON COPPER, UNLESS INDICATED OTHERWISE. UNLESS SPECIFIED OR INDICATED OTHERWISE OR REQUIRED BY NFPA 70, POWER AND LIGHTING WIRES SHALL BE 600-VOLT, TYPE THWN/THHN ANNEALED COPPER, REMOTE-CONTROL AND SIGNAL CIRCUITS SHALL BE TYPE TW, THW, OR TF ANNEALED COPPER.
22. MAKE ALL SPLICES IN ACCESSIBLE LOCATIONS. MAKE SPLICES IN CONDUCTORS NO. 10 AWG AND SMALLER DIAMETER WITH INSULATED, PRESSURE-TYPE CONNECTOR. MAKE SPLICES IN CONDUCTORS NO. 8 AWG AND LARGER DIAMETER WITH SOLDERLESS CONNECTOR, AND COVER WITH INSULATION MATERIAL EQUIVALENT TO CONDUCTOR INSULATION.
23. PHASE CONDUCTORS SHALL BE IDENTIFIED BY COLOR CODING. THE COLOR OF THE INSULATION ON PHASES A, B, AND C RESPECTIVELY (FOR THREE PHASE) OR PHASES A AND B RESPECTIVELY (FOR SINGLE PHASE) OF DIFFERENT VOLTAGE SYSTEMS SHALL BE AS FOLLOWS: 120/208 VOLT, 3-PHASE: BLACK, RED, AND BLUE. ON 3-PHASE, 4WIRE DELTA SYSTEM, HIGH LEG SHALL BE ORANGE, AS REQUIRED BY NFPA 70.
24. UNLESS OTHERWISE INDICATED, THE WIRING METHOD SHALL CONSIST OF THE INSTALLATION OF INSULATED CONDUCTORS INSTALLED IN RIGID ZINC-COATED STEEL CONDUIT, ELECTRICAL METALLIC TUBING, OR INTERMEDIATE METAL CONDUIT. PROVIDE INSULATED, GREEN EQUIPMENT GROUNDING CONDUCTOR IN FEEDER, INSTALLED IN CONDUIT OR RACEWAYS. GROUNDING CONDUCTOR SHALL BE SEPARATE FROM ELECTRICAL SYSTEM NEUTRAL CONDUCTOR. CONDUIT SIZES ARE SHOWN BASED ON THE USE OF COPPER CONDUCTORS WITH INSULATION TYPES AS INDICATED HEREIN. MINIMUM SIZE OF OF RACEWAYS SHALL BE (3/4INCH).
25. UNLESS OTHERWISE INDICATED, THE UNDERGROUND WIRING METHOD SHALL CONSIST OF THE INSTALLATION OF INSULATED CONDUCTORS INSTALLED IN RIGID ZINC-COATED STEEL CONDUIT, THICKWALL NONMETALLIC CONDUIT. PROVIDE INSULATED, GREEN EQUIPMENT GROUNDING CONDUCTOR IN FEEDER, INSTALLED IN CONDUIT OR RACEWAYS. GROUNDING CONDUCTOR SHALL BE SEPARATE FROM ELECTRICAL SYSTEM NEUTRAL CONDUCTOR METAL CONDUIT SHALL EXTEND THROUGH CONCRETE PAD FOR A MINIMUM DISTANCE OF 6 INCHES. CONDUIT SIZES SHOWN ARE BASED ON THE USE OF COPPER CONDUCTORS WITH INSULATION TYPES AS INDICATED HEREIN. MINIMUM SIZE OF RACEWAYS SHALL BE (3/4 INCH). WHEN THICKWALL NONMETALLIC CONDUIT IS USED PROVIDE ZINC-COATED STEEL CONDUIT SWEEPS THROUGH CONCRETE SLABS OR PADS.
26. ELECTRICAL METALLIC TUBING MAY BE INSTALLED ONLY WITHIN BUILDINGS. ELECTRICAL METALLIC TUBING MAY NOT BE INSTALLED IN CONCRETE OR EXTERIOR TO BUILDINGS. EMT SHALL NOT BE INSTALLED IN DAMP OR WET LOCATIONS. DO NOT USE IN AREAS SUBJECT TO SEVERE PHYSICAL DAMAGE INCLUDING BUT NOT LIMITED TO EQUIPMENT ROOMS WHERE MOVING OR REPLACING EQUIPMENT COULD PHYSICALLY DAMAGE THE EMT. BUSHINGS, MANUFACTURED FITTINGS OR BOXES PROVIDING EQUIVALENT MEANS OF PROTECTION SHALL BE INSTALLED ON THE ENDS OF ALL CONDUITS AND SHALL BE OF THE INSULATING TYPE, WHERE REQUIRED BY NFPA 70. ONLY UL LISTED ADAPTERS SHALL BE USED TO CONNECT EMT TO RIGID METAL CONDUIT, CAST BOXES, AND CONDUIT BODIES. METALLIC CONDUITS AND TUBING SHALL BE SECURELY AND RIGIDLY FASTENED IN PLACE AS REQUIRED BY NFPA 70.
27. PROVIDE ALL NECESSARY JUNCTION BOXES, PULL BOXES, PULL WIRES, COVER PLATES AND OTHER MISCELLANEOUS EQUIPMENT WHICH IS NOT SHOWN ON THE CONTRACT DOCUMENTS BUT NECESSARY TO COMPLETE THE WORK.
28. PROVIDE FIRESTOPPING AROUND ELECTRICAL PENETRATIONS IN ACCORDANCE WITH FIRESTOPPING REQUIREMENTS. PROVIDE ASBESTOS FREE FIRESTOPPING SYSTEM CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME AND GASES. SYSTEM SHALL BE UL LISTED AND COMPLY WITH ASTM E 814.
29. CLEAN, PRIME AND PAINT ELECTRICAL EQUIPMENT AND THE EXPOSED PORTION OF THE CONDUIT SYSTEM TO MATCH THE FINISH OF THE ADJACENT SURFACES OR TO MEET THE INDICATED OR SPECIFIED SAFETY CRITERIA OR TO MEET THE COLOR SCHEME SET BY THE ARCHITECT.
30. PROVIDE PRE-LABELED, SNAP AROUND PIPE MARKERS ON ALL CONDUITS. MARKERS SHALL COMPLY WITH ANSI A 13.1-1988 STANDARDS AND INDICATED VOLTAGE.
31. PROVIDE SHOP DRAWINGS FOR DISCONNECT SWITCHES, DIESEL GENERATOR, AUTOMATIC SWITCH, CONDUIT, CONDUCTORS AND CABLES, HANGERS AND SUPPORTS, AND BOXES.

SEAL

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CES #2018317.00

GENERATOR ADDITION FOR CREC OPERATIONS BUILDING

147 CHARTER OAK AVENUE
HARTFORD, CT

PHASE:

NO.	DATE	DESCRIPTION

REVISIONS:

DRAWING TITLE:
ELECTRICAL
LEGENDS AND SPECIFICATIONS

SCALE: AS SHOWN
DATE: 03/29/2019
DRAWN: KAB
CHECKED: DTB

SHEET:
E-0.1

GASEOUS GENERATOR SPECIFICATIONS

SECTION 1.0 GENERAL REQUIREMENTS

1.1 SCOPE
PROVIDE, INSTALL, AND ACCEPTANCE TEST A COMPLETE AND OPERABLE STANDBY ELECTRIC GENERATING SYSTEM, INCLUDING ALL DEVICES AND EQUIPMENT SPECIFIED HEREIN, AS SHOWN ON THE DRAWINGS, OR REQUIRED FOR THE SERVICE. EQUIPMENT SHALL BE NEW, FACTORY TESTED, AND DELIVERED READY FOR INSTALLATION.

1.2 APPROVED MANUFACTURERS:
BASIS OF DESIGN: KOHLER. ACCEPTABLE EQUIVALENT BY: CUMMINS POWER GENERATION, CATAPILLAR. NO SUBSTITUTIONS WILL BE PERMITTED.

1.4 WARRANTY:
THE WARRANTY SHALL BE PROVIDED FOR ALL PRODUCTS AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR FIVE YEAR PERIOD FROM THE START_UP DATE. WARRANTY SHALL COVER PARTS AND LABOR FOR THE WHOLE FIVE YEARS.

1.5 SINGLE SUPPLIER:
THE INSTALLER/SUPPLIER SHALL BE THE MANUFACTURER'S AUTHORIZED DISTRIBUTOR/DEALER, WHO SHALL PROVIDE COMPLETE INSTALLATION, INITIAL START_UP SERVICES, CONDUCT FIELD ACCEPTANCE TESTING, AND WARRANTY SERVICE. THE SUPPLIER SHALL HAVE 24_HOUR SERVICE AVAILABILITY AND FACTORY_TRAINED SERVICE TECHNICIANS AUTHORIZED TO PERFORM WARRANTY SERVICE ON ALL PRODUCTS PROVIDED.

1.6 MANUALS:
THREE (3) SETS OPERATORS AND SPARE PARTS MANUALS SHALL BE PROVIDED FOR ALL SYSTEM EQUIPMENT. THE MANUALS SHALL INCLUDE OUTLINE, INTERCONNECTION, WIRING, AND CONTROL DRAWINGS ACCURATELY DESCRIBING THE EQUIPMENT PROVIDED. PROVIDE LADDER LOGIC FOR ALL PROGRAMMABLE LOGIC CONTROLLERS IN THE SYSTEM.

SECTION 2.0 PRODUCTS

2.1 NATURAL GAS ENGINE_GENERATOR SET:
4_CYCLE, 1800 RPM, DIESEL ENGINE GENERATOR SET. GENERATOR SET RATINGS: 100 KW, 125 KVA AT 0.8 PF, STANDBY RATING, BASED ON SITE CONDITIONS NOTED BELOW. SYSTEM VOLTAGE OF: 120/208 VOLTS AC, THREE PHASE, FOUR WIRE, 60 HERTZ. SITE CONDITIONS: ALTITUDE 500 FT., AMBIENT TEMPERATURES UP TO 104 DEGREES F.

KOHLER MODEL 100REZGD, 120/208 VAC OR APPROVED EQUAL AS LISTED ABOVE
THE ENGINE SHALL BE MANUFACTURED BY THE GENERATOR SUPPLIER.

2.1.2 PERFORMANCE:
VOLTAGE REGULATION SHALL BE +/_ 1.0 PERCENT FOR ANY CONSTANT LOAD BETWEEN NO LOAD AND RATED LOAD.

FREQUENCY REGULATION SHALL BE ISOCHRONOUS FROM STEADY STATE NO LOAD TO STEADY STATE RATED LOAD. RANDOM FREQUENCY VARIATION WITH ANY STEADY LOAD FROM NO LOAD TO FULL LOAD SHALL NOT EXCEED PLUS OR MINUS 0.25%.

THE DIESEL ENGINE_GENERATOR SET SHALL BE CAPABLE OF SINGLE STEP LOAD PICK UP OF 100% NAMEPLATE KW AND POWER FACTOR, LESS APPLICABLE DERATING FACTORS, WITH THE ENGINE_GENERATOR SET AT OPERATING TEMPERATURE.

2.1.3 ENGINE:
THE ENGINE SHALL BE CERTIFIED TO TIER 3 EPA EMISSIONS STANDARDS. THE ENGINE SHALL BE NATURAL GAS, 4 CYCLE, RADIATOR AND FAN COOLED. MINIMUM DISPLACEMENT SHALL BE 408 CUBIC INCHES, WITH 6 CYLINDERS. THE HORSEPOWER RATING OF THE ENGINE AT IT'S MINIMUM TOLERANCE LEVEL SHALL BE SUFFICIENT TO DRIVE THE ALTERNATOR AND ALL CONNECTED ACCESSORIES. TWO CYCLE ENGINES ARE NOT ACCEPTABLE. ENGINE ACCESSORIES AND FEATURES SHALL INCLUDE:

SKID_MOUNTED RADIATOR AND COOLING SYSTEM RATED FOR FULL LOAD OPERATION IN 122 DEGREES F (50 DEGREES C) AMBIENT AS MEASURED AT THE GENERATOR AIR INLET. RADIATOR SHALL BE PROVIDED WITH A DUCT ADAPTER FLANGE. THE COOLING SYSTEM SHALL BE FILLED WITH 50/50 ETHYLENE GLYCOL/WATER MIXTURE BY THE EQUIPMENT SUPPLIER. ROTATING PARTS SHALL BE GUARDED AGAINST ACCIDENTAL CONTACT PER OSHA REQUIREMENTS.
AN ELECTRIC STARTER(S) CAPABLE OF THREE COMPLETE CRANKING CYCLES WITHOUT OVERHEATING.

POSITIVE DISPLACEMENT, MECHANICAL, FULL PRESSURE, LUBRICATION OIL PUMP.

FULL FLOW LUBRICATION OIL FILTERS WITH REPLACEABLE SPIN_ON CANISTER ELEMENTS AND DIPSTICK OIL LEVEL INDICATOR.

AN ENGINE DRIVEN, MECHANICAL, POSITIVE DISPLACEMENT FUEL PUMP. FUEL FILTER WITH REPLACEABLE SPIN_ON CANISTER ELEMENT.

REPLACEABLE DRY ELEMENT AIR CLEANER WITH RESTRICTION INDICATOR.

FLEXIBLE SUPPLY AND RETURN FUEL LINES.

ENGINE MOUNTED BATTERY CHARGING ALTERNATOR, 100 AMPERE MINIMUM, AND SOLID_STATE VOLTAGE REGULATOR.

PROVIDE A CRANKCASE EMISSION CONTROL SYSTEM THAT SHALL REMOVE A MINIMUM OF 99% OF CRANKCASE EMISSIONS. THE CRANKCASE EMISSION CONTROL SYSTEM SHALL REDUCE NOX, HYDROCARBON AND OIL FROM THE CRANKCASE EMISSIONS.

2.1.4 AC GENERATOR:
THE AC GENERATOR SHALL BE; SYNCHRONOUS, FOUR POLE, 2/3 PITCH, REVOLVING FIELD, DRIPPROOF CONSTRUCTION, SINGLE PRELUBRICATED SEALED BEARING, AIR COOLED BY A DIRECT DRIVE CENTRIFUGAL BLOWER FAN, AND DIRECTLY CONNECTED TO THE ENGINE WITH FLEXIBLE DRIVE DISC. ALL INSULATION SYSTEM COMPONENTS SHALL MEET NEMA MG1 TEMPERATURE LIMITS FOR CLASS H INSULATION SYSTEM. ACTUAL TEMPERATURE RISE MEASURED BY RESISTANCE METHOD AT FULL LOAD **SHALL NOT EXCEED 105 DEGREES CENTIGRADE.**

THE GENERATOR SHALL BE CAPABLE OF DELIVERING RATED OUTPUT (KVA) AT RATED FREQUENCY AND POWER FACTOR, AT ANY VOLTAGE NOT MORE THAN 5 PERCENT ABOVE OR BELOW RATED VOLTAGE.

2.1.5 ENGINE_GENERATOR SET CONTROL:
THE NEMA 1 ENCLOSED CONTROL PANEL SHALL BE MOUNTED ON THE GENERATOR SET WITH VIBRATION ISOLATORS. THE CONTROL SHALL BE VIBRATION ISOLATED AND PROTOTYPE TESTED TO VERIFY THE DURABILITY OF ALL COMPONENTS IN THE SYSTEM UNDER THE VIBRATION CONDITIONS ENCOUNTERED. THE GENERATOR SET MOUNTED CONTROL SHALL INCLUDE THE FOLLOWING FEATURES AND FUNCTIONS:

2.1.5.1 THREE POSITION CONTROL SWITCH LABELED RUN/OFF/AUTO.

2.1.5.2 RESET SWITCH.

2.1.5.3 PANEL LAMP SWITCH.

2.1.5.4 GENERATOR SET AC OUTPUT METERING:

ANALOG AC VOLTMETER, DUAL RANGE, 90 DEGREE SCALE, 2% ACCURACY; ANALOG AC AMMETER, DUAL RANGE, 90 DEGREE SCALE, 2% ACCURACY; ANALOG FREQUENCY/RPM METER, 45_65 HZ, 1350_1950 RPM, 90 DEGREE SCALE, +/_ 0.6 HZ ACCURACY.

SEVEN POSITION PHASE SELECTOR SWITCH WITH OFF POSITION TO ALLOW METER DISPLAY OF CURRENT AND VOLTAGE IN EACH GENERATOR PHASE. WHEN SUPPLIED WITH RECONNECTABLE GENERATORS, THE METER PANEL SHALL BE RECONNECTABLE FOR THE VOLTAGE SPECIFIED.

2.1.5.5 GENERATOR SET ALARM AND STATUS DISPLAY:
THE GENERATOR SET SHALL BE PROVIDED WITH ALARM AND STATUS INDICATING LAMPS TO INDICATE NON_AUTOMATIC GENERATOR STATUS, AND EXISTING ALARM AND SHUTDOWN CONDITIONS. THE LAMP CONDITION SHALL BE CLEARLY APPARENT UNDER BRIGHT ROOM LIGHTING CONDITIONS. THE GENERATOR SET CONTROL SHALL INDICATE THE EXISTENCE OF THE FOLLOWING ALARM AND SHUTDOWN CONDITIONS ON THE DISPLAY PANEL:
LOW OIL PRESSURE (ALARM)
LOW OIL PRESSURE (SHUTDOWN)
LOW COOLANT TEMPERATURE (ALARM)
HIGH COOLANT TEMPERATURE (ALARM)
HIGH COOLANT TEMPERATURE (SHUTDOWN)
LOW COOLANT LEVEL (SHUTDOWN)
OVERCRANK (SHUTDOWN)
OVERSPEED (SHUTDOWN)
IN ADDITION, PROVISIONS SHALL BE MADE FOR INDICATION OF TWO CUSTOMER_SPECIFIED ALARM OR SHUTDOWN CONDITIONS. THE NON_AUTOMATIC INDICATING LAMP SHALL BE RED, AND SHALL FLASH TO INDICATE THAT THE GENERATOR SET IS NOT ABLE TO AUTOMATICALLY RESPOND TO A COMMAND TO START FROM A REMOTE LOCATION.

PROVIDE A LOW COOLANT LEVEL SHUTDOWN THAT SHALL BE ANNUNCIATED AS A HIGH ENGINE TEMPERATURE ALARM.

2.1.5.6 ENGINE STATUS MONITORING:
THE FOLLOWING DEVICES SHALL BE PROVIDED ON THE GENERATOR SET CONTROL:
ENGINE OIL PRESSURE GUAGE
ENGINE COOLANT TEMPERATURE GAUGE
ENGINE OPERATION HOUR GAUGE
NUMBER OF HOURS OF OPERATION (HOURS)
BATTERY VOLTAGE (DC VOLTS)

2.1.5.7 CONTROL FUNCTIONS:
THE CONTROL SYSTEM PROVIDED SHALL INCLUDE A CYCLE CRANKING SYSTEM, WHICH SHALL BE FOR 3 CRANKING PERIODS OF 15 SECONDS EACH, WITH 15 SECOND REST PERIOD BETWEEN CRANKING PERIODS. FAIL TO START SHALL BE INDICATED BY OPERATION OF THE OVERCRANK ALARM INDICATION LAMP.

THE CONTROL SYSTEM SHALL INCLUDE AN ENGINE GOVERNOR CONTROL, WHICH FUNCTIONS TO PROVIDE STEADY STATE FREQUENCY REGULATION AS NOTED ELSEWHERE IN THIS SPECIFICATION.

2.1.5.8 ALTERNATOR CONTROL FUNCTIONS:
THE GENERATOR SET SHALL INCLUDE AN AUTOMATIC VOLTAGE REGULATION SYSTEM WHICH IS MATCHED AND PROTOTYPE TESTED WITH THE GOVERNING SYSTEM PROVIDED. IT SHALL BE IMMUNE FROM MISOPERATION DUE TO LOAD_INDUCED VOLTAGE WAVEFORM DISTORTION AND PROVIDE A PULSE WIDTH MODULATED OUTPUT TO THE ALTERNATOR EXCITER. THE SYSTEM SHALL INCLUDE A TORQUE_MATCHING CHARACTERISTIC, WHICH SHALL REDUCE OUTPUT VOLTAGE IN PROPORTION TO FREQUENCY BELOW A THRESHOLD OF [58_59] HZ.

VOLTAGE ADJUSTING RHEOSTAT, LOCKING SCREWDRIVER TYPE, TO ADJUST VOLTAGE +/_ 5% FROM RATED VALUE

2.1.5.9 CONTROL INTERFACES FOR REMOTE MONITORING:
PROVIDE THE FOLLOWING FEATURES IN THE CONTROL SYSTEM:

FORM "C" DRY COMMON ALARM CONTACT SET RATED 2A @ 30VDCTO INDICATE EXISTENCE OF ANY ALARM OR SHUTDOWN CONDITION ON THE GENERATOR SET.

ONE SET OF CONTACTS RATED 2A @ 30VDC TO INDICATE GENERATOR SET IS READY TO LOAD. THE CONTACTS SHALL OPERATE WHEN VOLTAGE AND FREQUENCY ARE GREATER THAN 90% OF RATED CONDITION.

A FUSED 10 AMP SWITCHED 12VDC POWER SUPPLY CIRCUIT SHALL BE PROVIDED FOR CUSTOMER USE. DC POWER SHALL BE AVAILABLE FROM THIS CIRCUIT WHENEVER THE GENERATOR SET IS RUNNING.

A FUSED 20 AMP 12VDC POWER SUPPLY CIRCUIT SHALL BE PROVIDED FOR CUSTOMER USE. DC POWER SHALL BE AVAILABLE FROM THIS CIRCUIT AT ALL TIMES FROM THE ENGINE STARTING/CONTROL BATTERIES.

2.1.6 BASE:
THE ENGINE_GENERATOR SET SHALL BE MOUNTED ON A HEAVY DUTY STEEL BASE TO MAINTAIN ALIGNMENT BETWEEN COMPONENTS. THE BASE SHALL INCORPORATE A BATTERY TRAY WITH HOLD-DOWN CLAMPS WITHIN THE RAILS. ADDITIONAL SEISMIC VIBRATION ISOLATORS SHALL BE PROVIDED BY THE GENERATOR SUPPLIER, AND INSTALLED BY THE CONTRACTOR.

2.1.7 GENERATOR SET AUXILIARY EQUIPMENT AND ACCESSORIES:

2.1.7.1 WATER JACKET HEATER
ENGINE MOUNTED, THERMOSTATICALLY CONTROLLED, WATER JACKET HEATER FOR EACH ENGINE. THE HEATER SHALL BE SIZED AS RECOMMENDED BY THE GENERATOR SET MANUFACTURER. HEATER VOLTAGE SHALL BE 120 VAC.

2.1.7.3 EXHAUST SILENCER
A CRITICAL GRADE SILENCER SHALL BE PROVIDED FOR EACH ENGINE, SIZE AND TYPE AS RECOMMENDED BY THE GENERATOR SET MANUFACTURER. THE SILENCER SHALL BE SUPPORTED SUCH THAT IT'S WEIGHT IS NOT SUPPORTED BY THE ENGINE. THE SILENCER SHALL BE MOUNTED INSIDE THE SOUND ATTENUATED ENCLOSURE. ROOF MOUNTED SILENCERS ARE NOT ACCEPTABLE.

2.1.7.4 STARTING AND CONTROL BATTERIES
STARTING BATTERY BANK, LEAD ACID TYPE, 12 VOLT DC, SIZED AS RECOMMENDED BY THE GENERATOR SET MANUFACTURER, SHALL BE SUPPLIED FOR EACH GENERATOR SET WITH BATTERY CABLES AND CONNECTORS. A BATTERY DISCONNECT SWITCH SHALL BE INCLUDED.

2.1.7.5 BATTERY CHARGER
A 10 AMP, 12VDC BATTERY CHARGER SHALL BE PROVIDED, EQUAL TO SENS MODEL NRG-22-10. PROVIDE 120V, 20 AMP CIRCUIT TO BATTERY CHARGER TO BE INSTALLED BY THE CONTRACTOR WITHIN THE GENERATOR SOUND ATTENUATED ENCLOSURE.

2.1.7.6. GENERATOR SET MAIN CIRCUIT BREAKER
GENERATOR CIRCUIT BREAKER SHALL BE 400 AMPS, 600V, SET_MOUNTED AND WIRED, UL LISTED, LSI TYPE WITH ELECTRONIC TRIP UNIT, 100% RATED.

2.1.8 WEATHERPROOF SOUND ATTENUATED ENCLOSURE
THE GENERATOR SET SHALL BE PROVIDED WITH AN OUTDOOR ENCLOSURE, WITH THE ENTIRE PACKAGE LISTED UNDER UL2200. THE PACKAGE SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE FOR ALL WIRING MATERIALS AND COMPONENT SPACING. HOUSING SHALL PROVIDE AMPLE AIRFLOW FOR GENERATOR SET OPERATION AT RATED LOAD IN AN AMBIENT TEMPERATURE OF 100F. THE HOUSING SHALL HAVE HINGED ACCESS DOORS AS REQUIRED TO MAINTAIN EASY ACCESS FOR ALL OPERATING AND SERVICE FUNCTIONS. ALL DOORS SHALL BE LOCKABLE, AND INCLUDE RETAINERS TO HOLD THE DOOR OPEN DURING SERVICE. ENCLOSURE ROOF SHALL BE CAMBERED TO PREVENT RAINWATER ACCUMULATION. OPENINGS SHALL BE SCREENED TO LIMIT ACCESS OF RODENTS INTO THE ENCLOSURE. ALL ELECTRICAL POWER AND CONTROL INTERCONNECTIONS SHALL BE MADE WITHIN THE PERIMETER OF THE ENCLOSURE.
ALL SHEET METAL SHALL BE PRIMED FOR CORROSION PROTECTION AND FINISH PAINTED WITH THE MANUFACTURERS STANDARD COLOR USING A TWO STEP ELECTROCOATING PAINT PROCESS, OR EQUAL MEETING THE PERFORMANCE REQUIREMENTS SPECIFIED BELOW. ALL SURFACES OF ALL METAL PARTS SHALL BE PRIMED AND PAINTED. THE PAINTING PROCESS SHALL RESULT IN A COATING THAT MEETS THE FOLLOWING REQUIREMENTS:
PRIMER THICKNESS, 0.5-2.0 MILS. TOP COAT THICKNESS, 0.8-1.2 MILS.
GLOSS, PER ASTM D523-89, 80% PLUS OR MINUS 5%. GLOSS RETENTION AFTER ONE YEAR SHALL EXCEED 50%.
CROSSHATCH ADHESION, PER ASTM D3359-93, 4B-5B.
IMPACT RESISTANCE, PER ASTM D2794-93, 120-160 INCH-POUNDS.
SALT SPRAY, PER ASTM B117-90, 1000+ HOURS.
HUMIDITY, PER ASTM D2247-92, 1000+ HOURS.
WATER SOAK, PER ASTM D2247-92, 1000+ HOURS.
PAINTING OF HOSES, CLAMPS, WIRING HARNESSES, AND OTHER NON-METALLIC SERVICE PARTS SHALL NOT BE ACCEPTABLE. FASTENERS USED SHALL BE CORROSION RESISTANT, AND DESIGNED TO MINIMIZE MARRING OF THE PAINTED SURFACE WHEN REMOVED FOR NORMAL INSTALLATION OR SERVICE WORK. ENCLOSURE SHALL BE CONSTRUCTED OF MINIMUM 12 GAUGE STEEL FOR FRAMEWORK AND 14 GAUGE STEEL FOR PANELS. ALL HARDWARE AND HINGES SHALL BE STAINLESS STEEL. THE EXHAUST SHALL EXIT THE ENCLOSURE THROUGH A RAIN COLLAR AND TERMINATE WITH A RAIN CAP. EXHAUST CONNECTIONS TO THE GENERATOR SET SHALL BE THROUGH SEAMLESS FLEXIBLE CONNECTIONS.
THE ENCLOSURE SHALL INCLUDE THE FOLLOWING MAINTENANCE PROVISIONS:
- FLEXIBLE COOLANT AND LUBRICATING OIL DRAIN LINES, THAT EXTEND TO THE EXTERIOR OF THE ENCLOSURE, WITH INTERNAL DRAIN VALVES
- EXTERNAL RADIATOR FILL PROVISION.

THE GENERATOR SET SHALL BE PROVIDED WITH A SOUND-ATTENUATED HOUSING WHICH ALLOWS THE GENERATOR SET TO OPERATE AT FULL RATED LOAD IN AN AMBIENT TEMPERATURE OF UP TO 100F. THE ENCLOSURE SHALL REDUCE THE SOUND LEVEL OF THE GENERATOR SET WHILE OPERATING AT FULL RATED LOAD TO A MAXIMUM OF 70 DBA AT ANY LOCATION 7 METERS FROM THE GENERATOR SET IN A FREE FIELD ENVIRONMENT. THE ENCLOSURE SHALL BE INSULATED WITH NON-HYDROSCOPIC MATERIALS.

2.1.9 REMOTE ANNUNCIATOR PANEL
PROVIDE REMOTE ANNUNCIATOR PANEL. THE ANNUNCIATOR SHALL MONITOR THE FOLLOWING
- GENERATOR RUNNING
- GENERATOR COMMON FAULTS
- GENERATOR SHUTDOWN
- LOW OIL PRESSURE
- LOW COOLANT LEVEL
- HIGH COOLANT TEMPERATURE

2.1.10 REMOTE EMERGENCY STOP SWITCH
PROVIDE A REMOTE EMERGENCY STOP SWITCH OUTSIDE THE BUILDING AS SHOWN ON DRAWINGS OR DIRECTED BY THE OWNER.

2.2 AUTOMATIC TRANSFER SWITCH
PROVIDE COMPLETE FACTORY ASSEMBLED POWER TRANSFER EQUIPMENT WITH ELECTRONIC CONTROLS DESIGNED FOR DESIGNED FOR FULLY AUTOMATIC OPERATION AND INCLUDING: SURGE VOLTAGE ISOLATION, VOLTAGE SENSORS ON ALL PHASES OF THE NORMAL SOURCE AND ONE PHASE OF THE EMERGENCY SOURCE, POSITIVE MECHANICAL AND ELECTRICAL INTERLOCKING, AND MECHANICALLY HELD CONTACTS FOR BOTH SOURCES.

THE GENERATOR SET MANUFACTURER SHALL WARRANT TRANSFER SWITCHES TO PROVIDE A SINGLE SOURCE OF RESPONSIBILITY FOR ALL THE PRODUCTS PROVIDED.

2.2.1 CODES AND STANDARDS
THE AUTOMATIC TRANSFER SWITCH SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING CODES AND STANDARDS:UL1008. THE TRANSFER SWITCH SHALL BE UL LISTED AND LABELED.

CSA C22.2, NO. 14 - M91 INDUSTRIAL CONTROL EQUIPMENT.

CSA 282, EMERGENCY ELECTRICAL POWER SUPPLY FOR BUILDINGS

IEEE STANDARD C62.41 AND C62.45.

NFPA70 - NATIONAL ELECTRICAL CODE. EQUIPMENT SHALL BE SUITABLE FOR USE IN SYSTEMS IN COMPLIANCE TO ARTICLE 700, 701, AND 702.

NFPA110 - EMERGENCY AND STANDBY POWER SYSTEMS.

IEEE446 - RECOMMENDED PRACTICE FOR EMERGENCY AND STANDBY POWER SYSTEMS FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS.

NEMA ICS10-1993 - AC AUTOMATIC TRANSFER SWITCHES.

THE TRANSFER SWITCH MANUFACTURER SHALL BE CERTIFIED TO ISO 9001 INTERNATIONAL QUALITY STANDARD AND SHALL HAVE THIRD PARTY CERTIFICATION VERIFYING QUALITY ASSURANCE IN DESIGN/DEVELOPMENT, PRODUCTION, INSTALLATION, AND SERVICE, IN ACCORDANCE WITH ISO 9001.

2.2.2 RATINGS
STANDBY ATS: 1000 AMPS, 208V, 3 POLE, 4 WIRE, NEMA 3R ENCLOSED, EQUAL TO KOHLER SERIES KSS

MAIN CONTACTS SHALL BE RATED FOR THE OPERATION VOLTAGE AS INSTALLED.

TRANSFER SWITCHES SHALL BE RATED TO CARRY 100 PERCENT OF RATED CURRENT CONTINUOUSLY IN THE ENCLOSURE SUPPLIED, IN AMBIENT TEMPERATURES OF _40 TO +60 DEGREES C, RELATIVE HUMIDITY UP TO 95% (NON_CONDENSING), AND ALTITUDES UP TO 10,000 FEET (3000M).

TRANSFER SWITCH EQUIPMENT SHALL HAVE WITHSTAND AND CLOSING RATINGS (WCR) IN RMS SYMMETRICAL AMPERES EQUAL TO OR GREATER THAN 65 KAIC. THE TRANSFER SWITCH AND ITS UPSTREAM PROTECTION SHALL BE COORDINATED. THE TRANSFER SWITCH SHALL BE THIRD PARTY LISTED AND LABELED FOR USE WITH THE SPECIFIC PROTECTIVE DEVICE(S) INSTALLED IN THE APPLICATION.

2.2.3 CONSTRUCTION
TRANSFER SWITCHES SHALL BE DOUBLE_THROW, ELECTRICALLY AND MECHANICALLY INTERLOCKED, AND MECHANICALLY HELD IN THE SOURCE 1 AND SOURCE 2 POSITIONS.

TRANSFER SWITCH INTERNAL WIRING SHALL BE COMPOSED OF PRE-MANUFACTURED HARNESSES THAT ARE PERMANENTLY MARKED FOR SOURCE AND DESTINATION. HARNESSES SHALL BE CONNECTED TO THE CONTROL SYSTEM BY MEANS OF LOCKING DISCONNECT PLUG(S), TO ALLOW THE CONTROL SYSTEM TO BE EASILY DISCONNECTED AND SERVICED WITHOUT DISCONNECTING POWER FROM THE TRANSFER SWITCH MECHANISM.

TRANSFER SWITCH SHALL BE PROVIDED WITH FLAME RETARDANT TRANSPARENT COVERS TO ALLOW VIEWING OF SWITCH CONTACT OPERATION BUT PREVENT DIRECT CONTACT WITH LINE VOLTAGE COMPONENTS.

TRANSFER SWITCHES SHALL BE 3-POLE AND SHALL BE PROVIDED WITH A NEUTRAL BUS AND LUGS. THE NEUTRAL BUS SHALL BE SIZED TO CARRY 100% OF THE CURRENT DESIGNATED ON THE SWITCH RATING.

ENCLOSURES SHALL BE UL LISTED AND NEMA 3R RATED. THE ENCLOSURE SHALL PROVIDE NEC WIRE BEND SPACE WHEN BOTH SOURCES AND THE LOAD ARE ALL CONNECTED FROM EITHER THE TOP OR BOTTOM OF THE TRANSFER SWITCH. THE CABINET DOOR SHALL BE KEY_LOCKING.

CONNECTIONS

FIELD CONTROL CONNECTIONS SHALL BE MADE ON A COMMON TERMINAL BLOCK THAT IS CLEARLY AND PERMANENTLY LABELED.

TRANSFER SWITCH SHALL BE PROVIDED WITH AL/CU MECHANICAL LUGS SIZED TO ACCEPT THE FULL OUTPUT RATING OF THE GENERATOR SET.

TRANSFER SWITCH CONTROL

SOLID_STATE UNDER VOLTAGE SENSORS SHALL SIMULTANEOUSLY MONITOR BOTH SOURCES. PICK_UP AND DROP_OUT SETTINGS SHALL BE ADJUSTABLE. VOLTAGE SENSORS SHALL HAVE FIELD CALIBRATION OF ACTUAL SUPPLY VOLTAGE TO NOMINAL SYSTEM VOLTAGE.

AUTOMATIC CONTROLS SHALL SIGNAL THE ENGINE_GENERATOR SET TO START UPON SIGNAL FROM NORMAL SOURCE SENSOR. SOLID_STATE TIME DELAY START, ADJUSTABLE FROM 0 TO 15 SECONDS (FACTORY SET AT 2 SECONDS) SHALL AVOID NUISANCE START_UPS. BATTERY VOLTAGE STARTING CONTACTS SHALL BE SILVER, DRY TYPE CONTACTS FACTORY WIRED TO A FIELD WIRING TERMINAL BLOCK.

THE SWITCH SHALL TRANSFER WHEN THE EMERGENCY SOURCE REACHES THE SET POINT. PROVIDE A SOLID_STATE TIME DELAY ON TRANSFER, ADJUSTABLE FROM 2 TO 120 SECONDS, FACTORY SET AT 3 SECONDS.

THE SWITCH SHALL RETRANSFER THE LOAD TO THE NORMAL SOURCE AFTER A TIME DELAY RETRANSFER, ADJUSTABLE FROM 6 SECONDS TO 30 MINUTES, FACTORY SET AT 5 MINUTES. RETRANSFER TIME DELAY SHALL BE IMMEDIATELY BYPASSED IF THE EMERGENCY POWER SOURCE FAILS.

CONTROLS SHALL SIGNAL THE ENGINE_GENERATOR SET TO STOP AFTER A TIME DELAY, ADJUSTABLE FROM 2 SECONDS TO 10 MINUTES, AND FACTORY SET AT 5 MINUTES, BEGINNING ON RETURN TO THE NORMAL SOURCE.

THE CONTROL SYSTEM SHALL INCLUDE FIELD ADJUSTABLE PROVISIONS TO CONTROL THE SPEED OF TRANSFER OF THE TRANSFER SWITCH.

POWER FOR TRANSFER OPERATION SHALL BE FROM THE SOURCE TO WHICH THE LOAD IS BEING TRANSFERRED.

THE CONTROL SHALL INCLUDE LATCHING DIAGNOSTIC INDICATORS TO PINPOINT THE LAST SUCCESSFUL STEP IN THE SEQUENCE OF CONTROL FUNCTIONS, AND TO INDICATE THE PRESENT STATUS OF THE CONTROL FUNCTIONS IN REAL TIME, AS FOLLOWS:

NORMAL AVAILABLE START (GEN SET) EMERGENCY AVAILABLE TRANSFER TIMING TRANSFER COMPLETERE TRANSFER TIMING RETRANSFER COMPLETE TIMING FOR STOP

THE TRANSFER SWITCH SHALL BE PROVIDED WITH A BATTERY CHARGER FOR THE GENERATOR SET STARTING BATTERIES. THE BATTERY CHARGER SHALL BE A FLOAT TYPE CHARGER RATED 2 AMPS. THE BATTERY CHARGER SHALL INCLUDE AN AMMETER FOR DISPLAY OF CHARGING CURRENT AND SHALL HAVE FUSED AC INPUTS AND DC OUTPUTS.

PROVIDE SOLID STATE EXERCISER CLOCK TO SET THE DAY, TIME, AND DURATION OF GENERATOR SET EXERCISE/TEST PERIOD. PROVIDE A WITH/WITHOUT LOAD SELECTOR SWITCH FOR THE EXERCISE PERIOD.

FRONT PANEL DEVICES:

PROVIDE CONTROL SWITCHES MOUNTED ON CABINET FRONT FOR:

TEST _ SIMULATES NORMAL POWER LOSS TO CONTROL FOR TESTING OF GENERATOR SET. CONTROLS SHALL PROVIDE FOR A TEST WITH OR WITHOUT LOAD TRANSFER.

RETRANSFER _ MOMENTARY POSITION TO OVERRIDE RETRANSFER TIME DELAY AND CAUSE IMMEDIATE RETURN TO NORMAL SOURCE, IF AVAILABLE.

PROVIDE LED-TYPE SWITCH POSITION AND SOURCE AVAILABLE INDICATOR LAMPS ON THE FRONT OF THE TRANSFER SWITCH CABINET.

CONTROL INTERFACE

THE TRANSFER SWITCH WILL PROVIDE AN ISOLATED RELAY CONTACT FOR STARTING OF A GENERATOR SET. THE RELAY SHALL BE NORMALLY HELD OPEN, AND CLOSE TO START THE GENERATOR SET. OUTPUT CONTACTS SHALL BE FORM C, FOR COMPATIBILITY WITH ANY GENERATOR SET.

PROVIDE ONE SET FORM C AUXILIARY CONTACTS ON BOTH SIDES, OPERATED BY TRANSFER SWITCH POSITION, RATED 10 AMPS 250 VAC.

THE TRANSFER SWITCH SHALL PROVIDE RELAY CONTACTS TO INDICATE THE FOLLOWING CONDITIONS: SOURCE 1 AVAILABLE, LOAD CONNECTED TO SOURCE 1, SOURCE 2 AVAILABLE, SOURCE 2 CONNECTED TO LOAD.

ENCLOSURE

ENCLOSURES SHALL BE UL LISTED. THE CABINET DOOR SHALL BE KEY_LOCKING.

TRANSFER SWITCH EQUIPMENT SHALL BE PROVIDED IN A NEMA 3R ENCLOSURE.

ENCLOSURES SHALL BE THE NEMA 3R TYPE . THE CABINET SHALL PROVIDE CODE-REQUIRED WIRE BEND SPACE AT POINT OF ENTRY AS SHOWN ON THE DRAWINGS. MANUAL OPERATING HANDLES AND ALL CONTROL SWITCHES (OTHER THAN KEY_OPERATED SWITCHES) SHALL BE ACCESSIBLE TO AUTHORIZED PERSONNEL ONLY BY OPENING THE KEY_LOCKING CABINET DOOR. TRANSFER SWITCHES WITH MANUAL OPERATING HANDLES AND/OR NON KEY_OPERATED CONTROL SWITCHES LOCATED ON OUTSIDE OF CABINET DO NOT MEET THIS SPECIFICATION AND ARE NOT ACCEPTABLE.

2.2.4 OPERATION
OPEN TRANSITION SEQUENCE OF OPERATION

TRANSFER SWITCH NORMALLY CONNECTS AN ENERGIZED UTILITY POWER SOURCE (SOURCE 1) TO LOADS AND A GENERATOR SET (SOURCE 2) TO THE LOADS WHEN NORMAL SOURCE FAILS. THE NORMAL POSITION OF THE TRANSFER SWITCH IS SOURCE 1 (CONNECTED TO THE UTILITY), AND NO START SIGNAL IS SUPPLIED TO THE GENSET.

GENERATOR SET EXERCISE (TEST) WITH LOAD MODE. THE CONTROL SYSTEM SHALL BE CONFIGURABLE TO TEST THE GENERATOR SET UNDER LOAD. IN THIS MODE, THE TRANSFER SWITCH SHALL CONTROL THE GENERATOR SET IN THE FOLLOWING SEQUENCE:

TRANSFER SWITCH SHALL INITIATE THE EXERCISE SEQUENCE AT A TIME INDICATED IN THE EXERCISE TIMER PROGRAM, OR WHEN MANUALLY INITIATED BY THE OPERATOR.

WHEN THE CONTROL SYSTEMS SENSES THE GENERATOR SET AT RATED VOLTAGE AND FREQUENCY, IT SHALL OPERATE TO CONNECT THE LOADS TO THE GENERATOR SET BY OPENING THE NORMAL SOURCE CONTACTS, AND CLOSING THE ALTERNATE SOURCE CONTACTS A PREDETERMINED TIME PERIOD LATER. THE TIMING SEQUENCE FOR THE CONTACT OPERATION SHALL BE PROGRAMMABLE IN THE CONTROLLER.

THE GENERATOR SET SHALL OPERATE CONNECTED TO THE LOAD FOR THE DURATION OF THE EXERCISE PERIOD. IF THE GENERATOR SET FAILS DURING THIS PERIOD, THE TRANSFER SWITCH SHALL AUTOMATICALLY RECONNECT THE GENERATOR SET TO THE NORMAL SERVICE.

ON COMPLETION OF THE EXERCISE PERIOD, THE TRANSFER SWITCH SHALL OPERATE TO CONNECT THE LOADS TO THE NORMAL SOURCE BY OPENING THE ALTERNATE SOURCE CONTACTS, AND CLOSING THE NORMAL SOURCE CONTACTS A PREDETERMINED TIME PERIOD LATER. THE TIMING SEQUENCE FOR THE CONTACT OPERATION SHALL BE PROGRAMMABLE IN THE CONTROLLER.

THE TRANSFER SWITCH SHALL OPERATE THE GENERATOR SET UNLOADED FOR A COOLDOWN PERIOD, AND THEN REMOVE THE START SIGNAL FROM THE GENERATOR SET. IF THE NORMAL POWER FAILS AT ANY TIME WHEN THE GENERATOR SET IS RUNNING, THE TRANSFER SWITCH SHALL IMMEDIATELY CONNECT THE SYSTEM LOADS TO THE GENERATOR SET.

2.2.5 ACCESSORIES
A PROGRAMMABLE EXERECISER SHALL BE SUPPLIED TO ALLOW PROGRAMMING OF UP TO 56 ON/OFF EVENTS.

HEATER, ANTI-CONDENSATION. AN ENCLOSURE HEATER STRIP SHALL BE SUPPLIED INSIDE THE TRANSFER SWITCH ENCLOSURE AND SHALL BE CONTROLLED BY AN ADJUSTABLE HUMIDISTAT. THE HUMIDISTAT SHALL BE ADJUSTABLE FROM 35% TO 95% RELATIVE HUMIDITY, FACTORY SET AT 65%. 120VAC POWER FOR THE STRIP HEATER IS TO BE PROVIDED. A 15A PROTECTIVE CIRCUIT BREAKER IS SHALL BE PROVIDED. THE HEATER SHALL PROVIDE 125WATT OR 250WATT DEPENDING ON THE CONFIGURED KIT.

PADLOCKABLE USER INTERFACE COVER. THE USER INTERFACE COVER SHALL PROTECT THE CONTROLLER USER INTERFACE FROM THE ENVIRONMENT.

3.0 EXECUTION

3.1 INSTALLATION:
EQUIPMENT SHALL BE INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH FINAL SUBMITTALS AND CONTRACT DOCUMENTS. INSTALLATION SHALL COMPLY WITH APPLICABLE STATE AND LOCAL CODES AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND INSTRUCTIONS INCLUDED IN THE LISTING OR LABELING OF UL LISTED PRODUCTS.

INSTALLATION OF EQUIPMENT SHALL INCLUDE FURNISHING AND INSTALLING ALL INTERCONNECTING WIRING BETWEEN ALL MAJOR EQUIPMENT PROVIDED FOR THE ON-SITE POWER SYSTEM. THE CONTRACTOR SHALL ALSO PERFORM INTERCONNECTING WIRING BETWEEN EQUIPMENT SECTIONS (WHEN REQUIRED), UNDER THE SUPERVISION OF THE EQUIPMENT SUPPLIER.

EQUIPMENT SHALL BE INITIALLY STARTED AND OPERATED BY REPRESENTATIVES OF THE MANUFACTURER.

ALL EQUIPMENT SHALL BE PHYSICALLY INSPECTED FOR DAMAGE. SCRATCHES AND OTHER INSTALLATION DAMAGE SHALL BE REPAIRED PRIOR TO FINAL SYSTEM TESTING. EQUIPMENT SHALL BE THOROUGHLY CLEANED TO REMOVE ALL DIRT AND CONSTRUCTION DEBRIS PRIOR TO FINAL TESTING OF THE SYSTEM.

THE CONTRACTOR SHALL PROVIDE THE FUEL FOR TESTING AND PROVIDE A FULL TANK OF FUEL PRIOR TO ACCEPTANCE BY THE OWNER.

3.3 ON_SITE ACCEPTANCE TEST:
THE COMPLETE PACKAGE SHALL BE TESTED FOR COMPLIANCE WITH THE SPECIFICATION FOLLOWING COMPLETION OF ALL SITE WORK. TESTING SHALL BE CONDUCTED BY REPRESENTATIVES OF THE MANUFACTURER. THE ENGINEER SHALL BE NOTIFIED IN ADVANCE AND SHALL HAVE THE OPTION TO WITNESS THE TESTS.

SEAL

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GENERATOR ADDITION FOR CREC OPERATIONS BUILDING

147 CHARTER OAK AVENUE
HARTFORD, CT

PHASE:

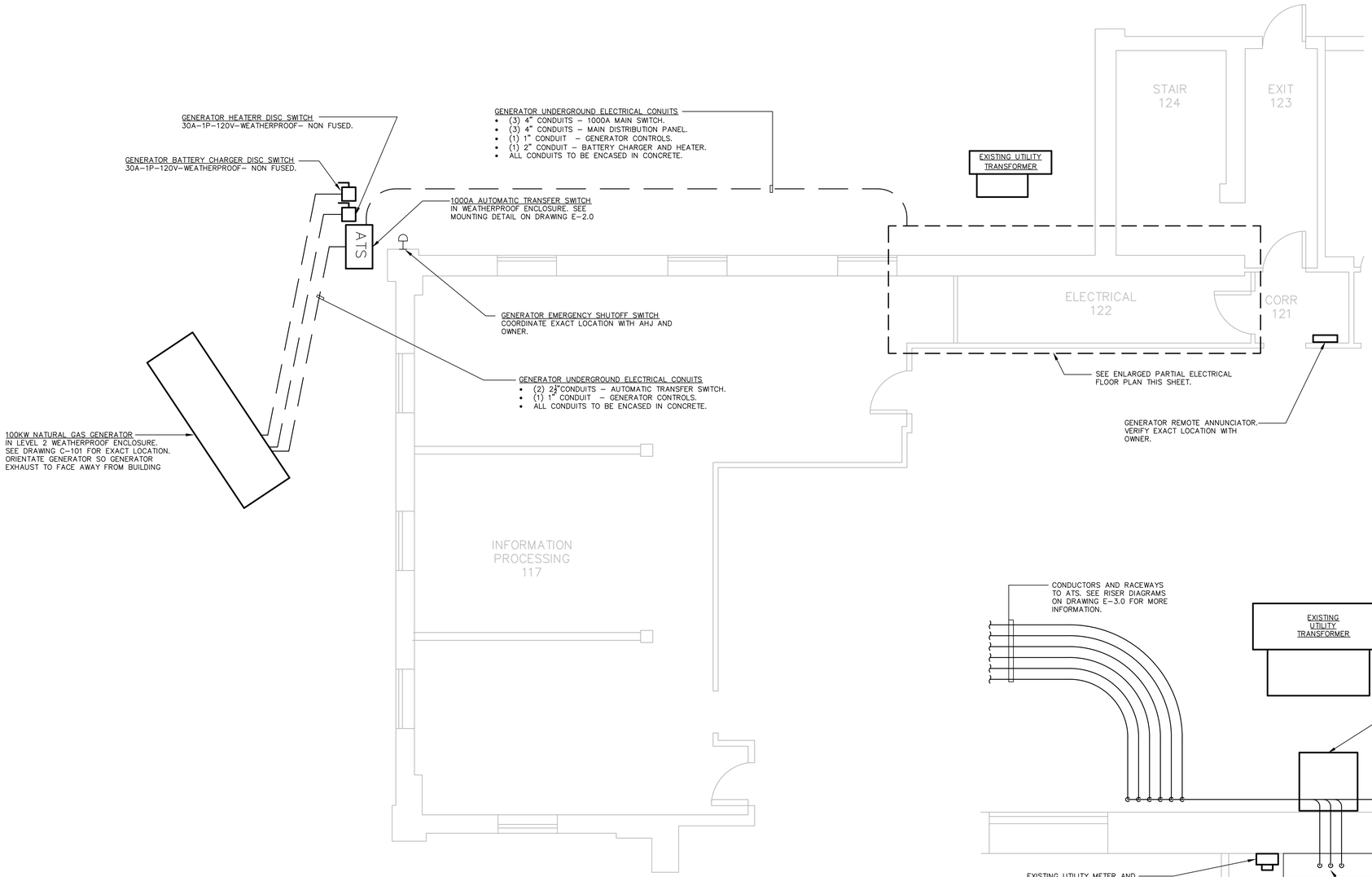
NO.	DATE	DESCRIPTION
	11/28/18	ISSUED FOR BIDDING

REVISIONS:

DRAWING TITLE:
ELECTRICAL
GENERATOR SPECIFICATIONS

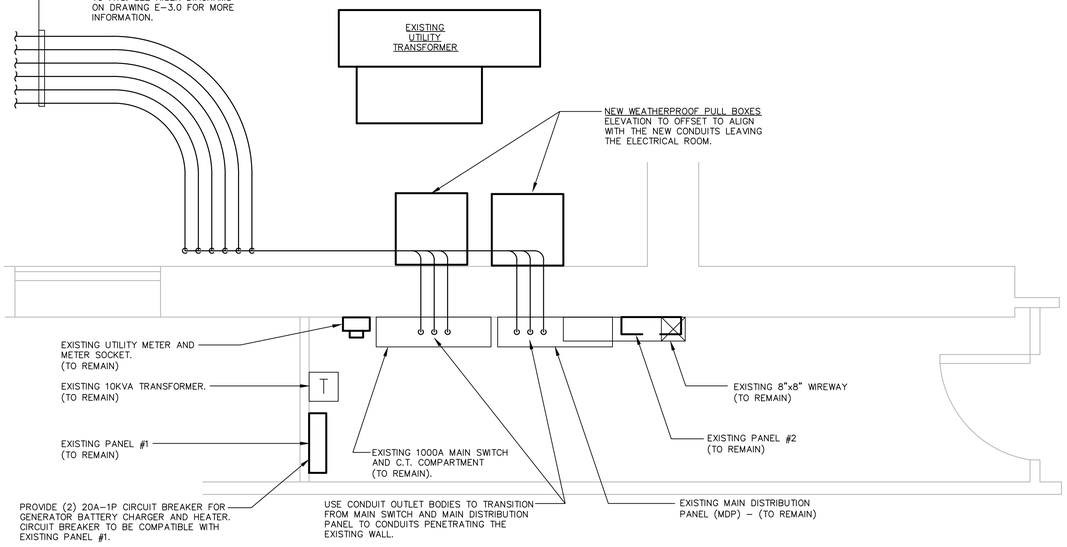
SCALE: AS SHOWN | DATE: 03/29/2019
DRAWN: KAB | CHECKED: DTB

SHEET:
E-0.2



1 FIRST FLOOR ELECTRICAL PLAN

SCALE: 1/4" = 1'-0"



2 PARTIAL PLAN - ELECTRICAL ROOM

SCALE: 1/2" = 1'-0"

WARNING - UNDERGROUND UTILITIES

THE CONTRACTOR SHALL CONTACT THE LOCAL CABLE TELEVISION COMPANY, POWER COMPANY, TELEPHONE COMPANY, GAS COMPANY, WATER AND SEWER COMPANY AND ANY OTHER UTILITY COMPANY WITHIN THE AREA PRIOR TO PROCEEDING WITH ANY EXCAVATION. BY LAW, THE CONTRACTOR IS REQUIRED TO CALL BEFORE DOING ANY EXCAVATION, DIGGING HOLES OR DRIVING POSTS REGARDLESS OF WHETHER IT IS WITHIN THE STREET LINE OR ON PRIVATE PROPERTY. OBTAIN INFORMATION REGARDING THE EXISTENCE AND LOCATION OF ANY UNDERGROUND FACILITIES BY CALLING 811 OR VISITING WWW.CALL811.COM FOR STATE SPECIFIC INFORMATION AND PHONE NUMBERS.

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GENERATOR ADDITION FOR CREC OPERATIONS BUILDING

147 CHARTER OAK AVENUE HARTFORD, CT

PHASE:

NO.	DATE	DESCRIPTION

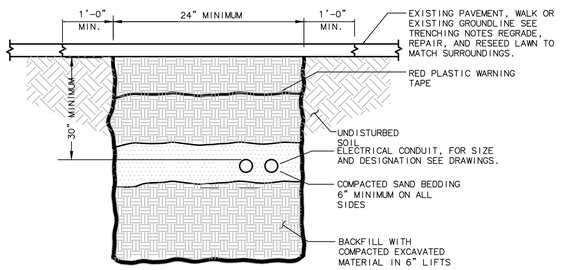
REVISIONS:

DRAWING TITLE: FIRST FLOOR ELECTRICAL PLAN

SCALE: AS SHOWN | DATE: 03/29/2019

DRAWN: KAB | CHECKED: DTB

SHEET: E-1.0



1 TYPICAL CONDUIT TRENCH DETAIL
N.T.S.

WARNING - UNDERGROUND UTILITIES

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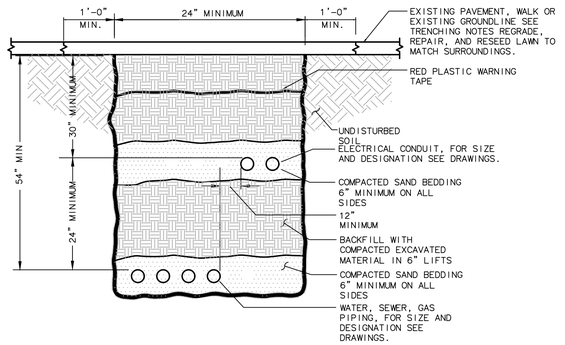
TRENCHING NOTE

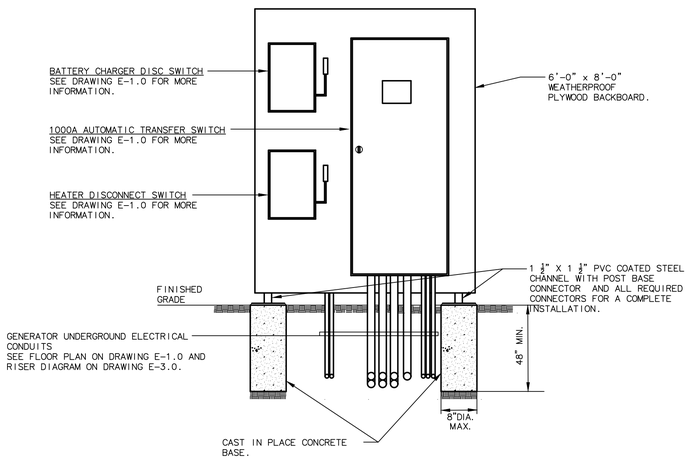
TRENCH EXCAVATION SHALL CONSIST OF THE REMOVAL OF ALL MATERIALS. PROVIDE TRENCH WALL SUPPORTS, DEWATERING, TEMPORARY STREAM OF GROUND WATER DIVERSION AS REQUIRED. PROVIDE LEGAL OFFSITE DISPOSAL OF ALL SURPLUS OR UNSUITABLE MATERIAL. PROVIDE BACKFILL AND COMPACTION NECESSARY FOR THE CONSTRUCTION OF THE TRENCH AT THE LOCATIONS AND TO THE DIMENSIONS AS SHOWN ON THE DETAIL OR AS DIRECTED BY THE ENGINEER.

ALL DIMENSIONS ARE MINIMAL ACCEPTABLE QUANTITIES.

WHEN EXISTING PAVEMENT HAS BEEN REMOVED, REPLACE WITH THE SAME TYPE AND THICKNESS OF PAVEMENT AND SUB-BASE. WHEN EXCAVATION IS WITHIN GRASS AREA, THE DISTURBED AREAS SHALL BE REPAIRED WITH SEED AND STRAW APPLICATION. WHERE THE CONCRETE WALK AND RETAINING WALL ARE DISTURBED, REPLACE WITH CONCRETE TO MATCH EXISTING HEIGHT AND THICKNESS.



2 TYPICAL PIPE TRENCH DETAIL
N.T.S.



4 AUTOMATIC TRANSFER SWITCH MOUNTING DETAIL
N.T.S.

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GENERATOR ADDITION FOR CREC OPERATIONS BUILDING

147 CHARTER OAK AVENUE HARTFORD, CT

PHASE:

NO.	DATE	DESCRIPTION

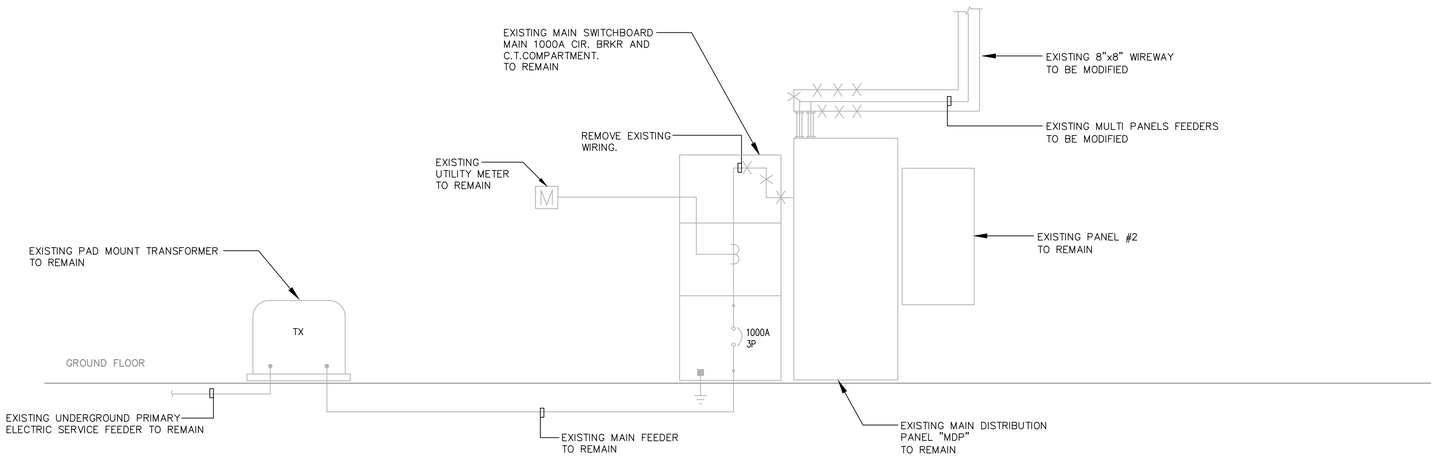
REVISIONS:

DRAWING TITLE: ELECTRICAL DETAILS

SCALE: AS SHOWN | DATE: 03/29/2019

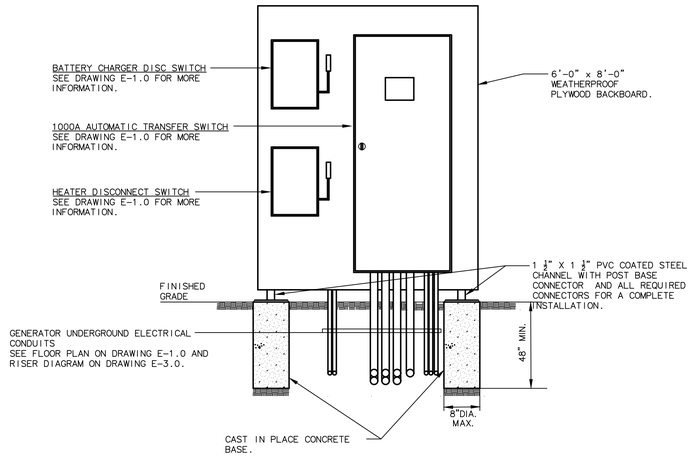
DRAWN: KAB | CHECKED: DTB

SHEET: E-2.0



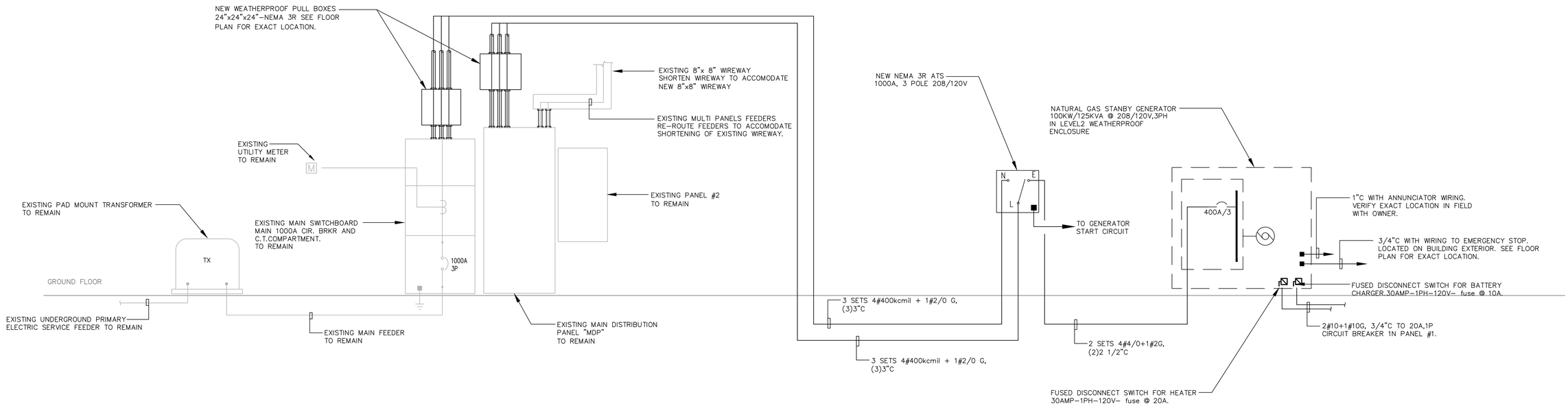
1 ONE-LINE POWER RISER DIAGRAM - DEMOLITION

SCALE: NTS



3 AUTOMATIC TRANSFER SWITCH MOUNTING DETAIL

SCALE: NTS



2 ONE-LINE POWER RISER DIAGRAM - REVISED

SCALE: NTS

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147 CHARTER OAK AVENUE
HARTFORD, CT

PHASE:

NO.	DATE	DESCRIPTION

REVISIONS:

DRAWING TITLE:
ELECTRICAL
POWER RISER DIAGRAM

SCALE: AS SHOWN
DATE: 03/29/2019
DRAWN: KAB
CHECKED: DTB

SHEET:
E-3.0