



Purchasing Department
Finance Group

October 21, 2013

INVITATION TO BID

The City of Norwalk is soliciting bids for the supply and installation of an emergency generator (800kw) for the Norwalk City Hall Facility. The estimated project cost is \$795,000.00. Below is an outline of some of the requirements which apply specifically to this project. The requirements of these services are outlined in greater detail within the drawings contained within Section 2 – Project Specifications.

PROJECT NUMBER:	3345
DEADLINE :	2:00 PM, November 14, 2013
BID TITLE :	EMERGENCY GENERATOR
SITE LOCATIONS:	Norwalk City Hall 125 East Avenue Norwalk, Connecticut 06851

Candidates will be required to provide:

- 10% bid bond, cashier's or certified check with your response (see sect. 3.1 C & D).
- Performance, labor, and materials bond for 100% of the project upon award if the contract value exceeds \$100,000.00 (see sect. 3.1 C & D).
- Copies of current certifications as applicable.

A PRE-BID CONFERENCE for this bid solicitation will commence at 10:00am, Thursday, October 31, 2013 at Norwalk City Hall, 125 East Avenue, Norwalk, CT, meeting in conference room 101. A walk-through of the facility will follow the pre-bid conference.

All questions regarding this solicitation must be directed via e-mail to, Gerald J. Foley, Purchasing Agent, gfoley@norwalkct.org or fax number (203) 854-7817. The deadline for submission of questions is 2:00PM, November 7, 2013.

Bid DOCUMENTS are available upon receipt of this invitation (if not attached) over the Internet at <http://www.norwalkct.org> Adobe Acrobat reader is required to view this document. If you do not have this software you may down load it for free from Adobe.

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SPECIAL NOTES:

1) **PROJECT SCHEDULE**

Subject to the delivery of the equipment, construction shall commence on or about February 3, 2014, with substantial completion on or about April 30, 2014. The project area shall be occupied during the construction period.

2) **BUILDING PERMITS**

Contractors shall obtain and pay for all required permit(s) for this project. Permits fees are **NOT** waived for this project.

3) References to Department of Public Works, Director of Public Works, and Engineer in section 3 and section 4 are to be interpreted as "Owner's designated representative".

4) Section 4, Item 109-04-2b, Contractor Charges is changed to read "...profit and overhead shall be figured at fifteen (15) percent unless some other basis is approved by the Director."

5) Contractors bidding on this project are required to perform more than 50% of the project with its own forces.

6) Contractors are hereby reminded that all submitted bid amounts **MUST** include all costs/insurance premium required to satisfy the various insurance limits as identified in these documents.

7) Section 3.8, Liquidated Damages, change to read "Liquidated damages as defined in Article 20 of the Norwalk General Conditions for Construction will be \$200.00 per day.

8) NOTE: Prevailing Wage Rates apply when (1) the total cost of work performed on **new construction is \$400,000** or more; or (2) the total cost of all work in connection with an alteration, repair, remodeling, refinishing, refurbishing or **rehabilitation is \$100,000** or more

BIDDER LISTS will not be published.

ADDENDAS, if issued, will be available over the Internet at <http://www.norwalkct.org> It is the responsibility of the bidders to verify the issuance of any addenda. We strongly suggest that you check for any addenda a minimum of forty eight hours in advance of the bid deadline.

If, after review of the bid documents, your firm is interested in performing the services specified, provide the information requested, sign and return the complete documents, along with your detailed proposal, to the Purchasing Department by the due date. We would appreciate the courtesy of promptly advising us if you do not intend to respond. To properly maintain our records those firms who do not respond may be removed from our vendor records.

Gerald J. Foley
Purchasing Agent
(Ph) 203-854-7712,
(Fax) 203-854-7817
E-mail – gfoley@norwalkct.org

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- 2.0 PROJECT TECHNICAL SPECIFICATIONS / DRAWINGS FOR THE SUPPLY AND INSTALLATION OF AN EMERGENCY GENERATOR FOR NORWALK CITY HALL.[NOTE: THE TECHNICAL SPECIFICATIONS IN THEIR ENTIRETY ARE PROVIDED ON THE DRAWINGS]

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SECTION 3 - GENERAL INFORMATION

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SECTION 1 – RESPONSE INFORMATION

SPECIAL NOTES ON RESPONDING:

ADDENDAS, if issued, will be available over the Internet at <http://www.norwalkct.org>. Adobe Acrobat reader is required to view this document. If you do not have this software you may download it for free from Adobe. **We strongly suggest that you check for any addenda a minimum of forty-eight hours in advance of the bid deadline.**

SUMMARIES will be available any time after 5:00 PM on the day of the bid opening over the Internet at <http://www.norwalkct.org>. The document number to request will be the same as the project number indicated in the invitation to bid. Bid results will not be provided over the phone.

AWARD NOTIFICATION will be issued by mail.

BUSINESSES WITHOUT FAX EQUIPMENT or Internet access may contact the Purchasing Department at 203-854-7712 for this information.

BID RESPONSES (One (1) Original plus seven (7) copies) are to be delivered to:

City of Norwalk
Purchasing Department
Room 103
125 East Avenue
P.O. Box 5125
Norwalk, CT 06856-5125

See Section 3 for information on delivering bids by fax.

1.1 Response Form - # 3345 – Emergency Generator – Norwalk City Hall

Vendor Name -		
Address -		
Phone -	Fax -	Email -
Manager -		Fed ID#

The undersigned hereby declares that he has or they have carefully examined the plans, specifications and project site and has satisfied him as to all the quantities and conditions, and understands that in signing this proposal he waives all right to plead any misunderstanding regarding the same.

The undersigned further understands and agrees that he will furnish and provide all the necessary material, machinery, implements, tools, labor, services, and other items of whatever nature, and to do and perform all the work necessary under the aforesaid conditions, to carry out the contract and to accept in full compensation therefore the amount of the contract as agreed to by the Contractor and the City.

A. Base Bid – supply & install a 800kw Emergency Generator – Norwalk City Hall

Total Lump Sum Bid Price	\$
Total Lump Sum Bid Price in Words	

B. Add Alternates:

1.	Supply & Install a 1,000kw generator (in lieu of 800kw), including all equipment, structure & system. (See note Drawing E-3, 5 Equipment)	\$
2.	Supply & Install two (2) 4” conduit stubbed into the electric room. (See note Drawing E-5, Electrical key note #3)	\$

Bid Security in the form of a (check one) is attached.	<input type="checkbox"/>	Bond	<input type="checkbox"/>	Certified Check
Cost for performance bond <u>included in lump sum</u>	\$			per thousand dollars
Insurance Agency Name -		Tel.-		
Agency Address -				

Submitted by - Printed	Signature:
Authorized Agent of Company (name and title)	Date:

The above signatory acknowledges receipt of the following addenda issued during the bidding period and understands that they are a part of the bidding documents (if applicable):

Addendum #		Dated		Addendum #		Dated	
Addendum #		Dated		Addendum #		Dated	

Vendor Name -

1.2 STATEMENT OF BIDDERS QUALIFICATIONS

Please answer the following questions regarding your company's past performance. Attach a financial statement or other supportive documentation. Failure to reply to this instruction may be regarded as justification for rejecting a bid.

1. Number of years in business - _____
2. Number of personnel employed Part-time - _____, Full - _____,
3. List projects of this type/size your firm has completed within the last three years:

Project	Date	Contact Person	Phone No.

4. ORGANIZATIONAL STRUCTURE OF BIDDER (check which applies)	<input type="checkbox"/>	general partnership
	<input type="checkbox"/>	limited partnership
	<input type="checkbox"/>	limited liability corporation
	<input type="checkbox"/>	limited liability partnership,
	<input type="checkbox"/>	corporation doing business under a trade name
	<input type="checkbox"/>	individual doing business under a trade name
	<input type="checkbox"/>	other (specify)

5. STATUS OF THE BUSINESS AND ITS CURRENT STANDING WITH THE SECRETARY OF STATE'S OFFICE; e.g., are all required filings current and in good standing or has the entity been withdrawn or canceled	<u>Connecticut corporations</u> - Will the Secretary of State be able to issue a Certificate of Good Standing within 30 days of the bid opening?	Yes	No
	<u>Out-of -State corporations</u> - Do you have a valid license to do business in the State of Connecticut? (Evidence in the form of a Certificate of Authority from the Connecticut Secretary of State will be required within 30 days of the bid opening.)	Yes	No

Vendor Name -

6. Is your local organization an affiliate of a parent company? If so, Indicate the principal place of business of your company and the name of the agent for service if different from what has been indicated on the response form:				
Business Name				
Address				
City		State		Zip
Name of Agent				

NOTE: In the case of a Limited Liability Corporation or a Limited Liability Partnership a certified copy of the Articles of Organization certified as valid and in effect as of the date of the bid opening will be required within 30 days of the bid opening.

A listing of the corporate officers, in the case of a corporation; the general or managing partners, in the case of a partnership; or the managers and members in the case of either a limited liability partnership or company will be required within 30 days of the bid opening.

7. The awarded contractor may be required to submit one copy of the following information relative to its company's financial statements prior to contract signing. This information must represent the current circumstance which surrounds the financial position of the bidding organization. Note: This information will be kept confidential if provided in a separate envelop from your bid pricing.

All information should be supported with appropriate audited financials.

- a. Book Value (Total Assets (-) Total Liabilities)
- b. Working Capital (Current Assets (-) Current Liabilities)
- c. Current Ratio (Current Assets/Current Liabilities)
- d. Debt to Equity Ratio (Long Term Debt/Shareholder's Equity)
- e. Return on Assets (Net Income/Total Assets)
- f. Return on Equity (Net Income/Shareholder's Equity)
- g. Return on Invested Capital (Net Income/Long Term Debt = Shareholders' Equity)

8. SUBCONTRACTORS: If subcontractors are to be used, please list firm name, address, name of principal, and phone number below or on a separate sheet. Also indicate portion or section of work subcontractor will be performing.

COMPANY NAME	ADDRESS	PRINCIPAL	PHONE

All responses to this questionnaire are understood to be proprietary to the vendor, and will be considered confidential. Additional information may be requested subsequent to your responding to this bid request.

END OF SECTION

1.3 *The following document is the City's standard construction services contract produced by the City of Norwalk's Corporation Counsel. Please be advised that the substantive terms and requirements outlined therein may be revised only with the approval of Norwalk's Corporation Counsel.*

**CITY OF NORWALK
CONTRACT FOR CONSTRUCTION SERVICES
FOR**

This Agreement entered into this _____ day of _____, 2014, by the **CITY OF NORWALK**, (hereinafter referred to as "CITY"), acting by and through Richard A. Moccia, its Mayor, duly authorized, and _____, a company existing under the laws of the State of Connecticut with an office and principal place of business located at _____, acting herein by _____, its _____, duly authorized, (hereinafter called the "CONTRACTOR").

WITNESSETH: That the CITY and CONTRACTOR, for the consideration hereinafter named, agree as follows:

ARTICLE 1. WORK TO BE DONE

The CONTRACTOR shall (a) furnish all the materials, machinery, implements, tools, labor, services, and other items of every kind (the "Work") using its best skill and attention required to perform and complete in the most substantial and workmanlike manner the project generally identified as the **Supply & Installation of an Emergency Generator for Norwalk City Hall** (hereinafter the "Project"), in strict accordance with the City of Norwalk Department of Public Works General Provisions, dated April 2011; the general and technical specifications and conditions of contract; the Project Plans; Special Conditions; any addenda to the specifications; and all requirements of the Contract Documents, as defined herein.

The CITY will pay to the CONTRACTOR for the satisfactory completion of the Project and of all of the CONTRACTOR's duties, obligations and responsibilities under this Contract, subject to additions and deductions as herein provided, the total sum of _____ in the manner set forth herein and the Contract Documents.

The Project shall be performed in accordance with the true intent and meaning of the Contract Documents without any expense of any nature whatsoever to the CITY exceeding the consideration stated herein.

The CONTRACTOR hereby represents that it has carefully examined and understands all of the terms and requirements of the Contract Documents, has investigated the nature, locality and site of the Project (the "Site") and the conditions and difficulties under which it is to be performed and that it enters into this Contract on the basis of its own examination, investigation and evaluation of such and not in reliance on any opinions or representations of the CITY or any third party, including any officer, agent, servant or employee thereof.

ARTICLE 2. ADMINISTRATION BY CITY

The Work to be performed under this Contract shall be administered on behalf of the CITY by _____, Director of the _____ Department, or his designated representative (hereinafter referred to as the "Director"). The CONTRACTOR acknowledges and agrees that any instructions, reviews, advice, approvals or directives rendered to it by the Director, or his designated representative, consistent with the Contract Documents are authorized on behalf of the CITY.

ARTICLE 3. DOCUMENTS FORMING THE CONTRACT

The Contract Documents shall be deemed to include the CITY's Request for Bids Project 3345 and Addendum ___ thereto dated _____, the CONTRACTOR's bid response dated _____, this written Agreement, including all bonds and insurance certificates; the City of Norwalk Department of Public Works General Provisions dated July 2011; the general and technical specifications and conditions of contract; the Project plans; Special Conditions and Addenda; State Labor Department minimum wage rates (if applicable); any addenda to the specifications; and all provisions required by law to be inserted in the contract, whether or not physically inserted.

This Contract will supersede any agreement or contract form that may have been included in the bid specifications, which form was included for information purposes only, and any writings or documents not incorporated herein by specific reference. This Contract, together with the other Contract Documents are all intended to supplement and complement each other and shall, to the fullest extent possible, be so construed and interpreted. If, however, any provision of this Contract irreconcilably conflicts with any provision of the other Contract Documents, the provision imposing a greater obligation on the CONTRACTOR shall govern.

ARTICLE 4. EXAMINATION OF DOCUMENTS AND SITE

The CONTRACTOR confirms that it has carefully examined the Site, as well as its surrounding territory. As a result, the CONTRACTOR acknowledges that it is fully informed regarding all existing conditions, both natural and manmade, as well as all such above grade, at grade and subsurface conditions that may in any way affect the Work to be done and labor and materials to be furnished for the proper completion of the Project, including, by way of example, the existence of poles, wires, pipes, ducts, conduits and other facilities and structures of municipal and public service corporations on, over or under the Project site. The CONTRACTOR further acknowledges that it has secured such information by personal investigation, research, and inquiry into all reasonably available data concerning the actual Site and has not relied upon the estimates or records of the CITY; and that it will make no claim against the CITY by reason of reliance on any such estimates, tests, information, data or representations made by any officer, agent, representative or employee of the CITY, or for costs incurred as a result thereof.

In addition, the CONTRACTOR agrees that, prior to starting any part of the Work, it shall carefully study and compare the various drawings, plans and other Contract Documents relative to that portion of the Work in order to facilitate construction.

ARTICLE 5. DATE OF COMPLETION

The CONTRACTOR further agrees that it will begin the Project herein described within ten (10) days of the date hereof, unless written instruction from the Director is given to begin at a different date. The CONTRACTOR shall diligently and continuously prosecute and complete the same and coordinate the Work with all other work being performed on the Project according to any schedules that may be issued from time to time during the Project and any other scheduling requirements listed in the Contract Documents, so as not to delay, impede, obstruct, hinder or interfere with the commencement, progress or completion of any part of the Project and so that the Project shall be entirely completed no later than ninety (90) calendar days of the Notice to Proceed issued pursuant to this Contract.

THE CONTRACTOR ACKNOWLEDGES THAT TIME IS OF THE ESSENCE IN TERMS OF COMPLETION OF THE CONTRACTOR'S WORK HEREUNDER.

No extension beyond this date of completion shall be effective unless in writing signed by the Director. Any extension shall be for such time and upon such terms and conditions as may be set by the Director, which may include charges for professional services, engineering and inspection expenses incurred, including expenses incurred by railroad companies on contracts which affect a railroad right of way) as a result. Notice of application for any extension shall be filed with the Director at least fifteen (15) days prior to the date of completion set forth above.

The CONTRACTOR shall work during such days and times as required by the CITY so as not to interfere with its use or operation of the Site. However, if the CITY deems it necessary, it may direct the CONTRACTOR to work overtime. If so directed, the CONTRACTOR shall work overtime and, provided that it is not in default under any of the terms or provisions of this Contract or of other Contract Documents, the CITY will pay the CONTRACTOR for such actual additional wages paid directly for such overtime work, if any, at rates which have been approved by the CITY.

The CONTRACTOR shall contribute to and cooperate with the development of the Project schedules and other efforts to achieve timely completion of the Work. The CONTRACTOR shall be required to provide information for the scheduling of the times and sequence of operations required in order for its Work to meet the CITY's overall schedule requirements and it shall continuously monitor the Project schedule so as to be fully familiar with the timing, phasing and sequence of operations of the Work and of any other work performed by others on the Project. The CONTRACTOR shall diligently execute the Work in accordance with the requirements of the Project schedule including any revisions thereto.

In the event the CONTRACTOR is delayed, obstructed, hindered or interfered with in the commencement, prosecution or completion of the Work by any cause including, but not limited to, any act, omission, neglect, negligence or default of the City or of anyone employed by it, or by any other contractor or subcontractor on the Project, or by damage caused by fire or other casualty or by any other cause beyond the control of and not due to any fault, neglect, act or omission of the CONTRACTOR, its officers, agents, employees, subcontractors or suppliers, the CONTRACTOR's exclusive remedy shall be an extension of time for a period equivalent to the time lost by reason of any and all of the aforesaid causes. Provided, however, that the CONTRACTOR shall not be entitled to any such extension of time unless the CONTRACTOR (1) notifies the CITY in writing of the cause or causes of

such delay, obstruction, hindrance or interference within forty-eight (48) hours of the commencement thereof and (2) demonstrates that it could not have anticipated or avoided such delay, obstruction, hindrance or interference and has used all available means to minimize the consequences thereof. Notwithstanding the foregoing, if any of the Contract Documents are at variance with granting such time extension, then the provisions of such documents shall control. In no event shall the CONTRACTOR be entitled to money damages or an adjustment to the sum payable hereunder by virtue of any such delay.

In the event of a delay in the progress of the Work or disruption of, hindrance, obstruction, or interference with the Work due to any fault, neglect, action or omission of the CONTRACTOR or any of its officers, agents, servants, employees, subcontractors or suppliers which results in any additional cost, expense, liability or damage to the City including, legal fees and disbursements incurred by the CITY (whether incurred in defending claims arising from such delay or in seeking reimbursement or indemnity from the CONTRACTOR and/or its surety hereunder or otherwise) or any damages or additional costs or expenses for which the CITY may or shall become liable, no extension of time shall be granted and the CONTRACTOR (and its surety) shall be liable to compensate the CITY for and indemnify it against all such costs, expenses, damages and liability. In addition, the CONTRACTOR shall not only fulfill all of its obligations imposed by this Contract at its own cost and expense, but also work such overtime as may be necessary to make up for all time lost in the performance of the Work and of the Project. Should the CONTRACTOR fail to make up for the time lost by reason of such delay, the CITY shall have the right to hire other contractors to work overtime, if needed, and to take whatever other action it deems necessary to avoid delay in the completion of the Work and of the Project. The cost and expense of such overtime and/or such other action, including all other consequential damages and expenses, shall be borne by the CONTRACTOR hereunder.

ARTICLE 6. CONTINGENCIES, EXTRA WORK, AND CHANGES

Whenever the CITY determines that, for any reason deemed to be in the best interests of the Project, the scope of Work or plans for the Project should be revised to provide for changes, deletions, contingencies, additional or extra work, it may issue a Change Order to the CONTRACTOR. Once the CITY has issued and signed a written Change Order in its standard form, the CONTRACTOR shall forthwith comply

with the specifications of such Change Order. In such event, allowances for additions and/or deductions to the prices listed in the bid documents will be made commensurate with such changes in the scope or extent of the Work. Any such action by the CITY shall not constitute grounds for a claim by the CONTRACTOR for damages, loss of anticipated profits, or for costs resulting from any variations between the approximate quantities and quality of Work contemplated in the bid documents and as built.

All changes, additions or omissions in the Work ordered in writing by the CITY shall be deemed to be a part of the Work hereunder and shall be performed and furnished in strict accordance with all of the terms and provisions of the Contract Documents based on a negotiated cost for the Work and materials.

The CONTRACTOR shall be responsible for keeping its surety informed of all such modifications to this Contract. The obligations of CONTRACTOR's surety shall not be reduced, waived or adversely affected by the issuance of such Change Orders, additions or deductions and the CITY shall not be required to inform the surety of the same or to obtain the consent of the surety to such modifications.

Payment for any unforeseen Work and/or changes shall be made as provided for in the Standard Specifications.

ARTICLE 7. MEANS AND METHODS

The CONTRACTOR shall supervise and direct the Work using its best skill and attention in order to perform and complete the Project according to the Contract Documents in a timely and workmanlike manner. The CONTRACTOR shall be responsible for safeguarding the Site and all adjacent property from damage and for implementing all reasonable and necessary construction means, methods, techniques, sequences and procedures for safety precautions, protection against vandalism, and compliance with fire insurance rating bureau procedures, in connection with the performance of the Work. CONTRACTOR further assumes responsibility for all actions and omissions of its agents, employees, subcontractors, suppliers and all of their respective agents, employees and any other person performing any part of the Work.

ARTICLE 8. NO COLLUSION OR FRAUD

The CONTRACTOR hereby agrees that all persons interested as principal or principals in the bid or proposal submitted by the CONTRACTOR for this Project are named therein; that

this Contract has been secured without any connection with any person or persons other than those named; that this Contract was secured without collusion or fraud; and that neither any officer nor employee of the CITY, nor any member of the immediate family of any such person, has or will have a financial interest in the performance of this Contract, in the supplies, Work or business to which it relates, or in any portion of the profits thereof.

ARTICLE 9. ESTIMATES AND PAYMENT

As the Project progresses in accordance with the Contract and in a manner that is satisfactory to the CITY, the CITY hereby agrees to make payments to the CONTRACTOR, based upon the Contract Documents as follows: on or before the last day of each month the CONTRACTOR shall submit to the CITY, [in the form required by the CITY], a written Application For Payment showing the value of the Work installed to that date based on the quantity of work completed and the Contract unit prices, from which shall be deducted all previous payments and all charges for services, materials, equipment and other items chargeable to the CONTRACTOR. The balance of such Application must be approved by the CITY and should represent the value of Work done and material furnished in accordance with the terms and conditions of this Contract during the preceding month. The CONTRACTOR shall be paid ninety five (95%) percent of such amount. The five (5) percent retained shall be held by the CITY until final completion and acceptance of all Work covered by this Contract; compliance by the CONTRACTOR with all of its responsibilities hereunder including the provision of signed waivers of lien from CONTRACTOR, its subcontractors and suppliers; the posting of a twenty-five percent (25%) maintenance bond by the CONTRACTOR insuring the Project for a period of two (2) years from the date of final acceptance; and the making of all payments due all subcontractors and material suppliers in connection with the Project. Nothing herein shall modify or limit detailed payment provisions contained in the Contract Documents and approved by the Director.

The CITY reserves the right to advance the date of any payment (including the final payment) under this Contract if, in its judgment, it becomes desirable to do so.

The CONTRACTOR agrees that, if and when requested to do so by the CITY, it shall furnish such information, evidence and substantiation as the CITY may require with respect to the nature and extent of all obligations incurred by the CONTRACTOR for or in connection with the Work, all payments made by the CONTRACTOR thereon, and the amounts remaining unpaid and the reasons therefor.

The CONTRACTOR warrants that: (1) title to Work, materials and equipment covered by an Application for Payment will pass to the CITY either by incorporation in construction or upon receipt of any payment for the same by the CONTRACTOR, whichever occurs first; (2) Work, materials and equipment covered by Applications for Payment shall be free and clear of liens, claims, security interests or encumbrances; and (3) no Work, materials or equipment covered by an Application for Payment shall be acquired by the CONTRACTOR, or any other entity or person performing any Work at the Site or furnishing materials or equipment for the Project, subject to an agreement or arrangement under which any interest therein or an encumbrance thereon is retained by the seller of such or is otherwise imposed by the CONTRACTOR or such other entity or person.

With each Application For Payment the CONTRACTOR shall certify to the CITY that the Work, for which payment is requested, has been fully completed in accordance with the Contract Documents; that all amounts owed to any subcontractor and subconsultant for Work or materials covered by all previous progress payments have been paid in full; and that the CONTRACTOR has no claim outstanding against the CITY related to this, or any previous progress payment, except any such claim as has been previously served by way of a detailed, verified statement upon the CITY prior to the filing of such Application For Payment. If requested to do so, the CONTRACTOR will file signed Waivers of Lien with each Application for Payment in a form satisfactory to the CITY.

The CONTRACTOR's refusal to accept any payment as tendered shall constitute a waiver of any right to interest thereon.

It is further agreed that so long as the CONTRACTOR fails to comply with any lawful or proper direction concerning the Work or material given by or on behalf of the Director, the CONTRACTOR shall not be entitled to have any estimate made for the purpose of payment. No such estimate shall be rendered until the CONTRACTOR fully and satisfactorily complies with all such directions.

If any of the following occurs: (1) a claim or lien is made or filed with or against the CITY, the Project, or the Project funds by any person claiming that the CONTRACTOR or any subcontractor or other person under subcontract has failed to make payment for any labor, services, materials, equipment, taxes or other items or obligations furnished or incurred for or in connection with the Work; (2) there is evidence of such nonpayment or of any claim or lien for

which, if established, the CITY might become liable and which is chargeable to the CONTRACTOR; (3) the CONTRACTOR or any subcontractor or other person under subcontract causes damage to the Work or to any other work on the Project; (4) or if the CONTRACTOR fails to perform or is otherwise in default under any of the terms or provisions of this Contract, the CITY shall have the right to retain from any payment then due or thereafter to become due an amount which it deems sufficient to (i) satisfy, discharge and/or defend against any such claim or lien or any action which may be brought or judgment which may be recovered thereon, (ii) make good any such nonpayment, damage, failure or default, and (iii) compensate the CITY for and indemnify and hold it harmless against any and all actual or potential losses, liabilities, damages, costs and expenses, including legal fees and disbursements, which may be sustained or incurred in connection therewith. The CITY shall have the right to apply and charge against the CONTRACTOR so much of the amount retained as may be required for the foregoing purposes. If the amount is insufficient therefor, the CONTRACTOR shall be liable for the difference and promptly pay the same to the CITY. No person shall have any right or claim by reason of the CITY's failure or refusal to withhold monies. No interest shall be payable by the CITY on any amounts withheld under this provision.

This provision is not intended to limit or in any way prejudice any other right of the CITY.

No payment (final or otherwise) made under or in connection with this Contract shall be conclusive evidence of the proper performance of the Work or of this Contract, in whole or in part, and no such payment shall be construed to be an acceptance of defective, faulty or improper work or materials, nor shall it release the CONTRACTOR from any of its obligations under this Contract; nor shall entrance upon and use of the Site by the CITY constitute acceptance of the Work or any part thereof.

ARTICLE 10. PAYMENT TO SUBCONTRACTORS AND SUPPLIERS

The CONTRACTOR shall, within thirty (30) days after its receipt of payment from the CITY, pay all amounts due any supplier or subcontractor, whether for labor performed or materials furnished

hereunder, when such labor or materials have been included in a requisition submitted by the CONTRACTOR and paid by the CITY.

The CONTRACTOR shall include in each of its contracts and subcontracts hereunder a provision requiring each contractor or subcontractor to pay all amounts due any of its own subcontractors, (second tier subcontractors), whether for labor performed or materials furnished, within thirty (30) days after such contractor or subcontractor is paid by the CONTRACTOR an amount that includes payment for labor or materials furnished by such second tier subcontractor.

The CITY shall have no obligation to pay directly or to be responsible in any way or under any circumstances for payment to a contractor, subcontractor, employee, agent or representative of the CONTRACTOR.

No progress payment or partial or entire use or occupancy of the Project by the CITY shall constitute an acceptance of Work which does not comply with the Contract Documents.

ARTICLE 11. FINAL PAYMENT

Final payment and payment of any amounts retained shall not become due until the following conditions precedent have been met: (1) the CITY accepts the Project and approves of all the Work performed hereunder; (2) the CONTRACTOR submits the following documents satisfactory to the CITY (a) certification that all payrolls, bills for materials, labor and equipment, and all other indebtedness connected with the Project, for which the CITY or CITY's property might be liable, have been paid or otherwise satisfied and that there are no claims, obligations, or liens outstanding or unsatisfied for labor, services, materials, equipment or other items performed, furnished or incurred for or in connection with the Work; (b) written consent of surety, if any, to final payment; (c) a certificate that insurance required by the Contract Documents is to remain in force for the required period of time following completion of the Work; (d) a satisfactory two (2) year maintenance bond posted with the CITY insuring the Project for a period of two (2) years from the date of final completion; (e) all required manufacturers' certification that all products and materials have been properly installed and/or incorporated into the Project and issuance of all applicable manufacturers' warranties for same; (f) any other information and documentation establishing payment or satisfaction of all outstanding obligations, to the extent and in such form as may be designated by the CITY, such as, by way of example only, receipts, releases and waivers of liens, including the execution and delivery by the CONTRACTOR, in a form satisfactory to the CITY, of a general release running to and in favor of the CITY; (g)

all required Certified Payrolls acceptable to the State of Connecticut Department of Labor; and (h) all Change Orders with sufficient backup/documentation acceptable to the CITY. Should any claim be made or other obligation arise after final payment is made, the CONTRACTOR shall refund to the CITY all expenses paid by the CITY to satisfy, discharge or defend against any such claim, obligation or lien or any action brought or recovered thereon and all costs and expenses, including legal fees and disbursements, incurred in connection therewith.

If the CONTRACTOR cannot, for reasonable cause not of its own fault, furnish any such information or documentation required by the CITY, the CONTRACTOR may furnish a bond satisfactory to the CITY promising to indemnify the CITY against any Project related, outstanding obligation. If any lien remains unsatisfied after final payments are made by the CITY, the CONTRACTOR shall reimburse the CITY for moneys the CITY may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

Final payment being tendered by the CITY shall constitute a waiver of claims by the CITY except those arising from:

- A. unsettled liens;
- B. faulty or defective Work or materials;
- C. failure of the Work or materials to comply with requirements of the Contract Documents; or
- D. terms of special warranties provided by the CONTRACTOR, its suppliers, or its subcontractors, or within the Contract Documents.
- E. claims arising after the authorization of any payment.

Acceptance by the CONTRACTOR, or anyone claiming by or through it, of any interim or final payment hereunder shall constitute and operate as a release of the CITY from any and all claims of any liability or responsibility to the CONTRACTOR for anything done to, furnished for, relating to or in connection with the Project hereunder, and for any act, neglect, default on the part of the CITY or any of its officers, agents, or employees unless the CONTRACTOR serves a detailed and verified statement of claim upon the CITY prior to the acceptance of such payment. Such statement shall specify the items and details upon which the claim is based and any claim shall be limited to such items. The CONTRACTOR's refusal to accept the final payment as tendered shall constitute a waiver of any right to interest thereon.

ARTICLE 12. FINAL ACCEPTANCE OF WORK

When, in the opinion of the Director, the CONTRACTOR has fully performed all the required Work under this Contract and any Change Orders issued for the Project to the CONTRACTOR, the Director shall recommend the acceptance of the Work so completed. If the recommendation is accepted, the CITY shall thereupon notify the CONTRACTOR in writing of such acceptance, and copies of such acceptance shall be sent to other interested parties. However, the CITY has the right to reject the whole or any portion of the Work should it be found or known to be inconsistent with the terms of the Contract Documents or otherwise improper. All certifications upon which partial payments may have been made, being merely estimates, are subject to correction in the final determination or upon final payment.

ARTICLE 13. SAFETY

The CONTRACTOR agrees that it is responsible for preventing accidents and ensuring safety of all persons engaged in the Project or in the vicinity of the Work including members of the general public. The CONTRACTOR shall comply with all laws, ordinances, rules, regulations, codes, standards, orders, notices and requirements concerning safety applicable to the Work, including, among others, the Federal Occupational Safety and Health Act of 1970, as amended, and all standards, rules, regulations and orders which have been or shall be adopted or issued thereunder, and with all safety standards established during the progress of the Work.

The CONTRACTOR shall at all times provide sufficient, safe and proper facilities for the inspection of the Work by the CITY and its authorized representatives in the field, at shops or at any other place where materials or equipment for the Work are in the course of preparation, manufacture, treatment or storage. The CONTRACTOR shall, immediately upon receiving written notice from the CITY, stop any part of the Work which is deemed unsafe and proceed to take down all portions of the Work and remove all materials whether worked or unworked, that may be noted as unsound, defective or improper or as in any way failing to conform to this Contract or the Plans, Specifications or other Contract Documents. The CONTRACTOR, at its own cost and expense, shall replace the same with proper and satisfactory Work and materials and make good all Work damaged or destroyed by or as a result of such unsound, defective, improper or nonconforming Work or materials or by the taking down, removal or replacement thereof. The CONTRACTOR agrees that it shall not have nor make any claim for costs, damages,

delays or extensions of time arising out of such stoppages. Should the CONTRACTOR neglect to take such corrective measures, the CITY may do so at the cost and expense of the CONTRACTOR and may deduct the cost thereof from any payments due or to become due to the CONTRACTOR.

Notwithstanding the foregoing, CONTRACTOR shall at all times be responsible for ensuring the safety of all persons and property at the Site, regardless of any action or failure to act on the part of the CITY. Nothing set forth herein, nor any action or failure to act by the CITY, shall relieve the CONTRACTOR of its obligations and responsibilities with regard to safety and safeguarding of the Site and all persons and property thereon or adjacent thereto.

ARTICLE 14. LABOR AND EMPLOYMENT REGULATIONS

Pursuant to Connecticut General Statutes, Section 31-52a, the following provision shall be incorporated into this Contract and each subcontract hereunder insofar as this Contract or any such subcontract concerns a public works project, including, but not limited to, construction, remodeling or repairing of any public facility or structure (except public buildings covered by Section 31-52), site preparation or improvement, appurtenances or highways, or the preparation or improvement of any land or waterway on or in which a structure is situated or to be constructed:

In the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the State who are, and continuously for at least six (6) months prior to the date hereof have been, residents of this State, and if no such person is available then to residents of other states. Nothing herein shall abrogate or supersede any provision regarding residence requirements in a collective bargaining agreement to which the CONTRACTOR is a party.

The CONTRACTOR shall include the foregoing provision in all subcontracts entered into pursuant to this Contract or related to this Project.

Pursuant to Connecticut General Statutes, Section 31-53, the following provision shall be incorporated into this Contract and each subcontract hereunder for work relating to the construction of a public works project where the total cost of all work to be performed in connection with such project is Four Hundred Thousand Dollars (\$400,000.00)

or more, and each contract for work relating to the remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project where the total cost of all work to be performed in connection with such project is One Hundred Thousand Dollars (\$100,000.00) or more:

The wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund described in Section 31-53(h) of the Connecticut General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the CITY of Norwalk. Any contractor who is not obligated by agreement to make a payment or contribution on behalf of such employees to any such employee welfare fund shall pay to each employee as part of his wages the amount of payment or contribution for his classification on each pay day.

In the event that the CITY determines that any mechanic, laborer or workman employed by the CONTRACTOR or any subcontractor directly on the Site for the Work contemplated hereunder has been or is being paid a rate of wages less than that required to be paid, as stated herein, the CITY may, by written notice to the CONTRACTOR, terminate the CONTRACTOR's right to proceed with the Work hereunder or such part of the Work for which there has been a failure to pay the required wages. In the event of such termination, the CITY may prosecute the Work to completion by contract or otherwise and the CONTRACTOR and its sureties shall be liable to the CITY for all costs incurred thereby in excess of the compensation to be paid under this Contract.

ARTICLE 15. RIGHT TO SUSPEND WORK OR TERMINATE CONTRACT

The CITY may at any time and for any reason terminate this Contract for convenience by written notice specifying the termination date, which shall be not less than seven (7) days from the date such notice is given. In the event of such termination for convenience, the CONTRACTOR shall be paid an amount that shall compensate the CONTRACTOR for the portion of the Work satisfactorily performed prior to termination. Such amount shall be fixed by the CITY after consultation with the CONTRACTOR, and shall be subject to audit by the CITY's Comptroller.

In the event the CITY determines that there has been a material breach by the CONTRACTOR of any of the terms of the Contract; the CONTRACTOR refuses or has failed to perform the Work or any part thereof in a timely, professional and diligent manner as will ensure its completion in accordance with the requirements hereof; the CITY determines that the Work hereunder is not being performed according to the Contract; the CONTRACTOR at any time refuses or neglects to supply a sufficient number of skilled workers or materials of the proper quality and quantity; the CONTRACTOR fails in any respect to prosecute the Work with promptness and diligence; the CONTRACTOR causes by any act or omission the stoppage, delay, or damage to the Work of any other contractors or subcontractors on the Project; the CONTRACTOR fails in the performance of any of the terms and provisions of this Contract or of the other Contract Documents; there is filed by or against the CONTRACTOR a petition in bankruptcy or for an arrangement or reorganization; or the CONTRACTOR becomes insolvent or is adjudicated bankrupt or go into liquidation or dissolution, either voluntarily or involuntarily or under a court order, or makes a general assignment for the benefit of creditors, or otherwise acknowledges insolvency, the CITY has the right, power and authority to terminate this Contract for cause upon providing the CONTRACTOR three (3) days written notice. Said notice is provided for the purposes of allowing the CONTRACTOR the opportunity to wind down its operations and is not intended to provide the CONTRACTOR with the opportunity to cure.

In the event the CITY terminates the Contract for cause, the City may proceed with the Project in such manner and by such process as it determines to be in the best interest of the Project. Furthermore, the CONTRACTOR shall not be entitled to receive any further payment under this Contract until the Work shall be wholly completed to the satisfaction of the CITY, as evidenced by written acceptance signed by the Director. Conversely, the CONTRACTOR shall be obligated to pay the CITY the cost of completing the Work to the satisfaction of the CITY and of performing and furnishing all labor, services, materials, equipment, and other items required therefor, but also all losses, damages, costs and expenses, (including legal fees and disbursements incurred in connection with procurement, in defending claims arising from such default and in seeking recovery of all such costs and expenses from the CONTRACTOR and/or its surety), and disbursements sustained, incurred or suffered by reason of or resulting from the CONTRACTOR's default. If such costs and expenses and other charges exceed the amount otherwise

due the CONTRACTOR, such excess amount shall be charged to and promptly paid by the CONTRACTOR to the CITY. In computing the amounts chargeable to the CONTRACTOR, the CITY shall not be held to a basis of the lowest prices for which the completion of the Project or any part thereof might have been accomplished, but the CONTRACTOR shall be liable for all sums actually paid or expenses actually incurred in affecting prompt completion of the Project hereunder. The rights described herein are in addition to any other rights and remedies provided by law.

The CITY also shall have the right to suspend the CONTRACTOR's performance under this Contract at any time and for any reason that the CITY deems in its best interest. Should the CITY reactivate the performance of the Project, in whole or in part, within one (1) year from the time of suspension, any fees paid to the CONTRACTOR pursuant to this Contract shall be applied as payment on the fees as set forth in the Contract at the time of reactivation, and payment for all remaining work shall be made in accordance with this Contract without adjustment. Should reactivation occur after a period of suspension exceeding one (1) year but not sooner, the CONTRACTOR and the CITY may renegotiate the Contract based upon current conditions or the CONTRACTOR or the CITY may unilaterally elect to terminate the Contract.

Termination or suspension under this section shall not give rise to any claim against the CITY for damages or compensation in addition to that provided hereunder.

ARTICLE 16. INTERPRETATION OF PLANS/SHOP DRAWINGS

The Work shall be performed and furnished under the direction and to the satisfaction of the CITY and, where appropriate, its Architect or Engineer. The CONTRACTOR shall be responsible for identifying any ambiguity in, or difference in interpretation of the plans, specifications or other Contract Documents, or between or among any of them, and immediately submitting the issue to the CITY, which will transmit the same to the responsible professional designer (i.e., Professional Engineer or Architect) who shall resolve the same. Any decision in relation thereto shall be final and conclusive upon the parties. The CITY will furnish to the CONTRACTOR any additional information and Plans as may be prepared to further describe the Work and the CONTRACTOR shall conform to and abide by the same.

Notwithstanding the dimensions on the Plans, Specifications and other Contract Documents it shall be the obligation and

responsibility of the CONTRACTOR to take such measurements as will insure the proper matching and fitting of the Work covered by this Contract with contiguous work.

The CONTRACTOR shall prepare and submit to the Director such shop drawings as may be necessary to describe completely the details and construction of the Work. Approval of such shop drawings shall not relieve the CONTRACTOR of its obligation to perform the Work according to the Plans, Specifications, the Special Conditions, Addenda and all other Contract Documents, nor of its responsibility for the proper matching and fitting of the Work with contiguous work and the coordination of the Work with other work being performed on the Site, which obligation and responsibility shall continue until completion and acceptance of the Project.

The CONTRACTOR's submission of a shop drawing shall constitute the CONTRACTOR's representation that it has reviewed the submission for accuracy and compliance with all Contract Documents and that, wherever engineering is required to be performed, same has been performed by a qualified and licensed engineer which shall have responsibility therefor.

Should the proper and accurate performance of the Work hereunder depend upon the proper and accurate performance of other work not covered by this Contract, the CONTRACTOR shall carefully examine such other work, determine whether it is in fit, ready and suitable condition for the proper and accurate performance of the Work hereunder, use all means necessary to discover any defects in such other work, and before proceeding with the Work hereunder, report promptly any such improper conditions and defects to the CITY in writing and allow the CITY a reasonable time to have such improper conditions and defects remedied.

ARTICLE 17. REJECTED WORK AND MATERIAL

In the event the CITY finds that the materials furnished, the finished Project or the Work performed hereunder by the CONTRACTOR, for any reason, does not conform with the requirements of the Contract Documents including any performance and Project specifications and has resulted or will result in an inferior or unsatisfactory product, the materials or Work shall be removed and replaced or otherwise corrected, to the satisfaction of the CITY, by and at the expense of the CONTRACTOR.

The CONTRACTOR agrees that it shall at once remove from the Site at its own expense all Work or material which may be

rejected by the CITY and replace the same with Work or material satisfactory to the CITY. All Work shall be in a first class and satisfactory condition at the time of final acceptance.

ARTICLE 18. LAWS, PERMITS, AND LICENSES

The CONTRACTOR shall observe all Federal, State, and local laws and regulations and shall procure all necessary licenses and permits, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the Work hereunder without any additional charge or expense to the CITY. CONTRACTOR shall be responsible for and shall correct, at its sole cost and expense, any violation thereof resulting from or in connection with the performance or failure to perform the Work.

The CONTRACTOR shall at any time upon demand furnish such proof as the CITY may require showing such compliance and the correction of such violations. The CONTRACTOR agrees to save harmless and indemnify the CITY, its officers and employees, from and against any and all loss, injury, claims, actions, proceedings, liability, damages, fines, penalties, costs and expenses, including legal fees and disbursements, caused or occasioned directly or indirectly by the CONTRACTOR's failure to comply with any of said laws, ordinances, rules, regulations, standards, orders, notices or requirements or to correct such violations thereof in connection with the performance of Work.

ARTICLE 19. EQUAL EMPLOYMENT OPPORTUNITY

The CONTRACTOR agrees and warrants that in the performance of this Contract it will not discriminate or permit discrimination in any manner prohibited by the laws of the United States or of the State of Connecticut against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, gender, sexual orientation, mental retardation or physical disability, including, but not limited to, blindness, unless it is shown by the CONTRACTOR that such disability prevents performance of the work involved. The CONTRACTOR further agrees to take affirmative action to insure that applicants with job-related qualifications are fairly employed and that employees are treated in a fair and nondiscriminatory manner.

The CONTRACTOR agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission concerning its employment practices and procedures.

The CONTRACTOR will cause the foregoing provisions to be inserted in all subcontracts for any of the Work covered by this Contract so that such provisions will be binding upon each subcontractor.

ARTICLE 20. SUCCESSORS AND ASSIGNS

This Contract shall bind the successors, assigns and representatives of the parties hereto. Notwithstanding the foregoing, this Contract may not be assigned by the CONTRACTOR nor shall the CONTRACTOR's rights, title or interest herein or hereto be assigned, transferred, conveyed, sublet, or disposed of without the previous written consent of the Director.

ARTICLE 21. RESPONSIBILITY FOR THE SITE

At all times throughout the performance of this Contract and until final acceptance of the Work hereunder, the CONTRACTOR shall be in control of and responsible for the Site and for any loss or damage to the Work to be performed and furnished under this Contract, however caused. This shall include responsibility for loss of or damage to materials, tools, equipment, appliances or other personal property owned, rented or used by the CONTRACTOR or anyone employed by it in the performance of the Work, however caused. Accordingly, the CONTRACTOR shall, at its own cost and expense, (1) keep the Site free at all times from all waste materials, packaging materials and other rubbish accumulated in connection with the execution of its Work, (2) clean and remove from its own Work and from all contiguous work of others any soiling, staining, mortar, plaster, concrete or dirt caused by the execution of its Work and make good all defects resulting therefrom, (3) at the completion of its Work in each area, perform such cleaning as may be required to leave the area "broom clean", and (4) at the entire completion of its Work, remove all of its tools, equipment, scaffolds, shanties and surplus materials. Should the CONTRACTOR fail to perform any of the foregoing to the CITY's satisfaction, the CITY shall have the right to perform and complete such Work itself or through others and charge the cost thereof to the CONTRACTOR.

ARTICLE 22. INSURANCE

The CONTRACTOR agrees to obtain at its own cost and expense all insurance required by the attached Insurance Rider and to keep the same in continuous effect for a period of two (2) years following the date on which the Director

indicates the termination of the CONTRACTOR's responsibilities hereunder. Before commencing the Project, the CONTRACTOR shall furnish the CITY's Corporation Counsel a certificate of insurance, and shall thereafter provide renewal certificates, as appropriate, evidencing such coverage written by a company or companies acceptable to the CITY. Each insurance certificate shall be endorsed to name the City of Norwalk as an additional insured party and shall provide that the insurance company providing coverage shall notify the CITY by certified mail at least thirty (30) days prior to the effective termination of or any change in the policy or policies coverage. No change in the coverage provided hereunder shall be made without the prior written approval of the Director.

ARTICLE 23. INDEMNIFICATION

The CONTRACTOR expressly agrees to at all times indemnify, defend and save harmless the CITY of Norwalk and its respective officers, agents and employees, on account of any and all demands; claims; damages; losses; litigation; financial costs and expenses, including counsel's fees; and compensation arising out of personal injuries (including death), any damage to property, real or personal, and any other loss, expense or aggrievement directly or indirectly arising out of, related to or connected with the Project and the Work to be performed hereunder by the CONTRACTOR, its employees, agents, subcontractors, material suppliers, or anyone directly or indirectly employed by any of them. The CONTRACTOR shall and does hereby assume and agree to pay for the defense of all such claims, demands, suits, proceedings and litigation. The provisions of this paragraph shall survive the expiration or early termination of this Contract; shall be separate and independent of any other provision or requirement of this Contract; and shall not be limited by reason of any insurance coverage provided hereunder.

The CITY may withhold from any payment due or to become due to the CONTRACTOR an amount sufficient in its judgment to protect and indemnify the CITY, its officers, agents, servants and employees from and against any and all such claims and liabilities described above.

Nothing in this provision, or elsewhere in this Contract, shall be deemed to relieve the CONTRACTOR of its duty to defend the CITY or any Indemnified Party, as specified in this Contract, pending a determination of the respective liabilities of the CONTRACTOR, the CITY, or any Indemnified Party, by legal proceeding or agreement.

In furtherance to but not in limitation of the indemnity provisions in this Contract, CONTRACTOR hereby expressly and specifically agrees that its obligation to indemnify, defend and save harmless as provided in this Contract shall not in any way be affected or diminished by any statutory or constitutional immunity it enjoys from suits by its own employees or from limitations of liability or recovery under workers' compensation laws.

ARTICLE 24. SUBCONTRACTING AND ASSIGNMENTS

The CONTRACTOR shall not subcontract any portion of the Work to be performed hereunder unless the prior written consent of the Director is given for both the Work to be subcontracted and the subcontractor to perform the same.

In the event that the CITY approves of the hiring of subcontractors or subconsultants to pursue the Project, the CONTRACTOR agrees to cooperate as fully as possible with the CITY and any and all such subcontractors and subconsultants in the interests of the Project. The CONTRACTOR shall be as fully responsible to the CITY for the acts and omissions of its subcontractors and subconsultants as it is for the acts and omissions of its direct employees and shall require any subcontractor or subconsultant approved by the CITY to agree in a written contract to observe and be bound by all obligations and conditions of this Agreement to which CONTRACTOR is bound hereby including the requirements regarding insurance and indemnification.

Each subcontract agreement shall preserve and protect the rights of the CITY and the Project Architect/Design Engineer, under the Contract Documents with respect to the Work to be performed by the subcontractor so that the subcontracting thereof will not prejudice such rights, and shall allow the subcontractor, unless specifically provided otherwise, the benefits of all rights, remedies and redress against the CONTRACTOR that the CONTRACTOR has against the CITY pursuant to the Contract Documents.

Nor shall CONTRACTOR assign, sell, transfer, delegate or encumber any rights, duties or obligations arising under this Contract including, but not limited to, any right to receive payments hereunder, without the prior written consent of the CITY in its sole discretion. The giving of any such consent to a particular assignment shall not dispense with the necessity of such consent to any further or other assignments. In the event CONTRACTOR assigns, sells, encumbers or otherwise transfers its rights to any

monies due or to become due under this Contract as security for any loan, financing or other indebtedness (herein "Assignment"), notification to the CITY of such Assignment must be sent by certified mail, return receipt requested, and the Assignment shall not be effective as against the CITY until the CITY provides its written consent to such Assignment. CONTRACTOR agrees that any such Assignment shall not relieve the CONTRACTOR of any of its agreements, duties, responsibilities or obligations under this Contract and the other Contract Documents and shall not create a contractual relationship or a third party beneficiary relationship of any kind between the CITY and assignee or transferee. CONTRACTOR further agrees that all of the CITY's defenses and claims arising out of this Contract with respect to any Assignment are reserved unless expressly waived in writing by a duly authorized representative. CONTRACTOR hereby agrees to indemnify, defend and hold harmless the CITY from and against any and all loss, cost, expense or damages that the CITY has or may sustain or incur in connection with such Assignment.

ARTICLE 25. WARRANTY

The CONTRACTOR hereby warrants to the CITY that all of the Work shall be in conformance with the Plans, Specifications, and all Contract Documents and shall be of good quality and free from any faults and defects.

The CONTRACTOR shall remove, replace and/or repair at its own expense and at the convenience of the CITY any portion of the Work, materials or equipment which, at any time up until two (2) years from the date of final acceptance of the Work hereunder, the Architect or the CITY shall condemn as unsound, defective or improper or as in any way failing to conform to this Contract or the plans, specifications or other Contract Documents, and the CONTRACTOR, at its own cost and expense, shall replace the same with proper and satisfactory Work, materials and/or equipment.

Without limiting the generality of the foregoing, the CONTRACTOR warrants to the CITY that all materials and equipment furnished under this Contract will be of first class quality and new, unless otherwise required or permitted by the other Contract Documents; that the Work performed and materials used pursuant to this Contract will be free from any defects and that the Work will conform with the requirements of the Contract Documents. Work not conforming to such requirements, not of the prescribed quality, or not capable of meeting the CITY's performance specifications, including substitutions not properly approved and authorized, shall be considered defective and

must be removed and replaced by CONTRACTOR at its own cost and expense. All warranties contained in this Contract and in the Contract Documents shall be in addition to and not in limitation of all other warranties or remedies required and/or arising pursuant to applicable law.

ARTICLE 26. NOTICE OF CLAIMS

Claims by either party must be in writing and sent within thirty (30) days following the occurrence of an event giving rise to the claim or within thirty (30) days after the claimant first acquires knowledge of or information concerning the claim, whichever occurs later to the extent that such knowledge or information could not have been reasonably obtained earlier. Claims must be made in writing and sent to the other party at the address(es) listed herein and shall describe the nature of the claim, the events or circumstances that gave rise to the claim with reasonable detail, and the amount thereof to the best of the claimant's information.

ARTICLE 27. LIQUIDATED DAMAGES

It is understood by the parties that timely completion of the Project is essential. Failure of the CONTRACTOR to complete the Project by the date stated herein will result in the CITY and the public incurring damages, additional costs and inconveniences that would be impossible or extremely difficult to accurately quantify at the time. Therefore, the parties agree that, if the CONTRACTOR fails to satisfactorily complete the Project hereunder within the time specified or within any extension of time that may have been allowed, there shall be deducted from any monies due or that may become due the CONTRACTOR, the sum of **TWO HUNDRED DOLLARS (\$200.00)** for each and every calendar day, including Saturdays and legal holidays, that the Project remains incomplete in accordance with Article 5 of this Agreement. This sum shall not be imposed as a penalty, but as liquidated damages due the CITY from the CONTRACTOR by reason of the damages incurred, inconvenience and additional costs and expenses to the public together with other problems suffered as a result of any such delay thereby occasioned.

ARTICLE 28. GENERAL PROVISIONS

A. This Contract shall be deemed binding only to the extent that sufficient funds are available and appropriated to the CITY for payment in accordance with the terms hereof and no liability on account of this Contract shall be

incurred by the CITY beyond such moneys as are properly made available and appropriated for the Project.

B. The relationship of the CONTRACTOR to the CITY is that of an independent CONTRACTOR. The CONTRACTOR covenants and agrees that it will conduct itself consistent with such status; that it will neither hold itself nor any of its employees or agents out as nor claim to be an officer, agent, or employee of the CITY by reason hereof; and that it will not, neither for itself nor on behalf of any of its employees, agents, or subcontractors, by reason hereof, make any claim, demand or application to or for any right or privilege applicable to an officer or employee of the CITY, including, but not limited to, workers' compensation coverage, unemployment insurance benefits, social security coverage, or retirement membership or credit.

C. The CONTRACTOR hereby certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal or state department or agency. Should the CONTRACTOR be unable to certify the above statement, it shall attach a certified statement explaining such to this Contract. The CONTRACTOR further agrees to include the foregoing certification in any subcontract or purchase order which it may enter into in furtherance of the Work contemplated hereunder.

D. No member of the governing body of the CITY, and no other officer, employee, or agent of the CITY, shall have any personal interest, direct or indirect, in this Contract, except as permitted by the Code of Ethics of the City of Norwalk; and the CONTRACTOR covenants that no person having such interest shall be employed in the performance of this Contract.

E. This Contract shall be construed in accordance with the laws of the State of Connecticut, and any action at law in connection herewith shall be brought in the Superior Court of the State of Connecticut, Judicial District Stamford/Norwalk.

F. The CONTRACTOR shall comply with all applicable laws, ordinances and codes of any governmental body having jurisdiction over any matter related to this Agreement or the services to be performed hereunder, and shall commit no trespass on any private property in performing any of the Work embraced herein.

G. This Contract incorporates all the understandings of the parties hereto, supersedes any and all agreements and negotiations reached and all commitments made by the parties prior to the execution of this Contract, whether oral or written, and shall not be released, amended or modified in any way unless by a written instrument signed by the parties hereto.

H. If any provision of this Contract is held invalid, the balance of the provisions of this Contract shall not be affected thereby if the balance of the provisions of this Contract would then continue to conform to the requirements of applicable laws.

I. Each and every provision and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though such provisions and clauses were included herein. If, through mistake or otherwise, any such provision is not inserted or is not correctly inserted, then upon the written consent of the parties, this Contract shall forthwith be physically amended to make such insertion.

J. All notices of any nature referred to in this Contract shall be in writing and sent by registered or certified mail, postage prepaid, to the respective addresses set forth below or to such other addresses as the respective parties hereto may designate in writing:

To the City:

City Hall, P. O. Box 5125
Norwalk, Connecticut 06856-5125

With a copy to:

Office of Corporation Counsel
City Hall, P.O. Box 798
Norwalk, Connecticut 06856-0798

To the Contractor:

K. The CONTRACTOR represents to the CITY as follows:

That the CONTRACTOR is a legally existing corporation under the laws of its respective states of incorporation and has not previously filed, nor is presently contemplating filing, nor has received notice of a petition of, nor contemplates receiving notice of a petition of,

bankruptcy, liquidation, receivership or any other action for the protection of creditors or debtors;

That the CONTRACTOR has the financial resources to perform this Contract and that it is not the subject of any litigation or action, pending or threatened, regarding this Contract or which, if resulting in an adverse decision, would affect its ability to perform its duties under this Contract;

That it has, and has exercised, the required corporate power and authority and has complied with all applicable legal requirements necessary to adopt, execute and deliver this Contract and to assume the responsibilities and obligations created hereunder; and

That this Contract is duly executed and delivered by an authorized corporate officer, in accordance with such officer's powers to bind the CONTRACTOR hereunder, and constitutes a valid and binding obligation enforceable in accordance with its terms, conditions and provisions.

L. The City of Norwalk's hiring practices strive to comply with all applicable federal regulations regarding employment eligibility and employment practices. Thus, all individuals and entities seeking to do work for the CITY are expected to comply with all applicable laws, governmental requirements and regulations, including the regulations of the United States Department of Justice pertaining to employment eligibility and employment practices. The CITY reserves the right at its discretion, but does not assume the obligation to require proof of valid citizenship or, in the alternative, proof of a valid green card for each person employed in the performance of work or services for the City of Norwalk. By reserving this right the CITY does not assume any obligation or responsibility to enforce or ensure compliance with the applicable laws and/or regulations. By signing this Agreement the CONTRACTOR hereby certifies to the City of Norwalk that it is in compliance with all applicable regulations and laws governing employment practices.

IN WITNESS WHEREOF, this agreement has been executed in four (4) counterparts by the CITY, acting by and through its Mayor, who has caused the seal of his office to be affixed hereto, and the CONTRACTOR has duly executed this agreement on the day and year first above written.

Signed, Sealed and Delivered
in the Presence of:

Witnesses' signatures:

CITY OF NORWALK

By: _____

Richard A. Moccia
Its Mayor
Duly Authorized

Witnesses' signatures:

By: _____

Its Member

Duly Authorized

(Affix corporate seal of
contractor if a

corporation)

APPROVED AS TO FORM:
CORPORATION COUNSEL OFFICE

By: _____

APPROVED AS TO
AVAILABILITY OF FUNDS:

By: _____
Comptroller

Date: _____

INSURANCE RIDER

The Contractor shall provide and maintain insurance coverage related to its services in connection with the Project in compliance with the following requirements.

The insurance required shall be written for not less than the scope and limits of insurance specified hereunder, or required by applicable federal, state and/or municipal law, regulation or requirement, whichever coverage requirement is greater. It is agreed and understood that the scope and limits of insurance specified hereunder are minimum requirements and shall in no way limit or preclude the City from requiring additional limits and coverage to be provided under the Contractor's policies.

A. Minimum Scope and Limits of Insurance:

Workers' Compensation insurance: With respect to all operations the Contractor performs, it shall carry workers' compensation insurance in accordance with the requirements of the laws of the State of Connecticut, and employer's liability limits of One Hundred Thousand Dollars (\$100,000.00) coverage for each accident, One Hundred Thousand Dollars (\$100,000.00) coverage for each employee by disease, Five Hundred Thousand (\$500,000.00) policy limit coverage for disease.

Commercial General Liability: With respect to all operations the Contractor performs it shall carry Commercial General Liability insurance providing for a total limit of One Million Dollars (\$1,000,000.00) coverage per occurrence for all damages arising out of bodily injury, personal injury, property damage, products/completed operations, and contractual liability coverage for the indemnification obligations arising under this Agreement. The annual aggregate limit shall not be less than Two Million Dollars (\$2,000,000.00).

Automobile Liability: With respect to each owned, non-owned, or hired vehicles the Contractor shall carry Automobile Liability insurance providing One Million Dollars (\$1,000,000.00) coverage per accident for bodily injury and property damage.

Environmental Liability: If applicable based on the Contractor's Scope of Work, the Contractor is required to provide environmental and remediation insurance in the amount of Five Million Dollars (\$5,000,000.00) per claim limit and Five Million Dollar (\$5,000,000.00) aggregate limit per occurrence. The policy shall be written on a follow form coverage wording to its underlying Schedule of insurance.

Errors and Omissions/Professional Liability: With respect to any damage caused by an error, omission or any negligent or wrongful act of the Contractor or any subcontractor or subconsultant in connection with any professional services performed under this Agreement the Contractor shall carry One Million Dollars (\$1,000,000.00) coverage per claim.

"Tail" Coverage: If any of the required liability insurance is on a "claims made" basis, "tail" coverage will be required at the completion of the Project for a duration of twenty-four (24) months, or the maximum time period reasonably available in the marketplace. Contractor shall furnish certification of "tail" coverage as described or continuous "claims made" liability coverage for twenty-four (24) months following Project completion. Continuous "claims made" coverage will be acceptable in lieu of "tail" coverage, provided its retroactive date is on or before the effective date of this Agreement. If continuous "claims made" coverage is used, Contractor shall be required to keep the coverage in effect for a duration of not less than twenty-four (24) months from the date of final completion of the Project.

Acceptability of Insurers: The Contractor's policies shall be written by insurance companies licensed to do business in the State of Connecticut, with an AM Best rating of A-VII, or otherwise acceptable to the City.

Subcontractors: The Contractor shall require all subcontractors to provide the same "minimum scope and limits of insurance" as required herein, with the exception of Errors and Omissions/Professional Liability insurance, unless Errors and Omissions/Professional Liability insurance is applicable to the Work performed by the subcontractor. All Certificates of Insurance shall be provided to the City's Corporation Counsel as required herein.

Aggregate Limits: Any aggregate limits must be declared to and be approved by the City. It is agreed that the Contractor shall notify the City whenever fifty percent (50%) of the aggregate limits are eroded during the required coverage period. If the aggregate limit is eroded for the full limit, the Contractor agrees to reinstate or purchase additional limits to meet the minimum limit requirements stated herein. Any premium for such shall be paid by the Contractor.

Deductibles and Self-Insured Retentions: Any deductible or self-insured retention must be declared to and approved by the City. All deductibles or self-insured retentions are the sole responsibility of the Contractor to pay and/or to indemnify.

Notice of Cancellation or Nonrenewal: Each insurance policy required shall be endorsed to state that coverage shall not be suspended, voided, cancelled, or reduced in coverage or in limits before the expiration date except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the City. Notwithstanding this requirement, the CONTRACTOR is primarily responsible for providing such written notice to the CITY thirty (30) days prior to any policy change or cancellation that would result in a change of the amount or type of coverage provided. In the event of any such change the CONTRACTOR shall provide comparable substitute coverage so that there is no lapse in applicable coverage or reduction in the amount of coverage available to the CITY related to the CONTRACTOR's services.

Waiver of Governmental Immunity: Unless requested otherwise by the City, the Contractor and its insurer shall waive governmental immunity as defense and shall not use the defense of governmental immunity in the adjustment of claims or in the defense of any suit brought against the City.

Additional Insured: The liability insurance coverage, except Errors and Omissions, Professional Liability, or Workers' Compensation, if included, required for the performance of the Project shall include the City as an Additional Insured with respect to the Contractor's activities to be performed under this Agreement. Coverage shall be primary and non-contributory with any other insurance and self-insurance.

Certificate of Insurance: As evidence of the insurance coverage required by this Agreement, the Contractor shall furnish Certificate(s) of Insurance to Corporation Counsel's Office prior to the Contractor's commencement of services under this Agreement. The Certificate(s) will specify all parties who are endorsed on the policy as Additional Insureds (or Loss Payees). The Certificates and endorsements for each insurance policy are to be signed by a person authorized by the insurer to bind coverage on its behalf. Renewals of expiring Certificates shall be filed thirty (30) days prior to expiration. The City reserves the right to require complete, certified copies of all required policies at any time.

All insurance documents required should be mailed to the City of Norwalk Corporation Counsel, 125 East Avenue, P. O. Box 798, Norwalk, Connecticut 06856-0798.

Waiver of requirements: The Corporation Counsel may vary these insurance requirements at Corporation Counsel's sole discretion if Corporation Counsel determines that the City's interests will be adequately protected by the provision of different types or other amounts of coverage.

End of Section - One

SECTION 2

PROJECT DRAWINGS

**SUPPLY & INSTALL 800kw EMERGENCY GENERATOR
NORWALK CITY HALL
125 EAST AVENUE, NORWALK, CT 06851**

(Note: Page numbering in this section is not sequential with other sections within this document)

ENGINEERING FIRM:

**SOUTHPORT ENGINEERING ASSOCIATES
11 BAILEY AVENUE, RIDGEFIELD, CT 06877
TELEPHONE: (203) 431-6844**

ELECTRICAL GENERAL NOTES

- A. DEMOLITION WORK:
- ALL SALVAGEABLE ITEMS SUCH AS DISCONNECT SWITCHES, ETC. THAT ARE NOT TO BE REUSED SHALL BE TURNED OVER TO THE OWNER.
 - THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR ACCESS TO WORK AREAS, CONSTRUCTION SCHEDULING AND SERVICE INTERRUPTIONS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION IN AREAS OF RENOVATION. ALL WIRING DEVICES, WIRE AND CONDUIT THAT ARE TO BE REMOVED SHALL BE STORED AS DIRECTED BY THE OWNER OR RELOCATED AS SHOWN ON NEW FLOOR PLANS. APPROPRIATE MEASURES SHALL BE TAKEN TO ASSURE CONTINUITY OF EXISTING CIRCUITS WHERE REQUIRED. ALL OUTAGES WHICH MAY RESULT SHALL BE COORDINATED WITH THE OWNER PRIOR TO THE WORK.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING SCHEDULES IN ALL ELECTRICAL PANELS THAT ARE AFFECTED BY THIS WORK. THE UPDATED SCHEDULES ARE TO BE TYPEWRITTEN.
 - COORDINATE ACCESS TO UG VAULT AND HANDHOLE AND ALL SHUTDOWNS OF EXISTING ELECTRICAL SERVICES WITH CL&P.
- B. NEW WORK:
- ALL WORK SHALL COMPLY WITH THE 2008 EDITION OF THE NATIONAL ELECTRICAL CODE.
 - EACH CIRCUIT SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR. MULTI-WIRE CIRCUITS OF DIFFERENT PHASES MAY SHARE EQUIPMENT GROUNDING CONDUCTOR. EQUIPMENT GROUNDING CONDUCTOR SIZE SHALL NOT BE LESS THAN #12AWG OR AS INDICATED ON THE DRAWINGS.
 - ON THREE PHASE, FOUR WIRE SYSTEMS; DO NOT USE A COMMON NEUTRAL FOR MORE THAN THREE CIRCUITS. MORE THAN THREE CIRCUITS IN ANY ONE CONDUIT IS NOT ALLOWED WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
 - MINIMUM CONDUCTOR SIZE SHALL BE #12AWG UNLESS OTHERWISE SPECIFIED. ALL CONDUCTORS #10AWG AND SMALLER SHALL BE SOLID COPPER AND ALL CONDUCTORS #8AWG AND LARGER SHALL BE STRANDED COPPER USING BOLTED LUGS AT TERMINALS.
 - MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS OTHERWISE SPECIFIED. ALL CONDUIT SHALL BE INSTALLED AS HIGH AS POSSIBLE (MOUNT TO BOTTOM OF STRUCTURE) TO AVOID CONFLICTS WITH DUCTWORK AND PIPING.
 - THE CONTRACTOR SHALL COORDINATE THE ALL WORK WITH THE BUILDING MANAGEMENT AS FOLLOWS:
 - THE CONTRACTOR SHALL COORDINATE WITH THE BUILDING MANAGEMENT PRIOR TO BID SUBMISSION TO DETERMINE REQUIREMENTS AND EXTENT OF PREMIUM TIME WORK THAT IS REQUIRED. FOR THE PURPOSE OF THE BID, THE CONTRACTOR SHALL NOT PERFORM ANY NOISY WORK (CHOPPING, CORE DRILLING, ETC.) AND BASE BUILDING SYSTEM INTERRUPTIONS DURING NORMAL BUSINESS HOURS. THE CONTRACTOR SHALL COMPLY WITH THE BUILDING OPERATING SCHEDULE.
 - THE CONTRACTOR SHALL PROVIDE A MINIMUM OF FIVE (5) DAYS ADVANCE NOTIFICATION FOR ANY SERVICE INTERRUPTIONS OF EXISTING SYSTEMS. PRIOR TO ANY WORK, THE CONTRACTOR SHALL COORDINATE AND OBTAIN APPROVAL FROM THE BUILDING MANAGEMENT TO PERFORM THE WORK. THE CONTRACTOR SHALL NOTIFY THE BUILDING MANAGEMENT BEFORE PERFORMING WORK ON PREMIUM TIME, IF SO DIRECTED BY THE BUILDING MANAGEMENT; SO AS NOT TO DISTURB BUILDING OPERATIONS.
 - THE CONTRACTOR SHALL INCLUDE AS PART OF THE BID AMOUNT, AN ALLOWANCE OF \$8,000 PLUS 10% AS O&P TO PROVIDE LANDSCAPE BUFFER FOR THE GENERATOR. LANDSCAPE DESIGN AND PLANTING LIST TO BE PROVIDED BY THE CITY DURING CONSTRUCTION PHASE. THE CONTRACTOR SHALL WORK WITH THE CITY TO OBTAIN A MINIMUM OF TWO QUOTES FOR THE WORK. IN THE EVENT THAT THE FINAL LANDSCAPE COSTS EXCEED AND BELOW THE \$8,000 ALLOWANCE, SAID ADJUSTMENT WILL BE MADE VIA CHANGE ORDER.

ELECTRICAL SYMBOL LEGEND

	TIME CLOCK
	LIGHTING CONTACTOR
	JUNCTION BOX
	TRANSFORMER
	EXISTING NONFUSED DISCONNECT SWITCH
	NONFUSED DISCONNECT SWITCH - TYPE AND SIZE AS INDICATED ON DRAWINGS
	FUSED DISCONNECT SWITCH - TYPE AND SIZE AS INDICATED ON DRAWINGS
	FUSE
	SWITCH
	CIRCUIT BREAKER
	EXISTING PANELBOARD/LOADCENTER, SURFACE MOUNTED
	EXISTING DISTRIBUTION PANELBOARD, SURFACE MOUNTED
	UTILITY METERING CURRENT TRANSFORMERS
	UTILITY ENERGY METER WITH PAN
	BRANCH CIRCUIT IN CONDUIT CONCEALED BELOW FLOOR SLAB
	BRANCH CIRCUIT IN CONDUIT - HOT LEG, NEUTRAL AND EQUIPMENT GROUND, RESPECTIVELY
	BRANCH CIRCUIT HOMERUN - PANEL AND SPACE AS INDICATED ON DRAWINGS
	EXISTING EQUIPMENT/WIRE TO BE DEMOLISHED
	EXISTING EQUIPMENT/WIRE TO REMAIN
	NEW EQUIPMENT/WIRE

ELECTRICAL ABBREVIATION LEGEND

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
BFG	BELOW FINISHED GRADE
ER	EXISTING TO REMAIN
GFI	GROUND-FAULT CIRCUIT INTERRUPTING TYPE DEVICE
WP	WEATHER-PROOF
UG	UNDERGROUND
UGS	UNDERGROUND SECONDARY SERVICE
UGP	UNDERGROUND PRIMARY SERVICE
UGE	UNDERGROUND ELECTRICAL SERVICE

ELECTRICAL SPECIFICATIONS

- A. GENERAL - 260100:
- PROVIDE LABOR, MATERIALS, EQUIPMENT AND SERVICES FOR THE COMPLETION OF ELECTRICAL SYSTEMS AS SHOWN ON THESE DRAWINGS AND AS REQUIRED BY THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL CODES AND OSHA REGULATIONS. THE CONTRACTOR SHALL PAY ALL FEES; AND OBTAIN ALL CERTIFICATES AND INSPECTIONS.
 - NON-COMPLIANCE: SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF APPLICABLE BUILDING CODES, STATE LAWS, LOCAL ORDINANCES, INDUSTRY STANDARDS, AND UTILITY COMPANY REGULATIONS; HE SHALL BEAR ALL COSTS ARISING IN CORRECTING THE DEFICIENCIES.
 - IN CASE OF DIFFERENCE BETWEEN BUILDING CODES, STATE LAWS, LOCAL ORDINANCES, INDUSTRY STANDARDS, UTILITY COMPANY REGULATIONS, THESE SPECIFICATIONS AND THE CONTRACT DRAWINGS; THE MOST STRINGENT SHALL GOVERN. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER IN WRITING OF ANY SUCH DIFFERENCE.
 - ALL EQUIPMENT SHALL BE NEW AND UNUSED; AND SHALL BE "UL" LISTED AND BEAR THE "UL" LABEL.
 - ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. ALL MATERIALS SHALL BE OF THE BEST QUALITY FOR THE PURPOSE INTENDED. OBTAIN WRITTEN APPROVAL FROM THE OWNER FOR ANY SUBSTITUTIONS MADE AFTER ACCEPTANCE OF SUBMITTAL FOR ANY ITEM.
 - ON ACCEPTANCE OF CONTRACT, THE CONTRACTOR AGREES TO GUARANTEE ALL WORK AND EQUIPMENT FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION. MANUFACTURED EQUIPMENT SHALL CARRY FULL PERIOD OF MANUFACTURER'S GUARANTEE AND SHALL NOT BE LESS THAN ONE (1) YEAR.
 - PRIOR TO SUBMISSION OF BID, THE CONTRACTOR SHALL VISIT THE JOB SITE TO ASCERTAIN ACTUAL FIELD CONDITIONS AS THEY RELATE TO THE WORK IN THESE SPECIFICATIONS AND DRAWINGS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AT THIS TIME. ALL ITEMS NOT RESOLVED PRIOR TO BID SHALL BE INCLUDED AS WRITTEN QUALIFICATIONS TO THE BID DOCUMENT. SUBMISSION OF BID SHALL BE EVIDENCE THAT VERIFICATION OF THE JOB SITE HAS BEEN PERFORMED.
 - THE GENERAL CONTRACTOR SHALL PERFORM ALL CUTTING NECESSARY FOR PROPER INSTALLATION OF ELECTRICAL WORK.
 - OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS OR CEILINGS SHALL BE FIRE-STOPPED USING APPROVED METHODS. ACCEPTABLE MANUFACTURERS ARE HILTI AND 3M BUT MATERIAL MUST BE APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL ELECTRICAL INSTALLATIONS THAT ARE WITHIN CLOSE PROXIMITY OF OTHER TRADES. CONDUIT SHALL BE INSTALLED AS HIGH AS POSSIBLE ABOVE FINISHED CEILING TO AVOID CONFLICTS WITH OTHER TRADES.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL TEMPORARY LIGHTING AND POWER DURING CONSTRUCTION.
 - COVER LIGHT FIXTURES, EQUIPMENT, APPARATUS, ETC. TO PROTECT AGAINST CHEMICAL, WATER, DIRT OR MECHANICAL DAMAGE BEFORE AND DURING THE CONSTRUCTION PERIOD UNTIL THE FINAL ACCEPTANCE. ALL EQUIPMENT SHALL BE DELIVERED, PROPERLY PACKED AND STORED AT THE SITE UNTIL FINAL INSTALLATION.
 - THE CONTRACTOR SHALL REPAIR ANY DAMAGE DONE BY HIMSELF OR HIS WORKMEN. RESTORE TO ORIGINAL CONDITION ANY APPARATUS, EQUIPMENT OR SURFACE DAMAGED UNDER THIS SCOPE OF WORK PRIOR TO FINAL ACCEPTANCE, INCLUDING RESTORATION OF DAMAGES TO SHOP COATS OF PAINT.
 - IT IS THE INTENT OF THESE SPECIFICATIONS AND DRAWINGS TO REQUIRE AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL IN THESE SPECIFICATIONS AND DRAWINGS. IF AN ITEM OF WORK IS SHOWN ON THE DRAWINGS, IT SHALL BE CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT THAT IS NECESSARY FOR COMPLETE INSTALLATION WHETHER SPECIFICALLY MENTIONED OR NOT.
 - THE DRAWINGS FOR ELECTRICAL WORK UTILIZE SYMBOLS AND SCHEMATIC DIAGRAMS WHICH HAVE NO DIMENSIONAL SIGNIFICANCE. THE WORK SHALL BE INSTALLED TO FULFILL THE DIAGRAMMATICAL INTENT EXPRESSED ON THE DRAWINGS AND IN CONFORMITY WITH DIMENSIONS INDICATED ON FINAL WORKING DRAWINGS, FIELD LAYOUTS AND SHOP DRAWINGS FROM ALL TRADES.
 - PROVIDE TO THE OWNER, A COMPLETE SET OF REPRODUCIBLE AS-BUILT DRAWINGS ON AUTOCAD CLEARLY INDICATING ANY DEVIATIONS FROM THE DESIGN AS SHOWN ON THE DRAWINGS.
 - PROVIDE TO THE OWNER, TWO (2) COPIES OF THE OPERATING AND MAINTENANCE MANUALS WITH CATALOG INFORMATION ON ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO; TRANSFER SWITCHES, GENERATORS, SWITCHBOARDS AND PANELBOARDS.
 - SHOP DRAWINGS AND OTHER INFORMATION REQUIRED: PRIOR TO PURCHASING ANY EQUIPMENT OR MATERIALS, A MANUFACTURER'S LIST SHALL BE SUBMITTED FOR REVIEW. PRIOR TO ASSEMBLING OR INSTALLING THE WORK, THE FOLLOWING SHALL BE SUBMITTED FOR REVIEW:
 - CATALOG INFORMATION SHEETS, FACTORY ASSEMBLY DRAWINGS AND FIELD INSTALLATION DRAWINGS AS REQUIRED FOR A COMPLETE EXPLANATION AND DESCRIPTION OF ALL ITEMS OR EQUIPMENT SPECIFIED IN THE FOLLOWING SECTIONS.
 - THE PURPOSE FOR THE REVIEW OF SHOP DRAWINGS IS TO MAINTAIN THE INTEGRITY OF THE DESIGN. UNLESS THE CONTRACTOR CLEARLY INDICATED IN WRITING AND ON HIS LETTERHEAD; ANY CHANGES, SUBSTITUTIONS, DELETIONS OR OTHER DIFFERENCES BETWEEN SUBMISSION AND CONTRACT DOCUMENTS, APPROVAL BY THE ENGINEER DOES NOT CONSTITUTE ACCEPTANCE.
 - NO SUBSTITUTIONS FOR ANY EQUIPMENT MATERIAL AND/OR MANUFACTURER SHALL BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL INCLUDING AN EXPLANATION FOR SUBSTITUTION, A LIST OF ANY DEVIATIONS FROM SPECIFIED THE MODEL, SHOP DRAWINGS AND ASSOCIATED CREDIT. IT SHALL NOT BE ASSUMED THAT THE ENGINEER HAS READ, TEXT OR REVIEWED ANY TECHNICAL DATA OF A MANUFACTURED ITEM AND ITS COMPONENTS EXCEPT WHERE THE VENDOR HAS SPECIFICALLY MENTIONED ALL DIFFERENCES BETWEEN THE SUBSTITUTED PRODUCT AND THE SPECIFIED MODEL.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EQUIPMENT, WIRING, DEVICES, ETC. REQUIRED FOR THE PROPER INSTALLATION OF THE SUBSTITUTED PRODUCT. THIS INCLUDES MODIFICATIONS OF ANY KIND THAT ARE REQUIRED TO ALL ASSOCIATED SYSTEMS AFFECTED BY THE SUBSTITUTION. SUCH ITEMS SHALL BE PROVIDED AT THE FULL EXPENSE OF THE CONTRACTOR WITH NO COSTS INCURRED TO THE OWNER.
 - ALL SUBSTITUTED PRODUCTS SHALL CONFORM TO PERFORMANCE AND SPATIAL REQUIREMENTS IN THESE SPECIFICATIONS AND DRAWINGS. ALL MODIFICATIONS OR REPLACEMENTS OF ANY PRODUCTS THAT DO NOT MEET THESE REQUIREMENTS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.
 - THE CONTRACTOR SHALL PROVIDE TESTS FOR EACH OF THE FOLLOWING:
 - PRIOR TO ENERGIZING THE ELECTRICAL SYSTEM, THE CONTRACTOR SHALL PROVIDE 600-VOLT INSULATION RESISTANCE TESTS FOR ALL DISTRIBUTION AND UTILIZATION EQUIPMENT. THE CONTRACTOR SHALL PROVIDE A SUITABLE AND STABLE SOURCE OF TEST POWER. THE INSULATION TEST SHALL BE A "MEGGER" TEST AT 500 VOLTS DC FOR 30 SECONDS. THE TEST SHALL BE CONDUCTED IN THE PRESENCE OF THE OWNER. A TEST REPORT SHALL BE SUBMITTED TO THE OWNER. THE MINIMUM INSULATION RESISTANCE SHALL BE 1,000,000 OHMS FOR #12AWG CONDUCTORS AND 250,000 OHMS FOR LARGER CONDUCTORS. CONDUCTORS TESTING BELOW THE MINIMUM INSULATION RESISTANCE SHALL BE REPLACED AND TESTED AGAIN.
 - THE CONTRACTOR SHALL PERFORM A CONTINUITY TEST ON THE ENTIRE ELECTRICAL SYSTEM PRIOR TO ENERGIZING THE SYSTEM TO INSURE PROPER CABLE CONNECTIONS.
 - THE CONTRACTOR SHALL PERFORM CONNECTION TORQUE TESTS FOR ALL LARGER CONDUCTOR BOLTED CONNECTIONS USING A TORQUE WRENCH. TORQUE SHALL BE TO NATIONAL ELECTRICAL TESTING ASSOCIATION'S (NETA) STANDARDS.
 - THE CONTRACTOR SHALL PERFORM MECHANICAL OPERATION TESTS FOR ALL ELECTRICAL EQUIPMENT, SUCH AS DISCONNECT SWITCHES, CIRCUIT BREAKERS, ETC.; TO VERIFY THAT THE MECHANICAL PORTIONS OF THE DEVICE ARE FUNCTIONING.
 - AT THE COMPLETION OF THE LIFE-SAFETY SYSTEM INSTALLATION, THE CONTRACTOR SHALL TEST ALL EMERGENCY LIGHTING DEVICES. THE CONTRACTOR SHALL SUBMIT A REPORT TO THE ENGINEER VERIFYING THAT THE SYSTEMS ARE FULLY OPERATIONAL.
- B. ELECTRICAL DEMOLITION - 260501:
- PRIOR TO SUBMISSION OF BID, THE CONTRACTOR SHALL THOROUGHLY INSPECT THE WORK AREA. BASED ON THIS INSPECTION, THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT TO ACCOMPLISH DEMOLITION WORK.
 - AS PART OF DEMOLITION WORK, THE CONTRACTOR IS RESPONSIBLE FOR KEEPING EXISTING SYSTEMS (NOT SCHEDULED FOR REMOVAL) ENERGIZED. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY WIRING TO KEEP EXISTING DEVICES THAT SHARE THE SAME CIRCUITS AS DEMOLITION ITEMS ACTIVE. THIS INCLUDES RECEPTACLE AND LIGHTING CIRCUITS, FIRE ALARM DEVICES, ETC.
 - EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH THE EXISTING ELECTRICAL SYSTEMS.
- C. WIRES AND CABLES - 260519:
- ALL ELECTRICAL SERVICE CONDUCTORS SHALL BE SOFT 98% MINIMUM CONDUCTIVITY REFINED COPPER, INSULATION TYPE "XHHW-2" RATED 600 VOLTS UNLESS INDICATED OTHERWISE.
 - ALL CONDUCTORS INSTALLED IN WET LOCATIONS INCLUDING UNDERGROUND INSTALLATIONS, SHALL BE WET LOCATION LISTED REGARDLESS IF THE CONDUCTORS ARE INSTALLED IN CONDUIT.
 - ALL OTHER CONDUCTORS SHALL BE SOFT 98% MINIMUM CONDUCTIVITY REFINED COPPER, INSULATION TYPE "THHN/THWN" RATED 600 VOLTS UNLESS INDICATED OTHERWISE.
 - FACTORY COLOR CODE USING THE SAME CODE THROUGHOUT FOR CONDUCTORS AS FOLLOWS:
120/208 VOLTS - BLACK, RED, BLUE AND WHITE NEUTRAL CONDUCTOR
277/480 VOLTS - BROWN, ORANGE, YELLOW AND GRAY NEUTRAL CONDUCTOR
GREEN CONDUCTOR SHALL BE USED WHERE EQUIPMENT GROUND WIRE IS SPECIFIED.
 - MINIMUM CONDUCTOR SIZES SHALL BE #12AWG FOR POWER AND LIGHTING CIRCUITS, #10AWG FOR BRANCH CIRCUIT RUNS LONGER THAN 100 FEET AND #14AWG FOR CONTROL CIRCUITS UNLESS INDICATED OTHERWISE.
 - NO CONDUCTORS SHALL BE PULLED INTO ANY CONDUIT RUN BEFORE ALL CONDUIT JOINTS ARE TIGHT AND ENTIRE RUN IS SECURED IN PLACE. WHERE NECESSARY FOR WIRING INSTALLATION, PULLING COMPOUND SHALL BE POWDERED SOAPSTONE, MINERALLAC #100 OR APPROVED EQUAL.
 - TERMINATIONS OF #6AWG OR LARGER AT SWITCHBOARDS SHALL BE MADE WITH COMPRESSION TYPE CONNECTORS. TERMINATIONS OF #6AWG OR LARGER AT PANELBOARDS SHALL BE MADE WITH MECHANICAL LUGS.
 - JOINS AND TAPS OF #6AWG OR LARGER SHALL BE MADE WITH PRESSURE INDENT TYPE CONNECTORS.
 - TAG ALL FEEDERS ROUTED THROUGH ELECTRICAL BOXES, GUTTER SPACES AND WIREWAYS.
 - ALL WIRES #10AWG AND SMALLER SHALL BE SOLID COPPER. ALL WIRES #8AWG AND LARGER SHALL BE STRANDED COPPER.
 - ACCEPTABLE MANUFACTURERS ARE ALLIED, GENERAL CABLE, PHELPS DODGE, ROME, SIMPLEX AND SOUTHWIRE FOR WIRES AND CABLES.
- D. GROUNDING AND GROUND-FAULT PROTECTION - 260526:
- GROUNDING SHALL COMPLY WITH NEC ARTICLE 250.
 - EACH CIRCUIT SHALL HAVE AN EQUIPMENT GROUND CONDUCTOR. MULTI-WIRE CIRCUITS OF DIFFERENT PHASES MAY SHARE EQUIPMENT GROUND CONDUCTOR. THE EQUIPMENT GROUND CONDUCTOR SHALL NOT BE LESS THAN #12AWG OR AS SHOWN ON DRAWINGS. PROVIDE ELECTRICALLY CONTINUOUS, TIGHT GROUNDING CONNECTIONS FOR ALL WIRING DEVICES UNLESS NOTED OTHERWISE. WIRING DEVICE GROUNDING CONNECTIONS SHALL BE MADE VIA PISTAL FROM GROUND SCREW WITHIN DEVICE OUTLET BOX. INSTALL IN STRICT ACCORDANCE WITH NEC ARTICLE 300-13 (B).
 - EQUIPMENT GROUND CONDUCTORS SHALL BE INSTALLED IN CONDUIT OR SUITABLY PROTECTED FROM DAMAGE.
 - CONDUITS ARE NOT TO BE USED AS MEANS OF GROUNDING.
 - ACCEPTABLE MANUFACTURERS ARE BURNDY, ERICO AND SQUARE D.
- E. SUPPORTING DEVICES - 260529:
- SUPPORT OF NEW ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE BEST INDUSTRY PRACTICES. DO NOT FASTEN SUPPORTS TO MECHANICAL EQUIPMENT, DUCTWORK, PIPING OR CONDUIT.
 - FURNISH AND INSTALL STEEL SUPPORT FRAMES, MEMBERS, HANGERS, BRACKETS, ETC. AS REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL EQUIPMENT.
 - SUPPORT FRAMES BOLTED TO FLOOR SLAB AND EXTENDING TO SLAB ABOVE SHALL BE PROVIDED AS REQUIRED FOR FREE STANDING EQUIPMENT OR WHERE WALLS ARE UNABLE TO SUPPORT EQUIPMENT WEIGHT.
 - ALL CONDUITS UP TO 1 1/2" TRADE SIZE SHALL BE SUPPORTED BY CLAMPS OR PIPE STRAPS SECURED TO BLACK IRON CEILING SUPPORT SYSTEM, STRUCTURAL MEMBERS OR SLAB ABOVE AT INTERVALS NO GREATER THAN 7'-0" AND WITHIN 12" OF CONDUIT END. ALL CONDUITS 2" TRADE SIZE OR LARGER SHALL BE SUPPORTED BY APPROVED HANGERS AND INSERTS FROM SLAB ABOVE AT INTERVALS NO GREATER THAN 10'-0" AND WITHIN 18" OF CONDUIT END. SUPPORT FROM CEILING TEES, CROSS TEES OR WIRES IS PROHIBITED.
- F. RACEWAYS FOR ELECTRICAL SYSTEMS - 260533:
- MATERIALS:
 - EMT: THIN WALL, HOT-DIPPED GALVANIZED STEEL (3/4" MINIMUM) - CONDUIT TO BE USED FOR ALL WORK CONCEALED IN WALLS AND ABOVE FINISHED CEILINGS; AND FOR EXPOSED RUNS UP TO 1 1/2" TRADE SIZE. USE WITH STEEL COMPRESSION FITTINGS ONLY.
 - RMG: HOT-DIPPED RIGID GALVANIZED STEEL - CONDUIT TO BE USED FOR ALL RISERS, PANELBOARD FEEDERS, THREE-PHASE MOTOR FEEDERS, CONDUIT INSTALLED IN SLAB, AND FOR EXPOSED RUNS 2" TRADE SIZE AND LARGER. CONDUIT SHALL BE GALVANIZED FOR CORROSION PROTECTION FOR CONDUIT INSTALLED IN CONCRETE SLAB. USE WITH THREADED FITTINGS ONLY.
 - FMC: INTERLOCKING COIL FORMED GALVANIZED STEEL STRIP (6' MAXIMUM LENGTH) - CONDUIT TO BE USED FOR ALL LIGHT FIXTURE WHIPS AND FINAL CONNECTIONS TO TRANSFORMERS AND MOTORS. USE WITH INSULATED THROAT BITE-TITE CONNECTORS.
 - LFMC: HELICALLY WOUND GALVANIZED STEEL STRIP WITH MOISTURE SEALING JACKET (6' MAXIMUM LENGTH) - CONDUIT TO BE USED FOR ALL LOCATIONS WITHIN 6'-0" OF A WATER SOURCE OR WHERE EXPOSED TO DAMP ATMOSPHERES OR CORROSIVE MATERIALS. USE WITH INSULATED LIQUID-TIGHT THROAT BITE-TITE CONNECTORS.
 - RNC: RIGID SCHEDULE 80 PVC (2" MINIMUM) - CONDUIT TO BE USED FOR ALL WORK BELOW GRADE. PROVIDE WITH RIGID GALVANIZED STEEL ELBOWS.
 - KEEP CONDUITS AND OTHER OPENINGS CLOSED TO PREVENT ENTRY OF FOREIGN MATTER DURING CONSTRUCTION AND PRIOR TO WIRE OR CABLE INSTALLATION.
 - ALL CONDUIT IN FINISHED AREAS SHALL BE CONCEALED IN WALLS OR ABOVE FINISHED CEILING WHERE POSSIBLE. IN AREAS WHERE ANY CONDUIT CANNOT BE CONCEALED DUE TO FIELD CONDITIONS, THE GENERAL CONTRACTOR SHALL PAINT CONDUIT AS DIRECTED BY THE BUILDING MANAGEMENT.
 - ALL CONDUIT SHALL BE SECURELY FASTENED IN PLACE TO STRUCTURAL MEMBERS. DO NOT FASTEN TO PIPING, MECHANICAL EQUIPMENT, ETC. PROVIDE HANGERS AND/OR SUPPORTS AT EACH ELBOW AND WITHIN 12" OF EACH CONDUIT TERMINATION INTO A BOX, ENCLOSURE OR CABINET. PROVIDE APPROVED BEAM CLAMPS, PIPE STRAPS OR HEAVY IRON TIES WHERE CONDUITS PENETRATE FLOOR/CEILING SLABS.
 - ALL CONDUIT TERMINATING IN METAL ENCLOSURES SHALL BE PROVIDED WITH AN INSULATED BUSHING. PROVIDE "GROUNDING" TYPE BUSHING WHERE REQUIRED.
 - CONDUIT TO BE INSTALLED TO AVOID PROXIMITY WITH STEAM AND HOT WATER PIPING. MAINTAIN 12" BETWEEN CONDUIT AND PIPING WHEREVER POSSIBLE. AT NO POINT SHALL SPACING BE LESS THAN 4" BETWEEN CONDUIT AND PIPING INSULATION.
 - ACCEPTABLE MANUFACTURERS ARE ALLIED TUBE & CONDUIT, NATIONAL WIRE PRODUCTS, REPUBLIC AND TRIANGLE FOR CONDUITS AND ASSOCIATED FITTINGS.

(CONTINUED ON DRAWING E-2)

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05/31/13		ISSUED FOR OWNER REVIEW	MF
01/02/08		ISSUED FOR PRICING	KW
DATE	REV	DESCRIPTION	BY
Southport Associates			
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PROJECT: CITY OF NORWALK CITY HALL POWER GENERATOR NORWALK, CT			
DRAWING TITLE: ELECTRICAL SPECIFICATIONS, NOTES AND LEGENDS			
SCALE:	NONE	DRAWN BY:	KW/SJG
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			E-1

ELECTRICAL SPECIFICATIONS

G. BOXES FOR ELECTRICAL SYSTEMS – 260534:

1. OUTLET, JUNCTION AND PULL BOXES SHALL BE INDUSTRY STANDARD GAUGE, GALVANIZED SHEET STEEL. BOXES SHALL BE INSTALLED WHERE NECESSARY TO FULFILL DESIGN INTENT REGARDLESS OF INDICATIONS AS SHOWN ON DRAWINGS. ALL BOXES SHALL BE MADE ACCESSIBLE.
2. BARRIERS SHALL BE INDUSTRY STANDARD GAUGE, CONDUCTIVE MATERIAL WITH ANGLE IRON FRAMING SUPPORT AROUND ITS PERIMETER AND SHALL HAVE ADEQUATE THICKNESS (1/8" MINIMUM) AS REQUIRED FOR MECHANICAL STRENGTH NECESSARY TO FULLY PROTECT THE SYSTEM. BARRIERS SHALL BE PROVIDED BETWEEN SEPARATE SYSTEMS AND BETWEEN SEPARATE VOLTAGES.
3. NORMAL POWER AND EMERGENCY POWER SYSTEMS SHALL NOT BE INSTALLED IN COMMON ELECTRICAL BOXES AND SHALL BE KEPT SEPARATE.
4. PROVIDE ADEQUATE OUTLET BOXES FOR MOUNTING ALL DEVICES. DO NOT USE ROUND JUNCTION BOXES.
 - 4.1. FURNISH AND INSTALL 4 11/16" SQUARE BY 1 1/2" OR 2 1/8" DEEP BACK BOX WITH EXTENSION RING. MULTI-GANG BACK BOXES SHALL BE APPROPRIATELY SIZED TO ACCOMMODATE INSTALLED WIRING DEVICES.
5. JUNCTION AND PULL BOXES SHALL HAVE REMOVABLE SCREW-ON COVER PLATES AND BE PROVIDED EVERY 100 FEET OF CONDUIT RUN AND WHERE NECESSARY TO FACILITATE THE INSTALLATION OF EQUIPMENT AND WIRING.
 - 5.1. BOXES SERVING EMERGENCY SYSTEM SHALL BE PAINTED YELLOW IN COLOR.
 - 5.2. BOXES SHALL BE SIZED TO COMPLY WITH MINIMUM BENDING RADIUS CRITERIA AS SPECIFIED BY THE NEC.
 - 5.3. BOXES HAVING ANY SINGLE DIMENSION LARGER THAN 36" SHALL BE PROVIDED WITH CABLE SUPPORT RACKS. CABLE SUPPORT RACKS SHALL CONSIST OF 3/4" DIAMETER STEEL PIPING WITH FLANGED ENDS BOLTED TO FRAME OF BOX AND FITTED CONTINUOUS FIBER INSULATING SLEEVES ARRANGED IN TIERS AND INSTALLED WITHIN 36" OF BOX.
6. ACCEPTABLE MANUFACTURERS ARE APPLETON, CROUSE HINDS, O.Z./GEDNEY, RACO AND THOMAS & BETTS FOR OUTLET, JUNCTION AND PULL BOXES.
7. ACCEPTABLE MANUFACTURERS ARE BURNDY, CROUSE HINDS, NEPCO, O.Z./GEDNEY, RACO AND THOMAS & BETTS FOR BUSHINGS, CONNECTORS, COUPLINGS AND FITTINGS.

H. VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS – 260548:

1. PROVIDE SEISMIC RESTRAINTS, INCLUDING ALL STRUCTURAL STEEL MEMBERS, INSERTS, ANCHORS, WIRES, ETC. AS REQUIRED FOR ALL ELECTRICAL EQUIPMENT. ALL SEISMIC RESTRAINTS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL CODES, ORDINANCES AND THE LOCAL AUTHORITY HAVING JURISDICTION.

I. ELECTRICAL IDENTIFICATION – 260553:

1. PROVIDE THERMOPLASTIC ENGRAVED NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO: CIRCUIT BREAKERS, SWITCHES, PANELBOARDS, SWITCHBOARDS, TRANSFORMERS, ETC. AS REQUIRED BY THE NATIONAL ELECTRIC CODE. NAMEPLATES SHALL INDICATE EQUIPMENT NAME, VOLTAGE AND AMPERAGE.
2. NAMEPLATES FOR EQUIPMENT ON NORMAL POWER SHALL BE BLACK WITH WHITE LETTERING. NAMEPLATES FOR EQUIPMENT ON EMERGENCY POWER SHALL BE YELLOW WITH BLACK LETTERING.
3. PROVIDE "DANGER" LABELING FOR ALL ELECTRICAL EQUIPMENT, BOXES, ETC. AS REQUIRED BY NEC CODES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MARKING ALL FIXED EQUIPMENT, RECEPTACLES AND SWITCHES WITH THE PANELBOARD NAME AND CIRCUIT BREAKER NUMBER SERVING EACH DEVICE WITH TYPEWRITTEN LABELS.

J. OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDIES – 260573:

1. SHORT-CIRCUIT FAULT CURRENTS:

- 1.1. CALCULATE MAXIMUM AVAILABLE SHORT-CIRCUIT CURRENT IN RMS SYMMETRICAL AMPERES FOR ELECTRICAL POWER DISTRIBUTION SYSTEM FROM "NORMAL/UTILITY" AND "EMERGENCY/GENERATOR" SOURCES. INCLUDE STUDIES OF SYSTEM SWITCHING CONFIGURATIONS AND ALTERNATE OPERATIONS THAT COULD RESULT IN MAXIMUM FAULT CONDITIONS. CALCULATE MOMENTARY AND INTERRUPTING DUTIES ON THE BASIS OF MAXIMUM AVAILABLE FAULT CURRENT.
- 1.2. FAULT CURRENTS SHALL BE DETERMINED AT ALL SWITCHBOARDS, PANELBOARDS, MOTOR CONTROL CENTERS AND CIRCUIT BREAKER POSITIONS OF THE ELECTRICAL POWER DISTRIBUTION SYSTEM. THE CALCULATION SHALL BE FOR THE CURRENT IMMEDIATELY AFTER INITIATION AND FOR A THREE-PHASE BOLTED SHORT-CIRCUIT. PERFORM A SELECTIVE DEVICE COORDINATION STUDY USING THE FAULT CURRENT LEVELS ESTABLISHED BY THE SHORT-CIRCUIT CALCULATIONS.
- 1.3. PREPARE A WRITTEN REPORT FOR SUBMITTAL TO THE ENGINEER. THE STUDY SHALL INCLUDE, BUT IS NOT LIMITED TO, THE FOLLOWING:
 - 1.3.a. PROVIDE DEVICE SETTINGS AND RATINGS OF ALL OVERCURRENT PROTECTIVE DEVICES.
 - 1.3.a.1. FOR 600-VOLT OVERCURRENT PROTECTIVE DEVICES, ENSURE THAT INTERRUPTING RATINGS ARE EQUAL TO OR HIGHER THAN CALCULATED 1/2-CYCLE SYMMETRICAL FAULT CURRENT.
 - 1.3.a.2. FOR DEVICES AND EQUIPMENT RATED FOR ASYMMETRICAL FAULT CURRENT, APPLY MULTIPLICATION FACTORS LISTED IN THE STANDARDS FOR 1/2-CYCLE SYMMETRICAL FAULT CURRENT.
 - 1.3.b. VERIFY ADEQUACY OF PHASE CONDUCTORS AT THE MAXIMUM THREE-PHASE BOLTED FAULT CURRENTS. VERIFY ADEQUACY OF EQUIPMENT GROUNDING CONDUCTORS AND GROUNDING ELECTRODE CONDUCTORS AT THE MAXIMUM GROUND-FAULT CURRENTS.
 - 1.3.c. ENSURE THAT SHORT-CIRCUIT WITHSTAND RATINGS ARE EQUAL TO OR HIGHER THAN CALCULATED 1/2-CYCLE SYMMETRICAL FAULT CURRENT.
 - 1.3.d. DEMONSTRATE SELECTIVE COORDINATION BY COMPUTER-GENERATED, TIME-CURRENT COORDINATION PLOTS.
 - 1.3.e. SHOW CALCULATED X/R RATIOS AND EQUIPMENT INTERRUPTING RATING FOR 1/2-CYCLE FAULT CURRENTS ON THE ELECTRICAL POWER DISTRIBUTION SYSTEM DIAGRAM.
 - 1.3.f. PROVIDE TABULAR FORMAT OF SETTINGS SELECTED FOR OVERCURRENT PROTECTIVE DEVICES.
 - 1.3.g. PROVIDE COORDINATION CURVES:
 - 1.3.g.1. PREPARE TO DETERMINE SETTINGS OF OVERCURRENT PROTECTIVE DEVICES TO ACHIEVE SELECTIVE COORDINATION.
 - 1.3.g.2. GRAPHICALLY ILLUSTRATE THAT ADEQUATE TIME SEPARATION EXISTS BETWEEN DEVICES INSTALLED IN SERIES, INCLUDING POWER UTILITY COMPANY'S UPSTREAM DEVICES.
 - 1.3.g.3. PREPARE SEPARATE SETS OF CURVES FOR SWITCHING SCHEMES; AND FOR EMERGENCY PERIODS WHERE POWER SOURCE IS LOCAL GENERATION.

2. ARC-FLASH FAULT CURRENTS:

- 2.1. USE FAULT CURRENT LEVELS AND EQUIPMENT DATA CONTAINED IN THE SHORT-CIRCUIT STUDY; AND PERFORM AN ARC-FLASH STUDY THAT COMPLIES WITH THE FOLLOWING:
 - 2.1.a. OSHA CFR 39 PART 1910 SUBPARTS
 - 2.1.b. NATIONAL ELECTRIC CODE (NFPA 70 – 2008) SECTION 110.116
 - 2.1.c. STANDARD FOR ELECTRICAL SAFETY IN THE WORK PLACE (NFPA 70E – 2009)
 - 2.1.d. IEEE GUIDE FOR PERFORMING ARC-FLASH ANALYSIS CALCULATIONS (IEEE STD. 1584 – 2002 W/ 2004 AMENDMENT)
 - 2.1.e. NATIONAL ELECTRIC SAFETY CODE (IEEE STD C2 – 2007)
- 2.2. FAULT CURRENTS SHALL BE DETERMINED AT ALL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS, MOTOR CONTROL CENTERS, FUSES, ENCLOSED SWITCHES, CIRCUIT BREAKERS AND TRANSFER SWITCHES OF THE ELECTRICAL POWER DISTRIBUTION SYSTEM.
- 2.3. PREPARE A WRITTEN REPORT FOR SUBMITTAL TO THE ENGINEER. THE STUDY SHALL INCLUDE, BUT IS NOT LIMITED TO, THE FOLLOWING:
 - 2.3.a. DETERMINE THE PROTECTIVE DEVICE CHARACTERISTICS AND DURATION OF THE ARC.
 - 2.3.b. DOCUMENT ALL SYSTEM VOLTAGES AND CLASSES OF EQUIPMENT.
 - 2.3.c. SELECT THE APPROPRIATE WORKING DISTANCE FOR EQUIPMENT.
 - 2.3.d. DETERMINE THE INCIDENT ENERGY FOR ALL EQUIPMENT IN THE STUDY.
 - 2.3.e. DETERMINE THE FLASH-PROTECTION BOUNDARY FOR ALL EQUIPMENT IN THE STUDY.

K. SWITCHBOARDS – 262413:

1. NEW SWITCHBOARDS SHALL BE RATED WITH MAIN BOLTED PRESSURE SWITCH AS SHOWN ON DRAWINGS. SWITCHBOARD SHALL BE CONSTRUCTED IN ACCORDANCE TO NEMA PB2 AND UL 891 STANDARDS. ENCLOSURE SHALL BE WEATHER-PROOF NEMA 3R, FRONT ACCESSIBLE ONLY MADE OF CODE GAUGE STEEL PANELS BOLTED OR SCREWED TO CODE GAUGE STEEL FRAME WITH STEEL BACKING PLATES FLOOR MOUNTED. ENCLOSURE SHALL BE PROVIDED WITH TWO COATS OF GRAY ENAMEL PAINT. PROVIDE WITH COPPER BUSSING PROPORTIONED FOR A CURRENT DENSITY OF 1000 AMPERES PER SQUARE INCH OF CROSS-SECTIONAL AREA, 100% RATED SOLID NEUTRAL, COPPER GROUND AND AIC RATING OF 65,000 AMPERES.
 - 1.1. SWITCHBOARD SHALL BE SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT AS SHOWN ON DRAWINGS. PROVIDE WITH HOT-SEQUENCE CT METERING CABINET APPROVED BY THE LOCAL ELECTRIC UTILITY COMPANY.
 - 1.2. ACCEPTABLE MANUFACTURERS ARE CUTLER-HAMMER "POWER-R-LINE I" SERIES, GENERAL ELECTRIC "SPECTRA CLASS 2" SERIES, SIEMENS "SB3" SERIES AND SQUARE D "QED-6" SERIES.

L. PANELBOARDS – 262416:

1. EXISTING PANELBOARDS/LOADCENTERS: CLEAN EXPOSED SURFACES AND CHECK TIGHTNESS OF ALL ELECTRICAL CONNECTIONS. REPLACE ALL DAMAGED CIRCUIT BREAKERS AND PROVIDE NEW CIRCUIT BREAKERS WHERE NECESSARY. NEW CIRCUIT BREAKERS SHALL MATCH EXISTING PANELBOARD/LOADCENTER IN MANUFACTURER AND AIC RATING. PROVIDE CLOSURE PLATES FOR VACANT POSITIONS. PROVIDE NEW UPDATED TYPEWRITTEN DIRECTORY SHOWING REVISED CIRCUITING ARRANGEMENT. THE CONTRACTOR SHALL VERIFY ALL CONDUIT AND FEEDER SIZES ASSOCIATED WITH PANELBOARDS/LOADCENTERS. ALL CODE DISCREPANCIES SHALL BE BROUGHT TO ATTENTION OF THE ENGINEER.

M. FUSES – 262813:

1. FUSES SHALL BE CURRENT-LIMITING TYPE WITH AN INTERRUPTING CURRENT CAPACITY OF 200,000RMS AMPERES AND A CONTINUOUS CURRENT RATING AS SHOWN ON DRAWINGS.
2. FUSES SHALL HAVE AVERAGE MELTING TIME-CURRENT CHARACTERISTIC TO MEET UNDERWRITERS' LABORATORIES REQUIREMENTS OF "CLASS K" FOR 0-600 AMP FUSES AND "CLASS L" FOR OVER 600 AMP FUSES.
3. ACCEPTABLE MANUFACTURERS ARE BUSSMAN, GOULD SHAWMUTT AND GENERAL ELECTRIC.

N. ENCLOSED SWITCHES AND CIRCUIT BREAKERS – 262816:

1. DISCONNECT SWITCHES SHALL BE "QUICK-MAKE", "QUICK-BREAK" HEAVY DUTY WITH VOLTAGE RATINGS OF 240 VOLTS FOR 208/120VOLT SYSTEMS. PROVIDE SINGLE OR THREE PHASE WITH AMPERE RATINGS AS SHOWN ON DRAWINGS. U.L. 98 LISTED, NEMA KS1. ENCLOSURES SHALL BE NEMA 1 FOR INDOOR AND NEMA 3R FOR OUTDOOR INSTALLATIONS.
 - 1.1. ACCEPTABLE MANUFACTURERS ARE CUTLER-HAMMER, GENERAL ELECTRIC, SIEMENS AND SQUARE D.
2. CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC, "QUICK-MAKE, QUICK-BREAK" TYPE WITH NONWELDING CONTACTS COMPENSATED FOR AMBIENT TEMPERATURES. PROVIDE WITH ELECTRONIC, FIELD ADJUSTABLE, TRIP FUNCTIONS FOR CIRCUIT BREAKERS RATED OVER 400 AMPERES.
 - 2.1. WHERE INSTALLED IN EXISTING PANELBOARDS, CIRCUIT BREAKERS SHALL MATCH THE EXISTING PANELBOARD IN MANUFACTURER AND AIC RATING.

O. ENGINE GENERATORS – 263213:

1. REFER TO DIESEL GENERATOR SPECIFICATIONS ON DRAWINGS E-3 AND E-4 FOR REQUIREMENTS.

P. TRANSFER SWITCHES – 263600:

1. THE AUTOMATIC TRANSFER SWITCH SHALL BE OPEN-TRANSITION TYPE AND SHALL CONSIST OF A POWER TRANSFER MODULE AND A CONTROL MODULE INTERCONNECTED TO PROVIDE COMPLETE AUTOMATIC OPERATION. THE SWITCH SHALL BE MECHANICALLY-HELD AND ELECTRICALLY-OPERATED BY A SINGLE-SOLENOID MECHANISM ENERGIZED FROM THE SOURCE TO WHICH LOAD IS TO BE TRANSFERRED. THE SWITCH SHALL BE RATED FOR CONTINUOUS DUTY AND BE INHERENTLY DOUBLE-THROW. THE SWITCH SHALL BE MECHANICALLY INTERLOCKED TO ENSURE ONLY ONE OF TWO POSSIBLE POSITIONS: NORMAL OR EMERGENCY. THE SWITCH SHALL BE SUITABLE FOR USE WITH EMERGENCY SOURCES; SUCH AS AN ENGINE OR TURBINE GENERATORS OR ANOTHER UTILITY SERVICE.
 - 1.1. ALL MAIN CONTACTS SHALL BE OF SILVER COMPOSITION. THEY SHALL BE PROTECTED BY ARCING CONTACTS AND OF SEGMENTED CONSTRUCTION. THE OPERATING TRANSFER TIME IN EITHER DIRECTION SHALL NOT EXCEED ONE-SIXTH (1/6) OF A SECOND.
 - 1.2. ALL CONTACTS, COILS, SPRINGS, AND CONTROL ELEMENTS SHALL BE CONVENIENTLY REMOVABLE FROM FRONT OF TRANSFER SWITCH WITHOUT MAJOR DISASSEMBLY OR DISCONNECTION OF POWER CONDUCTORS.
 - 1.3. THE CONTROL MODULE SHALL BE SUPPLIED WITH A PROTECTIVE COVER AND BE MOUNTED SEPARATELY FROM TRANSFER SWITCH FOR EASE OF MAINTENANCE. SENSING AND CONTROL LOGIC SHALL BE SOLID-STATE AND MOUNTED ON PLUG-IN PRINTED CIRCUIT BOARDS. PRINTED CIRCUIT BOARDS SHALL BE KEYS TO PREVENT INCORRECT INSTALLATION. INTERFACING RELAYS SHALL BE INDUSTRIAL CONTROL GRADE, PLUG-IN TYPE WITH DUST COVERS AND LOCKING CLIPS.
 - 1.4. THE AUTOMATIC TRANSFER SWITCH SHALL CONFORM TO THE REQUIREMENTS OF NEMA STANDARD ICS 2-447 AND UNDERWRITERS' LABORATORIES UL-1008, AND SHALL BE U.L. LISTED AS FOLLOWS:
 - 1.4.a. FOR USE IN EMERGENCY SYSTEMS IN ACCORDANCE WITH ARTICLES 517 AND 700 OF THE NATIONAL ELECTRICAL CODE.
 - 1.4.b. RATED IN AMPERES FOR TOTAL SYSTEM TRANSFER INCLUDING CONTROL OF MOTORS, ELECTRIC DISCHARGE LAMPS, ELECTRIC-HEATING AND TUNGSTEN-FILAMENT LAMP LOAD.
 - 1.5. THE AUTOMATIC TRANSFER SWITCH SHALL BE RATED TO WITHSTAND THE SYMMETRICAL SHORT CIRCUIT FAULT CURRENT OF 65,000 AMPERES AT THE AUTOMATIC TRANSFER SWITCH TERMINALS WITH OVERCURRENT PROTECTION AND VOLTAGE AS SHOWN ON DRAWINGS.
 - 1.6. THE AUTOMATIC TRANSFER SWITCH SHALL BE MOUNTED IN A WEATHER-PROOF TYPE NEMA 3R ENCLOSURE.
 - 1.7. THE AUTOMATIC TRANSFER SWITCH SHALL BE SIZED AS INDICATED ON DRAWINGS.
 - 1.8. ACCEPTABLE MANUFACTURERS ARE ASCO AND RUSSELECTRIC. NO OTHER MANUFACTURERS WILL BE CONSIDERED UNLESS APPROVAL IS RECEIVED PRIOR TO BID.
2. TESTING:
 - 2.1. CERTIFIED LABORATORY TEST DATA ON A SWITCH OF THE SAME DESIGN AND RATING SHALL BE PROVIDED TO CONFIRM THE FOLLOWING SWITCHING ABILITIES:
 - 2.1.a. OVERLOAD AND ENDURANCE PER TABLES 21.2 AND 23.2 OF UL-1008 WHEN ENCLOSED ACCORDING TO PARAGRAPH 1.6.
 - 2.1.b. TEMPERATURE RISE TESTS AFTER OVERLOAD AND ENDURANCE TESTS TO CONFIRM THE ABILITY OF THE TRANSFER SWITCHES TO CARRY THEIR RATED CURRENT WITHIN THE ALLOWABLE TEMPERATURE LIMITS OF THE INSULATION IN CONTACT WITH CURRENT-CARRYING PARTS.
 - 2.1.c. WITHSTAND CURRENT TESTS PER PARAGRAPH 25 OF UL-1008 FOR 65,000 AMPERES RMS SYMMETRICAL, AT 480 VOLTS AND X/R RATIO OF 6.6.
 - 2.1.d. NO WELDING OF CONTACTS. TRANSFER SWITCH MUST BE OPERABLE TO ALTERNATE SOURCE AFTER THE WITHSTAND CURRENT TESTS.
 - 2.1.e. DIELECTRIC TESTS AT 1960 VOLTS, RMS, MINIMUM AFTER THE WITHSTAND CURRENT TEST.
 - 2.2. ALL PRODUCTION UNITS SHOULD BE SUBJECTED TO THE FOLLOWING FACTORY TESTS:
 - 2.2.a. THE COMPLETE AUTOMATIC TRANSFER SWITCH SHALL BE TESTED TO ENSURE PROPER OPERATION OF THE INDIVIDUAL COMPONENTS AND CORRECT OVERALL SEQUENCE OF OPERATION, AND TO ENSURE THAT THE OPERATING TRANSFER TIME, VOLTAGE, FREQUENCY, AND TIME DELAY SETTINGS ARE IN COMPLIANCE WITH THE SPECIFICATION REQUIREMENTS.
 - 2.2.b. THE COMPLETE AUTOMATIC TRANSFER SWITCH SHALL BE SUBJECTED TO A DIELECTRIC STRENGTH TEST PER NEMA STANDARD ICS 1.109.05.
 - 2.3. THE CONTROL PANEL SHALL MEET OR EXCEED THE VOLTAGE SURGE WITHSTAND CAPABILITY IN ACCORDANCE WITH ANSI C37.90A-1978 AND IMPULSE WITHSTAND VOLTAGE TEST IN ACCORDANCE WITH NEMA STANDARD ICS 1-109.
3. OPERATION:
 - 3.1. FOUR-POLE SWITCHES FOR FOUR-WIRE SYSTEMS. SOLID NEUTRALS WILL NOT BE ACCEPTABLE.
 - 3.2. THE AUTOMATIC TRANSFER SWITCH CONTROL PANEL SHALL UTILIZE SOLID-STATE SENSING FOR AUTOMATIC, POSITIVE OPERATION. THE FOLLOWING SHALL BE PROVIDED:
 - 3.2.a. ALL PHASES OF THE NORMAL SHALL BE MONITORED LINE-TO-LINE. CLOSE DIFFERENTIAL VOLTAGE SENSING SHALL BE PROVIDED. THE PICKUP VOLTAGE SHALL BE ADJUSTABLE FROM 72% TO 100% OF NOMINAL, AND THE DROPOUT VOLTAGE SHALL BE ADJUSTABLE FROM 70% TO 98% OF THE PICKUP VALUE. THE TRANSFER TO EMERGENCY WILL BE INITIATED UPON REDUCTION OF NORMAL SOURCE TO 85% OF NOMINAL VOLTAGE AND RETRANSFER TO NORMAL SHALL OCCUR WHEN NORMAL SOURCE RESTORES TO 95% OF NOMINAL.
 - 3.2.b. A TEST SWITCH TO MOMENTARILY SIMULATE NORMAL SOURCE FAILURE.
4. ACCESSORIES:
 - 4.1. SWITCHES SHALL INCLUDE A TIME DELAY TO IGNORE MOMENTARY OUTAGES. IT SHALL DELAY CLOSING OF THE ENGINE START CONTACTS FOR A FIXED TIME OF 3 SECONDS (EXPANDABLE FOR .5 TO 6 SECONDS).
 - 4.2. SWITCHES SHALL INCLUDE A TIME DELAY ON TRANSFER FROM NORMAL TO EMERGENCY, FIELD-ADJUSTABLE FROM .6 TO 60 SECONDS.
 - 4.3. SWITCHES SHALL INCLUDE A TIME DELAY ON RETRANSFER FROM EMERGENCY TO NORMAL, FIELD ADJUSTABLE FROM 1 TO 30 MINUTES. THE TIME DELAY SHALL BE AUTOMATICALLY BYPASSED IF THE EMERGENCY SOURCE FAILS AND THE NORMAL SOURCE IS AVAILABLE.
 - 4.4. SWITCHES SHALL INCLUDE A TIME DELAY FOR ENGINE COOL DOWN FACTORY SET AT 5 MINUTES (EXPANDABLE FOR 1 TO 30 MINUTES).

- 4.5. THE SWITCHES SHALL INCLUDE VOLTAGE AND FREQUENCY SENSING OF THE EMERGENCY SOURCE AND SHALL BE FACTORY SET TO ALLOW TRANSFER TO EMERGENCY WHEN THAT SOURCE IS APPROXIMATELY AT 90% OF RATED VOLTAGE AND FREQUENCY.

- 4.6. CONTACTS WHICH CLOSE WHEN NORMAL SOURCE FAILS SHALL BE PROVIDED TO INITIATE ENGINE STARTING.

- 4.7. PILOT LIGHTS TO INDICATE POWER SOURCE AVAILABLE AND SWITCH POSITION.

- 4.8. TWO (2) SETS OF AUXILIARY CONTACTS MOUNTED ON MAIN SHAFT.

- 4.9. PROGRAMMABLE 7/14 DAY EXERCISER WITH LOAD/NO LOAD OPTION.

- 4.10. IN-PHASE MONITOR OR DELAYED TRANSITION TRANSFER.

- 4.11. PRE-TRANSFER CONTACTS, ADJUSTABLE PRIOR TO AND AFTER TRANSFER IN BOTH DIRECTIONS, TO SIGNAL ELEVATOR RESET.

- 4.12. AUXILIARY CONTACTS TO INDICATE SWITCH POSITION AT REMOTE ANNUNCIATOR PANEL.

5. CERTIFICATION: UPON REQUEST, THE MANUFACTURER SHALL PROVIDE A LETTER CERTIFYING COMPLIANCE WITH ALL REQUIREMENTS OF THE TRANSFER SWITCH SPECIFICATION. THE CERTIFICATION SHALL IDENTIFY EQUIPMENT BY SERIAL NUMBER AND SHALL INCLUDE NO EXCEPTIONS TO THE SPECIFICATIONS, EXCEPT THOSE STIPULATED WITH THE SUBMITTAL.

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DATE	REV	DESCRIPTION	BY
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PROJECT: CITY OF NORWALK CITY HALL POWER GENERATOR NORWALK, CT			
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**TECHNICAL SPECIFICATIONS
AND DESCRIPTION FOR 800KW
DIESEL ENGINE GENERATOR SET**

DIESEL GENERATOR SETS

1. GENERAL REQUIREMENTS

IT IS THE INTENT OF THIS SPECIFICATION TO SECURE AN EMERGENCY GENERATOR SYSTEM OF THE LATEST COMMERCIAL DESIGN THAT HAS BEEN PROTOTYPE TESTED, FACTORY BUILT PRODUCTION TESTED AND SITE TESTED TOGETHER WITH ALL ACCESSORIES NECESSARY FOR A COMPLETE INSTALLATION AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN. THE EQUIPMENT SUPPLIED AND INSTALLED SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, ALONG WITH ALL APPLICABLE LOCAL CODES AND REGULATIONS. ALL EQUIPMENT SHALL BE NEW AND UNUSED, AND SHALL BE OF CURRENT PRODUCTION BY A NATIONALLY RECOGNIZED FIRM WHICH MANUFACTURES AND ASSEMBLES GENERATOR SETS AS A COMPLETE UNIT SO THAT THERE IS A SINGLE SOURCE OF RESPONSIBILITY FOR WARRANTY, PARTS AND SERVICE THROUGH A LOCAL REPRESENTATIVE WITH FACTORY-TRAINED TECHNICIANS.

1.1 ACCEPTABLE MANUFACTURERS ARE ATLANTIC-DETROIT DIESEL, CATERPILLAR AND CUMMINS-ONAN.

2. SUBMITTAL

A FULL DATA SHEET SHALL BE INCLUDED WITH THE BID. THE SUBMITTAL SHALL INCLUDE PROTOTYPE TEST CERTIFICATION AND SPECIFICATION SHEETS SHOWING ALL STANDARD AND OPTIONAL ACCESSORIES TO BE SUPPLIED, SCHEMATIC WIRING DIAGRAMS, DIMENSIONAL DRAWINGS, AND INTERCONNECTION DIAGRAMS IDENTIFYING BY TERMINAL NUMBER EACH REQUIRED INTERCONNECTION BETWEEN THE GENERATOR SET, THE TRANSFER SWITCH(ES) AND REMOTE ANNUNCIATOR PANEL. THE VENDOR SHALL SUBMIT A CERTIFIED LETTER FROM THE MANUFACTURER STATING THAT THEY HAVE REVIEWED THE SPECIFICATIONS AND THAT THE EQUIPMENT PROVIDED IS IN CONFORMANCE. THIS CERTIFICATION SHALL LIST BY PARAGRAPH ANY DEVIATIONS OR EXCEPTIONS TO THE SPECIFICATIONS AS WELL AS THE JOB NAME AND VENDOR ORDER NUMBER. NO ADDITIONAL DEVIATIONS OR EXCEPTIONS WILL BE ALLOWED AFTER REVIEW OF THE CERTIFICATIONS.

3. TESTING

3.1. TO ASSURE THAT THE EQUIPMENT HAS BEEN DESIGNED AND BUILT TO THE HIGHEST RELIABILITY AND QUALITY STANDARDS, THE MANUFACTURER AND THE MANUFACTURER'S LOCAL REPRESENTATIVE SHALL BE RESPONSIBLE FOR THREE SEPARATE TESTS: DESIGN PROTOTYPE TESTS, FINAL PRODUCTION TESTS AND SITE TESTS.

3.2. DESIGN PROTOTYPE TESTS: THIS TEST, PERFORMED AT THE FACTORY ON SIMILAR DESIGN PROTOTYPES AND PREPRODUCTION MODELS WHICH WILL NOT BE SOLD, SHALL INCLUDE THE REQUIREMENTS OF NFPA 110 AND THE FOLLOWING RESULTS SHALL BE INCLUDED IN THE SUBMITTAL FOR THE ENGINEER'S INSPECTION:

- 3.2.1. MAXIMUM POWER (KW)
- 3.2.2. MAXIMUM MOTOR STARTING (KVA) AT 35% INSTANTANEOUS VOLTAGE DIP
- 3.2.3. ALTERNATOR TEMPERATURE RISE BY EMBEDDED THERMOCOUPLE AND BY RESISTANCE METHOD PER NEMA MG1-22.40 AND 16.40
- 3.2.4. GOVERNOR SPEED REGULATION UNDER STEADY-STATE AND TRANSIENT CONDITIONS
- 3.2.5. VOLTAGE REGULATION AND GENERATOR TRANSIENT RESPONSE
- 3.2.6. FUEL CONSUMPTION AT 1/4, 1/2, 3/4, AND FULL LOAD
- 3.2.7. HARMONIC ANALYSIS, VOLTAGE WAVEFORM DEVIATION, AND TELEPHONE INFLUENCE FACTOR
- 3.2.8. THREE-PHASE SHORT CIRCUIT TESTS
- 3.2.9. ALTERNATOR COOLING AIR FLOW
- 3.2.10. TORSIONAL ANALYSIS TESTING TO VERIFY THAT THE GENERATOR SET IS FREE OF HARMFUL TORSIONAL STRESSES
- 3.2.11. ENDURANCE TESTING

3.3. FINAL PRODUCTION TESTS: THE GENERATOR SET SHALL BE TESTED UNDER VARYING LOADS WITH GUARDS AND EXHAUST SYSTEM IN PLACE.

- 3.3.1. TESTS SHALL INCLUDE:
 - 1. SINGLE-STEP LOAD PICKUP
 - 2. TRANSIENT AND STEADY-STATE GOVERNING
 - 3. SAFETY SHUTDOWN DEVICE TESTING
 - 4. VOLTAGE REGULATION
 - 5. RATED POWER
 - 6. MAXIMUM POWER
 - 7. SOUND LEVEL

3.3.2. ALL TESTING SHALL BE PERFORMED AFTER THE GENERATOR HAS BEEN INSTALLED IN THE SOUND ATTENUATED ENCLOSURE

3.3.3. UPON REQUEST, ARRANGEMENTS TO EITHER WITNESS THIS TEST WILL BE MADE, OR A CERTIFIED TEST RECORD WILL BE SENT PRIOR TO SHIPMENT

3.4. SITE TESTS: AN INSTALLATION CHECK, START-UP AND BUILDING LOAD TEST SHALL BE PERFORMED BY THE MANUFACTURER'S LOCAL REPRESENTATIVE. THE ENGINEER, REGULAR OPERATORS AND THE MAINTENANCE STAFF SHALL BE NOTIFIED OF THE TIME AND DATE OF THE SITE TEST.

- 3.4.1. THE TESTS SHALL INCLUDE:
 - 1. FUEL, LUBRICATING OIL AND ANTIFREEZE SHALL BE CHECKED FOR CONFORMITY TO THE MANUFACTURER'S RECOMMENDATIONS, UNDER THE ENVIRONMENTAL CONDITIONS PRESENT AND EXPECTED.
 - 2. ACCESSORIES THAT NORMALLY FUNCTION WHILE THE SET IS STANDING BY SHALL BE CHECKED PRIOR TO CRANKING THE ENGINE. THESE SHALL INCLUDE BLOCK HEATERS, BATTERY CHARGER, GENERATOR STRIP HEATERS, REMOTE ANNUNCIATOR, ETC.
 - 3. START UP UNDER TEST MODE TO CHECK FOR EXHAUST LEAKS, PATH OF EXHAUST GASES OUTSIDE THE BUILDING, COOLING AIR FLOW, MOVEMENT DURING STARTING AND STOPPING, VIBRATION DURING RUNNING, NORMAL AND EMERGENCY LINE-TO-LINE VOLTAGE, AND PHASE ROTATION.
 - 4. AUTOMATIC START-UP BY MEANS OF SIMULATED POWER OUTAGE TO TEST REMOTE-AUTOMATIC STARTING, TRANSFER OF THE LOAD, AND AUTOMATIC SHUTDOWN. PRIOR TO THIS TEST, ALL TRANSFER SWITCH TIMERS SHALL BE ADJUSTED FOR PROPER SYSTEM COORDINATION. ENGINE COOLANT TEMPERATURE, OIL PRESSURE, AND BATTERY CHARGE LEVEL ALONG WITH GENERATOR VOLTAGE, AMPERES, AND FREQUENCY SHALL BE MONITORED THROUGHOUT THE TEST. AN EXTERNAL LOAD BANK SHALL BE CONNECTED TO THE SYSTEM IF SUFFICIENT BUILDING LOAD IS UNAVAILABLE TO LOAD THE GENERATOR TO THE SATISFACTION OF THE OWNER, UP TO AND INCLUDING SUSTAINED FULL LOAD TESTING. TESTS SHALL BE CONDUCTED FOR A MINIMUM OF 8 CONSECUTIVE HOURS.

5. A READING AT NO LOAD AND FULL LOAD SHALL BE MADE AT THE START OF THE TEST, AT SPECIFIED LOAD AT INTERVALS OF 30 MINUTES DURING TEST, AND A READING AT 50 PERCENT LOAD AND NO LOAD AT END OF TEST.

PROVIDE VOLTAGE AND FREQUENCY OSCILLOGRAPH RECORDINGS OF TRANSIENT RESPONSE FOR THE FOLLOWING LOAD STEPS:

- STEP 1 - 0 TO 100%
- STEP 2 - 0 TO 25%
- STEP 3 - 0 TO 50%
- STEP 4 - 0 TO 75%

3.4.2. VOLTAGE AND FREQUENCY TRANSIENTS SHALL BE RECORDED SIMULTANEOUSLY. NO DISPROPORTIONATE ADJUSTMENTS IN VOLTAGE ROLL-OFF WILL BE ALLOWED TO COMPENSATE FOR FREQUENCY DEVIATION.

3.4.3. THE TESTS SHALL INCLUDE A HARMONIC ANALYSIS WITH THE CONNECTED BUILDING LOAD. PROVIDE A PRINTED RECORDING OF HARMONIC CONTENT OF THE 3RD, 5TH AND 7TH HARMONIC UNDER NO LOAD AND BUILDING LOAD CONDITIONS.

4. WARRANTY & MAINTENANCE

4.1. THE EMERGENCY GENERATOR SYSTEM SHALL BE WARRANTED BY THE MANUFACTURER FOR TWO (2) YEARS OR 3,000 HOURS, WHICHEVER OCCURS FIRST; FROM THE DATE OF THE SITE START-UP. AN OPTIONAL 5-YEAR WARRANTY SHALL BE AVAILABLE UPON REQUEST. THE VENDOR MUST BE THE AUTHORIZED DISTRIBUTOR OF THE ENGINE MANUFACTURER AND ALL MAJOR COMPONENTS AND MUST PROVIDE DOCUMENTATION SUPPORTING THEIR ABILITY AND AUTHORITY TO PERFORM ALL WARRANTY SERVICE AND REPAIRS. VENDORS WITH LIMITED AUTHORITY TO PROVIDE MAINTENANCE SERVICE AND REPAIR ONLY WILL NOT BE CONSIDERED. UPON REQUEST, THE VENDOR SHALL PROVIDE A DETAILED SUMMARY OF THEIR SERVICE CAPABILITIES INCLUDING LABOR FORCE AND SPARE PARTS INVENTORY.

4.2. OPTIONAL SERVICE CONTRACT:

4.2.1. THE ENGINE DISTRIBUTOR SHALL EMPLOY FACTORY-TRAINED PERSONNEL AND MAINTAIN A 24-HOUR PARTS AND SERVICE CAPABILITY; AND SHOW AT TIME OF SUBMITTAL THAT THEY ARE REGULARLY ENGAGED IN A MAINTENANCE CONTRACT PROGRAM TO SEMI-ANNUALLY INSPECT AND TEST RUN THE ENGINE TO PERFORM THE MANUFACTURER'S RECOMMENDED PREVENTATIVE MAINTENANCE SERVICE ON THE EQUIPMENT FURNISHED. THIS SERVICE CONTRACT SHALL BE PROVIDED TO THE OWNER FOR REVIEW AND ACCEPTANCE AT DATE OF START UP OF THE GENERATOR SET. AT THE OWNER'S OPTION, THE SERVICE CONTRACT SHALL BE AVAILABLE ON A YEAR-TO-YEAR BASIS WITH COSTS BEING PAID BY THE OWNER.

5. EQUIPMENT

THE EMERGENCY GENERATOR SET SHALL BE 800 KW CONTINUOUS STANDBY, 1000 KVA, 480/277-VOLT, 3-PHASE, 4-WIRE WITH 0.8 POWER FACTOR RATED FOR 1200 AMPERES AT 500 FEET ALTITUDE.

* PROVIDE ALTERNATE PRICING FOR A 1000 KW CONTINUOUS STANDBY, 1250 KVA, 480/277-VOLT, 3-PHASE, 4-WIRE WITH 0.8 POWER FACTOR RATED FOR 1500 AMPERES AT 500 FEET ALTITUDE. EMERGENCY GENERATOR SET WITH A 400-AMP, 3-POLE CIRCUIT BREAKER IN ADDITION TO ALL OTHER ITEMS SPECIFIED HEREIN AND ON DRAWINGS.

5.1. SPRING VIBRATION ISOLATORS SHALL BE PROVIDED BETWEEN THE ENGINE GENERATOR'S HEAVY-DUTY STEEL BASE AND THE ENCLOSURE FLOOR.

6. ENGINE

6.1. THE PROPERLY SIZED DIESEL ENGINE SHALL DELIVER REQUIRED POWER FOR THE GENERATOR. THE ENGINE SHALL BE EQUIPPED WITH THE FOLLOWING:

- 6.1.1. ENGINE-DRIVEN FUEL TRANSFER PUMP CAPABLE OF LIFTING FUEL 6 FEET, PRIMARY AND SECONDARY FUEL FILTERS, ELECTRIC SOLENOID FUEL SHUT-OFF VALVE AND A FUEL DISTRIBUTION SYSTEM WITH AN ISOCRONOUS GOVERNOR CAPABLE OF +/- 0.25% STEADY-STATE FREQUENCY REGULATION
- 6.1.2. 24-VOLT POSITIVE ENGAGEMENT SOLENOID SHIFT-STARTING MOTORS
- 6.1.3. 65-AMPERE MINIMUM AUTOMATIC BATTERY CHARGING ALTERNATOR WITH SOLID-STATE VOLTAGE REGULATION
- 6.1.4. POSITIVE DISPLACEMENT, FULL PRESSURE LUBRICATION OIL PUMP, CARTRIDGE OIL FILTERS, DIPSTICK, AND OIL DRAIN
- 6.1.5. DRY-TYPE REPLACEABLE AIR CLEANER ELEMENTS

6.2. THE ENGINE SHALL BE FUELED WITH NO. 2 DIESEL LIQUID-COOLED BY A UNIT-MOUNTED RADIATOR, BLOWER FAN, WATER PUMP, THERMOSTAT AND RADIATOR DUCT FLANGE THAT SHALL PROPERLY COOL THE ENGINE IN 122°F AMBIENT TEMPERATURE WITH UP TO 0.5 INCHES H₂O STATIC PRESSURE ON THE FAN.

6.3. THE ENGINE SHALL BE ELECTRONICALLY CONTROLLED BY INCORPORATING TWO (2) ELECTRONIC CONTROL MODULES (ECM) TO PRECISELY CONTROL ALL ENGINE OPERATING FUNCTIONS INCLUDING FUEL CONTROL AND TIMING.

6.4. THE ENGINE SHALL BE FACTORY CERTIFIED TO MEET EPA TIER 2 EMISSION STANDARDS.

7. GENERATOR

7.1. THE ALTERNATOR SHALL BE SALIENT-POLE, BRUSHLESS, SELF-VENTILATED OF DRIP-PROOF CONSTRUCTION WITH ROTOR AND STATOR WINDINGS DESIGNED FOR SMOOTH VOLTAGE WAVEFORM. THE INSULATION SHALL MEET THE NEMA STANDARD (MG1-22.40 AND 16.40) FOR CLASS H AND BE INSULATED WITH EPOXY VARNISH TO BE FUNGUS RESISTANT PER MIL I-24092. TEMPERATURE RISE OF THE ROTOR AND STATOR SHALL BE LIMITED TO 80°C. THE EXCITATION SYSTEM SHALL BE OF BRUSHLESS CONSTRUCTION CONTROLLED BY A SOLID-STATE VOLTAGE REGULATOR CAPABLE OF MAINTAINING VOLTAGE WITHIN +/- 2% AT ANY CONSTANT LOAD FROM 0% TO 100% OF RATING.

7.2. UPON 1-STEP APPLICATION OF ANY LOAD UP TO 100% OF THE RATED LOAD AT 0.8 POWER FACTOR, THE VOLTAGE DIP SHALL NOT EXCEED 20% AND SHALL RECOVER TO +/- 2% OF RATED VOLTAGE WITHIN 3 SECONDS.

7.3. UPON 1-STEP APPLICATION OF ANY LOAD UP TO 100% OF THE RATED LOAD AT 0.8 POWER FACTOR, THE FREQUENCY DIP SHALL NOT EXCEED 15% AND SHALL RECOVER TO +/- 2% OF RATED VOLTAGE WITHIN 3 SECONDS.

7.4. THE GENERATOR SHALL BE CAPABLE OF SUSTAINING AT LEAST 250% OF RATED CURRENT FOR AT LEAST 10 SECONDS UNDER A 3-PHASE SYMMETRICAL SHORT.

7.5. THE GENERATOR SHALL BE FURNISHED WITH A RESETTABLE LINE CURRENT SENSING CIRCUIT BREAKER (RATED AS INDICATED ON THE DRAWINGS) WITH INVERSE TIME VERSUS CURRENT RESPONSE TO PROTECT THE GENERATOR FROM DAMAGE DUE TO ITS OWN HIGH CURRENT CAPABILITY. THIS BREAKER SHALL NOT TRIP WITHIN THE 10 SECONDS SPECIFIED ABOVE TO ALLOW SELECTIVE TRIPPING OF DOWNSTREAM FUSES OR CIRCUIT BREAKERS UNDER A FAULT CONDITION. THIS BREAKER SHALL NOT AUTOMATICALLY RESET, PREVENTING RESTORATION OF VOLTAGE IF MAINTENANCE IS BEING PERFORMED.

7.6. THE GENERATOR SHALL HAVE A SINGLE MAINTENANCE-FREE BEARING; AND SHALL BE DIRECTLY CONNECTED TO THE FLYWHEEL HOUSING WITH A SEMI-FLEXIBLE COUPLING BETWEEN THE ROTOR AND THE FLYWHEEL.

8. CONTROLLER

8.1. STANDARDS

B.1.1. THE CONTROLLER MUST MEET NFPA-110 LEVEL 1 REQUIREMENTS AND MUST HAVE AN INTEGRAL ALARM HORN AS REQUIRED BY NFPA.

B.1.2. NFPA-99 AND NEC MUST ALSO BE ACCOMMODATED.

B.1.3. THE CONTROLLER MUST BE LISTED UNDER UL 508.

B.2. HARDWARE REQUIREMENTS

B.2.1. A RUN-OFF/RESET-AUTO, THREE-POSITION, KEY-OPERATED SELECTOR SWITCH

B.2.2. A CONTROLLER-MOUNTED, LATCH-TYPE, EMERGENCY-STOP PUSH BUTTON

B.2.3. CONTROLS TO ADJUST ALTERNATOR OUTPUT VOLTAGE

B.2.4. FIVE INDICATING LIGHTS AS FOLLOWS:

- 1. SYSTEM READY - GREEN
- 2. NOT IN AUTO - YELLOW
- 3. PROGRAMMING MODE - YELLOW
- 4. SYSTEM WARNING - YELLOW
- 5. SYSTEM SHUTDOWN - RED

B.2.5. A LIGHTED DISPLAY WITH ALPHANUMERIC CHARACTERS FOR MESSAGES

B.2.6. A SEALED KEYPAD FOR MENU SELECTION AND DATA ENTRY

B.2.7. AN AUDIBLE ALARM

B.3. CONTROL FUNCTIONAL REQUIREMENTS

B.3.1. FIELD-PROGRAMMABLE TIME DELAY FOR ENGINE START: ADJUSTMENT RANGE, 0-5 MINUTES IN 1 SECOND INCREMENTS.

B.3.2. FIELD-PROGRAMMABLE TIME DELAY FOR ENGINE COOLDOWN: ADJUSTMENT RANGE, 0-10 MINUTES IN 1 SECOND INCREMENTS.

B.3.3. GENERATOR START AND RUN AT AN IDLE SPEED DURING WARM-UP. THE IDLE TIME MUST BE USER ADJUSTABLE. ENGINE COOLDOWN AT IDLE MUST ALSO BE AVAILABLE.

B.3.4. REAL TIME CLOCK AND CALENDAR FOR TIME STAMPING OF EVENTS.

B.3.5. OUTPUT WITH ADJUSTABLE TIMER FOR AN ETHER INJECTION STARTING SYSTEM: ADJUSTMENT RANGE, 0-10 SECONDS.

B.3.6. OUTPUT FOR SHEDDING OF LOADS IF GENERATOR REACHES A USER-PROGRAMMABLE PERCENTAGE OF ITS KW RATING. LOAD SHED MUST ALSO BE ENABLED IF THE GENERATOR OUTPUT FREQUENCY FALLS BELOW 59 HZ (60 HZ SYSTEM).

B.3.7. PROGRAMMABLE CYCLIC CRANKING THAT ALLOWS UP TO SIX CRANK CYCLES AND UP TO 45 SECONDS OF CRANK TIME PER CRANK CYCLE.

B.3.8. FIRMWARE MUST PROVIDE ALTERNATOR PROTECTION FOR OVERLOAD AND SHORT-CIRCUIT MATCHED TO INDIVIDUAL ALTERNATOR AND DUTY CYCLE.

B.3.9. A ± 0.25% DIGITAL VOLTAGE REGULATOR MUST BE INCORPORATED INTO THE CONTROLLER SOFTWARE.

B.3.10. IT MUST BE POSSIBLE TO EXERCISE THE GENERATOR BY PROGRAMMING A RUNNING TIME INTO THE CONTROLLER. THIS FEATURE MUST ALSO BE ENABLED THROUGH THE PC SOFTWARE.

B.4. GENERATOR SYSTEM MONITORING REQUIREMENTS WITH ALL MONITORED FUNCTIONS MUST BE VIEWABLE ON THE DIGITAL DISPLAY.

B.4.1. THE FOLLOWING GENERATOR FUNCTIONS MUST BE MONITORED:

- 1. ALL OUTPUT VOLTAGES - SINGLE PHASE, THREE PHASE, LINE TO LINE, AND LINE TO NEUTRAL, 0.25% ACCURACY
- 2. ALL SINGLE PHASE AND THREE PHASE CURRENTS, 0.25% ACCURACY
- 3. OUTPUT FREQUENCY, 0.25% ACCURACY
- 4. POWER FACTOR BY PHASE WITH LEADING/LAGGING INDICATION
- 5. TOTAL INSTANTANEOUS KILOWATT LOADING AND KILOWATTS PER PHASE, 0.5% ACCURACY
- 6. KVARs TOTAL AND PER PHASE, 0.5% ACCURACY
- 7. KW TOTAL AND PER PHASE, 0.5% ACCURACY
- 8. KW HOURS
- 9. A DISPLAY OF PERCENT GENERATOR DUTY LEVEL - ACTUAL KW LOADING DIVIDED BY THE KW RATING

B.4.2. ENGINE PARAMETERS LISTED BELOW SHALL BE MONITORED:

- 1. COOLANT TEMPERATURE BOTH IN ENGLISH AND METRIC UNITS
- 2. OIL PRESSURE IN ENGLISH AND METRIC UNITS
- 3. BATTERY VOLTAGE
- 4. RPM
- 5. LUBE OIL TEMPERATURE
- 6. LUBE OIL LEVEL
- 7. CRANKCASE PRESSURE
- 8. COOLANT LEVEL
- 9. COOLANT PRESSURE
- 10. FUEL PRESSURE*
- 11. FUEL TEMPERATURE
- 12. FUEL RATE
- 13. FUEL USED DURING THE LAST RUN
- 14. AMBIENT TEMPERATURE

B.4.3. OPERATIONAL RECORDS LISTED BELOW SHALL BE MONITORED SINCE SYSTEM START-UP MUST BE STORED IN THE CONTROLLER:

- 1. RUN TIME HOURS
- 2. RUN TIME LOADED
- 3. RUN TIME UNLOADED
- 4. NUMBER OF STARTS
- 5. FACTORY TEST DATE
- 6. LAST RUN DATA INCLUDING DATE, DURATION, AND WHETHER LOADED OR UNLOADED
- 7. KW HOURS

B.4.4. OPERATIONAL RECORDS LISTED BELOW MUST ALSO BE AVAILABLE IN A RESETTABLE FORM FOR MAINTENANCE PURPOSES:

- 1. RUN TIME HOURS
- 2. RUN TIME LOADED
- 3. RUN TIME UNLOADED
- 4. KILOWATT HOURS
- 5. DAYS OF OPERATION
- 6. NUMBER OF STARTS
- 7. START DATE AFTER RESET

B.4.5. THE CONTROLLER MUST STORE THE LAST ONE HUNDRED GENERATOR SYSTEM EVENTS WITH DATE AND TIME OF THE EVENT.

B.4.6. FOR MAINTENANCE AND SERVICE PURPOSES, THE FOLLOWING INFORMATION MUST BE STORED IN THE CONTROLLER AND SHALL BE DISPLAYED ON DEMAND:

- 1. MANUFACTURER'S MODEL AND SERIAL NUMBER
- 2. BATTERY VOLTAGE
- 3. GENERATOR SET KILOWATT RATING
- 4. RATED CURRENT
- 5. SYSTEM VOLTAGE

6. SYSTEM FREQUENCY
7. NUMBER OF PHASES

B.5. THE CONTROLLER MUST BE CAPABLE OF DETECTING THE FOLLOWING CONDITIONS, INDICATE IF THE CONDITION WILL SHUTDOWN THE GENERATOR OR PROVIDE A WARNING; AND ANNUNCIATE THE SITUATION USING WORDS AND PHRASES ON THE DIGITAL DISPLAY.

- B.5.1. WILL CAUSE A SYSTEM SHUTDOWN:
 - 1. AIR DAMPER TRIPPED (IF USED)
 - 2. CUSTOMER PROGRAMMED DIGITAL AUXILIARY INPUT ON (ANY OF THE 21 INPUTS AVAILABLE)
 - 3. CUSTOMER PROGRAMMED ANALOG AUXILIARY INPUT OUT OF BOUNDS (ANY OF 7 INPUTS FOR ECM EQUIPPED ENGINES AND 5 INPUTS FOR NON ECM ENGINES)
 - 4. EMERGENCY STOP
 - 5. HIGH COOLANT TEMPERATURE
 - 6. HIGH OIL TEMPERATURE
 - 7. CONTROLLER INTERNAL FAULT
 - 8. LOCKED ROTOR - FAIL TO ROTATE
 - 9. LOW COOLANT LEVEL
 - 10. LOW OIL PRESSURE
 - 11. MASTER SWITCH ERROR
 - 12. NFPA COMMON ALARM
 - 13. OVERCRANK
 - 14. OVERSPEED WITH USER ADJUSTABLE LEVEL: RANGE 65-70 HZ ON 60 HZ SYSTEMS
 - 15. GENERATOR OVERVOLTAGE WITH USER ADJUSTABLE LEVEL: RANGE 105% TO 135%
 - 16. OVERFREQUENCY WITH USER ADJUSTABLE LEVEL: RANGE 102% TO 140%
 - 17. UNDERFREQUENCY WITH USER ADJUSTABLE LEVEL: RANGE 80% TO 90%
 - 18. GENERATOR UNDERVOLTAGE WITH USER ADJUSTABLE LEVEL: RANGE 70% TO 95%
 - 19. COOLANT TEMPERATURE SIGNAL LOSS
 - 20. OIL PRESSURE GAUGE SIGNAL LOSS

- B.5.2. WILL CAUSE A WARNING BUT LEAVE GENERATOR RUNNING:
 - 1. BATTERY CHARGER FAILURE
 - 2. CUSTOMER PROGRAMMED DIGITAL AUXILIARY INPUT ON (ANY OF THE 21 INPUTS AVAILABLE)
 - 3. CUSTOMER PROGRAMMED ANALOG AUXILIARY INPUT ON (ANY OF THE 7 INPUTS AVAILABLE ON ECM ENGINES AND 5 INPUTS FOR NON ECM ENGINES)
 - 4. POWER SYSTEM SUPPLYING LOAD
 - 5. GROUND FAULT DETECTED - DETECTION BY OTHERS
 - 6. HIGH BATTERY VOLTAGE - LEVEL MUST BE USER ADJUSTABLE: RANGE 14.5 TO 16.5 VOLTS FOR 12-VOLT SYSTEMS AND 29-33 VOLTS FOR 24-VOLT SYSTEMS.
 - 7. HIGH COOLANT TEMPERATURE
 - 8. LOAD SHED
 - 9. LOSS OF AC SENSING
 - 10. UNDERFREQUENCY
 - 11. LOW BATTERY VOLTAGE - LEVEL MUST BE USER ADJUSTABLE: RANGE 10-12.5 VOLTS FOR 12-VOLT SYSTEMS AND 20-25 VOLTS FOR 24-VOLT SYSTEMS.
 - 12. LOW COOLANT TEMPERATURE
 - 13. LOW FUEL LEVEL OR PRESSURE
 - 14. LOW OIL PRESSURE
 - 15. NFPA COMMON ALARM
 - 16. OVERCURRENT
 - 17. SPEED SENSOR FAULT
 - 18. WEAK BATTERY
 - 19. ALTERNATOR PROTECTION ACTIVATED

B.6. INPUTS AND OUTPUTS

B.6.1. INPUTS

- 1. THERE SHALL BE 21 DRY CONTACT INPUTS THAT CAN BE USER-CONFIGURED TO SHUTDOWN THE GENERATOR OR PROVIDE A WARNING.
- 2. THERE SHALL BE 7 USER-PROGRAMMABLE ANALOG INPUTS FOR ECM ENGINES (5 FOR NON-ECM ENGINES) FOR MONITORING AND CONTROL.
 - a. EACH ANALOG INPUT CAN ACCEPT 0-5 VOLT ANALOG SIGNALS.
 - b. RESOLUTION MUST BE 1 PART IN 10,000.
 - c. EACH INPUT CAN BE PROGRAMMED TO PROVIDE UP TO TRIP VALUES - 2 WARNINGS AND 2 SHUTDOWNS.
 - d. IT MUST BE POSSIBLE TO VIEW THE ANALOG VALUE ON THE DISPLAY.
- 3. IT SHALL BE POSSIBLE TO DEFINE EACH USER CONFIGURED INPUT USING WORDS OR PHASES THAT WILL BE VIEWABLE ON THE DIGITAL DISPLAY. ADDITIONAL STANDARD INPUTS REQUIRED:
 - a. INPUT FOR AN EXTERNAL GROUND FAULT DETECTOR. DIGITAL DISPLAY MUST SHOW "GROUND FAULT" UPON DETECTION OF A GROUND FAULT
 - b. RESET OF SYSTEM FAULTS
 - c. REMOVE TWO WIRE START
 - d. REMOTE EMERGENCY STOP
 - e. IDLE MODE ENABLE

B.6.2. OUTPUTS

- 1. ALL NFPA 110 LEVEL 1 OUTPUTS MUST BE AVAILABLE.
- 2. THERE SHALL BE 30 OUTPUTS AVAILABLE FOR INTERFACING TO OTHER EQUIPMENT.
 - a. ANY OF THESE OUTPUTS SHALL BE ABLE TO BE USER-CONFIGURED FROM A LIST OF OVER 25 FUNCTIONS AND FAULTS.
 - b. THESE OUTPUTS SHALL DRIVE OPTIONAL DRY CONTACTS.
 - c. A PROGRAMMABLE USER-DEFINED COMMON FAULT OUTPUT WITH OVER 40 SELECTIONS SHALL BE AVAILABLE.

CONTINUED ON DRAWING E-4

08/28/13	ISSUED FOR BID	MF
05/31/13	ISSUED FOR OWNER REVIEW	MF
01/02/08	ISSUED FOR PRICING	KW
DATE	REV	DESCRIPTION
Southport Associates		
Southport Engineering Associates, PC 11 Bailey Avenue Ridgefield, CT 06877		
Tel.: (203)431-6844 Fax: (203)431-6877		
PROJECT: CITY OF NORWALK CITY HALL POWER GENERATOR NORWALK, CT		
DRAWING TITLE: ELECTRICAL DIESEL GENERATOR SPECIFICATIONS		
SCALE: NONE	DRAWN BY: KWS/JG	DRAWING NO:
DATE: 10/09/07	CHECKED BY: MFF	
PROJECT NO: 064008	APPROVED BY: MFF	E-3

8.7. SYSTEM PROGRAMMING

- 8.7.1. IT MUST BE POSSIBLE TO DISABLE PROGRAMMING SO THE SYSTEM CAN ONLY BE MONITORED.
- 8.7.2. IT SHALL BE POSSIBLE TO PROGRAM THE CONTROLLER WITH THE KEYPAD OR USING A PERSONAL COMPUTER.
- 8.7.3. PROGRAMMING ACCESS IS TO BE ENABLED ONLY AT THE CONTROLLER AND MUST BE PASSWORD PROTECTED.
- 8.7.4. THE FOLLOWING MUST BE PROGRAMMABLE FROM THE CONTROLLER KEYPAD:
 - 1. TIME DELAY SETTINGS
 - a. GENERATOR RUN TIME (0 TO 72 HOURS) – EXERCISE
 - b. LOAD SHED
 - c. ENGINE START
 - d. COOLDOWN
 - e. OVERVOLTAGE AND UNDERVOLTAGE DELAYS
 - f. STARTING AID
 - g. CRANK ON AND CRANK PAUSE TIME
 - h. IDLE TIME
 - 2. TRIP POINT SETTINGS
 - a. HIGH BATTERY VOLTAGE
 - b. LOW BATTERY VOLTAGE
 - c. OVERSPEED
 - d. UNDERFREQUENCY
 - e. OVERFREQUENCY
 - f. OVERVOLTAGE
 - g. UNDERVOLTAGE
 - h. LOAD SHED

8.8. COMMUNICATIONS

- 8.8.1. THE CONTROLLER MUST COMMUNICATE TO THE ECMS FOR CONTROL, MONITORING AND DIAGNOSTICS.
- 8.8.2. INDUSTRY STANDARD MODBUS RTU COMMUNICATION SHALL BE AVAILABLE.
 - 1. MODBUS MASTER WILL BE ABLE TO MONITOR CONTROLLER DATA.
 - 2. MODBUS MASTER WILL BE ABLE TO ALTER PARAMETERS.
 - 3. MODBUS MASTER MUST BE CAPABLE OF STARTING AND STOPPING THE GENERATOR.

8.9. COMMUNICATIONS & PERSONAL COMPUTER SOFTWARE

- 8.9.1. THE CONTROLLER MUST HAVE THE CAPABILITY TO COMMUNICATE TO A PERSONAL COMPUTER (IBM OR COMPATIBLE) RUNNING WINDOWS PROGRAM. BOTH RS-232 AND RS-485 COMMUNICATION FORMATS SHALL BE AVAILABLE.
- 8.9.2. A VARIETY OF CONNECTIONS SHALL BE AVAILABLE BASED ON REQUIREMENTS:
 - 1. A SINGLE CONNECTION TO A PC. A CABLE LENGTH OF UP TO 4000 FEET MUST BE SUPPORTED.
 - 2. MULTIPLE DEVICES AT A SINGLE LOCATION CONNECTED TO A PC.
 - 3. A SINGLE CONNECTION FROM A DEVICE TO A PC OVER PHONE LINES.
 - 4. MULTIPLE DEVICES TO A PC OVER PHONE LINES.
- 8.9.3. WHEN EQUIPPED WITH COMMUNICATIONS MODULES, TRANSFER SWITCHES AND POWER MONITORS ALONG WITH GENERATOR CONTROLLERS; THE CONTROLLER MUST BE ABLE TO BE CONNECTED TO THE SAME COMMUNICATION NETWORK WITH NO ADDITIONAL INTERFACES BEING REQUIRED.
- 8.9.4. THE CONTROLLER MUST HAVE THE CAPABILITY TO CONNECT UP TO 128 DEVICES (GENSET CONTROLS AND TRANSFER SWITCHES) ON A SINGLE NETWORK MUST BE SUPPORTED.
- 8.9.5. CABLING IS TO BE DEVICE-TO-DEVICE DESIGN IN A DAISY-CHAIN FASHION WITH NO LIMITATION ON DEVICE LOCATIONS WITHIN THE NETWORK.
- 8.9.6. THE NETWORK MUST BE SELF-POWERED. NO POWER WIRING BETWEEN DEVICES IS ALLOWED.
- 8.9.7. A SINGLE SOFTWARE PACKAGE WITH THE FOLLOWING CAPABILITIES IS REQUIRED:
 - 1. ANY COMBINATION OF TRANSFER SWITCHES AND GENERATOR CONTROLS.
 - 2. UP TO 128 DEVICES AT A SINGLE SITE MUST BE SUPPORTED.
 - 3. THE SAME SOFTWARE PACKAGE MUST SUPPORT COMMUNICATIONS OVER PHONE LINES. THE SOFTWARE SHALL ALLOW COMMUNICATIONS WITH UP TO 128 SITES (PHONE NUMBERS) INCLUDING PHONE NUMBER FIELDS LARGE ENOUGH FOR INTERNATIONAL COMMUNICATION.
 - 4. ACCESS TO INDIVIDUAL DEVICES BY THE SOFTWARE SHALL BE PROTECTED BY PASSWORD.
 - 5. TO SUPPORT FUTURE EXPANSION, IT MUST BE POSSIBLE TO ADD UP TO 128 DEVICES (ATS AND GENERATOR SET CONTROLLERS) AND UP TO 128 SITES WITH THE INSTALLED SOFTWARE. CHANGING TO A DIFFERENT SOFTWARE PACKAGE IS NOT ACCEPTABLE.
- 8.9.8. ALL DISPLAYS, DATA INQUIRES AND PROGRAM FUNCTIONS ALLOWED ON THE CONTROLLERS, BOTH GENERATOR AND ATS, SHALL ALSO BE AVAILABLE THROUGH THE SOFTWARE.
- 8.9.9. A SINGLE SOFTWARE SCREEN MUST BE CAPABLE OF DISPLAYING DATA FROM MULTIPLE DEVICES SIMULTANEOUSLY.
- 8.9.10. IT SHALL BE POSSIBLE TO RESET SHUTDOWN FAULTS, AND RESTART THE GENERATOR USING THE SOFTWARE.
- 8.9.11. IF A TRANSFER SWITCH IS USED, IT MUST BE POSSIBLE TO START THE GENERATOR AND TRANSFER THE LOADS TO THE GENERATOR.

9. ACCESSORIES

9.1. THE FOLLOWING ACCESSORIES SHALL BE INSTALLED:

- 9.1.1. BLOCK HEATER, 4000-WATT, 208 VOLT, 1 PHASE AC. THERMOSTATICALLY CONTROLLED AND SIZED TO MAINTAIN ENGINE COOLANT AT PROPER TEMPERATURE TO MEET REQUIREMENTS OF NFPA-110 REGULATION. THE BLOCK HEATER SHALL INCLUDE QUARTER TURN ISOLATION VALVES IN BOTH THE INLET AND OUTLET.
- 9.1.2. MAIN LINE CIRCUIT BREAKER AS INDICATED PREVIOUSLY, INCLUDING LSI TRIP SETTINGS.
- 9.1.3. OIL DRAIN EXTENSION FOR MAINTENANCE.
- 9.1.4. BATTERY RACKS, BATTERY CABLES AND 12-VOLT BATTERIES CAPABLE OF DELIVERING THE MANUFACTURER'S RECOMMENDED MINIMUM COLD-CRANKING AMPS REQUIRED AT 0°F, PER SAE STANDARD J-537.
- 9.1.5. 10-AMPERE AUTOMATIC FLOAT AND EQUALIZE BATTERY CHARGERS WITH +/- 1% CONSTANT VOLTAGE REGULATION FROM NO LOAD TO FULL LOAD OVER +/-10% AC INPUT LINE VARIATION THAT IS CURRENT-LIMITED DURING ENGINE CRANKING AND SHORT-CIRCUIT CONDITIONS, TEMPERATURE COMPENSATED FOR AMBIENTS FROM -400°C TO +600°C, 5% ACCURATE VOLTMETER AND AMMETER, FUSED, REVERSE POLARITY AND TRANSIENT PROTECTED. OPTIONAL ALARM CIRCUITBOARD TO MEET THE REQUIREMENTS OF NFPA 110 FOR LOW BATTERY VOLTAGE, HIGH BATTERY VOLTAGE AND BATTERY CHARGER MALFUNCTION.
- 9.1.6. GAS-PROOF, SEAMLESS, STAINLESS STEEL, FLEXIBLE EXHAUST BELLWS WITH FLANGED CONNECTION. THE ENGINE EXHAUST SILENCER(S) SHALL BE COATED TO BE

TEMPERATURE AND RUST RESISTANCE WITH INTEGRAL CONDENSATE DRAIN RATED FOR SUPER CRITICAL APPLICATION. RAIN CAPS SHALL BE PROVIDED ON ALL EXHAUST OUTLETS.

- 9.1.7. TWO FLEXIBLE FUEL LINES RATED 3000°F AND 100 PSI ENDING IN PIPE THREAD.
- 9.1.8. MINIMUM OF TEN (10) FORM "C" ADDRESSABLE RELAY CONTACTS FOR GENERATOR ALARM INTERFACE WITH CUSTOMER BMS OR BUILDING ALARM SYSTEM.
- 9.2. THE FOLLOWING ACCESSORIES SHALL BE SUPPLIED LOOSE:
 - 9.2.1. AN 18-LIGHT REMOTE ANNUNCIATOR WHICH SHALL MONITOR CONTROLLER FUNCTIONS PLUS LINE POWER AND GENERATOR POWER MONITORING WITH AN INTEGRAL LAMP TEST AND HORN SILENCER SWITCH SHALL BE INCLUDED, AS REQUIRED TO MEET NFPA 110.

10. GENERATOR SOUND-ATTENUATING ENCLOSURES

- 10.1. PROVIDE A WEATHERPROOF, SOUND-ATTENUATING ENCLOSURE WHICH SHALL LIMIT THE SOUND LEVEL TO LOWER OF TWO FOLLOWING LEVELS: NO MORE THAN 85 DBA WHEN MEASURED AT 3 FEET FROM ANY SIDE, TOP OR BOTTOM, INCLUDING ENTRY DOORS, HOT GAS DISCHARGES AND ANY PENETRATIONS FOR CONDUITS ETC., UNDER ALL OPERATING CONDITIONS; OR 5 DBA ABOVE THE AVERAGE STREET NOISE LEVEL AT THE SIDE OF THE EAST AVENUE (PROPERTY LINE).
- 10.2. THE ENCLOSURE SHALL BE DESIGNED TO REMAIN STRUCTURALLY INTACT DURING NORMAL TRANSPORT AND RIGGING WITH NO LOSS OF SHAPE OR WEATHER INTEGRITY; AND SHALL BE CONSTRUCTED AT A MINIMUM AS FOLLOWS:
 - 10.2.1. WALLS ARE FULLY INSULATED MODULAR TYPE CONSTRUCTION.
 - 1. ALL PANEL EXTERIOR SURFACES SHALL BE FINISHED IN THE OWNER'S CUSTOM COLOR SELECTION PASSED ON PPG PAINT FINISH TO BE SELECTED PRIOR TO RELEASE FOR MANUFACTURING.
 - 2. ALL INTERIOR SURFACES SHALL BE PERFORATED ALUMINUM (0.032") MILL FINISH (220A).
 - 3. EACH PANEL SHALL HAVE FULL FRAME OF 14-GAUGE AND STUDS NO MORE THAN 24 INCHES ON CENTERS. STIFF-ENDED WALL PANELS ARE NOT TO EXCEED 24-INCH WIDTH.
 - 4. THE PANEL CORES ARE TO BE 100% FILLED WITH MINERAL FIBER SOUND-ABSORBING MATERIALS HAVING A FLAME SPREAD OF 10 OR LESS WITH FUEL CONTRIBUTED AS 0 AND SMOKE DEVELOPED AS 0.
 - 10.2.2. BASE SHALL BE CONSTRUCTED OF STRUCTURAL STEEL DESIGNED FOR MINIMAL DEFLECTION DURING TRANSPORTATION AND RIGGING. THE STEEL BASE SHALL BE FURNISHED WITH "I" BEAMS SIZED AND SPACED AS REQUIRED.
 - 10.2.3. ROOF SHALL BE CONSTRUCTED WITH 12-GAUGE STEEL "C" PANELS WITH PERFORATED INTERIOR AND CORE AS ABOVE.
 - 10.2.4. DOOR ASSEMBLIES SHALL BE HUNG IN A WELDED 4-INCH THICK MODULAR FRAME ASSEMBLY. THE DOOR LEAF EXTERIORS SHALL BE OF THE SAME 14-GAUGE CONSTRUCTION AS THE WALL PANELS. EACH DOOR SHALL HAVE THREE (3) STAINLESS STEEL HINGES. DOOR LATCHES SHALL BE CHROME-PLATED HEAVY-DUTY STEEL FOR SEVERE SERVICE, AND HAVE ROLLER CATCHES WITH ADJUSTABLE STRIKER PLATE. DOOR ASSEMBLIES SHALL HAVE ACOUSTIC RATING EQUAL TO THE GENERATOR ENCLOSURE.
- 10.3. THE ENCLOSURE SHALL WITHSTAND A RIGIDITY WIND TEST EQUAL TO 115 MPH AND BE CAPABLE OF SUPPORTING A ROOF LOAD OF 50 LBS PER SOFT MINIMUM, IN ADDITION TO OTHER ROOF MOUNTED ELEMENTS.
- 10.4. THE MANUFACTURER SHALL SUBMIT DETAILS OF CONSTRUCTION MATERIALS AND METHODS WITH OCTAVE BAND CALCULATIONS DETAILING THE PERFORMANCE OF EACH ELEMENT AND SHOWING COMPLIANCE WITH THE ACOUSTICAL OBJECTIVES.
- 10.5. THE ENCLOSURE SHALL BE SIZED WITH REQUIRED MINIMUM WORKING CLEARANCES AROUND GEN-SET FRAME AND OTHER ELECTRICAL EQUIPMENT LOCATED INSIDE.
- 10.6. THE ENCLOSURE SHALL BE PROVIDED WITH THE FOLLOWING:
 - 10.6.1. ACCESS HATCHES AS REQUIRED FOR INSPECTION AND MAINTENANCE OF EACH MOTORIZED SHUTTER MECHANISM AS WELL AS ANY OTHER DEVICE REQUIRING MAINTENANCE ACCESS.
 - 10.6.2. FUEL SUPPLY AND RETURN SHALL BE COMPLETE INSIDE OF ENCLOSURE. THE FUEL OIL RETURN LINE SHALL BE EQUIPPED WITH A CHECK VALVE AS PREVENTION FROM LOSS OF PRIME AS WELL AS A GATE VALVE FOR UNIT ISOLATION. BOTH SUPPLY AND RETURN PIPING SHALL BE EQUIPPED WITH STAINLESS STEEL FLEXIBLE CONNECTIONS. FUEL OIL PIPE TO BE BLACK SEAMLESS STEEL A53 SCHEDULE 40 WITH MALLEABLE IRON FITTINGS. DEVICES SHALL BE INSTALLED TO PREVENT LOSS OF PRIME AND TO PREVENT SIPHONING.
 - 10.6.3. VENTILATION AIR INTAKE AND DISCHARGE SYSTEMS WITH SOUND TRAPS OF ADEQUATE SIZE TO ENSURE MINIMUM AIR RESTRICTION TO DIESEL ENGINE-GENERATOR.
 - 10.6.4. PROVIDE ADEQUATELY SIZED CONDUIT STUB-UP AREAS IN FLOOR OF ENCLOSURE FOR GENERATOR POWER CONDUITS, ENGINE-GENERATOR CONTROL WIRING AND ENCLOSURE AUXILIARY 120/208 VOLT PANEL.
 - 10.6.5. A MINIMUM OF FOUR STEEL LIFTING RINGS SHALL BE WELDED AND BOLTED TO ASSEMBLY FOR THE MINIMUM COMBINED LIFTING WEIGHT.

11. ENCLOSURE FUEL SYSTEM

- 11.1. A 24-HOUR SUB-BASE, UL LISTED, DOUBLE-WALL DIESEL FUEL DAY TANK SHALL BE PROVIDED. THE TANK WILL BE SET ON SADDLES WITHIN AN APPROVED SPILL BASIN. TANK AND BASIN WILL BE AS REQUIRED BY UL-142. TANK SHALL HAVE A UL LABEL.
 - 11.1.1. THE TANK WILL BE FURNISHED WITH ALL REQUIRED CONNECTIONS INCLUDING VENT, EMERGENCY VENT, FILL, GAUGE, FUEL SUPPLY, FUEL RETURN AND LOW FUEL CONTACTS AND ALARM. FUEL SUPPLY AND RETURN TO BE AT LEAST 24" APART OR HAVE AN INTEGRAL SEPARATING Baffle.
 - 11.1.2. RUPTURE ALARM CONTACTS SHALL BE PROVIDED IN THE SPACE BETWEEN THE INNER AND OUTER WALLS OF THE TANK AND SHALL ANNUNCIATE AT THE GENERATOR CONTROLLER. THE SPILL BASIN SHALL HAVE A FLOAT SWITCH FOR ALARM AND A DRAIN. AN ADDITIONAL RUPTURE ALARM CONTACT SHALL BE PROVIDED TO INTERFACE WITH THE FUEL TRANSFER SYSTEM IF SPECIFIED ELSEWHERE.
 - 11.1.3. THE TANK IS TO BE CLEANED, PRESSURE WASHED AND FINISHED. INTERIOR FINISH TO BE SOLVENT BASED RUST PREVENTATIVE. EXTERIOR TO BE COLORED RED PRIME. TANK IS TO BE PRESSURE TESTED TO 3-5 PSI AS PER UL 142.
- 11.2. ALL FUEL PIPING WILL BE SCHEDULE 40 PVC (NO GALVANIZED). PIPE TERMINATIONS WILL BE MADE TO THE ENGINES FLEXIBLE CONNECTIONS. PIPING SHALL BE INSTALLED SO AS TO PREVENT TANK OVERFLOW, SPILLAGE OR SIPHONING.
- 11.3. LUBE OIL AND COOLANT DRAIN PIPING WILL BE EXTENDED TO THE EXTERIOR OF THE ENCLOSURE. A GATE VALVE WILL BE PROVIDED. A PIPE CAP AND NAMETAG WILL BE INSTALLED AT THE ENCLOSURE EXTERIOR. CRANK CASE VENTS WILL BE MANIFOLDED AND EXTENDED TO ENCLOSURE EXTERIOR.

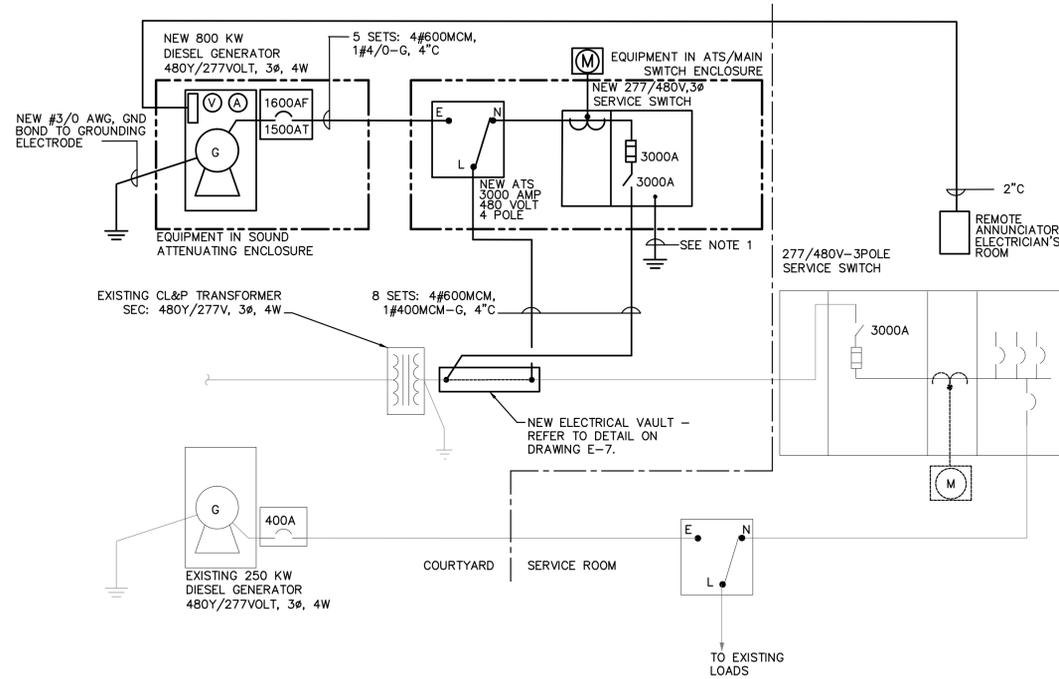
12. ENCLOSURE VENTILATION

12.1. VENTILATION AIR FOR THE ENCLOSURE IS REQUIRED FOR COMBUSTION AIR, RADIATOR COOLING AIR AND FOR COMFORT VENTILATION AIR.

- 12.1.1. THE AIR INLET SHALL BE A WEATHERPROOF ACOUSTIC HOOD WITH BIRD SCREEN WITH MOTORIZED SHUTTERS INSTALLED INSIDE THE ACOUSTIC HOOD.
- 12.1.2. THE AIR OUTLET SHALL HAVE FAIL-SAFE, GRAVITY TYPE SHUTTERS WITH A PROTECTIVE HOOD/LOUVER.
- 12.2. ALL SHUTTERS SHALL BE ALUMINUM CONSTRUCTION WITH BLADE SEALS.
- 13. TRAINING
 - 13.1. PROVIDE SERVICES OF A FACTORY-TRAINED REPRESENTATIVE TO INSTRUCT BUILDING MAINTENANCE PERSONNEL ON PROPER OPERATING AND MAINTENANCE PROCEDURES. PROVIDE A MINIMUM OF 8 HOURS OF TRAINING.
- 14. GROUNDING
 - 14.1. PROVIDE EQUIPMENT GROUNDING CONNECTIONS FOR GENERATOR AS INDICATED ON THE CONTRACT DRAWINGS.

END OF SPECIFICATIONS

08/28/13	ISSUED FOR BID	MF
05/31/13	ISSUED FOR OWNER REVIEW	MF
01/02/08	ISSUED FOR PRICING	KW
DATE	REV	DESCRIPTION
Southport Associates		
Southport Engineering Associates, PC 11 Bailey Avenue Ridgefield, CT 06877		
Tel.: (203)431-6844 Fax: (203)431-6877		
PROJECT: CITY OF NORWALK CITY HALL POWER GENERATOR NORWALK, CT		
DRAWING TITLE: ELECTRICAL DIESEL GENERATOR SPECIFICATIONS		
SCALE: NONE	DRAWN BY: KW/SJG	DRAWING NO:
DATE: 10/09/07	CHECKED BY: MFF	
PROJECT NO: 064008	APPROVED BY: MFF	E-4

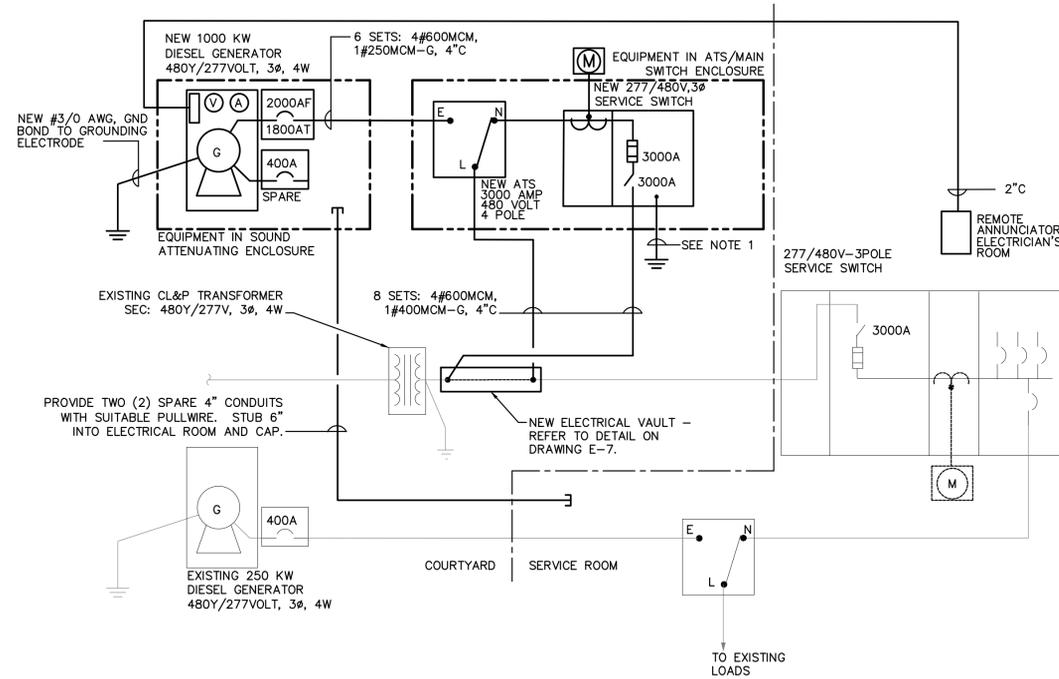


1 Electrical Emergency Power System Diagram - Base Bid Design

SCALE: None

NOTES:

- REFER TO ELECTRICAL SERVICE GROUNDING AND BONDING DETAIL ON THIS DRAWING FOR INFORMATION AND REQUIREMENTS.

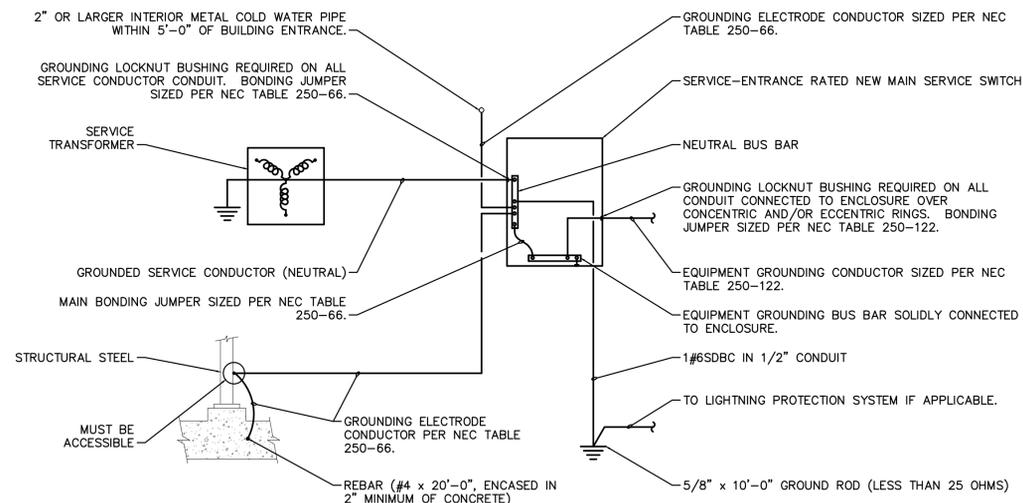


2 Electrical Emergency Power System Diagram - Alternate Design

SCALE: None

NOTES:

- REFER TO ELECTRICAL SERVICE GROUNDING AND BONDING DETAIL ON THIS DRAWING FOR INFORMATION AND REQUIREMENTS.
- PROVIDE ALTERNATE PRICING FOR ALTERNATIVE LARGER GENERATOR AND ASSOCIATED ELECTRICAL WORK.



3 Electrical Service Grounding and Bonding Detail

SCALE: None

NOTES:

- ALL SERVICE GROUNDING/BONDING SHALL COMPLY WITH ARTICLE 250 OF THE NEC 2008 EDITION.

08/28/13	ISSUED FOR BID	MF
05/31/13	ISSUED FOR OWNER REVIEW	MF
01/02/08	ISSUED FOR PRICING	KW
DATE	REV	DESCRIPTION
		BY

Southport Associates

Southport Engineering Associates, PC
 11 Bailey Avenue
 Ridgefield, CT 06877
 Tel.: (203)431-6844
 Fax: (203)431-6877

PROJECT: CITY OF NORWALK
 CITY HALL POWER GENERATOR
 NORWALK, CT

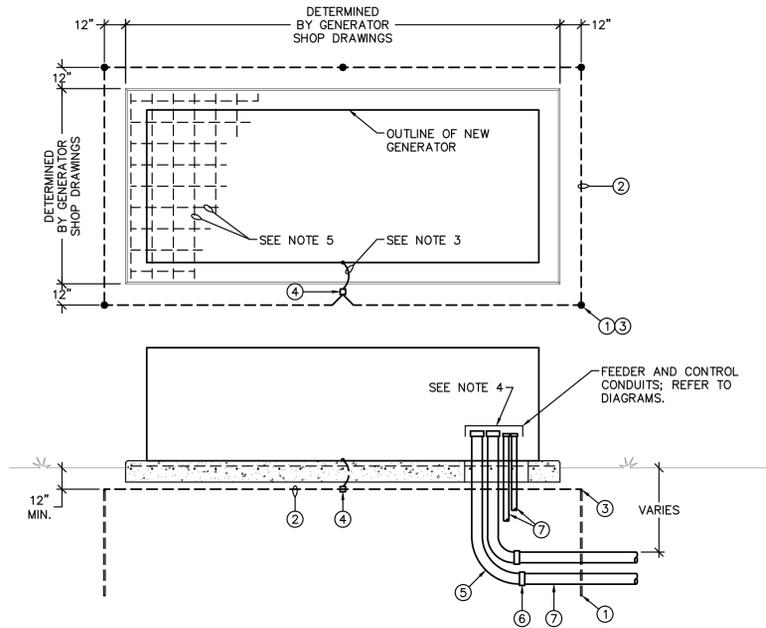
DRAWING TITLE:
**ELECTRICAL DIAGRAMS
 AND DETAILS**

SCALE: NONE	DRAWN BY: KW/SJG	DRAWING NO:
DATE: 10/09/07	CHECKED BY: MFF	
PROJECT NO: 064008	APPROVED BY: MFF	E-6

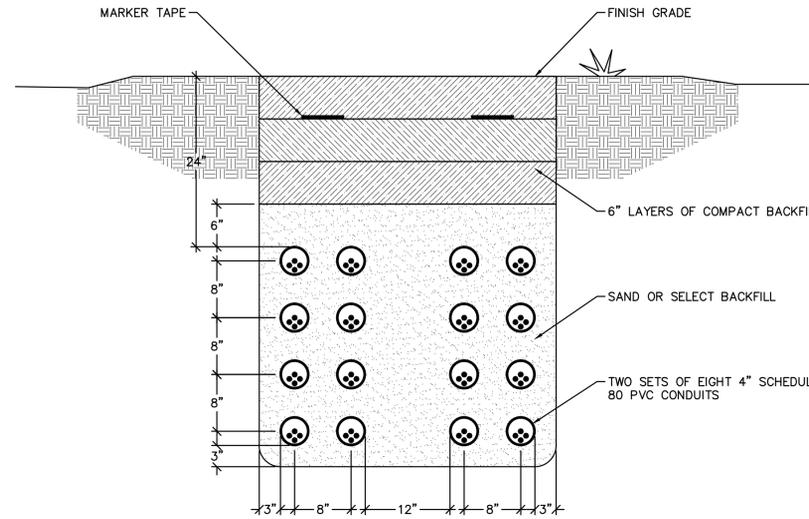
NOTES:

- TOP OF FOUNDATION TO BE SMOOTH AND LEVEL. FINAL GRADE SHALL SLOPE AWAY FROM PAD.
- WHEN INSTALLING CONDUIT, DISTURB GROUND IN FOUNDATION AREA AS LITTLE AS POSSIBLE. WHERE POSSIBLE, DO NOT PLACE CONDUIT UNDER FOUNDATION.
- 1" RIGID GALVANIZED STEEL CONDUIT TO BELOW GRADE UNDER PAD FOR #4/0 COPPER GROUND WIRE FROM GENERATOR ENCLOSURE OR GROUND BAR, WHERE PROVIDED, TO GROUNDING GRID.
- FIELD VERIFY EXACT LOCATIONS OF CONDUIT ENTRIES INTO GENERATOR ENCLOSURE. REFER TO ELECTRICAL POWER SYSTEM RISER DIAGRAM FOR ALL CONDUIT SIZES AND QUANTITIES.
- REINFORCING FOR EXTENDED PORTION OF GENERATOR PAD: #6 BARS 12" ON CENTERS BOTH WAYS.
- CONCRETE SHALL BE 3000 PSI AT 28 DAYS AND 1:2:3 MIXTURE WITH A MAXIMUM 4" SLUMP FOR GENERATOR PAD.

ITEM	DESCRIPTION
①	3/4" x 10'-0" COPPER GROUND ROD, MINIMUM OF ONE AT EACH CORNER AND ONE AT CENTER OF EXTENDED SIDE. INSTALL ADDITIONAL GROUND RODS AS REQUIRED TO OBTAIN LOW RESISTANCE GROUND OF 25 OHMS OR LESS.
②	#4/0 BARE COPPER CONDUCTOR, TYPICAL
③	GROUND ROD CLAMP, TYPICAL AT EACH GROUND ROD
④	#4/0 COPPER CADCWELDED
⑤	RIGID GALVANIZED STEEL CONDUIT THROUGH GENERATOR PAD TO BELOW GRADE WITH 90° RIGID GALVANIZED STEEL CONDUIT BEND
⑥	"GALVANIZED STEEL TO PVC" CONDUIT ADAPTER
⑦	SCHEDULE 80 PVC CONDUIT

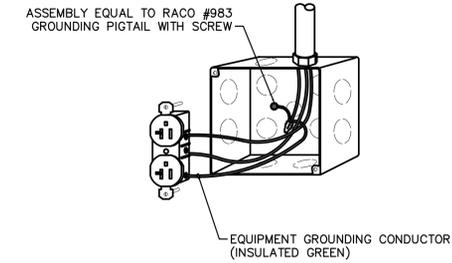


① Generator Grounding Grid Detail
Scale: None



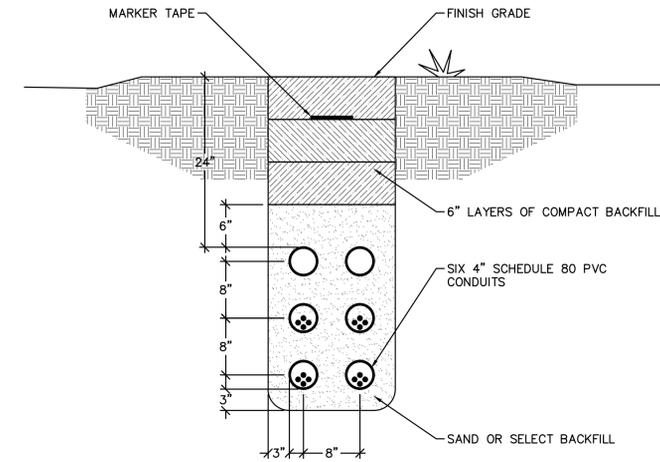
② Electrical Trench Detail
Scale: None

- NOTES:
- ALL ELBOWS AND CONDUIT ABOVE GRADE SHALL BE RIGID GALVANIZED STEEL.
 - REFER TO ELECTRICAL POWER SYSTEM SINGLE-LINE DIAGRAM FOR CONDUCTOR QUANTITIES AND TYPES.



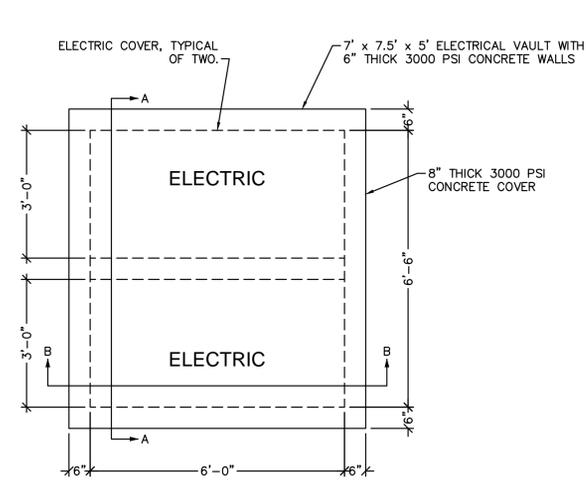
⑦ Device/Junction Box Grounding Detail
Scale: None

- NOTES:
- UTILIZE SAME GROUNDING METHOD FOR SWITCHES.



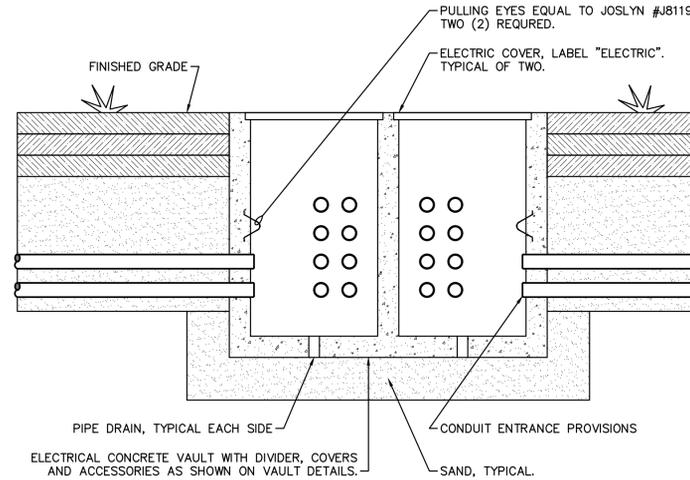
③ Electrical Trench Detail -
ATS/Main Switch Enclosure to Generator Enclosure
Scale: None

- NOTES:
- ALL ELBOWS AND CONDUIT ABOVE GRADE SHALL BE RIGID GALVANIZED STEEL.
 - REFER TO ELECTRICAL POWER SYSTEM SINGLE-LINE DIAGRAM FOR CONDUCTOR QUANTITIES AND TYPES.

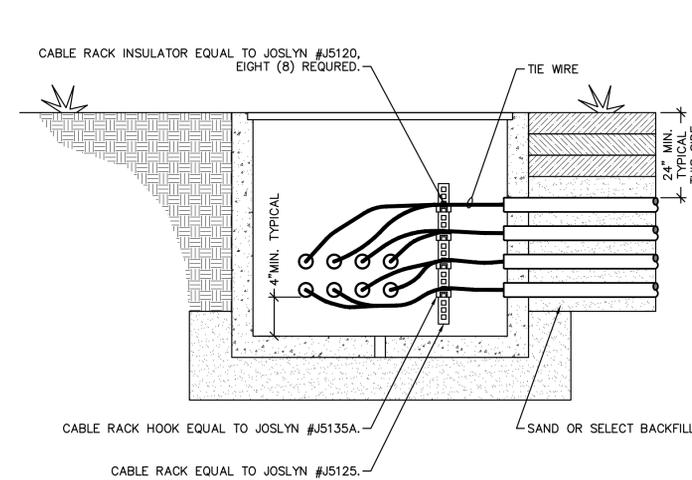


④ Electrical Vault Detail
Scale: None

- NOTES:
- REFER TO ELECTRICAL VAULT SECTION DETAILS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



⑤ Electrical Vault Section AA Detail
Scale: None



⑥ Typical Electrical Vault Section BB Detail
Scale: None

DATE	REV	DESCRIPTION	BY
08/28/13		ISSUED FOR BID	MF
05/31/13		ISSUED FOR OWNER REVIEW	MF
01/02/08		ISSUED FOR PRICING	KW

Southport Associates

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Tel.: (203)431-6844
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PROJECT: CITY OF NORWALK
CITY HALL POWER GENERATOR
NORWALK, CT

DRAWING TITLE: ELECTRICAL DETAILS

SCALE:	NONE	DRAWN BY:	SJG	DRAWING NO:
DATE:	10/09/07	CHECKED BY:	MFF	
PROJECT NO:	064008	APPROVED BY:	MFF	E-7

NOTE: SECTION 3 - GENERAL INFORMATION contains the City's Standard Terms and Conditions. You are responsible for obtaining a copy prior to bidding. If you do not have a revision dated 080813 or later on file you may obtain a copy over the Internet at <http://www.norwalkct.org> . Adobe Acrobat reader is required to view this document. If you do not have this software you may down load it for free from Adobe. A link to the Adobe site is provided. Document number 1006.

<http://www.norwalkct.org/documentcenter/view/865>

SECTION 4
CITY OF NORWALK GENERAL SPECIFICATIONS FOR CONSTRUCTION

(Note: Page numbering in this section is not sequential with other sections within this document)

NOTE: SECTION 4 contains the City's General Terms and Conditions for construction. You are responsible for obtaining a copy prior to bidding. If you do not have a revision dated 042011 or later on file you may download a copy from the Terms and Conditions section of our website at the Internet at <http://www.norwalkct.org> Document number 1008.

<http://www.norwalkct.org/documentcenter/view/866>

SECTION 5

PREVAILING WAGE ADDENDEUM

(Note: Page numbering in this section is not sequential with other sections within this document)

The Contractor shall weekly submit to the Director a certified payroll, which shall consist of a complete copy of its records relating to the wages and hours worked by each employee and a schedule of the occupation or work classification at which each mechanic, laborer or workman on the Project is employed during each work day and week. The submission shall be in such manner and form as the State Labor Commissioner requires and in compliance with the requirements of Public Act 93392. This weekly submission shall also include a statement signed by the employer (the Contractor) indicating the information set forth in Section 1(f) of Public Act 93-392."

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

**Minimum Rates and Classifications
for Building Construction**

ID# : B 18361

**Connecticut Department of Labor
Wage and Workplace Standards Division**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: 3345

Project Town: Norwalk

State#:

FAP#:

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk
City Hall

CLASSIFICATION

Hourly Rate

Benefits

1a) Asbestos Worker/Insulator (Includes application of insulating materials, protective coverings, coatings, & finishes to all types of mechanical systems; application of firestopping material for wall openings & penetrations in walls, floors, ceilings

35.00

27.41

1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7**

2) Boilermaker

35.24

25.01

As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	32.50	27.24 + a
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3b) Tile Setter	32.94	22.42
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3c) Terrazzo Mechanics and Marble Setters	31.69	22.35
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3d) Tile, Marble & Terrazzo Finishers	26.25	19.20
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3e) Plasterer	32.50	26.21
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-----LABORERS-----

As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

4) Group 1: Laborers (common or general), acetylene burners, carpenter tenders, concrete specialists, wrecking laborers, fire watchers.	26.40	17.15
4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofers/mixer/nozzleman, fence erector.	26.65	17.15
4b) Group 3: Jackhammer Operators/Pavement Breaker, mason tender (brick) and mason tender (cement/concrete)	26.90	17.15
4c) **Group 4: Pipelayers (Installation of water, storm drainage or sewage lines outside of the building line with P6, P7 license) (the pipelayer rate shall apply only to one or two employees of the total crew who primary task is to actually perform the mating of pipe sections) P6 and P7 rate is \$26.80	26.65	17.15
4d) Group 5: Air track operators, Sand blasters	27.15	17.15
4e) Group 6: Nuclear toxic waste removers, blasters	29.40	17.15

As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped)	27.40	17.15
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4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew	26.90	17.15
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4h) Group 9: Top men on open air caisson, cylindrical work and boring crew	26.40	17.15
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4i) Group 10: Traffic Control Signalman	16.00	17.15
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5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers.	30.45	21.65
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5a) Millwrights	30.78	22.15
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As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	36.52	23.00+3% of gross wage
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7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	46.41	25.185+a+b
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-----LINE CONSTRUCTION-----

Groundman	24.99	6.5% + 9.75
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Linemen/Cable Splicer	45.43	6.5% + 16.20
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8) Glazier (Trade License required: FG-1,2)	34.18	17.75
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As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	33.50	28.98
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----OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer 2 drums or over, front end loader (7 cubic yards or over); work boat 26 ft. and over. (Trade License Required)	36.05	21.55 + a
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Group 2: Cranes (100 ton rate capacity and over); Backhoe/Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer). (Trade License Required)	35.73	21.55 + a
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Group 3: Excavator; Backhoe/Excavator under 2 cubic yards; Cranes (under 100 ton rated capacity), Grader/Blade; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade. (slopes, shaping, laser or GPS, etc.). (Trade License Required)	34.99	21.55 + a
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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper).	34.60	21.55 + a
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As of: Wednesday, October 02, 2013

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Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell) 34.01 21.55 + a

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller; Pile Testing Machine. 34.01 21.55 + a

Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer). 33.70 21.55 + a

Group 7: Asphalt roller, concrete saws and cutters (ride on types), vermeer concrete cutter, Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrell). 33.36 21.55 + a

Group 8: Mechanic, grease truck operator, hydroblaster; barrier mover; power stone spreader; welding; work boat under 26 ft.; transfer machine. 32.96 21.55 + a

Group 9: Front end loader (under 3 cubic yards), skid steer loader regardless of attachments, (Bobcat or Similar): forklift, power chipper; landscape equipment (including Hydroseeder). 32.53 21.55 + a

As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	30.49	21.55 + a
Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	30.49	21.55 + a
Group 12: Wellpoint operator.	30.43	21.55 + a
Group 13: Compressor battery operator.	29.85	21.55 + a
Group 14: Elevator operator; tow motor operator (solid tire no rough terrain).	28.71	21.55 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	28.30	21.55 + a

As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

Group 16: Maintenance Engineer/Oiler.	27.65	21.55 + a
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Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	31.96	21.55 + a
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Group 18: Power safety boat; vacuum truck; zim mixer; sweeper; (Minimum for any job requiring a CDL license).	29.54	21.55 + a
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-----PAINTERS (Including Drywall Finishing)-----

10a) Brush and Roller	30.62	17.75
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10b) Taping Only/Drywall Finishing	31.37	17.75
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As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

10c) Paperhanger and Red Label	31.12	17.75
10e) Blast and Spray	33.62	17.75
11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	39.31	26.27
12) Well Digger, Pile Testing Machine	33.01	19.40 + a
Rofer: Cole Tar Pitch	37.00	12.75 + a
Rofer: Slate, Tile, Composition, Shingles, Singly Ply and Damp/Waterproofing	35.50	12.75 + a

As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	43.41	31.90
---	-------	-------

16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9)	39.31	26.27
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-----TRUCK DRIVERS-----

17a) 2 Axle	27.88	18.27 + a
-------------	-------	-----------

17b) 3 Axle, 2 Axle Ready Mix	27.98	18.27 + a
-------------------------------	-------	-----------

17c) 3 Axle Ready Mix	28.03	18.27 + a
-----------------------	-------	-----------

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

17d) 4 Axle, Heavy Duty Trailer up to 40 tons	28.08	18.27 + a
17e) 4 Axle Ready Mix	28.13	18.27 + a
17f) Heavy Duty Trailer (40 Tons and Over)	28.33	18.27 + a
17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	28.13	18.27 + a
18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	39.76	19.87 + a
19) Theatrical Stage Journeyman	22.22	6.53

As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional \$1.25 per hour for truck drivers.*

***Note: Hazardous waste premium \$3.00 per hour over classified rate*

- Crane with 150 ft. boom (including jib) - \$1.50 extra
- Crane with 200 ft. boom (including jib) - \$2.50 extra
- Crane with 250 ft. boom (including jib) - \$5.00 extra
- Crane with 300 ft. boom (including jib) - \$7.00 extra
- Crane with 400 ft. boom (including jib) - \$10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyman instructing and supervising the work of each apprentice in a specific trade.

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

As of: Wednesday, October 02, 2013

Project: Supply And Installation Of An 850 KW Emergency Generator At Norwalk City Hall

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

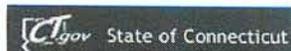
All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: Wednesday, October 02, 2013



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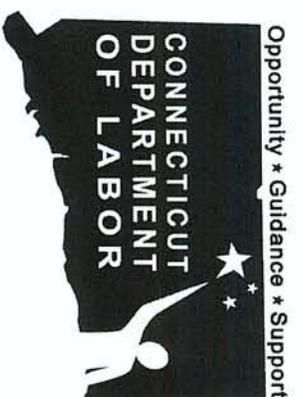
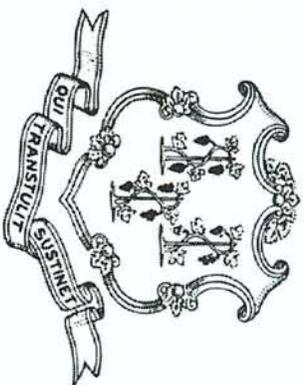
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PREVAILING WAGE BID PACKAGE

- [Prevailing Wage Law Poster](#) (PDF, 97KB)
- [Section 31-53b](#): Construction safety and Health Course. Proof of completion required for employees on public building projects. (PDF, 10KB)
 - [Informational Bulletin - The 10-Hour OSHA Construction Safety and Health Course](#) (PDF, 20KB)
- [Notice For All Mason Contractors](#) (PDF, 5KB)
- [CT General Statute 31-55a](#)
- [Contracting Agency Certification Form](#) (PDF, 89KB)
- [Contractor's Wage Certification Form](#) (PDF, 11KB)
- [Payroll Certification - Public Works Projects](#)
- [Occupational Classification Bulletin](#)
- **UPDATED!** [Footnotes](#) (Rev. 07/13) (PDF, 93KB)

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THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages
CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (g) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2009, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least \$100,000)

- (1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);
- (2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;
- (3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least \$100,000;
- (4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;
- (5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;
- (6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;
- (7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;
- (8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;
- (9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

- (10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;
- (11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;
- (12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;
- (13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;
- (14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and
- (15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.
- (16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of <http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm>; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTIMATELY ARISE CONCERNING THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice
To All Mason Contractors and Interested Parties
Regarding Construction Pursuant to Section 31-53 of the
Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.



CONNECTICUT DEPARTMENT OF LABOR

[Home](#)[About Us](#)[FAQ](#)[News and Notices](#)[Contact Us](#)[Unemployment Benefits On-Line](#)[Job Seekers](#)[Employers](#)[Labor Market Information](#)[Directions/Office Information](#)**STATUTE 31-55a** [print Statute 31-55a](#) (PDF, 383KB)**- SPECIAL NOTICE -****To: All State and Political Subdivisions, Their Agents, and Contractors****Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.**

⇒ Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31 -53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bid on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the **contractor's** responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's Web Site. The annual adjustments will be posted on the Department of Labor Web page: <http://www.ct.gov/dol>. For those without Internet access, please contact the division listed below.
- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.
- Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

 Any questions should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109 at (860) 263-6543.

[Workplace Laws](#)

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STATUTE 31-55a

- SPECIAL NOTICE -

To: All State and Political Subdivisions, Their Agents, and Contractors

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Any questions should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109 at (860)263-6790.

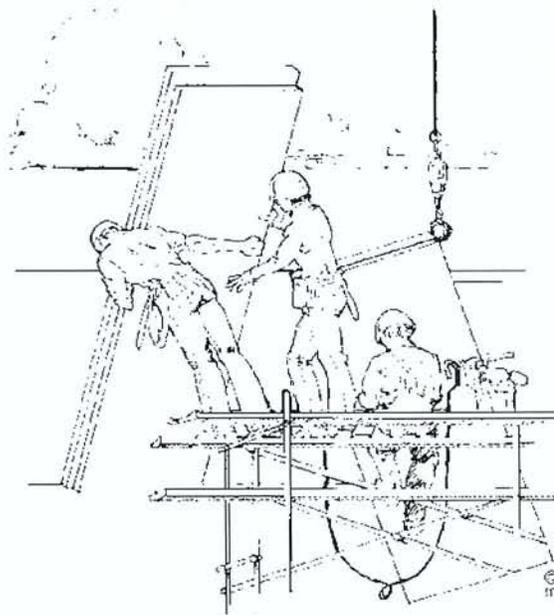
~NOTICE~

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached "Contracting Agency Certification Form" to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

 Inquiries can be directed to (860)263-6543.



CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION
CONTRACT COMPLIANCE UNIT

CONTRACTING AGENCY CERTIFICATION FORM

I, _____, acting in my official capacity as _____,
authorized representative title

for _____, located at _____,
contracting agency address

do hereby certify that the total dollar amount of work to be done in connection with

_____, located at _____,
project name and number address

shall be \$ _____, which includes all work, regardless of whether such project
consists of one or more contracts.

CONTRACTOR INFORMATION

Name: _____

Address: _____

Authorized Representative: _____

Approximate Starting Date: _____

Approximate Completion Date: _____

Signature

Date

Return To: Connecticut Department of Labor
Wage & Workplace Standards Division
Contract Compliance Unit
200 Folly Brook Blvd.
Wethersfield, CT 06109

Date Issued: _____

**CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION**

CONTRACTORS WAGE CERTIFICATION FORM

I, _____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

Street

City

and all of its subcontractors will pay all workers on the

Project Name and Number

Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

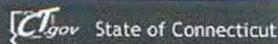
Signed

Subscribed and sworn to before me this _____ day of _____, 20 ____

Notary Public

Return to:
Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Date of Schedule Issued: _____



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In accordance with [Connecticut General Statutes, 31-53](#) Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.

Note: Once you have downloaded these forms and are ready to print them out, set the print function on your PC to the horizontal print orientation.

Note2: Please download both the Payroll Certification for Public Works Projects **and** the Certified Statement of Compliance for a complete package. The Certified Statement of Compliance appears on the same page as the Fringe Benefits Explanation page.

Announcement: The Certified Payroll Form WWS-CPI can now be completed on-line!

- [Certified Payroll Form WWS-CPI](#) (PDF, 727KB)
- [Sample Completed Form](#) (PDF, 101KB)

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***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

- 1) Medical or hospital care _____ 4) Disability _____
- 2) Pension or retirement _____ 5) Vacation, holiday _____
- 3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____ of _____, (hereafter known as

Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

- a) The records submitted are true and accurate;
- b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;
- c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);
- d) Each such employee of the Employer is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;
- e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and
- f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such employee's name first appears.

(Signature) (Title) Submitted on (Date)

Section B: Applies to CONNDOT Projects ONLY

That pursuant to CONNDOT contract requirements for reporting purposes only, all employees listed under Section B who performed work on this project are not covered under the prevailing wage requirements defined in Connecticut General Statutes Section 31-53.

(Signature) (Title) Submitted on (Date)

Note: CTDOL will assume all hours worked were performed under Section A unless clearly delineated as Section B WWS-CPI as such. Should an employee perform work under both Section A and Section B, the hours worked and wages paid must be segregated for reporting purposes.

*****THIS IS A PUBLIC DOCUMENT***
DO NOT INCLUDE SOCIAL SECURITY NUMBERS**

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

- 1) Medical or hospital care Blue Cross 4) Disability _____
- 2) Pension or retirement _____ 5) Vacation, holiday _____
- 3) Life Insurance Utopia 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of 9/26/09

I, Robert Craft of XYZ Corporation, (hereafter known as Employer) in my capacity as Owner (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

- a) The records submitted are true and accurate;
- b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;
- c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);
- d) Each such employee of the Employer is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;
- e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and
- f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA-The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such employee's name first appears.

Robert Craft owner 10/2/09
(Signature) (Title) Submitted on (Date)

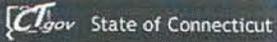
Section B: Applies to CONNDOT Projects ONLY

That pursuant to CONNDOT contract requirements for reporting purposes only, all employees listed under Section B who performed work on this project are not covered under the prevailing wage requirements defined in Connecticut General Statutes Section 31-53.

Robert Craft owner 10/2/09
(Signature) (Title) Submitted on (Date)

Note: CTDOL will assume all hours worked were performed under Section A unless clearly delineated as Section B WWS-CP1 as such. Should an employee perform work under both Section A and Section B, the hours worked and wages paid must be segregated for reporting purposes.

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OCCUPATIONAL CLASSIFICATION BULLETIN

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Information Bulletin

Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53.

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification.

Below are additional clarifications of specific job duties performed for certain classifications:

- **ASBESTOS WORKERS**

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- **ASBESTOS INSULATOR**

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- **BOILERMAKERS**

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- **BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS**

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- **CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS**

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **CLEANING LABORER**

The clean up of any construction debris and the general cleaning, including sweeping, wash down, mopping, wiping of the construction facility, washing, polishing, dusting, etc., prior to the issuance of a certificate of occupancy falls under the *Labor classification*.

- **DELIVERY PERSONNEL**

If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer/tradesman and not a delivery personnel.

- **ELECTRICIANS**

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring.

***License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.**

- **ELEVATOR CONSTRUCTORS**

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. *License required by Connecticut General Statutes: R-1,2,5,6.

- **FORK LIFT OPERATOR**

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- **GLAZIERS**

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which requires either a blended rate or equal composite workforce.

- **IRONWORKERS**

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which requires either a blended rate or equal composite workforce. Insulated metal and insulated composite panels are still installed by the Ironworker.

- **INSULATOR**

Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings. Past practice using the applicable licensed trades, Plumber, Sheet Metal, Sprinkler Fitter, and Electrician, is not inconsistent with the Insulator classification and would be permitted.

- **LABORERS**

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- **PAINTERS**

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- **LEAD PAINT REMOVAL**

Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- **PLUMBERS AND PIPEFITTERS**

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- **POWER EQUIPMENT OPERATORS**

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ***License required, crane operators only, per Connecticut General Statutes.**

- **ROOFERS**

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (tear-off and/or removal of any type of roofing and/or clean-up of any and all areas where a roof is to be relaid)

- **SHEETMETAL WORKERS**

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters.

Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, fascia, louvers, partitions, wall panel siding, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc.

The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Insulated metal and insulated composite panels are still installed by the Iron Worker. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers.

- **SPRINKLER FITTERS**

Installation, alteration, maintenance and repair of fire protection sprinkler systems.

***License required per Connecticut General Statutes: F-1,2,3,4.**

- **TILE MARBLE AND TERRAZZO FINISHERS**

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

Definitions:

1) "Site of the work" (29 Code of Federal Regulations (CFR) 5.2(l)(b) is the physical place or places where the building or work called for in the contract will remain and any other site where a significant portion of the building or work is constructed, provided that such site is established specifically for the performance of the contract or project;

(a) Except as provided in paragraph (l) (3) of this section, job headquarters, tool yards, batch plants, borrow pits, etc. are part of the "site of the work"; provided they are dedicated exclusively, or nearly so, to the performance of the contract or project, and provided they are adjacent to "the site of work" as defined in paragraph (e)(1) of this section;

(b) Not included in the "site of the work" are permanent home offices, branch plant establishments, fabrication plants, tool yards etc, of a contractor or subcontractor whose location and continuance in operation are determined wholly without regard to a particular State or political subdivision contract or uncertain and indefinite periods of time involved of a few seconds or minutes duration and where the failure to count such time is due to consideration justified by industrial realities (29 CFR 785.47)

2) "Engaged to wait" is waiting time that belongs to and is controlled by the employer which is an integral part of the job and is therefore compensable as hours worked. (29 CFR 785.15)

3) "Waiting to be engaged" is waiting time that an employee can use effectively for their own purpose and is not compensable as hours worked. (29 CFR 785.16)

4) "De Minimus" is a rule that recognizes that unsubstantial or insignificant periods of time which cannot as a practical administrative matter be precisely recorded for payroll purposes, may be disregarded. This rule applies only where there are uncertain and indefinite periods of time involved of a short duration and where the failure to count such time is due to consideration justified by worksite realities. For example, with respect to truck drivers on prevailing wage sites, this is typically less than 15 minutes at a time.

Coverage of Truck Drivers on State or Political subdivision Prevailing Wage Projects

Truck drivers are covered for payroll purposes under the following conditions:

- Truck Drivers for time spent working on the site of the work.
- Truck Drivers for time spent loading and/or unloading materials and supplies on the site of the work, if such time is not de minimus

- Truck drivers transporting materials or supplies between a facility that is deemed part of the site of the work and the actual construction site.
- Truck drivers transporting portions of the building or work between a site established specifically for the performance of the contract or project where a significant portion of such building or work is constructed and the physical places where the building or work outlined in the contract will remain.

For example: Truck drivers delivering asphalt are covered under prevailing wage while “engaged to wait” on the site and when directly involved in the paving operation, provided the total time is not “de minimus”

Truck Drivers are not covered in the following instances:

- Material delivery truck drivers while off “the site of the work”
- Truck Drivers traveling between a prevailing wage job and a commercial supply facility while they are off the “site of the work”
- Truck drivers whose time spent on the “site of the work” is de minimus, such as under 15 minutes at a time, merely to drop off materials or supplies, including asphalt.

These guidelines are similar to U.S. Labor Department policies. The application of these guidelines may be subject to review based on factual considerations on a case by case basis.

For example:

- Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
- Hauling material off site is not covered provided they are not dumping it at a location outlined above.
- Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

Any questions regarding the proper classification should be directed to:

*Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6543*

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

Please Note: If the “Benefits” listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the “Benefits” section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

- a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

- a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Veterans’ Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.
- b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

- a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators

(Heavy and Highway Construction & Building Construction)

- a. Paid Holidays: New Year’s Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

- a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

- a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

- a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

SECTION 5.1

LIVING WAGE ORDINANCE

GENERAL INFORMATION

Rev. 05012013, Express Request Doc. #1019

NOTE: SECTION 5 contains information concerning City's Living Wage Ordinance. You are responsible for obtaining a copy prior to bidding. If you do not have a revision dated 05/01/2013 or later on file you may download a copy from the Terms and Conditions section of our website at <http://www.norwalkct.org> Document number **1019**

<http://www.norwalkct.org/documentcenter/view/862>