City of Tacoma, WA

Information Technology Department

Request for Bids

Communication Facilities Fire Suppression Systems

Specification No. IT18-0069F

Radio Service Center

Form No. SPEC-010A

City of Tacoma
Information Technology

REQUEST FOR BIDS IT18-0069F
Communication Facilities Fire Suppression Systems

Submittal Deadline: 11:00 a.m., Pacific Time, Tuesday, March 13, 2018

Submittal Delivery: Sealed submittals will be received as follows:

By Carrier:	**In Person:**
City of Tacoma Procurement & Payables Division Tacoma Public Utilities 3628 S 35th Street Tacoma, WA 98409	City of Tacoma Procurement & Payables Division Tacoma Public Utilities Lobby Security Desk Administration Building North – Main Floor 3628 S 35th Street Tacoma, WA 98409 **Note: This is a change in location for in-person deliveries.**
By Mail: City of Tacoma Procurement & Payables Division Tacoma Public Utilities PO Box 11007 Tacoma, WA 98411-0007	

Submittal Opening: Sealed submittals in response to a RFB will be opened by a Purchasing representative and read aloud during a public bid opening held in Conference Room M-1, located on the main floor in the same building. Submittals in response to an RFP or RFQ are recorded as received but are not typically opened and read aloud. After 1:00 p.m. the day of bid opening, the names of vendors submitting proposals are posted to the website for public viewing.

Solicitation Documents: An electronic copy of the complete solicitation documents may be viewed and obtained by accessing the City of Tacoma Purchasing website at www.TacomaPurchasing.org.

- Register for the Bid Holders List to receive notices of addenda, questions and answers and related updates.
- Click here to see a list of vendors registered for this solicitation.

Pre-Proposal Meeting: A pre-proposal meeting will be held at 1:00 PM, Tuesday, February 27, 2018, at 400 Fawcett Ave, Tacoma, WA 98402. Please confirm your attendance by email to Joe Parris at jparris@cityoftacoma.org.

Project Scope: Increase and standardize fire suppression at seven (7) Communication facilities.

Estimate: $220,000

Paid Leave and Minimum Wage: Effective February 1, 2016, the City of Tacoma requires all employers to provide paid leave and minimum wages, as set forth in Title 18 of the Tacoma Municipal Code. For more information visit www.cityoftacoma.org/employmentstandards.

Additional Information: Requests for information regarding the specifications may be obtained by contacting Joe Parris, Senior Buyer by email to jparris@cityoftacoma.org.

Protest Policy: City of Tacoma protest policy, located at www.tacomapurchasing.org, specifies procedures for protests submitted prior to and after submittal deadline.

Meeting sites are accessible to persons with disabilities. Reasonable accommodations for persons with disabilities can be arranged with 48 hours advance notice by calling 253-502-8468.

BIDDER'S CHECK LIST

The bidder's attention is especially called to the following forms which must be submitted with your bid:

(a) Supplemental Qualifications Criteria

(b) Proposal Pages

The unit/lump sum prices bid must be shown in the space provided.

(c) Signature page

To be completed and signed by the bidder.

(d) Bid bond or certified check (for construction contracts only).

Each bid must be accompanied by a certified or cashier's check for 5-percent of the total amount bid, or an approved bid bond by a surety company authorized to do business in the State of Washington. See General Provisions 1.04.

(e) State Responsibility and Reciprocal Bid Preference Form

(f) Prime Contractor's Pre-Work Form

(g) Certification of Compliance with Wage Payment Statues Form

(h) Record of Prior Contracts

The following forms are to be executed after the contract is awarded:

(a) Contract

This agreement is to be executed by the successful bidder.

(b) Performance Bond and Payment Bond

To be executed by the successful bidder and his surety company, and countersigned by a local resident agent of said surety company.

(c) General Release to the City of Tacoma

To be executed by the successful bidder upon completion of work and prior to the receipt of the final payment.

SPECIAL REMINDER TO ALL BIDDERS

PLEASE NOTE: Be sure you have complied with all specifications and requirements and have signed or have caused to be signed all required instruments.

YOUR ATTENTION IS PARTICULARLY CALLED to the following forms, which must be executed in full before the bid is submitted:

1. BID PROPOSAL: The unit prices bid must be shown in the space provided. Be sure to check your computations for omissions and errors.

2. SIGNATURE PAGE: To be filled in and signed by the bidder. Be sure all parties whose signatures are legally necessary have signed, whether the bidder be an individual, partnership or corporation.

3. BID BOND: The Bid Bond must be executed by the person legally authorized to sign the bid, and must be properly signed by the representatives of the surety company unless the bid is accompanied by a certified check. If Bid Bond is furnished, the form furnished by the City must be followed; no variations from the language thereof will be accepted. The amount of the Bid Bond must be not less than 5% of the total amount bid; and, if shown in dollars and cents, the amount of said Bid Bond must be not less than the required 5%.

4. STATE RESPONSIBILITY AND RECIPROCAL BID PREFERENCE INFORMATION: The bidder shall complete this form in its entirety to ensure compliance with state legislation (SHB 2010).

5. SUPPLEMENTAL QUALIFICATIONS CRITERIA: The Contractor or subcontractor shall fill out this form in its entirety proving they meet the requirements as outlined in these specifications. It shall be the sole determination of the City to determine if the Contractor/subcontractor does in fact meet the requirements. This is a condition of award of the contract.

CITY OF TACOMA
FINANCE/PURCHASING DIVISION

SPECIAL NOTICE TO BIDDERS

Public works and improvement projects for the City of Tacoma are subject to Washington state law and Tacoma Municipal Code, including, but not limited to the following:

I. STATE OF WASHINGTON

A. RESPONSIBILITY CRITERIA – STATE OF WASHINGTON

In order to be considered a responsible bidder the bidder must meet the following mandatory state responsibility criteria contained in RCW 39.04.350:

1. Have a current certificate of registration as a contractor in compliance with chapter 18.27 RCW, which must have been in effect **at the time of bid submittal**;
2. Have a current Washington Unified Business Identifier (UBI) number;
3. If applicable:
   a. Have Industrial Insurance (workers' compensation) coverage for the bidder's employees working in Washington, as required in Title 51 RCW;
   b. Have a Washington Employment Security Department number, as required in Title 50 RCW;
   c. Have a Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW and;
4. Not be disqualified from bidding on any public works contract under RCW 39.06.010 (unlicensed or unregistered contractors) or 39.12.065(3) (prevailing wage).

B. RECIPROCAL PREFERENCE FOR RESIDENT CONTRACTORS:

Effective March 30, 2012, RCW 39.04.380 imposes a reciprocal preference for resident contractors. Any bid received from a non-resident contractor from a state that provides an in-state percentage bidding preference is subject application of a comparable percentage disadvantage.

A non-resident contractor from a state that provides an in-state percentage bidding preference means a contractor that:

1. Is from a state that provides a percentage bid preference to its resident contractors bidding on public works projects, and
2. Does not have a physical office located in Washington at the time of bidding on the City of Tacoma public works project.

The state of residence for a non-resident contractor is the state in which the contractor was incorporated, or if not a corporation, the state in which the contractor's business entity was formed.

The City of Tacoma will evaluate all non-resident contractors for an out of state bidder preference. If the state of the non-resident contractor provides an in state contractor preference, a comparable percentage disadvantage will be applied to the non-resident

contractor's bid prior to contract award. The responsive and lowest and best responsible bidder after application of any non-resident disadvantage will be awarded the contract.

The reciprocal preference evaluation does not apply to public works procured pursuant to RCW 39.04.155, RCW 39.04.280, federally funded competitive solicitations where such agencies prohibit the application of bid preferences, or any other procurement exempt from competitive bidding.

Bidders must provide the City of Tacoma with their state of incorporation or the state in which the business entity was formed and include whether the bidder has a physical office located in Washington.

The bidder shall submit documentation demonstrating compliance with above criteria on the enclosed State Responsibility and Reciprocal Bidder Information form.

C. SUBCONTRACTOR RESPONSIBILITY

1. The Contractor shall include the language of this subcontractor responsibility section in each of its first tier subcontracts, and shall require each of its subcontractors to include the same language of this section in each of their subcontracts, adjusting only as necessary the terms used for the contracting parties. The requirements of this section apply to all subcontractors regardless of tier.

2. At the time of subcontract execution, the Contractor shall verify that each of its first tier subcontractors meets the following bidder responsibility criteria:

    a. Have a current certificate of registration as a contractor in compliance with chapter 18.27 RCW, which must have been in effect at the time of subcontract bid submittal;

    b. Have a current Washington Unified Business Identifier (UBI) number;

    c. If applicable, have:

    a. Have Industrial Insurance (workers' compensation) coverage for the bidder's employees working in Washington, as required in Title 51 RCW;
    b. A Washington Employment Security Department number, as required in Title 50 RCW;
    c. A Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;
    d. An electrical contractor license, if required by Chapter 19.28 RCW;
    e. An elevator contractor license, if required by Chapter 70.87 RCW and;

3. Not be disqualified from bidding on any public works contract under RCW 39.06.010 (unlicensed or unregistered contractors) or 39.12.065(3) (prevailing wage).

II. CITY OF TACOMA

A. SUPPLEMENTAL RESPONSIBILITY CRITERIA – CITY OF TACOMA:

In order to be considered a responsible bidder, the prospective bidder shall have all of the following qualifications set forth in Tacoma Municipal Code 1.06.262:

1. Adequate financial resources or the ability to secure such resources;
2. The necessary experience, stability, organization and technical qualifications to perform the proposed contract;
3. The ability to comply with the required performance schedule, taking into consideration all existing business commitments;
4. A satisfactory record of performance, integrity, judgment and skills; and
5. Be otherwise qualified and eligible to receive an award under applicable laws and regulations.
    a. Bidder Responsibility. Bidders shall not be in violation of 39.04.350 RCW Bidder Responsibility Criteria - Supplemental Criteria.

In addition to the mandatory bidder responsibility criteria listed immediately above, the City may, in addition to price, consider any or all of the following criteria contained in Tacoma Municipal Code Chapter 1.06.262 in determining bidder responsibility:

1. The ability, capacity, experience, stability, technical qualifications and skill of the respondent to perform the contract;
2. Whether the respondent can perform the contract within the time specified, without delay or interference;
3. Integrity, reputation, character, judgment, experience, and efficiency of the respondents, including past compliance with the City's Ethics Code;
4. Quality of performance of previous contracts;
5. Previous and existing compliance with laws and ordinances relating to contracts or services;
6. Sufficiency of the respondent's financial resources;
7. Quality, availability, and adaptability of the supplies, purchased services or public works to the particular use required;
8. Ability of the respondent to provide future maintenance and service on a timely basis;
9. Payment terms and prompt pay discounts;
10. The number and scope of conditions attached to the submittal;
11. Compliance with all applicable City requirements, including but not limited to the City's Ethics Code and its Small Business Enterprise and Local Employment and Apprenticeship programs;
12. Other qualification criteria set forth in the specification or advertisement that the appropriate department or division head determines to be in the best interests of the City.

The City may require bidders to furnish information, sworn or certified to be true, to demonstrate compliance with the City responsibility criteria set forth above. If the city manager or director of utilities is not satisfied with the sufficiency of the information provided, or if the prospective respondent does not substantially meet all responsibility requirements, any submittal from such respondent must be disregarded.

B. ADDITIONAL SUPPLEMENTAL CRITERIA – NOT APPLICABLE

C. MODIFICATIONS TO SUPPLEMENTAL CRITERIA

Potential bidders may request modifications to the City's **supplemental criteria** by submitting a written request to the Purchasing Division no later than 5:00 p.m. Pacific Time, three days prior to the submittal deadline. Please include the Specification No. and Title when submitting such requests. Requests must include justification for why certain criteria should be modified. Requests received after this date and time will not be considered.

Requests for modifications to the supplemental criteria may be submitted via postal mail or delivered personally, or sent by e-mail or fax, within the above timeline as follows:

By Carrier: City of Tacoma Procurement & Payables Division Tacoma Public Utilities 3628 S 35th Street Tacoma, WA 98409	**In Person:** City of Tacoma Procurement & Payables Division Tacoma Public Utilities Lobby Security Desk Administration Building North – Main Floor 3628 S 35th Street Tacoma, WA 98409
By Mail: City of Tacoma Procurement & Payables Division Tacoma Public Utilities PO Box 11007 Tacoma, WA 98411-0007	Fax: 253-502-8372 E-mail: bids@cityoftacoma.org

The City will respond to a timely submitted request prior to the bid opening date. Changes to the supplemental criteria, if warranted, will be issued by addendum to the solicitation documents and posted to the City's website for the attention of all prospective bidders.

D. DETERMINATION OF BIDDER RESPONSIBILITY

If the City determines the bidder does not meet the criteria above and is therefore not a responsible bidder, the City shall notify the bidder in writing with the reasons for its determination. If the bidder disagrees, the bidder may appeal the determination in a manner consistent with the City's Protest Policy. Appeals are coordinated by the Purchasing Division heard by the Procurement and Payables Division manager for contracts less than or equal to $200,000 and by Contracts and Awards Board for contracts greater than $200,000.

PREBID CONFERENCE

A pre-bid meeting will be held at 1:00 p.m., on Tuesday, February 27, 2018, at the Master Site, see address below, followed by a site visit at each type of location applicable to the bid. The purpose of the pre-bid meeting is to answer questions about this solicitation, as well as the City's SBE and LEAP goals.

We will visit the sites in the following order.

- **Master Site:** 400 Fawcett Ave., Tacoma WA
    - This site contains the Dispatch, UPS/Electrical, Telephone, Server and Radio rooms
- **Cushman:** 1453 Earnest S Brazill St, Tacoma WA
- **Tyler:** 4504 Tyler Avenue, Tacoma, WA

SUPPLEMENTAL QUALIFICATIONS CRITERIA

1. Does your company have at least 15 years of experience installing Fenwal fire suppression systems?
   YES ☐ NO ☐

2. Are you a licensed and authorized reseller/ installer of Kidde Fire Suppression Systems?
   YES ☐ NO ☐

3. Provide the name and proof of certification for your employee who will be working on this project that has the required NICET level IV or equivalent certification:
   Name: _____

4. Can you provide a 1 hour or less response time?
   YES ☐ NO ☐

5. Do you have all of the insurance required for this project?
   YES ☐ NO ☐

6. Do you maintain a full complement of spares in stock necessary for emergency repairs?
   YES ☐ NO ☐

IT18-0069F **BIDDER** _____
Communication Facilities
Fire Suppression Systems

ITEM NO.	ITEM DESCRIPTION All line items below are the **lump sum** of all parts, labor and maintenance.	TOTAL AMOUNT
1	Dispatch @ Master Site VESDA	$ _____
2	UPS/Electrical Room @ Master Site Fire Suppression (connect to existing FenwalNet 6000 w/ Novec 1230)	$ _____
3	UPS/Electrical Room @ Master Site VESDA	$ _____
4	Server Room @ Master Site Fire Suppression (replace existing FM200 w/ Novec 1230)	$ _____
5	Telecom Room @ Master Site Fire Suppression (replace existing FM200 w/ Novec 1230	$ _____
6	Radio Room @ Master Site Fire Suppression (connect to existing FenwalNet 6000 w/ Novec 1230)	$ _____
7	Radio Room @ Master Site VESDA	$ _____
8	Master Site Clean Guard Fire Extinguisher (Qty 6)	$ _____
9	Indian Hill Fire Suppression (FenwalNET 8000 w/ Novec 1230)	$ _____
10	Indian Hill Clean Guard Fire Extinguisher (Qty 1)	$ _____
11	Tyler Fire Suppression (FenwalNET 8000 w/ Novec 1230)	$ _____
12	Tyler Clean Guard Fire Extinguisher (Qty 1)	$ _____

BIDDER_____

13	LESA Fire Suppression (FenwalNET 8000 w/ Novec 1230)	$ _____
14	LESA Clean Guard Fire Extinguisher (Qty 1)	$ _____
15	Pearl Fire Suppression (FenwalNET 8000 w/ Novec 1230)	$ _____
16	Pearl Clean Guard Fire Extinguisher (Qty 1)	$ _____
17	Fire Training Center Fire Suppression (FenwalNET 8000 w/ Novec 1230)	$ _____
18	Fire Training Center Clean Guard Fire Extinguisher (Qty 1)	$ _____
19	Cushman Fire Suppression (FenwalNET 8000 w/ Novec 1230)	$ _____
20	Cushman Clean Guard Fire Extinguisher (Qty 1)	$ _____
21	All Sites One year of system maintenance	$ _____

SUB TOTAL (excluding sales tax)	$ _____
10.1% SALES TAX	$ _____
TOTAL BID (including sales tax)	$ _____

SIGNATURE PAGE

CITY OF TACOMA INFORMATION TECHNOLOGY

All submittals must be in ink or typewritten and must be executed by a duly authorized officer or representative of the bidding/proposing entity. If the bidder/proposer is a subsidiary or doing business on behalf of another entity, so state, and provide the firm name under which business is hereby transacted.

Submittals will be received and time stamped only at the City of Tacoma Purchasing Division, located in the Tacoma Public Utilities Administration Building North, Main Floor, at 3628 South 35th Street, Tacoma, WA 98409. **See the Request for Bids page near the beginning of the specification for additional details.**

REQUEST FOR BIDS SPECIFICATION NO. IT18-0069F

COMMUNICATION FACILITIES FIRE SUPPRESSION SYSTEMS

The undersigned bidder/proposer hereby agrees to execute the proposed contract and furnish all materials, labor, tools, equipment and all other facilities and services in accordance with these specifications.

The bidder/proposer agrees, by submitting a bid/proposal under these specifications, that in the event any litigation should arise concerning the submission of bids/proposals or the award of contract under this specification, Request for Bids, Request for Proposals or Request for Qualifications, the venue of such action or litigation shall be in the Superior Court of the State of Washington, in and for the County of Pierce.

Non-Collusion Declaration

The undersigned bidder/proposer hereby certifies under penalty of perjury that this bid/proposal is genuine and not a sham or collusive bid/proposal, or made in the interests or on behalf of any person or entity not herein named; and that said bidder/proposer has not directly or indirectly induced or solicited any contractor or supplier on the above work to put in a sham bid/proposal or any person or entity to refrain from submitting a bid/proposal; and that said bidder/proposer has not, in any manner, sought by collusion to secure to itself an advantage over any other contractor(s) or person(s).

_____
Bidder/Proposer's Registered Name

_____
Address

_____
City, State, Zip

_____
E-Mail Address

_____
E.I.No. / Federal Social Security Number Used on Quarterly Federal Tax Return, U.S. Treasury Dept. Form 941

_____
Signature of Person Authorized to Enter into Contracts for Bidder/Proposer — Date

_____
Printed Name and Title

_____
(Area Code) Telephone Number / Fax Number

_____
State Business License Number
in WA, also known as UBI (Unified Business Identifier) Number

_____
State Contractor's License Number
(See Ch. 18.27, R.C.W.)

Addendum acknowledgement #1_____ #2_____ #3_____ #4_____ #5_____

THIS PAGE MUST BE SIGNED AND RETURNED WITH SUBMITTAL.

Herewith find deposit in the form of a cashier's check in the amount of $_____ which amount is not less than 5-percent of the total bid.

SIGN HERE_____

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____, as Principal, and _____, as Surety, are held and firmly bound unto the City of Tacoma, as Obligee, in the penal sum of _____ _____ dollars, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

The condition of this obligation is such that if the Obligee shall make any award to the Principal for

according to the terms of the proposal or bid made by the Principal therefor, and the Principal shall duly make and enter into a contract with the Obligee in accordance with the terms of said proposal or bid and award and shall give bond for faithful performance thereof, with Surety or Sureties approved by the Obligee; or if the Principal shall, in case of failure to do so, pay and forfeit to the Obligee the penal amount of the deposit specified in the call for bids, then this obligation shall be null and void; otherwise it shall be and remain in full force and effect and the Surety shall forthwith pay and forfeit to the Obligee, as penalty and liquidated damages, the amount of this bond.

SIGNED, SEALED AND DATED THIS _____ DAY OF _____, 20_____.

PRINCIPAL: SURETY:

_____ _____

_____ _____

_____, 20_____

Received return of deposit in the sum of $ _____

_____

Specification No. _____

_____
Name of Bidder

State Responsibility and Reciprocal Bid Preference Information

Certificate of registration as a contractor (must be in effect at the time of bid submittal):	Number:_____ Effective Date:_____ Expiration Date:_____
Current Washington Unified Business Identifier (UBI) number:	Number:_____
Do you have industrial insurance (workers' compensation) coverage for your employees working in Washington?	☐ Yes ☐ No ☐ Not Applicable
Washington Employment Security Department number:	Number:_____ ☐ Not Applicable
Washington Department of Revenue state excise tax registration number:	Number:_____ ☐ Not Applicable
Have you been disqualified from bidding on any public works contracts under RCW 39.06.010 or 39.12.065(3)?	☐ Yes ☐ No If yes, provide an explanation of your disqualification on a separate page.
Do you have a physical office located in the state of Washington?	☐ Yes ☐ No
If incorporated, in what state were you incorporated?	State: _____ ☐ Not Incorporated
If not incorporated, in what state was your business entity formed?	State: _____

SBE GOAL UTILIZATION FORM

SMALL BUSINESS ENTERPRISE REQUIREMENTS & PROCEDURES:

All bidders must complete and submit with their bid the following solicitation forms contained in the bid submittal package:

City of Tacoma – Prime Contractor's Pre-Work Form

IMPORTANT NOTE:

It is the bidder's responsibility to insure that the SBE subcontractor(s) listed on the SBE Utilization Form are currently certified by the City of Tacoma at the time of bid opening. This may be verified by contacting Carrie Lynn, SBE Program Coordinator of the SBE Program at (253) 591-5224 or via email at clynn@ci.tacoma.wa.us between 7:30 AM and 4:30 PM, Monday through Friday. This form must have clear expression of SBE participation that your company will use on this project. Ordinance 27867, passed by the City Council on December 15, 2009, establishes the overall SBE goal of 22%, *except where modified through appropriate procedures*. Please refer to the City of Tacoma SBE Provisions included elsewhere in these Special Provisions.

SBE GOAL: 0%

There is a zero (0%) percent SBE goal on this project due to scope and being limited to a singe trade.

www.cityoftacoma.org

MATERIAL MISSTATEMENTS CONCERNING COMPLETED ACTIONS BY THE BIDDER IN ANY SWORN STATEMENT OR FAILURE TO MEET COMMITMENTS AS INDICATED ON THE SBE UTILIZATION FORM MAY RENDER THE BIDDER IN DEFAULT OF CITY ORDINANCE 27867.

City of Tacoma
Community & Economic Development
Office of Small Business Enterprise
747 Market Street, Room 808
Tacoma, WA 98402
253-594-7933 or 253-591-5224

PRIME CONTRACTOR'S PRE-WORK FORM

Company Name _____ **Telephone** _____

Address/City/State/Zip Code _____

Specification Number _____ **Specification Title** _____

JOB CATEGORIES SPECIFY	TOTAL EMPLOYEES		TOTAL MINORITY EMPLOYEES		BLACK		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE		HISPANIC	
	M	F	M	F	M	F	M	F	M	F	M	F
Officer / Managers												
Supervisors												
Project Managers												
Office / Clerical												
Apprentices												
Trainees												
TOTALS												

CONTRACTOR'S PROJECTED WORK FORCE - THIS PROJECT

Superintendent												
Foreman												
Operators												
Laborers												
Apprentice												
Trainee												
TOTALS												

Type or Print Name of Responsible Officer / Title _____ **Signature of Responsible Officer** _____ **Date** _____

INSTRUCTIONS FOR COMPLETING
PRIME CONTRACTOR'S PRE-WORK FORM

This form only applies to employees who will be working on this specific project.

1. "Heading" the company name and address should reflect the prime contractor actually doing business with the City of Tacoma. If this address is different from that of the Equal Employment Opportunity Officer that administers the EEO programs of the company, the Equal Employment Opportunity Officer's address should be noted in the "Comments" section at the bottom of the form. "Telephone" should contain the area code, telephone number and extension (if any) for the Equal Employment Officer or the responsible official.

2. "Job Categories" at the extreme left hand column of the form specifying "Job Categories" lists "Officials & Managers." You are to list in addition to Officials & Managers any appropriate job titles such as Sales Workers, Office/Clerical, Professionals, Technical, etc., as they apply to your own company and only as pertains to this specific project.

3. The "M" and "F" headings at the top of each column refer to "Male" and "Female."

4. The "Total Employees" column should list the total number of male employees under "M" and the total female number of female employees under "F" for each job category listed. They should be listed in a similar manner in the "Total" category at the bottom of the form. The "Total Employees" column should include all those employees listed under "Non-Minority" and "Total Minorities." "Non-Minority" should include all employees not listed in the minority columns.

5. "Total Minorities" should include all employees listed under the "Black," "Asian or Pacific Islander" (A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.), "American Indian or Alaskan Native," and "Hispanic" columns. These columns should include only employees who are members of that particular minority group. Designation and definitions of ethnic/national origin status follow the instructions and definitions of the Federal EEO-1 Form of the U. S. Equal Employment Opportunity Commission.

6. "Totals" this line should reflect the total of all lines in each of the above columns.

7. The signature of your company's designated responsible official or similar official responsible for equal employment opportunity must appear in the designated space at the bottom of the form. Please PRINT OR TYPE the person's name on the top line across from the signature. This is required since some signatures are difficult to read.

8. "Comments" this section is to be used as needed for explanations to under utilization rate or lack of turnover, proposed expansion or reduction of staff or any other pertinent information you believe will help clarify or explain the data presented on the form. If you need additional space, please explain on a separate sheet of paper.

9. If you need assistance or have questions regarding the completion of this form, please call the SBE Office at 253-594-7933 or 253-591-5224.

City of Tacoma

Certification of Compliance with Wage Payment Statutes

The bidder hereby certifies that, within the three-year period immediately preceding the bid solicitation date (February 16, 2018), that the bidder is not a "willful" violator, as defined in RCW 49.48.082, of any provision of chapters 49.46, 49.48, or 49.52 RCW, as determined by a final and binding citation and notice of assessment issued by the Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction.

I certify under penalty of perjury under the laws of the state of Washington that the foregoing is true and correct.

Bidder

Signature of Authorized Official*

Printed Name

Title

Date City State

Check One:

Individual ☐ Partnership ☐ Joint Venture ☐ Corporation ☐

State of Incorporation, or if not a corporation, the state where business entity was formed:

If a co-partnership, give firm name under which business is transacted:

** If a corporation, proposal must be executed in the corporate name by the president or vice-president (or any other corporate officer accompanied by evidence of authority to sign). If a co-partnership, proposal must be executed by a partner.*

RECORD OF PRIOR CONTRACTS

NAME _____ **ADDRESS**_____

Type of Work _____ **Specification No.** _____

Beginning Date	Completion Date	Contract With	Contact Person Phone #	Amount of Contract

Remarks: _____

CONTRACT

Resolution No.
Contract No.

This Contract is made and entered into effective this _____ day of _____, 20 , ("Effective Date") by and between the City of Tacoma, a Municipal Corporation of the State of Washington ("City"), and ("Contractor").

That in consideration of the mutual promises and obligations hereinafter set forth the Parties hereto agree as follows:

I. Contractor shall fully execute and diligently and completely perform all work and provide all services and deliverables described herein and in the items listed below each of which are fully incorporated herein and which collectively are referred to as "Contract Documents":

1. Specification No. and Title together with all authorized addenda.
2. Contractor's submittal (or specifically described portions thereof) dated submitted in response to Specification No. and Title .
3. Describe with specific detail and list separately any other documents that will make up the contract (fee schedule, work schedule, authorized personnel etc.) or any other additional items mutually intended to be binding upon the parties.

In the event of a conflict or inconsistency between the terms and conditions contained in this document entitled Contract and any terms and conditions contained the above referenced Contract Documents the following order of precedence applies with the first listed item being the most controlling and the last listed item the least controlling:

1. Contract
2. List remaining Contract Documents in applicable controlling order.

II. The total price to be paid by City for Contracts full and complete performance hereunder may not exceed: $ _____, plus applicable sales tax.

III. Contractor agrees to accept as full payment hereunder the amounts specified herein and in Contract Documents, and the City agrees to make payments at the times and in the manner and upon the terms and conditions specified. Except as may be otherwise provided herein or in Contract Documents Contractor shall provide and bear the expense of all equipment, work and labor of any sort whatsoever that may be required for the transfer of materials and for constructing and completing the work and providing the services and deliverables required by this Contract.

IV. Contractor acknowledges, and by signing this Contract agrees, that the Indemnification provisions set forth in the controlling Contract Documents, including the Industrial Insurance immunity waiver (if applicable), are totally and fully part of this Contract and, within the context of the competitive bidding laws, have been mutually negotiated by the Parties hereto.

V. Contractor and for its heirs, executors, administrators, successors, and assigns, does hereby agree to the full performance of all the requirements contained herein and in Contract Documents.

VI. It is further provided that no liability shall attach to City by reason of entering into this Contract, except as expressly provided herein.

IN WITNESS WHEREOF, the Parties hereto have accepted and executed, as of the Effective Date stated above, which shall be Effective Date for bonding purposes as applicable.

CITY OF TACOMA:

By: _____
Enter title of dept or div staff w/auth to sign for this $ amt

By: _____
Select for over $50K or NA

CONTRACTOR:

By: _____
Signature

_____
Printed Name

Sample

By: _____ _____

Director of Finance *Title*

APPROVED AS TO FORM:

By: _____

City Attorney

Sample

PERFORMANCE BOND
TO THE CITY OF TACOMA

Resolution No.
Bond No.

That we, the undersigned, _____

as principal, and _____

as a surety, are jointly and severally held and firmly bound to the CITY OF TACOMA, in the penal sum of,

$ _____ , for the payment whereof Contractor and Surety bind themselves,

their executors, administrators, legal representatives, successors and assigns, jointly and severally, firmly by these presents.

This obligation is entered into in pursuance of the statutes of the State of Washington, the Ordinances of the City of Tacoma

WHEREAS, under and pursuant to the City Charter and general ordinances of the City of Tacoma, the said City has or is about to enter with the above bounden principal, a contract, providing for

Specification No.

Specification Title:

Contract No.

(which contract is referenced to herein and is made a part hereof as though attached hereto), and

WHEREAS, the said principal has accepted, the said contract, and undertake to perform the work therein provided for in the manner and within the time set forth.

This statutory performance bond shall become null and void, if and when the principal, its heirs, executors, administrators, successors, or assigns shall well and faithfully perform all of the Principal's obligations under the Contract and fulfill all terms and conditions of all duly authorized modifications, additions and changes to said Contract that may hereafter be made, at the time and in the manner therein specified; and if such performance obligations have not been fulfilled, this bond shall remain in force and effect.

The Surety for value received agrees that no change, extension of time, alteration or addition to the terms of the Contract, the specifications accompanying the Contract, or to the work to be performed under the Contract shall in any way affect its obligation on this bond, and waives notice of any change, extension of time, alteration or addition to the terms of the Contract or the work performed. The Surety agrees that modifications and changes to the terms and conditions of the Contract that increase the total amount to be paid the Principal shall automatically increase the obligation of the Surety on this bond and notice to Surety is not required for such increase.

If the City shall commence suit and obtain judgment against the Surety for recovery hereunder, then the Surety, in addition to such judgement, shall pay all costs and attorney's fees incurred by the City in enforcement of its rights hereunder. Venue for any action arising out of in in connection with this bond shall be in Pierce County, Washington.

Surety companies executing bonds must be authorized to transact business in the State of Washington as surety and named in the current list of "Surety Companies Acceptable in Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasure Department.

One original bond shall be executed, and signed by the parties' duly authorized officers. This bond will only be accepted if it is accompanied by a fully executed power of attorney for the office executing on behalf of the surety.

Approved as to form:

_____
Deputy City Attorney

Principal: Vendor Legal Name

_____

By: _____

Surety:

_____

By: _____

Agent's Name: _____

Agent's Address: _____

SAMPLE

PAYMENT BOND
TO THE CITY OF TACOMA

Resolution No.
Bond No.

That we, the undersigned, _____

as principal, and _____

as a surety, are jointly and severally held and firmly bound to the CITY OF TACOMA, in the penal sum of,

$ _____ , for the payment whereof Contractor and Surety bind themselves,

their executors, administrators, legal representatives, successors and assigns, jointly and severally, firmly by these presents.

This obligation is entered into in pursuance of the statutes of the State of Washington, the Ordinances of the City of Tacoma.

WHEREAS, under and pursuant to the City Charter and general ordinances of the City of Tacoma, the said City has or is about to enter with the above bounden principal, a contract, providing for

Specification No.

Specification Title:

Contract No.

(which contract is referenced to herein and is made a part hereof as though attached hereto), and

WHEREAS, the said principal has accepted, the said contract, and undertake to perform the work therein provided for in the manner and within the time set forth.

This statutory payment bond shall become null and void, if and when the Principal, its heirs, executors, administrators, successors, or assigns shall pay all persons in accordance with RCW 39.08, 39.12, and 60.28, including all workers, laborers, mechanics, subcontractors, and materialmen, and all person who shall supply such contractor or subcontractor with provisions and supplies for the carrying on of such work, and all taxes incurred on said Contract under Titles 50 and 51 RCW and all taxes imposed on the Principal under Title 82 RCW, and if such payment obligations have not been fulfilled, this bond shall remain in full force and effect.

The Surety for value received agrees that no change, extension of time, alteration or addition to the terms of the Contract shall in any way affect its obligation on this bond, and waivers notice of any changes, extension of time, alteration or addition to the terms of the Contract or the work performed. The Surety agrees that modifications and changes to the terms and conditions of the Contract that increase the total amount to be paid the Principal shall automatically increase the obligation of the Surety on this bond and notice to Surety is not required for such increased obligation.

No suit or action shall be commenced hereunder by any claimant unless claimant shall have given the written notices to the City, and where required, the Contractor, in accordance with RCW 39.08.030.

The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of claims which may be properly filed in accordance with RCW 39.08 whether or not suit is commenced under and against this bond.

If any claimant shall commence suit and obtain judgment against the Surety for recovery hereunder, then the Surety, in addition to such judgment and attorney fees as provided by RCW 39.08.030, shall also pay such costs and attorney fees as may be incurred by the City as a result of such suit. Venue for any action arising out of or in connection with this bond shall be in Pierce County, WA.

Surety companies executing bonds must be authorized to transact business in the State of Washington as surety and named in the current list of “Surety Companies Acceptable in Federal Bonds” as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasure Department.

Sample

Resolution No.
Bond No.
Specification No.
Contract No.

One original bond shall be executed, and be signed by the parties' duly authorized officers. This bond will only be accepted if it is accompanied by a fully executed power of attorney for the office executing on behalf of the surety.

Approved as to form:

_____
Deputy City Attorney

Principal: Vendor Legal Name

_____

By: _____

Surety:

_____

By: _____

Agent's Name: _____

Agent's Address: _____

Sample

City of Tacoma

City of Tacoma Contract No.: _____ Specification No.: _____

General Release to the City of Tacoma

The undersigned, named as the Contractor in a certain agreement between contractor name and the City of Tacoma, dated _____, 20___, hereby releases the City of Tacoma, its departmental officers, employees, and agents, from any and all claim or claims known or unknown, in any manner whatsoever, arising out of, or in connection with, or relating to said contract, excepting only the equity of the undersigned in the amount now retained by the City of Tacoma under said contract, to-wit: the sum of $_____.

Signed on this _____ day of _____, 20__.

_____
Contractor Name

_____
Contractor Authorized Signature

_____
Title

_____
Type or Print Signature Name

PREVAILING WAGE RATES

This project requires prevailing wages under chapter 39.12 RCW. Any worker, laborer, or mechanic employed in the performance of any part of the work shall be paid not less than the applicable prevailing rate of wage.

The project site is located in Pierce County.

The effective date for prevailing wages on this project will be the **submittal deadline** with these exceptions:

a. If the project is not awarded within six months of the submittal deadline, the award date is the effective date.
b. If the project is not awarded pursuant to a competitive solicitation, the date the contract is executed is the effective date.
c. Janitorial contracts follow WAC 296-127-023.

Except for janitorial contracts, these rates shall apply for the duration of the contract unless otherwise noted in the solicitation.

Look up prevailing rates of pay, benefits, and overtime codes from this link: http://www.lni.wa.gov/TradesLicensing/PrevWage/WageRates/default.asp

REQUIRED DOCUMENTS

The Contractor shall submit to the City the following Department of Labor and Industries (L&I) forms for itself and for each firm covered under 39.12 RCW that provided work and materials for the Contract:

1. A copy of an approved Statement of Intent to Pay Prevailing Wages, L&I form number F700-029-000. The City will make no payment under this Contract for the Work performed until this statement has been approved by L&I and a copy of the approved form has been submitted to the City.

2. A copy of an approved Affidavit of Prevailing Wages Paid, L&I form number F700-007-000. The Contracting Agency will not grant completion or release retainage held under chapter 60.28 RCW until all approved Affidavit of Wages paid for Contractor and all Subcontractors have been received by the City.

Department of Labor and Industries
Prevailing Wage
(360) 902-5335
www.lni.wa.gov/TradesLicensing/PrevWage

STATEMENT OF INTENT TO PAY PREVAILING WAGES

Public Works Contract
$40.00 Filing Fee Required

- This form **must** be typed or printed in ink.
- **Fill in all blanks or the form will be returned for correction (see instructions).**
- Please allow a **minimum** of 10 working days for processing.
- Once approved, your form will be posted online at https://fortress.wa.gov/lni/pwiapub/SearchFor.asp

Intent ID # (Assigned by L&I)_____

Your Company Information		
Your Company Name ABC Company, Inc.		
Your Address 1234 Main Street		
City Olympia	State WA	Zip+4 98501-1234
Your Contractor Registration Number ABCCI*0123AA	Your UBI Number 123456789	
Your Industrial Insurance Account Number 111,111-11		
Your Email Address (required for notification of approval) prevailingwage@lni.wa.gov	Your Phone Number (555) 555-5555	

Awarding Agency Information		
Project Name Road Repair	Contract Number 2011-01B	
Awarding Agency WA State Department of Transportation		
Awarding Agency Address PO Box 47354		
City Olympia	State WA	Zip+4 98501
Awarding Agency Contact Name John Doe	Phone Number (555) 555-5555	
County Where Work Will Be Performed Thurston	City Where Work Will Be Performed Olympia	

Additional Details	
Your Expected Job Start Date (mm/dd/yyyy) 01/01/2011	
Job Site Address/Directions State Street @ Plum Street	

Contract Details	
Bid Due Date (**Prime Contractor's**) 08/01/2010	Award Date (**Prime Contractor's**) 08/10/2010
Indicate Total Dollar Amount of **Your** Contract (including sales tax) or time and materials, if applicable.	$1000.00

ARRA Funds	**Weatherization or Energy Efficient Funds**
Does this project utilize American Recovery and Reinvestment Act (ARRA) funds? ☐ Yes ☒ No	Does this project utilize any weatherization or energy efficiency upgrade funds (ARRA or otherwise)? ☐ Yes ☒ No

Prime Contractor's Company Information		**Hiring Contractor's Company Information**	
Prime Contractor's Company Name XYZ Company, Inc.	Prime Contractor's Intent Number 123456	Hiring Contractor's Company Name Super Pavers, Inc.	
Prime Contractor's Registration Number XYZIN*0123AA	Prime Contractor's UBI Number 987654321	Hiring Contractor's Contractor Registration Number SUPERPA123AA	Hiring Contractor's UBI Number 321456987

Employment Information					
Do you intend to use **ANY** subcontractors?	☐ Yes	☒ No	Will employees perform work on this project?	☒ Yes	☐ No
Will **ALL** work be subcontracted?	☐ Yes	☒ No	Do you intend to use apprentice employees?	☒ Yes	☐ No

Number of Owner/Operators who own at least 30% of the company who will perform work on the project: ☐ None (0) ☒ One (1) ☐ Two (2) ☐ Three (3)

Crafts/Trades/Occupations – (Do not list apprentices. They are listed on the Affidavit of Wages Paid only.) If an employee works in more than one trade, ensure that all hours worked in each trade are reported below. For additional crafts/trades/occupations please use Addendum A.	**Number of Workers**	**Rate of Hourly Pay**	**Rate of Hourly Usual ("Fringe") Benefits**
Laborer - Asphalt Raker	**2**	**39.28**	**5.00**
Power Equipment Operator - Asphalt Plant Operator	**1**	**48.04**	**2.35**
Truck Driver - Asphalt Mix (over 16 Yds)	**1**	**46.47**	**0.00**

Signature Block

I hereby certify that I have read and understand the instructions to complete this form and that the information, including any addenda, are correct and that all workers I employ on this Public Works Project will be paid no less than the Prevailing Wage Rate(s) as determined by the Industrial Statistician of the Department of Labor and Industries.

Print Name:	**Print Title:**	**Signature:**	**Date:**

For L&I Use Only

Approved by signature of the Department of Labor and Industries Industrial Statistician

NOTICE: If the prime contract is at a cost of over one million dollars ($1,000,000.00), RCW 39.04.370 requires you to complete the EHB 2805 (RCW 39.04.370) Addendum and attach it to your Affidavit of Wages of Paid when your work on the project concludes. This is only a notice. The EHB 2805 Addendum is not submitted with this Intent.

SAMPLE

Department of Labor and Industries
Prevailing Wage Program
(360) 902-5335
www.Lni.wa.gov/TradesLicensing/PrevWage/default.asp

Affidavit of Wages Paid
Public Works Contract
$40.00 Filing Fee Required*
*Exemption may apply. See instruction 9.

This form **must** be typed or printed in ink.
Fill in ALL blanks or the form will be returned for correction (see instructions).
Please allow a **minimum** of 10 business days for processing.
Once approved, your form will be posted online at:
https://fortress.wa.gov/lni/wagelookup/searchforms.aspx

Affidavit ID # (Assigned by L&I):

 # WA67554-9090

Your Company Information		
Your Company Name ABC Company		
Your Company Address 1234 Main Street		
City Olympia	State WA	Zip+4 98501-1234
Your Contractor Registration Number ABCCI*0123AA	Your UBI Number 123456789	
Your Industrial Insurance Account Number 111,111-11		
Your Email Address (required for notification of approval) prevailingwage@lni.wa.gov	Your Phone Number (555) 555-5555	

Awarding Agency Information		
Project Name Road Repair	Contract Number 123-456	
Awarding Agency WA St Department of Transportation		
Awarding Agency Address PO Box 123		
City Olympia	State WA	Zip+4 98501
Awarding Agency Contact Name John Doe	Phone Number (555) 555-5555	
County Where Work Was Performed Thurston	City Where Work Was Performed Olympia	

Additional Details	
Your Job Start Date (mm/dd/yyyy) 2/1/2011	**Your** Date Work Completed (mm/dd/yyyy) 3/1/2011
Job Site Address/Directions Plum and State Street	Your Approved Intent ID # 123456

Contract Details	
Bid Due Date (**Prime Contractor's**) 1/1/2011	Award Date (**Prime Contractor's**) 1/5/2011
Indicate Total Dollar Amount of **Your** Contract (including sales tax). $ $10,000.00	

EHB 2805 (RCW 39.04.370) – Is the Prime Contractor's contract at a cost of over one million dollars ($1,000,000)?
☒ No ☐ Yes
If "Yes" to the **EHB 2805** question and the Award Date is **9/1/2010** or later you must complete and submit the **EHB 2805 (RCW 39.04.370) Addendum**.

ARRA Funds
Does this project utilize American Recovery and Reinvestment Act (ARRA) funds?
☐ Yes ☒ No

Weatherization or Energy Efficient Funds
Does this project utilize any weatherization or energy efficiency upgrade funds (ARRA or otherwise)? ☐ Yes ☒ No

Prime Contractor's Company Information	
Prime Contractor's Company Name XYZ Company	
Prime Contractor's Registration Number XYZCI*0123AA	Prime Contractor's UBI Number 987654321

Hiring Contractor's Company Information	
Hiring Contractor's Company Name CBA Company	
Hiring Contractor's Registration Number CBACI*0123AA	Hiring Contractor's UBI Number 456789123

Employment Information

Did you use **ANY** subcontractors?	☐ Yes **(Addendum B Required)**	☒ No	Did employees perform work on this project?	☒ Yes	☐ No
Was **ALL** work subcontracted?	☐ Yes **(Addendum B Required)**	☒ No	Did you use apprentice employees?	☐ Yes	☒ No

Number of Owner/Operators who own at least 30% of the company who performed work on this project:
You must list the First and Last Name(s) of any Owner/Operator performing work below
☐ None (0) ☒ One (1) ☐ Two (2) ☐ Three (3)

List your Crafts/Trades/Occupations Below - For Journey Level Workers you must provide all of the information below. Owner/Operators - must provide their First and Last name no other information required. ****Apprentices are not recorded below. You must use Addendum D to list Apprentices.**	**Number of Workers**	**Total # of Hours Worked**	**Rate of Hourly Pay**	**Rate of Hourly Usual ("Fringe") Benefits**
General Labor	**2**	**153**	**41.23**	**8.54**
Carpenter	**5**	**210**	**52.26**	**10.13**

Signature Block

I hereby certify that I have read and understand the instructions to complete this form and that the information on the form and any addenda is correct and that all workers I employed on this Public Works Project were paid no less than the Prevailing Wage Rate(s) as determined by the Industrial Statistician of the Department of Labor and Industries.

Print Name:	**Print Title:**	**Signature:**	**Date:**

For L&I Use Only

Department of Labor and Industries
APPROVED BY: _____
Industrial Statistician

SAMPLE

CITY OF TACOMA INSURANCE REQUIREMENTS

I. GENERAL REQUIREMENTS

A. The City of Tacoma (the City) reserves the right to approve or reject the insurance provided based upon the insurer (including financial condition), terms and coverage, the Certificate of Insurance (COI), and/or endorsements. The insurance must be provided by an insurer with a rating of (A-) VII or higher in the A.M. Best's Key Rating Guide *(http://www.ambest.com/home/default.aspx)*, and pursuant to RCW 48, licensed to do business in the State of Washington (or issued as a surplus line by a Washington Surplus Lines broker).

B. The Contractor shall keep this insurance in force during the entire term of the Contract and for thirty (30) calendar days after completion of all work required by the Contract, unless otherwise provided herein.

C. The liability insurance policies required by this section shall:
   1. Contain a "severability of insureds," "separation of interest," or "cross liability" provision.
   2. Be primary and non-contributory insurance to any insurance coverage or self-insurance program the City may maintain.
   3. Contain a Waiver of Subrogation clause in favor of the City.
   4. Other than Professional Liability, reflect coverage on an “occurrence,” not “claims-made” policy form.

D. The Contractor shall provide the City notice of any cancellation or non-renewal of this required insurance within 30 calendar days.

E. The Contractor shall forward to the City, a full and certified copy of the insurance policy(s) including endorsements required by this section upon the City’s request.

F. The Contractor shall not begin work under the Contract until the required insurance has been obtained and approved by the City.

G. Failure on the part of the Contractor to obtain and maintain the insurance as required by this section shall constitute a material breach of the Contract, upon which the City may, after giving five (5) business day notice to the Contractor to correct the breach, immediately terminate the Contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith; with any sums so expended to be repaid to the City by the Contractor upon demand, or at the sole discretion of the City, offset against funds due the Contractor from the City.

H. All costs for insurance shall be incidental to and included in the unit or lump sum prices of the Contract and no additional payment will be made by the City to the Contractor.

I. For all liability insurance policies required by this Section, the City, including its officers, elected officials, employees, agents, and authorized volunteers, and any other entities as required by the Contract, shall be named as additional insured(s) by amendatory endorsement, EXCEPT Professional Liability (if applicable), Workers’ Compensation, Owners and Contractors Protective Liability, and Railroad Protective Liability.

II. EVIDENCE OF INSURANCE

The Contractor shall deliver a COI and endorsements for each policy of insurance meeting the requirements set forth herein when the Contractor delivers the signed Contract for the work to the City. The certificate and endorsements must conform to the following requirements:

A. An ACORD certificate or a form determined by the City to be equivalent.
B. Copies of all endorsements showing the policy number and naming the City as an additional insured.
C. The endorsement is to state that the insurance is primary and non-contributory over any City insurance or self-insurance.
D. The endorsement is to extend "Products/Completed Operations" coverage to the City as an additional insured.
E. A statement of additional insured status on an ACORD COI shall not satisfy this requirement.
F. Any other amendatory endorsements to show the coverage required herein.

III. CERTIFICATE REQUIREMENTS SPECIFIC REPRESENTATIONS

The following must be indicated on the COI:

A. The City is named as an additional insured *(*"with respect to a specific Contract" or "for any and all work performed with the City" may be included in this statement).
B. "This insurance is primary and non-contributory over any insurance or self-insurance the City may carry" ("with respect to a specific Contract" or "for any and all work performed with the City" may be included in this statement).
C. A Waiver of Subrogation in favor of the City for General Liability and Automobile Liability.
D. Self-Insured Retention and applicable deductible limits must be disclosed on the COI and be no more than Ten Thousand Dollars ($10,000).
E. Contract or Permit number and the City Department.
F. All coverage other than Professional Liability, Cyber/Privacy and Security, and Pollution Liability must be written on "occurrence" form and not "claims-made" form.
G. Reflect the existence and form numbers of all required endorsements.

IV. SUBCONTRACTORS

It is the Contractor's responsibility to ensure that each subcontractor obtain and maintain adequate liability insurance coverage. The Contractor shall provide evidence of such insurance upon the City's request.

V. CERTIFICATE REQUIREMENTS FOR COVERAGES AND LIMITS

The insurance shall provide the minimum coverages and limits set forth below. Providing coverage in these stated minimum limits shall not be construed to relieve the Contractor from liability in excess of such limits. The policies and/or coverages required by this section shall be subject to a deductible or self-insured retained limit up to Ten Thousand Dollars ($10,000) unless first approved in writing by the City of Tacoma, Risk Management Division.

A. General Liability Insurance

1. Commercial General Liability (CGL) Insurance

The CGL insurance policy must provide limits not less than One Million Dollars ($1,000,000) each occurrence and Two Million Dollars ($2,000,000) annual aggregate.

The CGL policy shall be written on an "occurrence," not "claims-made," basis and shall include the following coverage:

a. Must use (Insurance Services Office (ISO) form CG0001(04-13) or its equivalent).
b. A per project aggregate policy limit.
c. Products Hazard/Completed Operations- for a period of one year following final acceptance of the work.
d. Personal/Advertising Injury.
e. Contractual Liability.
f. Explosion, Collapse, or Underground Property Damage.
g. Blasting (only required when the Contractor's work under this Contract includes exposures to which this specified coverage responds).
h. If Contractor is performing work within fifty (50) feet of a railroad right of way, the General Liability policy shall be endorsed to eliminate the Contractual Liability exclusion pertaining to work within fifty (50) feet of a railroad right of way using ISO form CG2417(10-01) or equivalent.
i. Abuse and Molestation, by a separate coverage part or an endorsement to the CGL, with limits not less than One Million Dollars ($1,000,000) each occurrence and Two Million Dollars ($2,000,000) aggregate including but not limited to Contractors working directly with youth under the age of 18. If Abuse and Molestation coverage is provided on a “claims-made” basis, coverage must be maintained for not less than three years following the end of the contract. This may be done by policy renewals or an Extended Reporting Period Endorsement.
j. Include the City as additional insured and:
    1) Use ISO forms CG2010(04-13) and CG2037(04-13) or equivalent for Contractors performing work on behalf of the City and name the City as an additional insured for ongoing and completed operations.
    2) Use ISO form CG2012(04-13) or equivalent for Permits and name the City as an additional insured.
    3) Use ISO form CG2026(04-13) or equivalent for Facility Use Agreements and name the City as an additional insured.
    4) Blanket additional insured provisions within a policy form will not be accepted in lieu of the specific additional insured endorsement forms specified herein. However, a blanket additional insured endorsement providing the equivalent coverage provided by specific additional insured endorsements specified herein, may be accepted upon written approval from City of Tacoma, Risk Management Division.

B. Commercial Automobile Liability (CAL) Insurance

The Contractor shall obtain and keep in force during the term of the Contract, a policy of CAL insurance coverage, providing bodily injury coverage and property damage coverage for owned (if any), non-owned, hired, and leased vehicles.

The Contractor must also maintain an MCS 90 endorsement or equivalent and a CA 9948 endorsement or equivalent if "Pollutants" are to be transported. CAL policies must provide limits not less than One Million Dollars ($1,000,000) each accident for bodily injury and property damage.
Must use ISO form CA 0001 or equivalent.

C. Workers' Compensation

1. **State of Washington Workers' Compensation**
   The Contractor shall comply with Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

D. Employers' Liability (EL) (Stop-Gap) Insurance

The Contractor shall maintain EL coverage with limits not less than One Million Dollars ($1,000,000) each employee, One Million Dollars ($1,000,000) each accident, and One Million Dollars ($1,000,000) policy limit.

E. Professional Liability Insurance (PLI)

The Contractor and/or its subcontractor shall provide evidence of PLI covering professional errors and omissions. Such policy must provide minimum limits of One Million Dollars ($1,000,000) per claim and Two Million Dollars ($2,000,000) aggregate. If the scope of such design-related professional services includes work related to pollution conditions, the PLI policy shall include Pollution Liability coverage. If provided on a "claims-made" basis, such coverage shall be maintained by policy renewals or an extended reporting period endorsement for not less than three years following the end of the Contract.

F. Excess or Umbrella Liability (UL) Insurance

The Contractor shall provide Excess or UL coverage at limits of not less than Five Million Dollars ($5,000,000) per occurrence and in the aggregate. This Excess or UL coverage shall apply, at a minimum, to the CGL, EL and Automobile Liability forms required herein.

G. Pollution Liability (PL) Insurance

The Contractor shall procure and maintain a PL or Environmental Liability policy providing coverage, including investigation and defense costs, for bodily injury and

property damage, including loss of use of damaged property or of property that has been physically damaged or destroyed. Such coverage shall provide both on-site and off-site cleanup costs and cover gradual and sudden pollution, and include in its scope of coverage the City damage claims for loss arising out of the Contractor's work with limits not less than One Million Dollars ($1,000,000) each occurrence and Two Million Dollars ($2,000,000) aggregate. This policy shall include Environmental Resource Damage coverage.

Such insurance may be provided on an "occurrence" or "claims-made" basis. If such coverage is provided on a "claims-made" basis, the following additional conditions must be met:

1. The policy shall not exclude coverage for Hazardous Substance Removal.
2. The policy must contain no retroactive date, or the retroactive date must precede the commencement date of this Contract.
3. If provided on a "claims-made" basis and the insurer providing coverage changes during the term of the Contract, the prior acts date must remain on or before the commencement date of this Contract.
4. The extended reporting period (tail) must be purchased to cover a minimum of six (6) years beyond completion of work.

H. Installation Floater Insurance (IFI)

The Contractor shall maintain in force during the term of this Contract, at its own expense, an IF insurance covering Contractor's labor, materials, and equipment to be used for completion of the work performed under this Contract against all risks of direct physical loss, excluding earthquake and flood, for an amount equal to the full amount of the Contract improvements.

I. Builder's Risk (BR) Insurance

The Contractor shall purchase and maintain during the term of the Contract, a policy of BR insurance providing coverage for all-risk of physical injury to all structures to be constructed according to the Contract. The City shall be included as a named insured on the policy. BR insurance shall:

1. Be on an ISO special form Causes of Loss form or equivalent and shall insure against the perils flood, earthquake, theft, vandalism, malicious mischief, and collapse.
2. Include coverage for temporary buildings, debris removal, and damage to materials in transit or stored off-site.
3. Be written in the amount of the completed value of the structures,

with no coinsurance provisions exposure on the part of the Contractor or City.

4. Have a deductible of no more than Five Thousand Dollars ($5,000) for each occurrence, the payment of which will be the responsibility of the Contractor. Any increased deductibles accepted by the City will remain the responsibility of the Contractor.
5. The policy shall contain a Waiver of Subrogation provision whereby each insured waives their subrogation rights to the extent the loss is covered by this insurance.
6. The policy shall grant permission to occupy, allowing the building or structure to be partially occupied prior to completion, without detrimental effect to the coverage provided.
7. The policy shall include coverage for the testing and startup of the building's operating systems.
8. The policy shall include coverage for the City's loss of use or business interruption arising out of a covered loss which delays completion.
9. The policy shall include resultant damage coverage for loss due to faulty workmanship and defective material.
10. Be maintained until final acceptance of the work by the City.

The Contractor and the City waive all rights against each other, their respective subcontractors, agents, and representatives for damages caused by fire or other perils to the extent covered by BR insurance or other property insurance applicable to the work. The policies shall provide such waivers by endorsement or otherwise.

J. Other Insurance

Other insurance may be deemed appropriate to cover risks and exposures related to the scope of work or changes to the scope of work required by the City. The costs of such necessary and appropriate insurance coverage shall be borne by the Contractor.

VI. CONTRACTOR

As used herein, "Contractor" shall be the Supplier(s) entering a Contract with City, whether designated as a Supplier, Contractor, Vendor, Proposer, Bidder, Respondent, Seller, Merchant, Service Provider, or otherwise.

Chapter 1.07

SMALL BUSINESS ENTERPRISE

Sections:
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1.07.140 Sunset and review of program.

1.07.010 Policy and purpose.

It is the policy of the City of Tacoma that citizens be afforded an opportunity for full participation in our free enterprise system and that historically underutilized business enterprises shall have an equitable opportunity to participate in the performance of City contracts. The City finds that in its contracting for supplies, services and public works there has been historical underutilization of small businesses located in certain geographically and economically disfavored locations and that this underutilization has had a deleterious impact on the economic well-being of the City. The purpose of this chapter is to remedy the effects of such underutilization through use of reasonably achievable goals to increase opportunities for historically underutilized businesses to participate in City contracts. It is the goal of this chapter to facilitate a substantial procurement, education, and mentorship program designed to promote equitable participation by historically underutilized businesses in the provision of supplies, services, and public works to the City. It is not the purpose of this chapter to provide any person or entity with any right, privilege, or claim, not shared by the public, generally, and this chapter shall not be construed to do so. This chapter is adopted in accordance with Chapter 35.22 RCW and RCW 49.60.400.

(Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.020 Definitions.

Terms used in this chapter shall have the following meanings unless defined elsewhere in the Tacoma Municipal Code ("TMC"), or unless the context in which they are used clearly indicates a different meaning.

A. "Affidavit of Small Business Enterprise Certification" means the fully completed, signed, and notarized affidavit that must be submitted with an application for SBE certification. Representations and certifications made by the applicant in this Affidavit are made under penalty of perjury and will be used and relied upon by City to verify SBE eligibility and compliance with SBE certification and documentation requirements.

B. "Base Bid" means a Bid for Public Works to be performed or Supplies or Services to be furnished under a City Contract, including additives, alternates, deductives, excluding force accounts, and taxes collected separately pursuant to Washington Administrative Code ("WAC") 458-20-171.

C. "Bid" means an offer submitted by a Respondent to furnish Supplies, Services, and/or Public Works in conformity with the Specifications and any other written terms and conditions included in a City request for such offer.

D. "Bidder" means an entity or individual who submits a Bid, Proposal or Quote. See also "Respondent."

E. "City" means all Departments, Divisions and agencies of the City of Tacoma.

F. "Contract" means any type of legally binding agreement regardless of form or title that governs the terms and conditions for procurement of Public Works and Improvements and/or Non-Public Works and Improvements Supplies and Services. Contracts include the terms and conditions found in Specifications, Bidder or Respondent Submittals, and purchase orders issued by the City. A "Contract" as used in this chapter shall include an agreement between the City and a non-profit entity to perform construction-related services for Public Works. A "Contract" does not include: (1) awards made by the City with federal/state grant or City general funds monies to a non-profit entity where the City offers assistance, guidance, or supervision on a project or program, and the recipient of the grant awards uses the grant moneys to provide services to the

community; (2) sales transactions where the City sells its personal or real property; (3) a loan transaction where the City is acting as a debtor or a creditor; (4) lease, franchise; (5) agreements to use City real property (such as Licenses, Permits and Easements) and, (6) banking and other financial or investment services.

G. "Contractor" means any Person that presents a Submittal to the City, enters into a Contract with the City, and/or performs all or any part of a Contract awarded by the City, for the provision of Public Works, or Non-Public Works and Improvements, Supplies or Services.

H. "Evaluated Bid" means a Bid that factors each Respondent's Base Bid including any alternates, deductive and additives selected by the City that will result in a weighed reduction based on that Respondent's percentage of SBE participation, as defined by formula set forth in this chapter or in the SBE Regulations adopted pursuant to this chapter.

I. "Goals" means the annual level of participation by SBEs in City Contracts as established in this chapter, the SBE Regulations, or as necessary to comply with applicable federal and state nondiscrimination laws and regulations. Goals for individual Contracts may be adjusted as provided for in this chapter and shall not be construed as a minimum for any particular Contract or for any particular geographical area.

J. "SBE Certified Business" (or "SBEs") means a business that meets the criteria set forth in Section 1.07.050 of this chapter and has been certified as meeting that criteria by the Community and Economic Development Department-SBE Program Coordinator.

K. "SBE Program Coordinator" means the individual appointed, from time to time, by the City's Community and Economic Development Director to administer the SBE Regulations.

L. "SBE Regulations" shall mean the written regulations and procedures adopted pursuant to this chapter for procurement of Supplies, Services and Public Works.

M. "Lowest and Best Responsible Bidder" means the Bidder submitting the lowest Bid received that is within the range of acceptable bids, that also has the ability to timely perform the Contract bid upon considering such factors as financial resources, skills, quality of materials, past work record, and ability to comply with state, federal, and local requirements, including those set forth in the SBE Regulations.

N. "Non-Public Works and Improvements" means all competitively solicited procurement of Supplies and/or Services by the City not solicited as Public Works.

O. "Person" means individuals, companies, corporations, partnerships, associations, cooperatives, any other legally recognized business entity, legal representative, trustee, or receivers.

P. "Proposal" means a written offer to furnish Supplies or Services in response to a Request for Proposals. This term may be further defined in the Purchasing Policy Manual and/or in competitive solicitations issued by the City.

Q. "Public Works (or "Public Works and Improvements)" means all work, construction, alteration, repair, or improvement other than ordinary maintenance, executed at the cost of the City, or that is by law a lien or charge on any property therein. This term includes all Supplies, materials, tools, and equipment to be furnished in accordance with the Contract for such work, construction, alteration, repair, or improvement.

R. "Quote" means a competitively solicited written offer to furnish Supplies or Services by a method of procurement that is less formalized than a Bid or a Proposal. This term may be further defined in the Purchasing Policy Manual.

S. "Respondent" means any entity or Person, other than a City employee, that provides a Submittal in response to a request for Bids, Request for Proposals, Request for Qualifications, request for quotes or other request for information, as such terms are defined in Section 1.06.251 TMC. This term includes any such entity or Person whether designated as a supplier, seller, vendor, proposer, Bidder, Contractor, consultant, merchant, or service provider that; (1) assumes a contractual responsibility to the City for provision of Supplies, Services, and/or Public Works; (2) is recognized by its industry as a provider of such Supplies, Services, and/or Public works; (3) has facilities similar to those commonly used by Persons engaged in the same or similar business; and/or (4) distributes, delivers, sells, or services a product or performs a Commercially Useful Function.

T. "Services" means non-Public Works and Improvements services and includes professional services, personal services, and purchased services, as such terms are defined in Section 1.06.251 TMC and/or the City's Purchasing Policy Manual.

U. "Submittal" means Bids, Proposals, Quotes, qualifications or other information submitted in response to requests for Bids, Requests for Proposals, Requests for Qualifications, requests for Quotations, or other City requests for information, as such terms are defined in Section 1.06.251 TMC.

V. "Supplies" means materials, Supplies, and other products that are procured by the City through a competitive process for either Public Works procurement or Non-Public Works and Improvements procurement unless an approved waiver has been granted by the appropriate authority.

(Ord. 28274 Ex. A; passed Dec. 16, 2014: Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.030 Discrimination prohibited.

A. No person that is engaged in the construction of public works for the City, engaged in the furnishing of laborers or craftspeople for public works of the City, or is engaged for compensation in the provision of non-public works and improvements supplies and/or services to the City, shall discriminate against any other person on the basis of race, religion, color, national origin or ancestry, sex, gender identity, sexual orientation, age, marital status, familial status, or the presence of any sensory, mental or physical disability in employment. Such discrimination includes the unfair treatment or denial of normal privileges to a person as manifested in employment upgrades, demotions, transfers, layoffs, termination, rates of pay, recruitment of employees, or advertisement for employment.

B. The violation of the terms of RCW 49.60 or Chapter 1.29 TMC by any person that is engaged in the construction of public works for the City, is engaged in the furnishing of laborers or craftspeople for public works of the City, or is engaged for compensation in the provision of non-public works and improvements supplies and/or services shall result in the rebuttable presumption that the terms of this chapter have also been violated. Such violation may result in termination of any City contract the violator may have with the City and/or the violator's ineligibility for further City Contracts.

(Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.040 Program administration.

A. The Community and Economic Development Director, or his or her designated SBE Program Coordinator, shall be responsible for administering this chapter and obtaining compliance with respect to contracts entered into by the City and/or its contractors. It shall be the duty of the Director to pursue the objectives of this chapter by conference, conciliation, persuasion, investigation, or enforcement action, as may be necessary under the circumstances. The Director is authorized to implement an administrative and compliance program to meet these responsibilities and objectives.

B. The Director is hereby authorized to adopt and to amend administrative rules and regulations known as the SBE Regulations to properly implement and administer the provisions of this chapter. The SBE Regulations shall be in conformance with City of Tacoma policies and state and federal laws and be designed to encourage achievement of the SBE goals set forth herein. The SBE Regulations shall become effective following public notice and an opportunity to comment by the public.

C. The SBE Regulations adopted pursuant to this section are for the administrative and procedural guidance of the officers and employees of the City and are further expressions of the public policy of the City. The SBE Regulations, when adopted, shall not confer an independent cause of action or claim for relief cognizable in the courts of the state of Washington or the United States of America to any third parties, and such provisions shall not be used as the basis for a lawsuit in any court of competent jurisdiction challenging the award of any contract by the City.

(Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 28110 Ex. B; passed Dec. 4, 2012: Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.050 Certification.

A. The SBE Program Coordinator shall approve a person as a SBE Certified Business if all of the following criteria are satisfied:

1. Each person with an ownership interest in the company has a personal net worth of less than $1,320,000 excluding one personal residence and the net worth of the business;

2. The company's total gross receipts for any consecutive three year period within the last six years is not more than $36,500,000 for public works companies and not more than $15,000,000 for non-public works and improvements companies;

3. The owner(s) of the company executes an Affidavit of Small Business Enterprise Certification and files it with the City which states that all information submitted on the SBE application is accurate, that the business has sought or intends to do business with the City and/or within the Pierce County area and has experienced or expects to experience difficulty competing for such business due to financial limitations that impair its ability to compete against larger firms; and

4. The company can demonstrate that it also meets at least one of the following additional requirements:

a. The company's business offices, or the personal residence of the owner, is located within a City of Tacoma designated Renewal Community/Community Empowerment Zone, prior to designation as a SBE, or

b. The company's business offices, or the personal residence of the owner, is located within the City of Tacoma for at least six months prior to designation as a SBE; or

c. The company's business offices are located in a federally designated HUBZONE in Pierce County or any adjacent county for at least 12 months prior to designation as a SBE; or

d. The company's business offices are located in a federally designated HUBZONE in a County wherein the work will be performed, or an adjacent county, for at least 12 months prior to designation as a SBE.

B. Application Process. The SBE Program Coordinator shall make the initial determination regarding certification or recertification. Each SBE applicant shall provide the following documents; as such documents are more fully described in the SBE Regulations, to the SBE Program Coordinator:

1. A completed Statement of Personal Net Worth form;

2. A completed, signed, and notarized Affidavit of Small Business Enterprise Certification that affirms compliance with the certification and documentation requirements of this section;

3. List of equipment and vehicles used by the SBE;

4. Description of company structure and owners;

5. Such additional information as the SBE Program Coordinator or designee may require.

When another governmental entity has an equivalent SBE classification process the City may enter into an interlocal cooperative agreement for mutual recognition of certifications.

C. Recertification. A SBE qualified business shall demonstrate annually to the satisfaction of the SBE Program Coordinator that the following SBE qualifications are still in effect for such business:

1. That the company still meets all of the criteria set forth in subsection 1.07.050.A. TMC, and

2. That the company has maintained all applicable and necessary licenses in the intervening period, and

3. That the company demonstrates that the owner and/or designated employees have completed the minimum annual continuing business education training requirements set forth in the SBE Regulations.

D. Appeals. The applicant may appeal any certification determination by the SBE Program Coordinator under this chapter to the Director. The appeal must be made in writing and must set forth the specific reasons for the appeal. The Director shall make a decision on the appeal request within a reasonable time, which decision shall be final unless further appeal is made to the Hearing Examiner. In that event, the Hearing Examiner Rules of Procedure for Hearings, Chapter 1.23 TMC, shall be applicable to that appeal proceeding.

(Ord. 28274 Ex. A; passed Dec. 16, 2014: Ord. 28147 Ex. A; passed May 7, 2013: Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 28110 Ex. B; passed Dec. 4, 2012: Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.060 Program requirements.

A. Establishment of Annual SBE Goals. The SBE Regulations adopted pursuant to this chapter shall state reasonably achievable cumulative annual goals for utilization of SBEs in the provision of supplies, services, and public works procured by the City. Cumulative annual goals for the participation of SBEs in City contracts shall be based on the number of qualified SBEs operating within Pierce County or in a county that is adjacent to Pierce County or in a HUBZone in a county where the supplies, services and/or public works will be delivered or performed. The dollar value of all contracts awarded by the City to SBEs in the procurement of supplies, services, and public works shall be counted toward the accomplishment of the applicable SBE goal. The initial cumulative annual SBE goal for all public works, non-public works and improvements supplies and services procured by the City of Tacoma is 22 percent.

B. Revision of Annual SBE Goals. SBE utilization goals for supplies, services, and public works shall be reviewed annually to determine the total level of SBE participation reasonably attainable. If no certified SBEs are available to provide supplies, services, and/or public works, the dollar value of such supplies, services, or public works shall be exempt from the calculation of the cumulative annual goals set forth in the SBE Regulations. Proposed reduction of the cumulative annual SBE goals shall be in accordance with the SBE Regulations.

C. Application of SBE Goals to Contracts. The SBE Program Coordinator shall consult with City departments/divisions to establish the SBE goal for competitively solicited contracts of $25,000 and above, in accordance with this chapter and the SBE Regulations. No SBE goal will be established if no certified SBEs are available to provide supplies, services and/or public works.

D. Waivers. City departments/divisions or the SBE Program Coordinator may request to waive one or more of the requirements of this chapter as they apply to a particular contract or contracts. Waivers may be granted in any one or more of the following circumstances:

1. Emergency: The supplies, services and/or public works must be provided with such immediacy that neither the City nor the contractor can comply with the requirements herein. Such emergency and waiver must be documented by the department/division awarding the contract.

2. Not Practicable: Compliance with the requirements of this chapter would impose an unwarranted economic burden or risk to the City after consideration of existing budgetary approvals.

3. Sole source: The supplies, services, and/or public works are available from only one source, and subcontracting possibilities do not reasonably exist as determined by the finance purchasing manager.

4. Government purchasing. The City is a party to or included in a federal, state or inter-local government purchasing agreement as approved by the finance purchasing manager.

5. Lack of SBEs: An insufficient number of qualified SBE contractors exist to create SBE utilization opportunities.

6. Best interests of the City: Waiver of SBE goals is in the best interests of the City due to unforeseen circumstances, provided that said circumstances are set forth in writing by the requestor.

E. Review of Waivers. A waiver determination by the finance purchasing manager may be reviewed by the Board of Contracts and Awards (C&A Board). The C&A Board may also review a request to reduce or waive the SBE utilization goals based on Not Practicable or Best Interests of the City circumstances. The C&A Board shall determine whether compliance with such goals would impose unwarranted economic burden on, or risk to, the City of Tacoma as compared with the degree to which the purposes and policies of this chapter would be furthered by requiring compliance. If the determination of the C&A Board does not resolve the matter, a final determination shall be made by the City Council or Public Utility Board, as the case may be.

(Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.070 Evaluation of submittals.

A. All submittals for a supplies, services, or public works and improvements contract valued at $25,000 or more shall be evaluated for attainment of the SBE goal established for that contract in accordance with this chapter and the SBE Regulations.

B. The determination of SBE usage and the calculation of SBE goal attainment per this section shall include the following considerations:

1. General. The dollar value of the contract awarded by the City to a SBE in the procurement of supplies, services, or public works shall be counted toward achievement of the SBE goal.

2. Supplies. A public works and improvements contractor may receive credit toward attainment of the SBE goal for expenditures for supplies obtained from a SBE; provided such SBE assumes the actual and contractual responsibility for delivering the supplies with its resources. The contractor may also receive credit toward attainment of the SBE goal for the amount of the commission paid to a SBE resulting from a supplies contract with the City; provided the SBE performs a commercially useful function in the process.

3. Services and Public Works subcontracts. Any bid by a certified SBE or a bidder that utilizes a certified SBE shall receive credit toward SBE goal attainment based on the percentage of SBE usage demonstrated in the bid. A contractor that utilizes a SBE-certified subcontractor to provide services or public works shall receive a credit toward the contractor's attainment of the SBE goal based on the value of the subcontract with that SBE.

4. Brokers, Fronts, or Similar Pass-Through Arrangements. SBEs acting as brokers, fronts, or similar pass-through arrangements (as such terms are defined in the SBE Regulations) shall not count toward SBE goal attainment unless the activity reflects normal industry practices and the broker performs a commercially useful function.

C. Evaluation of competitively solicited submittals for public works and improvements and for services when a SBE utilization goal has been established for the contract to be awarded shall be as follows:

1. When contract award is based on price. The lowest priced bid submitted by a responsive and responsible bidder will be reviewed to determine if it meets the SBE goal. Such low bid shall be determined to meet the SBE goal if the bidder is a certified SBE.

a. If the low bidder meets the SBE goal, the bid shall be presumed the lowest and best responsible bid for contract award.

b. If the lowest priced bid does not meet the SBE goal, but the bid of any other responsive and responsible bidder does, and such other bid(s) is or are priced within five percent of the lowest bid, then the following formula shall be applied to each such other bid:

$$\text{(Base Bid)} - \left[\frac{\text{SBE Usage Percentages}}{\text{SBE Goal Percentages}} \text{ X (.05 X Low Base Bid)} \right] = \text{Evaluated Bid}$$

c. The lowest evaluated bid after applying said evaluation formula shall be presumed the lowest and best responsible bid for contract award.

d. In no event shall a bidder's evaluated bid price be adjusted more than 5 percent from its base bid price for purposes of contract award.

2. When contract award is based on qualifications or other performance criteria in addition to price. Solicitations shall utilize a scoring system that promotes participation by certified SBEs. Submittals by respondents determined to be qualified may be further evaluated based on price using the formula applicable to price based contract awards above. The SBE Regulations may establish further requirements and procedures for final selection and contract award, including:

a. Evaluation of solicitations for Architectural and Engineering (A&E) services;

b. Evaluation and selection of submittals in response to requests for proposals; and

c. Selection of contractors from pre-qualified roster(s).

D. Evaluation of competitively solicited submittals for supplies when no SBE utilization goal has been established for the contract to be awarded shall encourage SBE participation as follows:

1. A submittal from a responsive certified SBE that is priced within five percent of the otherwise lowest responsive bid shall be recommended for award. Otherwise, the lowest responsive bidder shall be recommended for contract award.

E. The SBE Regulations may establish further SBE goal evaluation requirements and procedures for award of contracts between $5,000 and $25,000.00 and for non-competitively solicited contracts. City departments/divisions shall use due diligence to encourage and obtain SBE participation for supplies, services, and public works contracts under $5,000.

(Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.080 Contract compliance.

A. The contractor awarded a contract based on SBE participation shall, during the term of the contract, comply with the SBE goal established in said contract. To ensure compliance with this requirement following contract award, the following provisions apply:

1. Any substitutions for or failure to utilize SBEs projected to be used must be approved in advance by the SBE Program Coordinator. Substitution of one SBE with another shall be allowed where there has been a refusal to execute necessary agreements by the original SBE, a default on agreements previously made or other reasonable excuse; provided that the substitution does not increase the dollar amount of the bid.

2. Where it is shown that no other SBE is available as a substitute and that failure to secure participation by the SBE identified in the solicitation is not the fault of the respondent, substitution with a non-SBE shall be allowed; provided, that, the substitution does not increase the dollar amount of the bid.

3. If the SBE Program Coordinator determines that the contractor has not reasonably and actively pursued the use of replacement SBE(s), such contractor shall be deemed to be in non-compliance.

B. Record Keeping. All contracts shall require contractors to maintain relevant records and information necessary to document compliance with this chapter and the contractor's utilization of SBEs, and shall include the right of the City to inspect such records.

(Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.090 Program monitoring.

A. The SBE Program Coordinator shall monitor compliance with all provisions of this chapter and the SBE Regulations. The SBE Program Coordinator shall establish procedures to collect data and monitor the effect of the provisions of this chapter to assure, insofar as is practical, that the remedies set forth herein do not disproportionately favor one or more racial, gender, ethnic, or other protected groups, and that the remedies do not remain in effect beyond the point that they are required to

eliminate the effects of under utilization in City contracting. The SBE Program Coordinator shall have the authority to obtain from City departments/divisions, respondents, and contractors such relevant records, documents, and other information as is reasonably necessary to determine compliance.

B. The SBE Program Coordinator shall submit an annual report to the Community and Economic Development Director, Director of Utilities, and the City Manager detailing performance of the program. The report shall document SBE utilization levels, waivers, proposed modifications to the program, and such other matters as may be specified in the SBE Regulations.

(Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 28110 Ex. B; passed Dec. 4, 2012: Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.100 Enforcement.

The Director, or his or her designee, may investigate the employment practices of contractors to determine whether or not the requirements of this chapter have been violated. Such investigation shall be conducted in accordance with the procedures established in the SBE Regulations.

(Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 28110 Ex. B; passed Dec. 4, 2012: Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.110 Remedies.

A. Upon receipt of a determination of contractor violation by the SBE Program Coordinator, the City Manager or Director of Utilities, as appropriate, may take the following actions, singly or together, as appropriate:

1. Forfeit the contractor's bid bond and/or performance bond;

2. Publish notice of the contractor's noncompliance;

3. Cancel, terminate, or suspend the contractor's contract, or portion thereof;

4. Withhold funds due contractor until compliance is achieved; and/or

5. Recommend appropriate action including, but not limited to, disqualification of eligibility for future contract awards by the City (debarment) per Section 1.06.279 TMC;

B. Prior to exercise of any of the foregoing remedies, the City shall provide written notice to the contractor specifying the violation and the City's intent to exercise such remedy or remedies. The notice shall provide that each specified remedy becomes effective within ten business days of receipt unless the contractor appeals said action to the Hearing Examiner pursuant to Chapter 1.23 TMC.

C. When non-compliance with this chapter or the SBE Regulations has occurred, the SBE Program Coordinator and the department/division responsible for enforcement of the contract may allow continuation of the contract upon the contractor's development of a plan for compliance acceptable to the Director.

(Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 28110 Ex. B; passed Dec. 4, 2012: Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.120 Unlawful acts.

It shall be unlawful for any Person to willfully prevent or attempt to prevent, by intimidation, threats, coercion, or otherwise, any Person from complying with the provisions of this chapter.

(Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.130 Severability.

If any section of this chapter or its application to any Person or circumstance is held invalid by a court of competent jurisdiction, then the remaining sections of this chapter, or the application of the provisions to other Persons or circumstances, shall not be affected.

(Ord. 27867 Ex. A; passed Dec. 15, 2009)

1.07.140 Sunset and review of program.

This chapter shall be in effect through and until December 31, 2019, unless the City Council shall determine at an earlier date that the requirements of this chapter are no longer necessary. If this chapter has not been repealed by July 1, 2019, the City Council shall determine by the end of that year whether substantial effects or lack of opportunity of SBEs remain true in the relevant market and whether, and for how long, some or all of the requirements of this chapter should remain in effect.

(Ord. 28274 Ex. A; passed Dec. 16, 2014: Ord. 28141 Ex. A; passed Mar. 26, 2013: Ord. 27867 Ex. A; passed Dec. 15, 2009)

GENERAL PROVISIONS

(Revised January 17, 2017)

SECTION I - BIDDING REQUIREMENTS

SECTION I REQUIREMENTS ARE BINDING ON ALL RESPONDENTS.

1.01 USE AND COMPLETION OF CITY PROPOSAL SHEETS

A. Respondent's Proposal

Each Respondent must bid exactly as specified on the Proposal sheets. All proposals must remain open for acceptance by the City for a period of at least 60 calendar days from the date of opening of the bids.

B. Alterations of Proposals Not Allowed

Proposals that are incomplete or conditioned in any way, contain alternatives or items not called for in the General Provisions and Specifications, or not in conformity with law may be rejected as being nonresponsive. The City cannot legally accept any proposal containing a substantial deviation from these Specifications.

C. Filling Out City Proposal Sheets

All proposals must be completed using the proposal sheets and forms included with this specification, and the prices must be stated in figures either written in ink or typewritten. No proposal having erasures or interlineations will be accepted unless initialed by the Respondent in ink.

1.02 CLARIFICATION OF PROPOSAL FOR RESPONDENT

If a prospective Respondent has any questions concerning any part of the Proposal, he/she may submit a written request to the particular Division of the City of Tacoma for answer of his/her questions. Any interpretation of the Proposal will be made by an Addendum duly issued and mailed or delivered to each prospective Respondent. Such addendum must be acknowledged in the proposal. The City of Tacoma will not be responsible for any other explanation or interpretation of the bid documents.

1.03 SMALL BUSINESS ENTERPRISE (SBE) PROGRAM AND EQUAL OPPORTUNITY EMPLOYMENT

It is the policy of the City of Tacoma that all citizens be afforded an equal opportunity for full participation in our free enterprise system. In order to implement this policy, the City of Tacoma is committed to ensuring equitable participation of small business enterprises by establishing goals for their utilization in the provision of construction services, and related goods and/or services, to the City.

A. Public Work or Improvement Type Projects and Contracts:

Respondents for public work or improvement type projects and contracts in excess of $25,000 have an obligation to comply with the requirements set forth in the City's SBE Regulations adopted pursuant to Tacoma Municipal Code (TMC) Chapter 1.07. For further information, contact the City **SBE Office**, 747 Market Street, Room 900, Tacoma, WA 98402. Phone 253-573-2435. Email SBEOffice@cityoftacoma.org

Compliance with State Law RCW 35.22.650 is also required. All respondents for public work or improvement contracts (exceeding $10,000, and $15,000 for construction of water mains) are required to actively solicit minority and women business enterprise subcontractors. With respect to all such contracts, the Contractor agrees that he/she shall actively solicit the employment of minority group members. Contractor further agrees that he/she shall actively solicit bids for the subcontracting of goods or services from qualified minority businesses. Contractor shall furnish evidence of his/her compliance with these requirements of minority employment and solicitation. Contractor further agrees to consider the grant of subcontracts to said minority respondents on the basis of substantially equal proposals. The contractor shall be required to submit evidence of compliance with this section as part of the bid. ALL RESPONDENTS FOR PUBLIC WORK AND IMPROVEMENTS CONTRACTS MUST COMPLETE AND SUBMIT WITH THEIR BID THE FOLLOWING SOLICITATION FORMS CONTAINED IN THE BID SUBMITTAL PACKAGE AND ATTACHED HERETO:

- **Prime Contractor's Pre-Work Form** for contracts per RCW 35.22.650

B. Purchase of Goods and/or Services Contracts:

Respondents for supply type contracts to which SBE Regulations do not apply have an obligation to demonstrate efforts to ensure equitable participation of minority and women's businesses. Such respondents shall not discriminate against any person on the basis of race, color, creed, sex, age or nationality in employment and are subject to the City's ordinances and regulations prohibiting discrimination. See TMC Chapter 1.50.

Service contracts involving a single trade are also subject to TMC Chapter 1.07, and respondents for such service contracts must submit applicable SBE program forms to be considered for contract award.

ALL RESPONDENTS FOR PURCHASE and/or SERVICES CONTRACTS MUST COMPLETE AND SUBMIT WITH THEIR BID THE FOLLOWING FORM CONTAINED IN THE BID SUBMITTAL PACKAGE AND ATTACHED HERETO:

1.04 RESPONDENT'S BOND OR CERTIFIED CHECK

Each bid for construction must be accompanied either by a certified or cashiers check for 5 percent of the total amount bid, including tax, payable to the City Treasurer, or an approved bid bond, by a surety company authorized to do business in the State of Washington, for 5 percent of the total amount bid. All bid bonds must be signed by the person legally authorized to sign the bid. The approved bid bond form attached to these Specifications should be used: no substantial variations from the language thereof will be accepted.

If a bid bond is used, the 5 percent may be shown either in dollars and cents, or the bid bond may be filled in as follows, "5 percent of the total amount of the accompanying proposal."

The check of the successful Respondent will be returned after award of the Contract, acceptance of the Payment and Performance Bond and City's receipt of the signed Contract. The checks of all other Respondents will be returned immediately upon the award of the Contract. Bid bonds will not be returned.

1.05 DELIVERY OF PROPOSALS TO THE CITY'S PURCHASING OFFICE

Submittal packages must be received by the City's Purchasing Division, Tacoma Public Utilities Administration Building North, 3628 South 35th Street, Tacoma, WA 98409-3115, prior to the scheduled time and date stated in the solicitation announcement. Each submittal, intact and bound, shall be completely sealed, with the name of the submitting party (hereinafter "Respondent"), the specification number and title clearly marked on the exterior of the package. City offices are not open for special mail or other deliveries on weekends and City holidays.

Submittals may be delivered to the City by mail or in person to the main floor security desk; however, **the Respondent is solely responsible for timely delivery of its submittal to the Purchasing Division.**

Facsimile (fax) copies of submittals for requests for sealed bids, requests for proposals, requests for qualifications and requests for information will not be accepted at any City fax machine.

Submittals received after the time stated in the solicitation announcement will not be accepted and will be returned, unopened, to the Respondent.

For purposes of determining whether a submittal has been timely received, the City's Purchasing Division may rely on Universal Coordinated Time from the National Bureau of Standards as reported by http://wwp.greenwichmeantime.com/

1.06 CONTRACTOR'S STATE REGISTRATION NUMBER

Contractors for construction or public works construction are required to be licensed by the state. If the provisions of Chapter 18.27 of the Revised Code of Washington apply to the Respondent, then the Respondent's Washington State Contractor's Registration No. must accompany the bid.

1.07 BID IS NONCOLLUSIVE

The Respondent represents by the submission of the Proposal that the prices in this Bid are neither directly nor indirectly the result of any formal or informal agreement with another Respondent.

1.08 EVALUATION OF BID

A. Price, Experience, Delivery Time and Responsibility

In the evaluation of bids, the Respondent's experience, delivery time, quality of performance or product, conformance to the specifications and responsibility in performing other contracts (including satisfying all safety requirements) may be considered in addition to price. In addition, the bid evaluation factors set forth in City Code Section 1.06.262 may be considered by the City. Respondents who are inexperienced or who fail to properly perform other contracts may have their bids rejected for such cause.

B. Prequalified Electrical Contractor

Certain types of electrical construction requires special expertise, experience and prequalification of the Contractor (or subcontractor) by the City. In such cases, the Respondent must be prequalified or the Respondent must subcontract with a City prequalified electrical contractor for the specialty work.

C. Insertions of Material Conflicting with Specifications

Only material inserted by the Respondent to meet requirements of the Specifications will be considered. Any other material inserted by the Respondent will be disregarded as being nonresponsive and may be grounds for rejection of the Respondent's Proposal.

D. Correction of Ambiguities and Obvious Errors

The City reserves the right to correct obvious errors in the Respondent's proposal. In this regard, if the unit price does not compute to the extended total price, the unit price shall govern.

1.09 WITHDRAWAL OF BID

A. Prior to Bid Opening

Any Respondent may withdraw his/her Proposal prior to the scheduled bid opening time by delivering a written notice to the City’s Purchasing Office. The notice may be submitted in person or by mail; however, it must be received by the City’s Purchasing Office prior to the time of bid opening.

B. After Bid Opening

No Respondent will be permitted to withdraw his/her Proposal after the time of bid opening, as set forth in the Call for Bids, and before the actual award of the Contract, unless the award of Contract is delayed more than sixty (60) calendar days after the date set for bid opening. If a delay of more than 60 calendar days does occur, then the Respondent must submit written notice withdrawing his/her Proposal to the Purchasing Manager.

1.10 OPENING OF BIDS

At the time and place set for the opening of bids, all Proposals, unless previously withdrawn, will be publicly opened and read aloud, irrespective of any irregularities or informalities in such Proposal.

1.11 CITY COUNCIL FINAL DETERMINATION

The City Council of the City of Tacoma shall be the final judge as to which is the lowest and best bid in the interest of the City of Tacoma. The City reserves the right to reject any and all bids, waive minor deviations or informalities, and if necessary, call for new bids.

1.12 RESPONDENT'S REFUSAL TO ENTER INTO CONTRACT

Any Respondent who refuses to enter into a Contract after it has been awarded to the Respondent will be in breach of the agreement to enter the Contract and the Respondent's certified or cashier’s check or bid bond shall be forfeited.

1.13 TAXES

A. Include In Proposal All Taxes

Respondent shall include in his/her Proposal all applicable local, city, state, and federal taxes. It is the Respondent's obligation to state on his/her Proposal sheet the correct percentage and total applicable Washington State and local sales tax. The total cost to the City including all applicable taxes may be the basis for determining the low Respondent.

B. Federal Excise Tax

The City of Tacoma is exempt from federal excise tax. Where applicable, the City shall furnish a Federal Excise Tax Exemption certificate.

C. City of Tacoma Business and Occupation Tax

Sub-Title 6A of the City of Tacoma Municipal Code (TMC) provides that transactions with the City of Tacoma, may be subject to the City of Tacoma's Business and Occupation Tax. It is the responsibility of the Respondent awarded the Contract to register with the City of Tacoma's Department of Tax and License, 733 South Market Street, Room 21, Tacoma, WA 98402-3768, telephone 253-591-5252. The City's Business and Occupation Tax amount shall not be shown separately but shall be included in the unit and/or lump sum prices bid.

1.14 FIRM PRICES/ESCALATION

Except as specifically allowed by the Special Provisions, only firm prices will be accepted.

1.15 AWARD

A. Construction and/or Labor Contracts

Unless specifically noted in the Special Provisions or Proposal sheets, all construction and/or labor contracts will be awarded to only one Respondent.

B. Supply/Equipment Contracts

The City reserves the right to award an equipment or supply contract for any or all items to one or more Respondents as the interests of the City will be best satisfied.

1.16 INCREASE OR DECREASE IN QUANTITIES

The City of Tacoma reserves the right to increase or decrease the quantities of any items under this Contract and pay according to the unit prices quoted in the Proposal (with no adjustments for anticipated profit).

1.17 EXTENSION OF CONTRACT

Contracts resulting from this specification shall be subject to extension by mutual agreement per the same prices, terms and conditions.

1.18 PAYMENT TERMS

Prices will be considered as net 30 calendar days if no cash discount is shown. Payment discount periods of twenty (20) calendar days or more will be considered in determining the apparent lowest responsible bid. Invoices will not be processed for payment nor will the period of cash discount commence until receipt of a properly completed invoice and until all invoiced items are received and satisfactory performance of the Contractor has been attained. If an adjustment in payment is necessary due to damage or dispute, the cash discount period shall commence on the date final approval for payment is authorized.

1.19 COOPERATIVE PURCHASING

The Washington State Interlocal Cooperative Act RCW 39.34 provides that other governmental agencies may purchase goods and services on this solicitation or contract in accordance with the terms and prices indicated therein if all parties are agreeable.

1.20 PROPRIETARY OR CONFIDENTIAL TRADE SECRET INFORMATION

Washington State Public Disclosure Act (RCW 42.56 et seq.) requires public agencies in Washington to promptly make public records available for inspection and copying unless they fall within the specified exemptions contained in the Act. Documents submitted under this Specification are considered public records and, unless exempt from disclosure under the Act, will be made available for inspection and copying by the public in response to a public records request.

If the Respondent considers any submittal document to be exempt from disclosure under the law, the Respondent shall clearly mark on the specific page(s) affected such words as “CONFIDENTIAL,” “PROPRIETARY” or “TRADE SECRET.” The Respondent shall also submit an index with its submittal identifying the affected page number(s) and location(s) of all such identified material. **Failure to provide an index identifying the location of the material in the submittal that Respondent considers to be**

protected from disclosure will result in the records being released in response to a request for those records without further notice to Respondent. Marking the entire submittal as "confidential" or "proprietary" or "trade secret" is not acceptable and is grounds to reject such submittal.

If a public records request is made for disclosure of all or any part of Respondent's submittal **and** Respondent has (i) properly marked and (ii) indexed the material it asserts to be exempt from disclosure, the City will determine whether the material is exempt from public disclosure. If, in the City's opinion, the material is subject to a possible exemption to disclosure, the City will notify Respondent of the request and impending release and allow the Respondent ten (10) business days to take whatever action Respondent deems necessary to protect its interests. The City will reasonably cooperate with any legal action initiated by the Respondent to prevent release; provided that all expense of such action shall be borne solely by the Respondent, including any damages, penalties, attorney's fees or costs awarded by reason of having opposed disclosure and Respondent shall indemnify City against same. If the Respondent fails or neglects to take such action within said period, the City will release all materials deemed subject to disclosure. Submission of materials in response to this solicitation shall constitute assent by the Respondent to the foregoing procedure and the Respondent shall have no claim against the City on account of actions taken pursuant to such procedure.

SECTION II - CONTRACT REQUIREMENTS

2.01 CONTRACTOR'S RESPONSIBILITY

A. Contract Documents

The Respondent to whom the Contract is awarded, hereinafter called the Contractor, shall enter into a Contract with the City of Tacoma within 10 days after receipt from the City of Tacoma of a properly prepared Contract. In addition, the Contractor will do all things required to promptly perform this Contract pursuant to the terms of this Contract. Certain contracts for supplies, goods or equipment may use the City Purchase Order in place of a formal contract document.

B. Surety Bonds

Except as modified by the Special Provisions, the Respondent to whom the Contract is awarded shall provide a payment and performance bond, including power of attorney, for 100 percent of the amount of his/her bid (including sales taxes), to insure complete performance of the Contract including the guarantee. The bonds must be executed by a surety company licensed to do business in the State of Washington. For a supply-type contract, a cashiers check or cash may be substituted for the bonds; however, this cash or cashiers check must remain with the City through the guarantee period and any interest on said amount shall accrue to the City.

C. Independent Contractor

Contractor is an independent contractor; no personnel furnished by the Contractor shall be deemed under any circumstances to be the agent or servant of the City. Contractor shall be fully responsible for all acts or omissions of Subcontractors and its and their suppliers, and of persons employed by them, and shall be specifically responsible for sufficient and competent supervision and inspection to assure compliance in every respect with the Contract. There shall be no contractual relationship between any Subcontractors or supplier and the City arising out of or by virtue of this agreement. No provision of the Contract is intended or is to be construed to be for the benefit of any third party.

2.02 CONFLICTS IN SPECIFICATIONS

Anything mentioned in the Specifications and not shown on the Drawings and anything on the Drawings and not mentioned in the Specifications shall be of like effect and shall be understood to be shown and/or mentioned in both. In case of differences between Drawings and Specifications, the Specifications shall govern. In addition, in the event of any conflict between these General Provisions, the Special Provisions, the Technical Provisions and/or the Proposal pages, the following order of precedence shall control:

(a) Proposal pages prevail if they conflict with the General, Special or Technical Provisions.

(b) Special Provisions prevail if they conflict with the General Provisions and/or Technical Provisions.

(c) Technical Provisions prevail if they are in conflict with the General Provisions.

In case of discrepancy of figures between Drawings, Specifications or both, the matter shall immediately be submitted to the Engineer for determination. Failure to submit the discrepancy issue to the Engineer shall result in the Contractor's actions being at his/her own risk and expense. The Engineer shall furnish from time to time such detailed drawings and other information as he/she may consider necessary.

2.03 INSPECTION

A. Of the Work

All materials furnished and work done shall be subject to inspection.

The Inspector administering the Contract shall at all times have access to the work wherever it is in progress or being performed, and the Contractor shall provide proper facilities for such access and inspection. Such inspection shall not relieve the Contractor of the responsibility of performing the work correctly, utilizing the best labor and materials in strict accordance with the Specifications of this Contract. All material or work approved and later found to be defective shall be replaced without cost to the City of Tacoma.

B. Inspector's Authority

The inspector shall have power to reject materials or workmanship which do not fulfill the requirements of these Specifications, but in case of dispute the Contractor may appeal to the Director, whose decision shall be final. The word "Director" means the Director of the City of Tacoma division which is administering the contract.

The Contract shall be carried out under the general control of the representative of the particular Division administering the Contract, who may exercise such control over the conduct of the work as may be necessary, in his or her opinion, to safeguard the interest of the City of Tacoma. The Contractor shall comply with any and all orders and instructions given by the representative of the particular Division administering the Contract in accordance with the terms of the Contract.

Provided, that for the purposes of construction contracts, such control shall only apply (a) to the extent necessary to ensure compliance with the provisions of this contract, and (b) to the extent necessary to fulfill any nondelegable duty of the City for the benefit of third parties not engaged in promoting the activity of this contract.

Nothing herein contained, however, shall be taken to relieve the Contractor of his/her obligations or responsibilities under the Contract.

2.04 FEDERAL, STATE AND MUNICIPAL REGULATIONS

All federal, state, municipal and/or local regulations shall be satisfied in the performance of all portions of this Contract. The Contractor shall be solely responsible for all violations of the law from any cause in connection with work performed under this Contract.

2.05 INDEMNIFICATION

A. Indemnification

Contractor acknowledges that pursuant to the terms of this agreement, Contractor is solely and totally responsible for the safety of all persons and property in the performance of this Contract. To the greatest extent allowed by law, Contractor assumes the risk of all damages, loss, cost, penalties and expense and agrees to indemnity, defend and hold harmless the City of Tacoma, from and against any and all liability which may accrue to or be sustained by the City of Tacoma on account of any claim, suit or legal action made or brought against the City of Tacoma for the death of or injury to persons (including Contractor's or subcontractor's employees) or damage to property involving Contractor, or subcontractor(s) and their employees or agents, arising out of and in connection with or incident to the performance of the Contract including if the City is found to have a nondelegable duty to see that work is performed with requisite care, except for injuries or damages caused by the sole negligence of the City. In this regard, Contractor recognizes that Contractor is waiving immunity under industrial Insurance Law, Title 51 RCW. This indemnification extends to the officials, officers and employees of the City and also includes attorney's fees and the cost of establishing the right to indemnification hereunder in favor of the City of Tacoma. In addition, within the context of competitive bidding laws, it is agreed that this indemnification has been mutually negotiated. Provided however, this provision is intended to be applicable to the parties to this agreement and it shall not be interpreted to allow a Contractor's employee to have a claim or cause of action against Contractor.

B. Limitation of Liability for Primarily Supply-Type Contracts

In all contracts where the total cost of the supply of materials and/or equipment constitute at least 70 percent of the total contract price (as determined by the City), the City agrees that it will not hold the contractor, supplier or manufacturer liable for consequential damages for that part of the contract related to the manufacture and/or design of the equipment, materials or supplies.

2.06 ASSIGNMENT AND SUBLETTING OF CONTRACT

A. Assignment

The Contract shall not be assigned except with the consent of the Superintendent or his/her designee.

Requests for assignment of this contract must be in writing with the written consent of the surety, and the request must show the proposed person or organization to which the contract is assigned is capable, experienced and equipped to perform such work. The proposed substitute person or organization may be required to submit to the City information as to his/her experience, financial ability and give statements covering tools, equipment, organization, plans and methods to fulfill any portion of the Contract prior to approval of assignment.

B. Subletting

The Contract shall not be sublet except with the written consent of the Director or his/her designee. In the event that a prequalified electrical contractor is necessary to perform certain portions of the work, such work may be subcontracted with a City prequalified electrical contractor for the type of work involved.

Requests for subletting of this Contract must be in writing with the written consent of the Surety, and the request must show the proposed person or organization to which the Contract is sublet is capable, experienced and equipped to perform such work. The proposed substitute person or organization may be required to submit to the City information as to his experience, financial ability and give statements covering tools, equipment, organization, plans and methods to fulfill any portion of the Contract prior to approval of subletting.

The written consent approving the subletting of the Contract shall not be construed to relieve the Contractor of his/her responsibility for the fulfillment of the Contract. The Subcontractor shall be considered to be the agent of the Contractor and the Contractor agrees to be responsible for all the materials, work and indebtedness incurred by the agent.

A subcontractor shall not sublet any portion of a subcontract for work with the City without the written consent of the City.

2.07 DELAY

A. Extension of Time

With the written approval of the Director or his/her designee, the Contractor may be granted additional time for completion of the work required under this Contract, if, in the Director's opinion the additional time requested arises from unavoidable delay.

B. Unavoidable Delay

Unavoidable delays in the prosecution of the work shall include only delays from causes beyond the control of the Contractor and which he/she could not have avoided by the exercise of due care, prudence, foresight and diligence. Delay caused by persons other than the Contractor, Subcontractors or their employees will be considered unavoidable delays insofar as they necessarily interfere with the Contractor's completion of the work, and such delays are not part of this Contract.

Unavoidable delay will not include delays caused by weather conditions, surveys, measurements, inspections and submitting plans to the Engineer of the particular Division involved in administering this Contract.

2.08 GUARANTEE

A. Guarantee for Construction, Labor or Services Contract

Neither the final certificate of payment or any provision in the Contract Documents, nor partial or entire occupancy of the premises by the City, shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or

responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of the work unless a longer period is specified. The City will give notice of observed defects with reasonable promptness.

If it has been discovered, before payment is required under the terms of the Contract, that there is a failure to comply with any of the terms and provisions of this Contract, the City has the right and may withhold payment.

In case of a failure of any part of the work, materials, labor and equipment furnished by the Contract or to fully meet all of the requirements of the Contract, the Contractor shall make such changes as may be necessary to fully meet all of the specifications and requirements of this Contract. Such changes shall be made at the Contractor's sole cost and expense without delay and with the least practicable inconvenience to the City of Tacoma. Rejected material and equipment shall be removed from the City's property by and at the expense of the Contractor.

B. Guarantee for Supply Contracts

Unless a longer period is specified, the supplier and/or manufacturer of the supplies, materials and/or equipment furnished pursuant to this Contract agrees to correct any defect or failure of the supplies, materials and/or equipment which occurs within one year from the date of: (1) test energization if electrical or mechanical equipment; (2) commencement of use if supplies or materials, provided, however, said guarantee period shall not extend beyond eighteen months after date of receipt by the City. All of the costs (including shipping, dismantling and reinstallation) of repairs and/or corrections of defective or failed equipment, supplies and/or material is the responsibility of the supplier and/or manufacturer.

When the supplier is not the manufacturer of the item of equipment, supplier agrees to be responsible for this guarantee and supplier is not relieved by a manufacturer's guarantee.

C. Guarantee Period Extension

The Contract guarantee period shall be suspended from the time a significant defect is first documented by the City until the work or equipment is repaired or replaced by Contractor and accepted by the City. In addition, in the event less than ninety (90) days remain on the guarantee period (after recalculating), the guarantee period shall be extended to allow for at least ninety (90) days from the date the work or equipment is repaired or replaced and accepted by the City.

2.09 DEDUCTIONS FOR UNCORRECTED WORK

If the City of Tacoma deems it expedient to correct work not done in accordance with the terms of this Contract, an equitable deduction from the Contract price shall be made.

2.10 CITY OF TACOMA'S RIGHT TO TERMINATE CONTRACT

If the Contractor should be adjudged as bankrupt, or makes a general assignment for the benefit of creditors, or a receiver should be appointed on account of his/her insolvency, or if he/she or any of his/her subcontractors should violate any of the provisions of the Contract, or if the work is not being properly and diligently performed, the City of Tacoma may serve written notice upon the Contractor and Surety, executing the Payment and Performance Bond, of its intention to terminate the Contract; such notice will contain the reasons for termination of the Contract, and unless within 10 days after the serving of such notice, such violation shall cease and an arrangement satisfactory to the City of Tacoma for correction thereof shall be made, the Contract shall, upon the expiration of said 10 days, cease and terminate and all rights of the Contractor hereunder shall be forfeited. In the event the Contract is terminated for cause, Contractor shall not be entitled to any lost profits resulting therefrom.

In the event of any such termination, the City of Tacoma shall immediately send (by regular mail or other method) written notice thereof to the Surety and the Contractor. Upon such termination the Surety shall have the right to take over and perform the Contract, provided however, the Surety must provide written notice to the City of its intent to complete the work within 15 calendar days of its receipt of the original written notice (from the City) of the intent to terminate. Upon termination and if the Surety does not perform the work, the City of Tacoma may take over the work and prosecute the same to completion by any method it may deem advisable, for the account of and at the expense of the Contractor, and the Contractor and the Surety shall be liable to the City of Tacoma for all cost occasioned to the City of Tacoma thereby. The City of Tacoma may without liability for doing so, take possession of and utilize in completing the work, such materials,

equipment, plant and other property belonging to the Contractor as may be on the site of the work and necessary therefore.

2.11 LIENS

In the event that there are any liens on file against the City of Tacoma, the City of Tacoma shall be entitled to withhold final or progress payments to the extent deemed necessary by the City of Tacoma to properly protect the outstanding lien claimants until proper releases have been filed with the City Clerk.

2.12 LEGAL DISPUTES

A. General

Contractor and Surety agree and stipulate that in the event any litigation should occur concerning or arising out of this Contract, or any bids submitted in response to a Call for Bids under the attached Specification, the sole venue of any such legal action shall be the Pierce County Superior Court of the State of Washington and the interpretation of the terms of the Contract shall be governed by the laws of the State of Washington.

B. Attorney Fees

For contracts up to $250,000 which become the subject of litigation or arbitration, the substantially prevailing party may be entitled to reasonable attorney fees, as provided in RCW 39.04.240. Provided, however, the attorney fee hourly rate for the City of Tacoma's assistant city attorneys is agreed to be $150 per hour or the same as the hourly rate for Contractor's legal counsel, whichever is greater.

2.13 DELIVERY

Prices must be quoted F.O.B. destination, freight prepaid and allowed with risk of loss during transit remaining with Contractor/Supplier (unless otherwise stated in these Specifications) to the designated address set forth in these Specifications.

Deliveries shall be between 9:00 a.m. and 3:30 p.m.; Monday through Friday only (except legal holidays of the City of Tacoma).

Legal holidays of the City of Tacoma are:

New Year's Day	January 1
Martin Luther King's Birthday	3rd Monday in January
Washington's Birthday	3rd Monday in February
Memorial Day	Last Monday in May
Independence Day	July 4
Labor Day	1st Monday in September
Veteran's Day	November 11
Thanksgiving Day	4th Thursday of November
Day after Thanksgiving	4th Friday of November
Christmas Day	December 25

When any of these holidays occur on Saturday or Sunday, the preceding Friday or the following Monday, respectively, is a legal holiday for the City of Tacoma.

2.14 Shipping Notices and Invoices

Shipping notices shall furnish complete information of item, or items, contents of item if crated or cased, shipping point, carrier and Bill of Lading number, and City of Tacoma Purchase Order Number.

Unless otherwise directed in these specifications, shipping notices shall be mailed to:

Purchasing Division
City of Tacoma
P. O. Box 11007
Tacoma Washington 98411-2597

Invoices shall be sent in duplicate. Each invoice shall show City of Tacoma Purchase Order Number and Release Number if applicable and the Item Number, Quantity, Description, Unit Price and Total Price by line. Each line total shall be summed to give a grand total to which sales tax shall be added if applicable.

Invoices shall be mailed to:

Accounts Payable
City of Tacoma
P. O. Box 1717
Tacoma Washington 98401-1717

2.15 Approved Equals

A. Unless an item is indicated as "No substitute", special brands, when named, are intended to describe the standard of quality, performance or use desired. Equal items will be considered by the City, provided that the respondent specifies the brand and model, and provides all descriptive literature, independent test results, product samples, local servicing and parts availability to enable the City to evaluate the proposed "equal".

B. The decision of the City as to what items are equal shall be final and conclusive. If the City elects to purchase a brand represented by the respondent to be an "equal", the City's acceptance of the item is conditioned on the City's inspection and testing after receipt. If, in the sole judgment of the City, the item is determined not to be an equal, the item shall be returned at the respondent's expense.

C. When a brand name, or level of quality is not stated by the respondent, it is understood the offer is exactly as specified. If more than one brand name is specified, respondents must clearly indicate the brand and model/part number being bid.

2.16 Entire Agreement

This written contract represents the entire Agreement between the parties and supersedes any prior oral statements, discussions or understandings between the parties.

2.17 Code of Ethics

The City's Code of Ethics, Chapter 1.46, Tacoma Municipal Code, provides ethical standards for City personnel and also prohibits certain unethical conduct by others including respondents and contractors. Violation of the City's Code of Ethics will be grounds for termination of this contract.

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[Pages 11 through 16 are for contracts that involve construction and/or labor, and are not applicable to contracts solely for material/supply purchases.]

GENERAL PROVISIONS

SECTION III - CONSTRUCTION AND/OR LABOR CONTRACTS

SECTION III REQUIREMENTS APPLY ONLY TO CONSTRUCTION AND/OR LABOR CONTRACTS.

3.01 RESPONDENT'S DUTY TO EXAMINE

The Respondent agrees to be responsible for examining the site(s) and to have compared them with the Specifications and Contract Drawings, and to be satisfied as to the facilities and difficulties attending the execution of the proposed Contract (such as uncertainty of weather, floods, nature and condition of materials to be handled and all other conditions, obstacles and contingencies) before the delivery of his/her Proposal. No allowance will be subsequently made by the City on behalf of the Respondent by reason of any error or neglect on Respondent's part, for such uncertainties as aforesaid.

3.02 PERMITS

Except when modified by the Special Provisions, the Contractor shall procure and pay for all permits and licenses necessary for the completion of this Contract including those permits required by the City of Tacoma. The City will obtain county or state road crossing permits if required. In the event a necessary permit is not obtained, the Contractor will not be permitted to work on items subject to said permit and any delays caused thereby will not be subject to extra compensation or extensions.

3.03 NOTIFICATION OF OTHER GOVERNMENTAL AGENCIES AND UTILITIES WHEN UNDERGROUND WORK IS INVOLVED

The Contractor shall notify all other affected governmental agencies and utilities whenever underground work is done under the terms of this Contract. The Contractor is required to obtain permission of the appropriate public and private utilities and governmental agencies before performing underground work pursuant to the terms of this Contract. The Contractor is required to call "one call" at 1-800-424-5555 for all work involving excavation or digging more than 12 inches beneath ground or road surface.

The City may have indicated on the plans and specifications the existence of certain underground facilities that are known to the City division responsible for this Contract. It is the Contractor's responsibility to fully comply with the Underground Utility Locate Law, Chapter 19.122 RCW. If the site conditions are "changed or differing" as defined by RCW 19.122.040(I), the Contractor may pursue the party responsible for not properly marking or identifying the underground facility. The Contractor agrees not to file any claim or legal action against the City (division responsible for this Contract) for said "changed or differing" conditions unless said City division is solely responsible for the delay or damages that the Contractor may have incurred.

3.04 TRENCH EXCAVATION BID ITEM

In the event that "trench excavation" in excess of four feet requires a safety system pursuant to Washington State law and safety shoring, sloping, sheeting, or bracing is used, a separate bid item should be set forth in the Proposal for this work. If a separate bid item is not set forth in the Proposal pages, said installed safety system shall be paid at $3.00 per lineal foot of trench, which unit price includes both sides of the trench.

3.05 CONTRACTOR'S INSURANCE

The Contractor shall not commence work under this Contract until all required insurance has been obtained and such insurance has been approved by the City of Tacoma, nor shall the Contractor allow any subcontractor to commence work on his/her subcontract until all insurance required herein has been obtained by Subcontractor. It is the Contractor's responsibility to ascertain that all Subcontractors have the insurance as required by this Contract at all times such Subcontractors are performing the work. The insurance coverages required herein shall be maintained and effective at all times any work including guarantee work is being performed by the Contractor or a Subcontractor.

A. Compensation Insurance

The Contractor shall, at all times during the existence of this Contract, fully comply with all of the terms and conditions of the laws of the State of Washington pertaining to Workers' Compensation together with any and all amendments and supplements thereto and any and all regulations promulgated thereunder.

In the event any of the work herein is sublet, the Contractor shall require such Subcontractor to fully comply with all of the terms and conditions of the laws of the State of Washington pertaining to Workers' Compensation. For persons engaged in employment who are not within the mandatory coverage of the state Workers' Compensation laws, the Contractor shall provide and shall cause each subcontractor to provide compensation insurance (including self-insurance if it otherwise meets all requirements of state Workers' Compensation laws), satisfactory to the City, at least equivalent to the benefits provided for covered employment under state Workers' Compensation laws.

B. Public Liability and Property Damage Insurance

The Contractor shall procure and maintain during the life of this Contract, a policy of comprehensive general liability insurance, with an insurance carrier authorized to do business in the State of Washington. The policy shall be approved as to form and content by the City Attorney and shall protect the City of Tacoma from liability imposed by law for damages suffered by any persons arising out of or resulting from acts or omissions in the performance of this contract: (1) for bodily injury or death resulting therefrom caused by accidents or occurrences resulting from any act or omission by the Contractor in the performance of the Contract, and (2) for injury to, or destruction of, any property, including property of the City of Tacoma, and including loss of use. The policy or policies shall include coverage for claims for damages because of bodily injury or death or property damage arising out of the ownership, maintenance or use of any motor vehicle, including hired or non-owned vehicles.

The City of Tacoma shall be designated in said policy as a primary additional named insured and shall be given 30 days written notice of cancellation, nonrenewal, or material change in the coverage provided. Said insurance shall be on a Comprehensive General Liability form with coverages to include Blanket Contractor, Broad Form Property Damage, Personal Injury, Protective Liability and Employers Liability. Limits shall be at $1,000,000 per occurrence, $2,000,000 aggregate and for contracts in excess of $500,000 the minimum coverage limits include Umbrella Excess Liability of $5,000,000. Further that the City's insurance is excess to any other collectible insurance.

The Contractor shall furnish evidence of the amount of any deductible or self-insured retention under the policy. This must also be approved by the City Attorney if the amount of the deductible or self-insured retention exceeds $50,000. The City may require the Contractor to furnish evidence of its ability to pay the amount of any deductible or self-insured retention. If the policy provides for a deductible or self-insured retention, the Contractor shall be solely responsible for paying the amount of the deductible or self-insured retention toward the cost of any claim under the policy.

If the Contractor fails to maintain such insurance, the City of Tacoma, at its discretion, may immediately terminate the contract.

Nothing herein contained shall be in any manner construed as limiting the extent to which the Contractor or Subcontractor may be held liable or responsible for payment of damages resulting from their operations.

C. Builder's Risk

The Contractor shall be expected to protect and insure from loss for any tools and equipment owned or rented by the Contractor, Subcontractor of the employees of the Contractor and Subcontractor.

Until the work is completed and accepted by the City of Tacoma, the construction is at the risk of the Contractor and no partial payment shall constitute acceptance of the work or relieve the Contractor of responsibility to deliver to the City of Tacoma the completed project as required by this Contract.

D. Proof of Carriage of Insurance

The Contractor shall furnish and file with the City a certificate of insurance coverage. An up-to-date certificate of insurance must be on file with the City throughout the contract. The City may, at the time the contract is executed or at any other time, require the Contractor to furnish and file with the City a certified true copy of the insurance policy or policies, together with a letter from the insurance carrier verifying that the premium has been paid for the period indicated. The policy or policies shall be approved as to form and content by the City Attorney.

3.06 SAFETY

A. General

The Contractor shall, at all times, exercise adequate precautions for the safety of all persons, including its employees and the employees of a Subcontractor, in the performance of this Contract and shall comply with all applicable provisions of federal, state, county and municipal safety laws and regulations. It is the Contractor's responsibility to furnish safety equipment or to contractually require Subcontractors to furnish adequate safety equipment relevant to their responsibilities.

The Contractor shall obtain the necessary line clearance from the inspector before performing any work in, above, below or across energized Light Division circuits.

The Inspector and/or Engineer may advise the Contractor and the Safety Officer of any safety violations. It is the Contractor's responsibility to make the necessary corrections. Failure to correct safety violations is a breach of this Contract and, as such, shall be grounds for an order from the Safety Officer, Inspector or Engineer to cease further work and remove from the job site until the condition is corrected. Time and wages lost due to such safety shutdowns shall not relieve the Contractor of any provisions of Section 3.14 of this Specification and shall be at the sole cost of the Contractor. The purpose of this authority to stop work is to enforce the contract and not to assume control except to the extent necessary to ensure compliance with the provisions of this contract.

Any of the above actions by employees of the City of Tacoma shall in no way relieve the Contractor of his/her responsibility to provide for the safety of all persons, including his/her employees.

B. Work Hazard Analysis Report

The Contractor will be required to complete a work hazard analysis report. This report shall outline how the Contractor proposes to satisfy all safety laws and regulations involved in performing the work. This report shall be completed and submitted to the City Safety Officer before the pre-construction conference. A copy of the report shall be maintained at the work site (accessible to the supervisor).

3.07 PROTECTION OF WORKERS AND PROPERTY

The Contractor shall erect and maintain good and sufficient guards, barricades and signals at all unsafe places at or near the work and shall, in all cases, maintain safe passageways at all road crossings, and crosswalks, and shall do all other things necessary to prevent accident or loss of any kind.

The Contractor shall protect from damage all utilities, improvements, and all other property that is likely to become displaced or damaged by the execution of the work under this Contract.

The Contractor is responsible for all roads and property damaged by his/her operations as shall be determined by the Engineer administering this Contract. The Contractor shall be responsible for repairing all damage to roads caused by his/her operations to the satisfaction of the particular governmental body having jurisdiction over the road.

3.08 CONTRACTOR - SUPERVISION AND CHARACTER OF EMPLOYEES

A. Superintendent to Supervise Contractor's Employees

The Contractor shall keep on his/her work, during its progress, a competent superintendent and any necessary assistants, all of whom must be satisfactory to the City of Tacoma. The Contractor's superintendent shall not be changed except with the consent of the City of Tacoma, unless the Contractor's superintendent proves to be unsatisfactory to the Contractor and ceases to be in his/her employ. The Contractor's superintendent shall represent the Contractor in his/her absence and all directions given to him/her shall be binding as if given to the Contractor directly. The Contractor shall give efficient supervision to the work, using his/her best skill and attention.

B. Character of Contractor's Employees

The Contractor shall employ only competent, skillful, faithful and orderly persons to do the work, and whenever the Engineer administering the Contract shall notify the Contractor in writing that any person on the work is, in his or her opinion, incompetent, unfaithful, disorderly or otherwise unsatisfactory, the Contractor shall forthwith discharge such persons from the work and shall not again employ him or her on this Contract.

3.09 CONTRACTOR'S COMPLIANCE WITH THE LAW

A. Hours of Labor

The Contractor and Subcontractors shall be bound by the provisions of RCW Chapter 49.28 (as amended) relating to hours of labor. Except as set forth in the Special Provisions, eight (8) hours in any calendar day shall constitute a day's work on a job performed under this Contract.

In the event that the work is not performed in accordance with this provision and in accordance with the laws of the State of Washington, then this Contract may be terminated by the City of Tacoma for the reason that the same is not performed in accordance with the public policy of the State of Washington as defined in said statutes.

B. Prevailing Wages

The Contractor and any Subcontractors shall be bound by the provisions of Chapter 39.12 RCW, as amended, relating to prevailing wages and usual fringe benefits. No worker, laborer, or mechanic employed in the performance of any part of this Contract shall be paid less than the "prevailing rate of wage" as determined by the industrial Statistician of the Department of Labor and industries. The schedule of the prevailing wage rates for the locality or localities where this Contract will be performed is by reference made a part of this Contract as though fully set forth herein. Current prevailing wage data will be furnished by the Industrial Statistician upon request. The Contractor shall immediately upon award of the Contract, contact the Department of Labor and Industries, ESAC Division, General Administration Building, Olympia, Washington 98504, to obtain full information, forms and procedures relating to these matters.

Before payment is made by or on behalf of the City, of any sum or sums due on account of a Public Works contract, it shall be the duty of the officer or person charged with the custody and disbursement of public funds to require the Contractor and each and every Subcontractor from the Contractor or a Subcontractor to submit to such officer a "Statement of Intent to Pay Prevailing Wages." Each statement of intent to pay prevailing wages must be approved by the industrial statistician of the Department of Labor and Industries before it is submitted to said officer. Unless otherwise authorized by the Department of Labor and Industries each voucher claim submitted by a Contractor for payment on a project estimate shall state that the prevailing wages have been paid in accordance with the prefiled statement or statements of intent to pay prevailing wages on file with the public agency. Following the final acceptance of a Public Works project, it shall be the duty of the officer charged with the disbursement of public funds to require the Contractor and each and every Subcontractor from the Contractor or a Subcontractor to submit to such officer an "Affidavit of Wages Paid" before the funds retained according to the provisions of RCW 60.28.010 are released to the Contractor. Each affidavit of wages paid must be certified by the industrial statistician of the Department of Labor and Industries before it is submitted to said officer.

In the event any dispute arises as to what are the prevailing rates of wages for work of a similar nature and such dispute cannot be adjusted by the parties in interest, including labor and management representatives, the matter shall be referred for arbitration to the Director of the State of Washington, Department of Labor and industries whose decision shall be final, conclusive and binding on all parties involved in the dispute.

3.10 CHANGES

A. In Plans or Quantities

The City of Tacoma, without invalidating this Contract, or any part of this Contract, may order extra work or make reasonable changes by altering, adding to or deducting from the materials, work and labor and the Contract sum will be adjusted accordingly. All such work and labor shall be executed under the conditions of the original Contract except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change. When work or bid items are deducted, reduced or eliminated, it is agreed that no payment will be made to Contractor for anticipated profit.

B. Extra Work

Any claim or order for extra materials, work and labor made necessary by alterations or additions to the plans or by other reasons for which no price is provided in this Contract, shall not be valid unless the Contractor and Engineer administering the Contract have agreed upon a price prior to commencing extra work, and the agreement has been signed by the Contractor and approved by the Superintendent or his/her designee, and approved by the payment and performance bond surety.

C. Extra Work - No Agreed Price

If it is impracticable to fix an increase in price definitely in advance, the order may fix a maximum price which shall not under any circumstances, be exceeded, and subject to such limitation, such alteration, modification, or extra shall be paid for at the actual necessary cost as determined by the City of Tacoma, which cost (including an allowance for profit) shall be determined as the sum of the following items (1) to (7) inclusive:

(1) Labor, computed at regular wage scale, including premium on compensation insurance and charge for social security taxes, and other taxes, pertaining to labor; no charge for premium pay shall be allowed unless authorized by the Engineer administering the Contract;

(2) The proportionate cost of premiums on comprehensive general liability and other insurance applicable to the extra work involved and required under this Contract;

(3) Material, including sales taxes pertaining to materials;

(4) Plant and equipment rental, to be agreed upon in writing before the work is begun; no charge for the cost of repairs to plant or equipment will be allowed;

(5) Superintendence, general expense and profit computed at 20 percent of the total of paragraphs (1) to (4) inclusive;

(6) The proportionate cost of premiums on bonds required by this Contract, computed by 1 1/2 percent of the total of paragraphs (1) to (5) inclusive.

(7) The City of Tacoma reserves the right to furnish such materials as it may deem expedient, and no allowance will be made for profit thereon.

Whenever any extra work is in progress, for which the definite price has not been agreed on in advance, the Contractor shall each day, report to the Engineer the amount and cost of the labor and material used, and any other expense incurred in such extra work on the preceding day, and no claim for compensation for such extra work will be allowed unless such report shall have been made.

The above-described methods of determining the payment for work and materials shall not apply to the performance of any work or the furnishing of any material, which, in the judgment of the Engineer administering the Contract, may properly be classified under items for which prices are established in the Contract.

D. Claims for Extra Work

If the Contractor claims that any instructions by drawings or otherwise, involve extra cost under this Contract, he/she shall give the City of Tacoma written notice thereof within 30 days after receipt of such instruction, and in any event before proceeding to execute the work, except in an emergency endangering life or property, and the procedures governing the same shall be as provided for immediately above in this paragraph. The method in these paragraphs is the only method available to the Contractor for payment of claims for extra work performed under the terms of this Contract.

3.11 CLEANING UP

The Contractor shall at all times, at his/her own expense, keep the premises free from accumulation of waste materials or debris caused by any workers or the work, at the completion of the work the Contractor shall remove all his waste materials from and about the site and all his/her equipment, sanitary facilities and surplus materials. In the case of dispute, the City of Tacoma may remove the debris and charge the cost to the Contractor as the City of Tacoma shall determine to be just. All material that is deposited or placed elsewhere than in places designated or approved by the Engineer administering the Contract will not be paid for and the Contractor may be required to remove such material and deposit or place it where directed.

3.12 PROGRESS PAYMENT

Progress payments will be made up to the amount of ninety-five percent (95%) of the actual work completed as shall be determined by the Engineer administering the Contract.

The Contractor may request that an escrow account be established as permitted by law, in which event the Contractor will earn interest on the retained funds.

When the time for construction, services and/or installation will exceed thirty (30) days, the Contractor may request, by invoice, to be paid a progress payment based on percentage of work completed. The Engineer will review and approve the progress payment request on a monthly basis.

3.13 FINAL PAYMENT

The final payment of five percent (5%) of the Contract price shall be approved on final acceptance of the work under this Contract by the Superintendent or his/her designee. Also, before final payment is made, the Contractor shall be required to:

A. Provide a certificate from the Washington State Department of Revenue that all taxes due from the Contractor have been paid or are collectible in accordance with the provisions of Chapter 60.28 and Title 82 of the Revised Code of Washington;

B. Provide the General Release to the City of Tacoma on the form set forth in these Contract documents;

C. Provide a release of any outstanding liens that have been otherwise filed against any monies held or retained by the City of Tacoma;

D. File with the City Director of Finance, and with the Director of the Washington State Department of Labor and Industries, on the state form to be provided, an affidavit of wages paid;

E. File with the City Director of Finance, on the state form to be provided, a statement from the State of Washington, Department of Labor and Industries, certifying that the prevailing wage requirements have been satisfied.

F. File with the City Director of Finance, on the state form to be provided, a statement of release from the Public Works Contracts Division of the State of Washington, Department of Labor and Industries, verifying that all industrial insurance and medical aid premiums have been paid.

If there is a fee assessed to the City for any certificate, release or other form required by law, the contractor agrees that the fee amount may be passed on to the Contractor and deducted from the monies paid to the Contractor.

3.14 FAILURE TO COMPLETE THE WORK ON TIME

Should the completion of the work required under the Contract be delayed beyond the expiration of the period herein set for the completion of said work, or such extension of said period as may be allowed by reason of unavoidable delays, there shall be deducted from the total Contract price of work, for each calendar day by which such completion shall be delayed beyond said period of such extension thereof the sum of $300 or a sum of money as set forth hereinafter in these Specifications, as the amount of such deduction per calendar day.

Said sum shall be considered not as a penalty, but as liquidated damages which the City will suffer by reason of the failure of the Contractor to perform and complete the work within the period herein fixed or such extensions of said period as may be allowed by reason of unavoidable delays.

Any money due or to become due the Contractor may be retained by the City to cover said liquidated damages, and should such money not be sufficient to cover such damages, the City shall have the right to recover the balance from the Contractor or his/her Sureties.

The filing of any bid for the work herein contemplated shall constitute acknowledgment by the Respondent that he/she understands, agrees and has ascertained that the City will actually suffer damages to the amount hereinabove fixed for each and every calendar day during which the completion of the work herein required shall be delayed beyond the expiration of the period herein fixed for such completion or such extension of said period as may be allowed by reason of unavoidable delays.

3.15 CITY RESERVES RIGHT TO USE FACILITIES PRIOR TO ACCEPTANCE

The City of Tacoma hereby reserves the right to use the facilities herein contracted prior to final acceptance under this Contract. The use of said facilities, as mentioned herein, shall not be construed as a waiver or relinquishment of any rights that the City of Tacoma has under this Contract.

3.16 LIST OF SUBCONTRACTORS

Bid proposals for construction, alteration or repair of any building or other public works that may exceed $1,000,000 including tax shall satisfy the following requirement: Respondent shall submit as part of the bid,

the names of the subcontractors, with whom the respondent, if awarded the contract, will subcontract performance of the work of heating, ventilation and air conditioning, plumbing as described in chapter 18.106 RCW, and electrical as described in chapter 19.28 RCW, or to name itself for the work. The respondent shall not list more than one subcontractor for each category of work identified, unless subcontractors vary with bid alternates, in which case the respondent must indicate which subcontractor will be used for which alternate. Failure to comply with this provision or the naming of two or more subcontractors to perform the same work shall require the City (pursuant to state law RCW 39.30.060) to determine that respondent's bid is nonresponsive, therefore, the bid will be rejected.

SPECIAL PROVISIONS

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SPECIAL PROVISIONS

These Special Provisions make additions, deletions, or revisions to the General Provisions as indicated herein. All provisions which are not so added, deleted, or revised, remain in full force and effect.

4.1 SCOPE OF WORK

The City of Tacoma is looking to increase and standardize the fire suppression at seven (7) of its Communication facilities. For a complete breakdown of new equipment per location see list below. The VESDA systems installed at the Master Site will be connected to the Fenwal panel for monitoring.

4.1.1 Project Sites

Fire suppression systems will be modified or new installations completed at the following locations:

a. Master Site: 400 Fawcett Ave., Tacoma WA

Dispatch room
- VESDA installation
- Clean guard fire extinguisher

UPS/Electrical room
- Connect new fire suppression deploying Novec 1230 to existing FenwalNet 6000 panel
- VESDA installation
- Clean guard fire extinguisher

Server room
- Replace existing FM200 with Novec 1230
- Clean guard fire extinguisher

Telecom room
- Replace existing FM200 with Novec 1230
- Clean guard fire extinguisher

Generator room
- Clean guard fire extinguisher

Radio room
- Connect new fire suppression deploying Novec 1230 to existing Fenwalnet 6000 panel
- VESDA installation
- Clean guard fire extinguisher

b. **Indian Hill:** 5202 Tower Drive NE, Tacoma, WA
- New FenwalNet 8000 system, deploying Novec 1230
- Clean guard fire extinguisher

c. **Pearl:** 2402 N Pearl Street, Tacoma, WA
- New FenwalNet 8000 system, deploying Novec 1230
- Clean guard fire extinguisher

d. **Fire Training Center:** 2124 Marshall Avenue, Tacoma, WA
- New FenwalNet 8000 system, deploying Novec 1230
- Clean guard fire extinguisher

e. **Tyler:** 4504 S Tyler Street, Tacoma, WA
    - New FenwalNet 8000 system, deploying Novec 1230
    - Clean guard fire extinguisher

f. **LESA:** 2401 S 35th St., Tacoma WA
    - New FenwalNet 8000 system, deploying Novec 1230
    - Clean guard fire extinguisher

g. **Cushman:** 1453 Earnest S Brazill St., Tacoma WA
    - New FenwalNet 8000 system, deploying Novec 1230
    - Clean guard fire extinguisher

4.1.2 Project Information

City will not take the critical public safety infrastructure or dispatch services out of service during any portion of this work.

Fire Protection Inc. or (FPI) currently monitors the City of Tacoma's fire suppression systems. The Master Site already has the equipment installed for monitoring in that building; the City will connect the existing Fenwall panel to the monitoring system equipment prior to final inspection. It will be the responsibility of the Contractor to ensure wiring for all Fenwal suppression systems in the Master Site are completed to the existing Fenwal panal with the required number of relays (see Exhibit H for a riser diagram).

The City will also be using Fire Protection Inc. for monitoring at all other sites on this project. Coordination will be necessary to ensure installation of monitoring equipment is complete prior to final testing of the systems. Coordinate with Sam at FPI (425-290-9600 or sam@fpiseattle.com) at the following times:

- when both clean agent panel and 120vac outlet are installed at each site and
- 72 hours prior to AHJ fire final acceptance test at each site

All total flooding systems shall have the enclosure examined and tested to locate and then effectively seal any significant air leaks that could result in a failure of the enclosure to hold the specified agent concentration level for the specified 10 minute holding period. Quantitative results shall be obtained, recorded and provided to City's Project Manager to indicate that the specified agent concentration for the specified duration of protection is in compliance with NFPA 2001, 2015 edition, Section 5.6, using an approved blower fan unit or other means as approved by the authority having jurisdiction. Any penetrations made through the enclosure protected by the clean agent shall be sealed. The method of sealing shall restore the original fire resistance rating of the enclosure.

Exhibit A provides the specification of the Control Unit currently installed at the Master Site. All new equipment installations at the Master Site will need to connect to this unit.

Exhibit B provides the fire suppression equipment specification to be followed at all of the offsite communication buildings. Fenwal Clean Agent Fire Extinguishing System Employing 3M Novec 1230 Fire Protection Fluid Integrated with FenwalNET 8000 Multi-Loop Intelligent Control Unit.

Exhibit C provides the VESDA equipment specification.

Exhibit D provides the building plans for Indian Hill, **Exhibit E** provides the building plans for Tyler and all other Fibrebond buildings. There are no building plans available for the Cushman site.

Exhibit G provides the AES Intellinet 2.0 equipment specification.

Exhibit H provides a riser diagram for the Master Site and all other sites.

Exhibit I provides the clean guard fire extinguisher equipment specification.

The Contractor shall comply with the Washington State law regarding prevailing wages. These rules apply to any Contractor who does business with the City, including owner/operators. A Statement of Intent to Pay Prevailing Wages MUST be filed with the Washington Department of Labor & Industries upon award of contract. An Affidavit of Wages Paid must be filed with the Washington Department of Labor & Industries upon job completion. Payments cannot be released by the City until certification of these filings are received and a release has been sent to the City from the Department of Labor & Industries, the Department of Revenue and the Employment Security Department based on the Notice of Completion submitted by the Project Manager.

The selected Bidder (herein "Contractor") is responsible for supplying all labor, materials, and manufactured goods needed to complete the project as defined in this document on time and within contract amount. Contractor needs to consider lead time when ordering project materials. Contractor is responsible for the safety and security of all materials ordered for the project up to the Final Inspection.

Bidders are encouraged to seek written clarification prior to bid submittal concerning any areas of confusion and to visit each Project Site to determine existing conditions prior to submitting their bid. Bidders shall also be aware that they will be responsible for off- loading and securing all equipment and materials upon delivery.

The selected Contractor is responsible to attend a mandatory pre-construction meeting. The date and time for this meeting will be set once the Contractor has been selected.

4.1.3 Project Submittals

The Contractor shall be responsible for submitting the following as Submittals. Submittals will be sent to the City on a, per building or per schedule basis, with the first submittals due for the Master Site within fifteen (15) days after the award of the bid.

a. Providing a site specific written Work plan for review and approval by the Project Manager, see Section 4.11 for Submittal Procedures. The Work plan must contain the following:

    - A complete equipment list
    - Manufacturer's cut sheets as applicable for all part's used in Work
    - Certification by the product manufacturer that products comply with local regulations controlling the use of volatile organic compounds (VOC's)

- Proposed Project Schedule, including material acquisition in the schedule
- CAD Drawings (PDF format)
- Calculations
- Name of contractor construction supervisor including emergency contact numbers and email address

b. Providing a site specific health and safety plan. Specifically include the following as it applies to this project:

- Safety standards to be used when working around telecommunications equipment;
- Using ladders, fixed or portable

c. Providing an Acceptance Test Plan

4.2 PROJECT REQUIREMENTS

The main reason for the pre-bid site visits is to allow a chance for the Contractors to evaluate each site and the specific work that will need to take place to install the system as specified in this bid. Below are project requirements.

- The Contractor must by a licensed and authorized reseller/installer of Kidde Fire Suppression Systems (will be verified though Kidde before awarding contract)
- Have at least 15 years' experience installing Fenwall fire suppression systems
- Have at least one (1) employee on staff who will be working on this project with a NICET level IV certification or equivalent
- Maintain the required insurance for the duration of the project
- Provide design drawings of clean agent suppression system including calculations used to determine requirements
- The Contractor shall complete installations at the Master Site as the first priority. The order of the remaining locations can be arranged during the project
- All system components to be new, factory furnished
- Clean Agent releasing control panel with 24 hour backup power
- Installation, programming and commissioning by Factory trained technicians
- Labor and material to install piping and fittings for system
- All piping, supports, anchors and seismic bracing as necessary
- Piping to be clean black steel unless otherwise approved during submittal review
- Pipe pressure and flow test
- All required signage
- All components UL listed or FM Approved
- Sealing of each enclosure to pass a room integrity test, to be completed by the contractor.
- Records of the tests shall be submitted to the City's Project Manager.
- Installation of a dedicated 120vac connection to the panel including raceway wiring and lockout breaker.

- Land labeled wires from the monitoring communicator to clean agent fire panel and pretest each output for proper function
- Provide 4 relay outputs for 3rd party provided central station monitoring (see riser diagrams for more details, Exhibit H)
- Installation of all components for a complete and working system including but not limited to; release stations, abort stations, horn/strobe notification devices, discharge strobes, keyed maintenance bypass and supervisory pressure switches
- All wiring to be installed in EMT conduit, provided by Contractor
- Obtain and pay for all required permits (electrical and fire) and submit final permits to City Project Manager
- Any materials required to complete the installation per the requirements of the bid
- No use of Romex
- MC or flex is permitted for vibration or end termination only
- All design documents and work shall comply with the local, state and federal adopted codes, regulations and standards related to the scope of work. This includes but not limited to adopted Fire Codes, Building Codes, NFPA standards, and Electrical Codes.
- A full complement of necessary spare parts are kept in stock and available 24 hours a day in case of emergency while the equipment is under a maintenance contract
- A one year maintenance contract at all sites- to include 2 inspections in that year
- Ensure all systems are wired to allow for system monitoring.
- Provide a 1 hour response time for all emergency maintenance
- 1 year warranty on all workmanship
- Annual and semiannual inspections per NFPA 2001, 2015 Edition Chapter 7
- Manufacturer warranty on all equipment

4.3 **DEFINITIONS**

Wherever used in the Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof.

Addenda: Written or graphic instruments issued prior to the opening of bids which clarify, correct, or change the bidding requirements or the Contract Documents.
Agent: Representative employed by a party to act on behalf of said party.
Agreement: The written instrument which is evidence of the agreement between City and Contractor covering the Work.
Bid: The offer or proposal of the Bidder setting forth the prices for the Work to be performed.
Bidder: Any person, firm or corporation submitting a bid for the Work.
Bidding Documents: The Call for Bids, the Proposal form and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
Change Order: A document recommended by the Project Manager or Contractor which is signed by Contractor and City and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract price or the Contract times, issued on or after the effective date of the Agreement.
City: The City of Tacoma.

Contract Documents: The Agreement, Addenda (which pertain to the Contract Documents), Contractor's Proposal (in cluding documentation accompanying the Proposal and any post Proposal documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Provisions, the Special Provisions, the Technical Provisions and the drawings as the same are more specifically identified in the Agreement, together with all written Amendments, Change Orders, Work Change Directives, Field Orders, and Project Manager's written interpretations and clarifications.

Contract Price: The moneys payable by City to Contractor for completion of the Work in accordance with the Contract Documents.

Contractor: The person, firm or corporation with whom City has entered into the Agreement.

Defective: An adjective which when modifying the word "Work" refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to Project Manager's recommendation of final payment (unless responsibility for the protection thereof has been assumed by City at Substantial Completion).

Drawings: The drawings which show the scope, extent, and character of the Work to be furnished and performed by Contractor and which have been prepared or approved by Project Manager are referred to in the Contract Documents. Shop Drawings are not Drawings as so defined.

Effective Date of the Agreement: The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

Field Order: A written order issued by the Project Manager which requires minor changes in the Work but which does not involve a change in the Contract price or the Contract times.

Final Completion: The Work is fully and finally completed in accordance with the contract.

Final Payment: The payment made at Final Completion of the Work, after a release has been received from the Department of Revenue, the Employment Security Department and Labor & Industries.

Inspector: To be determined through the permitting process.

Notice to Proceed: A written notice given by Project Manager to Contractor fixing the date on which the Contract times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

Partial Payment: Payment made at partial completion of the Work.

Progress Payment: A periodic payment made to the Contractor by City.

Project Manager: The City representative for this project is Desiree Wyatt, Administrative Assistant.

Construction Supervisor: Contractor's assigned onsite supervisor to manage the project.

Project Site: The area of each Project Site will be defined during the pre-construction meeting. The Construction Supervisor will be required to maintain equipment and personnel only within defined limits as to allow City operations to continue.

Specifications: Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor: Any person, other than the Contractor, who agrees to furnish or furnishes any materials, supplies, equipment or services of any kind for or in connection with the Work.

Work: The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or providing all labor, and furnishing and incorporating all materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

Work Change Directive: A written statement to Contractor issued on or after the effective date of the agreement and signed by City ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive should not change the Contract price or the Contract times but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract price or Contract times.

4.4 LEGAL RELATIONS, RESPONSIBILITIES TO THE PUBLIC, AND SAFETY

A. In cases of conflict between different regulations, the more stringent regulation shall apply.

B. The Washington State Department of Labor and Industries shall be the sole and paramount administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA). The Contractor shall maintain at the Project Site all articles necessary for providing first aid to the injured. The Contractor shall establish, publish and make known to the employees, procedures for ensuring immediate removal to a hospital, or doctor's care, persons, including employee, who may have been injured on the Project Site. Employees should not be permitted to Work on the Project Site before the Contractor has established and made known procedures for removal of injured persons to a hospital or doctor's care.

C. The Contractor shall be solely and completely responsible for the Work conditions, including safety for all persons and property in the performance of Work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Project Manager to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the Project Site.

D. Contractor must ensure that employees and subcontractors wear appropriate safety gear at all times and follow all applicable safety practices.

E. Contractor shall follow all applicable Federal (Code of Federal Regulations), State (Washington Administrative Code) and City (Tacoma Municipal Code) laws and ordinance as they relate to the project, even if not specifically called out below:

- FR 1910: Occupational Safety and Health Standards
- FR 1926: Safety and Health Regulations for Construction
- WAC 296-876: Using ladders, portable or fixed

F. Contractor shall not use or allow the use of any controlled substances or tobacco projects on the Project Site.

G. Contractor is required to provide Fire Extinguishers as required by location and classes of fire exposures.

H. Contractor is required to provide guardrails around all hazardous equipment and at all locations where limited access is required. Protect the Project Site from access by the public. Protect the public by use of guardrails, barriers, warning lights, and other means as necessary.

I. Contractor is required to ensure workers and work areas are adequately protected from fire hazards and heat hazards resulting from handling, mixing and applications of substances.

4.5 **TIME OF COMPLETION**

The Master Site shall have final completion on or before 90 working days and all other Project Sites shall have final completion on or before 120 working days (Holidays are not included) following Notice to Proceed. If a Notice to Proceed has not been issued by the 30th day after the award of the contract, the allowable time of completion will begin on day 31 following the award of the contract; however that does not alleviate the Contractor from completing all submittals for approval. Contractor is cautioned that this timeline will likely require that significant portions of the Work will need to be managed concurrently between all Project Sites. Contractor will work together with City Project Manager to efficiently complete the project on time and within contract amount.

4.6 **TIME OF WORK**

Normal working hours shall be between 7:00 a.m. to 5:00 p.m., Monday through Friday. No Work shall be performed, unless otherwise approved by City Project Manager, on Project Sites on Saturday, Sunday, or holidays as defined.

4.7 **REQUIREMENTS OF BIDDERS**

A. Only bids from contractors with substantial experience and a successful performance record will be considered in awarding the contract. Bidders shall, on the "**Record of Prior Contracts**" form, present evidence at the time of opening bids that they have had experience in the kind of Work to be performed. Bid submittals of inexperienced contractors and those who have failed to properly perform other contracts may be rejected for such cause.
    1. Substantial experience means a minimum of fifteen (15) years of experience in the design and installation of systems of similar types. Also having an employee on staff who can show proficiency at least equal to a NICET level IV certification in special hazards design.
    2. Be a licensed and authorized reseller/installer of Kidde Fire Suppression Systems.

B. The City may consider the qualifications of the contractor, based upon their past construction record, and may check references in determining if a bidder is qualified.

C. To demonstrate their qualifications for the project, each bidder shall fill out the provided Questionnaire to demonstrate experience on similar type of projects. The selected Contractor shall possess licenses that authorize them to provide the necessary services in the State of Washington and City of Tacoma. The successful bidder shall also provide a statement as to their record of claims with Washington State Labor and Industries, by providing a copy of their OSHA 200 record, and identify any other significant aspects of their work safety history upon request.

D. Requests for clarification
    1. Technical questions and/or requests for clarification pertaining to the Work are to be submitted via email by contacting Joe Parris, jparris@cityoftacoma.org, prior to

submitting the bid. Each bidder must comply with the following conditions:

a. Examine the Contract Documents thoroughly
b. Understand the needs of the individual buildings
c. Become familiar with local conditions that may, in any manner affect the performance of the Work
d. Become familiar with federal, state and local laws, ordinances, rules and regulations that may affect the performance of the Work

E. It is highly recommended that you attend the pre-bid meeting, but will be required to attend the pre-construction meeting and both site inspections (unless only one is necessary.)

4.7.1 Local Employment and Apprenticeship Training Program (LEAP)

LEAP is a City of Tacoma economic development program adopted to provide employment opportunities for City of Tacoma residents on qualifying City funded projects. It requires the prime contractor or service provider performing a qualifying public works project or service contract to ensure that 15-percent of the total labor hours worked on the project are performed by apprentices approved by the Washington State Apprenticeship Council (SAC) and/or residents of Tacoma. Compliance may be met through any combination of utilizing residents of Tacoma or SAC apprentices on the project. Residents entering apprenticeships or other related training programs may be screened to work on City public works projects or service contracts.

Contractors/vendors may obtain further information by contacting the City's LEAP Coordinator, Clifford Armstrong, at 253-591-5826 or carmstrong@cityoftacoma.org. The LEAP coordinator can assist contractors in the recruitment of qualified employees from the Private Industry Council and other pre-employment and training organizations available in the area. The LEAP Office is located in the City's Community & Economic Development Department, Tacoma Municipal Building, 747 Market Street, Room 808, Tacoma, Washington 98402.

4.7.2 Performance, Payment, and Retainage Bonds

A. Performance and Payment Bonds

The Contractor shall provide both a Surety and Payment Bond for 100-percent of the total contract award within ten (10) calendar days after award of the contract in accordance with the General Provisions. These bonds shall be required for each contact awarded under this specification.

B. Retainage Bond

A 5-percent retainage bond may be provided in lieu of the City withholding five-percent retainage. If a retainage bond is not obtained, the City will withhold 5-percent retainage until the end of the contract. If a retainage bond is provided, the City form must be used. Contractor shall provide notice of intent to provide retainage bond ten (10) days prior to first invoice. The City may elect to allow submission of retainage bond after the first payment at its discretion.

4.8 PLANNING OF WORK AND PROGRESS SCHEDULES

A. The Contractor shall submit at least the required submittals for the Master Site no later than 15 days after the award of the contract. The Project Manager will issue a Notice to Proceed after review and approval all Submittals.

B. If extreme weather conditions or acts of God, are deemed by the Project Manager to be unsuitable for proper or safe installation or restrict access to the Project Site, then the Work shall not start or shall be interrupted until conditions have improved sufficiently as to allow the Work to progress without delay. Working stoppages of this type could be a basis for a claim of delay if agreed in writing between the Contractor and the Project Manager.

C. City's Right to Stop Work: If City determines that Work performed by the Contractor is not in accordance with the requirements of the contract specifications, or the Contractor fails to perform Work in accordance with Contract Documents, the Project Manager may issue a written order to stop Work, or any portion of the Work, until the Contractor meets the contract specifications, or the cause of the stop Work order has been resolved. The right of City to stop Work shall not be a cause for additional costs or charges.

D. City's Right to Continue Work: If the Contractor fails to correct the cause of a stop Work order, or fails to meet the requirements of the contract specifications or documents after seven days, the Project Manager may provide the Contractor a second written notice to correct Work deficiencies. If the Contractor fails to make corrections after three additional days, City may correct such deficiencies. The Project Manager will then issue a change order, and an appropriate amount shall be deducted from payments due the Contractor for the reasonable cost of correcting deficiencies. The appropriate amount will consist of any expenses incurred by the City to correct the Work deficiency, including but not limited to hourly compensation for Project Manager, additional City staff and Consultants.

E. City's Right to Terminate Contract: City may terminate the contract if the Contractor:
   1. Fails to supply properly trained and skilled workers; or
   2. Fails to supply proper and appropriate tools and equipment; or
   3. Fails to provide prompt payments to subcontractors; or
   4. Disregards laws, ordinances, rules, regulations, codes; or
   5. Substantially breaches contract specifications or documents, or breaches safety rules, regulations, or standard practices.

F. Supervision and Construction
   1. The Contractor shall supervise, direct, and be responsible for all work. This is to include all employees, labor and services; whether they are supplied directly by the Contractor or by others subcontracted by the Contractor. The Contractor shall be solely responsible for all coordination, construction, techniques and methods, delivery, security, services and subcontractors they employee.

2. The Contractor shall designate a Construction Supervisor who shall represent the Contractor, and shall provide and receive communications to and from the Project Manager. Important or critical project information shall be confirmed via email.

3. Unless specifically noted, the Contractor shall provide all labor, materials, equipment, tools, machinery, transportation, utilities, storage, restrooms, meeting space and other facilities and services necessary for the safety of all present at the Work location and the proper and timely completion of the Work.

I. Project Administration

1. The Contractor will manage the project to keep it on schedule and communicate any changes to the Project Manager.

2. Prior to commencing any Work, the Project Manager will schedule a Pre-Construction meeting with all parties.

3. Contractor and Construction Supervisor shall be equipped with some means of constant communications, such as a mobile phone. This equipment will not be supplied by City, nor will cellular service be arranged.

4. The Construction Supervisor will provide the Project Manager with daily updates on Project Site progress, in verbal or electronic form.

5. The Construction Supervisor shall be onsite at all times, unless a request is made in advance and agreed to by the City Project Manager, and an alternative responsible representative from the agency is available.

6. The Construction Supervisor will provide written weekly status updates that will include progress made, any issues or problems onsite and whether the project remains on track.

J. City reserves the right to execute other contracts for unrelated Work to be fulfilled at these Project Sites running concurrently with this project. If any portion of the Contractor's Work depends upon proper execution or results of any other provider, including materials or equipment supplied by City, the Contractor shall promptly inspect and report to the Project Manager any deficiencies that render the Work unsuitable for the Contractor's use. Failure to so inspect and report shall constitute an acceptance of the other provider's Work as fit and proper for the reception of the Contractor's Work.

4.9 PERMITS

It is the responsibility of the Contractor to obtain and pay for any permits necessary to complete the Work.

4.10 SUBMITTALS

A. After award of contract, before any material is fabricated or shipped, the Contractor shall submit to the Project Manager a set of submittals which shall include:

1. A complete equipment list
2. Project Schedule, including Work and material acquisitions/timelines
3. Site specific health & safety plan as explained in Section 4.1.2.b
4. Acceptance Test Plan
5. Certification documentation
6. Confirmation of spare parts and 24 hour emergency service availability

B. The submission of a bid will constitute an incontrovertible representation by the bidder that the bidder has complied with the requirements of the Request for Bids. Bidder shall have sole responsibility for the review of all drawings, specifications, and other descriptive materials provided by City and shall take responsibility for all Work to be performed through the submission of the bid. Errors and omissions are the sole responsibility of the bidder. Changes to submittals will not be allowed unless there were previously approved submittals requesting clarification or additional information by the Project Manager.

C. Submittals are due to the City for review within 15 days of the award date.

D. 10 calendar days are allotted for City review of submittals, this includes any required resubmittals.

E. Submittal deliveries may be made by mail, personal hand delivery or electronically submitted.

F. No oral agreement or conversation with any officer, agency or employee of the Contracting Agency, either before or after execution of the contract, shall affect or modify any of the terms or obligations contained in any of the Contract Documents. Such oral agreement or conversation shall be considered as unofficial information and in no way binding upon the Contracting Agency, see Exhibit F for the approved Change Request methods.

G. Each submittal shall be reviewed and stamped as reviewed and approved by the Contractor prior to submission to City.

H. The Project Manager may permit the use of certain materials prior to sampling and testing if accompanied by a certificate of compliance, stating the materials involved comply in all respects with the requirements of the contract. The certification shall be signed by the manufacturer of the material. A certificate shall be furnished with each lot of material delivered for the job and each lot number if applicable shall be clearly identified in the certificate. All materials used on the basis of a certificate of compliance may be sampled and tested at any time. The fact that the material is used on the basis of a certification of compliance shall not relieve the Contractor of responsibility for incorporating material into the Work which conforms to the requirement of any Contract Documents.

I. The Project Manager will use the following review stamps with the following meanings.

1. APPROVED: Is acceptance, and means that the submittal appears to conform to the respective requirements of the Contact documents. No resubmittal is required.

2. APPROVED AS NOTED: Is acceptance, and means that the submittal appears to conform to the respective requirements of the Contract Documents, upon incorporating of the Project Manager corrections as marked in the document. No resubmittal is required.

3. RESUBMISSION REQUIRED: Is a disapproval, and means the submittal has been thoroughly reviewed and found to have sufficient errors of such magnitude that incorporation could violate the Contract Documents. The submittal must be corrected and resubmitted. No additional time will be granted for resubmittals of this nature.

4. NOT APPROVED: Is a disapproval, and means that the submittal is deficient to the degree that the Project Manager cannot correct the submittal with a reasonable degree of effort. This submittal needs revision or completeness to be properly reviewed. This submittal must be corrected and resubmitted. No additional time will be granted for resubmittals of this nature.

4.11 **BID EVALUATION**

A. The bid proposal allows a potential Contractor to bid on the installation of fire suppression systems at seven (7) radio communication buildings. To be considered responsive, the Bidder shall submit a price on each and every item of Work listed as well as completion of the included Questionnaire. It will be necessary to evaluate various factors to insure the equipment proposed by the successful bidder will, in City's opinion, best meet the requirements.

4.12 **COORDINATION**

A. The Contractor shall coordinate with the Project Manager and with vendors providing parts required for repair by the Contractor to insure that the Contractor and the vendors prepare schedules to complete the Work on time and within budget. All such coordination will be the responsibility of the Contractor.

B. The Contractor shall also coordinate with FPI at the following times during the work to ensure FPI is able to install the required monitoring equipment and have it connected and ready for final testing. FPI can be reached by contacting Sam via email (sam@fpiseattle.com)or telephone (425-290-9600).
   - when both clean agent panel and 120vac outlet are installed at each site and
   - 72 hours prior to AHJ fire final acceptance test at each site

C. The Contractor shall diligently comply with the following requirements:
   1. Cooperate in planning and layout of the Project Site in advance of operations.
   2. Inform Subcontractors of job requirements at proper time to prevent delay or revisions.
   3. Insure delivery of materials and performance of Work on coordinated schedule with any Subcontractors.

4.13 **INTENT OF CONTRACT DOCUMENTS AND COMPLIANCE WITH SPECIFICATIONS**

The included Exhibits are intended to be complementary and provide clarification where necessary. However, should anything be shown, indicated, or specified on one and not the other, it shall be done the same as if shown, indicated or specified in both. *In the event of a conflict within the Contract Documents, the more stringent conditions shall apply unless specifically addressed through City-approved and signed specification revisions*. The Contract Documents are complementary in that what is called for by one is as binding as if called for by all. The purpose of the specifications is to interpret the intent of the drawings and to designate the method of the procedure, type and quality of materials required to complete the Work.

Components that do not comply with any part of these specifications shall be rejected and the vendor shall, at its own expense, including shipping, replace the rejected components with components that comply with these specifications. If these specifications are not satisfied, City may terminate the contract.

4.14 **WORKMANSHIP, QUALITY ASSURANCE, AND INSPECTIONS**

Work shall be performed in a quality manner, by craftsmen skilled in their particular trade, according to the best method known for each craft and the most current engineering practices. Work shall be performed in accordance with the City-approved specifications, manufacturer's recommendations, the best practices of the trade, and in accordance with all required local, state and federal codes, regulations and standards.

Completed Work shall present a neat and finished appearance. Workmanship that does not comply with these specifications or violations of safe labor practices may result in termination of the contract.

4.15 PROJECT SITE USE, CARE AND PROTECTION OF PROPERTY

The Contractor shall confine construction Work, storage of materials, equipment and machinery to areas defined by the Project Manager at the pre-construction meeting. The Contractor will make every effort to protect the Project Sites and other off-site areas from any disturbance.

The Contractor shall keep the Project Site and surrounding areas free from waste materials accumulated during construction. Waste materials should be removed at the end of each work day, and once Work is complete and prior to the preliminary final inspection the Contractor shall remove all tools, scaffolding, waste and surplus materials, Contractor tools, construction equipment, machinery, and shall leave the Project Site clean and ready for use.

The Contractor shall be responsible for the preservation of all public and private property and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the City of Tacoma to a condition similar or equal to that existing before the damage was done. Contractor shall be responsible for the costs incurred by the City to complete this work. It is the Contractor's responsibility to document any preexisting damage prior to the start of Work. Preexisting damage is considered "documented" when the Project Manager has acknowledged receipt of written or photographic evidence of damage.

4.16 CLEAN UP AND DISPOSAL OF EXCESS MATERIAL

A. During the course of the Work, the Contractor shall keep the Project Site of his/her operations in a clean and neat condition. Contractor shall leave the entire Project Site in a neat and orderly condition as directed by the City on a daily basis and at the completion of the job.

B. Specify a location on the Project Site where all trash and debris will be collected during the workday.

C. In no case shall equipment be cleaned using free draining water.

D. Retain all cleaners, thinners, solvents and other products containing Volatile Organic Compounds (VOCs) and store in designated containers and ensure proper disposal.

E. Wipe up any spills with rags and other absorbent material immediately.

F. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and any subcontractors shall comply with all applicable Federal, State, and local laws and regulations.

G. Visually inspect exterior surfaces and remove all traces of soil, waste materials, wood or concrete, smudges and other foreign matter. All cleaning of the Project Site surfaces shall be completed prior to sign-off. Contractor shall remove all traces of splashed material from adjacent surfaces. All waste shall be disposed of in a proper and legal fashion at an authorized facility.

H. At the end of each day sweep any paved areas within the Project Site.

I. Have and maintain appropriately sized and stocked spill kits stationed in all areas of chemical storage.

J. In the event of a release or spill no extra payment shall be made by the City if the release or spill was caused by or resulted from the Contractor's operation, negligence or omissions.

4.17 **TEMPORARY FACILITIES**

All temporary facilities described herein shall be provided by the Contractor and shall meet applicable safety and health codes.

A. ELECTRICAL POWER: The Contractor shall ensure there is adequate power at each site before starting work, if there is not the contractor shall be responsible to bringing additional power to the site.

B. TOILETS: Toilets are not available on Project Sites.

C. WATER FOR CONSTRUCTION PURPOSES: Water is not available on Project Sites.

D. PARKING: Parking for Contractor employees and equipment is available at the Project Site; with the exception that limited free parking will be available at the Master Site.

4.18 **MATERIALS**

Unless otherwise indicated, provide all high quality, new and unused materials, free from any defects, and suitable for the intended use and the space provided. All materials shall be the best available for the purpose intended as dictated by the best current engineering practice. Materials shall be approved by Underwriters Labs (UL), American Society for Testing and Materials (ASTM), Factory Mutual (FM), and National Electrical Manufacturers Association (NEMA), wherever standards have been established by those organizations.

Furnish and install all incidental items not specifically shown or specified, which are required by good practice to provide complete and fully operational systems.

Where two or more units of the same class of material or equipment are required, provide products of a single manufacturer/supplier within the same batch as applicable.

The Contractor guarantees to City that all materials and equipment will be new and of the highest quality, and that Work will be free of defects and conform to the requirements of the contract and specifications. The Contractor shall be responsible for the quality, condition, and installation of all materials and equipment. Contractor shall store all materials in a level and dry fashion and in a manner that does not necessarily obstruct the flow of other Work. Any storage method must meet all recommendations of the associated manufacturer.

Materials delivered to the Project Site must be in unopened containers bearing the manufacturer's name and product description on them.

Materials must be stored in a dry, well ventilated area in closed containers. Storage areas must remain in a clean, neat and orderly manner.

4.19 DAMAGE TO MATERIALS OR COMPLETED WORK

The Contractor shall assume all responsibility for damage to or loss of material or completed Work until final acceptance of the contract by the Project Manager.

4.20 LOCATION ACCESS

Access to the Master Site will be coordinated with Tacoma Fire Department, and Tacoma Fire personnel must be with contractors whenever work is being done in the Server Room. Access to all remote Project Sites will be provided on the first day of Work at each Project Site; the Project Manager will be onsite to provide access. Contractor shall have full access to the Project Site within specified working hours during the scope of the Project. Contractor is responsible for Project Site security during the project, up until final acceptance has been granted; Contractor will be required to ensure the gates remain locked after hours and are secured to keep the public from entering the Project Site during the work day. Jobsite trailers will not be allowed onsite unless special permission is given prior to the start of Work at a particular Project Site. It shall be the Contractor's responsibility to protect/secure all materials and equipment at each Project Site until all final inspections have been performed by City. Contractor is to use locks provided by the City on all City gates.

4.21 PROJECT SITE LOCATION INVESTIGATION

The Contractor shall satisfy themselves as to the conditions existing within the project area, the type of equipment required to perform the Work, the character, quality and quantity of the subsurface materials to be encountered insofar as this information is reasonably ascertainable from an inspection of the Project Site, as well as from information presented by the drawings

and specifications. Any failure of the Contractor to acquaint themselves with the available information will not relieve Contractor from the responsibility for estimating properly the difficulty or cost of successfully performing the Work. City assumes no responsibility for any conclusions or interpretation made by the Contractor on the basis of the information made available by City.

4.22 CONFLICT WITH SPECIFICATIONS

The Contractor shall be responsible for verification of all measurements at the Project Site before ordering any materials or doing any Work. No extra charge or compensation shall be allowed due to a difference between actual dimensions and dimensions indicated on the construction drawings. Any such discrepancy in dimension that may be found shall be submitted to City for consideration before the Contractor proceeds with the Work in the affected areas.

The Bidder, if awarded the contract, will not be allowed any extra compensation by reason of any matter or thing concerning which such Bidder might have fully informed himself prior to the bidding.

No plea of ignorance of conditions that exist, or of difficulties, or conditions that may be encountered, or of any other relevant matter concerning the Work to be performed in the execution of the Work will be accepted as an excuse for any failure or omission on the part of the Contractor to fulfill every detail of all the requirements of the Contract Documents governing the Work.

4.23 SUBCONTRACTOR APPROVAL

If City rejects any Subcontractor after the notice of award because of unsatisfactory Work or if the Contractor finds it necessary to change any Subcontractor after the notice of award, the Contractor shall procure a replacement acceptable to City at no increase in the contract price, or extension in contract completion date.

4.24 INDEMNIFICATION

Paragraph 2.05A of the General Provisions is hereby amended to provide that in addition to the City, the Contractor shall indemnify and hold harmless any Consultants used by the City, and the respective employees, directors, and agents of the City, under said Indemnification provision requirements.

4.25 SAFETY PLAN

It shall be the responsibility of the Contractor to formulate all written safety plans; including all safety plans listed in Section 4.02 Project Site Tasks, consistent with all applicable Federal, Washington State, and local laws and regulations. Copies of the safety plan shall be distributed to all prime contractors, subcontractors, Project Manager, and any other companies or personnel which may be required to be on Project Site during the construction

of this project.

4.26 GUARANTEE

This paragraph supplements General Provisions Paragraph 2.08. Contractor shall provide a three-year factory warranty on all installed components, so long as preventative service and maintenance is current by factory authorized distributors. Normal manufacturer's warranties shall be assumed to apply to all items manufactured by others unless so noted by Contractor. This guarantee shall include all parts, labor and other expenses, so that no cost to the City from any guarantee related problem will result. Manufacturer's warranty information shall be submitted to the Project Manager during project close out.

4.27 PRE-CONSTRUCTION MEETING

A pre-construction meeting shall be scheduled after the award of the Contract at the Tacoma Radio Service Center. Project Manager will notify the Contractor as to the date and time of the meeting. Contractor's Construction Supervisor and Contractor's Subcontractor representatives shall attend this meeting with City Project Manager and other associated project staff.

4.28 CONTACT INFORMATION

For information regarding this specification, bidders may contact: Joe Parris at jparris@cityoftacoma.org.

City reserves the right to request additional information to ascertain acceptability prior to awarding the contract. Failure to supply requested information may be cause to reject the bid as non-responsive. If there is additional information or changes regarding these specifications, a Notice of Addendum will be sent to each prospective bidder.

4.29 CHANGES AND CHANGE ORDERS

Change orders may be initiated by City and/or the Contractor involved per Exhibit F. The Contractor, upon verbal request from City shall prepare a written proposal describing the change in Work or materials and any changes in the contract amount and present to Project Manager for approval.

4.30 PAYMENT

The following paragraphs supplement General Provisions Paragraphs 3.12 and 3.13:
Requests for monthly progress payments and the final retainage payment shall be submitted to City separately. Payment will be made by City to the Contractor in accordance with the Contract Documents.

Payments, partial payments, final payment, and authorized adjustments, are the amounts payable by City to the Contractor for the performance of Work under the Contract Document. The Contractor will pay each subcontractor promptly, out of the payments received from City.

The Contractor can prepare and submit a payment schedule, for City and Project Manager approval, of progress or partial payments and a final payment.

For final payment and closeout, the Contractor shall certify in writing that Contract Documents have been reviewed, all installed items and Work have been tested, that all adjustments have been performed, meets all conditions and specifications of the Contract Documents and all open punch list items are resolved to the satisfaction of Project Manager. The Contractor shall remain on Project Site as long as necessary to correct any defects determined by Project Manager.

4.31 **CLOSE-OUT PROCEDURES**

The Contractor shall notify the Project Manager when all Work or portions of the Work are complete and ready for inspection at each site. The Contractor shall provide the following to the Project Manager at least 10 days prior to the requested inspection dated:

- Payroll Reports listing all hours worked on the Project for all staff onsite
- Materials Purchased
- Materials Used
- Manufacturer's Guarantees, Warranties and any required maintenance
- As-Built Drawings (CAD and PDF)

Prior to the requested date of the inspection, the Contractor shall perform or provide the following as applicable:

- Temporary facilities shall be removed
- The Project Site and all applicable appurtenances and improvements shall be cleaned

The Contractor shall be represented by its Construction Supervisor and any Subcontractors deemed appropriate by Contractor to answer questions from the Project Managers' inspection team.

The Contractor shall promptly correct any deficiencies noted during the preliminary final inspection.

The Contractor shall notify the Project Manager when all punch list deficiencies have been completed. The Project Manager will promptly set a time for final inspection, at which time the Project Manager (including any required inspectors and Tacoma Fire personnel) will complete a final inspection of the Work. The Contractor will promptly correct any further deficiencies noted.

Once all Work has been substantially completed in accordance with the Contract Documents and the Affidavit of Wages Paid has been submitted to L&I, the Project Manager will recommend the City issue a Certification of Substantial Completion. If punch list deficiencies

still exist and the Contractor has provided a fixed schedule for completion of those deficiencies, the Project Manager will attach the corresponding punch list and schedule to the Certificate of Substantial Completion.

The date of the Certificate of Substantial Completion will establish the completion date of the Work, or portions thereof as specifically referenced in the Certification for determining liquidated damages.

Upon completion of the punch list items, the Project Manager will recommend the City formally accept the Work.

Acceptance of the Work and final payment will be made in accordance with applicable Public Works and Improvement project guidelines.

FENWAL Protection Systems

For Information Purposes Only on Currently Installed
FENWALNET™ 6000 Control Unit

SECTION 1: GENERAL

1.01 INTENT OF SPECIFICATIONS

This specification details the requirements for a FENWALNET™ 6000 Control Unit. All requirements outlined in this specification must be completed in their entirety. These requirements, which are in accordance with the items listed in Section 1.03, combined with good engineering practices, shall be followed in order to produce a safe and effective fire suppression system.

1.02 GENERAL DESCRIPTION

The existing FENWALNET 6000 addressable, distributed-intelligence control unit and fire alarm/suppression system shall be used to perform fire alarm, supervisory, and trouble event initiation; occupant notification; event annunciation; local control functions; fire extinguishing system release, and off premises transmission.

The system's distributed intelligence shall extend to the SmartOne™ automatic initiating devices on the signaling line circuit. Each automatic initiating device shall have a microprocessor capable of independently determining whether or not a fire signature at its monitored location is of sufficient magnitude to warrant the issuance of an alarm signal to the control unit.

1.03 CODES AND COMPLIANCE

A. The design, installation, testing and maintenance of the fire alarm / suppression system shall be in accordance to the following codes and standards:
   1) NFPA 12A, *Standard on Halon 1301 Fire Extinguishing Systems*
   2) UL864, 9th Edition
   3) NFPA 13, S*tandard for the Installation of Sprinkler Systems*
   4) NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection*
   5) NFPA 70, *National Electrical Code*
   6) NFPA 72, *National Fire Alarm Code*
   7) NFPA 75, *Standard for the Protection of Electronic Computer/Data-Processing Equipment*
   8) NFPA 76, *Fire Protection of Telecommunications Facilities*
   9) NFPA 2001, *Standard for Clean Agent Fire Extinguishing Systems*
   10) Factory Mutual Approval Guide
   11) Design and installation practices set forth by system manufacturer
   12) Requirements of the Local Authorities Having Jurisdiction (AHJ)

B. All of the components of the fire-alarm / -suppression system shall have the following listings and approvals:
   1) FM Approved: Factory Mutual Research Center
   2) UL Listed: Underwriters Laboratories
   3) California State Fire Marshall (CSFM)
   4) New York City Materials and Equipment Approval (MEA)

1.04 SYSTEM DESIGN CRITERIA

A. All system components shall be manufactured and/or supplied by Fenwal Protection Systems, 400 Main Street, Ashland, MA 01721, USA, phone (508) 881-2000
URL: http://www.fenwalfire.com/

B. The system shall be supplied and installed by a factory-authorized Fenwal Protection Systems distributor. The distributor shall be trained by the manufacturer to design, install, test and maintain the FENWALNET 6000 fire alarm / suppression system and shall be able to produce a certificate stating such on request.

C. All materials and equipment shall be new and unused.

1.05 QUALIFICATIONS

A. Manufacturer

1. The manufacturer/supplier of the system hardware and components shall have a minimum of fifteen (15) years experience in the design and manufacture of systems of similar type.
2. The manufacturer/supplier of the systems shall be certified to ISO 9001 for a minimum period of five (5) years for the design, production and distribution of fire detection, fire alarm and fire suppression systems.
3. The name of the manufacturer/supplier and manufacturer part numbers shall appear on all major components.
4. All devices, components and equipment shall be the products of the same manufacturer/supplier.
5. The system manufacturer/supplier shall have the ability to provide multiple suppression system arrangements to accommodate the performance criteria required by the project.
6. All devices, components and equipment shall be listed by the standardizing agencies (Underwriters Laboratory and/or Factory Mutual).

B. Contractor

1. The system shall be supplied and installed by a factory-authorized, Fenwal Protection Systems Distributor. The Distributor/Installer shall be trained by the manufacturer to calculate/design, install, test and maintain the fire suppression system and shall be able to produce a certificate stating such on request.
2. The installing contractor shall employ a person who can show proficiency at least equal to a NICET level IV certification in special hazards design.
3. The factory-authorized Fenwal Protection Systems distributor shall confirm in writing that he stocks a full complement of spare parts and offers 24-hour emergency service for all equipment being furnished.

1.06 WARRANTY

The manufacturer shall warranty the FENWALNET 6000 Control Unit and the SmartOne initiating and control devices for 60 months from date of shipment.

1.07 SUBMITTALS

A. The factory-authorized Fenwal Protection Systems distributor shall provide all required installation drawings that shall include the following details:
   1. Plan and riser drawings showing the location of the FENWALNET 6000 Control Unit and the locations of all field devices such as smoke detectors, manual-release stations and notification appliances. Include all necessary installation and mounting details. Conduit routings shall be shown, with number of conductors, type of wire, and wire sizes indicated for each conduit segment.
   2. Point-to-point wiring diagram showing the termination points for all field-wiring circuits to the internal FENWALNET 6000 PCB. All internal wiring and communications cabling shall be shown.
   3. A primary-power calculation that details the power requirements for the FENWALNET 6000 Control Unit and all field devices such as smoke detectors, notification appliances, and releasing solenoids. Include the required capacity of the main AC power-line feed from the commercial power and light company.
   4. A secondary-power calculation that shows the quiescent- and alarm-power requirements for the FENWALNET 6000 Control Unit and all field devices such as smoke detectors, notification appliances, and releasing solenoids. Include the periods of time for which the quiescent- and alarm-power requirements shall be supported in order to determine the necessary standby-battery capacity.

B. The contractor shall provide the following supporting materials for the equipment being utilized in this project:
   1. A complete component and equipment list with model numbers and Fenwal Protection Systems part numbers.
   2. Product information sheets for each item of equipment.
   3. A theory of operations, with a description of system functionality.
   4. A detailed matrix of all the initiating points, control modules, and field circuits that identifies the labeling of all components and shows the relationships and activation sequences among the various initiating points and the control modules and / or field circuits.
   5. The architect will review all submittals for conformance to the drawings and specifications. The contractor shall be required to resubmit any materials, with appropriate modifications, that are found to be in non-conformance with the requirements of the drawings and these specifications after review by the architect. Approval of the submittals by the architect shall not relieve the contractor of his responsibility to meet the requirements of the drawings and specifications.

C. The contractor shall submit a test plan that describes how the system shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. Tests shall not be scheduled or conducted until the engineer of record approves the test plan.

D. Five (5) copies of the FENWALNET 6000 Installation, Operation and Maintenance Manual shall be submitted after complete installation.

SECTION 2: ELECTRICAL SYSTEM REQUIREMENTS

2.01 ELECTRICAL WORK

A. All electrical enclosures, raceways, and conduits shall be provided and installed in accordance with applicable codes and intended use, and shall contain only those electrical circuits associated with the fire-detection and control system. No circuit or circuits that are unrelated to the fire alarm or suppression system shall be routed through the enclosures, raceways, and conduits dedicated to the fire alarm or -suppression system.

B. Splicing of circuits shall be kept to a minimum, and is only permitted in an electrical box suitable for the purpose. Appropriate hardware shall be used to make the wire splices. Wires that are spliced together shall have the same color insulation.

C. White colored wire shall be used exclusively for the identification of the neutral conductor of an alternating-current circuit. Green colored wire shall be used exclusively for the identification of the earth-ground conductor of an AC or DC circuit. Appropriate color-coding shall be utilized for all other field wiring.

D. All electrical circuits shall be numerically tagged with suitable markings at each terminal point. All circuits shall correspond with the installation drawings.

2.02 SYSTEM CONFIGURATION

A. Activation of the extinguishing system shall be via crossed-zoned smoke detection. One half of the crossed-zoned smoke-detection system shall consist of either Model PSD-7152 SmartOne Photoelectric Detectors or AnaLASER II High Sensitivity Smoke Detectors. The other half of the crossed-zoned smoke-detection system shall consist of Model CPD-7052 Ionization Detectors.

B. The Model PSD-7152 SmartOne Photoelectric Detectors or AnaLASER II High Sensitivity Smoke Detectors shall be used as the primary pre-alarm detection system because they are more likely to alarm during the pre-combustion or early stages of the fire development. The Model CPD-7052 Ionization Detector shall be utilized primarily as a fire-confirmation detector to ensure the presence of a flame before the extinguishing system is discharged. Ionization detectors are small-particle detectors and are more likely to respond to flaming fires.

C. Spot-type detectors from each half of the crossed-zoned detection system shall be alternated throughout the protected area. It shall require the activation of at least one detector from each of the two crossed-zoned detector groupings to trigger the automatic release of the extinguishing system.

D. Systems that use multi-criteria detectors that cannot be programmed to respond to the various stages of fire development, or systems that do not use different smoke-detection principles to confirm the presence of a flaming fire, shall not be considered as equivalent or as meeting the intent of this specification.

2.03 POWER SUPPLIES

A. The Control Panel shall operate on 120 or 240 VAC 50/60 Hz Mains Supply.

B. The battery backup system shall consist of 24 VDC, maintenance free, sealed lead acid batteries of 1.2 AH capacity such as to provide for 24 hours of Standby operation followed by five (5) minutes of Alarm operation in the case of AC Mains failure. The battery charger shall be capable of providing a charging current of 0.48 Amperes.

2.04 ANNUNCIATION

Accessory modules shall be available to provide remote-event annunciation and operator control. The accessory modules shall be of two styles: either textual-type with control switches and indicators that duplicate the functionality of the main-control-unit display or point-driver-type for interface to graphical annunciators.

A. Textual-Type Remote Display Control Module (RDCM)
- Model RDCM shall completely duplicate the display and operator-intervention capabilities of the main-control-unit display.
- The RDCM shall communicate with the FENWALNET 6000 Control Unit via RS-485 communications, and the system shall be capable of supporting with up to 15 remote displays.
- The remote displays shall operate on 24 VDC power provided by the FENWALNET 6000-power supply, or by any remote power supply that is UL-Listed or FM-Approved for fire-alarm applications. The remote-display modules shall supervise their input-power connections.
- The main FENWALNET 6000 Control Unit display or one RDCM shall be capable of being programmed as the master unit with immediate operator-intervention privileges upon the occurrence of any alarm or fault condition. The master unit shall have control for a minimum period of 30 seconds, and all other control points shall be locked out and notified of the locked-out condition if another operator attempts to intervene during the locked-out period imposed by the master control module.

B. Output Driver Modules
- The Model ATM-L Annunciator Driver Module shall provide the FENWALNET 6000 Control Unit with up to 32 programmable outputs for remote LEDs, along with 6 system-level LEDs and 5 system-level functional switches.
- The Model ATM-R Relay Driver Module shall provide the FENWALNET 6000 Control Unit with up to 32 programmable outputs for remote relays.
- The ATM-L and -R Modules shall communicate with the FENWALNET 6000 Control Unit via the RS-485 communications circuit, with the most-remote module capable of being located up to 4,000 feet from the control unit. The ATM-Ls and ATM-Rs shall be capable of being installed in various combinations as long as the maximum number of 16 for each module type is not exceeded.
- Both modules can be powered from the FENWALNET 6000 power supply, or from an external, regulated, and power-limited power supply Listed and Approved for use with fire-protective-signaling systems, depending upon the total load of the remote outputs. A typical external power supply is Fenwal P/N 89-300022-001.

2.05 CONTROL PANEL

A. The control-unit configuration shall consist of a printed-circuit board (PCB) with the main microprocessor, an integral display/control assembly, and terminations for all field circuits, a primary power supply and an enclosure with removable door and viewing window.

B. The PCB shall contain the main-system microprocessor, the real-time clock, the history buffers, the watchdog timer, one USB device port, and two RS-232 serial communications ports. It shall also provide terminations for the following field circuits:
   - one (1) signaling line circuit (SLC)
   - two (2) notification-appliance circuits (NACs)
   - two (2) combination NAC / releasing circuits (Combos)
   - two (2) releasing circuits
   - three (3) programmable relays
   - one (1) trouble relay
   - one (1) RS-485 communications circuit
   - battery charging circuit
   - AC input power connections

C. The SLC shall serve as the hardware and software interface between the intelligent initiating and control devices and the FENWALNET 6000 Control Unit. The SLC shall be capable of communicating with up to 255 automatic detectors, monitor modules, and control devices, in any combination, without restrictions on the numbers of each type of field device.

D. The two releasing circuits shall be capable of actuating either an electro-explosive initiators, Fenwal control heads, or solenoid valves. Each releasing circuit shall be independently programmable to activate any of the following configurations of extinguishing-system actuators:
   1. Electro-explosive initiators, supervised and activated in series, subject to the constraints below:
      - Maximum of twelve (12) P/N 31-199932-004
      - Maximum of six (6) P/N 93-191001-001
   2. One (1) control head or solenoid valve
   3. Two (2) control heads or solenoid valves, supervised in series and activated in parallel. It shall not be necessary to use identical solenoid valves when two valves are activated on one releasing circuit.
   4. The releasing circuits shall be capable of actuating Factory Mutual System classified valves (Groups A, B, D, E, G)

E. The two notification-appliance circuits (NACs) shall be independently programmable and configurable for either Class-A or -B operation.
   1. The input power to the NAC shall be filtered and regulated. The NAC shall be capable of delivering a current of up to 1.5 A @ 24 VDC to the notification appliances.
   2. It shall be possible to field-configure each Class-B, Style-Y NAC to activate notification appliances with any and all of the following parameters via a personal-computer-based configuration program:
      - 20-character location
      - drill activation
      - silenceable / non-silenceable operation
      - walk-test activation
      - master-coded operation (60 bpm, 120 bpm, temporal per ANSI S3.41, continuous)
      - cutoff delay (5, 10, 15 minutes)
      - silence inhibit (1, 3, 5 minutes)

3. It shall be possible to override one master code with another depending on the state (i.e., prealarm, prerelease, release, or time-limit-cutout) of the particular suppression zone. It shall also be possible to shut off and re-activate a NAC as required by the approved system operating sequence. No supplemental equipment shall be required to perform this functionality.
4. It shall not be necessary to use external synchronization modules to synchronize the audible and visual notification signals created by any NAC.
5. Terminals for connection of field conductors to the NACs shall be large enough to accommodate #12 AWG wiring

F. The basic power-supply / charger assembly shall consist of an AC to DC switching power unit. The power-supply / charger assembly shall be configurable to accept either 120 or 240 VAC input voltage, and shall provide 5.4 A at 24 VDC of filtered and regulated power to operate the system and charge the system's standby battery. The charger assembly shall be capable of charging batteries of capacities up to 70 AH. Two user-configurable auxiliary-power circuits shall be provided on the PCB to power peripheral devices. The auxiliary-power circuits shall be software programmable for either continuous or interruptible power output, and shall be rated for 1.0 A at 24 VDC. It shall not be necessary to set jumpers or dip switches on the PCB to make these outputs continuous or interruptible.

G. The system shall have the ability to use an optional Intelligent Communications Module (ICM). The ICM shall be a device server that provides Internet access to the FENWALNET 6000 Control Unit via any standard Web browser such as Internet Explorer or Netscape Navigator. The ICM shall provide the following client services:

- dial-up control-unit monitoring and status reporting
- automatic event detection and reporting via e-mail
- Web-browser-based
- emulated display for the control unit
- access to items in the control unit's List Menu.

2.06 SMOKE DETECTORS

Spot-type smoke and heat detectors shall be microprocessor based SmartOne branded Ionization Detector, Model CPD-7052; Photoelectric Detector, Model PSD-7252; Thermal Detector, Model THD-7252.

A. SmartOne™ Ionization Detector

- The SmartOne Ionization Detector, Model CPD-7052, shall be a microprocessor-based smoke detector. The ionization detector shall be a dual-chamber, low profile, intelligent type that senses both visible and invisible products of combustion. The sensing chamber shall permit a full 360° smoke entry.
- Each ionization detector shall be electronically addressable and fully field-programmable. It shall be possible to set both alert and alarm thresholds anywhere from 0.5 to 1.5% per foot obscuration in 0.1%-per-foot increments. Alarm thresholds shall be dynamically adjustable as a result of another alarm event anywhere in the system. Where permitted, each detector shall be programmable for alarm verification in periods of up to 180 seconds in 1-second increments. Each detector shall provide a real-time value of current, local obscuration level in percent-per-foot readout when requested by an operator at the control unit.
- It shall be possible to configure each ionization detector for non-latching operation to prevent inadvertent or spurious fire signatures from accidentally discharging a waterless extinguishing system. The control unit shall latch the alarm report, but the discharge sequence shall be interrupted if the fire signature at the detector drops below the detector's programmable alarm threshold.

- Detector calibration, address, alert and alarm thresholds, and drift-compensation algorithm shall be stored in each detector's non-volatile memory. Systems that store all detector parameters in the control unit (i.e., non-distributed-intelligence-to-the-device-level architecture) shall not be considered as equivalent.
- A detector housing, Model DH-2000, shall be available to allow an ionization detector to monitor for the presence of combustion products in an air duct. The detector housing shall be rated for air-duct velocities ranging from 500 to 4,000 feet per minute. It shall also be possible to mount the ionization detector in an air duct with velocities ranging up to 2,000 feet per minute.

B. SmartOne™ Photoelectric Detector

- The SmartOne Photoelectric Detector, Model PSD-7252, shall be a microprocessor-based smoke detector. The photoelectric detector shall be a light scattering type, low profile, intelligent detector that senses a broad range of smoldering and flaming-type fires. The sensing chamber shall permit a full 360° smoke entry.
- Each photoelectric detector shall be electronically addressable and fully field-programmable. It shall be possible to set an alert threshold anywhere from 0.2 to 3.4% per foot obscuration in 0.1%-per-foot increments, and to set an alarm threshold anywhere from 0.5 to 3.5% per foot obscuration in 0.1%-per-foot increments. Alarm thresholds shall be dynamically adjustable as a result of another alarm event anywhere in the system. Where permitted, each detector shall be programmable for alarm verification in periods of up to 180 seconds in 1-second increments. Each detector shall provide a real-time value of current, local obscuration level in percent-per-foot readout when requested by an operator at the control unit.
- It shall be possible to configure each photoelectric detector for non-latching operation to prevent inadvertent or spurious fire signatures from accidentally discharging a waterless extinguishing system. The control unit shall latch the alarm report, but the discharge sequence shall be interrupted if the fire signature at the detector drops below the detector's programmable alarm threshold.
- Detector calibration, address, alert and alarm thresholds, and drift-compensation algorithm shall be stored in each detector's non-volatile memory. Systems that store all detector parameters in the control unit (i.e., non-distributed-intelligence-to-the-device-level architecture) shall not be considered as equivalent.
- A detector housing, Model DH-2000, shall be available to allow a photoelectric detector to monitor for the presence of combustion products in an air duct. The detector housing shall be rated for air-duct velocities ranging from 500 to 4,000 feet per minute. It shall also be possible to mount the photoelectric detector in an air duct with velocities ranging up to 4,000 feet per minute.

C. SmartOne™ Thermal Detector

- The SmartOne Thermal Detector, Model THD-7252, shall be a microprocessor-based heat detector. The thermal detector shall be a thermistor-type, low profile, intelligent detector that responds to a fixed temperature with minimal thermal lag. The sensing chamber shall permit a full 360° heat entry.
- Each thermal detector shall be electronically addressable and fully field-programmable. It shall be possible to set both alert and alarm thresholds anywhere from 80°F to 155°F in 1F° increments. Each detector shall provide a real-time value of current, local temperature in °F readout when requested by an operator at the control unit.

- It shall be possible to configure each thermal detector for non-latching operation to prevent inadvertent or spurious fire signatures from accidentally discharging a waterless extinguishing system. The control unit shall latch the alarm report, but the discharge sequence shall be interrupted if the fire signature at the detector drops below the detector's programmable alarm threshold.
- Detector calibration, address, and alert and alarm thresholds shall be stored in each detector's non-volatile memory. Systems that store all detector parameters in the control unit (i.e., non-distributed-intelligence-to-the-device-level architecture) shall not be considered as equivalent.

2.07 CONDUCTORS AND CONDUITS

A. All conductors shall be enclosed in rigid or thin-walled, steel conduit unless open wiring is permitted by the local electrical code.

B. Any conduit or raceway exposed to dampness or other similar conditions shall be properly sealed and installed to prevent moisture entrapment. Provisions for draining and drying shall be employed as required.

C. All wiring shall be of the proper size to conduct the circuit current, but shall not be smaller than #18 AWG unless permitted by the local electrical code. Wiring for the signaling line circuit shall be in accordance with the FENWALNET 6000 Installation, Operation, and Maintenance Manual. Wire that has scrapes, nicks, gouges, or crushed insulation shall not be used. The manufacturer's minimum wire-bending radii shall be observed in all enclosures, raceways, and conduits. Aluminum wire shall not be used.

SECTION 3: EXECUTION

3.01 ELECTRICAL SYSTEM INSTALLATION

A. The contractor shall install the system in accordance with the appropriate Fenwal Protection Systems installation, operation and maintenance manual.

B. Locations of all electrical equipment, the FENWALNET 6000 Control Unit, and all system components are subject to the approval of the architect.

C. All final-acceptance tests shall be performed in the presence of the architect and the authority having jurisdiction. The contractor shall record all equipment, tests and system configurations in a format approved by the manufacturer and/or the local Authority Having Jurisdiction. A copy of the commissioning tests and results shall be provided to the architect, the authority having jurisdiction, and the end-user.

3.02 TRAINING REQUIREMENTS

The contractor shall be certified and trained by Fenwal Protection Systems on installation, design and maintenance of the FENWALNET 6000 System and shall be able to produce a certificate stating such on request.

3.03 ROUTINE MAINTAINANCE

System maintenance and periodic testing shall be performed as required by NFPA 72 and NFPA 2001, current editions, and as recommended by the FENWALNET 6000 Installation, Operation and Maintenance Manual.

1. GENERAL

1.1 INTENT OF SPECIFICATIONS

This specification outlines the requirements for a total flooding clean agent fire extinguishing system comprising Fenwal Protection Systems equipment employing 3M™ Novec™ 1230 Fire Protection Fluid with a FENWALNET™ 8000 Control Unit alarm and releasing panel. All requirements outlined in this specification shall be completed in their entirety. These requirements, which are in accordance with the items listed in Section 1.3, combined with good engineering practices must be followed in order to produce a safe and effective fire protection and suppression system.

1.2 GENERAL DESCRIPTION

The clean agent fire extinguishing system shall perform as outlined in the following sub-sections.

A. Achieve a 4.5% (v/v) extinguishing concentration for Class A (Surface Type Fires) hazards.
B. Achieve a 5.85% (v/v) or greater, as required, extinguishing concentration for Class B (Flammable Liquids) hazards.
C. Achieve a 4.7% (v/v) extinguishing concentration for Class C (Energized Electrical Equipment) hazards.
D. Within 10 seconds, the clean agent fire extinguishing system shall discharge 95% of the required suppression agent mass.
E. The clean agent fire extinguishing system shall consist of one or more Fenwal Protection Systems agent storage containers and related equipment. The containers may be either connected to a discharge pipe arrangement separately or connected to a common manifold and discharge pipe arrangement. The agent storage containers shall be filled with Novec 1230 fluid, and super pressurized with dry nitrogen to a working pressure of 360 PSIG at 70°F (24.8 bar gauge at 21°C).
F. The FenwalNET 8000 addressable, distributed-intelligence control unit and fire alarm/suppression system shall perform fire alarm, supervisory, and trouble event initiation; occupant notification; event annunciation; local control functions; fire extinguishing system release, and off premises transmission.
G. The system's distributed intelligence shall extend to the SmartOne automatic initiating devices on the signaling line circuit. Each automatic initiating device shall have a microprocessor capable of independently determining whether or not a fire signature at its monitored location is of sufficient magnitude to warrant the issuance of an alarm signal to the control unit.

1.3 CODES AND COMPLIANCE

A. The design, installation, testing and maintenance of the integrated suppression shall be in accordance with the following applicable codes, standards and regulatory bodies:

1. NFPA 12A: Halon 1301 Fire Extinguishing Systems
2. NFPA12: Carbon Dioxide Extinguishing Systems
3. NFPA 2001: Clean Agent Fire Extinguishing Systems
4. NFPA 17: Dry Chemical Extinguishing Systems
5. NFPA 17A: Wet Chemical Extinguishing Systems
6. NFPA 70: National Electrical Code (NEC)
7. NFPA 72: National Fire Alarm Code
8. NFPA 75: Protection of Electronic Computer/Data Process Equipment
9. NFPA 76: Fire Protection for Telecommunications Systems
10. NFPA 92A: Recommended Practice for Smoke Control Systems
11. NFPA 101: Life Safety Code
12. NFPA 170: Standard for Fire Safety Symbols
13. NFPA 750: Water Mist Fire Protection Systems
14. UL 38: Manually Actuated Signaling Boxes
15. UL 217: Smoke Detectors, Single and Multiple Station
16. UL 228: Door Closers–Holders for Fire Protective Signaling Systems
17. UL 268: Standard for Smoke Detectors for Open Areas

18. UL 268A: Standard for Smoke Detectors for Duct Application
19. UL 346: Waterflow Indicators for Fire Protective Signaling Systems
20. UL 464: Audible Signaling Appliances
21. UL 521: Heat Detectors for Fire Protective Signaling Systems
22. UL 864, 9th ed: Control Units and Accessories for Fire Alarm Systems
23. UL 1638: Visual Signaling Appliances
24. UL 1971: Signaling Devices for Hearing Impaired
25. UL 2166: Halocarbon Clean Agent Extinguishing System Units
26. ULC-S524M: Canadian Standard - Installation of Fire Alarm Systems
27. ULC-S527-99: Canadian Standard - Fire Alarm Systems Control Units
28. ULC-S528-M91: Canadian Pull Station Standard
29. ULC-S529-02: Canadian Smoke Detector Standard
30. ANSI B1.20.1: Standard for Pipe Threads, General Purpose
31. Factory Mutual
32. Requirements of the Local Authority Having Jurisdiction
33. Manufacturer's Design, Installation, Operation & Maintenance Manual

B. The complete system shall have the applicable following listings and approvals:
   1. Underwriters Laboratories, Inc.
   2. Factory Mutual Global

1.4 SYSTEM DESIGN CRITERIA

A. All system components shall be manufactured and/or supplied by Fenwal Protection Systems, 400 Main Street, Ashland, MA 01721, USA, phone (508) 881-2000. URL: http://www.fenwalfire.com/
B. The system shall be supplied and installed by a Contractor. The Contractor shall be trained by the manufacturer to design, install, test and maintain the Fenwal Novec 1230 System and FenwalNET 8000 Control Unit shall be able to produce certificates stating such on request.
C. All materials and equipment shall be new and unused.
D. A total flooding, clean agent fire suppression system, filled with Novec 1230, shall be installed to meet a minimum design concentration of _____% by volume in all designated spaces to be protected.

1.5 QUALIFICATIONS

A. Manufacturer
   1. The manufacturer/supplier of the system hardware and components shall have a minimum of fifteen (15) years experience in the design and manufacture of systems of similar type
   2. The manufacturer/supplier of the systems shall be certified to ISO 9001 for a minimum period of five (5) years for the design, production and distribution of fire detection, fire alarm and fire suppression systems.
   3. The name of the manufacturer/supplier and manufacturer part numbers shall appear on all major components.
   4. All devices, components and equipment shall be the products of the same manufacturer/supplier.
   5. The system manufacturer/supplier shall have the ability to provide multiple suppression system arrangements to accommodate the performance criteria required by the project.
   6. All devices, components and equipment shall be listed by the standardizing agencies (ULC and/or FM).

B. Contractor
   1. The system shall be supplied and installed by a factory authorized, Fenwal Protection Systems distributor. The Contractor shall be trained by the manufacturer to calculate/design, install, test and maintain the fire suppression system and shall be able to produce a certificate stating such on request.

2. The installing contractor shall employ a person who can show proficiency at least equal to a NICET level IV certification in special hazards design.
3. The Contractor shall confirm in writing that he stocks a full complement of spare parts and offers 24-hour emergency service for all equipment being furnished.

1.6 WARRANTY

A. The manufacturer shall warrant the system from the date of shipment from the factory as follows: Fenwal Engineered System products for thirty-six (36) months; FenwalNET 8000 Control Unit for sixty (60) months; and the SmartOne devices for twenty-four (24) months.

1.7 SUBMITTALS

A. The architect will review all submittals for conformance to the drawings and specifications. The contractor shall be required to resubmit any materials, with appropriate modifications, that are found to be in non-conformance with the requirements of the drawings and these specifications after review by the architect. Approval of the submittals by the architect shall not relieve the Contractor of their responsibility to meet the requirements of the drawings and specifications.

B. Engineered Design Drawings: The Contractor shall provide all required documents that shall include the following details:
   1. The factory-authorized Fenwal Protection Systems Distributor shall provide all required installation drawings per NFPA 2001
   2. Plan and riser drawings showing the location of the FenwalNET 8000 Control Unit and the locations and necessary installation and mounting details of all field devices such as smoke detectors, manual-release stations and notification appliances. Conduit routings shall be shown, with number of conductors, type of wire, and wire sizes indicated for each conduit segment.
   3. Point-to-point wiring diagram showing the termination points for all field-wiring circuits to the internal FenwalNET 8000 PCB. All internal wiring and communications cabling shall be shown.
   4. A primary-power calculation that details the power requirements for the FenwalNET 8000 Control Unit and all field devices such as smoke detectors, notification appliances and releasing solenoids. Include the required capacity of the main AC power-line feed from the commercial power and light company.
   5. A secondary power calculation that shows the quiescent and alarm power requirements for the FenwalNET 8000 Control Unit and all field devices. Include the periods of time for which the quiescent and alarm power requirements shall be supported in order to determine the necessary standby battery capacity.
   6. The contractor shall submit a calculation justifying the capacity of batteries selected.

C. Flow Calculation Reports: The Contractor shall provide the following information in the flow calculation report.
   1. Customer information and project data.
   2. Enclosure information. At a minimum, enclosure information shall include minimum and adjusted design concentrations, minimum and maximum enclosure temperatures, minimum agent required and volume of enclosures, including non-permeable volume if applicable.
   3. Agent information. At a minimum, agent information shall include cylinder size and part number, quantity of cylinders, main and/or reserve cylinders, pipe take off direction and the floor loading for agent cylinder
   4. Pipe network information. At a minimum, pipe network information shall include pipe type, pipe diameter, pipe length, change in direction or elevation, pipe equivalent length and any added accessory equivalent length. In addition, the following nozzle information shall be provided; number of nozzles and identification of enclosure location, flow rate of associated nozzle, nozzle nominal size, nozzle type and nozzle orifice area

D. Pipes and pipe fittings. A detailed list of pipes and pipe fittings used in the design of the pipe network

E. OPTIONAL: Three-Way Ball Valve Information. A calculation shall be completed for each directional valve in the piping network. Modeling of the Three-Way Ball Valve shall be shown in the ”90-deg” and “through” position.

F. Commissioning Equipment List: The Contractor shall provide a commissioning equipment list for each installed system. The equipment list shall identify all installed equipment and configurations. The Contractor shall submit the following:
   1. Four (4) sets of installation drawings for each installed system and one (1) set of calculation reports, owner’s manuals and product data sheets.
   2. A description of system functionality and a detailed matrix of all the initiating points, control modules, and field circuits that identifies the labeling of all components and shows the relationships and activation sequences among the various initiating points and the control modules and/or field circuits.
   3. The contractor shall submit a commissioning check sheet for each installed ASD detector. The check sheet shall list all installed equipment, configurations and measured ambient conditions
   4. The Contractor shall submit a test plan that describes how the system shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. Tests shall not be scheduled or conducted until the engineer of record approves the test plan. At a minimum, the tests to be conducted shall be per the relevant referenced codes and any additional supplemental tests required by the AHJ. Tests shall not be scheduled or conducted until the engineer of record approves the test plan.
   5. Upon completion of installation and commissioning acceptance, two (2) sets of “As-Built” installation drawings and One (1) set of the calculation report for each installed system.

G. Test Plan
   1. The distributor shall submit a test plan that describes how the system equipment and room integrity shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. At a minimum, the tests to be conducted shall be per NFPA 2001 and any additional supplemental tests required by the AHJ. Tests shall not be scheduled nor conducted until the engineer of record approves the test plan

H. Installation Drawings
   1. Four (4) sets of installation drawings for each installed clean agent fire extinguishing system and one (1) set of the calculation report, owner’s manual and product data sheets shall be submitted to the end-user/owner.
   2. Upon completion of installation and commissioning acceptance, two (2) sets of “As-Built” installation drawings and One (1) set of the calculation report for each installed clean agent fire extinguishing system shall be given to the owner/end-user for use and reference.

I. Documentation: The Contractor shall submit two (2) copies the following after complete installation:
   1. Fenwal Engineered System Design, Installation, Operation and Maintenance Manual.
   2. FenwalNET 8000 Installation, Operation and Maintenance Manual.

2. SUPPRESSION SYSTEM REQUIREMENTS

2.1 GENERAL

A. The clean agent fire extinguishing system shall consist of FM-200, agent storage container(s), 1800-psig seamless nitrogen cylinders, Fenwal actuation hardware and Fenwal discharge nozzle(s) attached to a pipe network.

2.2 SYSTEM PERFORMANCE

A. System Discharge
   1. The discharge time required to achieve 95% of the minimum design concentration for flame extinguishment shall not exceed 10 seconds.

B. Duration of Protection
   1. 85% of the minimum design concentration shall be maintained for 10-minutes or a sufficiently longer period of time to allow effective emergency action by trained personnel. A level 1 certification in room integrity testing, provided by a recognized manufacturer of room integrity testing equipment, is required.

C. Minimum System Design Limits
   1. Nozzles
      i. Nozzles shall be listed and approved for a maximum ceiling height of 16 feet (4.88 m) and a minimum ceiling height of 1 foot (0.31 m).
      ii. Nozzle area coverage for both 360- and 180-degree nozzles shall be a maximum of 35.6 ft. x 35.6 ft. square (10.85 m x 10.85 m).
      iii. System Nozzles shall be listed and approved to accommodate a maximum arrival time of 2.0 seconds and a maximum run-out time of 6.3 seconds.
      iv. System Nozzles shall be listed and approved for a minimum of 60.3 PSIG (4.16 bar gauge) nozzle pressure.

2.3 PIPE AND FITTINGS

A. Distribution piping, and fittings, shall be installed in accordance with NFPA 2001, approved piping standards and the engineered fire suppression system manufacturer's requirements.

2.4 ACTUATION HARDWARE

A. The agent cylinders shall be actuated in accordance with the applicable design manual.
B. The suppression panel shall be UL Listed per UL 864, 9th Edition with the interfacing electric actuators.

2.5 NOZZLES

A. Total flooding clean agent extinguishing system nozzles shall be made of stainless steel.
B. Each nozzle shall be located in the space per the manufacturer's guidelines. Nozzles shall have either a 180- or a 360-degree discharge pattern.
C. C.Each nozzle discharge pattern shall be available in sizes ranging from 3/8-in NPT to 2-in NPT.
D. Within each nozzle size and style, the manufacturer shall offer multiple different orifice areas (minimum of 20).
E. Nozzles shall be UL Listed and FM Approved for use with the manufacturer's clean agent extinguishing system employing Novec 1230 fluid.

2.6 AGENT STORAGE CONTAINER ASSEMBLIES

A. Novec 1230 fluid shall be stored in containers manufactured and marked in accordance with US Department of Transportation (DOT) specification 4BW-500 or 4BA-500. The agent storage containers shall be conditioned to 360 PSIG @ 70°F (24.8 bar gauge @ 21°C). Cylinder and valve assemblies shall be dual marked with Transport Canada (TC) specification 4BW-M34 or 4BA-M34. The system manufacturer shall be able to provide US DOT documentation that the registration number marked on the agent storage container corresponds to a manufacturing location at a US address.
   1. Novec 1230 fluid containers shall be equipped with a pressure gauge to display internal pressures. The gauge shall be an integral part of the equipment and shall be color-coded for fast referencing of pressure readings.
   2. A low-pressure switch shall be provided as standard equipment on the Novec 1230 fluid containers. A decrease in pressure will cause the normally open contacts to close, indicating a trouble condition at the control panel. The low-pressure switch shall be field removable/replaceable while the container is still fully charged.

3. Novec 1230 fluid containers with empty weights in excess of 105-lbm shall be equipped with an integral liquid level indicator (LLI). The LLI will allow the agent container to remain connected and secured in place while measuring the agent mass.

2.7 OPTIONAL EQUIPMENT

A. When protecting multiple hazard areas from a single supply of Novec 1230 fluid, Fenwal Three-Way Directional Ball Valves shall be used.
   1) The Three-Way Directional Ball Valves shall be UL Listed or FM Approved for use with Novec 1230 fluid and Fenwal Engineered Suppression Systems.
   2) The Three-Way Directional Ball Valves shall be installed and located in the piping network per the manufacturer's guidelines and design manual.

3. ELECTRICAL SYSTEM REQUIREMENTS

3.1 ELECTRICAL WORK

A. All electrical enclosures, raceways, and conduits shall be provided and installed in accordance with applicable codes and intended use, and shall contain only those electrical circuits associated with the fire-detection and control system. No circuit or circuits that are unrelated to the fire alarm or suppression system shall be routed through the enclosures, raceways, and conduits dedicated to the fire alarm or -suppression system.

B. Splicing of circuits shall be kept to a minimum, and is only permitted in an electrical box suitable for the purpose. Appropriate hardware shall be used to make the wire splices. Wires that are spliced together shall have the same color insulation.

C. White colored wire shall be used exclusively for the identification of the neutral conductor of an alternating-current circuit. Green colored wire shall be used exclusively for the identification of the earth-ground conductor of an AC or DC circuit. Appropriate color-coding shall be utilized for all other field wiring.

D. All electrical circuits shall be numerically tagged with suitable markings at each terminal point. All circuits shall correspond with the installation drawings.

3.2 GENERAL

A. The FenwalNET 8000 shall be an addressable, distributed-intelligence type Control Unit. Its distributed intelligence shall extend to the SmartOne initiating devices on its Signaling Line Circuit

3.3 SYSTEM CONFIGURATION

A. Activation of the extinguishing system shall be via crossed-zoned smoke detection in the following optional combinations:
   1. Zone 1 Model PSD-7152 SmartOne Photoelectric and Zone 2 Model CPD-7052 SmartOne Ionization

B. Detection system layout shall be in accordance with NFPA72 and it shall require the activation of at least one detector from each of the two crossed-zoned detector groupings to trigger the automatic release of the extinguishing system.

3.4 CONTROL PANEL

A. The control unit shall consist of a printed-circuit board (PCB), an integral display/control assembly, and terminations for all field circuits, a primary power supply and an enclosure with removable door and viewing window.

B. The PCB shall contain the main-system microprocessor, the real-time clock, the history buffers, the watchdog timer, one USB device port, and two RS-232 serial ports. It shall also provide terminations for the following field circuits:
   1. Two (2) signaling line circuit (SLC) which can be expanded to up to 8
   2. Two (2) notification appliance circuits (NACs)
   3. Two (2) combination NAC/releasing circuits (Combos)
   4. Two (2) releasing circuits
   5. Three (3) programmable relays
   6. One (1) trouble relay

7. One (1) RS-485 communications circuit
8. Connections for BACNET, Modbus, TCP/IP and Modbus over IP
9. Battery charging circuit
10. AC input power connections

C. The SLC shall serve as the hardware and software interface between the intelligent initiating and control devices and the FenwalNET 8000 Control Unit. The SLC shall be capable of communicating with up to 255 automatic detectors, monitor modules, and control devices, in any combination, without restrictions on the numbers of each type of field device.

D. The two releasing circuits shall be capable of actuating electro-explosive initiators, control heads, or solenoid valves. Each releasing circuit shall be independently programmable to activate any of the following configurations of extinguishing-system actuators:
   1. Electro-explosive initiators, supervised and activated in series, subject to the constraints below:
      i. Maximum of six (6) P/N 93-002009-004
      ii. Maximum of six (6) P/N 93-191001-001
   2. One (1) control head or solenoid valve
   3. Two (2) control heads or solenoid valves supervised in series and activated in parallel. It shall not be necessary to use identical solenoid valves when two valves are activated on one releasing circuit.
   4. The releasing circuits shall be capable of actuating Factory Mutual System classified valves (Groups A, B, D, E, G).

E. The two notification-appliance circuits (NACs) shall be independently programmable and configurable for either Class-A or -B operation.
   1. The input power to the NAC shall be filtered and regulated. The NAC shall be capable of delivering a current of up to 1.5 A @ 24 VDC to the notification appliances.
   2. It shall be possible to field-configure each Class-B, Style-Y NAC to activate notification appliances with any and all of the following parameters via a personal-computer-based configuration program:
      i. Twenty-character location
      ii. Drill activation
      iii. Silenceable/non-silenceable operation
      iv. Walk-test activation
      v. Master-coded operation (60 bpm, 120 bpm, temporal per ANSI S3.41, continuous)
      vi. Cutoff delay (5, 10, 15 minutes)
      vii. Silence inhibit (1, 3, 5 minutes)
   3. It shall be possible to override one master code with another depending on the state (i.e., prealarm, prerelease, release, or time-limit-cutout) of the particular suppression zone. It shall also be possible to shut off and re-activate a NAC as required by the approved system operating sequence. No supplemental equipment shall be required to perform this functionality.
   4. It shall not be necessary to use external synchronization modules to synchronize the audible and visual notification signals created by any NAC
   5. Terminals for connection of field conductors to the NACs shall be large enough to accommodate #12 AWG wiring
   6. The basic power-supply / charger assembly shall consist of an AC to DC switching power unit. The power-supply / charger assembly shall be configurable to accept either 120 or 240 VAC input voltage, and shall provide 5.4 A at 24 VDC of filtered and regulated power to operate the system and charge the system's standby battery. The charger assembly shall be capable of charging batteries of capacities up to 70 AH. Two user-configurable auxiliary-power circuits shall be provided on the PCB to power peripheral devices. The auxiliary-power circuits shall be software programmable for either continuous or interruptible power output, and shall be rated for 1.0 A at 24 VDC. It shall not be

necessary to set jumpers or dip switches on the PCB to make these outputs continuous or interruptible.

7. The system shall have the ability to use an optional Intelligent Communications Module (ICM). The ICM shall be a device server that provides Internet access to the FenwalNET 8000 Control Unit via any standard Web browser such as Internet Explorer or Netscape Navigator. The ICM shall provide the following client services:
   i. Dial-up control-unit monitoring and status reporting
   ii. Automatic event detection and reporting via e-mail
   iii. Web-browser-based
   iv. Emulated display for the control unit
   v. Access to items in the control unit's List Menu.

3.5 ANNUNCIATION

A. The following modules shall be provided for remote-event annunciation and operator control as indicated on the bid documents.
   1. Textual-Type Remote Display Control Module (RDCM)
      i. Model RDCM shall completely duplicate the display and operator-intervention capabilities of the main-control-unit display.
      ii. The RDCM shall communicate with the FenwalNET 8000 Control Unit via RS-485 communications, and the system shall be capable of supporting with up to 15 remote displays.
      iii. The remote displays shall operate on 24 VDC power provided by the FenwalNET 8000 power supply, or by any remote power supply that is UL Listed or FM Approved for fire alarm applications. The remote-display modules shall supervise their input-power connections.
      iv. The main FenwalNET 8000 Control Unit display or one RDCM shall be capable of being programmed as the master unit with immediate operator-intervention privileges upon the occurrence of any alarm or fault condition. The master unit shall have control for a minimum period of 30 seconds, and all other control points shall be locked out and notified of the locked-out condition if another operator attempts to intervene during the locked-out period imposed by the master control module.

B. Output Driver Modules
   1. The Model ATM-L Annunciator Driver Module shall provide the FenwalNET 8000 Control Unit with up to 32 programmable outputs for remote LEDs, along with 6 system-level LEDs and 5 system-level functional switches.
   2. The Model ATM-R Relay Driver Module shall provide the FenwalNET 8000 Control Unit with up to 32 programmable outputs for remote relays.
   3. The ATM-L and -R Modules shall communicate with the FenwalNET 8000 Control Unit via the RS-485 communications circuit, with the most-remote module capable of being located up to 4,000 feet from the control unit. The ATM-Ls and ATM-Rs shall be capable of being installed in various combinations as long as the maximum number of 16 for each module type is not exceeded.
   4. Both modules shall be powered from the FenwalNET 8000 power supply, or from an external, regulated, and power-limited power supply Listed and Approved for use with fire-protective-signaling systems, depending upon the total load of the remote outputs. A typical external power supply is Fenwal P/N 89-300022-001.

3.6 DETECTORS

A. SmartOne Ionization Detector
   1. The SmartOne Ionization Detector, Model CPD-7052, shall be a microprocessor-based smoke detector. The ionization detector shall be a dual-chamber, low profile, intelligent type that senses both visible and invisible products of combustion. The sensing chamber shall permit a full 360° smoke entry.

2. Each ionization detector shall be electronically addressable and fully field-programmable. It shall be possible to set both alert and alarm thresholds anywhere from 0.5 to 1.5% per foot obscuration in 0.1%-per-foot increments. Alarm thresholds shall be dynamically adjustable as a result of another alarm event anywhere in the system. Where permitted, each detector shall be programmable for alarm verification in periods of up to 180 seconds in 1-second increments. Each detector shall provide a real-time value of current, local obscuration level in percent-per-foot readout when requested by an operator at the control unit.
3. It shall be possible to configure each ionization detector for non-latching operation to prevent inadvertent or spurious fire signatures from accidentally discharging a waterless extinguishing system. The control unit shall latch the alarm report, but the discharge sequence shall be interrupted if the fire signature at the detector drops below the detector's programmable alarm threshold.
4. Detector calibration, address, alert and alarm thresholds, and drift-compensation algorithm shall be stored in each detector's non-volatile memory. Systems that store all detector parameters in the control unit (i.e., non-distributed-intelligence-to-the-device-level architecture) shall not be considered as equivalent.
5. A detector-housing, Model DH-2000, shall be available to allow an ionization detector to monitor for the presence of combustion products in an air duct. The detector housing shall be rated for air-duct velocities ranging from 500 to 4,000 feet per minute. It shall also be possible to mount the ionization detector in an air duct with velocities ranging up to 2,000 feet per minute.

B. SmartOne Photoelectric Detector
1. The SmartOne Photoelectric Detector, Model PSD-7252, shall be a microprocessor-based smoke detector. The photoelectric detector shall be a light scattering type, low profile, intelligent detector that senses a broad range of smoldering and flaming-type fires. The sensing chamber shall permit a full 360° smoke entry.
2. Each photoelectric detector shall be electronically addressable and fully field-programmable. It shall be possible to set an alert threshold anywhere from 0.2 to 3.4% per foot obscuration in 0.1%-per-foot increments, and to set an alarm threshold anywhere from 0.5 to 3.5% per foot obscuration in 0.1%-per-foot increments. Alarm thresholds shall be dynamically adjustable as a result of another alarm event anywhere in the system. Where permitted, each detector shall be programmable for alarm verification in periods of up to 180 seconds in 1-second increments. Each detector shall provide a real-time value of current, local obscuration level in percent-per-foot readout when requested by an operator at the control unit.
3. It shall be possible to configure each photoelectric detector for non-latching operation to prevent inadvertent or spurious fire signatures from accidentally discharging a waterless extinguishing system. The control unit shall latch the alarm report, but the discharge sequence shall be interrupted if the fire signature at the detector drops below the detector's programmable alarm threshold
4. Detector calibration, address, alert and alarm thresholds, and drift-compensation algorithm shall be stored in each detector's non-volatile memory. Systems that store all detector parameters in the control unit (i.e., non-distributed-intelligence-to-the-device-level architecture) shall not be considered as equivalent.
5. A detector-housing, Model DH-2000, shall be available to allow a photoelectric detector to monitor for the presence of combustion products in an air duct. The detector housing shall be rated for air-duct velocities ranging from 500 to 4,000 feet per minute. It shall also be possible to mount the photoelectric detector in an air duct with velocities ranging up to 4,000 feet per minute.

C. SmartOne Thermal Detector
1. The SmartOne Thermal Detector, Model THD-7252, shall be a microprocessor-based heat detector. The thermal detector shall be a thermistor-type, low profile, intelligent detector that responds to a fixed temperature with minimal thermal lag. The sensing chamber shall permit a full 360° heat entry.

2. Each thermal detector shall be electronically addressable and fully field-programmable. It shall be possible to set both alert and alarm thresholds anywhere from 80°F to 155°F in 1°F increments. Each detector shall provide a real-time value of current, local temperature in °F readout when requested by an operator at the control unit.
3. It shall be possible to configure each thermal detector for non-latching operation to prevent inadvertent or spurious fire signatures from accidentally discharging a waterless extinguishing system. The control unit shall latch the alarm report, but the discharge sequence shall be interrupted if the fire signature at the detector drops below the detector's programmable alarm threshold.
4. Detector calibration, address, and alert and alarm thresholds shall be stored in each detector's non-volatile memory. Systems that store all detector parameters in the control unit (i.e., non-distributed-intelligence-to-the-device-level architecture) shall not be considered as equivalent.

3.7 CONDUCTORS AND CONDUITS

A. All conductors shall be enclosed in rigid or thin-walled, steel conduit unless open wiring is permitted by the local electrical code.
B. Any conduit or raceway exposed to dampness or other similar conditions shall be properly sealed and installed to prevent moisture entrapment. Provisions for draining and drying shall be employed as required.
C. All wiring shall be of the proper size to conduct the circuit current, but shall not be smaller than #18 AWG unless permitted by the local electrical code. Wiring for the signaling line circuit shall be in accordance with the FenwalNET 8000 Installation, Operation, and Maintenance Manual. Wire that has scrapes, nicks, gouges, or crushed insulation shall not be used. The manufacturer's minimum wire-bending radii shall be observed in all enclosures, raceways, and conduits. Aluminum wire shall not be used.

4. EXECUTION

4.1 SUPPRESSION SYSTEM INSTALLATION

A. The system shall be supplied and installed by a factory-authorized, Fenwal Protection Systems Contractor. The Contractor shall be trained and certified by Fenwal Protection Systems to design, install and maintain the Fenwal fire suppression system. The Contractor shall install the system in accordance with the manufacturer's design, installation, operation and maintenance manual.

4.2 ELECTRICAL SYSTEM INSTALLATION

A. The contractor shall install the system in accordance with the appropriate Fenwal Protection Systems installation, operation and maintenance manual.
B. Locations of all electrical equipment, the FenwalNET 8000 Control Unit, and all system components are subject to the approval of the architect.
C. All final-acceptance tests shall be performed in the presence of the architect and the authority having jurisdiction. The contractor shall record all equipment, tests and system configurations in a format approved by the manufacturer and/or the local Authority Having Jurisdiction. A copy of the commissioning tests and results shall be provided to the architect, the authority having jurisdiction, and the end-user.

4.3 ROUTINE MAINTENANCE

A. Routine maintenance on equipment shall be performed as recommended by the manufacturer's installation, operation and maintenance manual. At a minimum the routine maintenance will include the following by a certified Fenwal Protection System Distributor:
   1. Visual Check of Pipe network and distribution nozzles per the operation and maintenance manual.
   2. Weight and pressure of the Fenwal Engineered System cylinders per the operation and maintenance manual.
   3. Inspect all cylinders and equipment for damage per the operation and maintenance manual.

4. Pneumatic operation of the Three-Way Directional Ball Valve. Routine maintenance on the suppression system as a whole shall be performed as recommended by NFPA 2001, current edition.

Exhibit C

VESDA VLC

VLC-500 and VLC-505

Features

- Absolute smoke detection
- Wide sensitivity range
- Single pipe inlet
- Five (5) status LEDs
- Referencing
- VESDAnet communication (VN)
- Clean air barrier optics protection
- Three (3) Alarm Levels
- Three (3) Programmable Relays
- Air flow monitoring
- Optional remote display and relay capability
- Simple mounting design
- AutoLearn™

Introduction

The VESDA VLC detector has been specifically designed to provide all the benefits of aspirating smoke detection, including very early warning, in single environment small areas and where space is a premium.

The VLC combines the well-proven VESDA VLP detection technology with a modified aspirator design, and incorporates them into a compact enclosure with a simplified display.

Two variants and a remote display option

The VLC is available in two versions, one that interfaces via relays only (RO) and one that interfaces via relays and VESDAnet (VN).

The VN version is compatible with the remote Display Module, which allows the current status of the detector to be reported in the most convenient location. The remote Display Module has 7 remote relays to support any combination of signalling that may be demanded by the application. The VN version allows several detectors to be linked together on VESDAnet thereby allowing one to act as a reference detector for other VESDA detectors.

Description

The VLC is made up of two parts: the main enclosure and the front cover.

The main enclosure houses all the key components of the detector. All non-serviceable items like the main processor board and detector chamber are mounted away from the general access area, protecting them during the installation and service process.

The front cover includes:

- 5 LEDs: Fire, Pre-Alarm/Alert, Fault, OK, Reset/Isolate
- Reset/Isolate Push Button (press to reset, press and hold to isolate)

Approvals/Listings*

- UL
- ULC
- FM
- LPCB
- VdS
- CFE
- ActivFire
- AFNOR
- VNIIPO
- CE - EMC and CPD
- EN 54-20
  - Class A (30 holes / 0.05% obs/m)
  - Class B (36 holes / 0.09% obs/m)
  - Class C (40 holes / 0.165% obs/m)

Classification of any configuration is determined using ASPIRE2.

Regional approvals listings and regulatory compliance vary between VESDA product models. Refer to www.xtralis.com for the latest product approvals matrix.

*Special versions of the products are available which carry Marine Approvals. Please refer to separate data sheet (doc. no. 11655).

VESDA® by xtralis™

Exhibit C

VESDA VLC

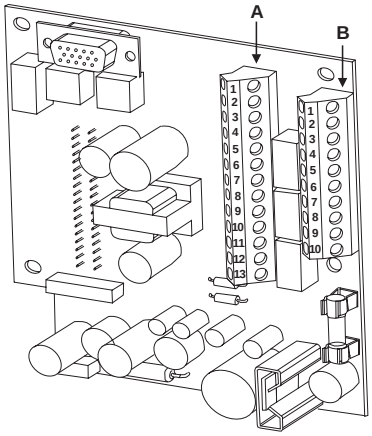
VLC-500 and VLC-505

How it works

Air is continually drawn through a simple pipe network to a central detector by a high efficiency aspirator. Air entering the unit passes a flow sensor before a sample is passed through a dual-stage dust filter (the majority of air is exhausted from the detector and back-vented to the protected area). The first stage removes dust and dirt from the air sample before it enters the chamber for smoke detection. The second, ultra-fine stage provides a clean air supply to be used inside the detection chamber to form clean air barriers, which protect the optical surfaces from contamination.

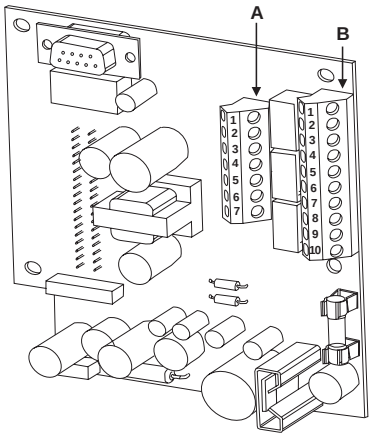
The detection chamber uses a stable, highly efficient laser light source and unique sensor configuration to achieve the optimum response to a wide range of smoke types. When smoke passes through the detection chamber it creates light scatter which is detected by the very sensitive sensor circuitry.

The status of the detector, all alarms, service and fault events, are monitored and logged with time and date stamps. Status reporting can be transmitted via simple relay connections or across the advanced VESDAnet communications network (VN version only).



VLC Termination Card (VN)

Terminal A		Terminal B	
1	Bias (-) (GND)	1	Shield
2	Reset (-)	2	VESDAnet-A (-)
3	Reset (+)	3	VESDAnet-A (+)
4	Bias (+)	4	Shield
5	LED (-) (GND)	5	VESDAnet-B (-)
6	LED (+)	6	VESDAnet-B (+)
7	FIRE (NO)	7	Power (-)
8	FIRE (C)	8	Power (+)
9	PRE-ALARM (NO)	9	Power (-)
10	PRE-ALARM (C)	10	Power (+)
11	FAULT (NO)		
12	FAULT (C)		
13	FAULT (NC)		



VLC Termination Card (RO)

Terminal A		Terminal B	
1	FIRE (NO)	1	Bias (-) (GND)
2	FIRE (C)	2	Reset (-)
3	PRE-ALARM (NO)	3	Reset (+)
4	PRE-ALARM (C)	4	Bias (+)
5	FAULT (NO)	5	LED (-) (GND)
6	FAULT (C)	6	LED (+)
7	FAULT (NC)	7	Power (-)
		8	Power (+)
		9	Power (-)
		10	Power (+)

Ordering Information

Product	Part number
VESDA VLC – VESDAnet	VLC-505
VESDA VLC – Relays Only	VLC-500
Remote Display (relays)	VRT-J00
Remote Display (no relays)	VRT-K00
Remote Relays (no display)	VRT-500

Approvals Compliance

Please refer to the Product Guide for details regarding compliant design, installation and commissioning.

Specifications

Supply voltage:
18 to 30 VDC

Power consumption:
5.4 W quiescent, 5.9 W with alarm

Current consumption:
225 mA quiescent, 245 mA with alarm

Fuse rating:
1.6 A

Dimensions (WHD):
225 mm x 225 mm x 85 mm (8 7/8" x 8 7/8"x 3 3/8")

Weight:
1.9 kg (4.2 lbs.)

Operating conditions:
Ambient: 0°C to 39°C (32°F to 103°F) *
Tested: -10°C to 55°C (14°F to 131°F) *
Sampled Air: -20°C to 60°C (-4°F to 140°F) *
Humidity: 10% to 95% RH, non-condensing

Storage conditions (non-operational):
Humidity: Dry (<95%)
Temperature: 0° to 85° C (32°F to 185°F)
Must not be exposed to sunlight or other radiation sources

Sampling network:
Maximum area of Coverage 800 sq.m (8000 sq.ft)

Maximum pipe lengths:
1 x 80 m (260ft), 2 x 50 m (164ft)

Computer design tool:
ASPIRE2™

Pipe:
Internal Diameter 15 mm–21 mm (9/16"–7/8")
External Diameter 25 mm (1")

Relays:
3 Relays rated 2 A @ 30 VDC
Fire (NO)
Pre-Alarm (NO)
Alert/Fault (Maintenance & Isolate) (NC/NO)
Configurable as latching or non-latching

IP rating:
IP30

Cable access:
4 x 25 mm (1") cable entries

Cable termination:
Screw Terminal blocks 0.2–2.5 sq mm (30–12 AWG)

Alarm sensitivity range:
0.005% to 20% obs/m (0.0015% to 6.25% obs/ft)

Threshold setting range:

Alert:	0.005%–1.990% obs/m (0.0015%–0.6218% obs/ft)
Pre-Alarm:	0.010%–1.995% obs/m (0.0031%–0.6234% obs/ft)
Fire:	0.015%–20.00% obs/m (0.0046%–6.25% obs/ft)*

*Limited to 4% obs/ft for UL

Software features:
Event log: Up to 12,000 events stored in FIFO format
Smoke level, user actions, alarms and faults with time and date stamp
AutoLearn: Minimum 15 minutes, maximum 15 days.
Recommended minimum 14 days.
During AutoLearn thresholds are NOT changed from pre-set values.

Configurable general input (24 VDC):
Standby, Mains OK or Reset/Isolate

* Product UL listed for use from 0°C to 38°C (32°F to 104°F)

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VESDA® by xtralis™

Very Early Warning Air Sampling Smoke and Gas Detection Systems

Engineering Specifications for IT and Communication Facilities

29036_00
April 2015

VESDA® by xtralis®

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SECTION XXXXXX – AIR SAMPLING SMOKE AND GAS DETECTION SYSTEMS

1 General

1.1 Related Documents

A. Related Sections include the following:

1. Section [XXX000].

B. [X.XX] Template Drawings.

1.2 Summary

A. This Section Includes the following:

1. Air Sampling Smoke Detection (ASSD).
2. Air Sampling Gas Detection (ASGD).
3. 24Vdc power supply.
4. Air sampling pipe distribution network.

B. Provide Air Sampling Detection (ASD) system(s) as indicated in this Specification and on the Drawings.

C. Reference the drawings for connectivity, interaction and function between other systems and devices as indicated on drawing [X.XX].

D. All fees and permits specifically required for the Air Sampling Detection system shall be applied for and paid for by Air Sampling Detection system Contractor.

E. The Contractor shall be responsible for obtaining and meeting the requirements as imposed by the AHJ. Any costs as a result of these requirements shall be the Air Sampling Detection system Contractor(s) responsibility.

F. This Specification outlines the requirements for furnishing, installation, connection, commissioning and testing of Air Sampling Detection system(s). The work described in this Specification includes all design, engineering, labor, materials, equipment and services necessary and required, to form a complete operative and coordinated system.

1.3 Definition

A.	AHJ	Authority Having Jurisdiction.
B.	ASD	Air Sampling Detection.
C.	ASSD	Air Sampling Smoke Detection.
D.	ASGD	Air Sampling Gas Detection.
E.	BMS	Building Management System.
F.	FACP	Fire Alarm Control Panel.
G.	SCP	Suppression Control Panel.
H.	HLI	High Level Integration.
I.	UL	Underwriters Laboratory.
J.	FM	Factory Mutual.
K.	NRTL	Nationally Recognized Testing Laboratory.
L.	FPE	Fire Protection Engineer.
M.	NICET	National Institute for Certification in Engineering Technologies.
N.	VEWFD	Very Early Warning Fire Detection.

O. EWFD Early Warning Fire Detection.

P. SFD Standard Fire Detection.

1.4 System Description

A. System shall consist of an ASSD assembly housing an integral aspiration fan, flow sensor(s), filter, laser based detection chamber, and control, output and supervision circuitry.

B. Where designated within this Specification and on the Drawings, system shall consist of one or more ASGD assemblies each housing a hydrogen gas sensing element, flow sensor, data logging card, and control, output and supervision circuitry.

C. System shall consist of a regulated 24Vdc power source provided with backup rechargeable batteries.

D. System shall consist of an air sampling pipe distribution network which shall include piping, tubing, fittings and fasteners as specified herein. Piping shall originate from each ASSD apparatus and, when provided, pass through each ASGD apparatus to the protected area(s). Sampling points shall be placed along the air sampling pipe distribution network in accordance with this Specification and the Drawings. The air sampling pipe distribution network shall be supported by calculations from the Manufacturer's computer-based design modeling tool.

E. In operation, the aspiration fan in the ASSD apparatus draws air from the protected area(s) through sampling points in the air sampling pipe distribution network and, when provided, through the ASGD apparatus where it is analyzed for hydrogen gas concentration then to the ASSD detector assembly where it is analyzed for concentration of fire products.

F. ASSD and ASGD apparatus shall include independent configurable alarm and trouble relay outputs for interface to other systems in accordance with this Specification and the Drawings.

G. ASGD apparatus shall support Modbus RTU via RS485 communications for interface to BMS in accordance with this Specification and the Drawings.

H. ASSD apparatus shall communicate on an RS485 network with each device incorporating an integral repeater and loop isolator.

I. ASSD apparatus shall be capable of communicating to various manufacturers' FACP or SCP through a UL listed High Level Interface (HLI) or by relay connectivity where HLI integration is not available with a particular manufacturers' control panel.

J. The system shall be considered a complete system when Section [XXX000, Preaction Sprinkler Systems], Section [XXX000, Instrumentation and Control for HVAC], and this Section are combined and designed to function as one system.

1.5 Performance Requirements

A. System shall be complete in all ways. It shall include all engineering, and electrical installation, all detection and control equipment, auxiliary devices and controls, alarm interface, functional checkout and testing, training and all other operations necessary for a functional ASD system.

B. System design, installation, commissioning and testing shall be in accordance with this Specification, the Manufacturer's guidelines and per all applicable codes and requirements of the local Authorities Having Jurisdiction (AHJ).

C. All equipment and associated components shall be new, standard products or the Manufacturer's latest design and suitable to perform the functions intended.

D. All fire protection related wiring shall be in conduit – no exceptions. Refer to the drawings for additional requirements or use.

E. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances, switches and devices necessary for a sound, secure and complete installation in full compliance with all applicable codes and requirements of the local Authorities Having Jurisdiction.

F. For detection of smoke concentration within ceiling void(s), where indicated in the drawings or where required to meet local jurisdictional requirements:

1. Provide appropriate number of ASSD apparatuses to efficiently and adequately cover designated area(s).
2. Air sampling pipe distribution networks shall be constructed using rigid pipe mounted to the underside of the structural ceiling.
3. Sampling points shall be drilled directly into the air sampling pipe distribution network, be oriented downward and be within 1 to 4 inches (25 to 101mm) below the underside of the structural ceiling as indicated in drawing detail [X.X].
4. For structural ceilings that have beams, girders, solid joist or a waffle-like construction, etc., air sampling pipe distribution networks shall mount to the underside of structural beams with stanchions extending up into each beam pocket at locations where sampling points are required as indicated in drawing detail [X.X].
5. Where the ceiling void is used as an air plenum, sampling points shall be oriented downward 20° to 45° towards the incoming airflow.
6. Maximum coverage per sampling point shall not exceed 200 sq ft (18.5 sq m).
7. Sampling points shall be installed in an area on the ceiling that is free from obstructions for a minimum of 18 inches (457mm) on all sides.
8. Placement of sampling points nearest to walls shall be greater than 12 inches (304mm) and not exceed 7ft (2m).

G. For detection of smoke concentration within open areas, where indicated in the drawings:

1. Provide appropriate number of ASSD apparatuses to efficiently and adequately cover designated area(s).
2. Air sampling pipe distribution networks shall be constructed using rigid pipe mounted to the underside of the structural ceiling.
3. Sampling points shall be drilled directly into the air sampling pipe distribution network, be oriented downward and be within 1 to 4 inches (25 to 101mm) below the underside of the structural ceiling as indicated on drawing detail [X.X].
4. For structural ceilings that have beams, girders, solid joist or a waffle-like construction, etc., air sampling pipe distribution networks shall mount to the underside of structural beams with stanchions having sampling point extend up into each beam pocket at locations where sampling points are required as indicated on drawing detail [X.X].
5. Where drop ceilings are present sampling points shall be remotely mounted to the underside of the drop ceiling, be oriented downward and be within 1 to 4 inches (25 to 101mm) below the underside of the drop ceiling. Remote sampling points shall interconnect with air sampling pipe distribution network located above the drop ceiling via use of flexible “capillary” tubing as indicated on drawing detail [X.X].
    a. For efficiency, air sampling pipe distribution networks located above the drop ceiling shall have “capillary” tubing running either side of each sampling pipe run to the corresponding remote sampling point as indicated in drawing detail [X.X].
6. Maximum coverage per sampling point shall not exceed 200 sq ft (18.5 sq m), exception being where obstructions such as air supply diffusers would otherwise prevent this spacing objective from being met, in which case placement shall be just outside perimeter of obstruction.
7. Sampling points shall be a minimum of 3ft (1m) away from air supply diffusers.
8. Sampling points shall be installed in an area on the ceiling that is free from obstructions for a minimum of 18 inches (457mm) on all sides.
9. Placement of sampling points nearest to walls shall be greater than 12 inches (304mm) and not exceed 7ft (2m).
10. For reaction release initiation sampling points from one ASSD zone serving open areas shall cross zone with one or more adjacent ASSD detection zones.

H. For detection of smoke concentration within floor void(s), where indicated in the drawings or where required to meet local jurisdictional requirements:

1. Provide appropriate number of ASSD apparatuses to efficiently and adequately cover designated area(s).
2. Air sampling pipe distribution networks shall be constructed using rigid pipe mounted and secured to raise floor support posts as close to the underside of floor tiles as possible.

3. Sampling points shall be drilled directly into the air sampling pipe distribution network and be oriented downward towards the slab.
4. Where the floor void is used as an air plenum, sampling points shall be oriented downward 20° to 45° towards the incoming airflow.
5. Maximum coverage per sampling point shall not exceed 200 sq ft (18.5 sq m).
6. Sampling points shall be free from obstructions for a minimum of 18 inches (457mm) on all sides.
7. Placement of sampling points nearest to perimeter walls extending to the slab shall be greater than 12 inches (304mm) and not exceed 7ft (2m).
8. Refer to drawing detail [X.X].

I. For detection of smoke concentration within hot aisle containment, where indicated in the drawings:

1. Provide appropriate number of ASSD apparatuses to efficiently and adequately cover designated area(s).
2. Air sampling pipe distribution networks shall be constructed using rigid pipe mounted at a point just before mechanical forced air leaves the hot aisle.
3. Sampling points shall be drilled directly into the air sampling pipe distribution network and be oriented 20-45° downward towards the incoming airflow.
4. Sampling point spacing shall be based upon sampling point distribution of maximum one (1) sampling point per 6ft (1.8m) of linear distance.
5. Each hot aisle shall be served by an individual ASSD zone (eg. four pipes on a four zone ASSD apparatus with each pipe serving an individual hot aisle).
6. For preaction release initiation sampling points from one ASSD zone serving hot aisles shall cross zone with one or more adjacent ASSD detection zones.
7. Refer to drawing detail [X.X]

J. For detection of smoke concentration at return air paths where indicated in the drawings:

1. Provide appropriate number of ASSD apparatuses to efficiently and adequately cover designated return air paths.
2. Sampling at return air grilles:
    a. Air sampling pipe distribution networks shall be constructed using rigid pipe mounted to face of return air grilles prior to filtration in accordance with Manufacturer's guidelines, this Specification and the drawings.
    b. Sampling points shall be drilled directly into the air sampling pipe distribution network, be oriented downward 20° to 45° towards the incoming airflow and shall not be placed outside of grille area.
    c. Sample point spacing for return air grille detection shall be based upon sampling point distribution of a maximum of one (1) sample point per every four (4) square feet of grille area.
    d. Sampling points covering return air grilles shall standoff 3 to 6 inches from the grille in order to avoid the low or negative pressure point directly at the grille surface.
    e. A means to disconnect the sampling pipe from return air grilles shall be provided and based on Manufacturer's guidelines.
    f. Mechanical standoff fasteners used to support the sampling pipe network shall be fit for purpose. Plastic zip ties are not permitted.
    g. Refer to drawing detail [X.X]
3. Sampling within return air ducts:
    a. ASSD apparatus serving a return air duct shall be dedicated to the duct in which it is monitoring.
    b. Air sampling pipe distribution networks shall be constructed using rigid pipe with sampling to occur within return air duct prior to entry into HVAC unit(s).
    c. The exhaust port of each ASSD apparatus shall be returned within the duct in which it is monitoring so as to maintain an equal pressure across ASSD inlet and exhaust port.

d. Sampling port spacing within return air ducts shall be spaced in accordance with Manufacturer's guidelines and be oriented 20° to 45° towards the incoming airflow and shall not be placed outside of the duct.

e. Application shall be in accordance with the Manufacturer's published in-duct sampling guidelines, this Specification and the drawings.

f. ASSD apparatuses serving return air duct(s) shall be listed and approved for duct application.

g. Refer to drawing detail [X.X].

4. For preaction release initiation ASSD apparatuses monitoring return air shall cross zone with ASSD apparatuses serving open areas.

K. For detection of smoke concentration originating from within HVAC system(s):

1. Provide appropriate number of ASSD apparatuses to efficiently and adequately cover supply side of designated HVAC unit(s).
2. Air sampling pipe distribution networks shall be constructed using rigid pipe with sampling to occur at a common point just after leaving HVAC unit(s).
3. Sampling points shall be drilled directly into the air sampling pipe distribution network, be oriented downward 20° to 45° towards the incoming airflow and shall not be placed outside of supply outlet area.
4. Sample point spacing for supply air detection shall be based upon sampling point distribution of a maximum of one (1) sample point per every four (4) square feet of supply air outlet area.
5. The exhaust port of each ASSD apparatus shall be returned to the protected area to minimize the effects of possible pressure differences between the protected area and the area where the detector is located.
6. For preaction release initiation ASSD apparatuses monitoring supply air shall cross zone with ASSD apparatuses serving open areas.
7. Refer to drawing detail [X.X]

L. Manufacturer's specific software modeling tool which uses air sampling pipe distribution network parameters shall be used to predict performance of pipe network design(s). Each of the following performance requirements shall be met:

1. Maximum sensitivity at each sample point for ASSD shall not exceed 1% obs/ft (3% obs/m).
2. Smoke transport time shall not exceed 60 seconds measured from the furthest sampling point (excluding Benchmark Test Point) on each pipe run back to the ASSD apparatus. A minimum 5% buffer shall be maintained to account for field variations that may occur but in no case shall exceed the 60 second objective.
3. For air sampling pipe distribution networks fitted with ASGD apparatuses balance between sampling points shall be a minimum of 90%.

M. Where local codes and standards dictate placement and spacing of sampling points that is more stringent than those specified herein, local codes and standards shall prevail.

N. All sampling points shall be marked with the Manufacturer's standard identification labels as specified herein.

O. ASSD and ASGD apparatus shall be installed in an accessible location and at an accessible height not to exceed 6ft (1.82m) as indicated in this Specification and on the Drawings.

P. A Benchmark Test Point shall be provided at the furthest end of each pipe run, opposite end of the ASSD apparatus. Provisions shall be made so that this test point can be located maximum 6ft (1.82m) above finished floor. The test point shall be constructed using a normally closed industrial quick connect fitting with an orifice of nominal 1/8 inch (3.2mm) when open to facilitate benchmark performance verification as indicated in this Specification and on the Drawings. This remote test point is intended to benchmark system performance at time of initial commissioning and during routine test and inspection. The test point shall be labeled documenting benchmark system performance at time of commissioning using Manufacturer supplied labels intended for this purpose. Benchmark labels shall be placed just above test points and be positioned so that they are visible without obstruction. Refer to drawing detail [X.X].

Q. Installation and materials shall be in accordance with Manufacturer's guidelines, this Specification and as indicated on the Drawings.

1.6 Submittals

A. Product Data:

1. Submit Manufacturer's technical product data as a minimum, but not limited to, for the following:
   a. Air Sampling Smoke Detector(s).
   b. Air Sampling Gas Detector(s)
   c. Display unit(s).
   d. Programming device(s).
   e. Sampling pipe.
   f. Input/output and monitoring devices.
   g. Devices such as relays if needed, etc.
   h. Wiring diagrams.
   i. Equipment ratings.
   j. Description of system operation for each product and that the system meets or exceeds specified requirements.

B. Shop Drawings:

1. Shop Drawings shall be prepared by persons with the following qualifications:
   a. Trained and certified by Manufacturer in Air Sampling Detection system design.
   b. NICET certified fire alarm technician, Level III minimum or equivalent.
   c. Where required, licensed or certified by the authorities having jurisdiction.

ADJUST LIST BELOW TO MEET PROJECT REQUIREMENTS

2. Information shall be submitted on [1/8" = 1'-0"] scale building floor plans. Reproduction of contract drawing will not be acceptable. The following information shall be included in the shop drawings:
   a. Provide mounting details of ASSD apparatuses, displays, programmers, power supplies and other boxes to building structure, showing fastener type, sizes, material, and embedded depth where applicable.
   b. Air sampling pipe, fittings and pipe details including pipe routing and support.
3. The following Calculations and Wiring Diagrams shall also be included on the shop drawings:
   a. Provide calculations for the battery stand-by power supply taking into consideration the power requirements of all auxiliary components under full load conditions. Include battery size calculations.
   b. Show system components, including detectors and cabinets, locations, quantities, and full schematic of system wiring showing conductor size, routings, quantities and connection details.
4. Reflected Ceiling Plans: Show ceiling penetrations, ceiling-mounted items, and method of attaching hangers to building structure.
5. System Performance Calculations:
   a. Submit report generated from Manufacturer's system performance calculation program illustrating performance criteria such as transport time to the detector. The system transport time shall not exceed 60 seconds from the furthest sampling point back to the detector.
6. A complete sequence of operation.

C. Permit Approved Drawings: Working plans, prepared according to local codes and standards, that have been approved by Authorities Having Jurisdiction. Include design calculations.

D. Maintenance data.

E. Warranty information.

1.7 Quality Assurance

A. It is imperative that the Manufacturer be included in the early stages of project work to ensure all designs are in compliance with regulatory code, and Manufacturer's criteria.

1. Installing Contractor: Prior to submittal, ordering of equipment or commencement of any installation work, the ASD system Manufacturer shall review all designs for new ASD systems;

a. A set of prints (AutoCAD) shall be sent to manufacturer complete with all ASD piping layouts, detector placement, ASPIRE2 calculations, and a copy of ASD project specifications. Upon receipt of this complete package, manufacturer will review and comment within 5-7 working days.

B. Manufacturer's Qualifications:

1. Firms regularly engaged in manufacture of Air Sampling Smoke Detection systems of types, sizes, and electrical characteristics required, and whose products have been in satisfactory use in similar service for not less than fifteen years.
2. The name of the manufacturer, part numbers and serial numbers shall appear on all major components.

C. Designers and Technicians Qualifications:

1. A Professional Engineers (PE) license in Fire Protection Engineering, a PE license in Electrical Engineering, a PE who is regularly engaged in the design of fire detection and alarm systems, or a NICET Level III or equivalent certified fire alarm technician working under the direct supervision of a PE as qualified above. The PE shall have evidence of not less than 4 years experience in designing fire detection and alarm systems.
2. Final construction drawings shall be signed and stamped/sealed and issued by a PE registered in the jurisdiction where the installation is to be made either by the System Designer or Engineer Consultant.

D. Contractor Qualifications:

1. All contractors involved with the design and installation of ASD systems shall be very experienced with the systems that they are designing / installing per the occupancy use. A minimum of 5 years experience in the installation of ASD systems and a NICET level III fire alarm technician or equivalent on staff to supervise the design and installation is required.
2. The installing contractor shall have successfully passed advanced certification training and be listed by the ASD system Manufacturer as an accredited VESDA Pro contractor, trained and certified to model, design, install, program, test and maintain the ASD system and shall be able to produce a certificate stating such upon request.
3. The installing contractor shall maintain appropriate licensing and certifications from the jurisdiction in which the work occurs.

E. Testing Technicians Qualifications:

1. Testing technicians of ASD systems shall be trained and qualified by the ASD system Manufacturer in the proper operation of the system per the occupancy use.
2. System testing technicians or others conducting system programming, certification, power up, and system commissioning shall have had advanced certification training, be listed by the ASD system Manufacturer as an accredited VESDA Pro technician and shall be able to produce a certificate stating such upon request.
3. Testing technicians shall be an accredited NICET Level II (or greater) or equivalent fire alarm technician to perform such work.

F. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1. [NFPA 70: National Electrical Code.]
2. [NFPA 72: National Fire Alarm Code.]
3. [NFPA 75: Standard for the Fire Protection of Information Technology Equipment.]

4. Standards listed, as well as all other applicable codes and standards shall be used as "minimum" design standards. Also, to be considered are the requirements of the "Authority Having Jurisdiction" and good engineering practices.

1.8 Closeout Submittals and Documentation

A. Operation and Maintenance Manuals:

1. Requirements and recommendations related to maintenance.
2. Manufacturer's user training manuals.
3. Provide all information required for shop drawing and product data review.

B. Record Drawings:

1. Equipment installation, operation and programming manuals.
2. Manufacturer's required maintenance related to system warranty requirements.
3. Include name, telephone number, address, and contact information for the local fire alarm installing contractor.
4. Record drawings to show as-built conditions to include, but not limited to the following:
   a. Parts list.
   b. Circuit drawings, point-to-point wiring diagram, riser diagram and control diagrams.
   c. Sequence of Operation which includes detailed operation and control of each item of equipment and a control sequence.
   d. Final location of all devices related to the ASD system.
   e. Show size and route of all conduits related to the ASD system.

C. Field quality-control test reports.

1. Record all tests and system calibration using the Manufacturer's standard commissioning form for each and every ASD system provided. A copy of these results shall be included in close-out submittals and a copy made available to be left on site.

1.9 Delivery, Storage, and Handling

A. It is the Contractor's responsibility to ensure on-time delivery of all materials and equipment required for the Project. All materials furnished or incorporated in the Work shall be new, unused, of best quality, and especially adapted for the service required; whenever the characteristics of any material are not particularly specified, such material shall be utilized as is customary in first class work of a nature for which the material is employed.

B. Contractor shall provide necessary means to properly stage and store all materials and equipment until time of use or installation on the Project. Contractor shall be solely responsible for materials and equipment stored on the Site; type and extent of security provided to be at Contractor's discretion. Coordinate all requirements with Owner.

C. Contractor shall be responsible for proper handling, rigging, and installing of all materials and equipment for the Project.

D. Owner reserves the right to reject any materials or equipment that are not properly stored in accordance with these specifications or the Manufacturers' requirements.

1.10 Warranty

A. All ASD system components furnished and installed under this contract, shall be guaranteed against defects in design, materials and workmanship for the full warranty period which is standard with the Manufacturer, but in no case less than one (1) years from the date of system acceptance.

2 Products

2.1 Manufacturers

A. Manufacturers – Basis of Design Bid: Subject to compliance with requirements, provide products by Xtralis Inc. Base bid shall include the Basis of Design. Substitutions will be considered for products by other manufacturers, but are not required in advance of bid. When substitution requests are submitted, the Architect / Engineer will be the sole judge of equivalency.

B. Manufacturer's Approved Products:

1. VESDA VLF (LaserFOCUS)
2. VESDA VLC (LaserCOMPACT)
3. VESDA VLP (LaserPLUS)
4. VESDA VLS (LaserSCANNER)
5. VESDA VEU
6. VESDA ECO: ECO-D-B-11 (0 to 100% LFL hydrogen)

C. All devices and equipment shall be listed by a Nationally Recognized Testing Laboratory.

2.2 Materials and Equipment

A. Air Sampling Smoke Detection (ASSD) Apparatus shall:

1. Be aspirated laser-based type.
2. Be of the mass light scattering type and capable of detecting a wide range of smoke particle types of varying size. A particle counting method shall be employed for the purposes of:
   a. Preventing large particles from affecting the true smoke reading.
   b. Monitoring contamination of the filter (dust & dirt etc.) to automatically notify when maintenance is required. The particle counting method shall not be used for the purpose of smoke density measurement.
3. Be equipped with an integral two-stage disposable filter cartridge. The first stage shall be capable of filtering particles in excess of 20 microns from the air sample. The second stage shall be ultra-fine, removing more than 99% of contaminant particles of 0.3 microns or larger, to provide a clean air barrier across critical detector optics to eliminate internal detector contamination.
4. Be self-monitoring for filter contamination and provide indication through system fault when replacement is necessary. Detectors which allow automatic reset of filter status upon removal and reinsertion are not permitted.
5. Contain relays for alarm and fault conditions. The relays shall be software programmable to the required functions.
6. Be network capable, each with its own integral bus isolator and repeater.
7. Be equipped with a general purpose input to allow either: Remote Reset, Isolate or Standby.

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8. [Be modular, with each detector monitored by an integral or externally mounted Display Unit featuring indicator LED's. For addressable detectors, indicators shall identify which pipe is carrying smoke. Remote Display units shall incorporate integral control buttons for Reset and Isolate.]
9. Allow configuration of:
   a. Smoke threshold alarm levels.
   b. Time and date.
   c. Time delays.
   d. Faults, including airflow, detector, power, filter and network as well as an indication of the urgency of the fault.
   e. Relay outputs for remote indication of alarm and fault conditions.

f. General purpose input functionality.

g. Simulated electronic testing of relays.

10. Provide a minimum of three alarm output levels corresponding to Pre-alarm, Fire 1 and Fire 2. Alarm levels shall be programmable and able to be set within listed limits at absolute sensitivities meeting sensitivity objectives specified herein. Setting and adjustment of sensitivities by means of adaptive algorithms is not permitted.
11. Incorporate a flow sensor in each pipe inlet and provide staged airflow faults. Detector units which permit unsupervised disabling of flow sensors is not permitted.
12. Incorporate facilities to transmit the following faults:

a. Detector

b. Airflow

c. Filter

d. System

e. Zone

f. Network

g. Power

h. Urgent and Minor faults

13. Store internally a minimum of 12,000 events in its history buffer for future extraction and analysis of events and operational status.
14. Addressable detectors shall have four pipe inlets fitted with an integral scanning valve mechanism to identify which sampling pipe is carrying smoke. The valve mechanism shall:

a. Begin to sample each pipe individually upon detection of smoke.

b. Be used to identify the level of smoke in each pipe.

c. Be used to indicate in which pipe an alarm was first detected.

15. Accommodate addition of Manufacturer's compatible Air Sampling Gas Detection (ASGD) apparatus.

B. Power Supply and Batteries:

1. System shall be powered by from a listed and approved regulated supply of nominally 24Vdc.
2. Power supply shall be provided with appropriately sized/rated batteries to accommodate the system's power requirements for a duration of time required by the local AHJ in the event main AC power is interrupted.

C. Sampling Pipe, Capillary Tubing, Remote Sampling Points, Fittings and Mounting Hardware:

1. Material for sampling pipe, capillary tubing, remote sampling points and associated fittings shall be in accordance with Manufacturer's guidelines, local codes and standards.
2. Pipe and tubing inside diameter shall be in accordance with Manufacturer's guidelines and as specified in air sampling pipe distribution software modeling tool.
3. Pipe and tubing interior shall be smooth bore.
4. Pipe and tubing shall be marked with the listing information and marking requirements as per local codes and standards.
5. All fittings shall be made with compatible pre-formed elbows, tees, couplings, end caps and unions.
6. All joints in the sampling pipe must be air tight and made by using compatible solvent cement, except at entry to the detector.
7. Mechanical pipe fasteners and hangers shall be approved for use with the pipe material in which it is supporting. Fasteners and hangars shall allow pipe to freely slide in and out to facilitate expansion and contraction of the material.

8. It shall be the installing contractor's responsibility to confirm pipe and tubing material and mounting methods selected meets this Specification, requirements of the local AHJ and Manufacturer's guidelines.

3 Execution

3.1 Installation

A. Comply with local codes and standards, and in accordance with the Manufacturer's written instructions for installation of Air Sampling Detection systems.

B. Air Sampling Smoke Detector (ASSD) Apparatus:

1. ASSD apparatuses shall be installed in accordance with this Specification and the Manufacturer's written installation and instruction manuals.
2. Detector assembly shall be mounted to a wall in the protected room at a height of approximately 48 inches (1.2m) to 60 inches (1.5m) to top of detector measured above finished floor.
3. Mounting location shall be a fully accessible and visible location.
4. Mounting or attachment to site equipment, cable trays, movable walls, other equipment or equipment supports is not permitted without express written approval.
5. Piping network insertion into the detector inlet shall not be glued.
6. Flexible tubing for termination of the sampling pipe network into detector inlet is not permitted.
7. In seismic zones installation techniques shall be in compliance with the geographical seismic zone requirements per the AHJ.

C. Air Sampling Gas Detector (ASGD) Apparatus:

1. ASGD apparatuses shall be installed in accordance with this Specification and the Manufacturer's written installation and instruction manuals.
2. Mount ASGD apparatus on a straight section of pipe at a minimum of 18 inches (457mm) from the inlet of the ASSD apparatus.

D. Pipe Mounting:

1. The air sampling pipe network shall be mounted in accordance with the Manufacturer's written installation and instruction manuals, and local codes and standards. The hardware used for mounting will depend upon the design and site requirements.
2. To minimize flexing the pipes shall be secured every 5ft (1.5m).
3. When installing a pipe network in areas subject to high temperature fluctuations allow for the contraction and expansion of pipes.
4. Where expansion or contraction of pipes is likely either after installation or on a continuous basis, do not place pipe clips adjacent to couplings and socket unions as these may interfere with the movement of the pipe.
5. No bends are permitted within the first 18 inches (457mm) from the detector inlet.
6. Piping shall be mounted as close to the ceiling as possible.
7. The routing of the piping network shall be coordinated with potential obstructions, including cable trays, grounding bars, and HVAC ductwork.
8. All changes in direction shall be made with standard elbows or tees.
9. All joints shall be air-tight and made by using solvent cement, except at the entry to the detector assembly. Refer to ASTM F402-88 standard practice for safe handling of solvent cements, primers and cleaners used for joining thermoplastic pipe and fittings.
10. Flexible tubing for termination of the sampling pipe network into detector inlet is not permitted.
11. All pipes shall be supported by mechanical hangers attached to the structure of the building. Not more than one foot of pipe shall extend beyond the last hanger of each sampling pipe. The final installation shall result in no noticeable deflection in the piping network.
12. Attachment of air sampling pipe networks to cable trays is prohibited.
13. Air sampling pipe network shall be labeled with the ASSD apparatus Manufacturer's standard identification marking at least 20ft (6m) intervals.
14. Placement of the air sampling pipe network shall take into consideration appropriate sampling point locations and spacing.
15. All air sampling pipe network penetrations of fire-rated partitions shall be sealed with a listed and/or approved through-penetration firestop material.

16. Swarf and other debris accumulated in air sampling pipe network during installation and assembly shall be removed by negative airflow prior to connection to the ASSD apparatus.

E. Capillary Sampling Network:

1. In areas with a suspended ceiling the sampling pipe network shall be installed above the ceiling with remote sampling points extending through the ceiling using appropriate lengths of 0.375 inch (10mm) inside diameter capillary tubing attached to remote sampling points. Remote sampling point locations shall align in center of ceiling tile where possible provided spacing meets the requirements of this Specification. Appearance shall be uniform in terms of sampling point row alignment. Coordinate layout with T-Bar grid.
2. The maximum length of the capillary tube shall be 26ft (8m).
3. An additional 2ft (60cm) of capillary tubing shall be provided for each drop to permit future relocation of remote sampling points (not to exceed 26ft (8m) limitation).
4. Remote sampling points shall be labeled with the Manufacturer's standard identification marking.
5. Capillary tube and attachment to sampling pipe network shall be that required by the Manufacturer.

F. Combined Detection Coverage:

1. It is permissible for an air sampling pipe network to protect adjacencies provided a branched air sampling pipe network is deployed and that the ASSD apparatus exhaust is in an equal or negative pressure, not to exceed 100 Pascal's, in relationship to where sampling points are located. Strict compliance with the Manufacturer's system design manual shall be given when applying a system in this fashion.

3.2 Electrical Power and Wiring

A. General: All power and distribution shall meet the requirements of the Manufacturer, applicable codes and standards.

3.3 Identification

A. Install framed instructions in a location visible from each ASSD and ASGD apparatus.

B. Identification shall include corresponding detector zone number, associated power supply number.

C. ASSD and ASGD apparatus identification to be consistent with BAS identification. This requires coordination between ASD system Contract and BAS contractor.

3.4 Initial Commissioning Setting

A. Initial Commissioning Settings for ASSD Apparatus.

1. The initial alarm threshold sensitivity setting at time of system commissioning shall be set and based upon the following formulas for each ASSD apparatus:
   a. Fire 2 – Divide target sampling point sensitivity of 4% obs/ft (13.12% obs/m) by number of holes in overall system pipe network to derive at the Fire 2 alarm threshold.
   b. Fire 1 – Divide target sampling point sensitivity of 1% obs/ft (3.28% obs/m) by number of holes in overall system pipe network to derive at the Fire 1 alarm threshold.
   c. Pre-alarm – Divide target sampling point sensitivity of 0.21% obs/ft (0.69% obs/m) by number of holes in overall system pipe network to derive at the Pre-alarm threshold.
2. Both day and night alarm thresholds are to be programmed to the same settings.
3. Detector(s) alarm delays shall be as follows :
   a. Fire 2: 30 seconds.
   b. Fire 1: 15 seconds.
   c. Pre-alarm: 15 seconds.
4. Detector(s) flow delays.

a. Flow High: 10 seconds.

b. Flow Low: 10 seconds.

c. Flow delay: 60 seconds.

5. Scan Delay (four zone ASSD apparatus): 30 seconds.
6. Sector Delay (four zone ASSD apparatus): 15 seconds.
7. Filter Fault: 1825 days.

B. Initial Commissioning Settings for ASGD Apparatus.

1. The alarm threshold sensitivity setting at time of system commissioning shall be set and based upon the following:

a. Desired low alarm detection limit: 25% LFL hydrogen.

b. Desired high alarm detection limit: 50% LFL hydrogen.

c. Effects of high air movement and dilution of gas:

1) Based on expected air movement within the area a relative uniform gas concentration can be expected.

2) A “safety factor” shall be applied to the alarm threshold stated above to compensate for the possibility of non-homogeneous gas concentration. The alarm thresholds shall be set as follows for each ASGD:

a) Low alarm threshold: 7% LFL hydrogen.

b) High alarm threshold: 12% LFL hydrogen.

d. Configure/map alarm thresholds to alarm relay.

e. Configure/map major and minor faults to fault relay.

f. Set relays to Latching or Non Latching based on system requirement.

3.5 Final Alarm Threshold Settings after 30 Day Verification Test

A. To ensure that the earliest possible alarm for detected smoke is rendered with the fewest number of false alarms. Each ASSD system shall be subjected to a 30-day minimum test before the system is considered acceptable. During the period while the sensitivity verification test is being conducted, normal operations shall continue unaltered within the fire zone. The building alarm shall be connected to the ASSD system, but alarms triggered by the system should not activate the automatic suppression systems and/or fire department notification.

B. At the end of this 30-day period the Fire Alarm Contractor shall download each ASSD system’s event log using the Manufacturer’s software and analyze the data providing for adjustments in accordance with the Manufacturer’s recommended procedure for data analysis, settings adjustment and compensatory measures should adjustment exceed minimum performance requirements as outlined herein.

3.6 Signals

A. Air Sampling Smoke Detection (ASSD) Signals.

1. Fire 2:

a. Discrete visual indicator at detector unit.

b. Fire 2 alarm to Fire Alarm/Suppression Control Panel.

c. Audible/visual alarm at Fire Alarm/Suppression Control Panel.

d. Fire 2 alarm signal to the monitoring station.

2. Fire 1:

a. Discrete visual indicator at detector unit.

b. Fire alarm signal to Fire Alarm Control Panel.

c. Audible/visual alarm at Fire Alarm Control Panel.

d. Fire alarm signal to the monitoring station.

3. Pre-alarm:

a. Pre-alarm signal to Fire Alarm Control Panel.

b. Audible/visual alarm at Fire Alarm Control Panel.

4. Sector Pipe Identification (four zone ASSD apparatus):

a. Sector pipe identification signal to Fire Alarm Control Panel.

5. Fault:

a. Discrete visual indicator at detector unit.

b. Trouble indication at Fire Alarm Control Panel.

c. Trouble to the monitoring station.

B. Air Sampling Gas Detection (ASGD) Signals.

1. Low alarm threshold:

a. Discrete visual indicator at detector unit.

b. Low alarm signal to the BMS.

2. High alarm threshold:

a. Discrete visual indicator at detector unit.

b. High alarm signal to the BMS.

3. Fault:

a. Discrete visual indicator at detector unit.

b. Trouble indication at BMS.

3.7 Field Quality Control

A. Perform tests and inspections.

B. The ASD system Contractor shall draft and submit, to the Architect / Engineer and the Owner's Representative, for approval, a detailed Method of Procedure (MOP) commissioning plan, per area, which outlines all commissioning activities and identifies each activity and test, zone specific, necessary for a complete verification of the design and operation prior to start of testing.

C. The complete system shall be functionally tested in the presence of Architect / Engineer and/or Owner's Representative and all functions must be operational at least [five (5)] days prior to the final acceptance tests.

D. Tests and Inspections:

1. General testing:

a. All system and equipment devices shall function as required and designed.

b. Each detector unit circuit shall be tested for trouble by inducing a trouble condition into the system.

c. Test wiring runs for continuity, short circuits, and grounds before system is energized. Test and record resistance, current, and voltage readings as work progresses.

d. Field tests shall be performed for all devices and functions of the ASD system (100%) prior to the performing a final test to be witnessed and accepted by the local AHJ. All testing shall be coordinated with the Architect / Engineer and the Owner's Representative

2. Visual Inspection: Conduct visual inspection prior to testing.

3. Correct malfunctioning equipment, and then retest to demonstrate compliance. Replace equipment that cannot be corrected or does not perform as specified and indicated, then retest to demonstrate compliance. Repeat procedure until satisfactory results are obtained.
4. Report test results promptly and in writing to Architect / Engineer, the Owner's Representative and Authorities Having Jurisdiction.

E. Acceptance Tests:

1. Prior to final acceptance, the installing contractor shall provide complete operation and maintenance instruction manuals as indicated in this Specification Part 1, Closeout Submittals and Documents. All aspects of system operation and maintenance shall be detailed, including piping isometrics, wiring diagrams of all circuits, a written description of the system design, sequence of operation and drawing(s) illustrating control logic and equipment used in the system. Checklists and procedures for emergency situations, troubleshooting techniques, maintenance operations and procedures shall be included in the manual.
2. Final Acceptance Test shall begin only when the Preliminary Test Report has been approved.
3. As-Built Drawings and previous test results shall be available at the time of testing.
4. The installation shall not be considered accepted until identified discrepancies have been corrected and test documentation is properly completed and received.

F. Prepare test and inspection reports.

1. Upon completion of a successful test, the ASD system Contractor shall so certify the system in writing to Owner's Representative.
2. Submit copy of test results in duplicate, after signed off by the AHJ, to the Architect / Engineer and the Owner's Representative.

G. Upon acceptance by the Architect / Engineer and the Owner's Representative, the completed system(s) shall be placed into service.

3.8 Demonstration and Training

A. Train Owner's maintenance personnel to adjust, operate, and maintain ASD systems.

B. Prior to final acceptance, the installing contractor shall provide operational training to each shift of Owner's personnel. Each training session shall include ASD system operation, trouble procedures, supervisory procedures, auxiliary functions and emergency procedures.

1. Furnish training for a minimum of [four (4)] Owner designated employees of the system user:
    a. Training in the receipt, handling, and acknowledgement of alarms.
    b. Training in the system operation including manual control of output functions from the system.
    c. Training in the testing of the system including logging of detector sensitivity, field test of devices and response to common troubles.
    d. The total training requirement shall be sufficient to cover all items specified.

END OF SECTION XXXXX

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Doc. 29036_00

VESDA® by xtralis®

Exhibit D

DESIGN CRITERIA:

Roof Live Load = 100 psf
Floor Live Load (shipping & handling) = 135 psf
Wind Velocity (Exposure) = 80 mph (B)
Seismic Zone = 4
Use Group = B/S2
Construction Type = V-N

[X] Non Fire-rated [ ] 1 Hour Fire-rated [ ] 2 Hour Fire-rated

DESIGN CODES:

UBC = 7/01 NEC = 2/99
UMC = 7/01 VIAQ = 7/01
UPC = 7/02 WSEC = 7/02
UFC = 7/01

For fire rated construction: V-1hr, V-2hr.

2001 UBC Table 7-B, item 7-1.1 and section 1914.3.2 and 1914.3.3, table 7-C, item 4-1.1.

Type 5 2hr. construction with 2hr. fire-rated Roof and Walls.

GENERAL DESIGN NOTES:

1. This is an unmanned storage and equipment shelter only.
2. Shelter F'c = 5000psi @ 28 days.
3. Building shall be located ten feet (20'-0") or more from any property line, interior lot line or any other building.
4. All items noted as "FIELDWORK" shall be installed and tested at the factory then removed for transport and reinstalled at the final site.
5. Model may be built as "mirror image".
6. Door swing and waveguide location may change due to site requirements.
7. Building shall be placed on a foundation supplied by others.
8. Building not designed for installation in a flood prone area.
9. All electrical components to be UL Listed.
10. Designed in accordance with the Washington State Energy Code, Chapter 51-11.
11. This shelter is classified as a Personal Wireless Services Facility and is exempted from some of the provisions of the Washington State Nonresidential Energy Code.

Fibrebond Corporation
1300 Davenport Drive
Minden, LA 71055
800-824-2614

Fibrebond West, Inc.
299 Beck Avenue
Fairfield, CA 94533
707-421-1065

FIBREBOND®

INDEX OF SHEETS

SHEET NO.	SHEET DESCRIPTION
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* 1-2	EXTERIOR ELEVATIONS - "A"
* 1-3	EXTERIOR ELEVATIONS - "C"
* 1-4	EXTERIOR ELEVATIONS - "B" & "D"
* 2-1	INTERIOR CEILING VIEW
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S2	STRUCTURAL LAYOUT - FLOOR
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S6	STRUCTURAL LAYOUT - END PANEL "D"
S7	MISC. DETAILS
S8	PARTITION WALL ASSEMBLY
S9	PARTITION WALL FINISH & LOCATION

* = DENOTES DRAWINGS WHICH HAVE WORK TO BE COMPLETED IN THE FIELD ("FIELD WORK"). N.L.E.A. REQUIRED.

STATE OF WASHINGTON
DEPT. OF LABOR & INDUSTRIES
CONSTRUCTION COMPLIANCE SECTION
FACTORY BUILT HOMES & COMMERCIAL STRUCTURES
PLANS ACCEPTED NO. ISSUED
SUBJECT TO FIELD INSPECTION OVERSIGHT
OR VIOLATION OF RCW IS NOT INCLUDED
BY: DATE: 8/16/02
EXPIRATION DATE: 8/30/04

FOR STATE USE ONLY

FRANK J. RALEY
STATE OF WASHINGTON
36853
REGISTERED PROFESSIONAL ENGINEER
8/16/02
EXPIRES 10/18/02

FOR ARCH./ENG. USE ONLY

FOR ARCH./ENG. USE ONL

SITE NAME: INDIAN [illegible]

STATE OF WASHINGTON, DEPT. OF L & I
FAS ELECTRICAL PLAN REVIEW SECTION
PLANS ACCEPTION NO. 00FBSO200254
BY: DATE: 08-16-2002
SUBJECT TO FIELD INSPECTION OVERSIGHT
OR VIOLATION OF RCW IS NOT INCLUDED

FOR THIRD PARTY USE ON

WAC 296-150F-0605 requires toilet facilities located in an adjacent facility to be noted on the plans submittal that the requirements of UBC Chapter 29,Sec 2902 and Table 29-A as amended by the state building code must be verified by the local jurisdiction building official and shown on the NLEA.

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

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APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.

11'-11" X 38'-0" EQUIPMENT SH

MANUFACTURED BUILDIN DATA SHEET

SCALE: NONE SHEET NO.: 1-0 B DWG NO.: D-6

Exhibit D

38'-0" [456"]

29'-1 1/8" [349 1/8"]

7 1/8"

7'-6" [90"]

36" 36" 179"

13"

Rack 1 RESC. TeNSr

Rack 2 QTARs

Rack 3 QTARs

Rack 3 QTARs

FUTURE

FUTURE

FUTURE

FUTURE

UPS

GENERATOR, 60 KW

49

2

1

43 31 18 42

25

44 45

59

53 FIELD WORK N.L.E.A.

51

52 STATE OF WASHINGTON DEPT. OF LABOR AND INDUSTRIES FIELD WORK LAN REVIEW SECTION N.L.E.A.A P R O V E D AUG 16 2002 SUBJECT TO CODE AND FIELD INSPECTION

53 FIELD WORK N.L.E.A.

Bench mark

6 3 46 35 33 21 7 37 24 4 5 21 7 37 24

FIELD WORK N.L.E.A. FIELD WORK Uo of = 0.24 door FIELD WORK N.L.E.A. FIELD WORK Uo of = 0.24 door

ROOFING SYSTEM BY CONKLIN
CONCRETE SKIN
POLYISOCYANURATE INSULATION
1/2" SHEETROCK
3/8" FRP
TYPICAL ROOF SECTION

THIS SHELTER NOT FOR HUMAN HABITATION

1/2" PLYWOOD
POLYISOCYANURATE INSULATION
CONCRETE SKIN
AGGREGATE
3/8" FRP
1/2" SHEETROCK
TYPICAL WALL SECTION

1/8" TILE
CONCRETE SKIN
FOAM BOARD INSULATION
TYPICAL FLOOR SECTION

SECTION "A-A"

SCALE: N.T.S.

FLOOR PLAN
452.83 sq. ft.

NOTES:
1. LOCATE THE INSIGNIA PLATE THE SAME LEVEL AS THE DOOR HANDLE OUT FROM THE DOOR OPENING ON THE ROCK APPROX. 6" BELOW THE BUILDING DATA PLATE.

FRANK J. RALEY STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER 7/19/02

EXPIRES 10/18/02

GENERATOR SCHEDU	
ITEM NAME	YES
EXTERNAL VENT	X
EXTERNAL FUEL FILL	X
WHISTLE VALVE	X

C B F E D A
ELEVATION KEY

MINDEN PROJ. NO.
MINDEN BLDG. NO.
FAIRFIELD PROJ. NO. STT963W
FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
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APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.

11'-11" X 38'-0" EQUIPMENT S

FLOOR PLAN

SCALE: 3/8"=1'-0" | SHEET NO.: 1-1 | B | DWG NO.: D-6

38'-4" [460"]

STATE OF WASHINGTON
DEPT. OF LABOR AND INDUSTRIES
FAS PLAN REVIEW SECTION
APPROVED
AUG 16 2002
SUBJECT TO CODE AND FIELD INSPECTION

GENERATOR MUFFLER

SERVICE ENTRANCE

N.L.E.A. FIELD WORK

BLDG. ID PLATE

6"

STATE INSIGNIA

FIELD WORK N.L.E.A.

53 FIELD WORK N.L.E.A.

Uo of door = 0.24

Uo of door = 0.24

108"

42"

ELEVATION A

FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER

EXPIRES 10/18/02

ELEVATION KEY

MINDEN PROJ. NO.

MINDEN BLDG. NO.

FAIRFIELD PROJ. NO. STT963W

FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
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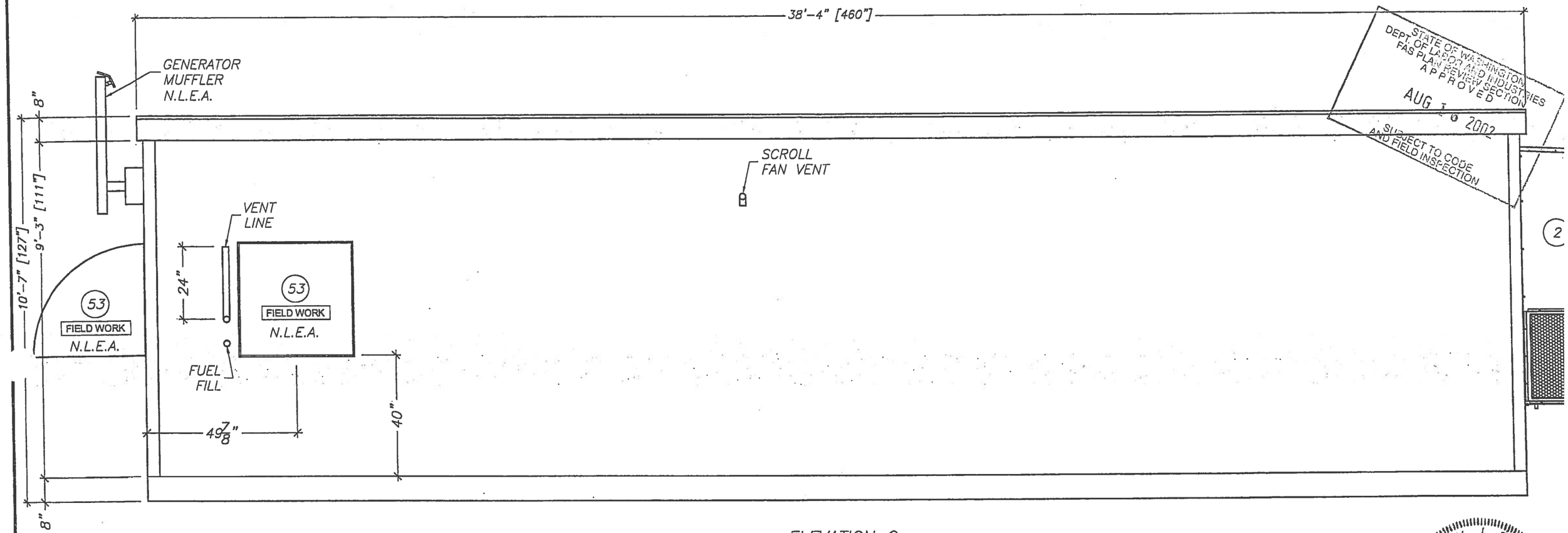
APP. BY: BT	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.

11'-11" X 38'-0" EQUIPMENT S

EXTERIOR ELEVATION A

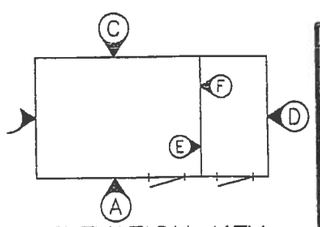
SCALE: 3/8"=1'-0" | SHEET NO.: 1-2 | B | DWG NO.: D-6



ELEVATION C

FRANK J. RALEY STATE OF WASHINGTON 38663 REGISTERED PROFESSIONAL ENGINEER

EXPIRES 10/18/02



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. ST7963W FAIRFIELD BLDG. NO. 2788

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1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-42

THESE PLANS ARE THE CONFIDENTIAL PROPERTY AND TRADE SECRETS OF FIBREBOND CORPORATION AND FIBREBOND WEST, INC. ANY USE OF THESE DRAWINGS OR THE INFORMATION CONTAINED HEREIN FOR ANY REASON OTHER THAN AS EXPRESSLY AUTHORIZED BY FIBREBOND CORPORATION OR FIBREBOND WEST, INC. IS STRICTLY PROHIBITED. THESE DRAWINGS HAVE BEEN DISTRIBUTED WITH THE UNDERSTANDING THAT ANY ONE RECEIVING OR OTHERWISE OBTAINING POSSESSION OF THEM WILL BE EXPRESSLY NOTIFIED OF THEIR CONFIDENTIAL NATURE.

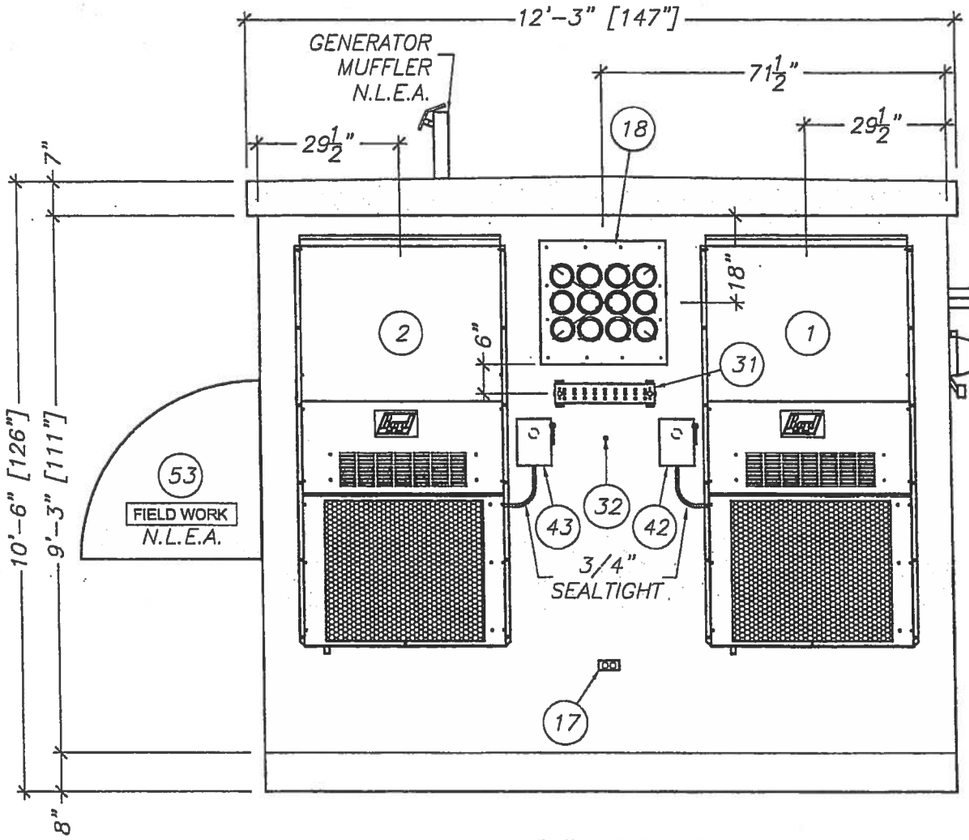
DRN. BY:	SC	DATE:	05/28/02
CHK. BY:	MT	DATE:	5/30/02
APP. BY:	BT	DATE:	7/17/2
APP. BY:		DATE:	
ENG. BY:		DATE:	

STRATA, INC.

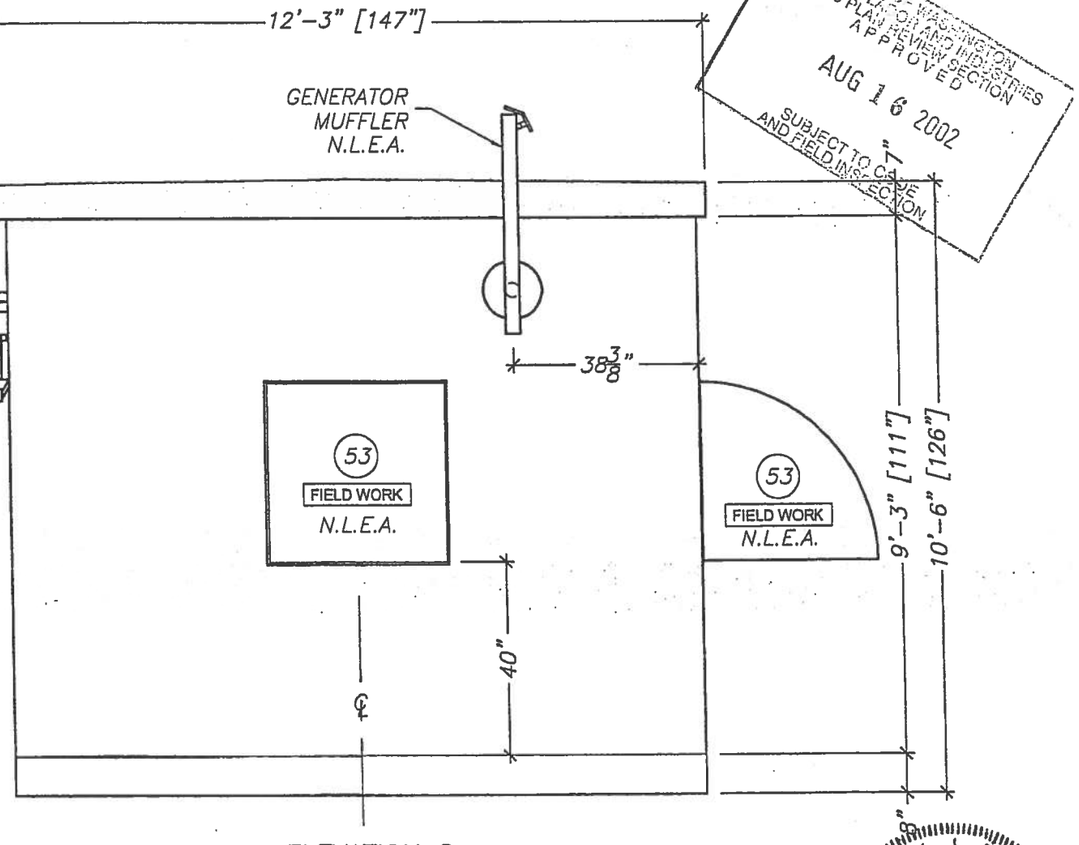
11'-11" X 38'-0" EQUIPMENT SH

EXTERIOR ELEVATION C

SCALE:	SHEET NO.:		DWG NO.:
3/8"=1'-0"	1-3	B	D-61



ELEVATION B

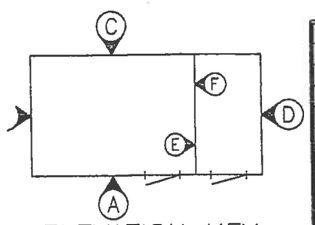


ELEVATION D

STATE OF WASHINGTON
DEPT. OF LABOR AND INDUSTRIES
FAS PLAN REVIEW SECTION
APPROVED
AUG 16 2002
SUBJECT TO CODE AND FIELD INSPECTION

FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES 10/18/ 02



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. ST7963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W		7/17/02

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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, IN
299 Beck Avenue
Fairfield, California 94533 707-42

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APP. BY: BT	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

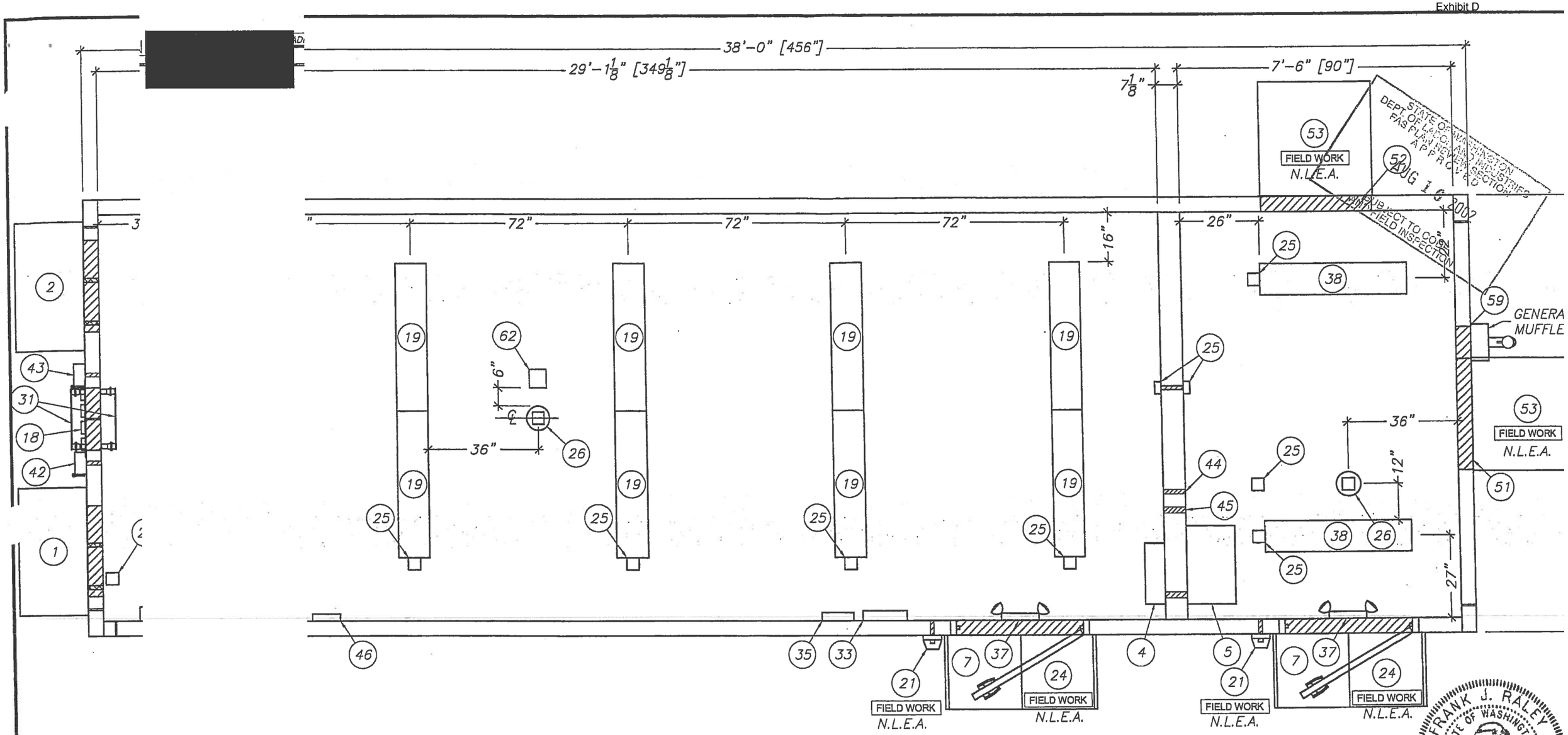
STRATA, INC.

11'-11" X 38'-0" EQUIPMENT SH

EXTERIOR ELEVATIONS B &

SCALE: 3/8"=1'-0" | SHEET NO.: 1-4 | B | DWG NO.: D-61

Exhibit D



CEILING VIEW

NOTE:

1. ALL MEASU
   ALL ADJACE

ACCURATE WITHIN ± 1/4".
THE SAME DIMENSION.

ELEVATION

FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER

EXPIRES 10/18/ 02

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

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DED BLDG. #2788 & PROJ. #963W — BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET — APP. — DATE

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

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299 Beck Avenue
Fairfield, California 94533 707-4

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APP. BY:	DATE:	
ENG. BY:	DATE:	

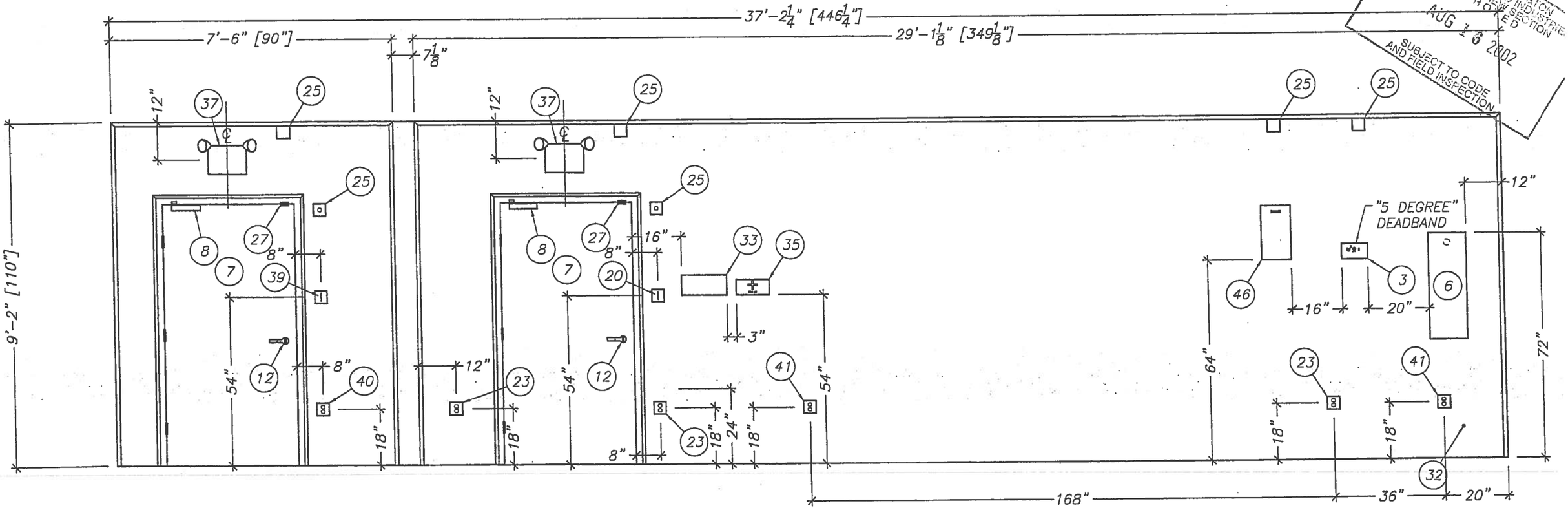
STRATA, INC.

11'-11" X 38'-0" EQUIPMENT S

INTERIOR CEILING VIEW

SCALE: 3/8"=1'-0" | SHEET NO.: 2-1 | B | DWG NO.: D-6

STATE OF WASHINGTON
DEPT OF LABOR AND INDUSTRIES
FAS PLAN REVIEW SECTION
APPROVED
AUG 16 2002
SUBJECT TO CODE AND FIELD INSPECTION



ELEVATION A

NOTE:

1. ALL MEASUREMENTS SHOWN ARE ACCURATE WITHIN ± 1/4". ALL ADJACENT BOXES SHALL BE THE SAME DIMENSION.

FRANK J. RALEY
STATE OF WASHINGTON
36865
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES 10/18/ 02

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

ELEVATION KEY

REV.	BY	DATE	REVISION	APP.	DATE
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1	PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

BY: DATE BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET APP. DATE

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FIBREBOND WEST, I
299 Beck Avenue
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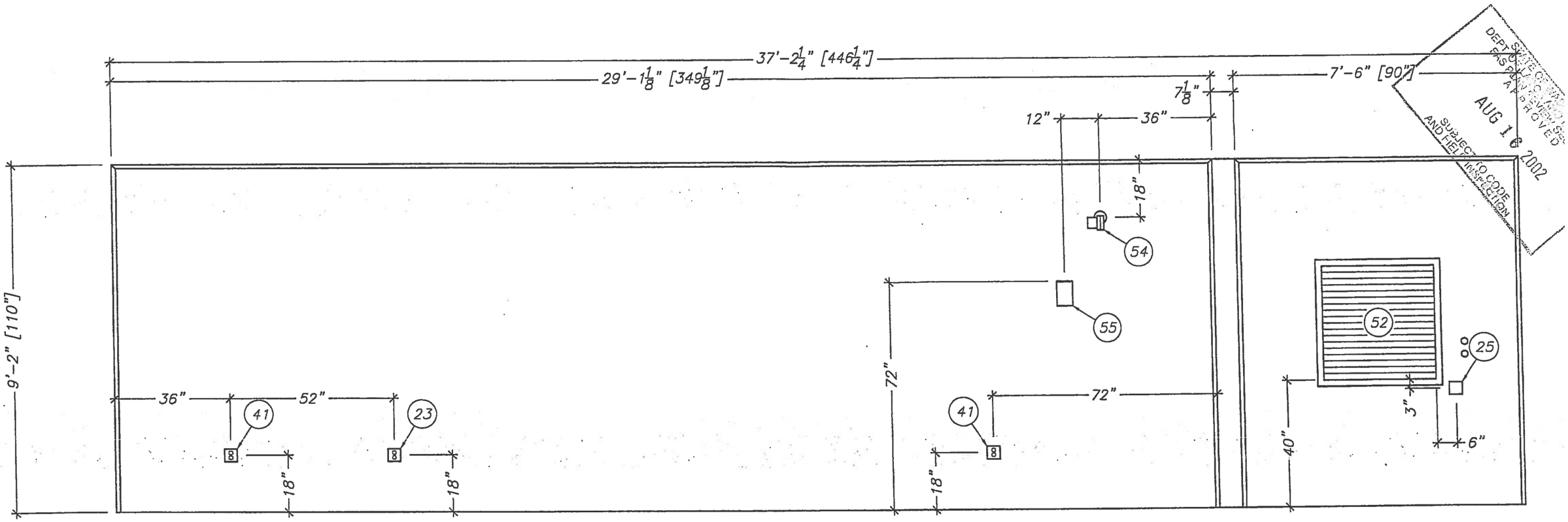
DRN. BY: SC	DATE: 05/28/02	STRATA, INC.	
CHK. BY: MT	DATE: 5/30/02	11'-11" X 38'-0" EQUIPMENT SH	
APP. BY: BT	DATE: 7/17/2	INTERIOR ELEVATION A	
APP. BY:	DATE:		
ENG. BY:	DATE:	SCALE: 3/8"=1'-0"	SHEET NO.: 2-2
		B	DWG NO.: D-6

Exhibit D



ELEVATION C

NOTE:

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FRANK J. RALEY
STATE OF WASHINGTON
3585
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 10/18/ 02

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

ELEVATION KEY

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
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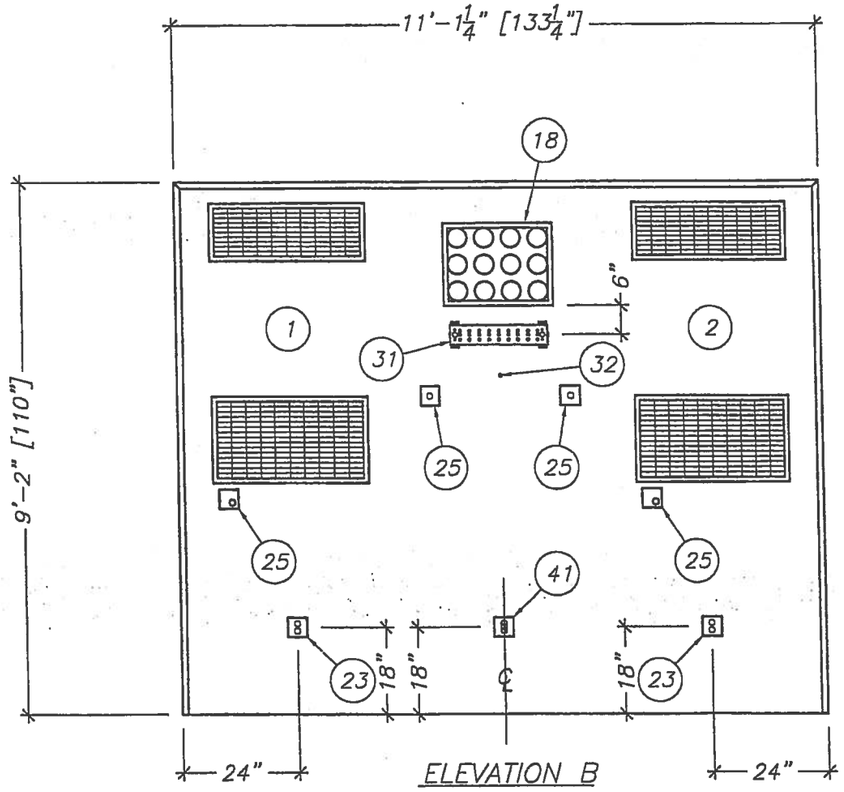
APP. BY:		DATE:	
ENG. BY:		DATE:	

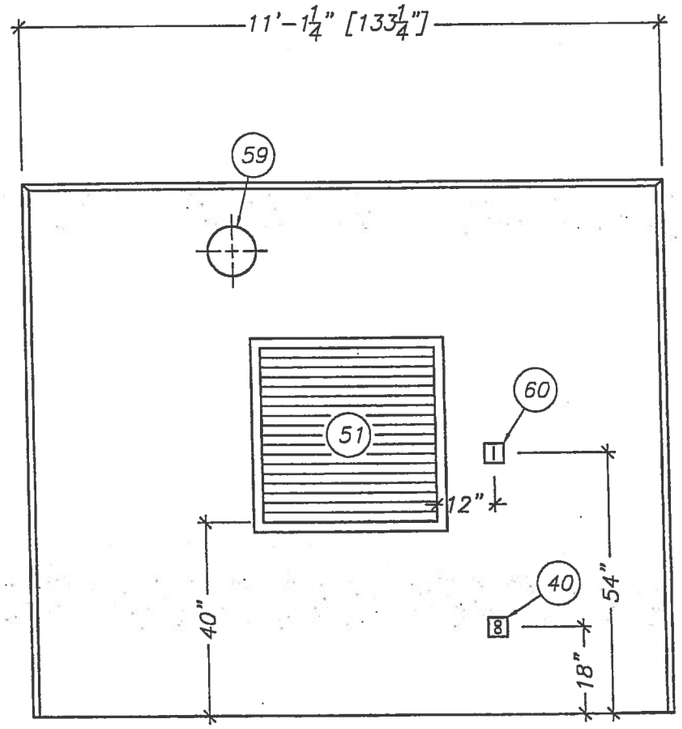
STRATA, INC.
11'-11" X 38'-0" EQUIPMENT SH
INTERIOR ELEVATION C

SCALE: 3/8"=1'-0" | SHEET NO.: 2-3 | B | DWG NO.: D-6

STATE OF WASHINGTON
DEPT. OF LABOR AND INDUSTRIES
FAS PLAN REVIEW SECTION
APPROVED
AUG 16 2002
SUBJECT TO CODE
AND FIELD INSPECTION



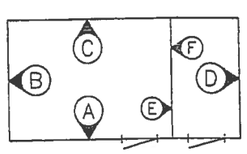
ELEVATION B



ELEVATION D

NOTE:

1. ALL MEASUREMENTS SHOWN ARE ACCURATE WITHIN ± 1/4". ALL ADJACENT BOXES SHALL BE THE SAME DIMENSION.



ELEVATION KEY

FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 10/18/

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. ST1963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

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FIBREBOND CORPORATION
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Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
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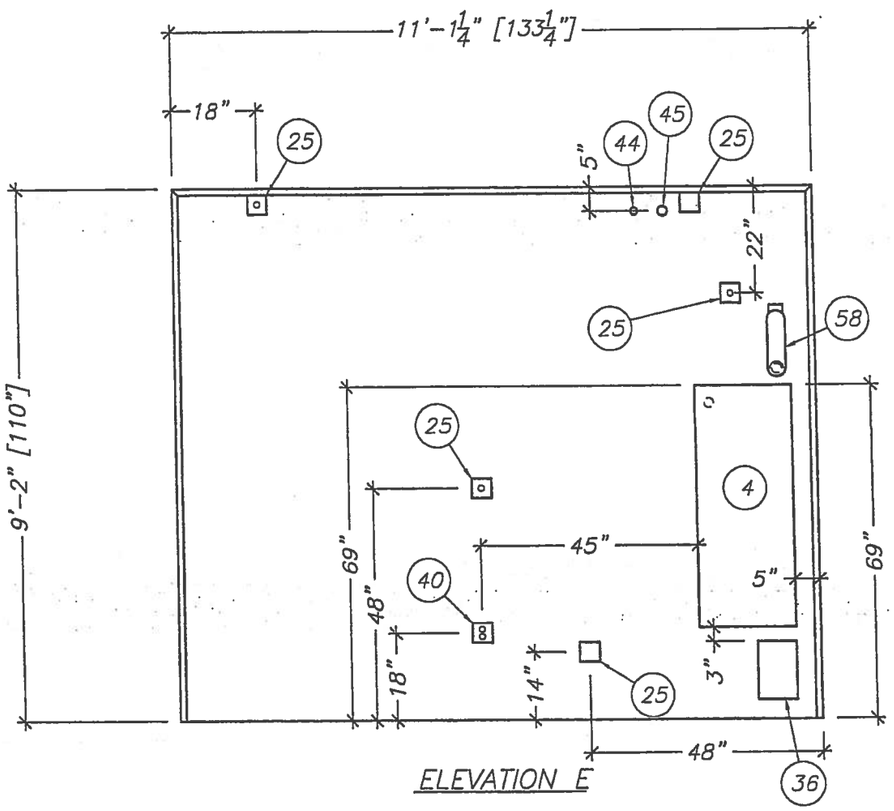
STRATA, INC.

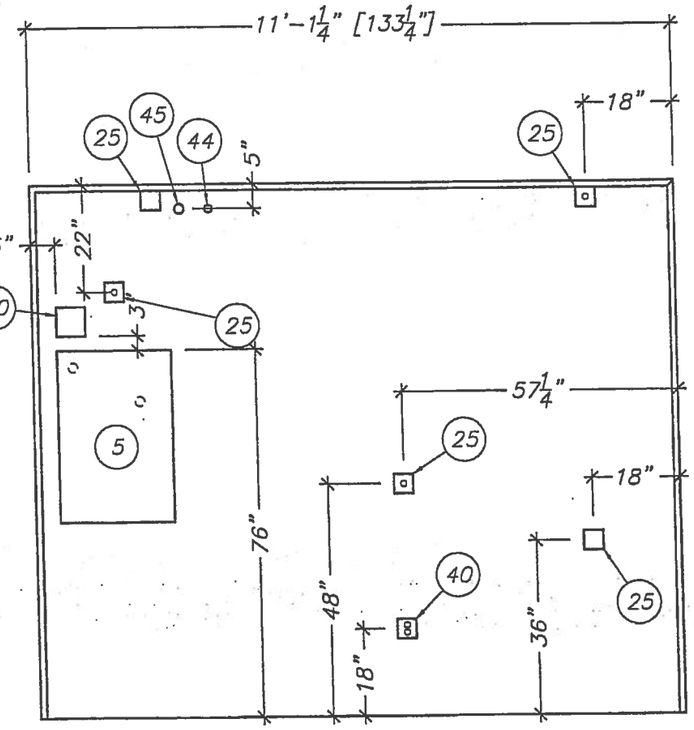
11'-11" X 38'-0" EQUIPMENT SI

INTERIOR ELEVATIONS B

SCALE:	SHEET NO.:		DWG NO.:
3/8"=1'-0"	2-4	B	D-6



ELEVATION E



ELEVATION F

NOTE:

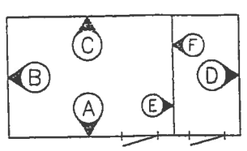
1. ALL MEASUREMENTS SHOWN ARE ACCURATE WITHIN ± 1/4". ALL ADJACENT BOXES SHALL BE THE SAME DIMENSION.

STATE OF WASHINGTON DEPT OF LABOR & INDUSTRIES PASS PLAN APPROVED AUG 16 2002 SUBJECT TO CODE AND FIELD INSPECTION

FRANK J. RALEY STATE OF WASHINGTON 38[illegible] REGISTERED PROFESSIONAL ENGINEER

EXPIRES 10/18/02

ELEVATION KEY



MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
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Fairfield, California 94533 707-42

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APP. BY:	DATE:	
ENG. BY:	DATE:	

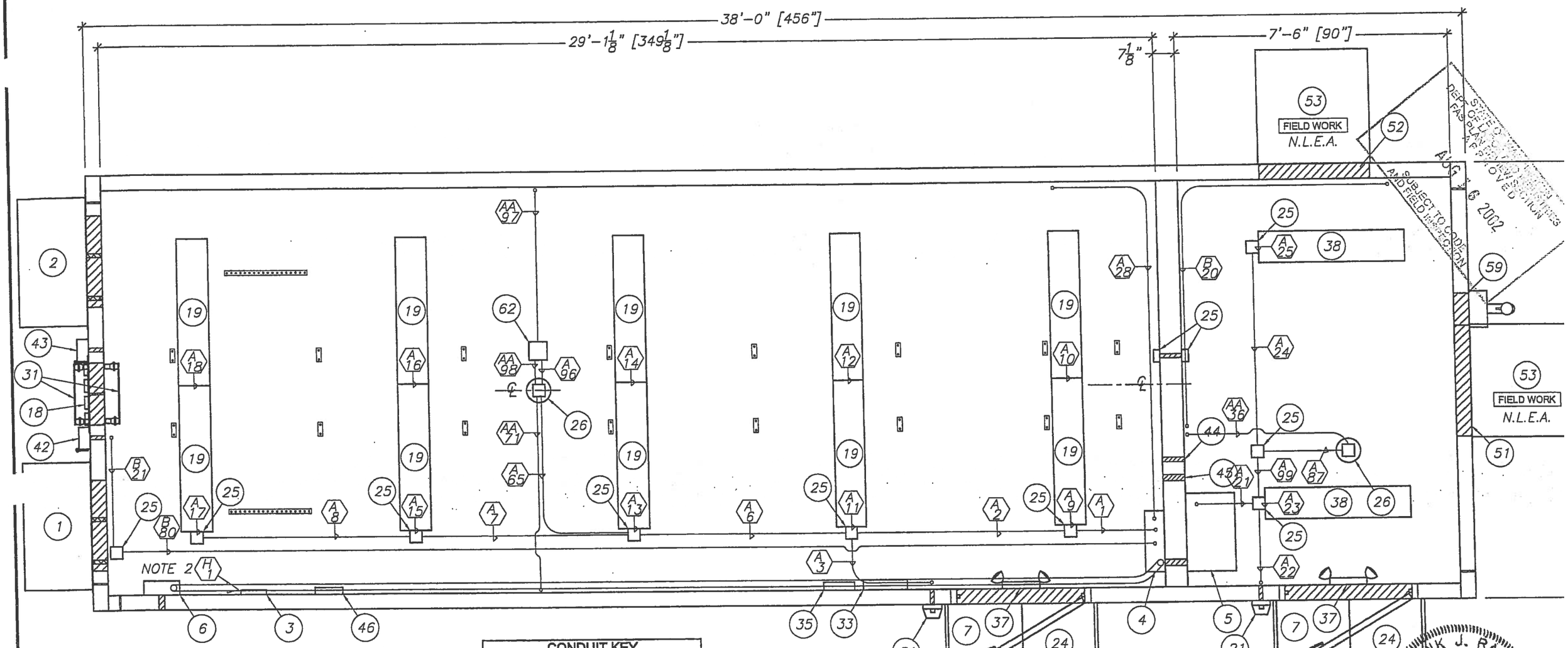
STRATA, INC.

11'-11" X 38'-0" EQUIPMENT S

INTERIOR ELEVATIONS E

SCALE: 3/8"=1'-0" | SHEET NO.: 2-5 | B | DWG NO.: D-6

Exhibit D



NOTE:

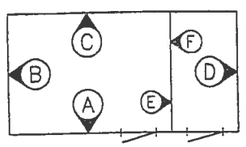
1. CONDUIT SHOULD BE INSTALLED AS SHOWN. ANY CHANGE TO 90° BENDS, OFFSETS, AND SADDLES SHOULD BE DONE ONLY WHEN NEEDED AND SHOULD BE UNDER GUIDANCE OF A QUALIFIED SENIOR CREW LEADER. ANY CHANGE MUST BE WITHIN THE GUIDELINES OF PROCEDURE; 4-1 GENERAL CONDUIT RULES.
2. INSTALL CONDUIT (H1) ON UNISTRUT ON CEILING.
3. CONNECT A 1 1/4" SEALTIGHT FROM LOAD BANK LOAD SIDE TO GENERATOR BREAKER PANEL.

CONDUIT KEY		
A.C.	LOW VOLTAGE	PVC
A = 1/2"	AA = 1/2"	XA = 1/2"
B = 3/4"	BB = 3/4"	XB = 3/4"
C = 1"	CC = 1"	XC = 1"
D = 1 1/4"	DD = 1 1/4"	XD = 1 1/4"
E = 1 1/2"	EE = 1 1/2"	XE = 1 1/2"
F = 2"	FF = 2"	XF = 2"
G = 2 1/2"	GG = 2 1/2"	XG = 2 1/2"
H = 3"	HH = 3"	XH = 3"
I = 3 1/2"	II = 3 1/2"	XI = 3 1/2"
J = 4"	JJ = 4"	XJ = 4"

CEILING VIEW

FRANK J. RALEY
STATE OF WASHINGTON
36883
REGISTERED
PROFESSIONAL ENGINEER
7/19/02
EXPIRES 10/18/02

MINDEN PROJ. NO.
MINDEN BLDG. NO.
FAIRFIELD PROJ. NO. STT963W
FAIRFIELD BLDG. NO. 2788



ELEVATION KEY

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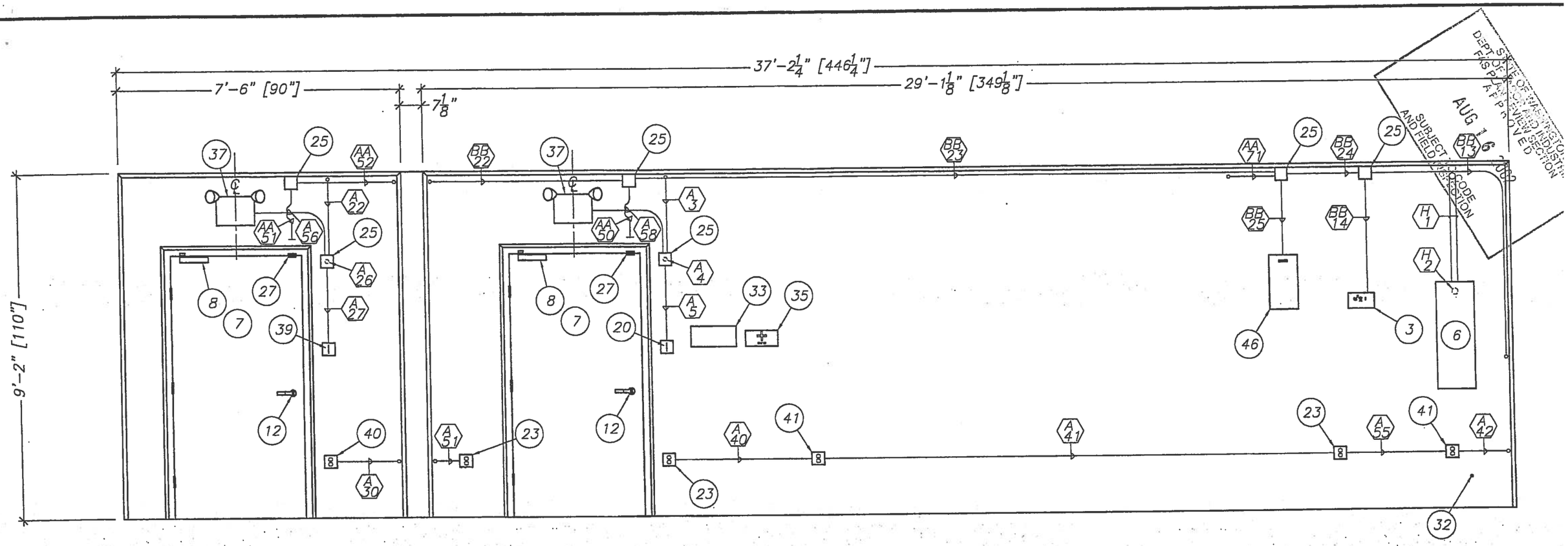
ENG. BY:	DATE:	

STRATA, INC.
11'-11" X 38'-0" EQUIPMENT S
CONDUIT CEILING VIEW

SCALE: 3/8"=1'-0" | SHEET NO.: 3-1 | B | DWG NO.: D-6

Exhibit D



ELEVATION A

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FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 10/18/02

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F = 2"	FF = 2"	XF = 2"
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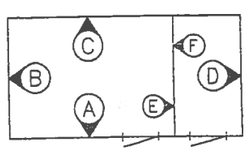

ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
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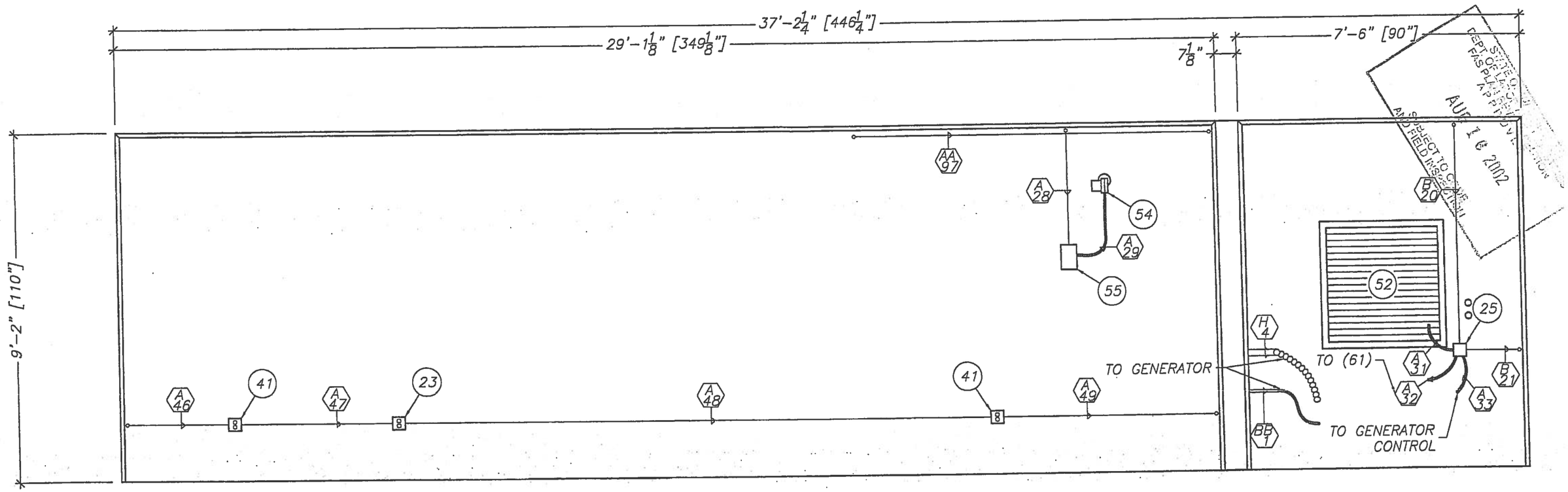
APP. BY: BJ	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.
11'-11" X 38'-0" EQUIPMENT S
CONDUIT ELEVATION A

SCALE:	SHEET NO.:		DWG NO.:
3/8"=1'-0"	3-2	B	D-6



ELEVATION C

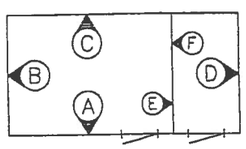
NOTE:

1. CONDUIT SHOULD BE INSTALLED AS SHOWN. ANY CHANGE TO 90° BENDS, OFFSETS, AND SADDLES SHOULD BE DONE ONLY WHEN NEEDED AND SHOULD BE UNDER GUIDANCE OF A QUALIFIED SENIOR CREW LEADER. ANY CHANGE MUST BE WITHIN THE GUIDELINES OF PROCEDURE; 4-1 GENERAL CONDUIT RULES.

CONDUIT KEY		
A.C.	LOW VOLTAGE	PVC
A = 1/2"	AA = 1/2"	XA = 1/2"
B = 3/4"	BB = 3/4"	XB = 3/4"
C = 1"	CC = 1"	XC = 1"
D = 1 1/4"	DD = 1 1/4"	XD = 1 1/4"
E = 1 1/2"	EE = 1 1/2"	XE = 1 1/2"
F = 2"	FF = 2"	XF = 2"
G = 2 1/2"	GG = 2 1/2"	XG = 2 1/2"
H = 3"	HH = 3"	XH = 3"
I = 3 1/2"	II = 3 1/2"	XI = 3 1/2"
J = 4"	JJ = 4"	XJ = 4"

FRANK J. RALEY STATE OF WASHINGTON 36853 REGISTERED PROFESSIONAL ENGINEER

EXPIRES 10/18/02



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

REV.	BY	DATE	REVISION	APP.	DATE
10					
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8					
7					
6					
5					
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3					
2					
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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-42

THESE PLANS ARE THE CONFIDENTIAL PROPERTY AND TRADE SECRETS OF FIBREBOND CORPORATION AND FIBREBOND WEST, INC. ANY USE OF THESE DRAWINGS OR THE INFORMATION CONTAINED HEREIN FOR ANY REASON OTHER THAN AS EXPRESSLY AUTHORIZED BY FIBREBOND CORPORATION OR FIBREBOND WEST, INC. IS STRICTLY PROHIBITED. THESE DRAWINGS HAVE BEEN DISTRIBUTED WITH THE UNDERSTANDING THAT ANY ONE RECEIVING OR OTHERWISE OBTAINING POSSESSION OF THEM WILL BE EXPRESSLY NOTIFIED OF THEIR CONFIDENTIAL NATURE.

DRN. BY: SC	DATE: 05/28/02	
CHK. BY: MT	DATE: 5/30/02	
APP. BY: BF	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

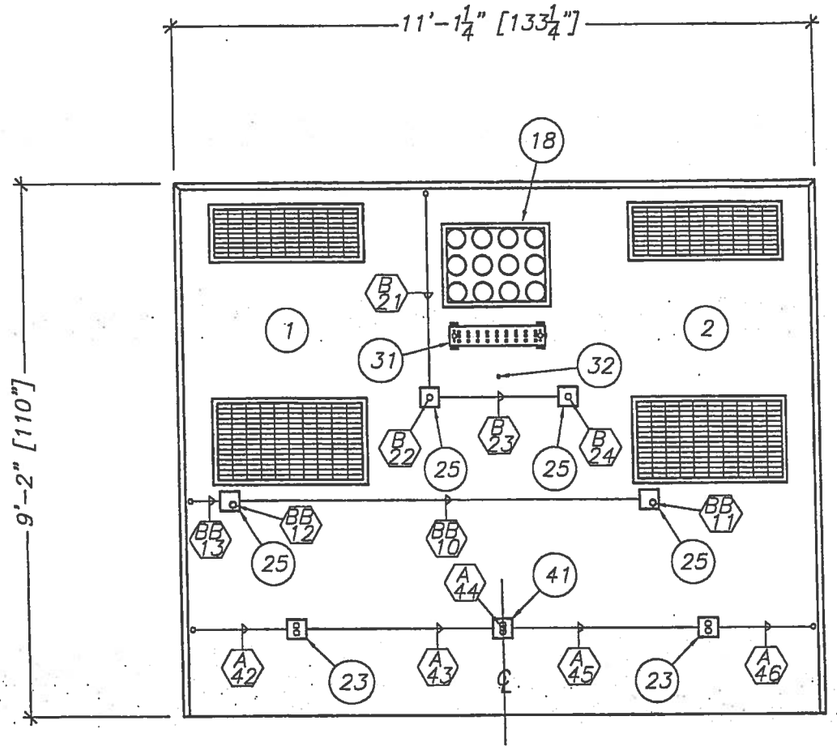
STRATA, INC.

11'-11" X 38'-0" EQUIPMENT SH

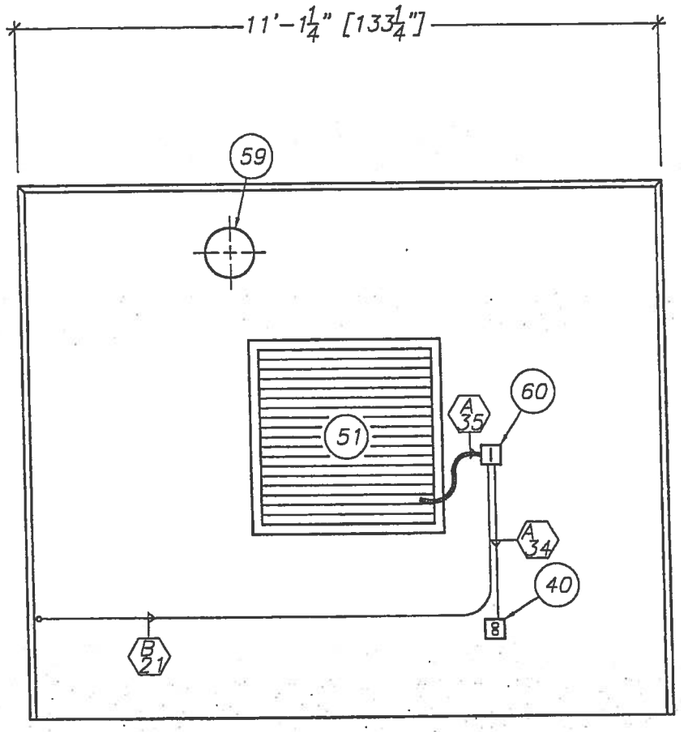
CONDUIT ELEVATION C

SCALE: 3/8"=1'-0" | SHEET NO.: 3-3 | B | DWG NO.: D-6

STATE OF LOUISIANA
DEPT. OF LABOR - BOILER SECTION
FAST-TRACK APPROVED
AUG 16 2002
SUBJECT TO CODE AND FIELD INSPECTION



ELEVATION B



ELEVATION D

NOTE:

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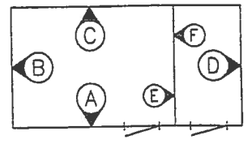

ELEVATION KEY

EXPIRES 10/18/ MV

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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

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APP. BY: BT	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-42

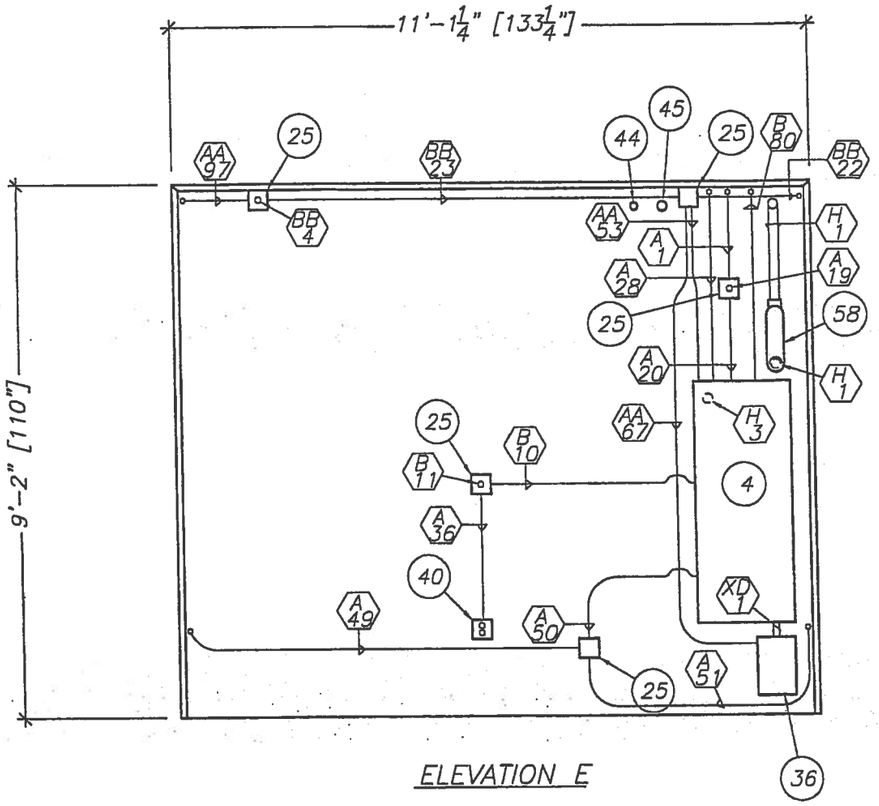
STRATA, INC.

11'-11" X 38'-0" EQUIPMENT SI

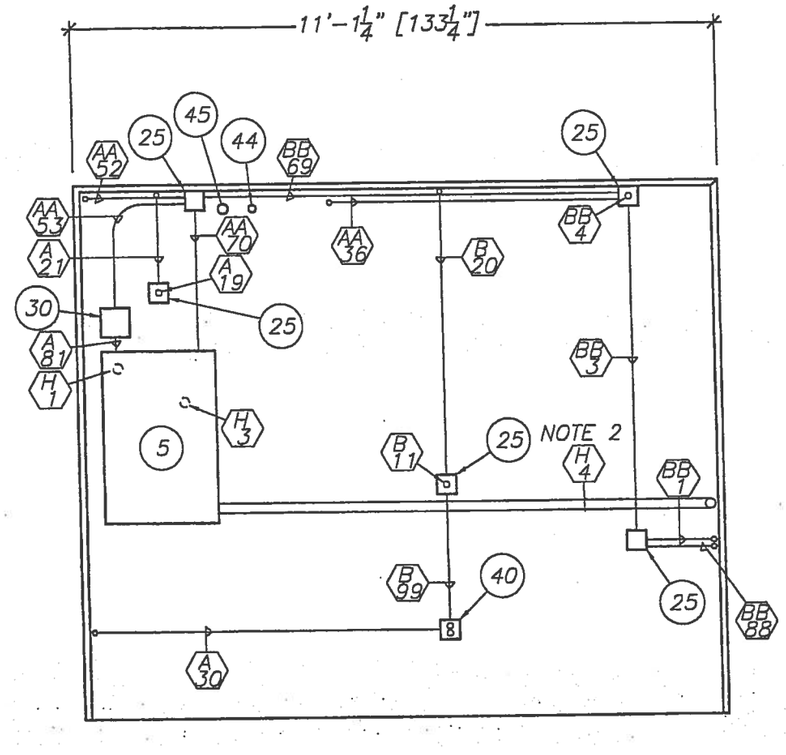
CONDUIT ELEVATIONS B &

SCALE:	SHEET NO.:		DWG NO.:
3/8"=1'-0"	3-4	B	D-6

STATE OF WASHINGTON
DEPT. OF LABOR & INDUSTRIES
FACTORY ASSEMBLED
APPROVED
AUG 16 2002
SUBJECT TO CODE AND FIELD INSPECTION



ELEVATION E



ELEVATION F

NOTE:

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2. MOUNT ON UNISTRUT.

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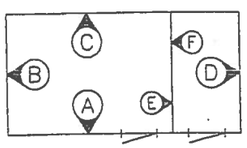

ELEVATION KEY

FRANK J. RALEY
STATE OF WASHINGTON
36850
REGISTERED
PROFESSIONAL ENGINEER
7/19
EXPIRES 10/18/02

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
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FIBREBOND CORPORATION
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Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST,
299 Beck Avenue
Fairfield, California 94533 707-

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DRN. BY: SC	DATE: 05/28/02	
CHK. BY: MT	DATE: 5/30/02	
APP. BY: 67	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.

11'-11" X 38'-0" EQUIPMENT

CONDUIT ELEVATIONS E

SCALE: 3/8"=1'-0" | SHEET NO.: 3-5 | B | DWG NO.: D-6

PANEL CIRCUIT AND LOAD SCHEDULE

TO AUTOMATIC TRANSFER (5)

#2 — #350 — 300A — S/G — S/N

SERVICE: 120/240 VAC
DESIGNATION: N/A
LOCATION: N/A

LOAD DESCRIPTION	QTY.	UNIT V.A.	LOAD PER PHASE (VA) A	B	C	LOADS CONTINUOUS	LOADS NON-CONTINUOUS	TRIP	POLES	WIRE SIZE	A.I.C.	WIRE TYPE		WIRE TYPE	A.I.C.	WIRE SIZE	POLES	TRIP	LOADS NON-CONTINUOUS	LOADS CONTINUOUS	LOAD PER PHASE (VA) A	B	C	UNIT V.A.	QTY.	LOAD DESCRIPTION
1 HVAC #1	1	3196	–	3196	–		X	50	2	8	10,000	THHN	RED 50A	THHN	10,000	8	2	50	X		–	3196	–	3196	1	HVAC #2 2
3	1	3196	3196	–	–		X	50	2	8	10,000	THHN	BLK	THHN	10,000	8	2	50	X		3196	–	–	3196	1	4
5 RECEPTACLES	4	180	–	720	–	X		20	1	12	10,000	THHN	RED 20A	THHN	10,000	12	1	20		X	–	1080	–	180	6	RECEPTACLES 6
7 RECEPTACLES	5	180	900	–	–	X		20	1	12	10,000	THHN	BLK 20A	THHN	10,000	12	1	15		X	180	–	–	180	1	GFCI 8
9 LIGHTING	12/2/2	90/67/72	–	1228.4	–	X		15	1	12	10,000	THHN	RED 15A	THHN	10,000	12	1	20		X	–	180	–	180	1	BATTERY CHARGER/ BLOCK HEATER 10
11 SMOKE DETECTOR	2	12	24	–	–	X		15	1	12	10,000	THHN	BLK 15A	THHN	10,000	12	1	15		X	120	–	–	120	1	SCROLL FAN 12
13			–		–						10,000	THHN	RED	THHN	10,000	12	1	20		X	–	220	–	220	1	VENT SYSTEM 14
15				–	–						10,000	THHN	BLK 30A	THHN	10,000		2	30		X	2880	–	–	2880	1	UPS 16
17			–		–						10,000	THHN	RED	THHN	10,000		2	30		X	–	2880	–	2880	1	18
19				–	–						10,000	THHN	BLK	THHN	10,000							–	–			20
21			–		–						10,000	THHN	RED	THHN	10,000						–		–			22
23				–	–						10,000	THHN	BLK	THHN	10,000							–	–			24
25			–		–						10,000	THHN	RED	THHN	10,000						–		–			26
27 SPACE				–	–						10,000	THHN	BLK	THHN	10,000							–	–			28 SPACE
29			–		–						10,000	THHN	RED	THHN	10,000						–		–			30
31				–	–						10,000	THHN	BLK	THHN	10,000							–	–			32
33			–		–						10,000	THHN	RED	THHN	10,000						–		–			34
35				–	–						10,000	THHN	BLK	THHN	10,000							–	–			36
37			–		–						10,000	THHN	RED	THHN	10,000						–		–			38
39				–	–						10,000	THHN	BLK 60A	THHN	10,000	4	2	60				–	–			40 SURGE ARRESTOR
41			–		–						10,000	THHN	RED	THHN	10,000	4	2	60			–		–			42
		SUBTOTAL CONTINUOUS	924	1948.4	–										3180	4360	–	SUBTOTAL CONTINUOUS								TOTAL KVA CONTINUOUS X 1.25 13.02
		SUBTOTAL NON-CONTINUOUS	3196	3196	–										3196	3196	–	SUBTOTAL NON-CONTINUOUS								TOTAL KVA NON-CONTINUOUS 12.78

VOLTAGE: 120/240 | CYCLE: 60 | PHASE: 1 | WIRES: 3
NEUTRAL: 400 AMPS
MAIN BREAKER: 300 AMP FRAME | AIC: 10,000 | TRIP: 300 AMPS
MAIN LUGS: AMPS | MAIN COPPER BUS: 400 AMPS
MAINS: TOP ☒ BOTTOM ☐

MANUFACTURER: SQUARE D
TYPE AND CATALOG NUMBER: NQOD42L400CU/NQOD2300Q2MB – FB #21841
NO EQUAL: ☐ APPROVED EQUAL: ☒
MOUNTING: SURFACE ☒ FLUSH ☐

TOTAL KVA 25.80
TOTAL AMPS 107.48

2#8's 1#10 — 3#12's — #4

PHOTOCELL — MOTION DET — PHOTOCELL — MOTION DET

SEE NOTE 6

NOTES:
1. ALL WIRE TO BE #12 THHN/THWN UNLESS NOTED OTHERWISE.
   COLOR CODE:
   Aø = BLACK
   Bø = RED
   NEUTRAL = WHITE
   GROUND = GREEN
2. ALL WORK TO CONFORM TO N.E.C. LATEST STATE ADOPTED EDITION.
3. LABEL SERVICE DISCONNECT WITH A RED TAG.
4. SWITCH LEG CONDUCTORS SHALL BE THE SAME COLOR AS CIRCUIT CONDUCTORS.
5. ALL RAISED COVER DUPLEX OUTLETS TO BE IN ACCORDANCE WITH NEC 410-56I.

STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES — DIVISION OF FACILITIES PLANNING — APPROVED — AUG 16 2002 — SUBJECT TO LIMITATIONS AND FIELD CHECK

FRANK J. RAMOS — STATE OF WASHINGTON — 36 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 10/28/

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

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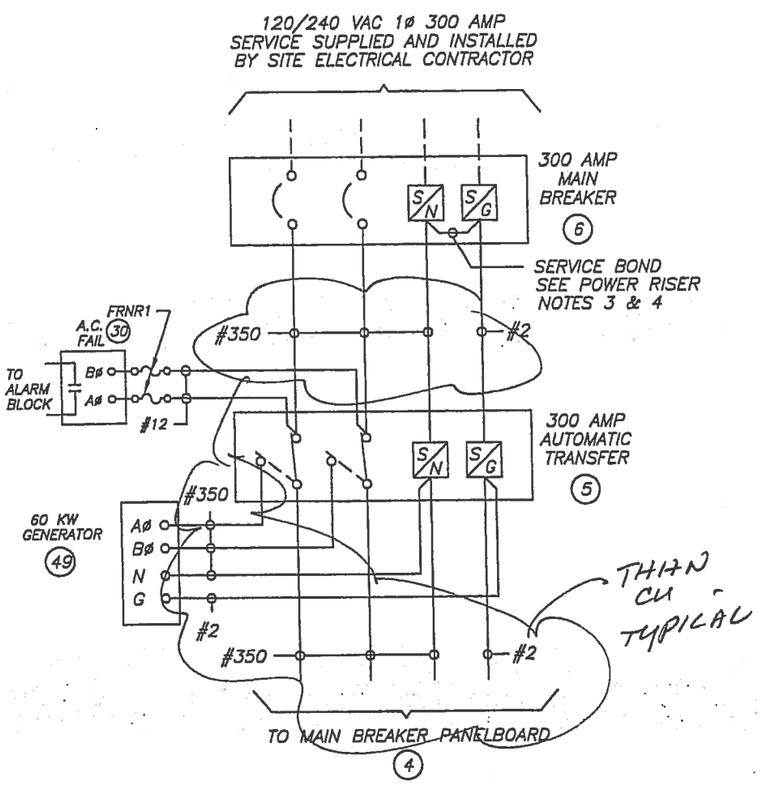
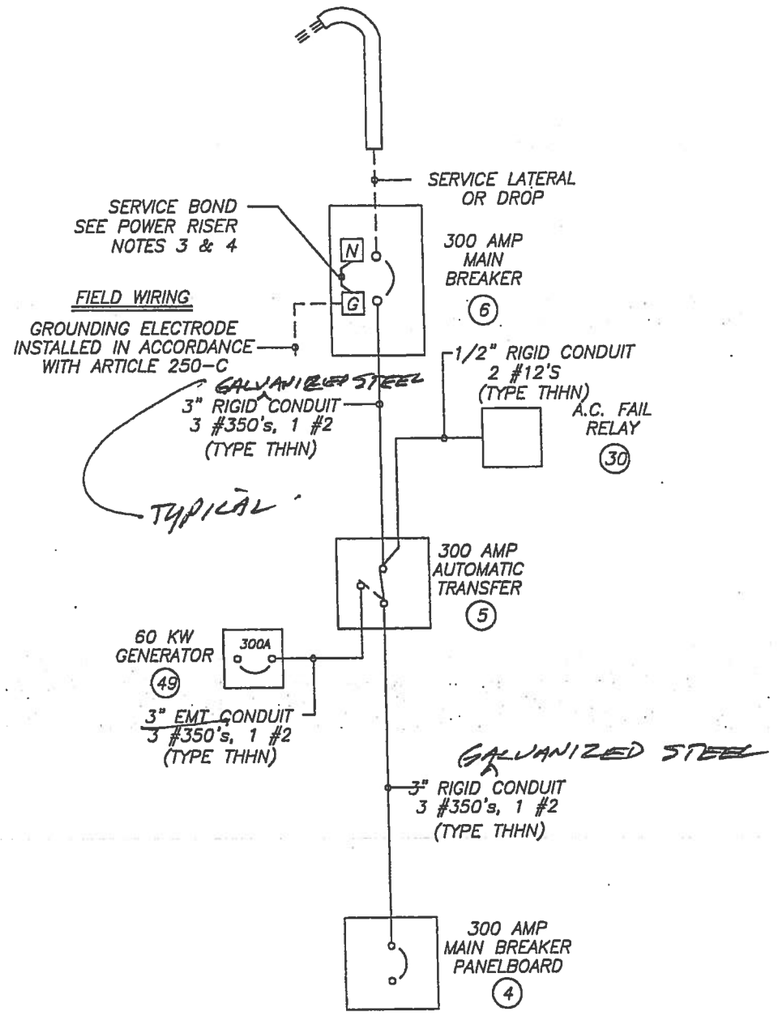
APP. BY: BF	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.
11'-11" X 38'-0" EQUIPMENT S
ELECTRICAL SCHEMATIC

SCALE: NONE | SHEET NO.: 4-1 | B | DWG NO.: D-6





POWER RISER BLOCK DIAGRAM

LIGHTING SCHEDULE

MANUFACTURER	MANUFACTURER PART NUMBER	ELECTRICAL CHARACTERISTIC	FIBREBOND PART NUMBER	QUANTITY
METALUX	MWTR-240A 120VLE3	120V/90W	10486	12
GRAINGER	2V604	120V/15W	13762	2
KENALL	3636	120V/67W	22805	2

SEATTLE DEPARTMENT OF PLANNING AND DEVELOPMENT
DEPT OF PLANNING & DEVELOPMENT
APPROVED
AUG 16 2002
SUBJECT TO CODE AND FIELD INSPECTION

NOTES:

1. ------ DASHED LINES DENOTE FIELD WORK
2. BUILDING ELECTRICAL SYSTEM IS RATED AT 10,000 A.I.C IF HIGHER RATINGS ARE REQUIRED, IT IS THE RESPONSIBILITY OF SITE CONTRACTOR/ENGINEER TO MEET SUCH REQUIREMENTS.
3. SERVICE BOND IS TO BE MADE BY DEVICES (STRAPS, SCREWS, ETC.) SUPPLIED BY EQUIPMENT MANUFACTURER. IF NO SUCH DEVICE IS SUPPLIED, BOND IS TO BE MADE IN ACCORDANCE WITH NEC ARTICLE 250.
4. WHEN SERVICE OVERCURRENT DISCONNECT IS FIELD INSTALLED AND HAS A NEUTRAL TO GROUND CONNECTION ESTABLISHED, REMOVE NEUTRAL TO GROUND CONNECTION IN MANUAL TRANSFER.
5. CONDUCTOR OVERCURRENT PROTECTION DEVICES ARE SELECTED IN ACCORDANCE WITH 1999 NEC (ARTICLE 240-3).
6. CONDUCTOR SIZING IS SELECTED FROM 1999 NEC (ARTICLE 215-2).
7. ALL LUGS THAT HOLD MORE THAN ONE WIRE SHALL BE LISTED FOR MULTI-BARRELL CONNECTIONS.
8. ALL CONDUCTORS SHALL BE COPPER.
9. LABEL SERVICE DISCONNECT WITH A RED TAG.

FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 10/18/02

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

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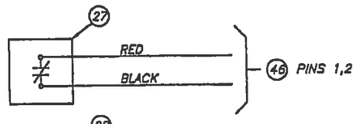
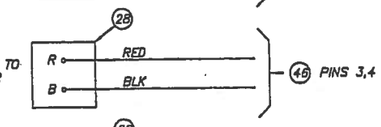
CHK. BY: MT	DATE: 5/30/02	11'-11" X 38'-0" EQUIPMENT S
APP. BY: BF	DATE: 7/17/2	ELECTRICAL SCHEMATIC
APP. BY:	DATE:	SCALE: NONE / SHEET NO.: 4-2 / B / DWG NO.: D-6
ENG. BY:	DATE:	

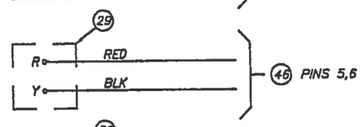
MAGNETIC DOOR ALARM
THE MAGNETIC DOOR ALARMS ARE WIRED NORMALLY OPEN. CONTACTS CLOSE UPON DOOR CLOSURE. WHEN DOOR IS OPENED, CONTACTS OPEN SENDING AN ALARM. (WIRE IN SERIES)



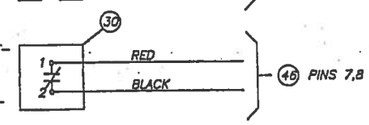
HIGH TEMP. ALARM
THE HIGH TEMP. ALARM IS SET TO OPEN ON TEMP. INCREASE. (OR RISE)



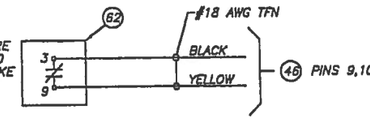
LOW TEMP. ALARM
THE LOW TEMP. ALARM IS SET TO OPEN ON TEMP. DECREASE. (OR FALL)



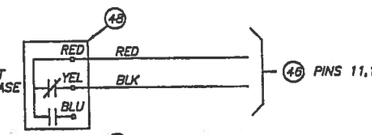
COMMERCIAL POWER FAIL
THE A.C. FAIL RELAY IS CONNECTED TO EACH PHASE OF THE INCOMING POWER. THE NORMALLY OPEN CONTACTS CLOSE UPON POWER UP OF THE BLDG. CONTACTS OPEN UPON LOSS OF POWER SENDING AN ALARM.



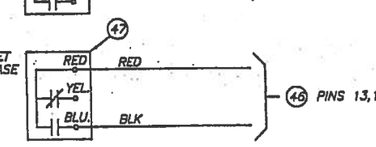
SMOKE ALARM
THE SMOKE ALARM CONTACTS ARE NORMALLY CLOSED UNDER A "NO SMOKE" CONDITION. WHEN SMOKE IS DETECTED THESE CONTACTS OPEN SENDING AN ALARM. (WIRE IN SERIES)



LOW HUMIDITY ALARM
THE LOW HUMIDITY ALARM IS SET TO OPEN ON A HUMIDITY DECREASE (OR FALL) BELOW 20%.

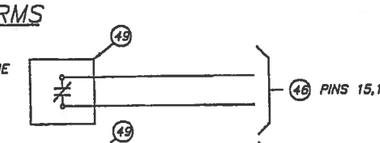


HIGH HUMIDITY ALARM
THE HIGH HUMIDITY ALARM IS SET TO OPEN ON A HUMIDITY INCREASE (OR RISE) ABOVE 60%.

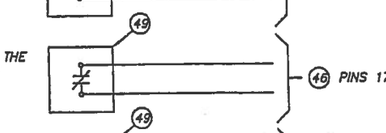


GENERATOR ALARMS

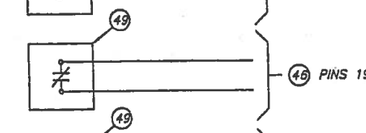
LOW FUEL
WHEN FUEL LEVEL GETS LOW THE CONTACTS OPEN SENDING AN ALARM.



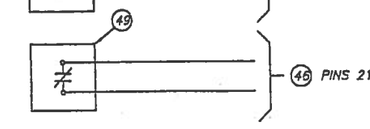
LOW OIL PRESSURE
WHEN OIL PRESSURE IS LOW THE CONTACTS OPEN SENDING AN ALARM.



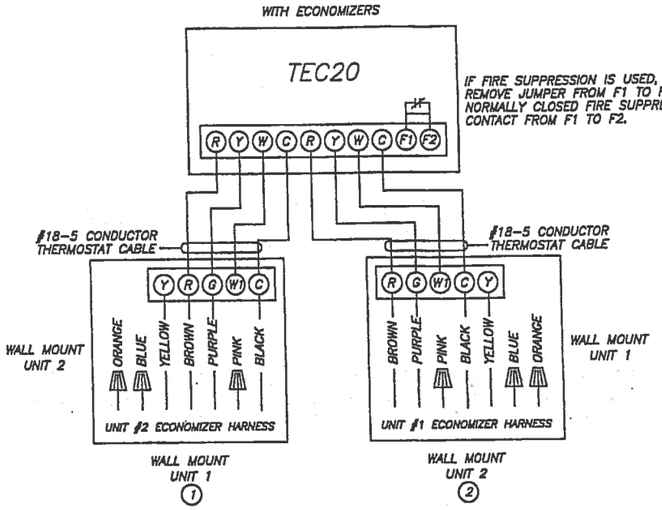
GENERATOR RUN
WHEN GENERATOR IS RUNNING AN ALARM IS SENT.

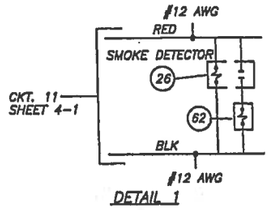


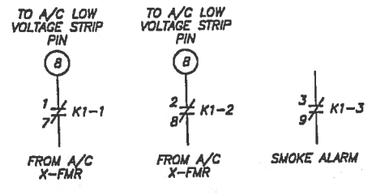
OVERCRANK SHUTDOWN
WHEN GENERATOR SHUTS DOWN DUE TO OVERCRANKING THE CONTACTS OPEN SENDING AN ALARM.



WITH ECONOMIZERS

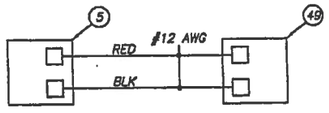




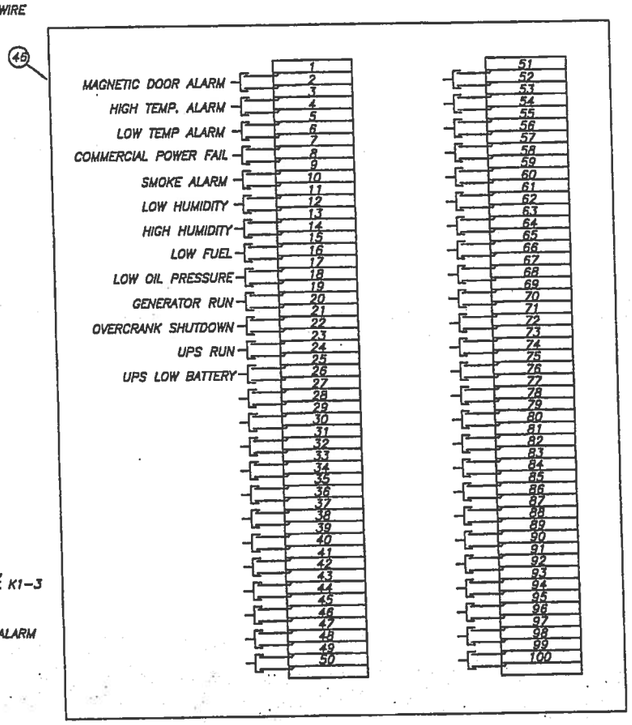


K1 = GRAINGER #5X841 RELAY, 27E21 BASE
K1-1 = HVAC #1 SHUTDOWN
K1-2 = HVAC #2 SHUTDOWN
K1-3 = EXHAUST FAN SHUTDOWN

HVAC/SHUTDOWN DIAGRAM (62)



GENERATOR REMOTE START WIRING



SUBJECT TO CODE AND FIELD INSPECTION
DEPT. OF LABOR & INDUSTRIES
PLANS APPROVED
AUG 16 2002

FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 10/18/02

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

REV.	BY	DATE	REVISION	APP.	DATE
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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-42

THESE PLANS ARE THE CONFIDENTIAL PROPERTY AND TRADE SECRETS OF FIBREBOND CORPORATION AND FIBREBOND WEST, INC. ANY USE OF THESE DRAWINGS OR THE INFORMATION CONTAINED HEREIN FOR ANY REASON OTHER THAN AS EXPRESSLY AUTHORIZED BY FIBREBOND CORPORATION OR FIBREBOND WEST, INC. IS STRICTLY PROHIBITED. THESE DRAWINGS HAVE BEEN DISTRIBUTED WITH THE UNDERSTANDING THAT ANY ONE RECEIVING OR OTHERWISE OBTAINING POSSESSION OF THEM WILL BE EXPRESSLY NOTIFIED OF THEIR CONFIDENTIAL NATURE.

DRN. BY: SC	DATE: 05/28/02	
CHK. BY: MT	DATE: 5/30/02	
APP. BY: BF	DATE: 9/1/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.
11'-11" X 38'-0" EQUIPMENT S
ALARM WIRING

SCALE:	SHEET NO.:		DWG NO.:
NONE	5	B	D-6

ITEM LIST

ITEM NO.	FIBREBOND PART NO.	MANUFACTURER PART NO.	MANUFACTURER	DESCRIPTION
1.	22013.2	WA602A0ZEX2XXI	BARD	HVAC #1, 5 TON, W/O HEAT STRIP W/ ECONOMIZER
2.	22013.2	WA602A0ZEX2XXI	BARD	HVAC #2, 5 TON, W/O HEAT STRIP W/ ECONOMIZER
3.	21914	TEC20	BARD	LEAD/LAG THERMOSTAT
4.		NQOOD42L400CU/NQOO230002MB	SQUARE D	300 AMP LOADCENTER
5.		QTPC300	ONAN	300 AMP AUTOMATIC TRANSFER
6.		LAL26300/LA400S	SQUARE D	300 AMP MAIN BREAKER
7.	11873		CURRIES	DOOR, 3670, LH SWING, LEVEL III
8.	11056	1104	SARGENT	DOOR CLOSURE
9.	21913	TA2314NRP26D	MCKINNEY	DOOR HINGES
10.	22371	ALH29-4SS	AUSTIN HARDWARE	DOOR HOLDER
11.	11058	10"	NATIONAL GUARD	LOCK GUARD
12.	24205.1	8707FL-AUE-260	YALE	LOCKSET
13.	11050	0382	KASON	PULL HANDLE
14.	12347	198N-42	NATIONAL GUARD	DOOR SWEEP
15.	11802	16AD-48	PONDER	DRIP STRIP
16.	12633	1086-55 TAN	D.A. RUBBER	DOOR STOP
17.	13664	1591I	HUBBELL	15 AMP GFCI DUPLEX RECEPTACLE / 2" X 4" W.P.J.B.
18.	15791	FB15791	FIBREBOND	WAVEGUIDE ENTRY, 12 HOLE, 4"
19.	10486	MWTR-240A-120V-LE3	METALUX	INTERIOR LIGHT FIXTURE, 40W, 2-BULB
20.	10203	CS120I	P&S	INTERIOR LIGHT SWITCH/ 4" X 4" J.B.
21.	10278	3636	KENALL	EXTERIOR LIGHT FIXTURE W/ PHOTOCELL AND MOTION DETECTOR
22.				
23.	10105	CR20I	P&S	20 AMP DUPLEX RECEPTACLE/ 4" X 4" J.B.
24.	11209	48"	PONDER	DOOR CANOPY, 48"
25.	10150	4SDEK	APPLETON	4" X 4" J.B. W/ 1/2" & 3/4" KNOCKOUT
26.	10128	7100F	GENTEX	SMOKE DETECTOR/ 4" X 4" J.B.
27.	11351	7939-2GY	ADEMCO	MAGNETIC DOOR ALARM
28.	10877	2E206	DAYTON	HIGH TEMP ALARM
29.	10877	2E206	DAYTON	LOW TEMP ALARM
30.	12964/10825	3X740/5X852	DAYTON	COMMERCIAL POWER FAIL RELAY/ 6" X 6" J.B.
31.	15397	FB15397	FIBREBOND	GROUND BAR, 1/4" X 4" X 20"
32.	21044	1/2" PVC	BARTEET	1/2" PVC CAST @ 45°
33.	13867	63202	DEFLECTO	LETTER TRAY
34.	22543			
35.	15366			FIRST AID KIT
36.	23077	APEX-III-120T	TRANSTECTOR	SURGE ARRESTOR
37.	13762	2V604		EMERGENCY LIGHT
38.	10486	MWTR-240A-120V-LE3	METALUX	INTERIOR LIGHT FIXTURE, 40W, 2-BULB
39.	10203	CS120I	P&S	INTERIOR LIGHT SWITCH, 4" X 4" J.B.
40.	10105	CR20I	P&S	20 AMP DUPLEX RECEPTACLE, 4" X 4" J.B.
41.	10105	CR20I	P&S	20 AMP DUPLEX RECEPTACLE, 4" X 4" J.B.
42.	21230	DU222RB	SQUARE D	60 AMP NON-FUSIBLE DISCONNECT FOR HVAC #1
43.	21230	DU222RB	SQUARE D	60 AMP NON-FUSIBLE DISCONNECT FOR HVAC #2
44.				1 1/2" NIPPLE W/CAPS
45.				2" NIPPLE W/CAPS
46.	11317	S66B4-50MH49	SEIMONS	ALARM BLOCK
47.	11718	H600A1014	HONEYWELL	HIGH HUMIDITY ALARM, W/ 2" X 4" J.B
48.	11718	H600A1014	HONEYWELL	LOW HUMIDITY ALARM, W/ 2" X 4" J.B
49.		60ODGCA	ONAN	GENERATOR, 60KW, W/ 120 GALLON TANK
50.				
51.	13657/20986	VC14S	AMERICAN WIRING	36" MOTORIZED INTAKE DAMPER, W/ FILTER
52.	13657	VC14S	AMERICAN WIRING	36" MOTORIZED EXHAUST DAMPER
53.	11214		P&S	37" VENT HOOD
54.	20675	4C440	DAYTON	SCROLL FAN
55.	13843	2E026	DAYTON	SCROLL FAN TIMER - 24 HOUR
56.	10278	3636	KENALL	EXTERIOR LIGHT FIXTURE W/ PHOTOCELL AND MOTION DETECTOR
57.				
58.			KILLARK	3" LB
59.	13090			EXHAUST THIMBLE
60.	10203	CS120I	P&S	VENT SYSTEM SWITCH, 4" X 4" J.B.
61.	10105	CR20I	P&S	20 AMP DUPLEX, 2" X 4" J.B. (BATTERY CHARGER/BLOCK HEATER)
62.	10924/11704	5X841/27E21		HVAC SHUTDOWN RELAY, 6" X 6" J.B.
63.				
64.				
65.				
66.				
67.				
68.				
69.				
70.				

NOTE:

ITEMS ARE SUBJECT TO CHANGE DUE TO AVAILABILITY AND EQUAL SUBSTITUTES WILL BE USED. ELECTRICAL OR MECHANICAL REQUIREMENTS MAY CHANGE DUE TO MANUFACTURES SPECIFICATIONS.

RECEIVED
AUG 16 2002
SUBJECT TO CODE AND FIELD INSPECTION

FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 10/18/

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W		

REV.	BY	DATE	REVISION	APP.	DATE
10					
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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, IN
299 Beck Avenue
Fairfield, California 94533 707-42

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CHK. BY: MT	DATE: 5/30/02	
APP. BY: BF	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

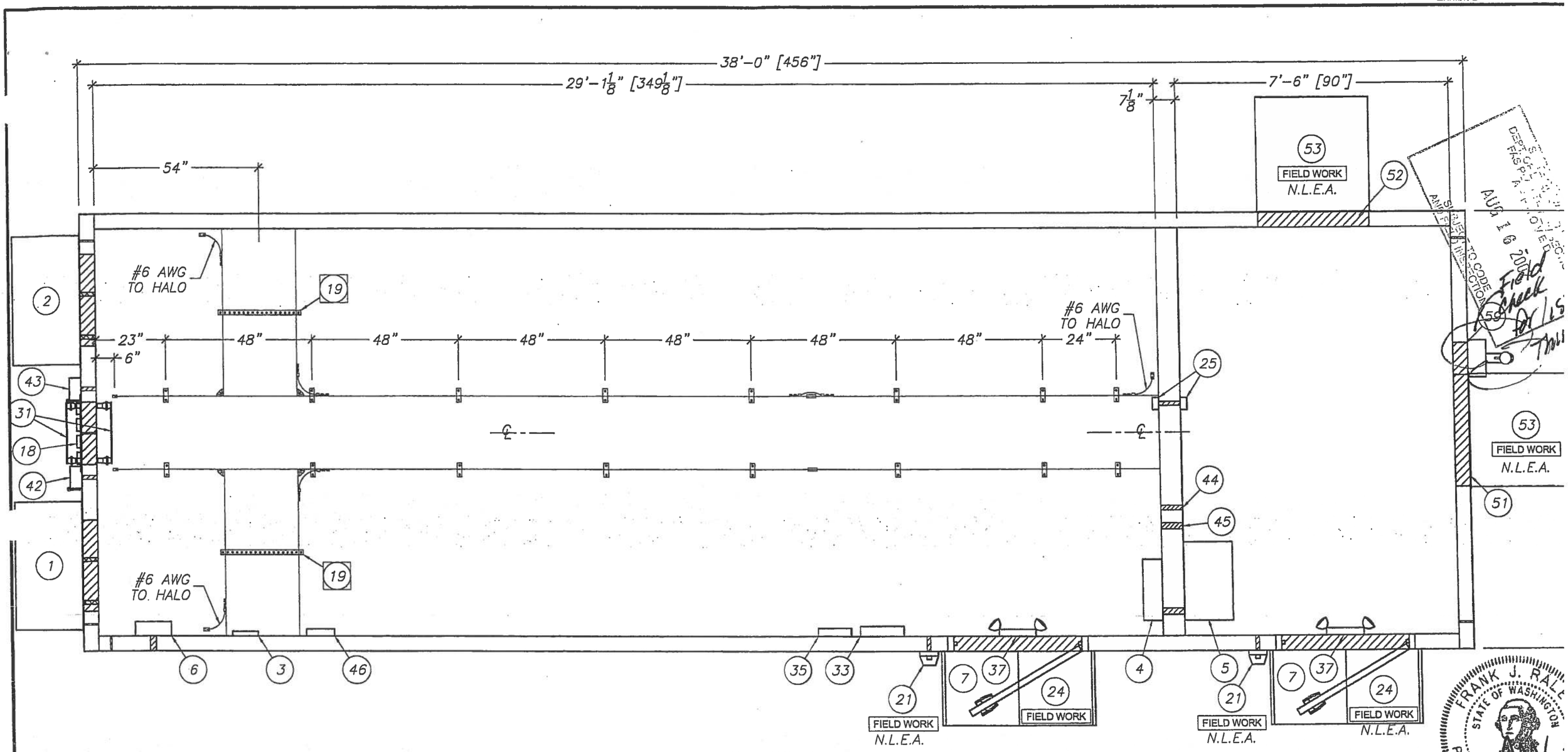
STRATA, INC.

11'-11" X 38'-0" EQUIPMENT SH

ITEM LIST

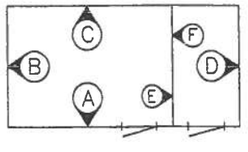
SCALE: NONE | SHEET NO.: 6 | B | DWG NO.: D-61

Exhibit D



CEILING VIEW

EXPIRES 10/18/0



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-4

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CHK. BY:	MT	DATE:	5/30/02
APP. BY:	BT	DATE:	7/17/2
APP. BY:		DATE:	
ENG. BY:		DATE:	

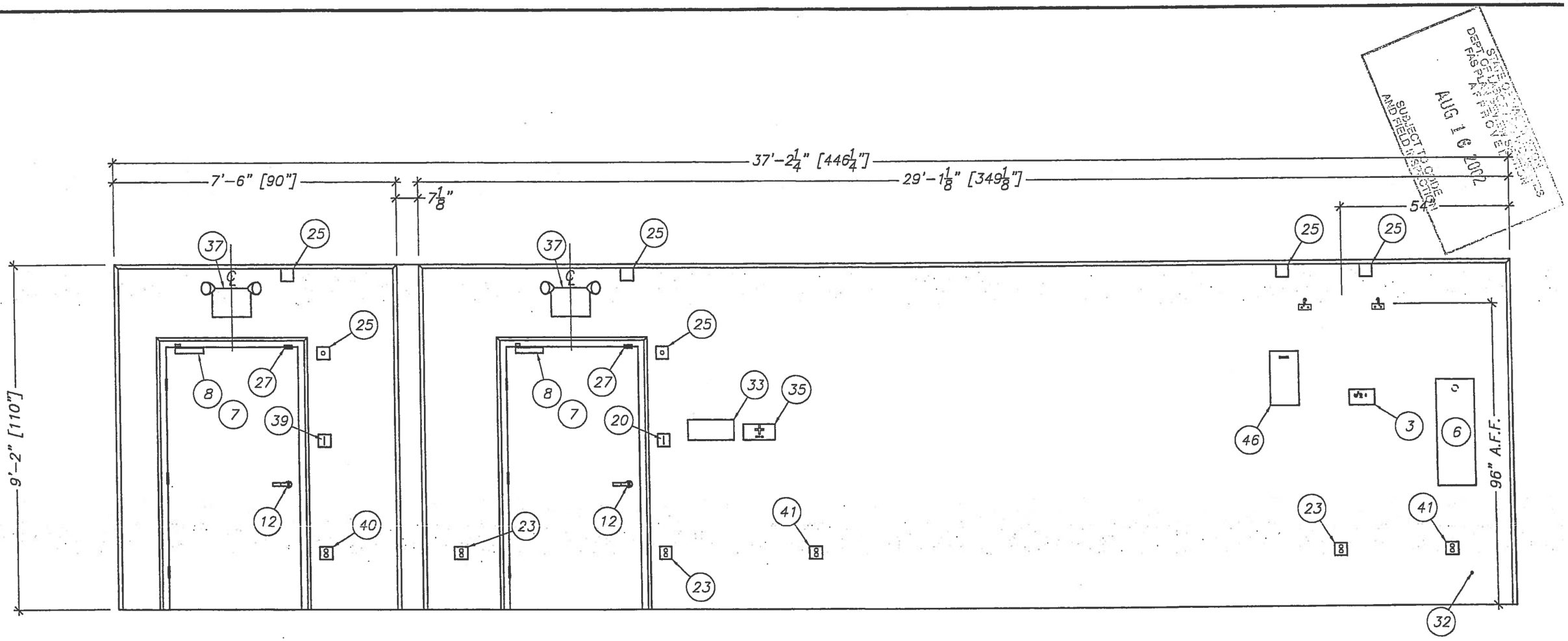
STRATA, INC.

11'-11" X 38'-0" EQUIPMENT S

CABLE RACK CEILING V

SCALE:	SHEET NO.:		DWG NO.:
3/8"=1'-0"	7-1	B	D-6

Exhibit D



ELEVATION A

ELEVATION KEY

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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
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Fairfield, California 94533 707-42

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APP. BY: BF	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.

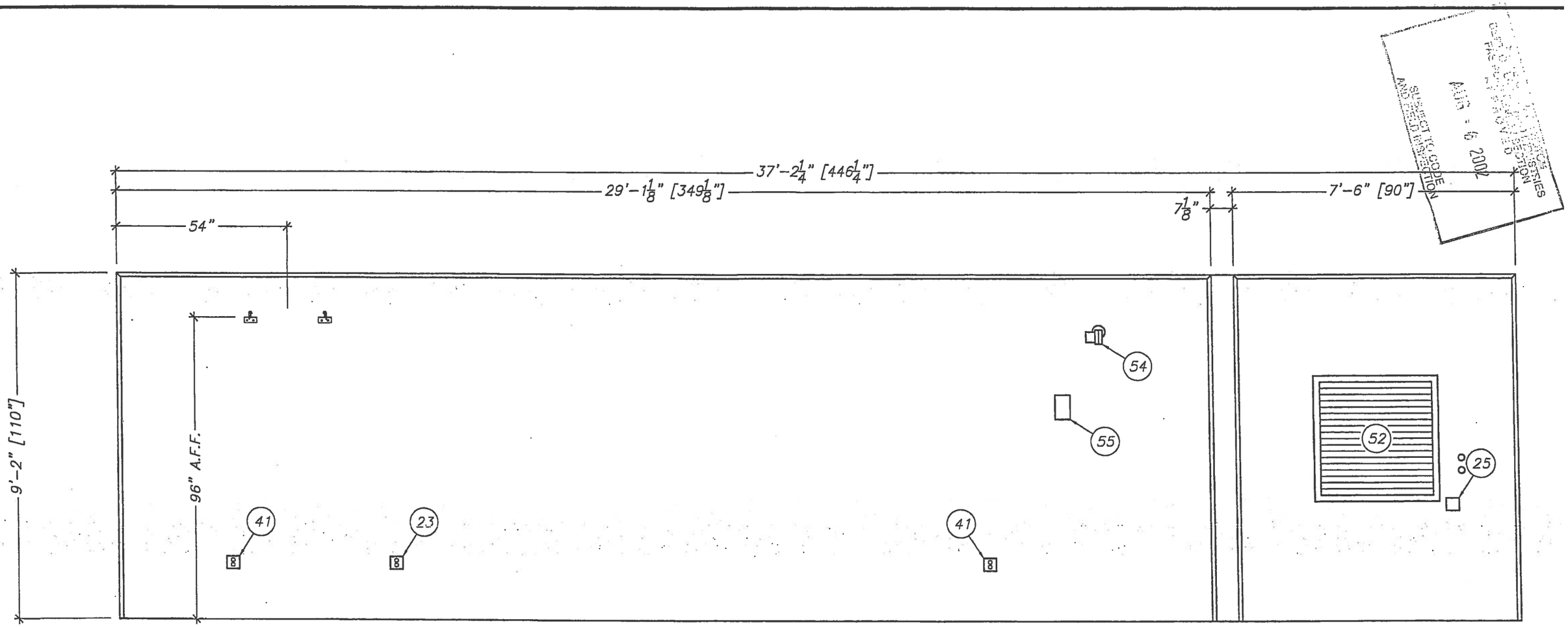
11'-11" X 38'-0" EQUIPMENT SH

CABLE RACK ELEVATION

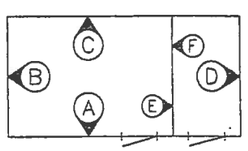
SCALE:	SHEET NO.:		DWG NO.:
3/8"=1'-0"	7-2	B	D-6

FRANK J. RALEY
STATE OF WASHINGTON
368
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 10/18/ 02

Exhibit D



ELEVATION C



ELEVATION KEY

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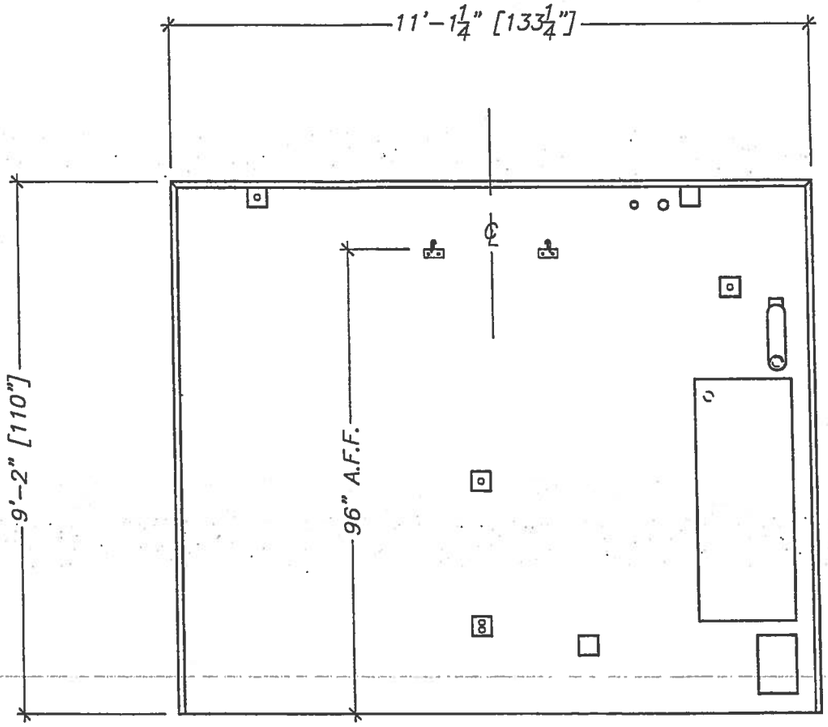
DRN. BY: SC	DATE: 05/28/02	STRATA, INC.	
CHK. BY: MT	DATE: 5/30/02	11'-11" X 38'-0" EQUIPMENT SH	
APP. BY: BT	DATE: 7/17/2	CABLE RACK ELEVATION	
APP. BY:	DATE:	SCALE: 3/8"=1'-0"	SHEET NO.: 7-3
ENG. BY:	DATE:	B	DWG NO.: D-6

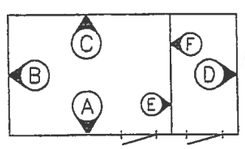
STATE OF WASHINGTON
DEPT. OF LABOR AND INDUSTRIES
FACTORY ASSEMBLED
DEPT. OF LABOR AND INDUSTRIES
FAS PLAN REVIEW SECTION
APPROVED
AUG 16 2002
SUBJECT TO CODE
AND FIELD INSPECTION



ELEVATION E

FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 10/18/ 0

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788



ELEVATION KEY

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

REV.	BY	DATE	REVISION	APP.	DATE
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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-42

THESE PLANS ARE THE CONFIDENTIAL PROPERTY AND TRADE SECRETS OF FIBREBOND CORPORATION AND FIBREBOND WEST, INC. ANY USE OF THESE DRAWINGS OR THE INFORMATION CONTAINED HEREIN FOR ANY REASON OTHER THAN AS EXPRESSLY AUTHORIZED BY FIBREBOND CORPORATION OR FIBREBOND WEST, INC. IS STRICTLY PROHIBITED. THESE DRAWINGS HAVE BEEN DISTRIBUTED WITH THE UNDERSTANDING THAT ANY ONE RECEIVING OR OTHERWISE OBTAINING POSSESSION OF THEM WILL BE EXPRESSLY NOTIFIED OF THEIR CONFIDENTIAL NATURE.

DRN. BY: SC	DATE: 05/28/02	
CHK. BY: MT	DATE: 5/30/02	
APP. BY: BF	DATE: 7/1/02	
APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.

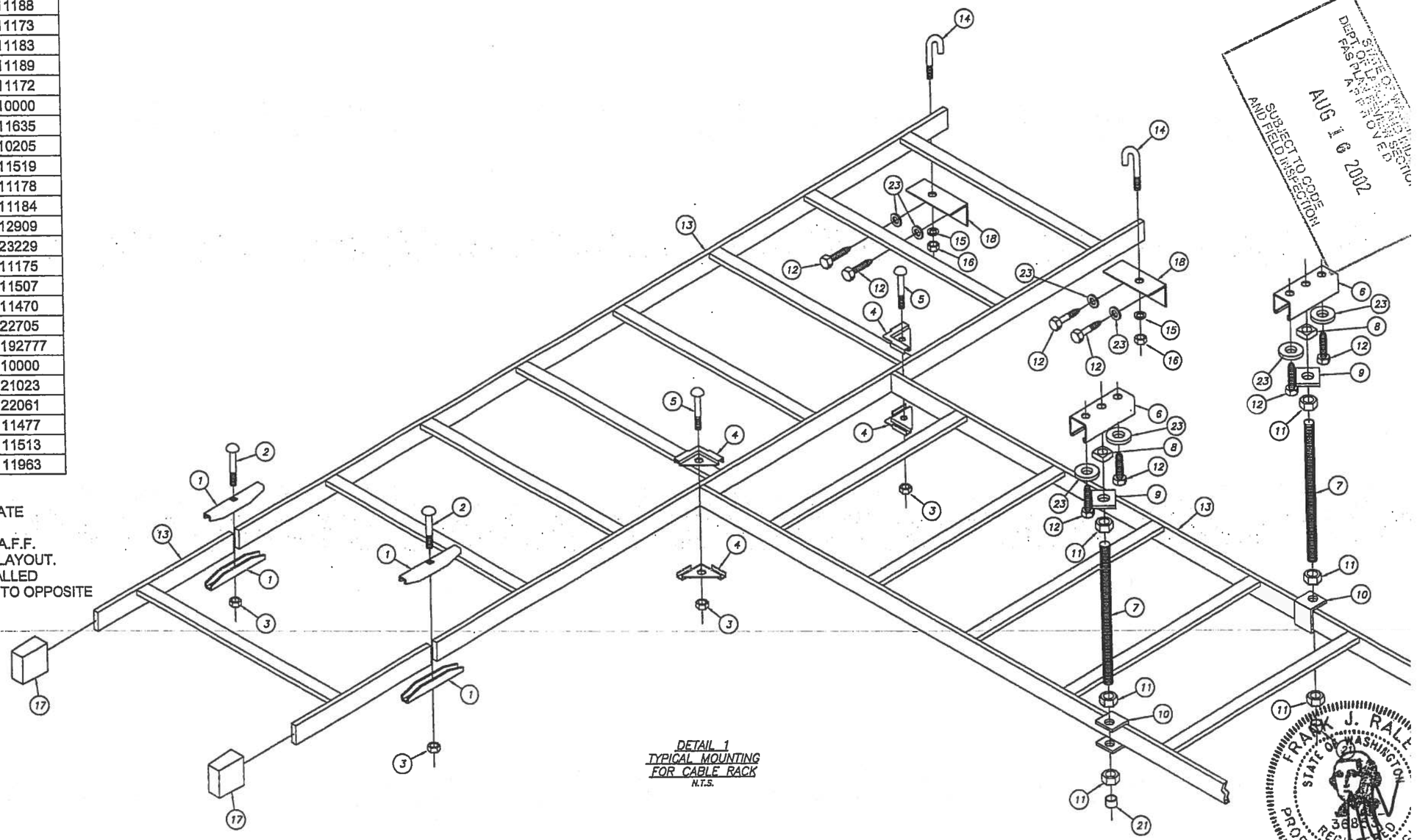
11'-11" X 38'-0" EQUIPMENT SI

CABLE RACK ELEVATION

SCALE:	SHEET NO.:		DWG NO.:
3/8"=1'-0"	7-4	B	D-6

MATERIAL LIST			
NO	REQ'D.	DESCRIPTION	PART NO
1	4	SPLICE CLAMP	11188
2	2	BOLT	11173
3	4	NUT	11183
4	4	CORNER CLAMP	11189
5	2	BOLT	11172
6	10	4 1/2" KINDORF CHANNEL	10000
7	14	5/8" - 11 THREADED ROD	11635
8	14	SQUARE NUT - 5/8"	10205
9	14	SQUARE WASHER	11519
10	14	BRACKET	11178
11	42	NUT	11184
12	52	TAP CON	12909
13	3	24" Z/C "STANDARD"	23229
14	6	J-BOLT	11175
15	12	LOCK WASHER	11507
16	12	NUT	11470
17	2	END CAPS	22705
18	6	1 3/4" x 1 3/4" x 1/8" x 4" ANGLE	192777
19	2	27" UNISTRUT	10000
20	3	2-HOLE LUG W/ #6 WIRE	21023
21	14	PLASTIC PROTECTION CAP	22061
22	6	1/4" X 1" BOLT	11477
23	52	1/4" X 1" FENDER FLAT WASHER	11513
24	0	BRACKET, WALL CLIP- 7/16" HOLE	11963

NOTES:
1. ALL CABLE TRAY MEASUREMENTS ARE ACCURATE WITHIN ± 1/4".
2. BOTTOM OF CABLE RACK TO BE MOUNTED 96" A.F.F.
3. ALL DETAILS MAY NOT APPLY TO CABLE RACK LAYOUT.
4. CABLE TRAY CORNER CLAMPS SHALL BE INSTALLED AS SHOWN. CORNER CLAMPS MAY BE MOVED TO OPPOSITE SIDE IF NEEDED DUE TO OBSTRUCTIONS.



DETAIL 1
TYPICAL MOUNTING
FOR CABLE RACK
N.T.S.

STATE OF WASHINGTON
DEPT OF LABOR AND INDUSTRIES
FACTORY ASSEMBLED
AUG 16 2002
SUBJECT TO CODE AND FIELD INSPECTION

FRANK J. RALE
STATE OF WASHINGTON
36881
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES 10/18/0

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-42

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CHK. BY:	MT	DATE:	5/30/02
APP. BY:	BF	DATE:	7/17/2
APP. BY:		DATE:	
ENG. BY:		DATE:	

STRATA, INC.

11'-11" X 38'-0" EQUIPMENT SI
CABLE RACK MOUNTIN
DETAILS & MATERIAL LI

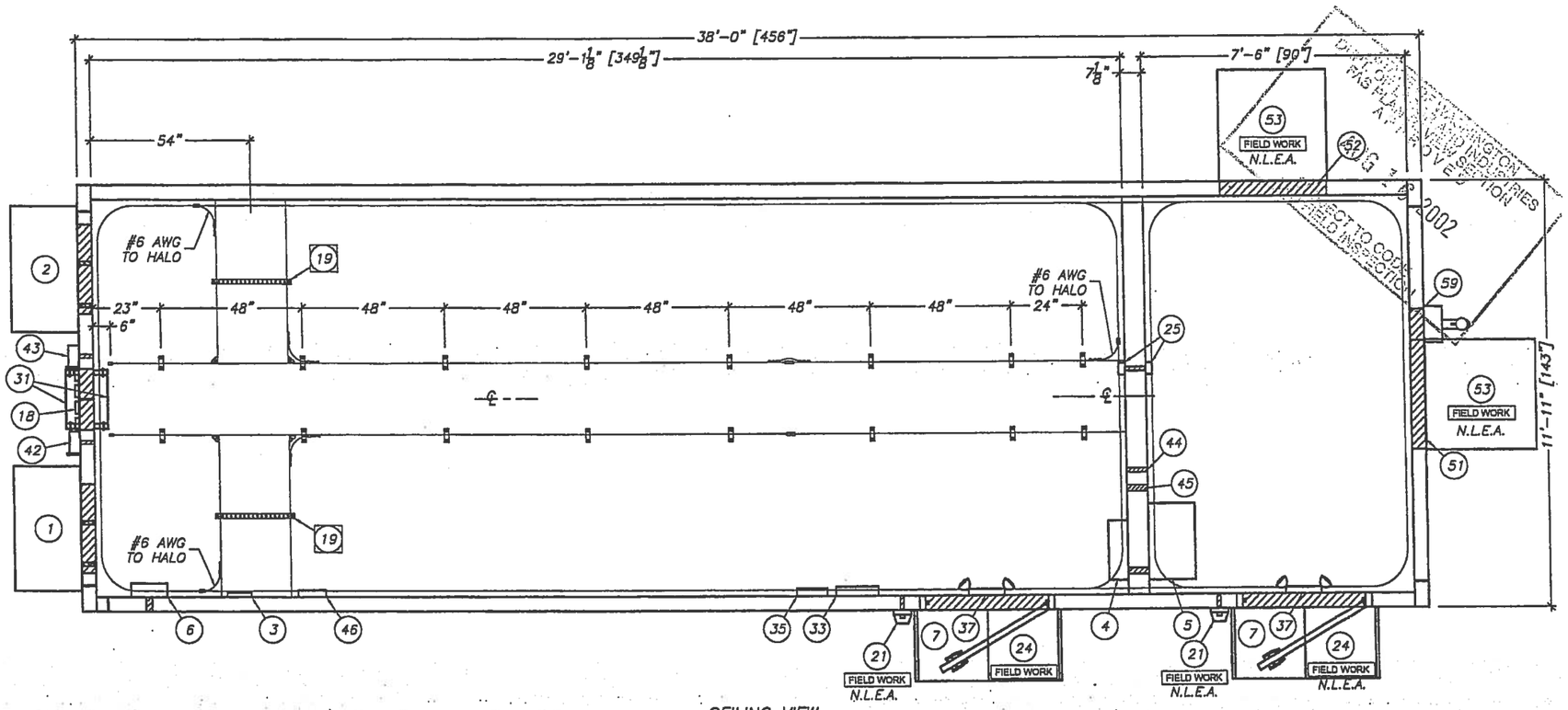
SCALE:	SHEET NO.:		DWG NO.:
NONE	7-5	B	D-6

NOTES:

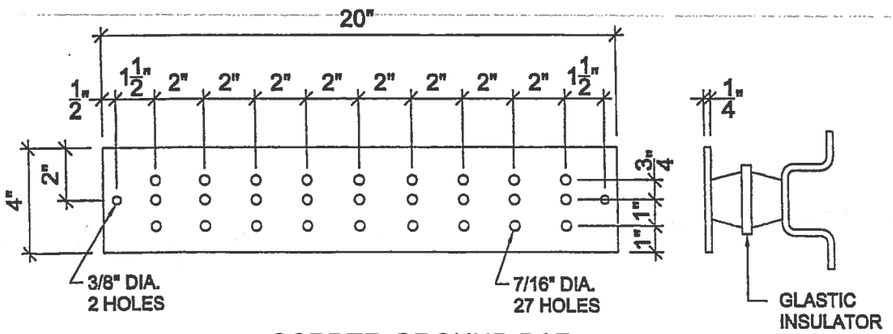
1. HALO GROUND SHALL BE #2 AWG STRANDED GREEN COPPER WIRE.
2. ALL BENDS MINIMUM 6" RADIUS.
3. APPLY ANTI-OXIDATION COMPOUND TO ALL CONNECTIONS.
4. 1/2" SCH. 40 PVC CAST AT 45° ANGLE.
5. ALL GROUNDING WIRES FOR HVAC GRILLES, BOXES, DOORS, CABLE TRAY JUMPERS, ETC. SHALL BE #6 AWG GREEN STRANDED COPPER WIRE AND A 2-HOLE LUG.
6. BARE COPPER CONDUCTORS SHALL NOT BE IN CONTACT WITH ANY DISSIMILAR MATERIAL. PLACE ON STANDOFFS, IF NECESSARY, TO ALLOW FOR PROPER INSTALLATION.
7. SHARP BENDS IN GROUNDING CONDUCTORS SHALL BE AVOIDED. 90° BENDS SHALL NOT BE USED.
8. ALL GROUNDING CONDUCTORS SHALL BE KEPT AS SHORT AS POSSIBLE. THE SHORTEST PRACTICAL ROUTE SHALL BE CHOSEN WITH THE LEAST AMOUNT OF BENDS AND SPLICES. USE THIS RULE AT ALL TIMES, EVEN IF ELEVATION PLAN SHOWS OTHERWISE. PLANS ARE SOMETIMES CLUTTERED AND UNCLEAR DUE TO LARGE AMOUNTS OF GROUNDING.
9. ALL CONNECTIONS TO GROUND BARS SHALL BE WITH A 2-HOLE LUG UNLESS OTHERWISE SPECIFIED.
10. ALL SOLID WIRE SHALL USE A 2-HOLE LONG BARREL LUG.
11. WHEN GROUNDING MORE THAN ONE PIECE OF EQUIPMENT, DO NOT USE THE EQUIPMENT AS GROUNDING CONDUCTOR. DOUBLE-STACKING OF LUGS SHALL BE USED TO GET FROM EQUIPMENT TO EQUIPMENT.
12. REMOVE ALL PAINT BENEATH THE SURFACE OF GROUND LUGS.
15. ALL CABLE TRAY BONDING JUMPERS MAY BE INSTALLED ACROSS JUNCTION AS SHOWN OR AT OPPOSITE JUNCTION.

KEY:

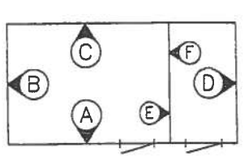
▭ = T & B COMPRESSION TERMINAL
▯ = 5/16" OR 3/8" NYLON CLIPS MOUNTED 1'-6" [18"] C/C



CEILING VIEW



COPPER GROUND BAR
FB#193973



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
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FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, IN
299 Beck Avenue
Fairfield, California 94533 707-42

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DRN. BY: SC	DATE: 05/28/02		
CHK. BY: MT	DATE: 5/30/02		
APP. BY: [illegible]	DATE: 7/17/2		
APP. BY:	DATE:		
ENG. BY:	DATE:		

STRATA, INC.

11'-11" X 38'-0" EQUIPMENT SH

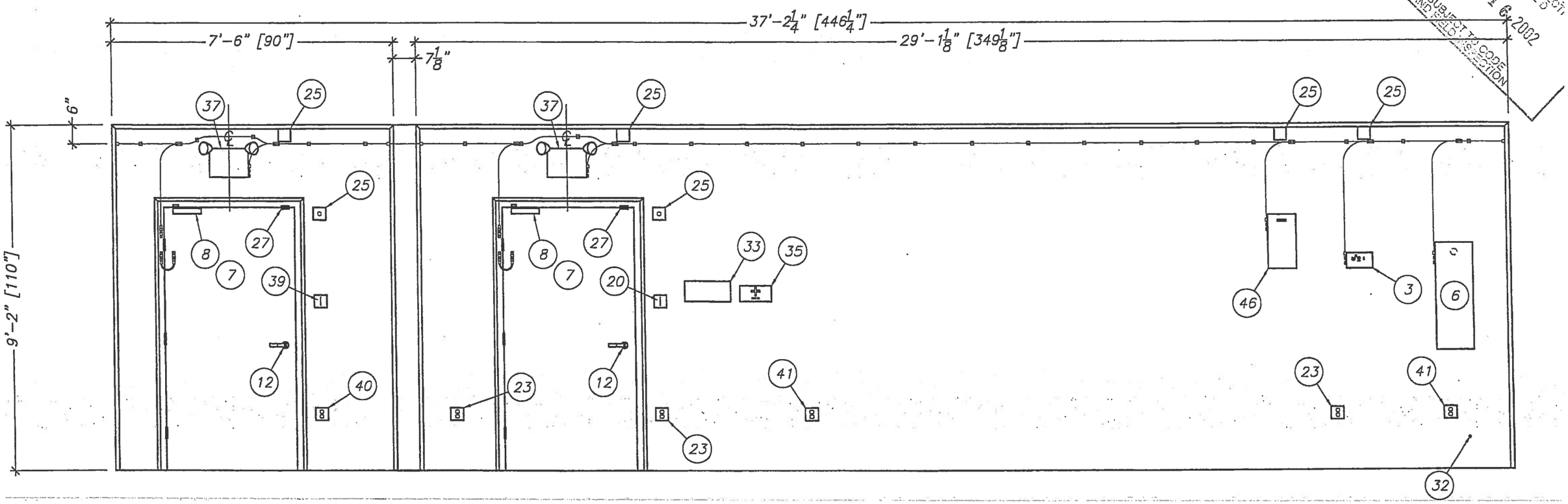
HALO GROUND CEILING VI

SCALE:	SHEET NO.:	DWG NO.:
3/8"=1'-0"	8-1	B D-61

FRANK J. RALEY
STATE OF WASHINGTON
3685
REGISTERED
PROFESSIONAL ENGINEER

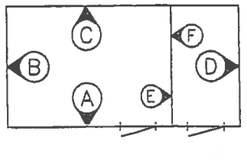
EXPIRES 10/18/ 02

STATE OF WASHINGTON
DEPT OF LABOR AND INDUSTRIES
FACTORY ASSEMBLED STRUCTURES
APPROVED
AUG 16 2002
SUBJECT TO CODE AND SELECTION



ELEVATION A

FRANK J. RALEY
STATE OF WASHINGTON
36881
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 10/18/02



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

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ENG. BY:		DATE:	

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-42

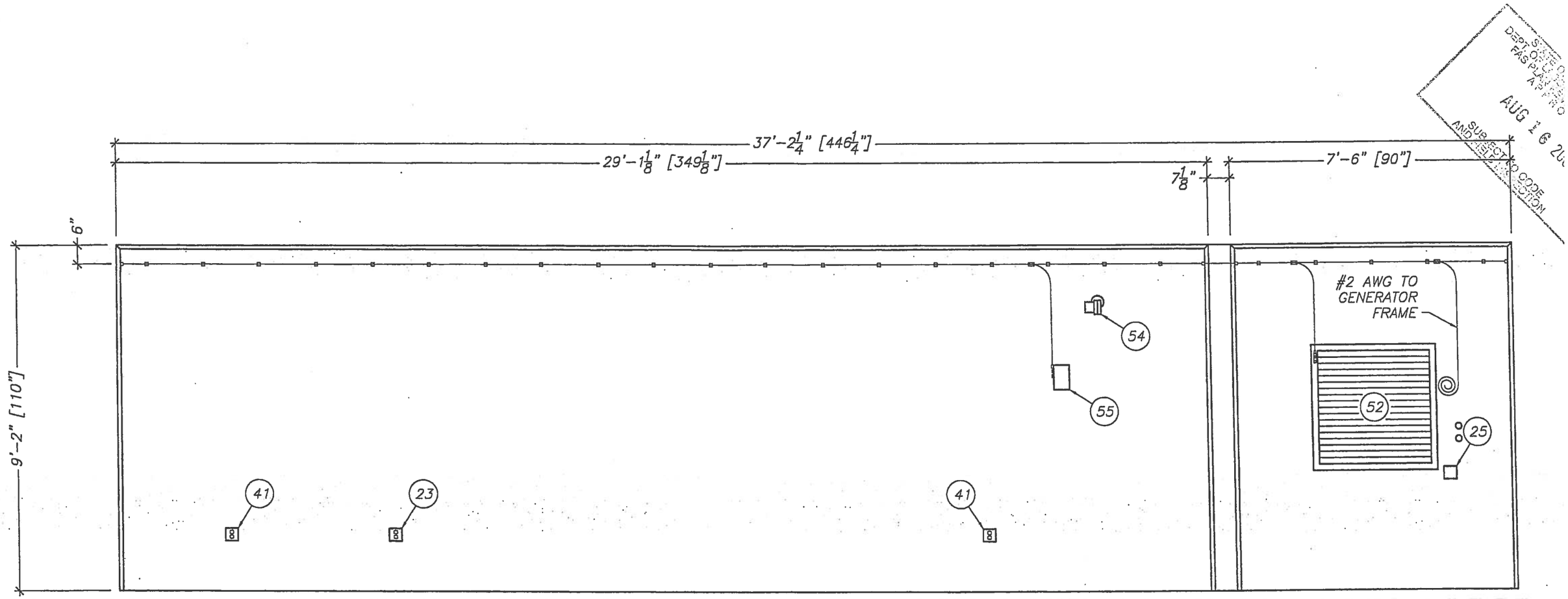
STRATA, INC.

11'-11" X 38'-0" EQUIPMENT SH

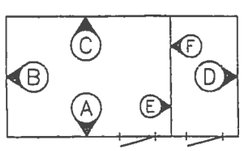
HALO GROUND ELEVATION

SCALE:	SHEET NO.:		DWG NO.:
3/8"=1'-0"	8-2	B	D-6

Exhibit D



ELEVATION C



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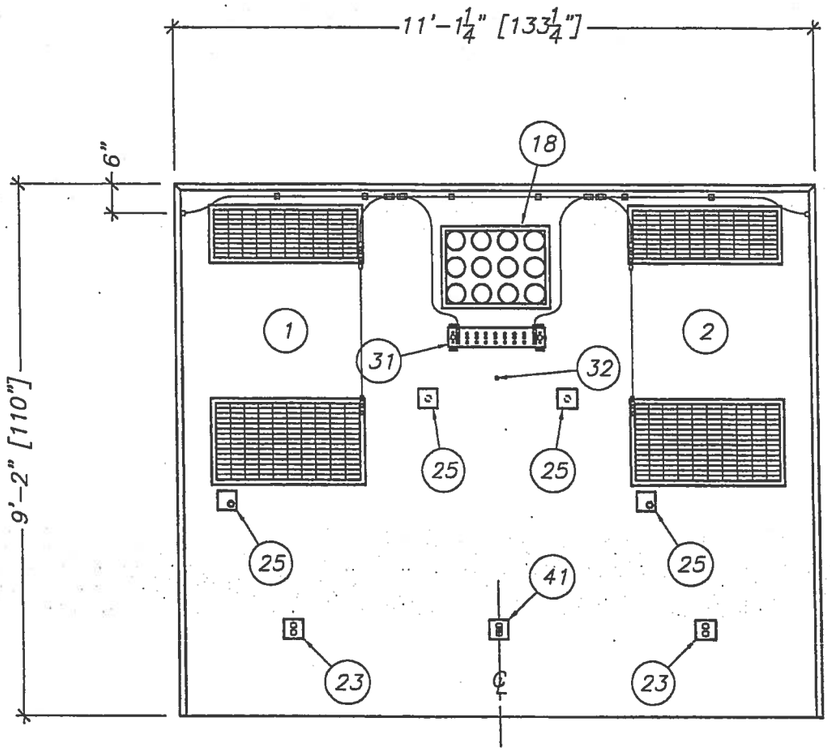
STRATA, INC.

11'-11" X 38'-0" EQUIPMENT SH

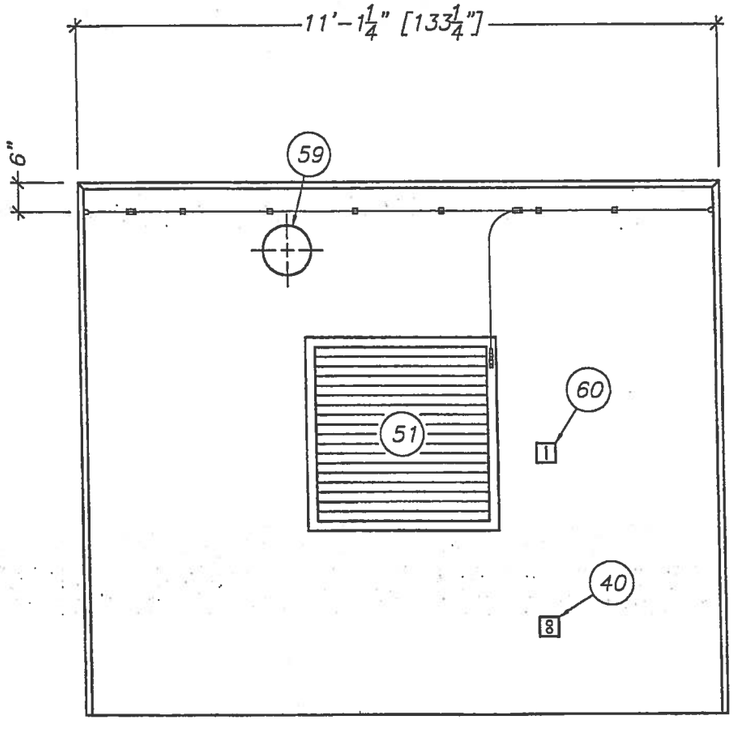
HALO GROUND ELEVATION

SCALE: 3/8"=1'-0" | SHEET NO.: 8-3 | B | DWG NO.: D-6

STATE OF WASHINGTON
DEPARTMENT OF LABOR AND INDUSTRIES
FACTORY ASSEMBLED STRUCTURES
APPROVED
AUG 16 2002
SUBJECT TO COMPLIANCE WITH RCW 18.27 AND WAC 296-150M-0020

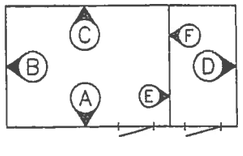


ELEVATION B



ELEVATION D

NOTE:
USE DUCTWORK IN HVAC'S. BOND DUCTWORK TO HVAC GRILL WITH #6 AWG.



ELEVATION KEY

FRANK J. RALEY
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES 10/13/ 02

7/19

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
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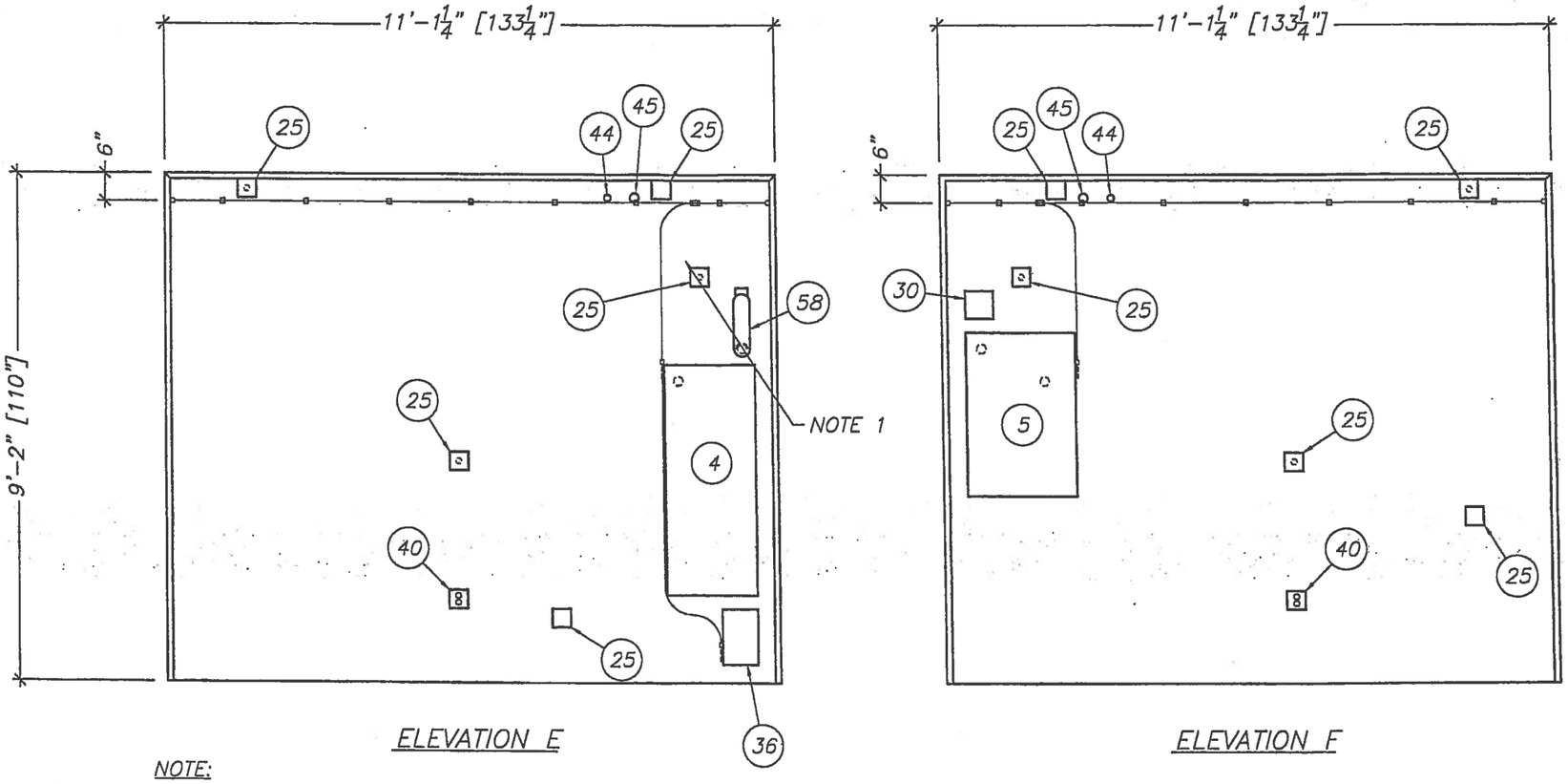
STRATA, INC.
11'-11" X 38'-0" EQUIPMENT SH
HALO GROUND
ELEVATIONS B & D

SCALE: 3/8"=1'-0" | SHEET NO.: 8-4 | B | DWG NO.: D-6

Exhibit D

APPROVED
AUG 16 2002
SUBJECT TO CODE
COMPLIANCE

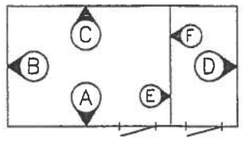


ELEVATION E

ELEVATION F

NOTE:
1. BOND WITH #6 AWG ONLY IF ITEM (36) IS METAL, OTHERWISE DISREGUARD BONDING IF IT IS PLASTIC.

FRANK J. RALEY
STATE OF WASHINGTON
36805
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 10/18/02



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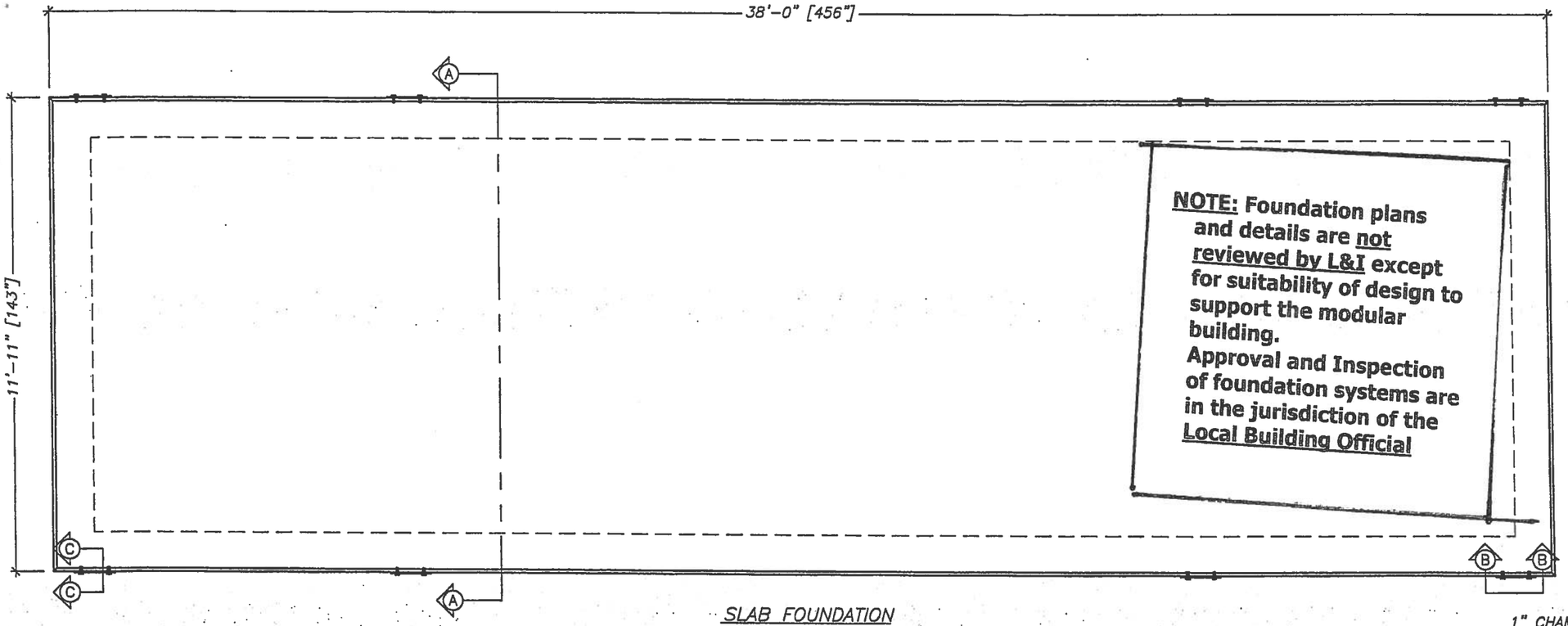
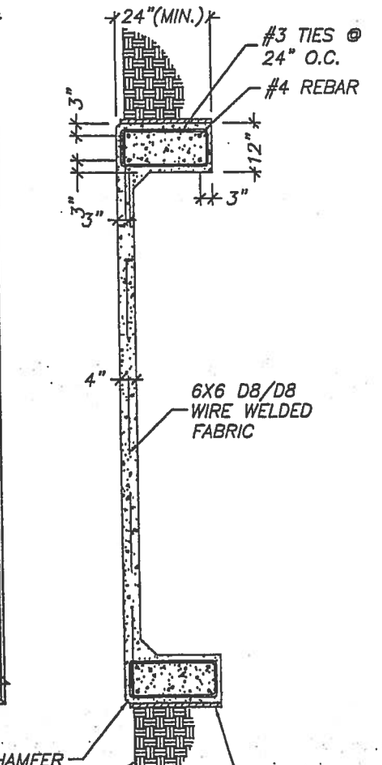
STRATA, INC.
11'-11" X 38'-0" EQUIPMENT S
HALO GROUND
ELEVATIONS E & F

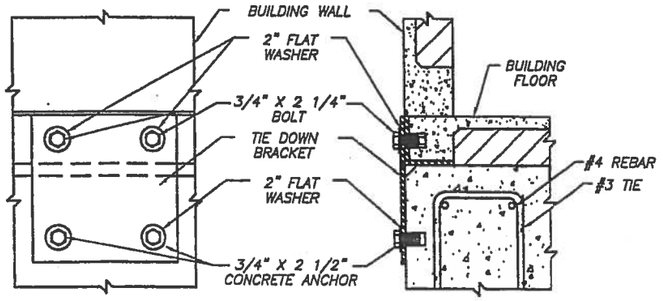
SCALE: 3/8"=1'-0" | SHEET NO.: 8-5 | B | DWG NO.: D-6



SLAB FOUNDATION
SCALE: 5/16"=1'-0"

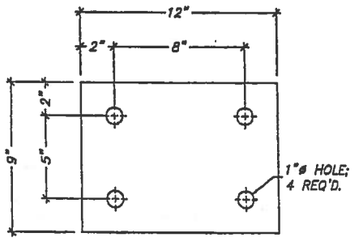


SECTION "A-A"



SECTION "B-B"
N.T.S.

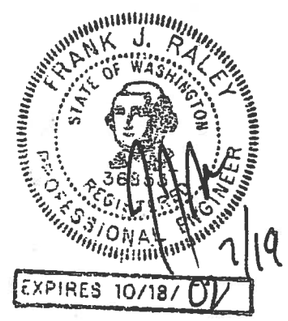
SECTION "C-C"
N.T.S.



TIE DOWN PLATE
RAW MATERIAL
3/8" PLATE
N.T.S.

NOTES:

1. SLAB TO BE LEVEL ±1/4".
2. FOOTING TO EXTEND A MINIMUM OF 24" BELOW UNDISTURBED SOIL AND FROST LINE.
3. FINAL SITE DESIGN IS THE RESPONSIBILITY OF THE SITE CONTRACTOR.
4. SLAB FOUNDATION DESIGNED ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
5. SLAB FOUNDATION DESIGNED ASSUMING MAXIMUM SOIL PLASTICITY INDEX OF 27.
6. CONCRETE STRENGTH SHALL BE A MINIMUM OF 3000 PSI.



MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W		

REV.	BY	DATE	REVISION	APP.	DATE
10					
9					
8					
7					
6					
5					
4					
3					
2					
1					

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-42

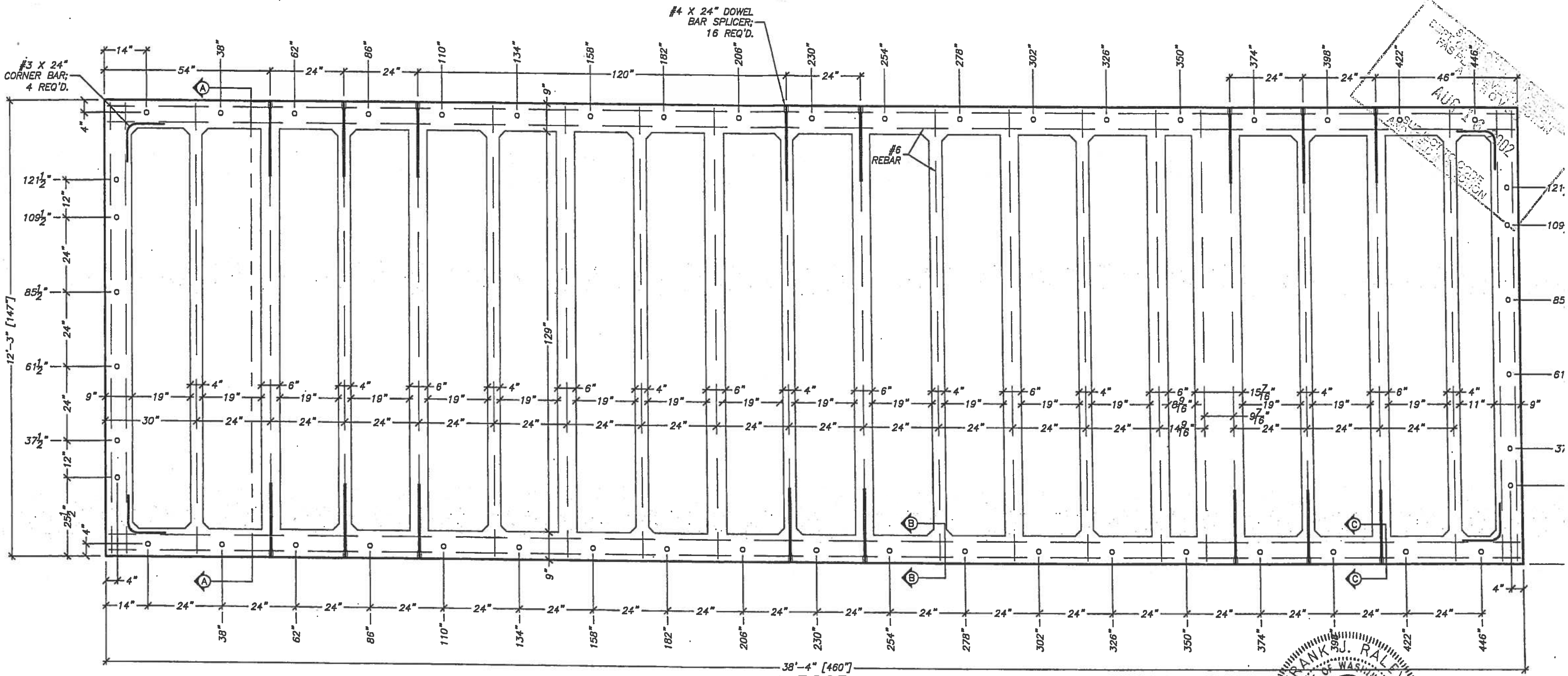
THESE PLANS ARE THE CONFIDENTIAL PROPERTY AND TRADE SECRETS OF FIBREBOND CORPORATION AND FIBREBOND WEST, INC. ANY USE OF THESE DRAWINGS OR THE INFORMATION CONTAINED HEREIN FOR ANY REASON OTHER THAN AS EXPRESSLY AUTHORIZED BY FIBREBOND CORPORATION OR FIBREBOND WEST, INC. IS STRICTLY PROHIBITED. THESE DRAWINGS HAVE BEEN DISTRIBUTED WITH THE UNDERSTANDING THAT ANY ONE RECEIVING OR OTHERWISE OBTAINING POSSESSION OF THEM WILL BE EXPRESSLY NOTIFIED OF THEIR CONFIDENTIAL NATURE.

DRN. BY: SC	DATE: 05/28/02	
CHK. BY: MT	DATE: 5/30/02	
APP. BY: BT	DATE: 7/11/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

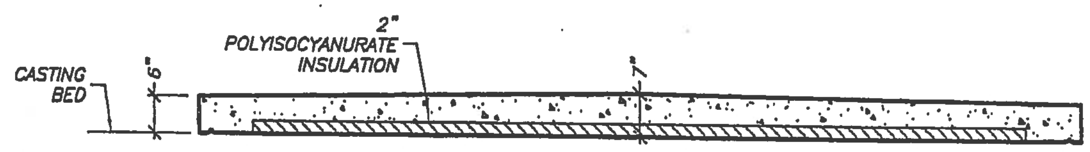
STRATA, INC.
11'-11" X 38'-0" EQUIPMENT S
FOUNDATION PLAN

SCALE:	SHEET NO.:		DWG NO.:
NOTED	9	B	D-6

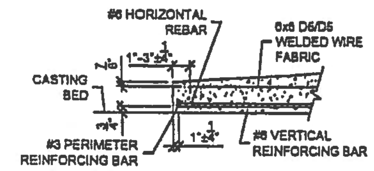
Exhibit D



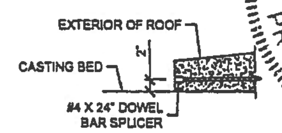
ROOF
469.6 sq. ft.



SECTION "A-A"



ROOF SECTION "B-B"
NOT TO SCALE



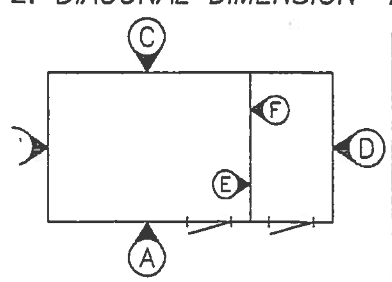
ROOF SECTION "C-C"
NOT TO SCALE

FRANK J. RALEY
STATE OF WASHINGTON
36853
REGISTERED PROFESSIONAL ENGINEER
8/7/02
EXPIRES 10/18/02

TOTAL LENGTH OF REBAR:
5167in. of #6

NOTES:
1. ALL REBAR GRADE 60 TYPICAL SEE MISC. DETAIL SHEET FOR REBAR SIZE & SPLICE LENGTH.
2. DIAGONAL DIMENSION—482 15/16"

CAUTION: ROOF TO HEAVY FOR CRANE & MONORAIL—CAST OFF LINE



ELEVATION KEY

MINDEN PROJ. NO.
MINDEN BLDG. NO.
FAIRFIELD PROJ. NO. STT963W
FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

REV.	BY	DATE	REVISION	APP.	DATE
10					
9					
8					
7					
6					
5					
4					
3					
2					
1	DL	8/6/02	REVISED PER STATE APPROVAL	[signature]	8/6/02

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, IN
299 Beck Avenue
Fairfield, California 94533 707-421

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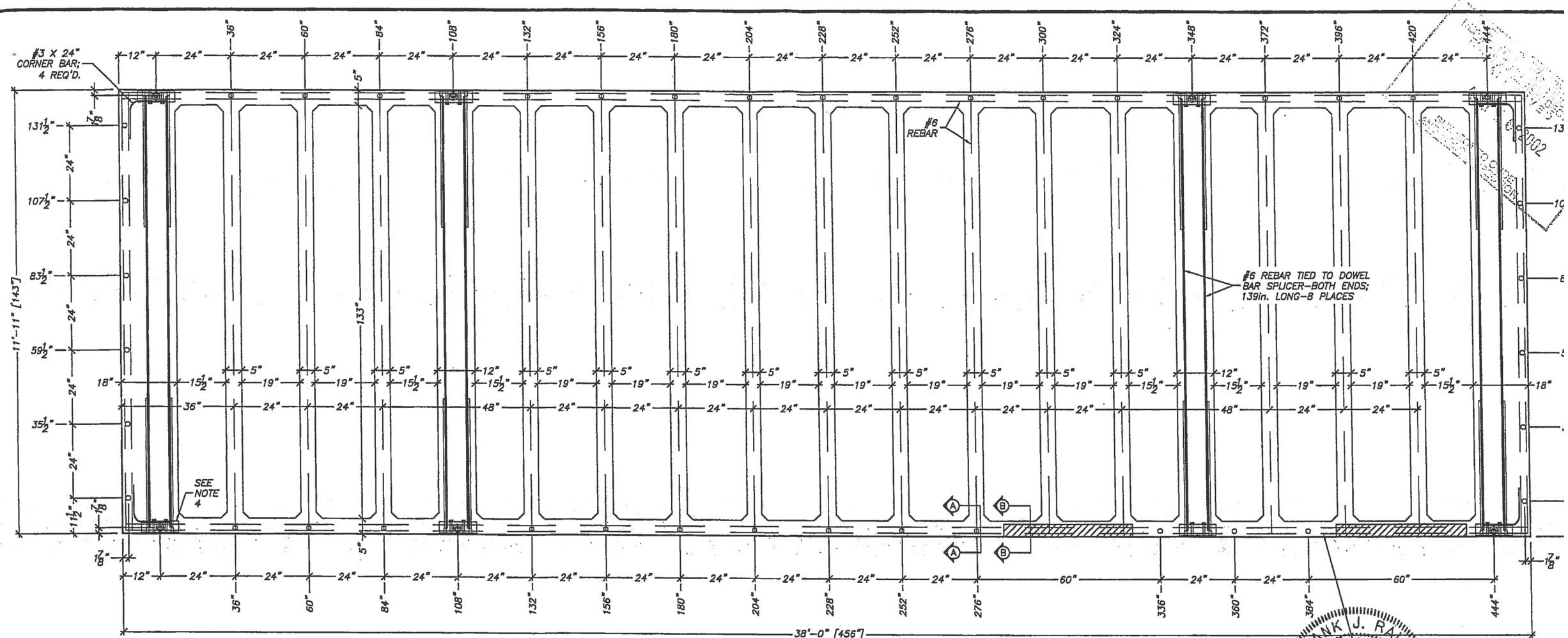
DRN. BY: SC	DATE: 05/28/02	
CHK. BY: DL	DATE: 05/30/02	
APP. BY: MT	DATE: 5/30/02	
APP. BY:	DATE:	
ENG. BY:	DATE:	

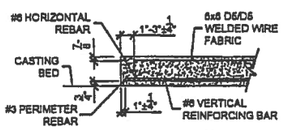
STRATA, INC.
11'-11" X 38'-0" EQUIPMENT SH
STRUCTURAL LAYOUT
ROOF

SCALE: 3/8"=1'-0" | SHEET NO.: S1 | B | DWG NO.: D-61

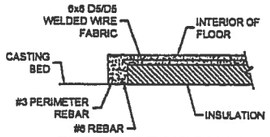
Exhibit D



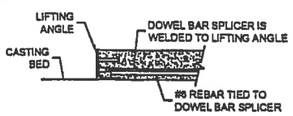
FLOOR
452.8 sq. ft.



FLOOR SECTION "A-A"
NOT TO SCALE



FLOOR SECTION "B-B"
NOT TO SCALE



CASTING DETAIL
NOT TO SCALE

#3 PERIMETER REBAR PLACED OUTSIDE POCKET FORMERS; TYPICAL APPROX. LENGTH

FRANK J. RALEY STATE OF WASHINGTON 36856 REGISTERED PROFESSIONAL ENGINEER

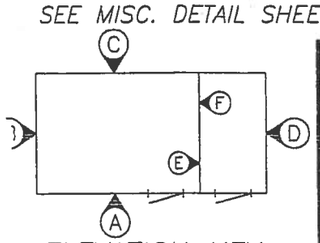
1/19/02

EXPIRES 10/18/ 02

TOTAL LENGTH OF REBAR:
3305in. of #

NOTES:
1. ALL REBAR GRADE 60 TYPICAL SEE MISC. DETAIL SHEET FOR REBAR SIZE & SPLICE LENGTH.
2. DIAGONAL DIMENSION–477 7/8"
3. TYPICAL 8" FLOOR PANEL; SEE MISC. DETAIL SHEET.
4. LIFTING BRACKET ASSEMBLY TYPICAL 7 PLACES–#193859 TYPICAL 1 PLACE–#193857

PREPARE FLOOR FOR TILE TO CONCRETE
USE 6" POLYISOCYANURATE



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

REV.	BY	DATE	REVISION	APP.	DATE
10					
9					
8					
7					
6					
5					
4					
3					
2					
1					

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-42

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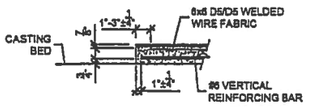
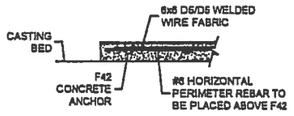
DRN. BY: SC	DATE: 05/28/02	
CHK. BY: DL	DATE: 5/30/02	
APP. BY: MT	DATE: 5/30/02	
APP. BY: BF	DATE: 7/17/02	
ENG. BY:	DATE:	

STRATA, INC.
11'-11" X 38'-0" EQUIPMENT SI
STRUCTURAL LAYOUT
FLOOR

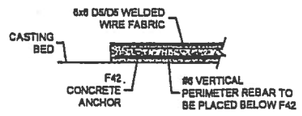
SCALE: 3/8"=1'-0" | SHEET NO.: S2 | B | DWG NO.: D-6



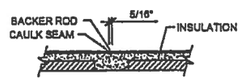
WALL PANEL SECTION "A-A"
NOT TO SCALE



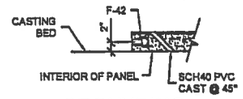
WALL PANEL SECTION "B-B"
NOT TO SCALE



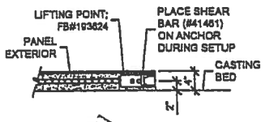
WALL PANEL SECTION "C-C"
NOT TO SCALE



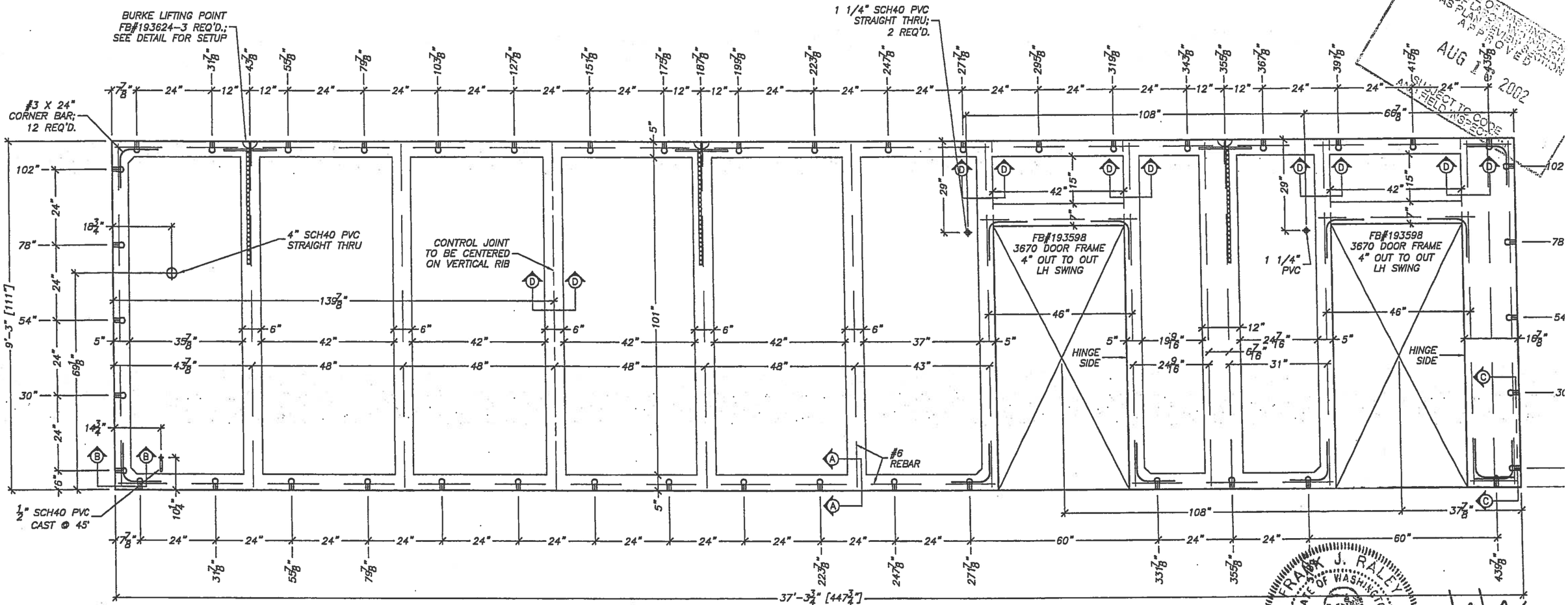
CONTROL JOINT SECTION "D-D"
NOT TO SCALE



GROUNDING PENETRATION DETAIL
NOT TO SCALE

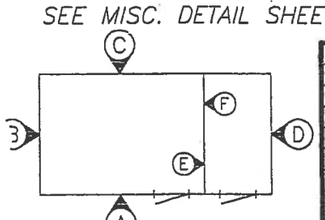


BURKE LIFTING POINT
NOT TO SCALE



SIDE PANEL "A"
345.1 sq. ft.

NOTES:
1. ALL REBAR GRADE 60 TYPICAL SEE MISC. DETAIL SHEET FOR REBAR SIZE & SPLICE LENGTH.
2. DIAGONAL DIMENSION–461 5/16"
3. TYPICAL 4" WALL PANEL; SEE MISC. DETAIL SHEET.



ELEVATION KEY

EXTERIOR TO BE AGGREGATE FINISH
2" POLYISOCYANURATE INSULATION

DEPT. STATE OF WASHINGTON
PLANS APPROVED
AUG 2002
SUBJECT TO FIELD INSPECTION
FRANK J. RALEY
STATE OF WASHINGTON
3685
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 10/18/02
1/19/02

TOTAL LENGTH OF REBAR:
2430in. of #

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. ST7963W FAIRFIELD BLDG. NO. 2788

REV.	BY	DATE	REVISION	APP.	DATE
10					
9					
8					
7					
6					
5					
4					
3					
2					
1	PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W		

BY: | DATE | BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET | APP. | DATE

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-4

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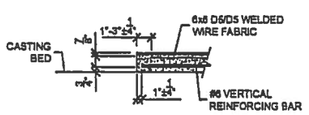
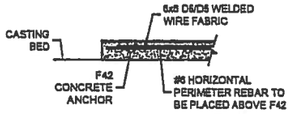
DRN. BY: SC	DATE: 05/28/02	
CHK. BY: MT	DATE: 5/30/02	
APP. BY: BT	DATE: 7/17/2	
APP. BY:	DATE:	
ENG. BY:	DATE:	

STRATA, INC.
11'-11" X 38'-0" EQUIPMENT S
STRUCTURAL LAYOUT
SIDE PANEL "A"

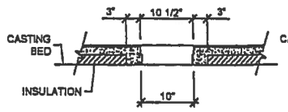
SCALE: 3/8"=1'-0" | SHEET NO.: S3 | DWG NO.: B D-6



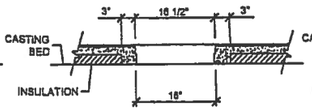
WALL PANEL SECTION "A-A"
NOT TO SCALE



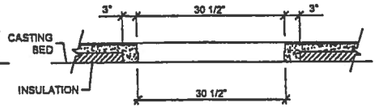
WALL PANEL SECTION "B-B"
NOT TO SCALE



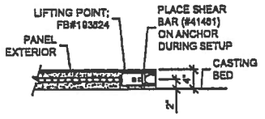
SECTION "C-C"
NOT TO SCALE



SECTION "D-D"
NOT TO SCALE

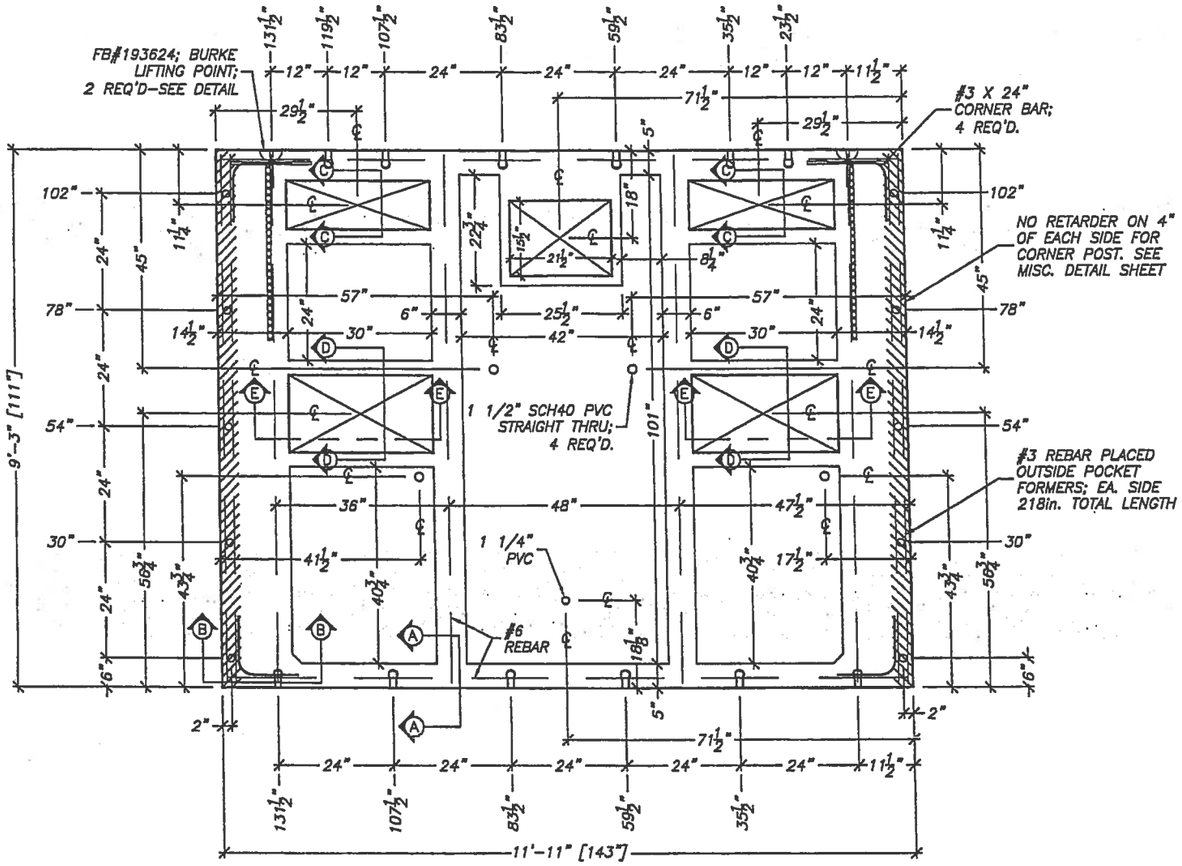


SECTION "E-E"
NOT TO SCALE



BURKE LIFTING POINT
NOT TO SCALE

STATE OF WASHINGTON DEPARTMENT OF LABOR AND INDUSTRIES PASCO PLAN REVIEW APPROVED AUG 16 2002 SUBJECT TO CODE AND FIELD INSPECTION



END PANEL "B"
110.2 sq. ft.

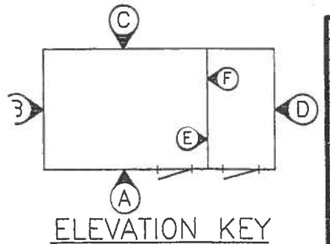
FRANK J. RALEY STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER 7/10

EXPIRES 10/18/ 02

NOTES:
1. ALL REBAR GRADE 60 TYPICAL SEE MISC. DETAIL SHEET FOR REBAR SIZE & SPLICE LENGTH.
2. DIAGONAL DIMENSION–181"
3. TYPICAL 4" WALL PANEL; SEE MISC. DETAIL SHEET.

EXTERIOR TO BE AGGREGATE FINISH
2" POLYISOCYANURATE INSULATION

TOTAL LENGTH OF REBAR: 936in. of #6



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W		

REV.	BY	DATE	REVISION	APP.	DATE
10					
9					
8					
7					
6					
5					
4					
3					
2					
1					

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST,
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Fairfield, California 94533 707-4

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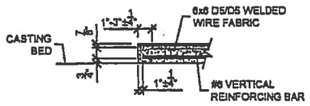
DRN. BY: SC	DATE: 05/28/02	
CHK. BY: DL	DATE: 5/30/02	
APP. BY: MT	DATE: 5/30/03	
APP. BY: BT	DATE: 7/17/2	
ENG. BY:	DATE:	

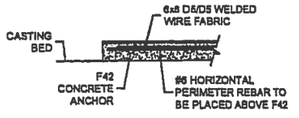
STRATA, INC.
11'-11" X 38'-0" EQUIPMENT S
STRUCTURAL LAYOUT
END PANEL "B"

SCALE: 3/8"=1'-0" | SHEET NO.: S4 | B | DWG NO.: D-6

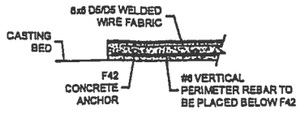
Exhibit D



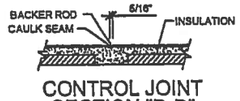
WALL PANEL SECTION "A-A"
NOT TO SCALE



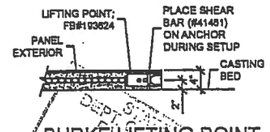
WALL PANEL SECTION "B-B"
NOT TO SCALE



WALL PANEL SECTION "C-C"
NOT TO SCALE

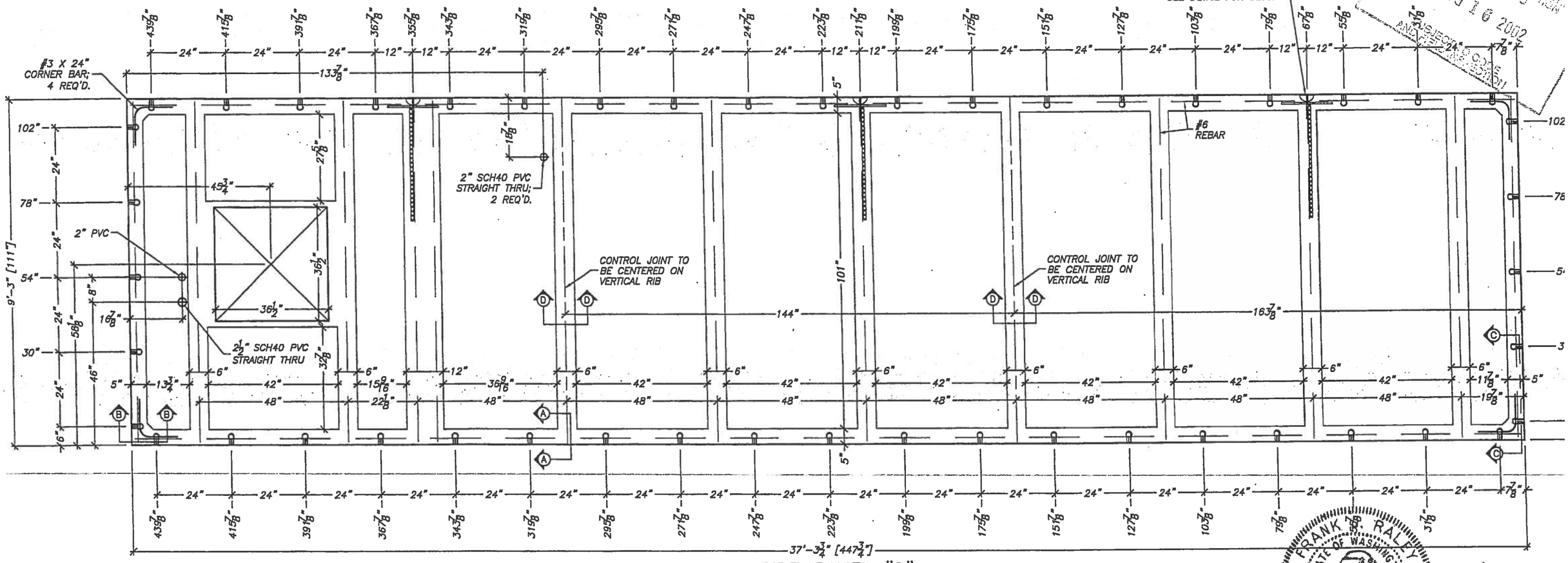


CONTROL JOINT SECTION "D-D"
NOT TO SCALE



BURKE LIFTING POINT
NOT TO SCALE

DEPT. OF PLANNING & BUILDING
APPROVED
AUG 16 2002
AND CONFORMS TO CODE REQUIREMENTS



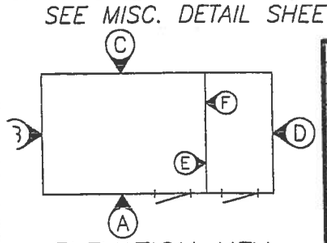
SIDE PANEL "C"
345.1 sq. ft.

FRANK B. RALEY
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 10/18/02
1/19/02

NOTES:
1. ALL REBAR GRADE 60 TYPICAL SEE MISC. DETAIL SHEET FOR REBAR SIZE & SPLICE LENGTH.
2. DIAGONAL DIMENSION–461 5/16"
3. TYPICAL 4" WALL PANEL; SEE MISC. DETAIL SHEET.

EXTERIOR TO BE AGGREGATE FINISH
2" POLYISOCYANURATE INSULATION

TOTAL LENGTH OF REBAR:
2309in. of #



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

REV.	BY	DATE	REVISION	APP.	DATE
10					
9					
8					
7					
6					
5					
4					
3					
2					
1	PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W		7/17/02

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-4

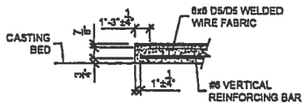
THESE PLANS ARE THE CONFIDENTIAL PROPERTY AND TRADE SECRETS OF FIBREBOND CORPORATION AND FIBREBOND WEST, INC. ANY USE OF THESE DRAWINGS OR THE INFORMATION CONTAINED HEREIN FOR ANY REASON OTHER THAN AS EXPRESSLY AUTHORIZED BY FIBREBOND CORPORATION OR FIBREBOND WEST, INC. IS STRICTLY PROHIBITED. THESE DRAWINGS HAVE BEEN DISTRIBUTED WITH THE UNDERSTANDING THAT ANY ONE RECEIVING OR OTHERWISE OBTAINING POSSESSION OF THEM WILL BE EXPRESSLY NOTIFIED OF THEIR CONFIDENTIAL NATURE.

DRN. BY: SC	DATE: 05/28/02	
CHK. BY: DL	DATE: 5/30/02	
APP. BY: MT	DATE: 5/30/02	
APP. BY: BF	DATE: 7/17/2	
ENG. BY:	DATE:	

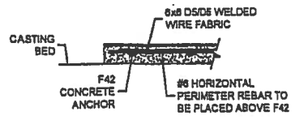
STRATA, INC.

11'–11" X 38'–0" EQUIPMENT S
STRUCTURAL LAYOUT
SIDE PANEL "C"

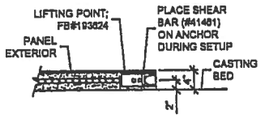
SCALE: 3/8"=1'-0" | SHEET NO.: S5 | B | DWG NO.: D-6



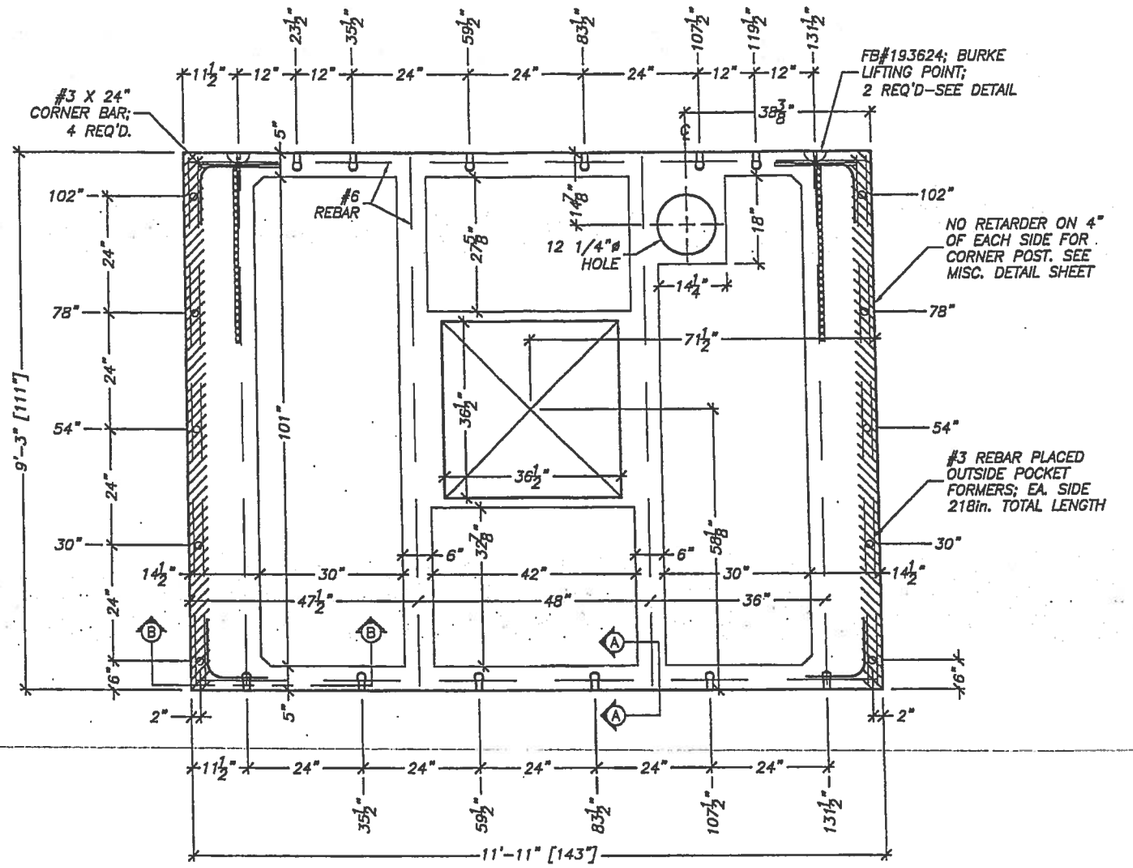
WALL PANEL SECTION "A-A"
NOT TO SCALE



WALL PANEL SECTION "B-B"
NOT TO SCALE



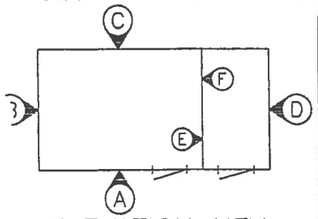
BURKE LIFTING POINT
NOT TO SCALE



END PANEL "D"
110.2 sq. ft.

SUBJECT TO COMPLIANCE WITH ATTACHED APPROVAL LETTER
AUG 16 2002
SUBJECT TO SCOPE AND FIELD INSPECTION

NOTES:
1. ALL REBAR GRADE 60 TYPICAL SEE MISC. DETAIL SHEET FOR REBAR SIZE & SPLICE LENGTH.
2. DIAGONAL DIMENSION–181"
3. TYPICAL 4" WALL PANEL; SEE MISC. DETAIL SHEET.



ELEVATION KEY

EXTERIOR TO BE AGGREGATE FINISH
2" POLYISOCYANURATE INSULATION

TOTAL LENGTH OF REBAR: 936in. of #6

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. ST1963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W		

REV.	BY	DATE	REVISION	APP.	DATE
A0					
9					
8					
7					
6					
5					
4					
3					
2					
1					

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-4

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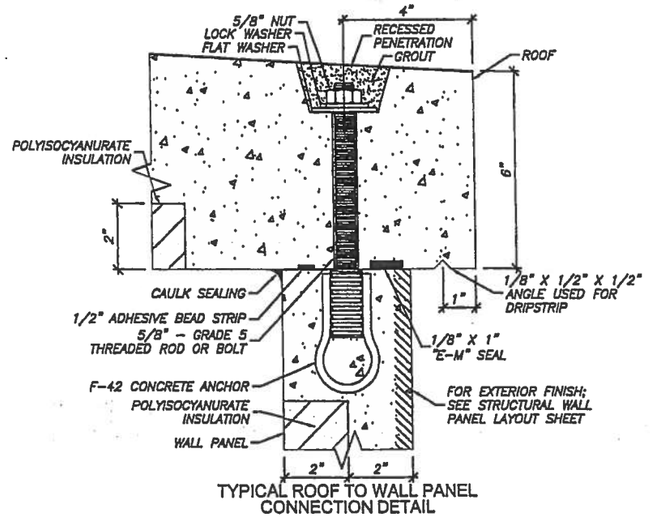
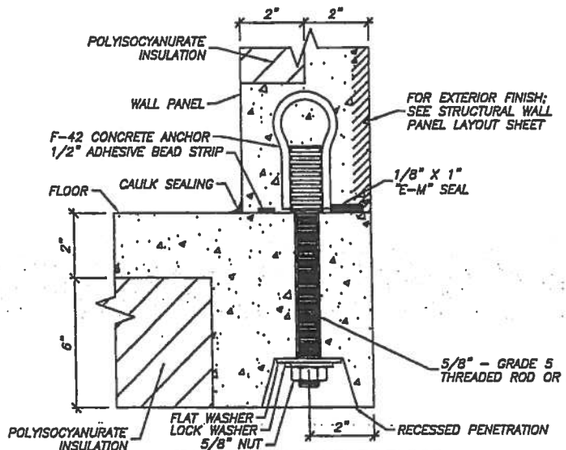
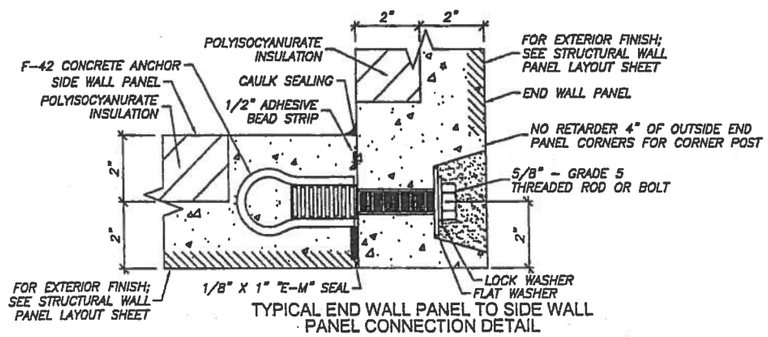
DRN. BY: SC	DATE: 05/28/02	STRATA, INC.
CHK. BY: DL	DATE: 5/30/02	11'–11" X 38'–0" EQUIPMENT S
APP. BY: MT	DATE: 5/30/02	STRUCTURAL LAYOUT
APP. BY: BT	DATE: 7/17/2	END PANEL "D"
ENG. BY:	DATE:	SCALE: 3/8"=1'-0" · SHEET NO.: S6 · B · DWG NO.: D-6



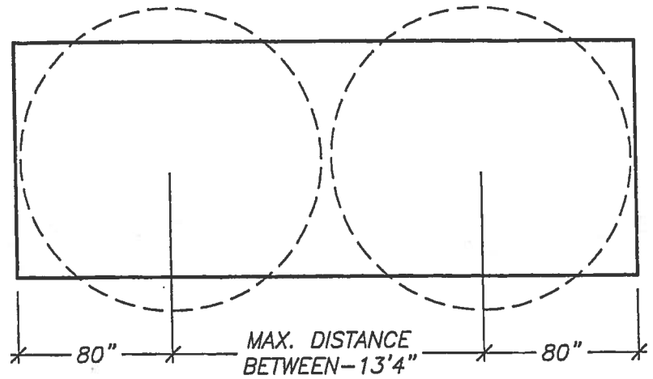
TYPICAL ROOF TO WALL PANEL CONNECTION DETAIL



TYPICAL WALL PANEL TO FLOOR CONNECTION DETAIL



TYPICAL END WALL PANEL TO SIDE WALL PANEL CONNECTION DETAIL



"D" RING INSTALLATION

BUILDING SIZE	D-RINGS
13' or LESS	1
14' or 20'	2
21' or 26'	3
27' or 40'	4

PANEL VOLUME / WEIGHT SCHEDULE

PANEL	APPROX. VOL. (yds.)		APPROX. WT. (lbs.)	
	LT. WT.	NORMAL	LT. WT.	NORMA
ROOF	5.63		19,008	
FLOOR	4.73		15949	
PANEL "A"		2.29		8944
PANEL "B"		0.87		3421
PANEL "C"		2.61		10,221
PANEL "D"		0.88		3438
TOTAL	10.36	6.65	≈	60,981

Refer to Individual Structural Layout sheet for actual panel s

Note:

Building weight is an approximation and shall not be used for Offloads or Shipping. Contact Fibrebond Corporation's Transportation Department for correct transportation weig

REINFORCING SPLICE SCHEDULE

SIZE	LIGHTWEIGHT CONCRETE	NORMAL WEIGHT CONCRETE
WWF	8"	8"
#2	12"	12"
#3	17"	13"
#4	22"	17"
#5	28"	22"
#6	33"	26"

Stagger splice locations 2X splice length in adjacent bars

FRANK J. RALEY STATE OF WASHINGTON 36857 REGISTERED PROFESSIONAL ENGINEER

8/1/02

EXPIRES 10/18/02

TOTAL SQ. FT. ALL PANELS: 1833.2 sq. f

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

REV.	BY	DATE	REVISION	APP.	DATE
1	DL	8/6/02	REVISED PER STATE APPROVAL		8/6/02

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-4

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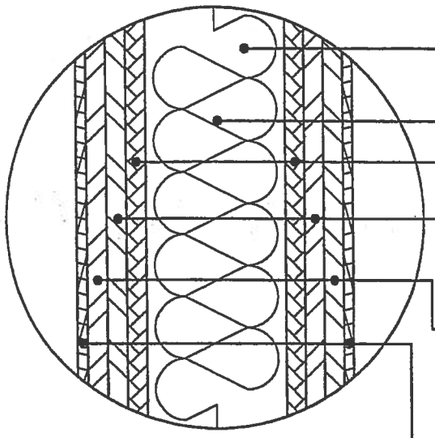
DRN. BY: SC	DATE: 05/28/02	STRATA, INC.
CHK. BY: DL	DATE: 05/30/02	11'–11" X 38'–0" EQUIPMENT S
APP. BY: MT	DATE: 5/30/02	MISC. DETAILS
APP. BY: BF	DATE: 7/17/02	
ENG. BY:	DATE:	SCALE: NOTED / SHEET NO.: S7 / B / DWG NO.: D-6



NO. 25 C.S. GALV. CHANNEL SHAPE "C" STUD;
16" O/C; SCREWED TO UPPER & LOWER CHANNEL
W/ 1/2" PHILLIPS PAN HEAD SELF TAPPING SCREWS
(P/N 11535) (SCREW AT 4 PLACES)

FIRE RATED BATT INSULATION
INSTALLED BETWEEN METAL STUDS

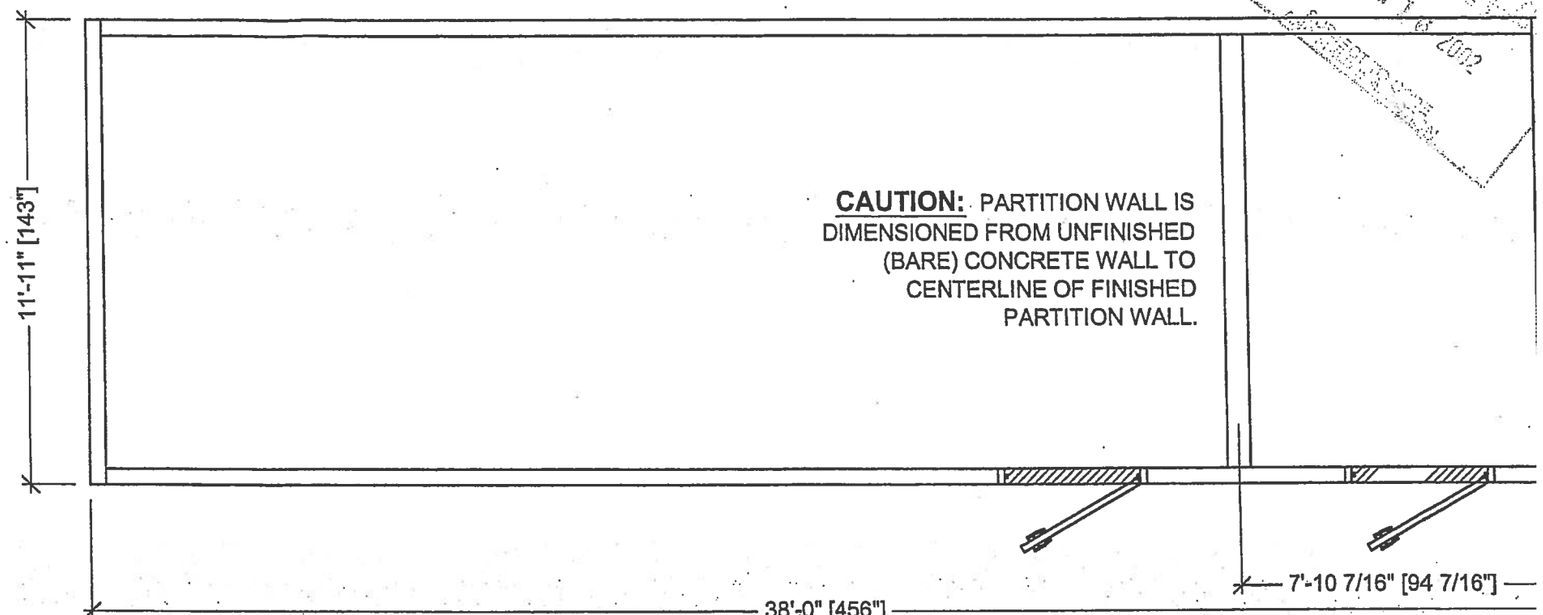
1/2" CD PLYWOOD;
FASTEN W/ 10-24 X 1 7/16 PWH WING SCREW (P/N 15403)
AT 12" O/C ALONG STUDS AND UPPER & LOWER TRACKS.

FIRST LAYER OF GYPSUM BOARD:
1/2" TYPE X GYPSUM BOARD;
VERTICALLY ORIENT & MOUNT TO PLYWOOD W/ #6 X 1-1/4"
DRYWALL SCREWS (P/N 13513) 8" O/C AROUND PERIMETER
AND 12" O/C ON INTERMEDIATE STUDS. (OFFSET VERTICAL
JOINTS 1 STUD SPACE)

SECOND LAYER OF GYPSUM BOARD:
1/2" TYPE X GYPSUM BOARD;
VERTICALLY ORIENT & MOUNT TO PLYWOOD W/ #6 X 2"
DRYWALL SCREWS (P/N 13379) 9" O/C AROUND PERIMETER
AND 12" O/C ON INTERMEDIATE STUDS AND 24" O/C ON
TOP & BOTTOM RUNNERS. (OFFSET VERTICAL JOINTS
1 STUD SPACE FROM FIRST LAYER OF GYPSUM BOARD)

WALL COVERING: 3/8" FRP
WALL COVERING: 3/8" FRP

WALL SECTION "A"



PARTITION WALL LOCATION
SCALE: 1/4"=1'-0"

NOTES:
1. TWO-HOUR FIRE RATED DESIGN AS PER 1994 UBC SECTION 1-13 AND ICBO ER NO. 2599.

2. TWO-HOUR FIRE RATED DESIGN CALCULATIONS AS PER 1994 UBC, SECTION 709.

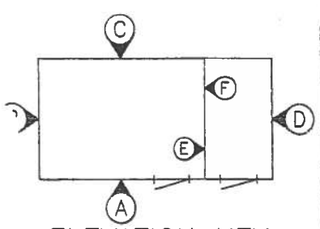
3. GYPSUM BOARD JOINTS TO BE STAGGERED ONE STUD SPACING ON OPPOSITE SIDES OF WALL.

4. NOT A "NON-COMBUSTIBLE" DESIGN.

5. ALL PASSAGE DOORS TO BE OF SIMILAR FIRE RATING.

6. ALL PENETRATIONS TO BE SEALED WITH FIRE STOP PILLOWS, CAULK OR PUTTY.

FRANK J. RALEY
STATE OF WASHINGTON
PROFESSIONAL ENGINEER
EXPIRES 10/18/



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W	MT	7/17/02

REV.	BY	DATE	REVISION	APP.	DATE
10					
9					
8					
7					
6					
5					
4					
3					
2					
1					

FIBREBOND CORPORATION
1300 Davenport Drive
Minden, Louisiana 71055 800-824-2614

FIBREBOND WEST, I
299 Beck Avenue
Fairfield, California 94533 707-4

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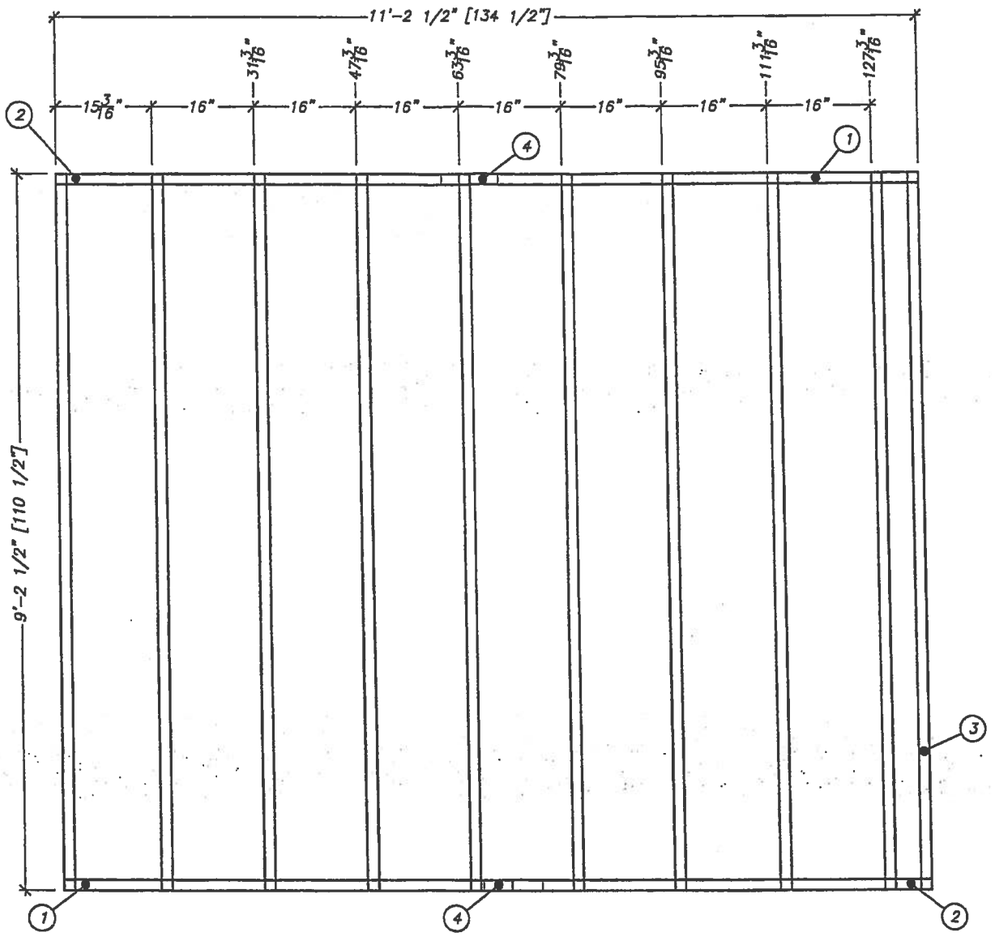
DRN. BY: SC	DATE: 05/28/02	STRATA, INC.
CHK. BY: DL	DATE: 5/30/02	11'-11" X 38'-0" EQUIPMENT S
APP. BY: MT	DATE: 5/30/02	PARTITION WALL LAYOU
APP. BY: BF	DATE: 7/17/2	FINISH & LOCATION
ENG. BY:	DATE:	SCALE: NOTED / SHEET NO.: S8 / B / DWG NO.: D-6

RECEIVED
AUG 16 2002
SUBJECT TO CONDITIONS AND LIMITATIONS



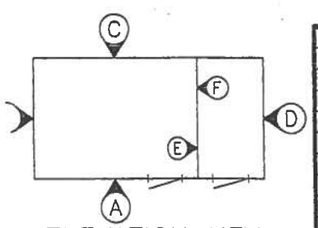
INTERIOR PARTITION WALL "E–F"

DIAGONAL DIMENSION: 174 1/16"

INTERIOR PARTITION WALL ASSEMBLY
PART FB#194918
9'-2 1/2" [110 1/2"] X 11'-2 1/2" [134 1/2"]

ITEM NO.	FB PART NO.	QTY.	PART NAME	RAW MAT'L DESC. & FB NO.	LENGTH
1	193719	2	TRACK, LONG	3 5/8" X 10' – #15167	69 3/4"
2	193737	2	TRACK, SHORT	3 5/8" X 10' – #15167	64 3/4"
3	194919	10	STUD, WALL	3 5/8" X 12' – #20977	110 3/8"
4	19278	2	STUD, SPLICE	3 5/8" X 10' – #13365	9"

FRANK J. RALEY
STATE OF WASHINGTON
3693
REGISTERED
PROFESSIONAL ENGINEER
7/19/0
EXPIRES 10/18/



ELEVATION KEY

MINDEN PROJ. NO. _____ MINDEN BLDG. NO. _____ FAIRFIELD PROJ. NO. STT963W FAIRFIELD BLDG. NO. 2788

BY:	DATE	BLDG. & PROJ. NO. ADDED-TO / REMOVED-FROM SET	APP.	DATE
PP	7/17/02	ADDED BLDG. #2788 & PROJ. #963W		

REV.	BY	DATE	REVISION	APP.	DATE
10					
9					
8					
7					
6					
5					
4					
3					
2					
1					

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DRN. BY: SC	DATE: 05/28/02	STRATA, INC.
CHK. BY: DL	DATE: 5/30/02	11'-11" X 38'-0" EQUIPMENT S
APP. BY: MT	DATE: 5/30/02	PARTITION WALL LAYOU
APP. BY: BF	DATE: 7/17/2	METAL FAB. ASSEMBL
ENG. BY:	DATE:	SCALE: 1/2"=1'-0" SHEET NO.: S9 B DWG NO.: D-6

Exhibit E

Ck # 026810
$11.00 cg
241.50

FIBREBOND®

State of Washington
Plan Approval

Model: D-6026
11'-11"x 28'-0" x 9'-3" Equip. Shelter

Manufactured by:
Fibrebond Corporation
1300 Davenport Drive
Minden, Louisiana 71055
(Voice) 318-377-1030/800-824-2614
(Fax) 318-371-9208
(E-mail) project1@fibrebond.com
www.fibrebond.com

Branch Facility:
Fibrebond West, Inc.
299 Beck Avenue
Fairfield, California 94533
(Voice) 707-421-1065
(Fax) 707-421-0845

STATE OF WASHINGTON
DEPT OF LABOR AND INDUSTRIES
FAS PLAN REVIEW SECTION
APPROVED
JUL 24 2002
SUBJECT TO CODE AND FIELD INSPECTION

Exhibit E

al Delivery
-partment of Labor and Industries
Factory Assembled Structures
PO Box 44430
Olympia WA 98504-4430

Non-Postal Delivery (e.g., FedEx, UPS)
rtment of Labor and Industries
Linderson Way SW
-awater WA 98501

Web address: www.wa.gov.lni/FAS/

☒ FB
☐ CC CH 11
☐ CC CST
☒ WA Only
☐ WA Rev/OR Courtesy
☐ _____ State ID Other state reciprocity

Applicant: Fill out completely

Manufacturer	Mfg. No.
Fibrebond Corporation	M-205
Plans to be returned to: Address	
1300 Davenport Drive	
City / State / ZIP	
Minden, LA 71055	

FOR DEPARTMENT USE ONLY

Fee Ledg Sht #.	Check #	$ Amount	Application ID
Ap No.	Date Approved	Expiration Date	
00P8502002Q4	7.24.2002	6.30.2004	

PLAN APPROVAL REQUEST

FACTORY BUILT STRUCTURES & COMMERCIAL COACHES

Contact person's printed name:	Date:	Fee enclosed:
Dean Williams	6/5/2002	$ 241.50
Signature: Dean Williams	Phone No.: (318) 377 - 1030	FAX No.: (318) 371 - 9208

New plan (Master design) D-6026 (1 Yr. design) _____ *See appropriate WAC for fees*

Addendum _____ AP No. _____

Renewal _____ AP No. _____

Initial MFG filing _____ No fee required _____

Resubmittal _____ Appl. ID _____

Plans reviewed by listed professional _____

Code cycles (month / year): UBC, UMC, [illegible]: 7 / 01 VIAQ: 7 / 01 NEC: 2 / 99 WSEC: 7 / 02 UFC: 7 / 01

Size of building: Width: 11'11" Length: 28'0" Area (sq ft): 333.7 No. of Modules: 1 Occupancy Group: B

Type of Construction: V Use: Personal Wireless Services Facility Sub yr. 2000 SEC yr. 1999 (PSF for CC) Seismic Zone: 4 Soil type: SD

Roof live load PSF: 100 Wind load MPH – EXP: 80 / B Floor load PSF: 135

Plot plans submitted? ☐ Yes ☒ No If "No", provide distance from farthest projection to nearest building/property line:

Front: Greater than 20' Rear: Greater than 20' Left side: Greater than 20' Right side: Greater than 20'

Type of heat: ☒ Central forced air ☐ Hydronics ☐ Base board ☐ Cable ☐ Fan powered room heater ☐ Other: _____

Type of fuel: ☒ Electric ☐ Solar ☐ Wood ☐ Heat pump ☐ Natural gas ☐ Propane ☐ Oil

Insulation values: Floor 22.01 Walls 11.28 Roof (flat) 18.90 Roof (vault) N/A

Heating zone: ☒ Zone 1 ☐ Zone 2 EXEMPT

WSEC compliance chapter: ☐ Component Performance ☐ Systems Analysis ☐ Prescriptive ☒ Energy calculations: Attached ☐ On file – AP# _____

Air Conditioning ☒ Yes ☐ No

Electrical service: Amps ~~200~~ 225 Phase ☒ 1 ☐ 3

STATE OF WASHINGTON
DEPT. OF LABOR AND INDUSTRIES
FAS PLAN REVIEW SECTION
APPROVED
JUL 24 2002
SUBJECT TO CODE AND FIELD INSPECTION

	N/A	Attached L&I Review	Attached/ Design Professional Review		
Structural calculations or test proposals	☐	☒	☐	☐	On file – AP# _____
Truss of rafter drawing(s)	☒	☐	☐	☐	On file – AP# _____
Truss plan if over 3 different trusses	☒	☐	☐	☐	On file – AP# _____
Girder truss or ridge beam drawing	☒	☐	☐	☐	On file – AP# _____
HVAC drawing	☐	☒	☐	☐	On file – AP# _____
Cross section and elevation	☐	☒	☐	☐	On file – AP# _____
Foundation plan	☐	☒	☐	☐	On file – AP# _____
Electrical load demand calculation	☐	☒	☐	☐	On file – AP# _____
Panel box schedule / Electric load calculations	☐	☒	☐	☐	On file – AP# _____
Chassis drawing (CC & vendor units only)	☒	☐	☐	☐	On file – AP# _____
.umbing systems	☒	☐	☐	☐	On file – AP# _____

Operating pressure N/A No. of fixtures _____ to _____ Total developed length _____

6f

ENVELOPE SYSTEM PERFORMANCE COMPLIANCE CALCULATION PROGRAM
PUBLIC REVIEW VERSION 2.2

ASHRAE/IES Standard 90.1-1989 with proposed Addenda f & m
ENERGY EFFICIENT DESIGN OF NEW BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS

CITY: 198 Seattle/Tacoma WA
CODE <B,C,H>: Both Heated and Cooled

BUILDING: D6026WA
DATE: 6/5/02

ENVSTD Public Review Version 2.2 - January 1993

	N	NE	E	SE	S	SW	W	NW	WEIGHTED AVERAGE	CRITERIA
WL AREA	252.8		110.2		252.8		110.2		0.000	0.250
GL AREA	0		0		0		0		WWR	WWR
SCx	0		0		0		0		0.000	0.719
PF	0		0		0		0		0.000	0.000
VLT	0		0		0		0		0.000	N/A
Uof	0		0		0		0		0.000	0.619
WALL Uo	.09		.09		.09		.09		0.090	0.096
HC	1		1		1		1		1.000	1
INS POS	2		2		2		2		N/A	N/A
EQUIP	.6		.6		.6		.6		0.600	0.600
LIGHTS	2.8		2.8		2.8		2.8		2.800	2.800
DLCF	0		0		0		0		0.000	0.000
LOADS									-TOTAL-	
HEATING	2.437		1.053		2.243		1.057		6.790<	7.668
COOLING	3.151		1.484		3.902		1.492		10.029<	22.826
TOTAL	5.588		2.537		6.145		2.549		16.819<	30.494

********** PASSES EXTERIOR WALL TOTAL CRITERIA **********

OTHER ENVELOPE REQUIREMENTS
ENVSTD Public Review Version 2.2 - January 1993

MAXIMUM PERCENTAGE OF ROOF AREA IN SKYLIGHTS:	DESIGN	CRITERIA MAXIMUM
Percentage of Roof Area in Skylights:		
Visible Transmittance of Skylight		
Design Lighting Footcandles of Space (30, 50, 70)		

MAXIMUM ALLOWABLE Uo:			MAXIMUM
Roof	.05	<	0.067
Wall Adjacent to Unconditioned Space	.09	<	0.150
Floor Over Unconditioned Space			0.060

MINIMUM ALLOWABLE R-VALUE:			MINIMUM
Wall Below Grade			
R-Value of Concrete Slab Insulation			0.5
Heated or Unheated Slab (H/U)			
Horizontal or Vertical Insulation Position (H/V)			
Depth or Width of Insulation (24, 36, or 48 in.)			

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********* PASSES OTHER ENVELOPE REQUIREMENTS *********

MAXIMUM BUILDING SIZE (OUTSIDE DIMENSIONS)

WIDTH (W) = 12'
LENGTH (L) = 36'
HEIGHT (H) = 11' (PANEL HEIGHT = 10')

DESIGN CRITERIA

ROOF LIVE LOAD (RLL) = 100 PSF
FLOOR LIVE LOAD (FLL) = 135 PSF
ROOF DEAD LOAD (RDL) = 45 PSF
FLOOR DEAD LOAD (FDL) = 35 PSF
WALL DEAD LOAD (WDL) = 35 PSF

WIND LOAD CRITERIA

BASIC WIND SPEED (FASTEST MILE) (V) = 125 MPH
IMPORTANCE FACTOR (Iw) = 1.15
WIND EXPOSURE = D
HEIGHT, EXPSOSURE AND GUST COEFF.(Ce) = 1.39
PRESSURE COEFF. (CqH) = 1.3
PRESSURE COEFF. (CqV) = -0.7
STAGNATION PRESSURE (q_s) = 40.0 PSF
DESIGN WALL PRESSURE (P_H) = (1.39) (1.3) (40.0 PSF) (1.15)
(P_H) = 83.1 PSF

DESIGN ROOF PRESSURE (UPWARD) (P_V) = (1.39) (-0.7) (40.0 PSF) (1.15)
(P_V) = -44.8 PSF (UPWARD)

EARTHQUAKE LOAD CRITERIA

SEISMIC ZONE = 4
IMPORTANCE FACTOR (I_E) = 1.25
SOIL PROFILE TYPE = S_D
NEAR SOURCE FACTOR (Na) = 1.3
SEISMIC COEFFICIENT (Ca) = 0.44 Na = 0.572
BASIC STRUCTURAL SYSTEM → BEARING WALL SYSTEM W/ORDINARY REINFORCED CONCRETE SHEARWALLS

ANALYSIS PROCEDURE → SIMPLIFIED BASE SHEAR PROCEDURE

RESPONSE MODIFICATION COEFFICIENT (R) = 4.5
SEISMIC BASE SHEAR (V) = $\frac{(3.0)\ (0.572)\ (TW)}{(4.5)}$

(V) = (0.381) (TW)

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SNOW LOAD CRITERIA - (ASCE 7-98)

GROUND SNOW LOAD (Pg) = 80 PSF
IMPORTANCE FACTOR (Is) = 1.2
SNOW EXPOSURE FACTOR (Ce) = 1.3
THERMAL FACTOR (Ct) = 1.0
FLAT ROOF SNOW LOAD (Pf) = (0.7) (Ce) (Ct) (Is) (Pg)
(Pf) = 87.4 PSF → USE 100 PSF RLL

MATERIAL PROPERTIES AND ALLOWABLES

CONCRETE COMPRESSIVE STRENGTH (f'c)	=	5000 PSI
REINFORCING YIELD STRENGTH (Fy)	=	60,000 PSI
F42 CAPACITY, EDGE SHEAR, ($F42_{ES}$)	=	750 LBS
F42 CAPACITY, LINEAR SHEAR, ($F42_{LS}$)	=	2000 LBS
F42 CAPACITY, TENSION, ($F42_{T}$)	=	2000 LBS
TIEDOWN CAPACITY, TENSION OR SHEAR, (TDC)	=	2500 LBS
COEFFICIENT OF FRICTION (u) (CONCRETE ON CONCRETE)	=	0.4

WEIGHT OF BUILDING

WEIGHT OF ROOF (WR) = (RDL) (W) (L)	=	19,440 LBS
WEIGHT OF ENDWALLS (WE) = (2) (WDL) (W) (H)	=	9240 LBS
WEIGHT OF SIDEWALLS (WS) = (2) (WDL) (L) (H)	=	27,720 LBS
WEIGHT OF FLOOR (WF) = (FDL) (W) (L)	=	15,120 LBS
TOTAL WEIGHT OF BUILDING (TW)	=	71,520 LBS

EXTERNAL STABILITY

SEISMIC BASE SHEAR (V) = (0.381) (TW)	=	27,249 LBS
SEISMIC OVERTURNING (SO) = (V) (H)	=	299,739 FT-LBS
WIND OVERTURNING (WO) = (P_H) (L) (H) (H/2) + (P_V) (L) (W) (W/2)	=	297,114 FT-LBS

$\therefore$ SEISMIC GOVERNS OVERTURNING

RESISTING OVERTURNING (RO)	=	(TW) (W/2)
	=	429,120 FT-LBS

(RO) > (SO) ✓

WIND SLIDING (WSL) = (P_H) (L) (H)	=	32,908 LBS
SEISMIC SLIDING (V)	=	27,249 LBS

$\therefore$ WIND GOVERNS SLIDING

RESISTING SLIDING (RS) = (u) [(TW)-(PV) (L) (W)]	=	20,867 LBS

(RS) < (WSL) $\therefore$ TIE SHELTER DOWN

USE 4 TIEDOWNS PER SIDE

(RS)' = 20,867 LBS + (8) (2500 LBS)

(RS)' = 40,867 LBS > (WSL) ✓

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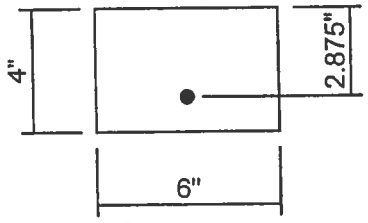
WE RECOMMEND TYING ALL BUILDINGS TO FOUNDATIONS REGARDLESS OF SIZE OR WEIGHT. WE RECOMMEND 4 TIE DOWNS FOR BUILDINGS 26' LENGTH OR LESS. WE RECOMMEND 8 TIE DOWNS FOR BUILDINGS OF GREATER LENGTH THAN 26'.

WALL DESIGN - RIBS (PANEL HEIGHT = 10' ⟶ RIB SPAN = 9')

- 6" RIB AT 48" O.C. W/ #6 BAR ⟶ As = 0.44in²



$$\rho_{MIN} = \frac{200}{Fy} = 0.0033$$

ρ_{BAL} = 0.03354, $\rho_{MAX} = 0.75\ \rho_{BAL}$

$\rho_{MAX} = 0.0252$

$$\rho = \frac{As}{bd} = \frac{(0.44in^2)}{(6")(2.875")} = 0.0255$$

$$a = \frac{\rho\ Fy\ d}{0.85\ f'c} = \frac{(0.0255)\ (60{,}000\ PSI)\ (2.875")}{(0.85)\ (5000\ PSI)} = 1.04"$$

$$Mu = 0.9\ [0.85 \cdot f'c \cdot a \cdot b\ (d - a/2)]$$

$$Mu = 0.9\ [0.85\ (5000\ PSI)\ (1.04")\ (6")\ (2.875" - 1.04"/2)]$$

$$Mu = 56{,}209\ IN\text{-}LBS = 4684\ FT\text{-}LBS$$

*** DESIGN RIBS BASED ON WIND ***

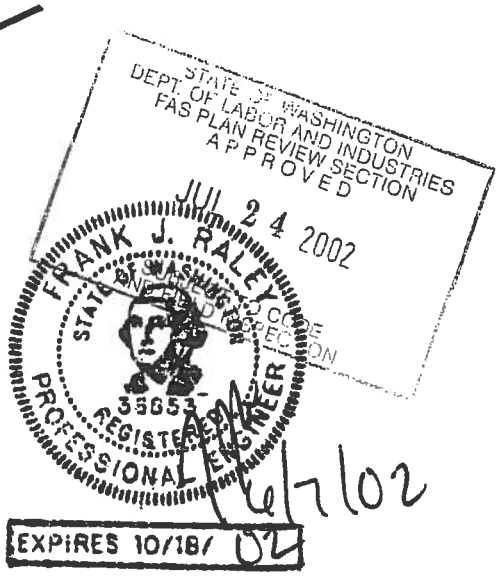
$$M_{MAX} = \frac{(1.3)\ (83.1\ PSF)\ (4')\ (9')^2}{8}$$

M_{MAX} = 4376 FT-LBS < Mu ✓

$$Vu = (0.85)\ (2)\ (\sqrt{f'c})\ (b)\ (d) = (0.85)\ (2)\ (\sqrt{5000})\ (6")\ (2.875")$$

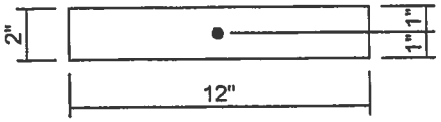
Vu = 2074 LBS

$$V_{MAX} = \frac{(1.3)\ (83.1\ PSF)\ (4')\ (9')}{2} = 1945\ LBS < Vu$$ ✓



WALL DESIGN - SKIN (SKIN SPAN = 42")

- 2" SKIN W/ WWF 6x6 D5/D5 ⟶ $A_S = 0.1 in^2$ / FT



$\rho_{MIN} = 0.0033$

$\rho_{BAL} = 0.03354$

$\rho_{MAX} = 0.375\,\rho_{BAL} = 0.0126$

$$\rho = \frac{(0.1\ in^2)}{(12")(1")} = 0.0083$$

$$a = \frac{(0.0083)\ (60{,}000\ PSI)\ (1.0")}{(0.85)\ (5000\ PSI)} = 0.118"$$

$Mu = 0.9\ [0.85\ (5000\ PSI)\ (0.118")\ (12")\ (1.0" - {}^{0.118"}/_{2})]$

$Mu = 5097$ IN-LBS = 425 FT-LBS

*** DESIGN SKIN BASED ON WIND ***

$$M_{MAX} = \frac{(1.3)\ (83.1\ PSF)\ (1.0')\ (3.5')^2}{8} = 166\ FT\text{-}LBS < Mu \checkmark$$

$Vu = (0.85)\ (2)\ (\sqrt{5000})\ (12")\ (1") = 1442$ LBS

$$V_{MAX} = \frac{(1.3)\ (83.1\ PSF)\ (1.0')\ (3.5')}{2}$$

$V_{MAX} = 189$ LBS $< Vu \checkmark$

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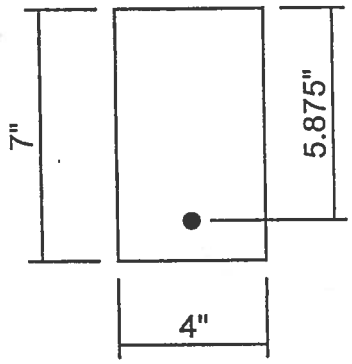
ROOF DESIGN - RIBS (WIDTH = 12' ⟶ RIB SPAN = 11')

- 4" RIB AT 24" O.C. W/ #6 BAR ⟶ $As = 0.44in^2$

AT MIDPOINT



$\rho_{MAX} = 0.0252$

$$\rho = \frac{(0.44in^2)}{(4")\ (5.875")} = 0.0187$$

$$a = \frac{(0.0187)\ (60{,}000\ PSI)\ (5.875")}{(0.85)\ (5000\ PSI)} = 1.55"$$

$$Mu = 0.9\ [0.85\ (5000\ PSI)\ (1.55")\ (4")\ (5.875" - {}^{1.55"}/_{2})]$$

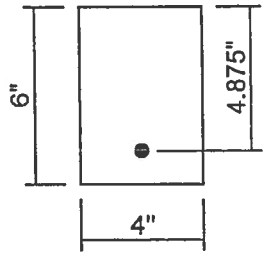
Mu = 120,947 IN-LBS = 10,079 FT-LBS

*** DESIGN RIBS BASED ON ROOF LIVE LOAD = 100 PSF ***

$$M_{MAX} = \frac{[(1.7)\ (100\ PSF)\ (2') + (1.4)\ (45\ PSF)\ (2')]\ (11')^2}{8}$$

M_{MAX} = 7049 FT-LBS < Mu ✓

AT EAVE



$$Vu = (0.85)\ (2)\ (\sqrt{5000})\ (4")\ (4.875")\ (1.1) = 2578\ LBS$$

$$V_{MAX} = \frac{[(1.7)\ (100\ PSF)\ (2') + (1.4)\ (45\ PSF)\ (2')]\ (11')}{2}$$

V_{MAX} = 2563 LBS < Vu ✓

ROOF DESIGN - SKIN (SKIN SPAN = 20")

- USE 2" SKIN PROPERTIES FROM WALL DESIGN

Mu = 425 FT-LBS, Vu = 1442 LBS

$$M_{MAX} = \frac{[(1.7)\ (100\ PSF)\ (1') + (1.4)\ (45\ PSF)\ (1')]\ (1.67')^2}{8}$$

M_{MAX} = 81 FT-LBS < Mu ✓

$$V_{MAX} = \frac{[(1.7)\ (100\ PSF)\ (1') + (1.4)\ (45\ PSF)\ (1')]\ (1.67')}{2}$$

V_{MAX} = 195 LBS < Vu ✓

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ROOF DESIGN - PONDING CHECK

t = 7" AT MIDSPAN

ℓ = 132" (RIB SPAN)

$\ell/16$ = $132"/16 = 8.25" > 7"$ ∴ CALCULATE Δ

Wc = 125 PCF FOR ROOF PANEL

$Ec = (Wc^{1.5})(33)(\sqrt{f'c}) = 3{,}261{,}099$ PSI

$fr = (7.5)(\sqrt{f'c}) = 530$ PSI

$$Ig = \frac{bh^3}{12} = \frac{(4")(7")^3}{12} = 114.3\ in^4$$

Yt = 3.5"

$$M_{CR} = \frac{(fr)(Ig)}{(Yt)} = \frac{(530\ PSI)(114.3\ in^4)}{(3.5")} = 17{,}308\ IN\text{-}LBS$$

$$n = \frac{E_{ST}}{Ec} = \frac{29{,}000{,}000\ PSI}{3{,}261{,}099\ PSI} = 8.9$$

$$c = \frac{(n)(As)}{(b)}\left[\sqrt{1+\frac{(2)(b)(d)}{(n)(As)}}\ -1\right] = \frac{(8.9)(0.44in^2)}{(4")}\left[\sqrt{1+\frac{(2)(4")(5.875")}{(8.9)(0.44in^2)}}\ -1\right]$$

c = 2.55"

$$I_{CR} = \frac{bc^3}{3} + n\,A_S(d-c)^2 = \frac{(4")(2.55")^3}{3} + (8.9)(0.44in^2)(3.325")^2$$

$I_{CR} = 65.4\ in^4$

$$M_{MAX} = \frac{[(100\ PSF)(2') + (45\ PSF)(2')](11')^2}{8} = 4387\ FT\text{-}LBS = 52{,}644\ IN\text{-}LBS$$

$$Ie = \left(\frac{M_{CR}}{M_{MAX}}\right)^3 Ig + \left[1-\left(\frac{M_{CR}}{M_{MAX}}\right)^3\right] I_{CR} \le Ig$$

$Ie = 67\ in^4$

$$\Delta_{INST} = \frac{(5)(W)(L)^4}{(384)(Ec)(Ie)}$$

$$\Delta_{INST} = \frac{(5)[(100\ PSF)(2') + (45\ PSF)(2')]\,(1/12)\,(132")^4}{(384)(3{,}261{,}099\ PSI)(67\ in^4)}$$

$\Delta_{INST} = 0.44"$

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ROOF DESIGN - PONDING CHECK (CONT'D.)

$$\Delta_{ALL} = \frac{\ell}{180} = \frac{132"}{180} = 0.73" > 0.44" \checkmark$$

CHECK LONG TERM DEFLECTION ASSUMING 50% OF LIVE LOAD IS SUSTAINED

$$\Delta_{INST} = \frac{(5)\,[(50\ PSF)\,(2') + (45\ PSF)\,(2')]\,(1/12)\,(132")^4}{(384)\,(3{,}261{,}099\ PSI)\,(67\ in^4)} = 0.29"$$

$$\lambda = \frac{\varepsilon}{1+50\rho'} = \frac{(2.0)}{(1+0)} = 2.0$$

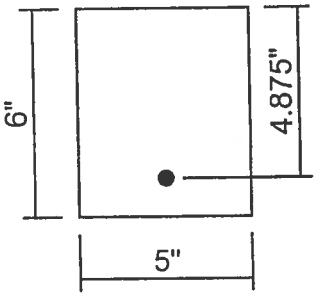
$$\Delta_{LONG\text{-}TERM} = (2.0)\,(0.29") = 0.58"$$

$$\Delta_{ALL\ LONG\ TERM} = \frac{\ell}{240} = \frac{132"}{240} = 0.55" \approx^{*} 0.58" \checkmark$$

***ALSO KEEP IN MIND THAT DEFLECTIONS WERE BASED ON RECTANGULAR BEAM PROPERTIES WHEN WE REALLY HAVE A TEE-BEAM SECTION WHICH WOULD DECREASE DEFLECTIONS.**

FLOOR DESIGN - RIBS (WIDTH = 12' → RIB SPAN =11')

- 5" RIB AT 24" O.C. W/ #6 BAR → $As = 0.44in^2$



$\rho_{MAX} = 0.0252$

$$\rho = \frac{0.44in^2}{(5")\,(4.875")} = 0.0181$$

$$a = \frac{(0.0181)\,(60{,}000\ PSI)\,(4.875")}{(0.85)\,(5000\ PSI)}$$

$a = 1.25"$

$$Mu = 0.9\,[0.85\,(5000\ PSI)\,(1.25")\,(5")\,(4.875" - 1.25"/2)]$$

$Mu = 101{,}602$ IN-LBS = 8467 FT-LBS

$$M_{MAX} = \frac{[(1.7)\,(135\ PSF)\,(2') + (1.4)\,(35\ PSF)\,(2')]\,(11')^2}{8}$$

$M_{MAX} = 8425$ FT-LBS $< Mu$ ✓

$Vu = (0.85)\,(2)\,(\sqrt{5000})\,(5")\,(4.875")\,(1.1) = 3223$ LBS

$$V_{MAX} = \frac{[(1.7)\,(135\ PSF)\,(2') + (1.4)\,(35\ PSF)\,(2')]\,(11')}{2}$$

$V_{MAX} = 3064$ LBS $< Vu$ ✓

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BATTERY CHECK
LOAD = 780 LBS
AREA = 6 FT 2
PRESSURE = 780 LBS / 6 FT 2
PRESSURE = 130 PSF
130 PSF < 135 PSF ✓

FLOOR DESIGN - SKIN (SKIN SPAN = 19")

- USE 2" SKIN PROPERTIES FROM WALL DESIGN

Mu = 425 FT-LBS, Vu = 1442 LBS

$$M_{MAX} = \frac{[(1.7)\ (135\ PSF)\ (1') + (1.4)\ (35\ PSF)\ (1')]\ (1.6')^2}{8}$$

M_{MAX} = 89 FT-LBS < Mu ✓

$$V_{MAX} = \frac{[(1.7)\ (135\ PSF)\ (1') + (1.4)\ (35\ PSF)\ (1')]\ (1.6')}{2}$$

V_{MAX} = 223 LBS < Vu ✓

CONNECTION CHECK (F42's) DURING LIFTING - WHEN LIFTING FROM ROOF

FLOOR TO WALLS → F42 AT ≈ 24" O.C.

MAXIMUM LOAD = (2') (6') (135 PSF + 35 PSF) = 2040 LBS

$F42_T$ = 2000 LBS ≈ * 2040 LBS ✓

* THIS ONLY OCCURS DURING LIFTING OF BUILDING FROM ROOF AND CONTAINS A SAFETY FACTOR OF 3 ∴ OK

CONNECTION CHECK (F42's) WIND LOAD

WALLS TO FLOOR OR WALLS TO ROOF

F42 AT ≈ 24" O.C.

MAXIMUM LOAD = (2') (5') (83.1 PSF)

MAXIMUM LOAD = 831 LBS

$F42_{ES}$ = 750 LBS ≈* 831 LBS ✓

* THIS ONLY OCCURS DURING MAXIMUM WIND LOAD AND CONTAINS A SAFETY FACTOR OF 2 ∴ OK

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CONNECTION CHECK (F42's) SEISMIC SHEARWALL

SEISMIC LOAD IN ROOF DIAPHRAGM = V = 27,249 LBS

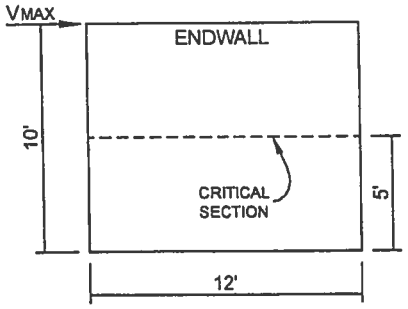
CHECK SHEAR PARALLEL TO WIDTH OF BUILDING AS WORST CASE

$$\frac{(27{,}249 \text{ LBS})}{(2 \text{ ENDWALLS})(22 \text{ F42's})} = 620 \text{ LBS / F42}$$

$F42_{LS}$ = 2000 LBS > 620 LBS ✓

SHEARWALL CHECK (SEISMIC)

V_{MAX} = 1/2(V) (1.7) = 1/2(27,249 LBS) (1.7) = 23,162 LBS



CRITICAL SECTION FOR SHEAR

$$\frac{\ell w}{2} = \frac{12'}{2} = 6'$$

$$\frac{hw}{2} = \frac{10'}{2} = 5' \text{ (GOVERNS)}$$

V_U = (ø) (10) ($\sqrt{f'c}$) (h) (d)

WHERE h = 2" SKIN, d = 0.8 (12') = 9.6' = 115"

V_U = (0.85) (10) ($\sqrt{5000}$) (2") (115") = 138,239 LBS > 23,162 LBS ✓

SHEAR STRENGTH PROVIDED BY CONCRETE ALONE:

Vc = (2) ($\sqrt{f'c}$) (h) (d) = (2) ($\sqrt{5000}$) (2") (115") = 32,527 LBS (CONSERVATIVE)

ø Vc = (0.85) (32,527 LBS) = 27,648 LBS

$\frac{ø\,Vc}{2}$ = 13,824 LBS < V_{MAX} ∴ SUPPLY HORIZONTAL REINFORCEMENT

$$23{,}162 \text{ LBS} \le 27{,}648 \text{ LBS} + \frac{(0.85)(Av)(fy)(d)}{S_2}$$

$$23{,}162 \text{ LBS} \le 27{,}648 \text{ LBS} + \frac{(0.85)(0.1 \text{ in}^2)(60{,}000 \text{ PSI})(115")}{12"}$$

23,162 LBS ≤ 76,523 LBS ✓

VERICAL REINFORCEMENT OK
BY INSPECTION

STATE OF WASHINGTON DEPT OF LABOR AND INDUSTRIES FAS PLAN REVIEW SECTION APPROVED FRANKLIN D. RALPH STATE OF WASHINGTON 36853 REGISTERED PROFESSIONAL ENGINEER EXPIRES 10/18/02 10-7-02

* USING THE CALCULATION PROCEDURES AS DETAILED ON THE PREVIOUS PAGES, THE FOLLOWING CHARTS OF ALLOWABLE LOADS HAVE BEEN DEVELOPED FOR BUILDINGS OF VARIOUS SIZES. ALL RIB SIZES, SPACINGS AND REBAR SIZES WERE HELD CONSTANT.

WALL PANELS

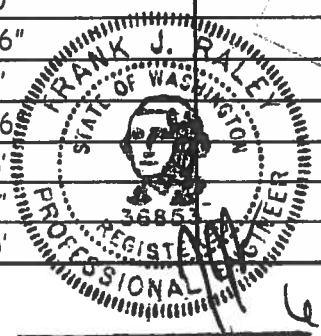
PANEL HEIGHT	RIB SPAN	MAX. WIND (FASTEST MILE)
10'	9'	125 MPH
9'-6"	8'-6"	130 MPH
9'	8'	135 MPH

ROOF PANELS

PANEL WIDTH	RIB SPAN	MAX. LIVE LOAD
12'	11'	100 PSF
11'-9"	10'-9"	100 PSF
11'-6"	10'-6"	105 PSF
11'	10'	110 PSF
10'-6"	9'-6"	120 PSF
10'	9'	130 PSF
9'-6"	8'-6"	140 PSF
9'	8'	150 PSF
8'	7'	175 PSF
7'	6'	200 PSF

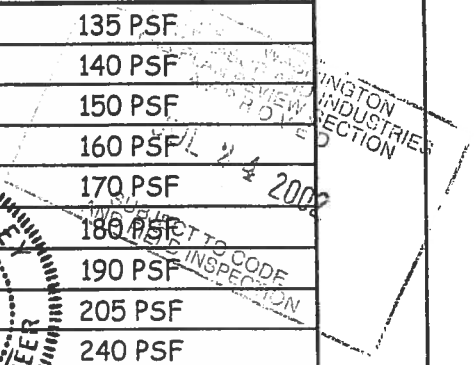
FLOOR PANELS

PANEL WIDTH	RIB SPAN	MAX. LIVE LOAD
12'	11'	135 PSF
11'-9"	10'-9"	140 PSF
11'-6"	10'-6"	150 PSF
11'	10'	160 PSF
10'-6"	9'-6"	170 PSF
10'	9'	180 PSF
9'-6"	8'-6"	190 PSF
9'	8'	205 PSF
8'	7'	240 PSF
7'	6'	260 PSF



6/7/02

(SEAL) EXPIRES 10/18/ 02



CHANGE ORDER PROPOSAL - 001

Project Name:

Date:

Specification No: **Contract No:** **Change Order No:** 001

Contractor Name:

Scope of Change Order/Work: Enter increased scope here

☐ Sketch Attached ☐ Drawing Attached ☐ Additional Pages Attached

Original Contract Amount: $

Change Order Increase Amount: $ Enter increase amount here + tax

Accounting for Increased Amount:

Time extension or reduction approved: There will be no time extension approved for this increased scope of work.

The change order includes all contractor labor, material, overhead, profit and all direct and/or indirect costs associated with the change in the scope of Work.

☐ Approved ☐ Disapproved ☐ Resubmit

City of Tacoma

_____

Director Name, Information Technology Director

Contractor Name

_____

Enter Name, Enter Position

SAMPLE

AES CORPORATION 40 Years of SECURITY INNOVATION

AES 7707P-88-ULP + 7794 IntelliPro
Frequency: 465.9875
Monitoring Agency: Fire Protection, Inc. 425-290-9600
Contact person: Sam Ozturgut - sam@fpiseattle.com

7707 Fire Subscribers

IntelliNet 2.0

Introducing a Newer, Smarter Alarm Communications Platform

New Feature Highlights

- Leverages state of the art technology
- Applies advanced security protection
- Offers flexible power and configuration options
- Engineered for backward compatibility with legacy systems
- Enables future ready capabilities
- Provides instant subscriber status through front panel with Power and Trouble LEDs, a backlit LCD display, and Menu/Silence button
- Improves functionality with an adaptive Graphic User Interface (GUI) for programming via smartphones, tablet and PCs
- Plus many more...

Key Benefits that Make 2.0 the Best Alarm Monitoring Solution Ever

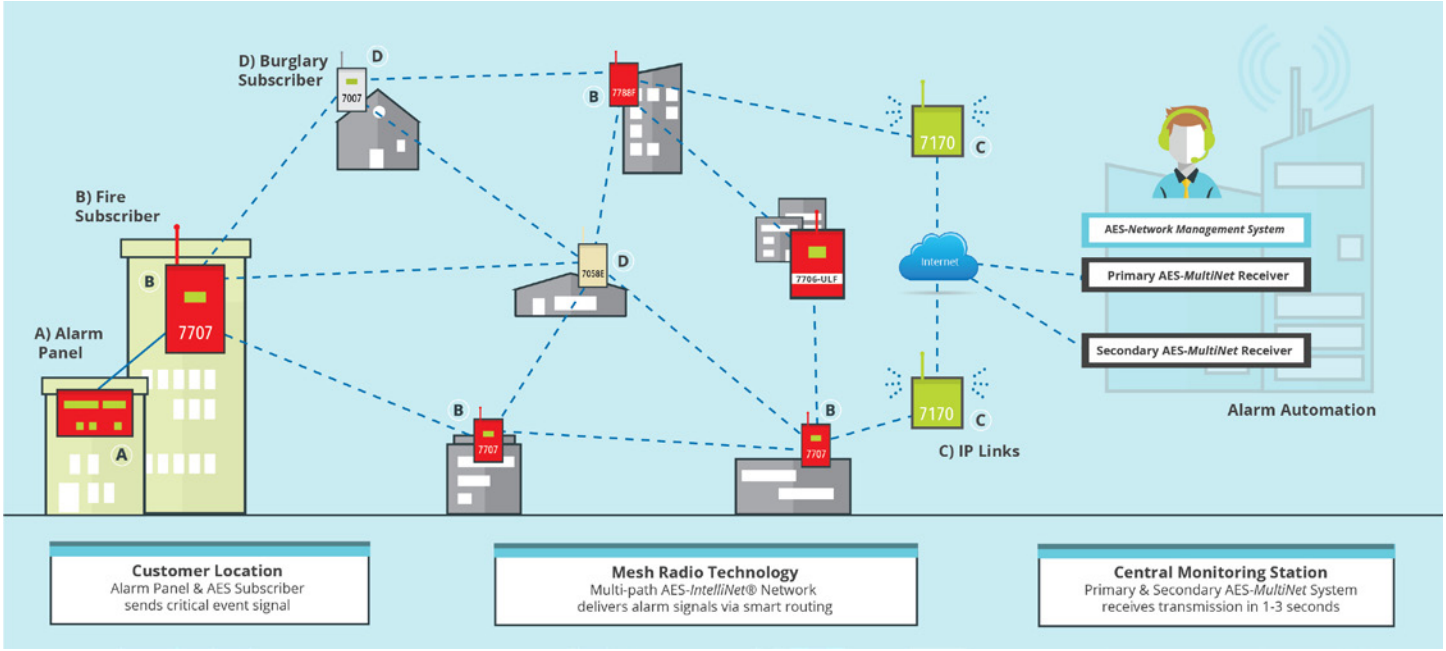
- Built upon the solid foundation of AES-*IntelliNet* patented mesh radio technology for use in private licensed wireless networks
- Protects subscriber units against unauthorized access and rogue activity with a password protected Dealer Code
- Makes programming and streamlined troubleshooting easy with user friendly interface
- Adds integrated supervision of AES-*IntelliPro* full data module
- Provides versatile power options:
  (1) Direct from the Fire Alarm Control Panel (FACP) without requiring an electrician onsite and without Subscriber backup battery
  (2) Directly from the FACP with Subscriber backup battery; or
  (3) Traditional installation with plug in Class 2 low power transformer
- Allows for enhancement upgrades and an expanded number of new features to be added easily with highly flexible and scalable alarm communications infrastructure
- Rigorously tested to the highest industry standards and future ready to meet emerging NFPA code and UL standards

Enhanced Wireless Fire Alarm Monitoring

Powered by AES enhanced mesh radio technology, *IntelliNet* 2.0 7707 Fire Subscribers are next generation universal wireless communicators that provide advanced security protection for any new or existing alarm monitoring network. The AES Model 7707 is ideal for commercial fire applications. With the AES-*IntelliPro* full data module option, they are the ideal drop-in replacement for Plain Old Telephone Service (POTS) lines.

The red metal enclosure comes with a key lock and front panel LCD backlit display with intuitive view that provides an instant visual of the subscriber status. The user friendly GUI makes it easy to program AES subscriber units via a smartphone, laptop, tablet, or integrated Universal Serial Bus (USB)—without the need for special cables or having to use a handheld programmer. Additional knockouts make it easier to mount for faster installation.

IntelliNet 2.0 Private Wireless Mesh Radio Network



The *IntelliNet* 2.0 Fire Subscriber has an 8 Zone modular design for expansion with normal and reverse polarity, POTS and DACT interfaces with an option for the 7794A AES-*IntelliPro* full data module add-on accessory board. AES subscribers' intelligent software automatically detects new hardware and devices to reduce installation time.

An AES certified WiFi accessory allows seamless wireless connectivity for configuration and programming. A laptop, Ethernet cable, or a Wi-Fi USB dongle is required for *IntelliNet* 2.0 programming, handheld programmers will not work with 2.0 units. A FACP Power Supply Adapter is required for certain configurations when using flexible power options. The forward compatible design allows for feature add-ons, engineered to adapt seamlessly with future software upgrades as technology advances. *IntelliNet* 2.0 allows configuration cloning for faster installation time.

The AES 7707 was designed with quick configuration and installation in mind to make it easier for field technicians to get in, out, and on to the next install.

Visit our Fire Marshal Resources web page for official NFPA and UL Listings:
http://aes-corp.com/products/fire/fire-marshal-resources/

IntelliNet 2.0 Fire Subscribers	
2.0 PREMIUM (UL & ULC Listed, Available Now!)	
7707P-88	*IntelliNet* 2.0 Fire Subscriber, 8 Zone, 8 Supervised Zones, with integrated onboard Local Annunciator, Red Enclosure
7707P-88-ULP	*IntelliNet* 2.0 Fire Subscriber, 8 Zone, 8 Supervised Zones with 7794A AES-*IntelliPro* and integrated onboard Local Annunciator, Red Enclosure
7707P-44	*IntelliNet* 2.0 Fire Subscriber, 4 Zone, 4 Supervised Zones, with integrated onboard Local Annunciator, Red Enclosure
7707P-44-ULP	*IntelliNet* 2.0 Fire Subscriber, 4 Zone, 4 Supervised Zones with 7794A AES-*IntelliPro* and integrated onboard Local Annunciator, Red Enclosure
2.0 FEATURE ADD (Pending UL Review)	
7707P-88-M	*IntelliNet* 2.0 Fire Subscriber, 8 Zone with Multiple Communication Technologies (MCT), Red Enclosure
7707P-88-ULP-M	*IntelliNet* 2.0 Fire Subscriber, 8 Zone with 7794A AES-*IntelliPro*, and integrated onboard Local Annunciator plus MCT, Red Enclosure
7707P-44-M	*IntelliNet* 2.0 Fire Subscriber, 4 Zone with Multiple Communication Technologies (MCT), Red Enclosure
7707P-44-ULP-M	*IntelliNet* 2.0 Fire Subscriber, 4 Zone with 7794A AES-*IntelliPro*, and integrated onboard Local Annunciator plus MCT, Red Enclosure
7707M-UPG	*IntelliNet* 2.0 Fire MCT Software Upgrade
2.0 ACCESSORIES	
7794A	Standalone AES-*IntelliPro* Fire full data module add-on accessory board with firmware for new *IntelliNet* 2.0 units only, cannot be used in legacy units
77-WiFi	AES certified WiFi adapter
77-FACPA	FACP Power Supply Adapter for internal mount
77-FACPA-KIT	External installation hardware for 2-way Junction Box
***Legacy* Fire Subscribers**	
7706-ULF	Integrated Fire Monitoring System, Red Enclosure
7788F-ULP-P	Legacy Fire Subscriber, 8 Zone with 7795 AES-*IntelliPro* (7794 full data module, 7762 hardware supervisory module, and 7740 Local Annunciator), Red Enclosure
7788F-ULP	Legacy Fire Subscriber, 8 Zone, 8 Supervised Zones with 7794 AES-*IntelliPro*, Red Enclosure
7788F	Legacy Fire Subscriber, 8 Zone, 8 Supervised Zones, Red Enclosure
7744F-ULP-P	Legacy Fire Subscriber, 4 Zone with 7795 AES-*IntelliPro* (7794 full data module, 7762 hardware supervisory module, and 7740 Local Annunciator), Red Enclosure
7744F-ULP	Legacy Fire Subscriber, 4x4 Zone, 4 Supervised Zones with 7794 AES-*IntelliPro*, Red Enclosure
7744F	Legacy Fire Subscriber, 4x4 Zone, 4 Reversing Polarity, 4 Supervised Zones, Red Enclosure
LEGACY ACCESSORIES	
7794	Standalone AES-*IntelliPro* Fire full data module add-on accessory board for legacy units only, please see 7794A above for *IntelliNet* 2.0 version

Technical Specifications

DIMENSIONS
13”H x 8.5”W x 4.5”D
(33cmH x 21.5cmW x 11.4cmD)

WEIGHT
5.8 lbs (2.6 kilograms)
excluding battery
13 lbs (5.9 kilograms) with
10 Ah battery

RADIO FREQUENCY
Standard Frequency Range:
450-470 MHz
Contact AES for other UHF
and VHF frequencies

ANTENNA
2.5 dB tamper resistant antenna
included, mounts on enclosure
Optional remote mounting
antenna available

POWER INPUT
AC SOURCES
Transformer: Class 2
16.5V AC nominal output
1.9 A max current (40 VA MIN)
ELK ELK-TRG1640,
MG ELECTRONIC SALES MGT1640,
or AES 1640 (not included)
DC SOURCES (includes FACP)
24V DC Regulated Power Supply
with Subscriber
Rechargeable Battery
1.9 A max current

BACKUP BATTERY
10-12 Ah, UL recognized lead acid
gel cell, size based on subscriber
configuration

ALARM SIGNAL INPUTS/ZONES
- 8 individually programmable E.O.L. type zone inputs
- 4+4: 4 reverse polarity input and 4 individually programmable E.O.L. type zone inputs
- Optional 7794A AES-*IntelliPro* for full data via Contact ID, Pulse, Modem IIe and Modem IIIa2

UL LISTINGS
UL 864 10th Edition
Standard for Control Units and
Accessories for Fire Alarm Systems
ULC S559-04 1st Edition
Equipment for Fire Signal
Receiving Centres and Systems

TROUBLE OUTPUT—ACK DELAY/ANTENNA CUT
Form C relay, fail secure, rated 24V
DC 1A resistive, unsupervised

RESET BUTTON
Located on main circuit board

OPERATING TEMPERATURE
32 to 120°F (0 to 49°C)

STORAGE TEMPERATURE
14 to 140°F (-10 to 60°C)

RELATIVE HUMIDITY
0 to 93%, non-condensing

RECHARGE CAPABILITY
Will charge 12V battery size
from 10-12 Ah

PORTS
Ethernet for configuration
and message communication
USB access for software upgrade

REMOTE ANNUNCIATOR
AES Model 7740
Remote Annunciator, supervised

COMPATIBLE RECEIVERS
7705i AES-MultiNet Receiver

CONFIGURATION INTERFACE
Web browser capable device
accessible via smartphone, tablet,
laptop, or PC

CURRENT CONSUMPTION
Standby w/ charged backup battery:
200 mA (1.2 A Transmitting)
Standby + charging backup battery:
900 mA (1.9 A Transmitting - MAX)

POWER OUTPUT
2 or 5 Watts
Factory set

ENCLOSURE MATERIAL
Steel with paint finish

FINISH COLOR
Red

VISUAL INDICATORS
Front panel LCD
(2 x 20 alphanumeric character
backlit display)
Power and Trouble LEDs
(ALM, Trouble, Tx, Rx, WA)

Contact Us

For pricing and availability or to learn more about *IntelliNet* 2.0, please call your local AES Sales Representative at **(800) 237-6387** or email **sales@aes-corp.com.**

www.aes-corp.com
AES Corporation | 285 Newbury Street | Peabody, MA 01960 United States

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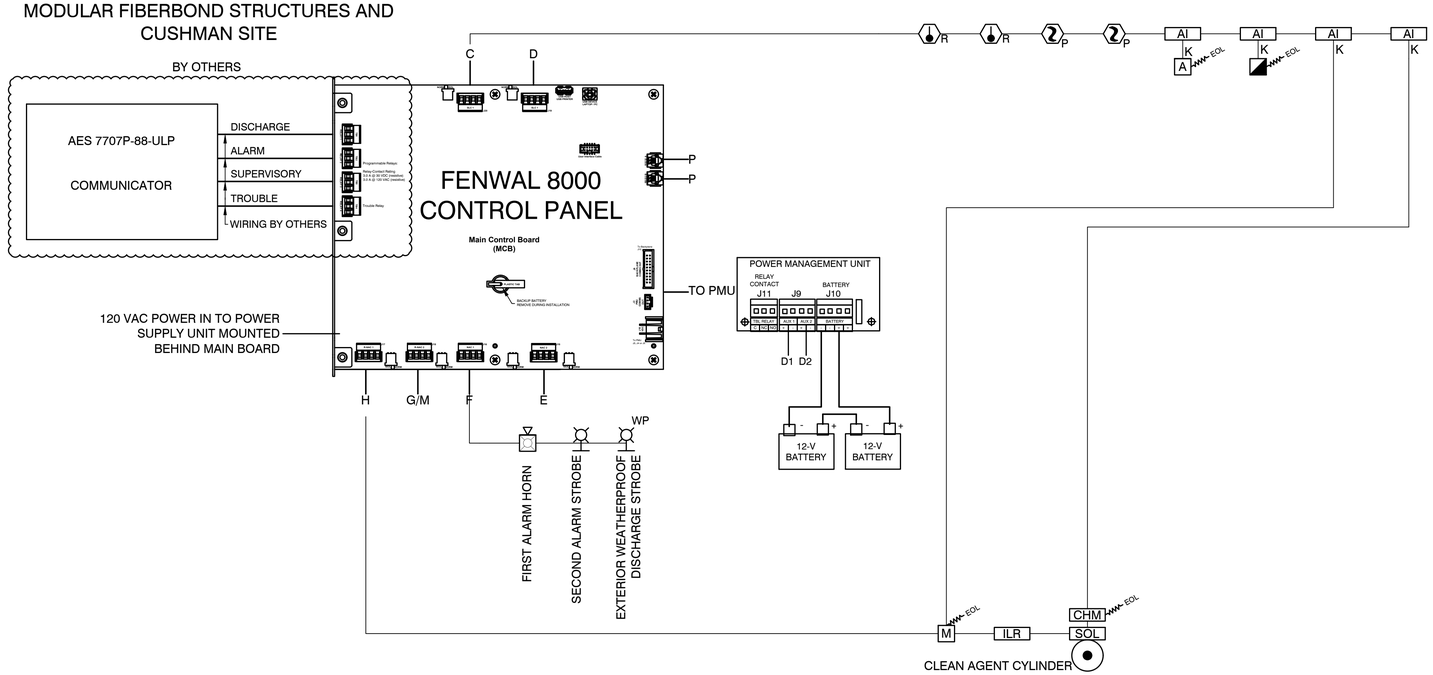
Exhibit H

CITY OF TACOMA
RISER DIAGRAM
MODULAR FIBERBOND STRUCTURES AND CUSHMAN SITE



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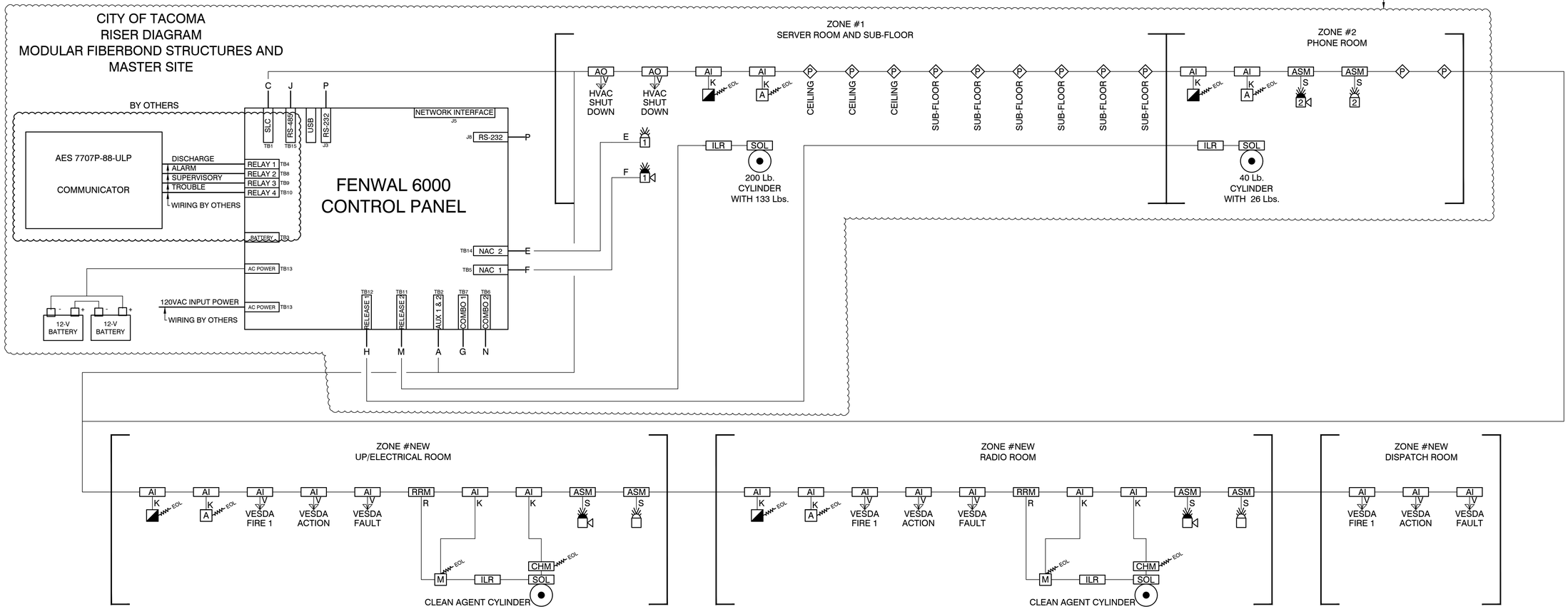

SUPPRESSION SYSTEMS INC.
SPECIAL HAZARDS FIRE PROTECTION
3077 20TH STREET EAST, SUITE B
FIFE, WA 98424-1798
(253) 926-3300 FAX (253)926-3306

NICET STAMPS

MANUFACTURER LOGO'S

Kidde Fire Systems

FIRE PROTECTION ENGINEERS STAMP

COMPLIANCE SUBMITTALS	DATE
SUBMITTAL	

REV	DESCRIPTION	DATE
1		
2		
3		
4		

PROJECT INFORMATION:

CITY OF TACOMA
CUSHMAN SITE AND
MASTER SITE

DESIGNED BY: NMR	SCALE: NOT TO SCALE UNLESS NOTED OTHERWISE
DRAWN BY: NMR	
CHECKED BY: ZST	
JOB NUMBER:	

SHEET TITLE:
FIRE SUPPRESSION SYSTEM
EXAMPLE SINGLE
WIRING DIAGRAM

SHEET NUMBER:
FP-1.1 of 1

12/21/17 10:23:42 AM

HALOTRON™ I

Amerex Corporation

Aluminum Valve
A384T
B385TS
B386T
B394TS

Brass Valve
397
398

AVAILABLE IN WHEELED EXTINGUISHERS

RUGGED
- 5 Year Manufacturer's Warranty
- Stored Pressure Design
- Dependable Drawn Steel Cylinders
- Durable High Gloss Polyester Powder Paint
- All Metal Valve Construction
- Temperature Range -40°F to 120°F

ENVIRONMENTALLY ACCEPTABLE
- EPA approved "Clean Agent" for Class A, B and C hazards
- Low GWP (Global Warming Potential)
- Low ODP (Ozone Depletion Potential)
- Short Atmospheric Lifetime

CLEAN
- Leaves No Residue

USER FRIENDLY
- Maximum Visibility During Discharge
- Large Loop Pull Pin
- No Electrical Conductivity Back to the Operator
- No Thermal or Static Shock
- Bar Coded and Bi-lingual Labels

OPTION
- 5 lb., 11 lb. and 15 ½ lb. Extinguishers are USCG Approved with Bracket Listed on UL Label

Halotron™ I clean fire extinguishing agent discharges as a rapidly evaporating liquid, which is non-conductive, non-corrosive, and leaves behind no residue. Halotron™ I is the clean agent market leader with a history of successful real-world protection of valuable assets. From model scale aircraft to wide body commercial aircraft, from data centers to pharmaceutical and other industrial plants, the Halotron™ I agent has been used to extinguish the fire, limit damage and help reduce downtime that can be caused by other agents. The Halotron™ I clean agent has been determined to be the most environmentally beneficial halocarbon agent on the market today that meets wide performance standards. The primary raw material in the agent is HCFC-123, which has an outstanding profile of near-zero ozone depleting potential (0.0098, CFC-11=1.0) and a low global warming potential (77, 100 yr. CO_2 time horizon). State of the art atmospheric modeling completed in 2009 describes the smaller environmental footprint than HFC-based agents available for portable extinguishers.Ideal applications for these extinguishers include: data centers, laboratories, manufacturing plants, general office areas, computer rooms, telecommunication facilities, clean rooms, control rooms, warehouses, military electronics, vehicles including classic autos, boats, engine compartments, aircraft ramps, onboard aircraft and in facilities that service aircraft and any facility where dry chemical extinguishers could cause unacceptable damage or contamination.

FAA Approved Models Available (See Chart Below)

AGENT TYPE	HALOTRON™ I					
VALVE TYPE	ANODIZED ALUMINUM				CHROMED BRASS	
DESIGN	NOZZLE				HOSE & NOZZLE	
MODEL NUMBER	A384T	B385TS	B386T	B394TS	397	398
UL & ULC RATING	1B:C	2B:C	5B:C	5B:C	1A:10B:C	2A:10B:C
CAPACITY (LBS.)	1.4	2.5	5	5.5	11	15.5
SHIPPING WT. (LBS.)	3.25	5.25	9.5	10	22.5	27.5
HEIGHT (IN.)	10	15.5	15.25	15	21.88	21.88
WIDTH (IN.)	3.5	6.38	5.75	5.13	9.25	9.25
DEPTH (IN.)	2.63	3	4.25	4.25	6	6
RANGE (INITIAL- FT)	6-8	6-8	9-15	9-15	9-15	12-18
DISCHARGE TIME (SEC.)	9	9	9	9	9	14
FM APPROVED				YES	YES	YES
OPTIONAL CHROME CYLINDER	YES	YES	YES			
MINIMUM CONFINED SPACE REQUIREMENTS (CU. FT.)	196	350	700	770	1540	2170
FAA APPROVED MODEL				YES	YES	YES
INCLUDED BRACKET	VEHICLE	VEHICLE	VEHICLE	AIRCRAFT	WALL	WALL

Manufactured and Tested to ANSI/UL Standards
Complies with NFPA 10 Standard
ISO-9001/ ISO-14001 Certified
UL LISTED

CONFORMS TO TEST STANDARDS:

CAN/ULC-S556 - ANSI/UL2129 &
CAN/ULC-S508 - ANSI/UL711

MADE IN U.S.A.