



# ANCHORAGE SCHOOL DISTRICT

Purchasing Department  
4919 Van Buren Street  
Anchorage, AK 99517-3137

## REQUEST FOR PROPOSAL

**THIS IS NOT AN ORDER**

Show the following on the outside of the sealed proposal envelope:  
**RFP 2024-607 DESIGN SERVICES:  
SCENIC PARK ELEMENTARY  
SCHOOL ROOF REPLACEMENT**

ISSUED DATE:  
**JANUARY 5, 2024**

DUE: **PRIOR to 10:00 A.M., LOCAL  
TIME**  
DATE: **JANUARY 29, 2024**

The Anchorage School District (referred to as the “District” or the “ASD”) invites sealed proposals from qualified persons/firms to PROVIDE PROFESSIONAL DESIGN SERVICES FOR THE COMPLETE ROOF REPLACEMENT AT SCENIC PARK ELEMENTARY SCHOOL to the District in accordance with the following documents that are a part of this RFP 2024-607:

Cover Page	This Notice/Cover Page	Page(s) 1 – 2
<b>Section I</b>	Instructions to Offerors	Page(s) 3 – 13
<b>Section II</b>	Evaluation of Proposals	Page(s) 14 – 15
<b>Section III</b>	Proposal Format	Page(s) 16 – 17
<b>Section IV</b>	Specifications and Scope of Services	Page(s) 18 – 22
<b>Attachment A</b>	Proposal Transmittal Form	1 Page(s)
<b>Attachment B</b>	Pre-Audit Statement	1 Page(s)
<b>Attachment C</b>	Sample Formal Professional Services Agreement (FPSA)	56 Page(s)
<b>Attachment D</b>	Scenic Park ES Plans	6 Page(s)
<b>Attachment E</b>	ASD B3000 Roofing Standards	13 Page(s)
<b>Attachment F</b>	Scenic Park ES ASCE 41-17 Tier 2 Seismic Evaluation : (and) Pre-Reroof Report	184 Page(s)

AVAILABILITY OF RFP: This Request for Proposals (.pdf) is available electronically at the District’s Purchasing website: <http://asdk12.org/depts/purchasing/>

A copy of the current plan holder’s list can be viewed at:  
[http://apps.asdk12.org/depts/purchasing/meeting/Plan\\_Holders/2024/607.xlsx](http://apps.asdk12.org/depts/purchasing/meeting/Plan_Holders/2024/607.xlsx)

SUBMISSION OF PROPOSALS: Proposals must be submitted to the Anchorage School District Purchasing Department, 4919 Van Buren Street, Anchorage, Alaska 99517. Prior to the time specified above. Proposals received after that time will not be considered and will be returned. FAXED or ELECTRONIC proposals are not acceptable. Proposals must be submitted in a SEALED package with the outside of the package clearly marked with Offeror’s name, address, and phone number, and as follows:

REQUEST FOR PROPOSALS 2024-607  
DESIGN SERVICES: SCENIC PARK ELEMENTARY SCHOOL ROOF REPLACEMENT  
DUE: PRIOR TO 10:00 A.M., LOCAL TIME  
DATE: JANUARY 29, 2024

PRE-PROPOSAL SITE-VISIT: **A pre-proposal site-visit will be held at 12:00 p.m., Local Time, January 10, 2024** at Scenic Park ES, 3933 Patterson St. Anchorage, Alaska 99504. Prospective proposers are encouraged to meet the ASD Project Manager at the School’s main office entrance and walk through the proposed area of design for this RFP.

PRE-PROPOSAL CONFERENCE: **A pre-proposal conference will be held at 10:00 a.m., Local Time, January 11, 2024**, in the conference room of the Anchorage School District Purchasing Department, 4919

Cover Page

Van Buren Street, Anchorage, Alaska to discuss any matter concerned with this RFP. **Prospective Offerors are encouraged to participate by teleconference by calling (907) 742-6750.** The line will be available approximately 5 minutes prior to the conference start time.

The Anchorage School District is committed to providing reasonable accommodations, according to applicable state and federal laws, to all individuals with a qualifying disability. If you require a reasonable accommodation in order to participate in this or any other district process, please contact the Anchorage School District's Compliance/Equal Employment Opportunity Office (907) 742-4132.

Estimated amount of proposed contract: \$300,000 to \$450,000

END OF COVER PAGE



**A. GENERAL REQUIREMENTS**

This solicitation is a REQUEST FOR PROPOSALS (“RFP”) governed by applicable Anchorage School Board Policies, including Section 3311 of such Policies. Anchorage School Board Policies are available at <https://www.boardpolicyonline.com/?b=anchorage>

Offerors should read this RFP carefully and review all instructions contained herein. Incomplete or incorrect proposals may be rejected as not conforming to the essential requirements of the RFP. Proposals submitted on other than the prescribed forms contained in this RFP will be rejected. Offerors may copy the forms contained in the RFP for use in their proposals, but substitute forms or formats are unacceptable. Electronic copies of the forms which offerors must submit as part of any proposal, if any—if not provided with this RFP—may be obtained by contacting the Anchorage School District Purchasing Department. Forms shall not be altered except to supply requested offeror information.

**B. INTENT OF SPECIFICATIONS**

The Anchorage School District desires to enter into a contract with an offeror whose primary business is to provide professional design services for the complete roof replacement and seismic upgrades at Scenic Park ES and to complete the contract in accordance with all of its terms and conditions and in compliance with all applicable laws. The scope of work is considered performance oriented and it is the intent of the District to rely on the experience and expertise of the offeror to fully appraise itself of the work required to fulfill the terms of the contract resulting from the RFP.

**C. EXAMINATION OF CONTRACT DOCUMENTS**

Offerors should read this Request for Proposals carefully and review all instructions contained herein. The submission of a proposal shall constitute acknowledgement that the offeror has thoroughly examined and is familiar with the solicitation documents.

**D. CONDITIONS OF THE WORK**

Each offeror must acquaint itself thoroughly as to the character and nature of the services to be provided to fulfill the requirements of the resulting contract. Each offeror must complete a careful examination of the existing systems, infrastructure, geographical features, and prevailing weather conditions, as applicable, and must inform itself fully as to the difficulties to be encountered in the performance of the work, the availability of a qualified work force and other conditions related to providing the required services. No claim of ignorance of conditions that exist or hereafter may exist, or difficulties that may be encountered in the execution of the work, as a result of failures to make necessary investigations and examinations, will be accepted as an excuse for any failure or omission on the part of a successful offeror(s) to fulfill all of the requirements of the contract documents and to complete the work for the consideration set forth therein, or as the basis for any claim whatsoever.

**E. QUESTIONS; METHOD FOR CLARIFICATION**

Any offeror in doubt as to the true meaning of any part of this RFP may submit to the District a written request for an interpretation thereof. Questions must be received by the District’s Purchasing Department at least seven (7) days prior to the date set for the submission of proposals. If such date falls on a weekend or holiday, the deadline shall be the last business day before the weekend or holiday. Questions can be delivered as follows:

Fax: Anchorage School District Purchasing Department @ 907-243-6293  
Attn: Shannon Powers, Sr. Purchasing Agent  
Reference: RFP 2024-607 DESIGN SERVICES: SCENIC PARK ELEMENTARY  
SCHOOL ROOF REPLACEMENT

**E-mail: [purchasing@asdk12.org](mailto:purchasing@asdk12.org) \*\*PREFERRED METHOD\*\*  
Attn: Shannon Powers, Sr. Purchasing Agent  
Reference: RFP 2024-607 DESIGN SERVICES: SCENIC PARK ELEMENTARY  
SCHOOL ROOF REPLACEMENT**

Mail: Anchorage School District Purchasing Department  
Attn: Shannon Powers, Sr. Purchasing Agent  
4919 Van Buren Street  
Anchorage Alaska 99517-3137  
Reference: RFP 2024-607 DESIGN SERVICES: SCENIC PARK ELEMENTARY  
SCHOOL ROOF REPLACEMENT

Two types of questions generally arise. One may be answered by directing the offeror to a specific section of the RFP. These questions may be answered by direct communication to the offeror submitting the question. Questions which in the opinion of the Purchasing Senior Director require a more detailed or complex reply, or require an answer that may affect responses to this RFP or may be prejudicial to other prospective offerors, will be answered by issuing an addendum to all RFP holders prior to the submittal opening.

#### **F. ERRORS AND AMBIGUITIES**

1. Offeror comments concerning discrepancies, defects, ambiguities or other errors in the RFP must be made in writing and received by the District's Purchasing Department at least seven (7) days prior to the date set for the submission of proposals. If such date falls on a weekend or holiday, the deadline shall be the last business day before the weekend or holiday. Comments can be delivered as set forth in Section E, above. Any clarifications, changes or corrections to the RFP will be made only by written notice or addendum issued by the District.
2. If an offeror fails to notify the District of a discrepancy, defect, ambiguity or other error in the RFP, the offeror's proposal shall be submitted at the offeror's own risk and if a contract is awarded as a result of such proposal, the offeror shall not be entitled to additional compensation or other consideration by reason of the discrepancy, defect, ambiguity or other error, or its later correction or clarification. Protests based on any error or omission, or on the content of the solicitation, will be disallowed if the fault has not been brought to the attention of the District, in writing, at least five (5) days prior to the date set for submission of proposals. If such date falls on a weekend or holiday, the deadline shall be the last business day before the weekend or holiday.

#### **G. ADDENDA**

Addenda may be issued when changes, clarifications, or amendments to this RFP are deemed necessary by the District for any reason. If an addendum is issued, the District will make reasonable efforts to ensure that each prospective offeror receives the addendum in a timely fashion. However, the risk of non-receipt of any addendum lies solely with prospective offerors. Offerors should contact the District at the addresses set forth in Section E, above, to ascertain if any addenda have been issued. Offerors must acknowledge receipt of each addendum issued in the space provided on the appropriate addendum form and submit such signed addendum with the proposal. No oral change or interpretation of this RFP shall be relied upon by prospective offerors or shall be binding on the District whether issued at a pre-proposal conference or otherwise.

#### **H. SUBMISSION OF PROPOSALS**

1. All proposals, addenda, and forms must be manually signed. **One (1) original and five (5) copies of the proposal, for a total of six (6).**

2. Proposals delivered by telefax, facsimile or by electronic means are not acceptable and will not be considered.
3. Signed and sealed Proposals must be at the District Purchasing Department on or before the time and date stated on the face page of this RFP. Offerors are solely responsible for ensuring that the offeror's proposal package is received by the District's Purchasing Department by the deadline.
4. Late proposals will not be considered and will be returned to the offeror unopened.
5. Photographs may be included with a proposal as appropriate or as desired by the offeror. Photographs will not be returned to an offeror.
6. Offerors may submit only one proposal for evaluation.
7. No responsibility will attach to any officer or agent of the District for the premature opening of, or the failure to open, a proposal not properly addressed and identified.

**I. ALASKA BUSINESS LICENSE**

Offerors must hold a valid Alaska business license and any necessary applicable professional licenses required by Alaska Statute as a condition of award. Offerors should contact the State of Alaska, Department of Commerce, Community and Economic Development, Division of Occupational Licensing, for information regarding business licensing. Contact information, information regarding business licensing, and business licenses, are available at <http://www.dced.state.ak.us/occ>.

**J. FIRM OFFER**

Offers made in response to this RFP must be good and firm for a period of ninety (90) calendar days from the date specified for submittal of proposals.

**K. WITHDRAWAL OF PROPOSALS**

Proposals may be withdrawn on written request delivered to the District Purchasing Director (fax is acceptable) prior to the time specified for submittal. Proposals not withdrawn prior to the specified time may not be withdrawn for a period of ninety (90) calendar days after the time for receipt of proposals.

**L. DISTRICT NOT RESPONSIBLE FOR PREPARATION COSTS**

Each offeror understands and agrees that it submits its proposal at its own risk and expense and releases the District from any claim for damages or other liability arising out of the Request for Proposals and award process, including but not limited to: proposal preparation costs and costs associated with any challenge (administrative, judicial or otherwise (including attorney fees)) to the determination of the highest ranked proposal and/or award of contract and/or rejection of proposals, except as follows: in the event that a contract is awarded to one offeror, and it is determined after award of the contract that it should have been awarded to some other offeror, the only financial liability of the District, if any, to the aggrieved offeror shall be actual costs reasonably incurred by that offeror in the preparation and submittal of its proposal. No other obligation of any sort is created nor may liability, financial or otherwise, be asserted against the District, its Board, Board members, employees, agents or insurers to offer to award or award a contract. By submitting a proposal, each offeror agrees to be bound in this respect.

**M. REJECTION OF PROPOSALS**

Instructions to Offerors  
Section I

1. Offerors must comply with all of the terms of this RFP, and all applicable local, state, and federal laws, codes and regulations. The District may reject any proposal that does not comply with all of the material and substantial terms, conditions, and performance requirements of this RFP and any proposal which contains information or material which cannot be verified or otherwise confirmed for purposes of determining responsiveness to the solicitation.
2. The District reserves the right to waive informalities and minor irregularities, and/or reject any and all proposals, and to not award the proposed contract, if in its best interest. "Informalities and minor irregularities" means matters of form rather than substance which are evident from the submittal, or are insignificant matters that have a negligible effect on price, quantity, quality, delivery, or contractual conditions and that can be waived or corrected without prejudice to other Offerors. These include items that:
  - Do not affect responsiveness;
  - Are merely a matter of form or format;
  - Do not change the relative standing or otherwise prejudice other offers;
  - Do not change the meaning or scope of the RFP;
  - Are trivial, negligible, or immaterial in nature;
  - Do not reflect a material change in the work, or;
  - Do not constitute a substantial reservation against a requirement or provision of the RFP.

**N. SELECTION FOR AWARD**

1. Selection for award will be accomplished in accordance with Anchorage School Board Policy Section 3311 and the terms and conditions of this solicitation. A recommendation for award, based upon the evaluation criteria specified in this RFP, will be made to the Anchorage School Board for approval, unless approval is not required under Board Policy Section 3311.
2. The District may award a contract on the basis of initial proposals received, without discussions. Therefore, each proposal should contain the offeror's best efforts from a technical standpoint.
3. For those awards requiring Board approval, the District's Purchasing Department will make public in the Purchasing Department each Notice of Intent to Award ten (10) calendar days prior to the scheduled date for award by the Board. Offerors may, upon request to the Purchasing Department, review the proposal scoring summary prior to the scheduled Board award date.
4. Any contract awarded as a result of this solicitation will incorporate the contents of this RFP and the successful offeror's proposal, subject to the reservations set forth herein for provisions of a proposal that do not comply with material and substantial terms, conditions, and requirements of this RFP or that impermissibly restrict the rights of the District. The successful offeror(s) will be required to execute a written contract in the form included as part of this RFP and comply with its terms.

**O. NEGOTIATIONS**

After final evaluation, the District may negotiate with the offeror of the highest-ranking proposal. Negotiations, if held, shall be within the scope of the RFP and limited to those items which would not have an effect on the ranking of proposals. The District reserves the right to change terms and conditions during contract negotiations. If the highest-ranked offeror fails to provide necessary information for negotiations in a timely manner or fails to negotiate in good faith, or if the offeror and the District, after a good faith effort, cannot come to terms, the District may terminate negotiations and commence negotiations with the offeror of the next highest-ranking proposal.

**P. REQUIREMENTS FOR SUBMISSION OF COST/PRICING DATA**

**This project requires the submission of certified cost/pricing data. An audit, conducted by the offeror, of the selected offeror's cost accounting systems and business records may be required to ascertain if systems are adequate for School District review; and to investigate the accuracy of proposed labor rates and unit prices.**

- 1. The selected firm shall prepare and submit the PRE-AUDIT STATEMENT as contained in Attachment B with their cost/price proposal. ASD reserves the right to review requested supporting documentation and/or institute a site visit.**
- 2. The firm selected for negotiations shall be required to submit a detailed breakout for each task and all the direct costs included in the scope of work. The information shall include the estimated hours to perform each task and include the labor category necessary to complete the task.**
- 3. A detailed price sheet of unburdened labor costs by labor category shall be submitted. However, if the offeror has been audited within the last 2 years by a government agency, or provided by an auditing firm, that has approved a fully loaded labor rate for all categories of labor included in the cost proposal, ASD will review such data for consideration.**
- 4. If the offeror's Indirect Costs have not been previously audited by a government agency, ASD may, in its sole discretion, require an on-site audit of the offeror's financial records for the purposes of approving a project Indirect Cost Rate to apply to any resulting contract.**
- 5. Provide a proposed fee or profit margin to apply to the project along with an explanation as to the appropriateness of the fee/profit as it relates to the project risks and deliverables.**

**Q. RESPONSIBLE OFFERORS**

1. A contract will be awarded only to prospective offerors who are determined to be responsible.
2. In order to determine responsibility of a prospective offeror, the District may require offerors to supply additional information or documentation and may perform on-site pre-award surveys. Failure of an offeror to promptly cooperate or supply information in connection with a District inquiry with respect to responsibility may result in a determination of non-responsibility with respect to the offeror.
3. To be determined responsible, a prospective offeror must:
  - a. Have adequate financial resources to perform the contract or the ability to obtain them;
  - b. Be able to comply with the contract performance schedule taking into consideration all existing other business commitments;
  - c. Have a satisfactory performance record;
  - d. Have a satisfactory record of integrity and business ethics;
  - e. Have the necessary organization personnel, experience, accounting and operational controls, and technical skills, or the ability to obtain them;
  - f. Have the necessary equipment and facilities or the ability to obtain them; and

- g. Be otherwise qualified and eligible to receive an award under applicable laws and regulations.

**R. AWARD OF CONTRACT**

1. Award of Contract

- a. Selection of the successful offeror will be by a notice in writing signed by a duly authorized representative of the District and no other act of the District or its representative will constitute an acceptance of a proposal.

2. Execution of Contract

- a. The offeror whose proposal is accepted by the District shall execute the contract and furnish the required insurance within five (5) days after presentation of the contract for signature. Failure or neglect to provide the required insurance or to execute the contract within the time specified, or within such additional time as the District, in its sole discretion, may allow, shall constitute a breach of the agreement affecting the award. The damages to the District for such breach shall include loss due to delay and interference with the District's general operations improvements program, and increased administrative expense, and other items whose accurate amount would be difficult or impossible to compute.
- b. Upon receipt of the above-referenced contract executed by the offeror, and all required insurance certificates, the properly authorized District representatives will execute the contract. The Contract shall not be effective until it is executed by a properly authorized representative of the District.

**S. AGGRIEVED OFFERORS**

1. Protest

- a. An interested party may protest a solicitation or a proposed award of a contract.
  - i. A protest as to the specifications and/or terms and conditions of a solicitation must be received by the Purchasing Senior Director at least five (5) calendar days prior to the due date of the bid or proposal; failure to protest as provided herein constitutes a waiver of any objection to the solicitation.
  - ii. For construction projects and architectural/engineering design services, the protest of a proposed award of a contract must be received by the Purchasing Senior Director within ten (10) calendar days after issuance of the Notice of Intent to Award.
  - iii. For goods or services, the protest of a proposed award of a contract must be received by the Purchasing Senior Director within seven (7) calendar days after issuance of the Notice of Intent to Award, except that for purchases under \$100,000, the protest must be received within three (3) business days.
  - iv. The protest must include the name of the person submitting the protest, the name of the bidder/proposer represented by that person, the specific action or bid/request for proposal contract award which is being protested, a detailed explanation of the reasons for the protest, and the relief requested.
  - v. The aggrieved person must serve all other interested parties with its protest.

- b. The Purchasing Senior Director shall stay the intended award of a contract unless the Purchasing Senior Director determines the award of the contract without further delay is necessary to protect the District's best interest.
  - c. The Purchasing Senior Director may, in his/her sole discretion, hold a hearing.
  - d. The rights and remedies granted by this section are not available for informal small purchases with an actual or potential value of less than twenty-five thousand dollars (\$25,000).
  - e. Failure to protest as provided herein constitutes a waiver of any objection to the solicitation and contract award.
2. Appeal
- a. A decision by the Purchasing Senior Director may be appealed to the Anchorage School Board.
  - b. Any appeal shall be filed with the Superintendent within five (5) days after the decision is received by the protester and must include the name of the person submitting the appeal, the name of the bidder/proposer represented by that person, and a detailed explanation of the basis for the appeal.
  - c. The aggrieved bidder/proposer must serve all other interested parties with its appeal.
  - d. The Superintendent may obtain an independent review of the appeal issues if the Superintendent determines such review will assist consideration of the appeal.
  - e. The independent review shall not be conducted by a District employee, but must be conducted by an experienced but disinterested third party from outside the District.
  - f. Failure to appeal to the Anchorage School Board as provided herein constitutes a waiver of any objections to the solicitation and the contract award.
3. Consideration of Appeal
- a. The decision being appealed and the findings from the independent review, if any will be reported to the Board.
  - b. Upon consideration of the appeal and allowing interested parties an opportunity to address the issues on appeal, the Board may:
    - i. Award the contract as recommended, if applicable, indicating its reasons for rejecting the appeal;
    - ii. Grant the appeal, indicating its reasons for granting the appeal, and determine an appropriate remedy consistent with AR3311.1(c).1 of Board Policy. The Board may award the contract at that meeting to some other bidder/proposer if it finds that a delay in making the award would adversely affect the District.
    - iii. Stay any award of the contract to permit further consideration of the appeal, with action to be scheduled as soon as practicable, but in no event more than twenty (20) days after the stay as initiated.
    - iv. Reject all bids/proposals

Instructions to Offerors  
Section I

- v. Take such other action as appears appropriate and in the best interest of the District under the circumstances.
4. Frivolous Protests
  - a. Signature on Protest Constitutes Certificate
    - i. The signature of an attorney or party on a request for review, protest, motion, or other document constitutes a certificate by the signer that the signer has read the document, to the best of his/her knowledge, information, and belief formed after reasonable inquiry it is well grounded in fact and is warranted by existing law or a good faith argument for the extension, modification, or reversal of existing law, and that it is not interposed for an improper purpose, such as to harass, limit competition, or to cause unnecessary delay or needless increase in the cost of the procurement or of the litigation.
  - b. Sanctions for Violation
    - i. If a request for review, protest, pleading, motion, or other document is filed with the Purchasing Senior Director is signed in violation of Board Policy AR3311.1(c).1, the School Board may impose upon the person who signed it, a represented party, or both, an appropriate sanction, that may include an order to pay to the other party or parties the amount of the reasonable expenses incurred because of the filing of the protest, pleading, motion, or other paper, including a reasonable attorney's fee.

**T. PUBLIC RECORDS/CONFIDENTIALITY**

1. This RFP and the resulting proposals received, together with copies of all documents pertaining to the award of a contract, will be kept by the District's Purchasing Office and made a part of the record which will be open to public inspection after contract award. Proposers, upon request to the Purchasing Officer, may review the proposal scoring summary after issuance of the notice of intent to award has been issued, except to the extent permissibly restricted by the offeror.
2. Offerors are advised to consult School Board Policy Section 1340 and the Alaska Public Records Act, A.S. 40.25.100-40.25.295 to verify if any of their proposal information may qualify for exemption from public disclosure. Exemptions to public disclosure requirements are narrowly construed. As such, the District cannot exempt materials that are not of a truly proprietary nature under applicable law and policy, and cannot be held liable for the disclosure of such information, even if marked for restriction by an offeror.
3. If a proposal contains any information that an offeror reasonably believes is proprietary or confidential, and is subject to protection under applicable law, each such page of the proposal must be marked "Confidential" by the offeror and the offeror must explain the basis for its determination that the information is not subject to disclosure under applicable public records laws. Cost or price information may not be restricted and will be open to public inspection. Marking an entire proposal "confidential" is not acceptable and may result in disclosure of the entire proposal.
4. By submitting a proposal, the offeror agrees to release the District from any liability resulting from the District's disclosure of information not clearly marked "Confidential." The offeror also agrees to defend any action seeking release of information marked "Confidential" and to indemnify and hold the District, its Board, employees and agents, harmless from any judgments, damages and costs awarded against the District, its Board, employees or agents, in favor of a party requesting information submitted by an offeror. Additionally, the offeror understands and agrees that if a request is made under applicable public records laws, the



District will notify the offeror of such request but under no circumstance shall the District be required to commence or defend any action to prevent the disclosure of any information submitted by an offeror, including information the offeror believes to be confidential or proprietary.

**U. EQUAL EMPLOYMENT OPPORTUNITY**

1. The Contractor certifies that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry, age, sex, marital status, mental or physical disability, or change in marital status, in employment, provision of services or otherwise. The Contractor shall take affirmative action to ensure such non-discrimination, including but not limited to the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
2. The Contractor shall state, in all solicitations or advertisements for employees to work in the performance of this Agreement, that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, ancestry, age, sex, marital status, mental or physical disability, or change in marital status.
3. The Contractor shall comply with the requirements of the Anchorage Municipal Code, Chapter 7.50.010-.120, as well as any procedures adopted by the District to implement the policies set forth therein.
4. The Contractor shall comply with any and all of the applicable laws and directives, and any regulations which may be applicable to the Project or this Agreement.
5. The Contractor shall include the provisions of this Article in every Subcontract and purchase order, and shall require each Subcontractor to include these provisions in every sub-subcontract, so that these provisions will be binding upon each Subcontractor, sub-subcontractor and vendor providing services or goods to the Project.
6. The Contractor shall cooperate fully with the District's efforts which seek to deal with the problem of unlawful discrimination, and with all other District efforts to guarantee fair employment practices under this contract and promptly comply with all requests and directions from the Anchorage Equal Rights Commission and State Commission for Human Rights or any of its officers or agents relating to prevention of discriminatory employment practices.

**V. NON-DISCRIMINATION**

1. No Contractor on any District contract may illegally discriminate on the basis of sex, race, color, religion, gender identity, sexual orientation, national origin, ancestry, age, marital status, changes in marital status, pregnancy, parenthood, physical or mental disability, Vietnam era veteran status, genetic information, or good faith reporting to the board on a matter of public concern in employment, provision of services, or otherwise.
2. Any Contractor submitting a bid or proposal of one hundred thousand (\$100,000) or more must certify that if awarded a contract on the basis of that bid or proposal, he/she as the contractor will not illegally discriminate against any member or applicant for employment because of sex, race, color, religion, gender identity, sexual orientation, national origin, ancestry, age, marital status, changes in marital status, pregnancy, parenthood, physical or mental disability, Vietnam era veteran status, genetic information, or good faith reporting to the board on a matter of public concern in employment, provision of services, or otherwise.

**W. NOTICE OF COMPLIANCE**

1. All successful Contractors shall ensure such non-discrimination.
2. All successful Contractors must agree to post in conspicuous places, available to employees and applicants for employment, notice setting forth the provisions of this non-discrimination section and this section shall be deemed to be a part of every contract entered into by the District under these policies.

**X. CONFLICT OF INTEREST**

1. The Contractor agrees to certify that Anchorage School District employees, School Board members, or a member of their household are not in conflict of interest with the contract and Board Policy as follows (AR3311.1(e).1 Disclosure and Waiver of Conflict of Interest):
  - a. No Board member, employee, or a member of their household, shall acquire, directly or indirectly, an economic interest in a District or Municipal contract, or engage in business with the District or the municipality, unless the contract is competitively solicited and other requirements of Section 3311 of Board Policy and section 1.15 of the Anchorage Municipal Code are met.
  - b. The following acts and circumstances shall not be deemed to be in conflict with the performance of official duties if, at the earliest opportunity after having acquired such knowledge, the Board member or employee files a disclosure pursuant to AR3311.1(e).1 or requests and obtains a waiver pursuant to Board Policy AR3311.1(e).2:
    - i. Such person owns a sole proprietorship, or is a partner in a partnership, or is an officer, director, major shareholder (five percent (5%) or more of the outstanding shares) or has management control in a corporation that submits a bid, proposal or quotation to the District or attempts to enter or enters into a contract with the District;
    - ii. Such person has any significant (five percent (5%) or more) financial interest in any sale, lease or rental to the District of any service or property and such person has knowledge that the District intends to purchase, lease or rent the property or service;
    - iii. Such person wishes to sell or receive royalties on books or materials sold to the District for use in the school system for which the employee is the author;
    - iv. Such person is an employee who has been providing private services to a child who transfers to a new school or class or advances to a higher grade and the child becomes a student in the class being taught/aided by his/her provider.
2. Board Members, District employees, and their household and/or immediate family members are required to comply with Board Policies and the Municipal Ethics Code by disclosing conflicts of interest.
  - a. When a board member, employee, or their household and/or immediate family member intends to do business with the District, the appropriate District and Municipal forms must be filed by the Board Member or District employee with the Municipal Clerk's Office and the Purchasing Department.

Note: *Notice of Intent To Respond To Public Solicitation* shall be filed with the Municipal Clerk's office in advance to allow a minimum of **7 calendar days to elapse between electronic publication by the clerk and the final date** for submitting a response to the solicitation. The form may be obtained from the Municipality of Anchorage website, [www.muni.org](http://www.muni.org).

District *Disclosure* and *Request for Waiver* forms and instructions may be obtained from the Conflict of Interest link on the Procurement Department page of the ASD website, [www.asdk12.org](http://www.asdk12.org).

- b. The responsibility for complete and timely filing rests solely with the Board Member or District employee.

**Y. SEX OFFENDER/CHILD KIDNAPPER REGISTRY**

Anchorage School Board Policy 3515.5 prohibits a contractor whose employees or agents may have direct or incidental contact with District students from sending any employee or agent to district property who has been convicted of a sex offense under federal law or the law of any state and who is required to register as a sex offender under Alaska law or by court order, or who has been convicted of child kidnapping under federal law or the law of any state and who is required under Alaska law or court order to register on the Alaska Department of Public Safety Sex Offender/Child Kidnapper Central Registry. Board Policy 3515.5 requires contractors to certify in writing the contractor's knowledge of and compliance with Board Policy 3515.5. ***Prior to executing a contract*** for this project, the selected Contractor shall verify that no employee or agent who will be on district property is registered as a sex offender or child kidnapper in Alaska [Alaska Department of Public Safety "Sex Offender/Child Kidnapper Registry"] or in any other state. In addition, the contractor shall certify that, to its knowledge, no employee or agent is a convicted sex offender or child kidnapper. Certification will be required at time of award.

**Z. CONTACT WITH SCHOOL STAFF AND AUTHORIZED SCHOOL COMMUNITY GROUPS**

Offeror is not to contact site's school staff or authorized community groups for purposes of solicitation unless otherwise authorized by the Purchasing Senior Director.

**AA. CONTRACT INDUCEMENTS**

No payment, gratuity or offer of employment shall be made in connection with any contract, by or on behalf of the subcontractor to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

**BB. STANDARD CONTRACT TERMS**

In addition to carefully reading all of the information in the RFP, Offerors must carefully read and review the attached standard contract terms and conditions. The successful Offeror shall be required to enter into an agreement with the District which will be substantially similar to the sample.

END OF SECTION I

**A. EVALUATION OF PROPOSALS**

1. All proposals will be reviewed by the District's Purchasing Department to evaluate administrative responsiveness of proposals to determine if offerors have complied with the administrative proposal requirements and to determine if proposals meet the minimum mandatory criteria set forth below.
2. Proposals meeting minimum mandatory requirements then will be evaluated by an evaluation committee comprised of District employees or other persons deemed appropriate by the District using the Evaluation Criteria specified in this RFP. Evaluation of proposals in accordance with the evaluation criteria will result in a numerical score for each proposal. Each criterion has an assigned weight for this RFP which demonstrates its relative importance. Evaluation of proposals will be accomplished as follows:

- a. Each Evaluator will individually review and score each offeror's proposal on a scale of 0 to 1 for each of the Technical Evaluation Criteria.

A rating of "0" indicates a proposal which is non-responsive and/or provides no quality or value to the District and a rating of "1.0" indicates a proposal which is completely responsive and/or provides significant quality and value to the District. Ratings within the range indicate the level at which the proposal is responsive and/or provides quality and value to the District.

- b. After completion of ratings by each Evaluator, the Selection Committee may discuss the proposal. Evaluators may then alter their ratings; however, any changes shall be based only on the proposal and the Evaluation Criteria.
- c. The chairperson will obtain the ratings for the Evaluation Criteria, which ratings will then be multiplied against the points available for each criterion. The sum of the weighted scores for each proposal will result in a total weighted score from each member of the evaluation committee. The total weighted scores of all Evaluators will be summed to determine the total weighted score for each proposal. The maximum score obtainable for any proposal is equal to the product of the maximum points for the evaluation criteria multiplied by the number of Evaluators.
- d. Based upon the results of the proposal scoring, the District may, in its discretion, conduct discussions with offerors whose proposals are determined to be reasonably susceptible to award. Such discussions, visits and presentations are for the purpose of ensuring full understanding of the requirements of the RFP and offeror proposals and may not result in any material or substantive change to proposals. Offerors selected by the Selection Committee for interviews may be permitted to submit final written, graphic and verbal presentation information for consideration by the Selection Committee in response to the above purposes. Only those members of the offeror's staff who will be in responsible charge and/or will carry out the actual tasks should participate in the interviews.
- e. Subsequent to the interviews, the Selection Committee will make a final rating based upon the original criterion supplemented by interview information for the purposes of determining the highest ranked proposer. The Selection Committee shall use the same procedure as specified for the initial proposal rankings. The final ranking may or may not be the same as the order of ranking after completion of the initial ranking.
- f. For purposes of this RFP, proposals that are "reasonably susceptible to award" means the three (3) highest scoring proposals, unless, in the sole discretion of the District's Purchasing Senior Director, one or more of the three highest scoring proposals did not achieve a score high enough to be within the competitive range and to remain under

consideration for award when ranked with other proposals or the District received one or more additional proposals that are within the competitive range of the three highest scoring proposals such that the additional proposal(s) may remain under consideration when ranked with the other proposals. This is not a strict mathematical formula and may not be challenged on that basis except in the case of obvious arithmetic errors.

3. The District reserves the right, at any time, to determine that a proposal is non-responsive and to request additional information to determine responsiveness.
4. All Offerors will be advised of the offeror selected for negotiation with a Notice of Intent to Negotiate. If contract negotiations are unsuccessful with offeror selected for negotiation, the School District may either cancel the solicitation or negotiate with other offerors in the order of ranking.

**B. EVALUATION CRITERIA**

Proposals will be scored using the criteria listed below to determine which proposal best meets the needs of the Anchorage School District. The criteria to be considered during the evaluation and their associated weights are as follows:

<b>Item</b>	<b>Criteria</b>	<b>Points</b>
1.	<b>PROJECT APPROACH</b>	20
2.	<b>METHODS</b>	20
3.	<b>MANAGEMENT</b>	15
4.	<b>FIRM'S EXPERIENCE</b>	15
5.	<b>PROPOSED PROJECT STAFF</b>	15
6.	<b>WORKLOAD AND RESOURCES</b>	15
	<b>TOTAL POINTS POSSIBLE</b>	<b>100</b>

END OF SECTION II

Proposal Format  
Section III

Each response must be identified and keyed to the applicable criterion and assembled in the order in which the criteria are listed in Section II, Part B, so the criterion to which information applies shall be plainly evident. Material not so identified or assembled may be discarded without evaluation. Each proposal shall be submitted on standard 8 1/2" x 11" bond paper bound on one side. Proposals should be prepared simply and economically, providing a straightforward, concise delineation of the capabilities proposed to satisfy the requirements of this RFP. In addition, small print or typeface that is difficult to read may affect scoring.

To achieve a uniform review process and obtain the maximum degree of comparability, it is required that the proposals be organized in the manner specified below. **Proposals shall not exceed thirty (30 pages in length** (excluding letter of transmittal, resumes (resumes shall not exceed two (2) pages in length), table of contents, attachments, or dividers. Information in excess of those allowed will not be evaluated or scored. One page shall be interpreted as one side of single lined, typed, 8 1/2" X 11", piece of paper.

To ensure that proposals are evaluated fairly and that comparisons between proposals are accurate, Offerors must submit proposals in the format outlined below. Failure to comply with these requirements may cause a proposal to be rejected as non-responsive and eliminated from further consideration.

**A. PROPOSAL TRANSMITTAL FORM**

Submit the completed Proposal Transmittal Form (Attachment A) as the first page of the proposal. The Proposal Transmittal Form must be signed by an authorized representative of the offeror.

**B. PROPOSAL NARRATIVE**

1. PROJECT APPROACH

Weight:

Restate the proposed Scope of Services, outlining the objectives and scope as perceived. Do not repeat the statement of services provided herewith, but elaborate on the tasks, conditions, deliverables or other specifics deemed significant and necessary to demonstrate a complete understanding of the technical and substantive issues to be addressed. Define any assumptions made in formulating response. If scope includes design services for a construction project, express any opinions regarding alternative design considerations that could impact construction costs.

2. METHODS

Weight:

Response must outline the methods for accomplishing the proposed contract. Consider what, when, where, how, and in what sequence the work will be done. Include proposed timeline with milestones. Identify the amount and type of work to be performed by any sub-consultants. Consider how each task may be carried out; what services or interaction may be required from/with the Contracting Agency. Suggest alternatives, if appropriate. Identify any distinct and substantive qualifications for undertaking the proposed contract, such as the availability of specialized equipment or unique approaches or concepts relevant to the required services, which the firms may use.

3. MANAGEMENT

Weight:

Response must describe the administrative and operational structures that will be used for performing the proposed contract. Address who will have overall responsibility for the contract and who will have direct responsibility for specific disciplines. Discuss the lines of authority. Use of a table or chart is preferred in your response. When applicable, include discussion of public participation process and coordination with State and Municipal agencies.

4. FIRM'S EXPERIENCE

Weight:

Discuss the offeror's background and qualifications to establish experience and performance as a team leader for professional services similar to those required by this project. Discuss the relevance of past projects (program, unique features, schedules, budgets, etc.) to this project. List at least three (3) references (contact persons and telephone numbers) for the firm.

5. PROPOSED PROJECT STAFF

Weight:

Response must name proposed leader(s) for the following categories plus any other essential personnel who will be directly and routinely engaged in performing the work:

1 – Principal-in-Charge	3 – Project Architect
2 – Contract/Project Manager	

Describe the work to be performed by the named Leader(s), and their qualifications in terms of educational and substantive experience directly related to the proposed services. Identify: employer, professional discipline and/or job classification, Alaskan registration number, and state of residency. A response prepared specifically for this proposal is required. Marketing resumes often include irrelevant information, which may detract from the evaluation of proposal. Lists of projects without relevant details are not useful. Focus on individuals' specific duties and responsibilities and how project experience is relevant to the proposed services.

6. WORKLOAD AND RESOURCES

Weight:

15

Response must: (1) discuss both current and potential time commitments to all clients (i.e. not only the District) for the proposed Project Staff; and (2) demonstrate adequate support personnel, facilities and other resources to provide the services required throughout the project's term. Briefly address capabilities for providing additional services and/or services under an accelerated schedule. Address capacity to reassign personnel, equipment and facilities whenever the proposed contract would not require such capabilities or would be delayed.

END OF SECTION III

**A. SCOPE OF WORK**

1. The requirements of this project shall consist of providing complete design services necessary to support the Scenic Park ES Roof Replacement project at the location(s) identified below.

- a. Scenic Park Elementary School is located at 3933 Patterson St., Anchorage, Alaska 99504

The Prime Consultant is the project design coordinator and document quality control authority. Prime Consultant will review and verify deliverables prior to submission to Owner. Incomplete or lacking deliverables may be rejected. Owner will review complete deliverables for compliance and acceptance.

2. Planned Project Scope of Work:

- a. Scenic Park Elementary School was originally constructed in 1962 as a one-story building. Since then Scenic Park ES has had numerous additions and renovations, including some single story and two-story spaces. The square footage of the roofs altogether is approximately 52,513 sq. ft. and consists of a mix of EPDM, BUR, IRMA, and Metal Roof systems, refer to Attachment D SPES (Roof) Plans. Provide professional design services following ASD guidelines and standards, all local and building code requirement, and any required and recommended seismic upgrades to the building structure to support the replacement of the entire building roof system with new low slope roof system. **The scope of work requires on-site verification and evaluation** of existing conditions as well as the review of the additional information and recommendations provided in Attachment D SPES (Roof) Plans including Attachment F 2023 Scenic Park ES ASCE 41-17 Tier 2 Seismic Evaluation Pre-Reroof Report, which identifies non-conforming structural and seismic deficiencies and provides recommendations, to be addressed by the design. Hazardous material may be present in the area of scope of work, evaluate and test for abatement requirements as part of the design scope of work. Account for and include design consideration for any mechanical and electrical penetrations, pipes, conduit, louvers, windows and equipment that may be affected by the roof replacement. Evaluate rooftop electrical and mechanical equipment for replacement. Scope will include new roof ladders, fall protection, pick points, and a new weather station.

**B. SCOPE OF CONSULTANT SERVICES**

For the purpose of this document, the phrase “Consultant(s)” refers to the person, partnership, corporation, joint venture, or other business entity with which the District contracts to provide the professional services required for this project.

Anticipated Scope of Consultant Services: For this project, the Consultant shall provide all professional services necessary to support the successful completion of this project. The Consultant’s services shall include, but are not limited, to the following:

1. Consultant Design Phases/Deliverable Requirements: The following design phases with corresponding design deliverables shall be required for this project. See “Deliverables Checklist” (Sample FPSA, Appendix B, Attachment A) and referenced District Design Guidelines for additional information on submittal requirements.

- a. Design Development Phase Submittal (65%)
  - b. Construction Document Phase Submittal (95%)
  - c. Bid Documents Submittal (100%)

2. Phase 1 Design Development



- a. Develop Project Scope and Design; Prepare Construction Drawings and Specifications with cost estimates
  - i. Verification of the Planned Project Scope of Work: As part of the Schematic Design Phase work, the Consultant shall verify and update the Planned Project Scope of Work. Consider sequencing and phasing of the work around the school's schedule, and provide recommendations. cursory review of the District's hazmat documentation will be necessary to ensure the project is viable and will remain within budget. The Consultant shall consult with the District Project Manager for any deviation from the Planned Project Scope of Work prior to completing the Schematic Submittal. Schematic Submittal shall reflect the final approved project scope of work. Value engineering and innovative design solutions are encouraged.
  - ii. Verification of the Construction Budget: The Consultant shall verify the project scope of work at each submittal with respect to required cost estimates at the 35%, 65%, and 95% submittal. Prior to all milestone submittals, the Consultant shall verify to the District Project Manager that the cost estimate was reviewed and is reflective of the design document submittal. Should the project cost estimate reflect a design (scope of work) that is over the District's budget (CCAP), the Consultant shall, at the direction of the District Project Manager, make changes to arrive at the optimum design and bidding strategy by one of the follow or combination of methods. In general, it is expected the Consultant shall develop appropriate project scope at, or slightly exceeding, the available construction budget.
    - a. Adjust the design (scope of work) and/or propose additive alternates in consultation with the District Project Manager at no additional cost to the District
    - b. Revise the cost estimate at no additional cost to the District
  - iii. Project Design Review: ASD milestone Project Design Reviews are organized by the ASD PM and executed using Bluebeam Revu (Bluebeam) sessions at Planning/15%, 35%, 65%, and 95% design phases. The use of Bluebeam allows for a collaborative, digital review for the Project; involving ASD Reviewers and Consultants, including the Consultant's cost estimator. ASD will provide all comments, written and noted, in the Bluebeam session and the Consultant shall assist the District by reviewing and responding in writing to all comments in the Bluebeam session; identifying and making written recommendations to the ASD Project Manager regarding the most critical design issues. The most critical path design issues will be summarized and discussed in a Post-Review Debrief (to be held at each design phase). The Project Manager will organize/invite Reviewers to the Post-Review Debrief. The Consultant shall act as the Meeting Facilitator of the Post-Review Debrief. The Post-Review Debrief is not meant to be a 'page-turn' review of design documents and comments, but a one-hour summarization of the most critical path items in design development and the team's intent/approach to resolve. Once the Post-Review Debrief is held, the PM will give Consultant notice to proceed to next design phase, pending any requested changes prior to NTP. The Project Manager will then verify that each comment and response has a Bluebeam **status** set and **finish** the Bluebeam session for ASD archives.
  - iv. Bidding and Permitting: The Consultant shall assist the District during the bidding and permit review of the project. During this phase of work, the Consultant's services shall include providing assistance during Municipality of Anchorage plan review and construction permit application process [utilizing MOA electronic plans review protocols], attendance at pre-bid conference and pre-bid site visits, answering bidder's questions, and assisting the District in preparing necessary bid addendum. Provide all signed and stamped bid documents electronically on writable CD-ROM (drawings

Specifications and Scope of Services  
Section IV

should be submitted in most current version of AutoCAD used by the Anchorage School District or as determined by ASD Project Manager and PDF versions).

3. Phase 2 Construction Administration & Closeout
  - a. Perform Construction Administration Services
    - i. The Consultant's services include attendance at the pre-construction conference and other scheduled meetings during construction.
    - ii. Review of submittals; respond to Requests for Information (RFIs), Potential Change Orders (PCOs), DCVRs, Information Bulletins, inspections, reviews of contractor pay requests, and review of closeout documentation.
    - iii. If part of the project, the consultant will participate in commissioning.
    - iv. Provide as-built Record Drawings and "Roof Section Schedule" (in Excel) electronically on CD-ROM. ASD will provide an Excel template for the "Roof Section Schedule". Provide both CAD and independent PDF files. Drawings shall be prepared using current ASD approved AutoCAD version and clearly identified as record drawings.
4. Anticipated Required Consultant Service Disciplines: Anticipated disciplines required for this project shall include, but are not limited to:
  - a. Architectural
  - b. Structural Engineering
  - c. Mechanical Engineering
  - d. Electrical Engineering
  - e. HAZMAT Consultant
  - f. Cost Estimating
5. Additional Requirements:
  - a. Reference Record Drawings: The Consultant shall research the District Plans Room records to identify important record drawings that may be issued with the Bid Documents as Reference Record Drawings or made available for viewing by the bidders at the District Plans Room. The Reference Record Drawings are intended to provide sufficient information to allow bidders to ascertain the physical conditions of the building including types of construction, building dimensions, etc. The Consultant shall prepare a Reference Record Drawing Cover Memo describing the reference record drawings. The cover memo shall include historical building and project information. If applicable, the Reference Record Drawing Cover Memo and the Reference Record Drawings shall be issued as part of the Bid Documents.
  - b. Use of the Anchorage School District Design Guidelines: Unless otherwise directed, the Consultant's designs and submittals shall conform to the requirements of the Anchorage School District Design Guidelines. The Consultant is advised the Anchorage School District Design Guidelines will be periodically updated. The Consultant's services and design shall conform to revisions to the Design Guidelines as they occur throughout the project.
  - c. Use of the Anchorage School District Guide Specifications: Unless otherwise directed, the

Consultant shall utilize the Anchorage School District Guide Specifications as the basis for the technical specifications for this project. The Consultant is advised the Anchorage School District Guide Specifications will be periodically updated. The Consultant’s services and design shall conform to revisions to the Guide Specifications as they occur throughout the project.

- d. **Services related to Construction Submittals:** For this project, the District will develop a Submittal Register and a Submittal Status Log based on the developed project specifications. The applicable specification section shall be based on a guide specification section to be provided by the District. During construction, the Consultant shall be responsible for communications, the management of the Construction submittals, Requests for Information, construction record documents and photographs, and other purposes as directed by the Project Manager for the District utilizing owner-provided construction management software, currently Procore Construction Management. The Consultant shall receive the submittals directly from the Construction Contractor. Upon completion of the review of the submittals, one copy of the submittal shall be retained by the Consultant. The Consultant shall return the remaining copies of the submittals directly to the Construction Contractor.
- e. **Extended District Review:** The Consultant shall acknowledge that while review periods are scheduled during the design process, the District plan review resources may not be able to accommodate the schedule due to work load. In some cases, follow-up comments beyond the scheduled review period may be necessary. The Consultant is encouraged to be proactive in assisting the District in facilitating the design review process.
- f. **Use of Standard Anchorage School District Invoice Format:** The Consultant shall utilize a standardized Anchorage School District Invoice Format. The format will be provided by the District to the consultants.
- g. **Technical Specifications Format:** The Consultant shall utilize formatting standards for documenting technical specifications. The District will provide the standards format to the consultants.
- h. **MOA Building Safety Pre-Application Meeting:** At a minimum, one design pre-application meeting with the Municipality Building Safety officials at 65% schematic design is required. The following disciplines are suggested to attend: architectural, structural, mechanical, electrical, fire, traffic and zoning. Designer has responsibility to determine final list of disciplines required based on scope of project.

**C. PROJECT SCHEDULE**

Based on the Tentative Project Schedule and Specific Project Schedule Requirements below, the Offeror shall develop a preliminary project schedule covering the period from Notice to Proceed (NTP) through Design Completion based on anticipated workload and resources and include it as part of the Offeror’s proposal response to Section III Proposal Format Part B, Article 2 Methods. Identify all submittal milestones including submittal dates, cost estimate submittal dates, and District review periods.

1. Tentative Project Schedule for Design Work:

Requirement	Anticipated Dates
RFP/Consultant Selection/Negotiation:	January/February 2024
Anticipated Contract Award/NTP:	April 2024
65%, 95% Documents:	May 2024 through June 2024

Specifications and Scope of Services  
Section IV

Final Construction Documents:	July 2024
Bid Period:	September 2024
Anticipated Construction Period:	May 2025 through September 2025
Record Documents:	October 2025

2. Specific Project Schedule Requirements:
  - a. Allow 2 weeks after each submittal for review by the District.

**D. INFORMATION TO BE PROVIDED BY THE DISTRICT**

The following information is available for review and use by the consultants during design:

1. Scenic Park ES is located at 3933 Patterson St., Anchorage, Alaska 99504
2. Historical As-Built/Project Documents/AHERA Documents – Existing documents are available at the District Capital Planning & Construction Department. Proposers can view existing documents by coordination with the project support section for access to the plans room. Proposer must coordinate a time in advance with Capital Planning & Construction (CP&C) project support staff at 907-348-5215.

**E. ADDITIONAL INFORMATION**

1. Attachment D Scenic Park ES Plans.
2. Attachment E ASD B3000 Roofing Standards.
3. Attachment F Scenic Park ES ASCE 41-17 Tier 2 Seismic Evaluation Pre-Reroof Report.

END OF SECTION IV

**THIS FORM MUST BE RETURNED WITH THE OFFEROR'S PROPOSAL**

Addendum Number(s)/Date(s) \_\_\_\_\_ is/are hereby acknowledged.

FIRM'S NAME: \_\_\_\_\_

MAILING ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

PHYSICAL BUSINESS ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

CONTACT PERSON FOR THIS SOLICITATION: \_\_\_\_\_

FAX NO.: \_\_\_\_\_

TELEPHONE NO.: \_\_\_\_\_

CELL PHONE NO.: \_\_\_\_\_

ALASKA BUSINESS LICENSE NO.: \_\_\_\_\_

FEDERAL TAX ID NO.: \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

**CERTIFICATION**

I certify that I am a duly authorized representative of the firm listed above and that the information and materials enclosed with this proposal accurately represent the capabilities of the firm to provide the services indicated in compliance with the requirements of the solicitation. I certify that no member of the School Board or District employee, or spouse or other member of his/her household, has or shall have any undisclosed interest in the firm or this proposal, as provided in the Instructions to Offerors ("Conflicts of Interest"). The School District is hereby authorized to request from any individual any pertinent information deemed necessary to verify information regarding the capacity of the firm and for purposes of determining responsiveness of the proposal or responsibility of the firm as a prospective contractor.

In compliance with the solicitation, the offeror agrees, if this offer is accepted within 90 calendar days from the date specified in the solicitation for receipt offers, to furnish any or all items on which prices are offered at the price set opposite each item, delivered at the designated places, within the times specified in the solicitation.

SIGNATURE: \_\_\_\_\_

PRINTED NAME AND TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

**CONFIDENTIAL WHEN COMPLETED**

Evaluation of this statement may preclude the necessity for a comprehensive on-site audit of the Contractor's records. Entries may be handwritten, if legible.

1. Identify your fiscal year, including beginning and end dates \_\_\_\_\_
2. List your actual costs, by the following categories, for your most recent fiscal year. Cost terminology is attached.
  - a. Direct Labor \$ \_\_\_\_\_
  - b. Attach a Trial Balance with grouping of accounts used to arrive at the following Indirect Cost amounts:

Fringe Benefits	\$ _____
General & Administrative Expenses	\$ _____
Sum	\$ _____
  - c. Indirect Cost Rate (Sum of b/a) \_\_\_\_\_ %
3. If your records have been audited with the last 2 years by a governmental agency, attach a copy of the Audit Report.
4. Attach copies of your most recent Internal and Audited Financial Statements.
5. Are your accounting methods for recording contract costs based on a job or project identified cost system?  
 Yes     No    If your response is "No", attach an explanation of your cost accounting system
6. If you charge your projects based on unit rates (e.g. for computer time, laboratory tests, copies or equipment use, etc.) attach a list of such items and unit prices.
7. Do you offset revenue received from unit rate payments against the applicable Indirect Cost Accounts?  
 Yes     No

**CERTIFICATION**

I certify that I am a duly authorized representative of the Contractor and that information and materials enclosed within this statement accurately represent financial records of the company.

Signature _____	Date _____
Name and Title _____	Telephone No. _____
Company Name _____	Fax No. _____
Address _____	Email Address: _____
_____	
_____	

# ANCHORAGE SCHOOL DISTRICT

## FORMAL PROFESSIONAL SERVICES AGREEMENT

Contract No.:	_____
Requisition No.:	_____
RFP No.:	_____
Board Memo No.:	_____

**PROJECT TITLE:** \_\_\_\_\_

This contract consists of the following, which are hereby incorporated by reference as if in full text; consisting of the following documents in order of precedence:

1. Formal Professional Services Agreement – (Consisting of XX-Pages):
2. RFP XXXX-XXX, and associated addenda
3. Contractor's proposal dated XX
4. Contractor's negotiated Cost Proposal dated XX
5. Contractor's Fee Rate Schedule dated XX

This agreement is between the Anchorage School District and designer (hereafter "Contractor"), effective on the last date executed by its parties.

### CONTRACTOR

SIGNATURE: \_\_\_\_\_ Date \_\_\_\_\_  
NAME: \_\_\_\_\_  
TITLE: \_\_\_\_\_

### DISTRICT

SIGNATURE: \_\_\_\_\_ Date \_\_\_\_\_  
NAME: David Whiting  
TITLE: Senior Director, Purchasing/Warehouse

In consideration of the terms, conditions and promises of Articles 1 through 6 in this document, the parties hereto agree:

### ARTICLE 1 PURPOSE

1.1 The purpose of this agreement is to provide professional design services.

**Insert Information**

**Project Name**  
Project Number **Insert Number**  
RFP Number **Insert Number**  
Revised 4-18-18

**ARTICLE 2  
COMPENSATION**

2.1 The maximum amount payable under this agreement (see Appendix C) shall not exceed:

**\$** \_\_\_\_\_ **Account Code(s):** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**ARTICLE 3  
PERIOD OF PERFORMANCE**

3.1 Contractor shall commence work under this agreement as authorized by written notice(s) to proceed at each phase and shall complete the work in accordance with any time schedule required by Appendix F. This agreement is of no force or effect until executed by the Contractor and the District and no services shall be undertaken or performed until a Notice to Proceed (NTP) is issued.

3.2 The period of performance under this agreement shall end upon the date of the District's final acceptance of the Project, or approval of the Contractor's final invoice pursuant to the Contractor's satisfactory completion of obligations under this Agreement, whichever is later.

**ARTICLE 4  
APPENDICES**

4.1 The following appendices are attached to this document and incorporated herein by reference:

<u>Appendix</u>	<u>Title</u>
A	General Conditions
B	General Architectural/Engineering and Design & Construction Phase Services
Attachment A	Deliverables Checklist (Attachment A to Appendix B)
C	Basis of Compensation
D	Indemnification and Insurance (plus certificate of insurance)
E	Project Staffing and Subcontractors
F	Master Time Schedule

**ARTICLE 5  
DISTRICT**

**Project Manager Name:** \_\_\_\_\_

ASD Office: \_\_\_\_\_ Capital Planning & Construction

Street: \_\_\_\_\_ 1301 Labar St.

City, State, Zip: \_\_\_\_\_ Anchorage, Alaska, 99515

Fax No.: \_\_\_\_\_ (907) 348-5207

**Office No.:** \_\_\_\_\_

**Cell No.:** \_\_\_\_\_



Email Address: \_\_\_\_\_

**ARTICLE 6  
CONTRACTOR**

Company Name: \_\_\_\_\_ AK Business License No.: \_\_\_\_\_

Principal Name: \_\_\_\_\_ Federal Identification No.: \_\_\_\_\_

Street: \_\_\_\_\_

P.O. Box: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Fax No.: \_\_\_\_\_

Office No.: \_\_\_\_\_

Cell No.: \_\_\_\_\_

Email Address: \_\_\_\_\_

<b>TYPE OF FIRM (Check One)</b>	
Individual	<input type="checkbox"/>
Partnership	<input type="checkbox"/>
Joint Venture	<input type="checkbox"/>
Corporation	<input checked="" type="checkbox"/>
In State of: AK	

Project Name  
Project Number Insert Number  
RFP Number Insert Number  
Revised 4-18-18

Contract No:
Date Prepared:

ANCHORAGE SCHOOL DISTRICT  
FORMAL PROFESSIONAL SERVICES AGREEMENT

INDEX

<u>ARTICLE</u>	<u>TITLE</u>
A1	Definitions
A2	Information and Services from Others
A3	Occupational Safety and Health
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**ARTICLE A1 Definitions**

The following words and phrases where appearing with first letters capitalized in any appendix contained in this Agreement, shall have the following meanings:

- A1.1 **Additional Services.** Services performed by the Contractor which are beyond the Scope of Services required by this Agreement prior to any Amendment thereto.
- A1.2 **Agreement.** This professional services agreement which has been signed by both the Anchorage School District and the Contractor. The Agreement consists of the two-page contract document, including Articles 1 through 6 thereof, Appendices A through F which are incorporated therein by reference, and any Amendments thereto.
- A1.3 **Amendment.** A written change to the Agreement which modifies the Contractor's Scope of Services, conditions of service, time for performance, or compensation, or any combination of the foregoing. To be effective, an Amendment must be signed by both the Anchorage School District and the Contractor, and may require approval by the Anchorage School Board.

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- A1.4 Anchorage School District/ASD/District. The designated managing agency of the Municipality of Anchorage (the owner of the Project), which is authorized to manage the school facility that is the subject of this Agreement. The term "Anchorage School District" includes all school board members, officers, employees, representatives, and agents of the Anchorage School District.
- A1.5 Basic Services. Services performed by the Contractor which are within the Scope of Services required by this Agreement prior to any Amendment thereto.
- A1.6 Bid Documents. The Construction Contract Documents, plus the instructions to bidders and bid forms.
- A1.7 Claim. A request by the Contractor for additional compensation or time extension which has not or cannot be resolved through the usual Amendment procedure because the validity of the request is disputed by the Project Manager or the Anchorage School District.
- A1.8 Commissioning. A methodical process intended to ensure that building systems perform in conformance with the intent for which they were designed. Such systems can include, but are not limited to: heating, ventilating, air conditioning, fire protection, electrical, security, data, communications, and control.
- A1.9 Conformed Documents. Construction drawings and specifications revised to reflect changes issued by addenda prior to bid opening.
- A1.10 Construction Contract. The contract between the Anchorage School District and the Construction Contractor for the construction of all or part of the Project, including, without limitation, the providing of labor, materials, and equipment to be incorporated into the Project, and including all change orders thereto. The Anchorage School District, in its discretion, may award more than one Construction Contract in relation to the Project.
- A1.11 Construction Contract Award Price (CCAP). The amount budgeted by the Anchorage School District to cover the costs of construction of the Project. The CCAP includes the cost of all Construction Contracts required for the completion of the construction of the Project. The CCAP does not include the compensation of the Contractor or the cost of the land, site investigations, right-of-ways, furnishings and equipment, special inspections, agency plan review permit fees, or Anchorage School District administrative costs, all of which are the responsibility of the Anchorage School District unless otherwise stated herein.
- A1.12 Construction Contract Documents. The Construction Contract form(s), general and supplementary conditions, general requirements, technical drawings and specifications for the Project, and any addenda thereto.
- A1.13 Construction Contractor. The person, partnership, corporation, joint venture, or other type of business entity with which the Anchorage School District contracts in the Construction Contract to construct all or part of the Project.
- A1.14 Contractor. The person, partnership, corporation, joint venture, or other type of business entity with which the Anchorage School District contracts to provide the professional services required by this Agreement. The term "Contractor" includes all officers, directors, employees, partners, joint venturers, consultants, Subcontractors, representatives, and agents of the Contractor.
- A1.15 Days. Calendar days.
- A1.16 Deliverable. A service product created by the Contractor and deliverable to the Anchorage School District under requirements of the Agreement.

- A1.17 Design Adjustment. A modification to the Educational Specifications, CCAP, management plan, Master Schedule (Appendix F hereto), or previously approved design documents, which modification has no impact on the Contractor's time for performance or the compensation due the Contractor as provided by this Agreement. A Design Adjustment shall be made in writing by the Project Manager, the Anchorage School District, or the Anchorage School Board.
- A1.18 Designer of Record. The Contractor and its subcontracted business entities who are professionally responsible for the Work Products produced under this Agreement.
- A1.19 Educational Specifications. The detailed written summary of the requirements for the facility to which the Project relates, which sets forth the Anchorage School District's overall program and design objectives, constraints and criteria, including space requirements and relationships, quality levels, flexibility and expandability, special equipment and systems, and site requirements.
- A1.20 Estimated Total Construction Cost. The Contractor's current estimated cost for all construction Work necessary to complete the Project in accordance with the Construction Contract Documents. The Estimated Total Construction Cost does not include the cost of land acquisition, site investigation, design, public artwork, Anchorage School District administration, or any furnishings and equipment, special inspections, permit fees, which is not included in the Construction Contract. The CCAP and the Estimated Total Construction Cost may not be the same amount.
- A1.21 Information Bulletin. Written conveyance of information pertinent to the Project initiated by the Contractor or Anchorage School District and issued to the Construction Contractor.
- A1.22 Master Time Schedule. A project-specific calendar indicating: Contractor's identified services and Work elements; their start, duration and end dates; their critical milestones (including action required by Anchorage School District and bid dates); and Deliverables.
- A1.23 Notice to Proceed (NTP). Written authorization from the Project Manager to the Contractor to provide all, or specified portions of, the services required by this Agreement.
- A1.24 Project. The school facility, or the portion of the school facility, which is to be designed by the Contractor in accordance with this Agreement and constructed by the Construction Contractor in accordance with the Construction Contract.
- A1.25 Project Manager. The Anchorage School District's employee who has the direct responsibility for the Project. The Project Manager is the Anchorage School District's project representative and the Contractor's primary point of contact with the Anchorage School District.
- A1.26 Record Drawings. Graphic representations of the executed Work prepared, in part, by the Construction Contractor from Conformed Documents to show significant changes in the Work made during the construction process and transferred to drawing media by the Contractor.
- A1.27 Request for Information (RFI). Written request from the Construction Contractor to the Anchorage School District requesting information related to construction of the Project.
- A1.28 Scope of Work/Scope of Services. The work to be performed under a contract, typically divided by tasks with noted deliverables and deadlines.
- A1.29 Subcontract. An agreement between the Contractor and a Subcontractor by which the Subcontractor agrees to provide to the Anchorage School District a portion of the services required of the Contractor under the terms of this Agreement.

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- A1.30 Subcontractor. A person, partnership, corporation, joint venture, or other business entity with which the Contractor subcontracts to provide a portion of the services required of the Contractor under the terms of this Agreement.
- A1.31 Technical Specifications and Design Standards. Guidelines established by the Anchorage School District to define performance quality of design elements, construction materials, systems and installations for application to facilities under Anchorage School District operational control. Such guidelines are working documents published periodically in the form of two separate documents: Design Standards and Technical Specifications.
- A1.32 Work. All labor and materials provided by the Construction Contractor to construct the Project in accordance with the terms of the Construction Contract.
- A1.33 Work Product. Without limitation, all documents, models, renderings, and other materials to be furnished by the Contractor to the Anchorage School District by or on behalf of the Contractor, or by any consultants, subcontractors, or others retained by the Contractor (hereafter "Subcontractors"), and all written information, reports, studies, object or source codes, flow charts, diagrams, specifications, and other tangible material which have been created by the Contractor in order to provide services pursuant to this Agreement.

**ARTICLE A2 Information and Services from Others**

- A2.1 The Anchorage School District may, at its election or in response to a request from the Contractor, furnish information or services from other contractors. Contractor shall review such information and services for adequacy. If, in the Contractor's opinion, such information or services is inadequate, the Contractor must notify the Project Manager of the specific service or material deemed inadequate and the extent of the inadequacy prior to use in the performance of this Agreement. The Project Manager will then evaluate and resolve the matter in writing. Unless so notified by the Contractor, the Anchorage School District may assume the information or services provided are adequate.

**ARTICLE A3 Occupational Safety and Health**

- A3.1 The Contractor and its Subcontractors shall observe and comply with (a) the Federal Occupational Safety and Health Act of 1970 and all regulations and standards promulgated thereunder, and (b) all State of Alaska occupational safety and health laws and regulations. The Contractor shall include a provision in each Subcontract requiring the Subcontractor to observe and comply with said laws and regulations.

**ARTICLE A4 Equal Employment Opportunity**

- A4.1 The Contractor certifies that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry, age, sex, marital status, mental or physical handicap, or change in marital status, in employment, provision of services or otherwise. The Contractor shall take affirmative action to ensure such non-discrimination, including but not limited to the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
- A4.2 The Contractor shall state, in all solicitations or advertisements for employees to Work in the performance of this Agreement, that all qualified applicants will receive consideration for

employment without regard to race, color, religion, national origin, ancestry, age, sex, marital status, mental or physical handicap, or change in marital status.

- A4.3 The Contractor shall comply with the requirements of the Anchorage Municipal Code, Chapter 7.50.010-120, as well as any procedures adopted by the Anchorage School District to implement the policies set forth therein.
- A4.4 The Contractor shall comply with any and all of the following laws and directives, and any regulations promulgated thereunder, which may be applicable to the Project or this Agreement, all of which are incorporated herein by reference:
- Title IV of the Federal Civil Rights Act of 1964;
  - Federal Executive Order 11625 (Equal Employment Opportunity);
  - Title 41, Code of Federal Regulations, Part 60 (Equal Employment Opportunity);
  - Title 49, Code of Federal Regulations, Part 21 (Discrimination);
  - Title 49, Code of Federal Regulations, Part 23 (Minority Business Enterprises);
  - Office of Management and Budget (OMB) Circular 102, Attachment O (Procurement Standards);
  - Alaska Statute (AS) 18.80.200-300 (Discrimination).
- A4.5 The Contractor shall include the provisions of this Article in every Subcontract and purchase order, and shall require each Subcontractor to include these provisions in every sub-subcontract, so that these provisions will be binding upon each Subcontractor, sub-subcontractor and vendor providing services or goods to the Project.

#### **ARTICLE A5**     **Payments to the Contractor**

- A5.1 Payments shall be based on Contractor's invoices which have been submitted in accordance with this Article and the provisions of Appendix C hereto, and which have been approved by the Anchorage School District. The sum of all payments shall not exceed the maximum allowable amount of compensation stated in Appendix C, or any Amendment thereto. All invoices shall be in a format provided by the Anchorage School District.
- A5.2 The Anchorage School District will attempt with due diligence to obtain any approval of Contractor's invoices or payment to Contractor which may be required of a funding agency and to issue Notice(s) to Proceed in a timely manner. The Contractor shall not perform any services without a Notice to Proceed. The Contractor shall not be entitled to payment for services performed or any associated reimbursable costs incurred which are outside the Scope of Services and costs authorized by Appendix C, or any Amendment thereto.
- A5.3 In the event that items on an invoice are disputed by the Anchorage School District, payment for those items will be withheld until the dispute is resolved. Payment for undisputed items will not be withheld, subject to the Anchorage School District's right of set-off or counterclaim.
- A5.4 The Contractor shall submit a final invoice and all other documentation required by this Agreement to the Project Manager within ninety (90) Days after the final acceptance of services by the Anchorage School District. The Contractor is not entitled to payment of any invoice submitted after said ninety (90) Day period, unless the Anchorage School District has given prior written consent thereto.

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A5.5 All payments due the Contractor will be made within thirty (30) Days of the Project Manager's approval of the invoice.

**ARTICLE A6 Changes to the Agreement**

A6.1 Changes in the Contractor's compensation may be made only by written Amendment, signed by both parties and, if required, approved by the Anchorage School Board. If a change is made in the Contractor's Scope of Services or conditions of service under this Agreement, and such change results in an increase or decrease in the Contractor's costs, an equitable adjustment to the Contractor's compensation shall be made and set forth in an Amendment. The Contractor shall not perform any Additional Services prior to receiving a Notice to Proceed, except as the Contractor may be requested under the provisions of Article A15 (Claims).

A6.1.1 From time to time throughout the course of Contractor's performance of this Agreement, the Project Manager may request the Contractor to make one or more Design Adjustments in relation to the Project. The making of any Design Adjustment is part of Basic Services and shall not entitle the Contractor to an Amendment. Neither the Contractor's time for performance nor the Contractor's compensation will be adjusted in relation to a Design Adjustment.

A6.2 Changes in the Contractor's time for performance, including any change in the period of performance stated in the Agreement or in the Master Time Schedule which is to be incorporated into this Agreement as an appendix, may be made only as follows: (a) If the change in the time for performance is associated with a change in the Contractor's compensation, the change must be made by the same Amendment which changes the Contractor's compensation, or (b) if the change in time for performance is not associated with a change in the Contractor's compensation, then such change may be set forth in a new Master Time Schedule appendix which is signed and dated by the parties, and then substituted for the original Master Time Schedule appendix, or its most recent substitute.

A6.3 The Contractor shall submit a written request for an Amendment to the Project Manager within thirty (30) Days after the beginning of the occurrence of any act or event of which Contractor becomes aware, or should have become aware, and in relation to which Contractor believes it is entitled to additional compensation and any associated time extension. Such acts or events may include but are not limited to the Anchorage School District requesting, either verbally or in writing, that the Contractor perform Additional Services which are not already covered by a fully executed Amendment. If the Project Manager deems an Amendment appropriate, he will negotiate the terms of an Amendment with the Contractor. Unless such written request for an Amendment is submitted in a timely manner, the Contractor shall be deemed to have acknowledged that the act or event does not entitle it to additional compensation or a time extension.

A6.4 The Contractor shall submit any request for modification of the Master Time Schedule to the Project Manager within a reasonable period of time after the beginning of the occurrence or event giving rise to the request for such modification.

**ARTICLE A7 Audits and Records**

A7.1 The Contractor shall maintain records and keep in safe condition all documents relating to performance, communications, correspondence and costs pertinent to this Agreement. The Anchorage School District's authorized representatives shall have the right to examine such records and documents, and Contractor's accounting procedures and practices.

A7.2 The Anchorage School District's authorized representatives shall have the right to examine all accounting books, records, data and other documents of both the Contractor and Contractor's first tier Subcontractors related to the negotiation, pricing and performance of this Agreement,

and any Amendment thereto, for the purpose of evaluating the accuracy, completeness and currency of the information submitted as part of or in relation to any invoice. Such right of examination shall extend to all documents necessary to permit the Anchorage School District to evaluate the information, computations and projections used to the extent deemed necessary by the Anchorage School District, in its sole discretion.

A7.3 The materials described in this Article shall be made available at the business office of the Contractor at all reasonable times for inspection, audit or duplication, for a minimum of seven (7) years from the date of final payment under this Agreement and for such longer period, if any, as may be required by an applicable statute.

A7.3.1 If this Agreement is completely or partially terminated, records relating to the services terminated shall be made available for a minimum of seven (7) years from the date of any resulting final settlement.

A7.4 If the Agreement is funded to any extent with federal or state monies, or both, the appropriate federal or state authorities may also examine the accounting books, records, data and the other documents of the Contractor and Contractor's first tier Subcontractors.

A7.5 The Contractor shall include the provisions of this Article in all first tier Subcontracts so as to be binding on all first tier Subcontractors.

A7.6 All documents which relate to an appeal under Article A15 (Claims), litigation or the settlement of a Claim arising out of the performance of this Agreement shall be made available to the Anchorage School District for inspection and copying until such appeal, litigation or Claim has been finally concluded. Such documents shall be made available to the Anchorage School District within thirty (30) Days of the Anchorage School District's request therefor.

#### **ARTICLE A8 Inspections by Anchorage School District**

A8.1 The Anchorage School District shall have the right to inspect, in the manner and at reasonable times it considers appropriate during the period of this Agreement, all facilities and activities of the Contractor as may be engaged in the performance of this Agreement.

#### **ARTICLE A9 Termination or Suspension**

A9.1 This Agreement may be terminated by either party upon ten (10) Days' written notice if the other party (a) fails substantially to perform in accordance with the terms of the Agreement through no fault of the party initiating the termination, and (b) fails to cure such failure to perform before the end of the ten-Day notice period, or if the cure cannot be completed within a ten (10) Day period, fails to take substantial steps toward effecting such cure. If the Anchorage School District terminates this Agreement because of Contractor's default (default termination), the Anchorage School District will not make any payment to Contractor beyond those payments already made, until after completion of the Project and after deduction of any damages which are incurred by the Anchorage School District as a result of the Contractor's default, or which are allowable as a set-off, or as the result of a counterclaim, cross-claim or cause of action. In no event shall Contractor be entitled to payment for the following: (a) unperformed services; (b) services which cannot be substantiated in whole or in part by the Contractor to the satisfaction of the Anchorage School District in its sole discretion; (c) services or Work Products which are unsatisfactory to the Anchorage School District in its sole discretion and are the result of Contractor's failure to perform in accordance with the terms of the Agreement; (d) direct non-salary costs which are incurred after Contractor's receipt of the notice of termination, or (e) markup for anticipated profit or indirect costs relating to unperformed services.

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- A9.1.1 If the Anchorage School District terminates this Agreement because of Contractor's default, the Anchorage School District may assume responsibility for the services to be provided hereunder and prosecute the same to completion by contract or otherwise, and the Contractor shall be liable to the Anchorage School District for any cost incurred by the Anchorage School District which exceeds the cost the Anchorage School District would have incurred had the Contractor fulfilled its obligations under the Agreement. Settlement of liability for such excess costs or for any delay in completion of the services required under this Agreement or construction of the Project which arises out of Contractor's default may constitute the basis of a set-off, counterclaim, cross-claim, or cause of action available to the Anchorage School District.
- A9.2 The Anchorage School District may at any time terminate (convenience termination) or suspend this Agreement for its needs or convenience upon ten (10) Days' written notice to the Contractor. In the event of a convenience termination or a suspension of the Agreement for more than three (3) months, the Anchorage School District will compensate the Contractor for services performed and any expenditures incurred prior to the effective date of the written notice of termination or suspension. No fee, profit or other compensation for the uncompleted portion of the services will be paid, except for already incurred indirect costs which the Contractor can establish and for which the Anchorage School District would have compensated the Contractor over the life of this Agreement, but because of the termination or suspension would have to be absorbed by the Contractor without further compensation.
- A9.3 If federal funds support this Agreement, settlement for default or convenience termination must be approved by the funding agency and shall conform with Title 41, Code of Federal Regulations, Subparts 1-8.604 or 1-8.203 and 1-8.213.
- A9.4 In the event of termination or suspension of the Agreement for over three (3) months, the Contractor and its Subcontractors shall discontinue all services, or such portions of service as directed in the notice, and deliver to the Project Manager all Work Products, including all data, reproducibles, plans, specifications, reports, estimates, summaries, schedules, and other documents and data prepared or in the process of being prepared pursuant to this Agreement.
- A9.5 The Contractor shall include the provisions of this Article in each Subcontract so as to be binding on each Subcontractor.
- A9.6 The rights and remedies of the Anchorage School District as set forth in this Article A9 are not exclusive, and are in addition to any other rights and remedies the Anchorage School District may have at law or as provided elsewhere in this Agreement.
- A9.7 Unless earlier terminated as provided in this Article, this Agreement shall remain in force for a period which may reasonably be required for the Basic Services and Additional Services hereunder. However, the provisions of the Agreement relating to professional responsibility, dispute resolution, professional liability coverage, indemnification, governing law, records and ownership of documents shall remain in effect after termination of the other provisions of the Agreement.
- A9.8 The payment of any sums by the Anchorage School District under this Article A9 shall not constitute a waiver of any Claims for damages by the Anchorage School District against the Contractor.

**ARTICLE A10 Inducement/Conflict of Interest**

- A10.1 The Contractor agrees that it will not engage on a full-time or part-time basis, during the period of this Agreement, any person or persons who are or have been employed by the Anchorage School District during the period of this Agreement or during the ninety (90) Days immediately

preceding the date of this Agreement, except such employee(s) who have been regularly retired or approved in writing by the Anchorage School District.

#### **ARTICLE A11 Covenant Against Contingent Fees**

- A11.1 The Contractor shall comply with the Copeland "Anti-Kickback" Act (19 USC 874), and the U.S. Department of Labor Regulations promulgated thereunder (29 CFR, Part 3), both of which are incorporated herein by reference.
- A11.2 The Contractor warrants that it has not employed or retained any organization or person, other than a bona fide employee, to solicit or secure this Agreement and that it has not paid or agreed to pay any organization or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, the Anchorage School District has the right to void this Agreement without liability or, in its discretion, to deduct from the allowable compensation the full amount of such commission, percentage, brokerage or contingent fee.

#### **ARTICLE A12 Endorsement of Documents**

- A12.1 Endorsements (signatures) and professional seals, if applicable, must be included on all final drawings, specifications, and geotechnical reports prepared by the Contractor.

#### **ARTICLE A13 Ownership of Work Products**

- A13.1 Ownership of Work Products produced under this Agreement, including items which have pre-existing copyrights, shall remain with the Contractor. The Anchorage School District shall have an unrestricted, irrevocable license to use the Work Products without infringing any copyrights, and without additional compensation to the Contractor.
- A13.1.1 Unrestricted use shall include use: (1) for any additions, alterations, or other subsequent Work to the Project; (2) to demonstrate or reference conceptual arrangements, in whole or in part, for incorporation into any District project; and (3) reuse of a prototypical design on an Anchorage School District project.
- A13.2 Should the Anchorage School District elect to reuse Work Products produced by the Contractor and its Subcontractors under this Agreement and owned by the Contractor on any other project, the Anchorage School District shall indemnify, hold harmless and defend the Contractor and its Subcontractors against any damages or liabilities arising from such reuse.
- A13.2.1 When Work Products produced by the Contractor and its Subcontractors under this Agreement are reused by the Anchorage School District, the Contractor's and Subcontractors' signatures, professional seals and dates shall be removed. Such Work Products, which require professional signature and seal, will be signed, sealed and dated by the professional who is in direct supervisory control and responsible for the new project for which such Work Products are being reused.
- A13.3 The Contractor shall include this provision in every Subcontract so as to be binding on every Subcontractor.

#### **ARTICLE A14 Subcontractors, Successors and Assigns**

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- A14.1 The Contractor shall provide to the Project Manager a list of all consultant firms with which the Contractor proposes to subcontract, consistent with the District's qualifications-based Request for Proposals requirements, in order to provide a portion of the services required of the Contractor under this Agreement. The Contractor shall acquire the Project Manager's non-objection to any proposed Subcontractor prior to entering into a Subcontract. Upon request by the Project Manager, the Contractor shall provide additional information concerning the qualifications of any proposed Subcontractor.
- A14.2 If Appendix E identifies a named individual in the employ of Contractor, or a named Subcontractor, or a named individual in the employ of a Subcontractor, or any combination of the foregoing, as providing professional services under this Agreement, then Contractor shall employ such individual or subcontract with such Subcontractor so that the named individual(s) or Subcontractor, or both, shall provide the designated services. Contractor shall immediately notify the Project Manager in writing of a proposed replacement of named individual(s) or Subcontractor, or both. The Anchorage School District reserves the right to object to the proposed replacement so named in accordance with Section A14.1.
- A14.3 The Contractor shall not assign, delegate or transfer the whole or any part of this Agreement or any monies due or to become due hereunder, without the prior written consent of the Anchorage School District. Any assignment, delegation or transfer not in accordance with this provision shall be null and void and of no force or effect. This Agreement shall otherwise be binding upon and inure to the benefit of the successors and permitted assigns and delegates of the parties hereto.
- A14.4 The Contractor binds itself, its partners, officers, directors, Subcontractors, executors, administrators, successors, assigns, and legal representatives to this Agreement and to the successors, assigns and legal representatives of the Anchorage School District with respect to all covenants of this Agreement. The Contractor's Agreement is incorporated by this reference herein in all subsequent contracts with Subcontractors and their Subcontractors. This language shall be made a part of all contracts between the Contractor and its Subcontractors.
- A14.5 No payment, gratuity or offer of employment shall be made in connection with any Subcontract, by or on behalf of any Subcontractor to the Contractor, or by a sub-subcontractor to a higher tier subcontractor or any person associated therewith, as an inducement for the award of a Subcontract.
- A14.6 The Contractor shall include provisions appropriate to effectuate the purposes of this Agreement in all sub-tier agreements. Where Contractor is required to perform certain services in this Agreement, and the parties agree that all or a portion of those services are to be performed by a Subcontractor, the Contractor shall require the Subcontractor in the Subcontract to perform those services for the benefit of the Anchorage School District. Nothing stated herein, however, shall relieve the Contractor of the responsibility of performing all of its responsibilities and obligations under this Agreement.

**ARTICLE A15 Claims**

- A15.1 The Contractor shall notify the Project Manager in writing of the occurrence of any act or event of which Contractor becomes aware, or reasonably should have become aware, which may form the basis of a Claim within ten (10) Days of the occurrence of such act or event. If the matter cannot be resolved within seven (7) Days following the Project Manager's receipt of notification regarding the potential Claim, the Contractor shall, within the next fourteen (14) Days, submit a written "Notice of Claim" to the Project Manager in accordance with provision A15.1.2. The Anchorage School District will review and decide the Claim in accordance with provisions A15.1.3 through A15.1.6.

- A15.1.1 If directed by the Project Manager, the Contractor shall proceed with the performance of this Agreement, including the performance of any disputed services, pending final resolution of any Claim or action arising under the Agreement.
- A15.1.2 In any Notice of Claim, the Contractor shall set forth the following: (a) the provisions of the Agreement which apply to the Claim and under which the Claim is made, and (b) the specific relief requested, including any additional compensation claimed and the basis upon which it was calculated, and any additional time requested and the basis upon which it was calculated.
- A15.1.3 In relation to a Notice of Claim in an amount of \$25,000 or less, the Anchorage School District shall, if requested in writing by the Contractor, proceed with due diligence to attempt to issue a decision regarding the Claim within fifteen (15) Days of receipt of such a request. In relation to a Notice of Claim in an amount over \$25,000, the Anchorage School District shall proceed with due diligence to attempt to issue a decision regarding the Claim; in any event if the Claim is not decided within a thirty (30) Day period, the Anchorage School District shall notify the Contractor of the date by when the decision will be made.
- A15.1.4 In reviewing a Claim, the Anchorage School District may schedule a review hearing or request additional information from the Contractor in order to evaluate the Claim fully. The Contractor shall provide any additional information requested by the Anchorage School District within fifteen (15) Days of the receipt of the request for additional information. Failure by the Contractor to furnish such additional information shall constitute a waiver of the Claim.
- A15.1.5 The Anchorage School District will deliver to the Contractor a final written decision regarding a Claim. Any Amendment arising out of a Claim shall be subject to the provisions of Article A6 (Changes to the Agreement) herein.
- A15.1.6 If a Claim is not resolved in accordance with the procedures set forth in provisions A15.1.1 through A15.1.6 herein, the Contractor has no right to file an action against the Anchorage School District in a court of law, until the Claim is first subjected to non-binding mediation before a single mediator agreed upon by the parties. Such mediation shall be attended by a representative of the Contractor and a representative of the Anchorage School District, each of which has authority to enter into a full and final, binding settlement of the Claim, except where the final, binding settlement is subject to the Anchorage School District School Board's approval. Unless otherwise agreed in writing, all unresolved Claims of the Contractor shall be considered during a single mediation which shall occur prior to final payment by the Anchorage School District. The Anchorage School District and the Contractor shall share equally the costs of the mediator.
- A15.2 Nothing stated herein shall be interpreted to limit the right of the Anchorage School District to seek any remedy it may have against the Contractor as a counterclaim raised during a mediation proceeding or as an action, counterclaim or cross-claim, at law or in equity, filed in a court of law.

#### **ARTICLE A16 Extent of Agreement**

- A16.1 This Agreement, including any and all appendices, and any Amendments thereto, represents the entire and integrated Agreement between the Anchorage School District and the Contractor, and supersedes all prior negotiations, representations, or agreements, written or oral. This Agreement may be modified only by Amendment.

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General Conditions  
Appendix A

A16.2 Nothing contained in this Agreement may be deemed to create any contractual relationship between the Anchorage School District and any Subcontractor or material supplier; nor may anything contained in this Agreement be deemed to give any third party a claim or right of action against the Anchorage School District or the Contractor which does not otherwise exist without this Agreement. Nothing in this Agreement shall be construed as creating any personal liability on the part of any officer, School Board member, employee or representative of the Anchorage School District.

**ARTICLE A17 Notices/Communications**

- A17.1 All notices required or permitted to be given under this Agreement shall be in writing and may be emailed, hand-delivered, mailed, delivered by overnight courier service, or transmitted by facsimile. If mailed, such notices shall be sent by certified mail, postage pre-paid, return receipt requested. The date on which such notice was given shall be deemed to be the date which is two (2) Days after the date of the mailing. The post-mark affixed to such notice by a U.S. Post Office shall be conclusively presumed to be the date of mailing for purposes of this provision. In the case of notices given by hand delivery or overnight courier, such notices shall be deemed to be given on the date of the actual receipt. If transmitted by email or facsimile, such notices shall be deemed to be given on the date of the actual receipt of a complete, email or legible facsimile transmission, except that if an email or facsimile transmission is received after business hours or on the weekend or holiday, then the notice shall be deemed to be given on the next business day following the receipt of the email or facsimile transmission.
- A17.2 Notices to the Anchorage School District shall be sent to the individual identified in Article 5 of the Agreement as the Project Manager, at the email, address or the fax number indicated.
- A17.3 Notices to the Contractor shall be sent to the individual identified in Article 6 of the Agreement as the Contractor's Principal, at the email, address or fax number indicated.
- A17.4 Either party may change the address to which notices shall be sent by notice in writing to the other party.
- A17.5 The Anchorage School District shall be entitled to rely on information provided by and statements made by the Contractor's Principal identified in Article 6 of the Agreement as binding the Contractor. The Contractor shall be entitled to rely on information provided by and statements made by the Project Manager identified in Article 5 of the Agreement, or other Anchorage School District officials identified in writing, as binding the Anchorage School District.

**ARTICLE A18 Taxes**

A18.1 The Contractor shall pay all federal, state and local taxes incurred by the Contractor as a result of performing services required by this Agreement. The Contractor shall include this provision in any Subcontract so as to be binding on any and all Subcontractors.

**ARTICLE A19 Governing Laws**

A19.1 This Agreement is governed by the laws of the State of Alaska, and any applicable federal and municipal laws and ordinances. Any legal proceedings will be held in Superior Court in Anchorage Alaska. The Contractor shall at all times observe and comply with all such laws and ordinances. If any term, covenant, or condition is found by a court of law to be unenforceable, the remaining terms, covenants, and conditions shall remain in full force and effect.

**ARTICLE A20 Force Majeure Suspension**

A20.1 The duties and obligations of the parties to this Agreement shall be suspended during such time as performance by either party is prevented or materially impeded by strikes, labor disturbances, riots, fire, governmental act, war, acts of God, or any other causes similar to the foregoing and beyond control of the parties hereto.

**ARTICLE A21 Waiver**

A21.1 No delay in exercising any right or remedy of the parties hereunder shall constitute a waiver thereof, and no waiver by the Anchorage School District or the Contractor of the breach of any term, covenant or condition of this Agreement shall be construed as a waiver of any preceding or succeeding breach of the same or any other term of this Agreement. No covenant, condition, right or remedy in this Agreement may be waived or modified orally, by course of conduct or previous acceptance unless such waiver or modification is specifically agreed to in a writing executed by the Anchorage School District and the Contractor.

**ARTICLE A22 Interpretation**

A22.1 Each party has had the opportunity for its attorney to review and comment upon this Agreement, and therefore the terms hereof shall not be interpreted against either party.

**ARTICLE A23 Miscellaneous Provisions**

A23.1 For the purpose of this Agreement, unless the context clearly indicates otherwise, the singular includes the plural, and the plural includes the singular.

A23.2 The titles of all Appendices, Articles and provisions contained in this Agreement are used only for purposes of convenience and ease of reference, and shall not be interpreted to affect the contents of any provision of this Agreement.

**ARTICLE A24 Additional Provisions**

A24.1 The following itemized Anchorage School District design guidelines and/or standards are in effect for this Agreement. Should all or portions of subsequently issued standards be applicable to the Project covered by this Agreement, such standards will be issued by Amendment.

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ANCHORAGE SCHOOL DISTRICT  
FORMAL PROFESSIONAL SERVICES AGREEMENT

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**ARTICLE B1 Professional Responsibilities, Standard of Care, Representations**

- B1.1 The Contractor shall provide professional architectural/engineering services for the Project in accordance with the terms and conditions of this Agreement. The Contractor shall perform such services, as a professional consultant to the Anchorage School District, to carry out the activities of Project design and Construction Contract administration, and to provide the technical documents and construction observation that are necessary and desirable to complete the Project in a manner satisfactory to the Anchorage School District.
- B1.2 The Contractor shall provide all services required in this Agreement using no less than the usual and customary skill, care and judgment of a professional architectural/engineering firm that is registered in the State of Alaska and is well experienced in providing such services as the design and construction of public school buildings located within the Anchorage School District.
- B1.3 Contractor represents and agrees that (a) it is an experienced firm having the ability and skill (or that it will subcontract to obtain the services of qualified sub-consultant(s) acceptable to the Anchorage School District) that are necessary to perform the services required of it under this Agreement, including specifically, but without limitation, the design and construction of a project having the scope and complexity of the Project contemplated herein; (b) it has the capabilities and resources necessary to perform its obligations hereunder; (c) it is familiar with the current laws, rules and regulations applicable to the Project, including applicable municipal, state and federal building codes and sanitary and environmental laws, rules, regulations, and orders thereof.
  - B1.3.1 In the event the Contractor becomes aware of a change or pending change in codes, laws, rules or regulations which may affect the design or construction of the Project, the Contractor shall inform the Project Manager of the change or pending change and the possible impacts thereof on the Project.
- B1.4 The Contractor represents and agrees that the drawings, specifications and other documents prepared by it or its Subcontractors pursuant to this Agreement shall be functional for the purposes intended, and that the Project, if constructed in accordance with such drawings, specifications and other documents, will be structurally sound and a complete and properly functioning facility in

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accordance with the general design intent established by the Educational Specifications.

- B1.5 The Contractor shall prepare drawings, specifications, and other documents necessary to complete the design of the Project and to meet applicable codes, laws, rules, regulations and professional standards in effect as of the date of design. The Contractor or its Subcontractors shall correct, at their own expense, any and all errors, omissions, ambiguities and conflicts in the drawings, specifications and other documents prepared by the Contractor.
- B1.6 The Contractor covenants and agrees to perform the services described in this Agreement through appropriate, competent professionals who are Contractor's staff members or Subcontractors, or the staff members of Contractor's Subcontractors, and are professionally registered when required by State of Alaska statutes. Subcontractors may include, but are not limited to, architects, structural engineers, mechanical engineers, electrical engineers, landscape architects, civil engineers, cost estimators, and others as necessary.
- B1.6.1 The Anchorage School District shall have the right to require the Contractor to exclude from providing services under this Agreement any Subcontractor, or any employee of Contractor or any of its Subcontractors, or any other person under the control of the Contractor, to whom the Anchorage School District has a reasonable objection. The Anchorage School District reserves the right to object to selection of Subcontractors based on considerations of cost, performance, special qualifications, and/or known work load relative to resources.

## **ARTICLE B2 Relationship of the Parties**

- B2.1 The Anchorage School District has no design responsibilities of any nature under this Agreement. Additionally, the District's issuance of Design Standards and Technical Specifications guidelines and/or the District's approval or denial of deviations from said Design Standards or Technical Specifications guidelines shall not create in the District design responsibilities or obligations under this Agreement. None of the activities of the Anchorage School District are intended to supplant or conflict with the design, construction cost estimating, contract administration, construction observation, or any other services and responsibilities of the Contractor that are required under this Agreement.
- B2.1.1 The Contractor's architectural and engineering design services include, but are not limited to, cost and time estimating that are calculated to demonstrate that the Project can be constructed within the budget and time frame identified in this Agreement. Although the Project Manager may discuss or suggest changes to Contractor's cost and time estimates, such discussions or suggestions shall in no way relieve the Contractor of the responsibility of fulfilling its obligations and responsibilities therefor.
- B2.2 The Contractor, including its agents, employees and Subcontractors, is an independent contractor of the Anchorage School District, and not an agent, officer or employee of the Anchorage School District. The Contractor shall carry out its responsibilities under this Agreement and conduct itself at all times as an independent contractor, except as the authority to act as an agent of the Anchorage School District in relation to certain tasks and events may be specifically granted by the Project Manager in writing from time to time. The Contractor shall not represent itself to any third party as other than an independent contractor of the Anchorage School District at any time, except in accordance with the foregoing written authority of the Project Manager.
- B2.3 Any and all employees of the Contractor, while engaged in the performance of any services required of the Contractor under this Agreement, shall be considered employees only of the Contractor and not of the Anchorage School District, and any and all claims that may or might arise under the Workers' Compensation Act on behalf of said employees while so engaged, and any and



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all claims made by a third party as a consequence of any act or omission on the part of the Contractor's employees while so engaged on any of the services to be rendered herein, shall be the sole obligation and responsibility of the Contractor.

- B2.4 Communications by the Anchorage School District to the Contractor relating to services performed by the Contractor may be issued or made through the Project Manager. Formal communications and submittals of the Contractor to the Anchorage School District and the Construction Contractor shall be issued or made through the Project Manager, unless otherwise directed by the Project Manager or by this Agreement. The Project Manager shall have the authority to establish procedures consistent with this Agreement, to be followed by the Contractor, and to call periodic conferences to be attended by the Contractor and its Subcontractors throughout the term of this Agreement.

**ARTICLE B3 Administrative Requirements**

- B3.1 The provisions contained in this Article B3 are administrative requirements of this Agreement.
- B3.2 Cost Analysis and Control. Cost analysis and cost control are primary concerns of the Anchorage School District. Provisions B3.2.1 - B3.2.6.2 are included in this Agreement in order to facilitate and promote effective cost analysis and control in relation to the Project.
- B3.2.1 The Contractor shall prepare and deliver Estimated Total Construction Costs (ETCC) to the Anchorage School District at periods designated by the Deliverables Checklist referenced in Article B4. The initial ETCC shall be reviewed by the Project Manager and revised to the extent necessary at each subsequent deliverable period at no additional cost to the Anchorage School District.
- B3.2.2 The Contractor shall provide a Project design that reflects the program as defined in Contractor's original or amended scope of work. If the Estimated Total Construction Cost exceeds the budgeted Construction Contract Award Price (CCAP), the Contractor shall at no additional cost to the Anchorage School District designate an appropriate base bid scope of Work and one or more additive alternate bid scope(s) of Work, at its own expense. The ETCC for such scopes of Work shall approximate the CCAP.
- B3.2.2.1 To the extent possible, and only when requested by and approved by the District, the Contractor shall provide additive alternates or redesign the basic bid; deductive alternates shall only be included with the approval of the Anchorage School District. Where Bid Documents require bid proposals for unit prices that exceed, or deduct from, base quantity allowances, such base allowances shall be based on specific quantity surveys and not factors.
- B3.2.3 The Anchorage School District may, at its option, obtain an independent estimate of the total construction cost based on the Contractor's design. If, in the opinion of the Project Manager, such independent estimate varies significantly from the ETCC provided by the Contractor, then the Project Manager and the Contractor shall review the discrepancies. If the Project Manager concludes that changes in the Project design are required in order to keep construction costs within the CCAP, the Contractor shall modify the Construction Contract Documents accordingly at its own expense. Contractor's modification(s) shall be carried out in a reasonable time so as not to delay the scheduled completion and occupancy of the project by the Anchorage School District.
- B3.2.4 Should the Contractor be required to redesign the Project for any reason, such redesign must be approved by the Anchorage School District.
- B3.2.5 After opening bids, the Anchorage School District may exercise any option available to it,

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including without limitation the following:

- B3.2.5.1 If the lowest responsive basic bid by a responsible bidder exceeds 100% of the CCAP, (a) increase the budgeted funds and award the Construction Contract(s), or (b) reduce the Project scope and require the Contractor to redesign the Project and modify the Bid Documents accordingly for rebid at Contractor's own expense.
- B3.2.5.2 If the lowest responsive basic bid by a responsible bidder, plus all additive alternative bids, is less than 90% of the CCAP, and if the scope of the Project had previously been decreased or the quality of the materials used in the Project had previously been lessened from the Technical Specifications and Design Standards because the ETCC exceeded the CCAP, (a) award the Construction Contract(s), and (b) require the Contractor to redesign the Project and modify the Construction Contract Documents in order to return the Project to its previous scope, or the materials to their previous qualities, or both, or other mutually agreed upon adjustment. Contractor's modification(s) shall be carried out in a reasonable time so as not to delay the scheduled completion and occupancy of the project by the Anchorage School District. Such modification(s) will serve as the basis of a change order to the Construction Contract.
- B3.2.6 If the Contractor is required by the Project Manager to redesign the Project and modify Bid Documents pursuant to provision B3.2.5.1, or to redesign the Project, modify the Construction Contract Documents and prepare a change order to the Construction Contract pursuant to provision B3.2.5.2, such redesign, modification and change order preparation shall be performed at Contractor's own expense, unless one or more of the following conditions exist:
- B3.2.6.1 The required redesign, modification and preparation is made necessary as the result of a prior redesign or modification directed by the Project Manager following an independent estimate of total construction cost pursuant to provision B3.2.3.
- B3.2.6.2 The required redesign and modification is the result of the lowest responsive bid by a responsible bidder being more than 100% of the CCAP, and (a) the Contractor notified the Project Manager in writing prior to completing the Construction Contract Documents that the CCAP would probably be insufficient for award of the basic bid and no action was taken by the Project Manager to resolve the matter, or (b) because the bid opening date was delayed, for reasons not the fault of the Contractor, more than ninety (90) days after the Project Manager's receipt of the ETCC submitted as part of Construction Document Services.
- B3.3 Time for Performance, Delays Timely provision of a Master Time Schedule, as defined in Appendix A, is a material requirement of this Agreement. If such a schedule is not included in Appendix F herein, Contractor shall develop and deliver it prior to the first billing for design services to the Anchorage School District, but in no event later than thirty (30) days after award of contract to the Contractor. Contractor shall coordinate Master Time Schedule with Anchorage School District's anticipated date for occupancy of Project.
- B3.3.1 The Contractor shall not deviate from the Master Time Schedule unless, in accordance with and under the conditions set forth in Article A6 ("Changes to the Agreement"), one of the following conditions is met: (a) an Amendment incorporating such change of schedule is negotiated and signed by both parties hereto, or (b) a modification to the

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Master Time Schedule is agreed upon and signed by both parties. Contractor shall accordingly modify and submit a revised Master Time Schedule prior to submission of any subsequent billing to the Anchorage School District.

- B3.3.1.1 Should the Project Manager reasonably determine that the Contractor is behind schedule, and so notify the Contractor, the Contractor shall accelerate its efforts at its own expense, including using additional manpower or overtime, or both, to maintain the approved Master Time Schedule.
- B3.3.2 The Contractor shall not be held liable for damages incurred by the Anchorage School District due to a failure by the Contractor to meet any deadline established by the Master Time Schedule, provided that such failure arises out of a cause(s) beyond the control and without the fault or negligence of the Contractor. Such causes may include but are not limited to: Acts of God or of the public enemy, acts of a governmental entity acting in its sovereign or proprietary capacity, acts of the Anchorage School District acting in its contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, and weather that is unusually severe for the location(s) in which the Contractor is to perform its services. In the event of any such delay, Contractor shall provide to the Project Manager a written request for time extension by Amendment or modification to the Master Time Schedule in accordance with Article A6 ("Changes to the Agreement"). Except as provided in this provision B3.3.2, the Anchorage School District shall have all other contractual rights and remedies available to it at law or in equity in the event of Contractor's failure to perform this Agreement in a timely manner.
- B3.3.3 Contractor shall not be entitled to any damages for delay from the Anchorage School District, whether caused by the Anchorage School District, or the Construction Contractor or another third party. Contractor's sole remedy for delay is a reasonable time extension granted by the Project Manager in an Amendment or modification to the Master Time Schedule pursuant to Article A6 ("Changes to the Agreement").
- B3.3.4 In the event of a suspension in service directed by, or as a result of, the Anchorage School District, upon resumption of services, if any, the Contractor shall be required to review, revise and deliver the Master Time Schedule. Contractor shall be compensated for same based on stipulated sum pursuant to Article A6 ("Changes to the Agreement").
- B3.4 Conformance with ASD guidelines. The Anchorage School District's Technical Specifications and Design Standards are intended as guidelines. The Contractor shall review these guidelines. The Contractor's use of such guidelines without written notice of exception shall constitute Contractor's acceptance of the guidelines. If the Contractor proposes deviations from these guidelines, such deviations shall be justified to the Anchorage School District in writing. The Anchorage School District retains the right to accept or reject such deviations, the Contractor shall modify the Construction Contract Documents accordingly at its own expense. The Contractor shall incorporate and coordinate the referenced guidelines into the Project.
- B3.5 Document Preparation and Submission Procedures. Contractor's compliance with the procedures and requirements set forth in provisions B3.5.1 - B3.5.9 concerning document preparation and submission is mandatory, except as may be specifically modified in writing by the Project Manager.
- B3.5.1 All drawings and specifications submitted for review and approval shall be marked as "Schematic Development Review Set," "Design Development Review Set," "Construction Document Review Set," or similar phrase, as appropriate. The original set used to duplicate the Bid Documents shall be marked and issue dated as directed by the Anchorage School District.
- B3.5.1.1 Technical specifications shall be provided in the current C.S.I. format.

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- B3.5.1.2 Specifications shall be provided digitally in pdf and the current version of Microsoft Word used by the Anchorage School District.
- B3.5.2 All Construction Contract Documents shall bear the Anchorage School District's Project number and title, and shall be signed or initialed by the Contractor to acknowledge that the submissions have been checked by the Contractor for accuracy, completeness and coordination.
- B3.5.3 Electronic media drawing files shall be developed or usable in current version of AutoCAD used by the Anchorage School District, or as determined by the Project Manager in consultation with the Contractor.
- B3.5.3.1 Fonts used in drawing data bases shall be standard AutoCAD fonts, or Contractor shall supply the Anchorage School District with a licensed copy of font files used.
- B3.5.3.2 Contractor shall conform drawing production data classifications to the current version of the "United States National CAD Standard", except as otherwise approved by the Project Manager for project-specific requirements. Information regarding this Standard is available at: <http://www.nationalcadstandard.org>.
- B3.5.4 Contractor shall provide drawing files on writable CD-ROM disk(s), labeled with the Anchorage School District's Project name and number, and drawing numbers, dates, and phase status.
- B3.5.5 During design phases, Contractor shall provide digital progress drawings, as pdf, in sizes and quantities as agreed to by Project Manager and Contractor.
- B3.5.6 Contractor shall provide one complete set of final reproducible drawings each for Bid Document issuance and, subsequently, for Conformed Documents digitally in sizes as agreed to by Project Manager and Contractor.
- B3.5.7 At the completion of construction of the Work as provided by B5.17, the Contractor shall provide one complete set of Record Drawings both hard copy and electronically on writable CD-ROM disk(s).
- B3.5.8 The Contractor shall not delegate or transfer in any way through the Bid Documents any service required of it by this Agreement, unless such delegation or transfer is submitted prior to the Construction Document phase and approved in writing by the Project Manager. Any performance specifications which require design services by the Construction Contractor or one of its subcontractors, or by a third party, or which require instruction (such as from a manufacturer, supplier or installer) shall state that the Contractor must review and approve all such designs or instructions for conformance with design intent.
- B3.5.9 "Brand Name", "Sole Source", or proprietary specifications shall not be used in the Bid Documents except when directed by the Project Manager, or when justified by the Contractor and approved by the Project Manager. Basis shall be replacement inventory, compatibility with existing systems, spatial parameters, previous performance history, and/or Anchorage School District Technical Specifications and Design Standards. "Brand Name or Equal as approved by Architect or Engineer" specifications may be used in Bid Documents as a means to define the performance or other salient requirements of an item, if the specific features of the brand name establish the minimum essential characteristics required to satisfy its intended use and the same is clearly stated in the

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specifications. During construction, Contractor shall conform with Article B5.4.2 for substitution of specified products.

- B3.6 Review, Comment. The District's review of drawings and specifications may generate comments directed to the Contractor which are designated by the following classifications and which require certain types of action by the Contractor as indicated below:

Class I comments pertain to real or potential code or regulation violations, and require the Contractor's response by means of modification or formal written approval or variance from the regulatory agency. Any such approval or variance from the regulatory agency shall be copied to the Project Manager.

Class II comments pertain to errors, omissions, matters of document coordination, or deviations from Anchorage School District's Technical Specifications and Design Standards, and require the Contractor's correction of the documents, unless justification satisfactory to the Project Manager is provided in writing by the Contractor.

Class III comments pertain to matters of design judgment and are offered in a positive manner with the intent of improving the design result. These comments are not directions for design changes, but are provided as suggestions for consideration by Contractor as the Contractor may deem appropriate. These comments do not require any revision of the documents by the Contractor. However, they do require response by the Contractor justifying action taken.

- B3.7 Presentation, Approval, Acceptance. Notwithstanding presentation requirements of other regulatory agencies, the Contractor shall present Conceptual Design (when required) and subsequently Schematic Design documents to the Anchorage School Board at a regularly scheduled Board Meeting to obtain Board approval before proceeding with services for subsequent phase. At least three weeks prior to the anticipated Board meeting, the Contractor shall submit presentation drawings as defined by the attached Deliverables Checklist and shall notify the Project Manager that the Contractor will be ready to make the presentation to the School Board at the regularly scheduled meeting.

B3.7.1 Approval of the Contractor's design and document submissions by the Project Manager, the Anchorage School District, or the Anchorage School Board constitutes approval of the basic design concept and layout only, and does not relieve the Contractor of the responsibility for preparing a complete set of Construction Contract Documents in accordance with the terms of this Agreement.

B3.7.2 Acceptance by the Project Manager, the Anchorage School District, or the Anchorage School Board of the Contractor's design and document submissions is not an approval of any Contractor omissions, errors, conflicts, oversights or noncompliance with any applicable governmental laws or regulations. The Anchorage School District shall not be liable for failure to identify any such omissions, errors, conflicts, oversights, or noncompliance. All such responsibility belongs to the Contractor.

**ARTICLE B4 Design Services**

- B4.1 The Contractor shall provide all the design services described within this Article B4 ("Design Services"). Design Services shall consist of Conceptual Design Services (when required), Schematic Design Services, Design Development Services, Construction Document Services and Bid Services described herein, except that any such service may be modified or deleted in Article B8 ("Additional Provisions"), or deleted by a notation in the left margin of Article B4 which is initialed by both parties.

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- B4.1.1 The Contractor shall provide Deliverables as indicated on the attached Deliverables Checklist (Attachment A to PSA Appendix B) as negotiated within the Scope of Services by the Contractor and Project Manager.
- B4.1.1.1 Where indicated on the Deliverables Checklist, drawings showing preliminary master plan development, site plan layout, building plan layouts, preliminary building cross-sections, exterior elevations, and interior elevations of salient features shall be provided in both full size and 8-1/2 x 11" format (or as otherwise directed by Project Manager) for presentation to the Anchorage School Board.
- B4.1.1.2 Where three-dimensional control coordinates are indicated on the Deliverables Checklist, Contractor shall provide same for all critical control coordinates (i.e., tangent points, property corners, curvature points, grade breaks, horizontal and vertical control monuments, inverts, flow lines, etc.) CADD drawings shall include all disciplines referenced to the same geometric base. Should the Municipality of Anchorage require that certain drawings reflect a different basis of control than that selected by the Contractor, appropriate equation(s) shall be provided by the Contractor allowing coordination on either data base(s).
- B4.1.1.3 Where indicated on the Deliverables Checklist, the Contractor shall review, approve and submit to the Project Manager Estimated Total Construction Costs of the Project, based on historic area, volume or other unit costs, construction sequence and scheduling, economic tradeoffs, safety and maintenance requirements, and such other factors as may be appropriate.
- B4.1.2 The Contractor shall serve as a member of the Municipality of Anchorage Art in Public Places program's Art Advisory Committee to determine specific sites for work(s) of art and the scale and type of artwork most appropriate for the Project.
- B4.1.2.1 The Contractor shall work closely with artist(s) and artist's (artists') consultants approved by the Anchorage School District to identify and coordinate the structural, utility or other requirements which interface with Contractor's work for selected work(s) of art for inclusion in the Bid Documents.
- B4.1.3 The Contractor shall prepare and submit all Deliverables necessary to obtain all preliminary reviews or approvals required: by governmental entities that have regulatory and jurisdictional power over the Project through applicable laws, statutes, regulations and codes; by privately-owned utility companies or other entities which may impose conditions on the Project; and by such other entities as may be identified by the Project Manager.
- B4.1.4 As part of its risk management program, the Anchorage School District requires submittal of Construction Documents to its property and casualty insurer ("Insurer") for review and comment. Upon receipt of Insurer's review comments, the District will evaluate issues raised and address with the Contractor. The Contractor shall become familiar with applicable Insurer standards and endeavor to comply with those standards.
- B4.2 When required, Conceptual Master Plan Services shall consist of the preparation and presentation of Deliverables which illustrate and describe the general master planning scope, scale and relationship of program components based on Educational Specifications for approval by the Anchorage School District.

- B4.3 Schematic Design Services shall consist of the preparation and presentation of Deliverables which illustrate and describe the general scope, scale and relationship of Project components based on the program, approved Master Time Schedule, and Construction Contract Award Price, for approval by the Anchorage School District.
- B4.3.1 The Contractor shall review the Educational Specifications, Technical Specifications and Design Standards, and other pertinent documents furnished by the Anchorage School District to ascertain the requirements of the Project.
- B4.3.2 The Contractor shall develop initial design concepts and options for the Project in close coordination with the Anchorage School District. The Contractor shall identify unusual structural, mechanical, electrical or other features that may impact costs or use, and shall develop the systems selected in sufficient detail to permit coordination among design elements.
- B4.3.3 In order to inventory existing site conditions, the Contractor shall request a Project site visit and propose an itinerary. Following the Project Manager's written approval of the Contractor's request, the Contractor's principal, and other personnel as may be designated, shall visit the Project site.
- B4.3.4 When the Construction Contract Documents are approximately thirty-five percent (35%) complete, the Contractor shall submit to the Project Manager one complete set of reproducible drawings for review.
- B4.4 Design Development Services shall be based on the approved Schematic Design, and shall consist of the preparation, for approval by the Anchorage School District, of Deliverables to fix and describe the size and character of the entire Project with regard to structural, mechanical and electrical systems, materials and such other essentials as may be appropriate. Design Development Services shall include a detailed expansion of the architectural design so that the Project's size, appearance, form, construction type, and engineering systems are developed. Major material selections, equipment items, and quality of finishes shall be identified.
- B4.4.1 When the Construction Contract Documents are approximately sixty-five percent (65%) complete, the Contractor shall submit to the Project Manager one complete set of reproducible drawings for review.
- B4.5 Construction Document Services shall be based on the approved Design Development Deliverables, and shall consist of the preparation, for approval by the Anchorage School District, of Deliverables, setting forth in detail the requirements for construction of the entire Project. Deliverables shall establish the detailed quality levels and extent of materials and systems sufficient for both bidding and construction of the Work.
- B4.5.1 The Contractor shall prepare and coordinate a complete set of Construction Contract Documents for the Project in accordance with the current Construction Specifications Institute Manual of Practice, except as provided by the Anchorage School District and enumerated below.
- B4.5.1.1 The Contractor shall prepare applicable technical specifications (Divisions 2-17), an index of drawings, and drawings for inclusion in the Construction Contract Documents. The Anchorage School District will provide Conditions of the Contract (Division 0), with the exception of the index of drawings, and will transmit an informational copy to Contractor. The Contractor and the Project Manager shall jointly prepare General Requirements (Division 1) in a coordinated effort. All documents and specifications are to be complementary and compatible.

- B4.5.2 When the Construction Contract Documents are approximately ninety-five percent (95%) complete, the Contractor shall submit to the Project Manager one complete set of reproducible drawings for review.
- B4.5.3 The Contractor shall review, approve and submit to the Project Manager, when the Construction Contract Documents are ninety-five percent (95%) complete, an updated and revised Estimated Total Construction Cost, based on materials, systems and details of construction, and which considers changes in the cost of materials, labor and services discovered since submission of the previous Estimated Total Construction Cost; adjustments for anticipated changes in the bidding market relative to the Project; and such other factors as may be appropriate.
- B4.6 Bid Services shall be based on the approved Construction Contract Documents, and shall consist of assisting in the preparation, for approval by the Anchorage School District, of Bid Documents for obtaining bids and awarding contract(s) for construction of the Project.
- B4.6.1 Upon direction by the Project Manager, the Contractor shall prepare responses to bidders' questions or requests for clarification or interpretation of Bid Documents. The Contractor shall not respond directly to any bidder's question or request for clarification or interpretation. All questions and requests for clarifications or interpretations as to the meaning of the information in the Bid Documents must be in writing, with responses by the Contractor provided to the Anchorage School District and retained in the Contractor's records. The Contractor shall not respond to bidders' oral questions and requests for clarifications except in writing.
- B4.6.2 The Contractor shall prepare and deliver copy-ready and electronically, as defined by Article B3.5, any addenda to the Bid Documents which may be necessary to clarify or supplement drawings, specifications, or instructions, or to provide notice of any change in bidding procedures. All addenda will be distributed by the Anchorage School District during the bidding period.
- B4.6.3 As directed by the Project Manager, the Contractor shall participate in pre-bid conferences, the bid opening, the review and evaluation of bids, and the recommendation for award of the Construction Contract(s).
- B4.6.4 Contractor shall provide Conformed Documents within 30 days of bid opening, unless the Anchorage School District approves an extension in writing, which extension shall not exceed 15 days. Conformed drawing items shall be identified by clouds referenced with revision numbers in triangles and corresponding revision dates in drawings' title blocks. Conformed technical specification items shall be italicized with footers referencing revision and date. Contractor shall submit Conformed Documents to applicable permitting agencies for their approval, and shall provide Project Manager both half-sized and full-sized pdf copies of Conformed Documents for issuance to Construction Contractor.
- B4.7 Permitting Services shall be provided as assistance to ASD and based on approved Construction Contract Documents submitted to the Municipality and/or others for permitting. Contractor shall review all building (or any other applicable) permit comments and respond/resolve all comments pertaining to Contractor's Scope of Work.

## **ARTICLE B5 Construction Phase Services**

- B5.1 Construction Phase Services shall consist of providing such Construction Contract administration services and construction observation services during the construction of the Project as are



General Architectural and Engineering Design and Construction Phase Services

described in this Article B5. Construction Phase Services shall commence with the award of the Construction Contract and shall terminate with the Anchorage School District's final acceptance of the Project, or approval of the Contractor's final invoice pursuant to the Contractor's satisfactory completion of obligations under this Agreement, whichever is later.

- B5.2 As directed by the Project Manager, the Contractor shall participate in pre-construction conferences with the successful bidder.
- B5.3 The Contractor shall consult with the Project Manager regarding the acceptability of the supervisory personnel, subcontractors and suppliers proposed by the Construction Contractor for various portions of the Work.
- B5.4 The Contractor shall review and approve or take other appropriate action on schedules, shop drawings, samples, schedules of values, and other submissions of the Construction Contractor(s), as well as the Work performed by the Construction Contractor(s), for conformance with the design concept of the Project and for compliance with the Construction Contract Documents.
- B5.4.1 The Contractor shall provide a submittal register listing the submittals required in format provided by Project Manager. The Contractor shall review and return submittals to the Construction Contractor expeditiously, but no later than fourteen (14) Days from date of receipt, except when otherwise authorized by the Project Manager. The Contractor shall coordinate directly with the Construction Contractor to obtain all submittals required by the Construction Contract Documents, and shall promptly notify the Project Manager concerning any submittals, or lack of submittals, which may affect the Project. The Contractor's approval of submittals must be in writing to the Project Manager and copied to the Construction Contractor. Approvals must contain Contractor's recommendation regarding any credit due the Anchorage School District for an item substituted by the Construction Contractor.
- B5.4.2 The Contractor shall submit to the Anchorage School District for acceptance all recommended approvals for substitutions of specified products proposed by the Construction Contractor.
- B5.5 The Project Manager will establish with the Contractor procedures to be followed for the review and processing of all the Construction Contractor's shop drawings, catalog submissions, Project reports, test reports, maintenance manuals, and other necessary documentation, as well as the Construction Contractor's requests for change orders and applications for extensions of time.
- B5.6 The Contractor shall render to the Project Manager with reasonable promptness, interpretations of the requirements of the Construction Contract Documents which are submitted by the Construction Contractor as Requests for Information (RFIs). The Contractor's interpretations shall be consistent with the intent of, and reasonably inferable from, the Construction Contract Documents. The Contractor's decisions in matters relating to artistic effect shall be consistent with the intent of the Construction Contract Documents. The Contractor's decisions set forth in response to RFIs which impact cost and schedule shall be approved by the Project Manager prior to the Contractor transmitting them to the Construction Contractor. The Contractor shall coordinate with the Anchorage School District's logs of RFIs, Proposal Requests, and Change Orders using owner-provided construction management software.
- B5.6.1 Should errors, omissions or conflicts in the drawings, specifications or other Construction Contract Documents be discovered which are due to the Contractor's fault, the Contractor shall prepare and submit to the Project Manager such amendments or supplementary documents and provide such consultation as may be required, for which the Contractor shall make no additional charge, but may be subject to claim, from the Anchorage School District.

- B5.7 As directed by the Project Manager, the Contractor shall research, review, and recommend for approval or disapproval the Construction Contractor's responses to requests for proposals or requests for change orders to the Construction Contract, and participate in Change Order negotiations.
- B5.8 The Contractor will have access to the Work at all reasonable times. All site visits, observations, and other on-site activities by the Contractor shall be coordinated through the Project Manager.
- B5.9 The Contractor is not responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work. Contractor is not responsible for any failure by the Construction Contractor to carry out the Work in accordance with the Construction Contract Documents. Nothing stated herein absolves the Contractor from the responsibility of observing construction to ascertain conformance of the Work with the Construction Contract Documents, as required herein.
- B5.10 The Contractor shall make periodic visits to the construction site to observe the Work, per the agreed upon scheduled, for conformance with the Construction Contract Documents. Such visits shall be timed to coincide with the Project Manager's construction progress meeting with the Construction Contractor. A representative from each engineering discipline shall make periodic visits to the construction site no less than once every two weeks during the course of Work applicable to that discipline. Contractor shall not be required to make extensive or full-time on-site observations to check the quality or quantity of the Work as part of Basic Services, but shall make as many observations as may be reasonably required to fulfill its obligations to the Anchorage School District hereunder. The Contractor and each representative from each engineering discipline shall prepare a written field report on each visit and observations of the Work made during each visit. Each field report shall be submitted via the Contractor to the Project Manager, in a form acceptable to the Project Manager, within two (2) working Days of the respective visit.
- B5.10.1 In addition to the foregoing, each of the engineering disciplines may be required by the Project Manager to make extended visits or have full-time personnel at the job site during critical phases of the Work. Such extended visits or full-time observation at the job site shall be Additional Services when directed, by written authorization, by the Project Manager.
- B5.11 On the basis of on-site observations, the Contractor shall take the appropriate steps to attempt to guard the Anchorage School District against defects and deficiencies in the Work of the Construction Contractor. If the Contractor observes any Work that does not conform to the Construction Contract Documents, the Contractor shall immediately make an oral report of all such observations to the Project Manager. The Contractor shall confirm the non-conformance in writing to the Project Manager within three (3) Days of such observation.
- B5.12 Only the Project Manager shall have authority to condemn or reject Work when in the Project Manager's or the Contractor's opinion the Work does not conform to the Construction Contract Documents. Such condemnation or rejection will be by written notice delivered to the Construction Contractor. Whenever, in the Project Manager's or the Contractor's reasonable opinion, it is considered necessary or advisable to ensure the proper implementation of the intent of the Construction Contract Documents, the Project Manager shall have the authority to require special inspection or testing of any Work in accordance with the provisions of the Construction Contract Documents, whether or not such Work is fabricated, installed or completed.
- B5.13 Based upon observations at the site and upon the Construction Contractor's applications for payment, the Contractor shall determine the amount it believes the Anchorage School District owes the Construction Contractor(s) pursuant to the terms of the Construction Contract, and shall within seven (7) Days after receipt of an application for payment from the Construction Contractor, submit to the Project Manager a signed certificate for payment in such amount.

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- B5.13.1 The Contractor's signing of a certificate of payment shall constitute a representation by the Contractor to the Anchorage School District, based upon the Contractor's observations at the site and the data comprising the application for payment, that the Work has progressed to the point indicated, that to the best of the Contractor's knowledge, information and belief, the quality of the Work appears to be in accordance with the Construction Contract Documents (subject to: an evaluation of the Work for conformance with the Construction Contract Documents upon Substantial Completion; the results of any subsequent tests required in accordance with the Construction Contract Documents; minor deviations from the Construction Contract Documents correctable prior to completion; and to any specific qualifications stated in the recommendation); and that the Construction Contractor is entitled to payment in the amount stated in the recommendation. When required by the State of Alaska Department of Education and Early Development, and at the Project Manager's direction, the Contractor will provide the Project Manager with written certification when the Construction Contract is 50% complete in a format provided by the Project Manager.
- B5.13.2 By signing a certificate for payment to the Anchorage School District, the Contractor shall not be deemed to represent that it has made any examination to ascertain how and for what purpose the Construction Contractor has used the moneys paid on account of the Construction Contract.
- B5.13.3 The Project Manager shall consult with the Contractor regarding the determination of the amount due the Construction Contractor, and shall approve or disapprove the certificate for payment.
- B5.14 The Contractor shall, when directed by the Project Manager, research, review and make recommendations regarding any claim submitted by the Construction Contractor.
- B5.15 The Contractor shall be responsible for obtaining governing agency approval of its designs. If any exceptions arise related to the design, the Contractor shall endeavor to resolve the exception with the governing agency and provide its design services to correct the situation at no additional cost to the Anchorage School District. The Contractor shall not be liable for costs of design services if the exceptions are subsequent contradictions to a governing agency's previous approval and/or if the exceptions appear to be unreasonable in the Project Manager's judgement.
- B5.16 Upon direction by the Project Manager following notice by the Construction Contractor that the Work (or portions of the Work) are substantially complete, the Contractor shall inspect the Work (or portions of the Work) and prepare and submit to the Project Manager typed punch lists of the Work which is not in conformance with the Construction Contract Documents. The Project Manager will transmit such punch lists to the Construction Contractor(s).
- B5.17 Upon direction by the Project Manager, following notice by the Construction Contractor that the Work or portions of the Work are finally complete, the Contractor shall conduct final completion inspections. Upon correction of all punch list items and acceptance of all other close-out submittals and certificates of the Construction Contractor, the Contractor shall approve the Construction Contractor's application for final payment and submit the signed certificate of final payment to the Project Manager for review and approval.
- B5.18 The Contractor shall review and approve for completeness, clarity and accuracy, As-builts provided by the Construction Contractor showing significant changes in the Work made during the construction process, based on neatly and clearly marked-up conformed contract drawings, prints, and other data furnished by the Construction Contractor(s), responses to RFI's, periodic site visits, and change orders which occurred during the Work. Contractor shall deliver to the Project Manager a reproducible set of the approved Record Drawings and such electronic copies as are required by provision B3.5.7 herein.

Project Name  
Project Number **Insert Number**  
RFP Number **Insert Number**  
Revised 4-18-18

## **ARTICLE B6 Additional Services**

- B6.1 The Architect shall provide selected Additional Services described in this Article B6, or as may be modified or supplemented in Article B8, only when the basis for ascertaining the compensation for such services is included either in Appendix C hereto or by subsequently issued Addenda and the services are authorized by a Notice(s) to Proceed.
- B6.2 Additional Services may include, but are not limited to, the following:
- B6.2.1 Upon the completion of the Schematic Design Services, the remaining Design Services may be divided to facilitate the bidding of separate trade contracts or the release of phased construction activities. The Project Manager shall have the right to determine whether there will be early, late, or phased release of construction contracts to meet funding and other Project constraints.
  - B6.2.2 Performing geotechnical site investigations, surveys, and/or platting services.
  - B6.2.3 Performing on-site observations of the Work which require extended visits or full-time personnel at the job site.
  - B6.2.4 Performing a preliminary energy audit in a format approved by the Project Manager. If the preliminary energy audit discloses opportunities for energy conservation, the Contractor shall develop and submit to the Project Manager a proposal to perform a detailed energy audit to identify technical solutions and the projected economic benefit of those solutions.
    - B6.2.4.1 If the Anchorage School District accepts a proposal submitted in accordance with provision B6.2.4, an Amendment covering the performance of the detailed energy audit must be executed before the Contractor will be entitled to any compensation therefor.
    - B6.2.4.2 If a detailed energy audit identifies economical solutions to conserve energy, the Contractor and the Anchorage School District may execute an Amendment covering the preparation of the necessary design and the inclusion of such design requirements in the Bid Documents within the basic bid or as an additive alternative bid.
  - B6.2.5 Providing start-up Commissioning assistance, including on-site observations and review of test data regarding the original operation of any equipment, and the operation of building systems during the initial occupancy and subsequent periods until proper operations are established. Such assistance may include determining responsibility for corrective measures or procedures as may be needed. If Commissioning reveals deficiencies caused by the Contractor's design, Contractor shall provide design services to correct the deficiencies at no additional cost to the Anchorage School District.
  - B6.2.6 Providing warranty inspections, as required, through the scheduled completion of the warranty period specified in the construction contract.
  - B6.2.7 Preparing an environmental assessment of the Project: obtaining federal, state and local review which must be obtained in accordance with applicable laws and regulations, and revising as necessary.
    - B6.2.7.1 Preparing an environmental impact statement (EIS) for the Project; obtaining federal, state and local reviews which must be obtained in accordance with applicable laws and

General Architectural and Engineering Design and Construction Phase Services

regulations; revising as necessary; preparing any necessary design requirements; and, including such design requirements in the Bid Documents within the basic bid or as an additive alternate bid.

- B6.2.8 Preparing Educational Specifications which conform to Anchorage School District Design Standards and Department of Education and Early Development requirements.
- B6.2.9 Preparing a Life Cycle Cost analysis and recommendations for materials and building systems to be considered as alternatives to those established by Anchorage School District Design Standards and Technical Specifications.

**ARTICLE B7 Anchorage School District Responsibilities**

- B7.1 The Anchorage School District shall, as applicable, provide the Educational Specifications for the Project, unless this task is identified as an Additional Service to be undertaken by the Contractor.
- B7.2 The Anchorage School District shall provide the Contractor with access to the land on which the Project is to be constructed and the Work of the Construction Contractor as may be required in order for the Contractor to perform its services required under the Agreement.
- B7.3 The Anchorage School District shall review documents submitted by the Contractor and render decisions pertaining thereto with reasonable promptness.
- B7.4 The Anchorage School District shall furnish information and responses to Contractor's requests for approvals with reasonable promptness.
- B7.5 The Anchorage School District shall provide all notices and advertisements inviting bids.
- B7.6 The Anchorage School District shall provide all standard construction contract forms for incorporation into the Bid Documents.
- B7.7 The Anchorage School District shall duplicate and distribute Bid Documents.
- B7.8 The Anchorage School District shall receive and open bids and provide tabulation of bids.
- B7.9 The Anchorage School District shall pay directly, or through the Construction Contractor, for all permits, licenses, approvals, easements, assessments, and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities.
- B7.10 The Anchorage School District shall pay for such structural, mechanical, chemical and other laboratory tests, inspections and reports as are required by law and which are not required to be paid by Contractor in this Agreement.
- B7.11 The Anchorage School District shall decide all claims and disputes involving the Construction Contractor and the Anchorage School District, following its review of any related facts and recommendations submitted by the Contractor.
- B7.12 The Anchorage School District shall furnish such legal, accounting, and insurance counseling services as it may deem necessary to preserve its interests in the Project.

**ARTICLE B8 Additional Provisions**

- B8.1 None

Project Name  
Project Number **Insert Number**  
RFP Number **Insert Number**  
Revised 4-18-18



Instructions: 1. Please indicate Scope of Services by marking an "X" where included as part of the project.  
2. Please DO NOT DELETE the non-used Scope of Services, use the strikethrough effect instead of deleting them.  
3. Add and edit the project Scope of Services as needed.

School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase	Design Development Phase	Construction Document Phase
-----------------	--------------------------	-----------------------------

**NARRATIVE\* - Executive Summary for Review**

\* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings  
 \*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.  
 (a) = See FPSA Article B4.1.1.1

	**Outline project objectives and process	
	**Describe design concept	
**Compare proposed program space to ASD Educational Specifications, tabulating required and proposed areas and teaching stations in format acceptable to District	Update and finalize tabulations	Finalized tabulations
Provide regulatory summary, describing design requirements related to all applicable building and zoning/land use codes and regulations, including local amendments: such as Title 21 implications	Update and finalize regulatory summary	Finalized regulatory summary
Describe thermal envelope, giving R-values for roof, walls, grade floors	Finalize thermal envelope design R-values	Finalized thermal envelope design R-values
Define Energy Budget (EB) based on comparable existing facility	Compare and finalize proposed design to EB	Finalized proposed design to EB
Discuss adequacy of Owner-furnished data and identify additional information required.	Discuss adequacy of Owner-furnished data and finalize additional information required.	Finalized required information
Chart Master Time Schedule. Using Microsoft Project. Include tasks, responsibilities, and the following Milestones as applicable: a/e selection; contract negotiations; budget analysis; Ed Spec verification; programming/concept design; site analysis; schematic design; design development; construction documents; all cost estimates; all agency reviews; permitting; bidding; conformed documents; construction award; phasing; construction; commissioning; occupancy	Update Master Time Schedule with each invoice.	Update Master Time Schedule with each invoice. Provide estimates of construction durations for basic bid and major additive alternate Work. Provide basis of duration estimate(s).
	**Provide Estimated Total Construction Cost	

Instructions: 1. Please indicate Scope of Services by marking an "X" where included as part of the project.  
2. Please DO NOT DELETE the non-used Scope of Services, use the strikethrough effect instead of deleting them.  
3. Add and edit the project Scope of Services as needed.

School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
Geotechnical report and recommendations		Geotechnical report and recommendations		Geotechnical report and recommendations	
<b>NARRATIVE*</b> - Detailed Provisions for Review					
* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings					
** = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.					
(a) = See FPSA Article B4.1.1.1					
Relate proposed design to ASD Technical Specifications and Design Standards criteria, justifying any deviation.		Relate proposed design to ASD Technical Specifications and Design Standards criteria, justifying any deviation.		Relate proposed design to ASD Technical Specifications and Design Standards criteria, justifying any deviation.	
Utility services existing and required for both temporary and permanent construction.		Utility services existing and required for both temporary and permanent construction.		Utility services existing and required for both temporary and permanent construction.	
Research hazardous materials history, identifying any known hazardous materials, and identifying potential scope of work.		Investigate, assess, delineate and quantify materials. Propose abatement methods.		Detail hazardous material removal or abatement methods.	
Describe proposed exterior and interior architectural materials, assemblies, systems and finishes.		Submit manufacturers data, catalog cut sheets, and regulatory approvals or tests as required.			
Structural considerations, including seismic analysis of existing buildings and proposed strengthening techniques, floor and roof structural framing live and dead loads analysis.		Structural analysis and calculations		Update Structural analysis and calculations	
Describe mechanical design parameters, referencing Energy Budget. Describe design parameters and project scope for the following systems: heating, ventilation, air conditioning (HVAC), fire sprinkler, plumbing, and controls. For renovation projects clearly indicate which systems will or will not be included in the scope of the project.		Mechanical engineering type of heating system, heat loss and gain load calculations; cut sheets of major heating, ventilation and plumbing components.		Update mechanical engineering loads, calculations and cut sheets of major components.	
Air flow diagram showing where the (existing and new) air is going in the building and relief/exhaust/static, etc information		Verify and update the Air flow diagram		Final narrative	

Instructions: 1. Please indicate Scope of Services by marking an "X" where included as part of the project.  
2. Please DO NOT DELETE the non-used Scope of Services, use the strikethrough effect instead of deleting them.  
3. Add and edit the project Scope of Services as needed.

School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
	Describe water service, sewer service and storm drain system connections to coordinate with utility and site Civil Design.		Update narrative.		Finalize narrative.
	Describe roof rain leader systems and connections with storm water system (drywell if any)		Update roof rain leader systems and connections with storm water system (drywell if any) per reports and recommendations.		Update roof rain leader systems and connections with storm water system (drywell if any)
	Provide video footage and drain inspection report (and rain leader pressure jet cleaning report) for roof STORM WATER drainage system. Reports to define work performed and recommendations.		Update narrative per reports and recommendations.		Update
	Provide video footage and drain inspection report (and sewer piping pressure jet cleaning report) for SEWER drainage system. Reports to define work performed and recommendations.		Update narrative per reports and recommendations.		Update
	Describe plumbing systems. Describe HVAC systems. Define any special systems for project including but not limited to well systems, fire pumps, fuel oil systems (or alternate fuel), propane systems and compressed air..		Update plumbing systems. Update HVAC systems.		Update plumbing systems. Update HVAC systems.
	Define Energy Conservation Measures, including Life Cycle Cost analysis (see Article B6), renewable energy options.		Update ECM and LCC analysis.		Update ECM and LCC analysis.
	Describe proposed controls systems, and coordination with existing where applicable.		Outline controls system and coordination with existing where applicable. Including but not limited to, roof drainage system heat traced with automatic controls, roof access security.		Update controls system narrative.
	Describe fire protection plan and systems.		Fire protection design load requirements.		Update fire protection load requirements.



Instructions: 1. Please indicate Scope of Services by marking an "X" where included as part of the project.  
2. Please DO NOT DELETE the non-used Scope of Services, use the strikethrough effect instead of deleting them.  
3. Add and edit the project Scope of Services as needed.

School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
	Describe electrical design parameters, including, but not limited to: Lighting, power, fire alarm, telecom, intercom/clock, sound systems, access control, security, and video surveillance.		Revise narrative to match updated project requirements.		Final electrical narrative.
	Estimate new and or upgraded service size based on historical demand data from utility.		Electrical engineering load and lighting calculations and cut sheets of major components.		Update electrical engineering load and lighting calculations and cut sheets of major components.
	Define emergency and standby power requirements and systems.		Calculate emergency and standby power requirements.		Update emergency and standby power calculations.
	Define other utilities and services required.		Finalize calculations for other utilities and services.		Finalized calculations for other utilities and services. Estimate operating utility costs, including gas, electricity, water and sewer
	Describe fall protection plan and systems		Outline system and coordination with existing where applicable.		Update fall protection narrative
	Determine Special Systems, their level of performance and quality (see Narrative Note 1)				
	Describe quality control system's check list		Implement quality control checklist.		Update quality control checklist.
	Identify any existing overgrown landscaping that may affect building footprint and roof parapets,		Describe existing overgrown landscaping for the building footprint and roof parapets,		Update description.
			Color selections for all exterior and interior finishes and materials		Color selections for all exterior and interior finishes and materials
					Color board(s) for all interior and exterior finishes and materials

**NARRATIVE NOTE:** 1. Special Systems are computer and telecommunication systems including, but not limited to, telephone, intercom, clock, television, public address/sound, media retrieval, theatrical lighting and sound, access control and security.

**SPECIFICATIONS\***

\* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings

\*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.

(a) = See FPSA Article B4.1.1.1

	Create Table of Contents showing Technical Sections to be included, identifying major materials and systems in CSI format		Draft Technical Specifications, identifying material and system selections for each Section (CSI format)		Final Technical Specifications in hard copy and electronic format.
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Instructions: 1. Please indicate Scope of Services by marking an "X" where included as part of the project.  
2. Please DO NOT DELETE the non-used Scope of Services, use the strikethrough effect instead of deleting them.  
3. Add and edit the project Scope of Services as needed.

School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
			Review ASD standard specifications, such as door hardware, doors, windows, shades, carpet, etc and use/modify as needed for project requirements. Clearly show what changes are made to ASD standard specs and indicate why changes are recommended		Final Technical Specifications in hard copy and electronic format.
	On Table of Contents, identify all project elements having impact on ASD Divisions 0 and 1, such as demolition.		Review ASD Division 0; recommend edits to ASD Division 1 in collaboration with ASD PM.		Update edits to ASD Division 1, including Bid Form and bid strategies such as additive alternates, allowances, unit prices, etc.
			Identify testing requirements, special inspections, replacement stock, and systems requiring commissioning in ASD Division 1 – General Requirements		Update and detail.
			Draft submittal register.		Finalize submittal register.

**PERFORMANCE SPECIFICATIONS AND DRAWINGS\* - FIRE PROTECTION (MECHANICAL)**

\* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings

\*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.

(a) = See FPSA Article B4.1.1.1

	Specifications: Include fire protection sections in table of contents.		Specifications: Define sprinkler design parameters including, but not limited to, wet or dry, density, conditions of freezing or excessive heat, Zones/Hazard classifications, FM global requirements and utility connections. Determine requirements for seismically bracing existing system.		Specifications: Define submittal requirements including, but not limited to, sprinkler legend, piping and head layout, pipe sizes, zone valve locations and details, riser diagram, monitoring system connections, main drains, and backflow prevention.
	Drawings: Fire protection legend.		Drawings: Fire protection legend, abbreviations and notes.		Drawings: Fire protection legend, abbreviations and notes.
	Drawings: Identify areas of wet or dry sprinkler work.		Drawings: Overall plan indicating areas of work, hazard zone and FM global requirements if applicable.		Final plans.
	Drawings: Identify water service/fire riser locations and fire pump if applicable.		Drawings: Water service entrance schematic with sprinkler riser and backflow prevention.		Final piping schematics.

**Project Name**  
Project Number **Insert Number**  
RFP Number **Insert Number**  
Issued 06/20/00; Revised 3-05-2020

Instructions: 1. Please indicate Scope of Services by marking an "X" where included as part of the project.  
2. Please DO NOT DELETE the non-used Scope of Services, use the strikethrough effect instead of deleting them.  
3. Add and edit the project Scope of Services as needed.

School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase	Design Development Phase	Construction Document Phase
-----------------	--------------------------	-----------------------------

**DRAWINGS\* - GENERAL**  
 \* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings  
 \*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.  
 (a) = See FPSA Article B4.1.1.1

	Title sheet showing project title, project address, ASD project number, Design Team	Update
General notes, abbreviations, drawing and material conventions, vicinity map, drawing index, and code classification information (including occupancies, construction types, allowable and actual areas, applicable codes, etc.). Scope of work descriptions	Update. Summary scope of work per each discipline, per base bid and alternates (if any), separately.	Update
Seismic recovery scope of work includes structure and non-structure (Architectural, Mechanical, and Electrical) drawings per seismic assessment report requirements.	Seismic drawings are needs for demolitions, repairs, patches, and replacements, such as (but no limited) site, floor, ceiling, and roof plans, elevations, sections, and details to match all related different disciplines' scope below.	Update

**DRAWINGS\* - CIVIL**  
 \* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings  
 \*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.  
 (a) = See FPSA Article B4.1.1.1

Surveyed plat including, but not limited to, legal description, property lines, easements, buffers, rights-of-way	Update	Update
Survey of existing conditions including, but not limited to, topography, hydrology, drainage, structures, roadways, vegetation, utilities, 3-dimensional control points	Update	Update
Proposed building(s) and site improvements including, but not limited to, athletic fields, waste collection and recycle holding, loading docks, bicycle racks, playground	Dimensioned locations of building(s) and site improvements off 3-D control points	Construction limits and staging area(s); Detailed building(s) and site improvements.
**Master plan phases locating future relocatable buildings		Construction phasing and coordination where applicable (See Article B6)

Instructions: 1. Please indicate Scope of Services by marking an "X" where included as part of the project.  
2. Please DO NOT DELETE the non-used Scope of Services, use the strikethrough effect instead of deleting them.  
3. Add and edit the project Scope of Services as needed.

School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
			Preliminary grading and drainage including, but not limited to, storm water control, footing and rain leaders.		Final grading and drainage referenced to 3-D control points.
	Identify roof rain leader drainage systems and connections to the site storm water drainage system		Provide site drawings showing rain leader downspouts, drainage system, and storm water control		Final drainage referenced to 3-D control points. Details, including, but not limited to: manholes and cleanouts
	Schematic proposed utility routes and access to existing utilities		Preliminary utility layouts, details and locates referenced to 3-D control points		Final utility layouts, details and locates referenced to 3-D control points
	Vehicular and pedestrian access including, but not limited to, parking, drop-offs, bus loading, service, and off-site access		Dimensioned vehicular and pedestrian access with traffic control plan and snow storage location		Detailed vehicular and pedestrian access and traffic control referenced to 3-D control points
	Identify any required off-site improvements		Dimensioned layout of off-site improvements		Detailed off-site improvements referenced to 3-D control points
	Identify ADA-compliant accessible route(s) and parking locations		Dimensioned layout of site ADA-compliant improvements, details		ADA-compliant signage and striping
					Excavations, compactions, shoring, underpinning and retaining walls.
			Exterior lighting plans showing design foot-candles, orientation and exposure control.		Exterior lighting details

**DRAWINGS\* - LANDSCAPING**  
 \* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings  
 \*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.  
 (a) = See FPSA Article B4.1.1.1

	Topographic base plan showing major existing and proposed site amenities and landscaping (a)		Planting plans and schedules, playgrounds and athletic fields		Soil preparations, planting and site amenities details, irrigation requirements, and protection of existing vegetation
	Identify any existing overgrown landscaping that may affect building footprint, building facia, roof and roof parapets.				

**DRAWINGS\* - HAZARDOUS MATERIALS ABATEMENT**  
 \* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings  
 \*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.  
 (a) = See FPSA Article B4.1.1.1

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School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
			Floor (roof) plans showing locations and types of hazardous materials. Including but not limited to, hazmat scope, locations, quantities and removal or abatement methods and details.		Update plans and abatement measures not covered by technical specifications
			Quantify materials removal or abatement.		Update the quantify materials removal or abatement.

**DRAWINGS\* - ARCHITECTURAL**  
 \* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings  
 \*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.  
 (a) = See FPSA Article B4.1.1.1

	**Depictions of general building mass, its relationship to site, scale and appearance.				
	**Overall floor plans showing, as appropriate, existing to be removed and new construction, room locations and square footage; for renovations, show existing to remain and to be removed; (a)		Update. Reference enlarged plans, building sections, exterior elevations.		Update
	(Demo and New) Floor plans of typical rooms showing equipment and furnishings (a)		Update plans and enlarged typical rooms. Freeze furnishings layer. Reference vertical assemblies, wall opening types and designations, interior elevations, wall openings, equipment and casework, details.		Update
					Photographs of existing conditions showing work items
	Fire and code plans showing existing and new rated walls, paths of egress, occupant loads, separations, pertinent code classifications and designated ADA-accessible routes.		Update, showing all floor plans, including basements, mezzanines, and fan rooms.		Update. Reference typical ADA details.
			Detail vertical and horizontal assemblies showing fire ratings and approved test numbers (UL, FM, etc.)		
			Schedule finishes		Detail finishes

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School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
			Schedule openings (doors, windows, relites, louvers, hatches, etc.) and hardware.		Detail openings.
			Identify and adjust the existing door closer locations on HVAC renovations		Detail
			Schedule roof sections		Update details
			Schedule equipment and casework.		Detail
			(Demo and New) Reflected ceiling plans indicating changes in ceiling to floor (or re-roof related) elevations and materials. (Enlarged plans, as necessary)		Ceiling and soffit details
	Typical representative building cross sections (a)		Complete building sections, referencing wall sections		Update
	Typical floor and wall assemblies		Typical wall sections, wall assembly R-. values, and details		Update and complete wall sections
			Typical interior elevations		Update and complete interior elevations. Details.
	(Demo and New) Roof plans (overall plan and detailed plans, as necessary) depicting roof exterior elements and objects. Includes verification of electrical raceway below deck. (a)		Roof plans to include, but not be limited to, slope, drainage, curbs, parapets, hatches , ladders, monitors and skylights, all equipment, penetrations, expansion and seismic joints, fall protection locations		Roof details. Reference on plans.
	Typical roof assemblies		Roof assembly R-values, and details		Update and complete details
			Enlarged vertical circulation plans and sections including, but not limited to, stairs, ramps and elevators		Details
			Determine and schedule required room numbering based on new construction or renovation per ASD standards		Miscellaneous details.
					1% Art, where integrated with project's permanent construction (see Article B4)

**DRAWINGS\* - STRUCTURAL**

\* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings

\*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.

(a) = See FPSA Article B4.1.1.1

Project Name

Project Number **Insert Number**

RFP Number **Insert Number**

Issued 06/20/00; Revised 3-05-2020

Instructions: 1. Please indicate Scope of Services by marking an "X" where included as part of the project.  
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3. Add and edit the project Scope of Services as needed.

School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
	Establish design loads; structural design to meet the current codes		Structural legend and notes, including code requirements and design criteria, special inspection requirements.		Update
	(Demo and New) Foundation structural framing plans with reference grids, systems and materials. Locate shear walls. (overall plan, as necessary)		Dimensions. Member sizes. Reference structural enlarged plans, and sections.		Reference structural details and schedules
	(Demo and New) Floor structural framing plans with reference grids, systems and materials. Locate shear walls. (overall plan, as necessary)		Dimensions. Member sizes. Reference structural enlarged plans, and sections.		Reference structural details and schedules
	(Demo and New) Roof structural framing, wind load, snow load plans with reference grids, systems and materials. Locate shear walls. (overall plan, foundation plan, as necessary)		Dimensions. Member sizes. Reference structural enlarged plans, and sections.		Reference structural details and schedules
			Dimensioned foundation plans		Reference foundation details
			Structural sections		Reference structural details
			Typical structural details		Complete and update structural details
			Typical structural schedules		Update schedules

**DRAWINGS\* - PLUMBING**

\* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings

\*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.

(a) = See FPSA Article B4.1.1.1

	Plumbing legend, symbols and abbreviations		General notes		Finalize legend, symbols, abbreviations and notes.
	Plumbing schedules to include list of new fixtures and equipment.		Plumbing schedules indicating basis of design plumbing fixtures and equipment.		Final plumbing schedules.
	Plumbing site plan to identify roof rain leader connections with storm water system (drywell if any). Identify utility connections. Show meter locations.		Site plan coordinated with Civil indicating routing of sanitary sewer, domestic water, storm drain and gas piping within 5 feet of building. Site plan shall indicate cleanout locations and storm drain overflow locations,		Final site plan, coordinated with Civil site plan.



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School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
	Show slab demolition for underfloor piping in remodel projects.		Underfloor piping plans with slab demolition indicated in remodel areas coordinated with architectural and structural footing and foundation plans indicated. Detail references.		Final underfloor piping plans. Slab demolition in remodel areas shall be coordinated with architectural and structural slab demolition. Final detail references.
	(Demo and New) Subfloor and floor plumbing plans, locating header(s), pipe chases, fixtures, equipment and special plumbing systems including but not limited to well systems, fire pumps, fuel oil, or compressed gas systems (propane, natural gas, air). Identify roof rain leaders and connections with storm water system (drywell if any). Show preliminary routing and sizing of main piping.		Subfloor and floor, plans showing, but not limited to domestic and waste water, rain leaders and their drainage slopes, vents, drains, cleanouts, special systems, penetrations. Enlarged plumbing plans including but not limited to toilet rooms, kitchens and mechanical rooms. Pipe labeled and sized, fixtures and equipment tagged to match schedules. Detail references.		Final subfloor and floor plans and enlarged plans with all piping sized and labeled, cleanouts and trap primer locations and access identified. Final detail references.
	(Demo and New) Roof plan showing roof drains and overflow drains.		Roof plans showing, but not limited to, roof drains, overflow drains (heat trace, if any), vents, gas piping, penetrations and curbs. Detail references.		Final Roof Plan, coordinated with Architectural roof plan. Final pipe sizes and detail references.
			Piping schematics and details for plumbing equipment. Including but not limited to water heaters, plumbing fixture risers, trap primer, vents, meters, pipe supports		Final plumbing piping schematics and details.

**DRAWINGS\* - HVAC**

\* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings  
 \*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.  
 (a) = See FPSA Article B4.1.1.1

	HVAC legend, symbols and abbreviations		General notes.		Finalize legend, symbols, abbreviations and notes.
	HVAC schedules to include list of equipment, including but not limited to, boilers, pumps, tanks, heat exchangers, coils, air handling equipment, terminal heating and ventilation equipment, noise reduction equipment and refrigeration equipment.		HVAC schedules indicating basis of design equipment.		Final HVAC schedules.



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School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
	(Demo and New) subfloor, floor and roof plans; Show locations of existing equipment, heating piping or ductwork that is scheduled to be demolished. Show locations of new equipment and preliminary routing and sizing of main heating piping and ductwork.		Subfloor, floor and roof plans with all heating piping, ductwork and mechanical equipment. Enlarged to-scale plans, sections and elevations for mechanical rooms and/or equipment. Piping and ductwork labeled and sized, equipment tagged to match schedules. Roof plans, including but not limited to, boiler venting, roof mounted equipment, exhaust/relief hoods, air intake locations. Coordinate with Architectural reflected ceiling plans. Identify Maintenance access points. Reference details.		Final subfloor, floor, roof and enlarged plans, sections and elevations with all equipment, piping and ductwork, and access points sized, tagged, labeled and coordinated with Architectural. Final reference details.
	(Demo and New) Show locations of air intake, mixing, relief and exhaust for ventilation systems. Identify gravity return air paths. Identify special occupancy zones		Air Intake, mixing, relief and exhaust locations coordinated with building exterior elevations and sections. Coordinate package units with building systems.		Final air intake, mixing, relief and exhaust locations.
	(Demo) Piping schematics for mechanical equipment.		New piping schematics and details for mechanical equipment. Identify installation details.		Final piping schematics and details. Equipment curbs coordinated with Architectural. Final installation details.
	One line flow diagrams depicting mode of operations		One line diagrams depicting operations of various design conditions, including, but not limited to, fluid flow rates, temperature and pressures, other balancing/control information, list of operational requirements and set-points.		Control diagrams coordinated with sequence of operations.
	Demolition Drawings: Show locations of existing control panels, thermostats and sensors that are scheduled to be demolished.		Control panels identified on plans coordinated with electrical for power and data connections. New control sensors and thermostat locations identified. Coordinate with ASD BAS Contractor		Final control panel locations. Final sensor/thermostat locations and identification for associated equipment/zone.

**DRAWINGS\* - LIGHTING**

\* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings

\*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.

(a) = See FPSA Article B4.1.1.1

	Electrical legend		Update electrical legend		Complete electrical legend
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School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
	Schematic fixture schedule with general description of fixture types		Fixture schedule with all fixture types and part numbers defined.		Completed fixture schedule
	Demolition Drawings: Show locations of existing site, emergency and interior light fixtures, switches and control that are scheduled to remain or be demolished. Include roof plan as required.		Update demolition drawings and notes.		Complete demolition drawings and notes.
	Show all new lighting control field devices (switches, occupancy sensors, etc.) Include roof plan as required.		All lighting controls shown on drawings. Include roof plan as required.		Circuiting for all light fixtures and complete panel schedules.
			Lighting details showing pertinent wiring diagrams, control details, and/or installation details.		Final lighting details.
	Show site lighting plan with exterior fixtures and illumination levels required.		Site plan including, but not limited to, lighting fixtures (quantities and types), poles, emergency lighting, and light levels.		Complete site plan.
	Interior lighting plan showing fixture types, quantities and illumination level required per room/area. Show all new lighting control field devices (switches, occupancy sensors, etc.)		Floor plans including, but not limited to, lighting fixtures (quantities and types) and switching layouts, emergency lighting and light levels. All lighting controls shown on drawings. Lighting		Complete floor plan

**DRAWINGS\* - ELECTRICAL POWER DISTRIBUTION**

\* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings

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(a) = See FPSA Article B4.1.1.1

	Electrical Legend		Update Electrical Legend		Complete Electrical Legend
	Power Demolition Drawings: Show locations of existing electrical equipment (panels, receptacles, etc.) that are scheduled to remain or be demolished.		Update demolition drawings and notes. Verify existing panel(s), circuit(s), and schedule. Requiring opening the panel to verify circuits are available spares, instead of relying on the as-built schedule.		Complete demolition drawings and notes
			Power load calculations		Final load calculation.
			Fault current calculation		Final fault current calculation

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School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
	Electric vault location basic site electrical plan with utility transformer and service entrance equipment.		Update site plan		Complete site plan
	Show locations of new receptacles. Show locations of existing equipment requiring power.		Show all new equipment requiring power including, but not limited to, mechanical equipment, architectural equipment or owner provided equipment.		Final floor plans showing all equipment requiring power.
	Show locations of new main electrical distribution equipment and existing panels in work, including lighting.		Show all new and existing branch panels. Provide existing panel schedules. Provide blank panel schedules for all new and existing branch panels.		Circuiting for all equipment and complete panel schedules, including lighting.
	Identify and locate emergency or standby systems.		Emergency or standby load estimate		Complete emergency or standby wiring systems and final load
	Preliminary one-line diagrams, (demolition existing and new).		Revised one-line diagrams to include room numbers for panels and transformers.		Final one-line diagrams. Connection to FA, emergency or standby systems, security and HVAC. MCC details
	Locate and describe heat trace and control.		Basic details for installation including, but not limited to, heat trace control, grounding and trenching details		Complete details

**DRAWINGS\* - FIRE ALARM**

\* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings  
\*\* = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.  
(a) = See FPSA Article B4.1.1.1

	Connection to monitoring system		Device locations		Connection details including MCC, HVAC, elevators, door hardware, emergency or standby systems, BAS, and security.
	Fire alarm control panel location		Fire alarm panel, annunciator panel locations and proposed NAC booster/amplifier cabinets		All fire alarm control devices
	All initiating devices (pull stations and smoke detectors) All notification appliances (horn/strobes or speaker/strobes)		Update all initiating/notification device locations as design progresses. System needs calculations if more than 2 devices are added.		Final locations of all fire alarm field devices.

Schematic Phase			Design Development Phase			Construction Document Phase		
Fire alarm code summary.								
<p><b>DRAWINGS* - SPECIAL SYSTEMS</b> (computer and telecommunication systems including, but not limited to, telephone, intercom, clock, television, public address/ sound, media retrieval, theatrical lighting and sound, access control and security)</p> <p>* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings</p> <p>** = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.</p> <p>(a) = See FPSA Article B4.1.1.1</p>								
	Show locations of existing and new telecom rooms.		Layout of equipment in rooms. Indicate tie-in locations. Rack elevations, telecom backbone details. Note information for ventilation requirements.		Show backboard layout and connections, and ventilation			
	Provide notes and plans for demolition coordination. Special systems demolition drawings.		Update special systems demolition drawings.		Final special systems demolition drawings.			
	Show locations of existing and new head-end equipment for telephone, intercom, clock, television, public address/ sound, media retrieval, theatrical lighting and sound, access control and security. Locate and verify security sensor for roof access door or hatch.		Plans showing types and layouts of Special Systems, including backbone, cable trays and roof security. Identify equipment placement and device locations.		Detail connections			
	Typical classroom layout for all special systems - show for one classroom.		Show device locations in all classrooms.		Final locations of all special systems devices			
	All systems' device layout in all other rooms and areas.		Update all systems' device locations in all other rooms and areas including, but not limited to, corridors, MPR, gym and toilet.		Final all systems' device locations in all other rooms and areas.			
	Preliminary one-line diagrams (demolition and new)		Full one-line diagrams for all special systems.		Final one-line diagrams for all special systems.			
<p><b>COST ESTIMATES*</b></p> <p>* = Each successive phase includes items from the previous phase; transfer technical and design data and keynotes from Narrative to DD and CD Drawings</p> <p>** = When Conceptual Master Plan Design is required, provide and update at Schematic Design phase.</p> <p>(a) = See FPSA Article B4.1.1.1</p>								

School/Building Name **Insert**  
Date Prepared **Insert**

Instructions: 1. Please indicate Scope of Services by marking an "X" where included as part of the project.  
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School/Building Name **Insert**  
Date Prepared **Insert**

Schematic Phase		Design Development Phase		Construction Document Phase	
	Provide Estimated Total Construction Cost		Provide Estimated Total Construction Cost, including bid strategies such as additive alternates, allowances, unit prices, etc. at 65% CD completion.		Provide Estimated Total Construction Cost, including bid strategies such as additive alternates, allowances, unit prices, etc. at 95% CD completion.
<b>BID AND POST-BID SERVICES: CONSTRUCTION DOCUMENTS</b> (Drawings and Specifications)					
	<b>Bid Phase</b>		<b>Post-Bid/Pre-Construction Period</b>		<b>Construction Phase</b>
	Addenda, including attached drawings and specifications		Conformed Construction Documents (see sections B3.5 and B5.5)		Supplementary Drawings in hardcopy and electronic format
<b>POST-CONSTRUCTION SERVICE:</b> (Drawings, Specifications and Reports)					
					<b>Post-Construction Phase</b>
					Project Record Documents – Includes record drawings, specifications and related documents. See Specification Section 01720 "Project Record Documents" for requirements, and PM to provide Project Record Checklist. Provide "Roof Section Schedule" in PDF and digital files if it does not include in construction documents.
					Provide the Hazmat Response Action Report base on the AHERA manuals requirements.

Contract No:
Date Prepared:

ANCHORAGE SCHOOL DISTRICT  
FORMAL PROFESSIONAL SERVICES AGREEMENT

C1.1 Payments will be made based on invoices that are approved by the Anchorage School District and any applicable funding agency. To acquire approval of an invoice, the Contractor must submit the invoice in accordance with Article A5 of this Agreement and the following indicated (by checked box) schedule, which schedule is set forth in its entirety in the FPSA C Price Schedule pages 3 and 4. Regardless of the payment schedule agreed upon by the parties, payment shall be limited to the maximum allowable amount(s) stated herein. Provisions for audit are contained in Article A7 of this Agreement.

C2.1 The Contractor shall not be paid any markup of costs under this Agreement, except as allowed by provision C10.1 for the following:


C3.1 The Contractor has no right to any payment in excess of the maximum amount payable as stated in this Appendix, unless an Amendment providing for such increased payment has been executed by both parties and approved (if required) by the Anchorage School Board.

C4.1 Final payment to the Contractor may be withheld until the Contractor submits a fully-executed release of all claims under this Agreement, on a form(s) prescribed by the Anchorage School District.

C5.1 The Anchorage School District's List of Standard Definitions of Terms and Allowances for Costs is contained in this FPSA C Basis of Compensation. Any word or phrase defined on pages 1-4 shall be interpreted to have the meaning stated therein whenever such word or phrase appears in Appendix C and regardless whether such word or phrase is capitalized as it appears in the list of definitions.

LIST OF STANDARD DEFINITIONS OF TERMS AND ALLOWANCES FOR COSTS

C6.1 Cost Objective - A function, organizational subdivision, contract or work unit for which cost data are accumulated.

C7.1 Markup - A percentage of incurred expenses for specified direct costs which may be used as a basis of compensation for specified indirect costs (e.g., payroll benefits or overhead), or profit, or both.

Project Name  
Project Number Insert Number  
RFP Number Insert Number  
Revised 4-18-18

Basis of Compensation  
Appendix C

- C8.1 Direct Cost - A specific cost identified with a single cost objective. Direct costs are segregated into two categories: direct salary costs and direct non-salary costs.
- C8.2 Direct Salary Costs - The sum of actual compensation paid to all employees regardless of job classification when such employees are directly engaged in services necessary to fulfill the terms of this Agreement.
- C8.2.1 The rates of pay for assignable productive time of principals and salaried personnel shall be commensurate with that which would be paid a hired professional with the qualifications necessary to perform the tasks assigned.
- C8.2.2 Overtime costs, if approved by the Project Manager, are direct salary costs.
- C8.3 Non-Direct Salary Costs – All items of expense directly incurred by, or attributable to, a specific project, assignment or task, such as:
- C8.3.1 Fees paid for securing approval of regulatory authorities having jurisdiction over the Project. (Such fees may be paid directly by the Anchorage School District if requested by the Contractor, in which event no markup will be paid);
- C8.3.2 Communications;
- C8.3.3 Duplication of reports, drawings and specifications. Also included are duplication costs for revised submittals that were required by the Anchorage School District's changes in scope of the Project. (Duplication costs relating to revised submittals necessitated by Contractor's inadequacies are excluded);
- C8.3.4 If specifically identified in this Agreement or, if authorized in writing by the Project Manager, actual costs of the following items: Subcontracts; transportation (economy rates/air-coach); per diem (Anchorage School District schedule and rates); incidental travel expenses, computer use at specified rates; equipment use at specified rates; specific materials and supplies; and other direct non-salary costs.
- C9.1 Indirect Costs - Costs not directly identified with a single cost objective, but identified with two or more cost objectives. Indirect costs consist of expenses which, because of their incurrence for common or joint cost objectives must be prorated (allocated) to jobs or contracts using a specified markup based on incurred direct costs. Generally, indirect costs are segregated into two categories: payroll benefits and overhead.
- C9.2 Payroll Benefits may include costs of items such as: vacation time and authorized leave; group and workers' compensation insurance; deferred compensation/retirement plans; social security and unemployment taxes; and group medical plan and life insurance premiums.
- C9.2.1 Any markup for payroll benefits shall be derived as follows: The sum of actual and allowable costs for payroll burden during a base period (usually a fiscal year) divided by the sum of direct salary costs during the same period, expressed as a percentage.
- C9.3 Overhead may include the following general and administrative (G&A) items, if they are not included in direct costs: general office administrative and supervisory wages; travel, food, lodging; communications; duplication costs; computer costs; business insurance premiums not billed to clients; office supplies; rent, heat, power, light, janitorial services; upkeep and depreciation of office equipment; rentals of equipment; and recruiting expenses.
- C9.3.1 The following costs are generally not included as overhead: interest and other financial costs; bad debts; contributions and donations; fines and penalties; losses on other contracts; entertainment; contingencies; dividends; and income taxes.



C9.3.2 In determining individual items of cost which may be included as overhead, the following factors are considered:

Allocability - Cost is chargeable to one or more cost objectives, and it benefits the Agreement and is necessary to the overall operation of the business;

Reasonableness - Cost does not exceed that which would be incurred by an ordinarily prudent person in the conduct of competitive business;

Standards promulgated by the Federal Cost Accounting Standards Board; and

If this Agreement is supported by federal funds, Title 41, Parts 1-15, Code of Federal Regulations (CFR). (If a military funding agency, the Defense Acquisition Regulations [DAR] supersede the CFR.)

C9.3.3 Any markup for overhead shall be derived as follows: The sums of actual and allowable indirect costs during a base period (usually a fiscal year), divided by the sum of direct salary costs during the same period, expressed as a percentage.

C9.4 Compensation for indirect costs may be based upon separate markups for payroll benefits and overhead, or upon one markup which includes both factors. Markup(s), if used under the terms of this Agreement, may be subject to audit verification in accordance with Appendix A, Article A7.

C10.1 Negotiated Markup for Specific Cost Objective, or Profit, or Both - A negotiated markup is a markup other than a markup for indirect costs in accordance with provision C9.2.1 or C9.3.3. Most, if not all, costs incurred for administration and management of Subcontracts and other direct non-salary costs are generally compensated as part of the payment received for direct salary costs or markups for indirect costs. Therefore, compensation based on a negotiated markup will not be allowed under this Agreement, unless the specific expenses or profit represented by such markup are fully identified and the School District is satisfied, in its sole discretion, that compensation for such expenses or profit has not been included within compensation for direct salary or indirect costs.

PRICE SCHEDULE

C.11.1 Contractor will be paid by the method(s) checked below and at the fixed rates specified for personnel time or other unit of measurement. Such rates include all profit and costs, except for any direct non-salary costs allowed by provision C14.1, which may be payable in addition to fixed rate costs. Payments shall not exceed allowances as may be stated below. (NOTE: Schedules attached to this appendix shall list actual unit prices and/or billing rates which include all costs, and are not subject to markup for indirect costs or profit. Any conditions of such schedules which conflict with the Anchorage School District's standard conditions as contained herein shall be void.)

MAXIMUM ALLOWANCE FOR PHASE, TASK OR WORK PRODUCT	\$
MAXIMUM ALLOWANCE FOR TIME AND MATERIALS	\$
MAXIMUM ALLOWANCE FOR DIRECT NON-SALARY COSTS	\$
MAXIMUM AMOUNT PAYABLE	\$

C12.1  Progress Payments for Phase/Tasks/Work Products Completed

Progress payments will be made based on approved invoices which shall segregate costs for each phase, task or work product listed below or in attached schedules. The sum of payments for

Project Name  
Project Number **Insert Number**  
RFP Number **Insert Number**  
Revised 4-18-18



Basis of Compensation  
Appendix C

each phase, task or work product shall not exceed an amount equal to the fixed price multiplied by the percentage (as determined by the Anchorage School District) of the phase, task or work product completed, plus the sum of any reimbursements for direct non-salary costs.

<u>PHASE/TASK/WORK PRODUCT</u>	<u>DATE TO BE COMPLETED</u>	<u>FIXED PRICE</u>
SUBTOTAL-FIXED PRICES:		
ALLOWANCE FOR DIRECT NON-SALARY COSTS:		
MAXIMUM AMOUNT PAYABLE:		

C.13.1  Time and Materials Not to Exceed

Progress payments, equal to the number(s) of hours expended by each named individual or job classification multiplied by the applicable hourly billing rates in attached schedules, will be made based on approved invoices which shall fully substantiate the number of hours expended.

C14.1  Direct Non-Salary Costs

Payments for direct non-salary costs are limited by provisions C8.3 and C8.3.1 - C8.3.4. Additionally, the Contractor is hereby authorized reimbursement for the specific items listed below at the rates specified below or in attached schedules, or if not specified, of actual costs. Other items may be authorized in accordance with provision C8.3.4. Payments, to include any applicable markup if specified in provision C2.1, will be made based on approved invoices which shall fully substantiate costs.


Contract No:
Date Prepared:

ANCHORAGE SCHOOL DISTRICT  
FORMAL PROFESSIONAL SERVICES AGREEMENT

**ARTICLE D1 Indemnification**

D1.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless, the Anchorage School District and the Municipality of Anchorage (hereafter in this provision D1.1 collectively referred to as "Anchorage School District") from and against any and all actual or alleged claims, actions, demands, or liabilities, damages, financial losses, costs or expenses, including reasonable attorney's fees, arising out of one or more negligent acts or failures to act by the Contractor which relate to this Agreement. The Contractor shall not be required to indemnify or hold harmless the Anchorage School District against an actual or alleged claim, action, demand, liability, damages, financial loss, cost or expense arising out of the Independent Act or Failure to Act of the Anchorage School District. If there is a claim, action, demand, liability, damages, financial loss, cost or expense arising out of the joint act or failure to act of the Contractor and Independent Act or Failure to Act of the Anchorage School District, this indemnification and hold harmless obligation shall be apportioned on a comparative fault basis. The term "Independent Act or Failure to Act" as used herein means an act or failure to act by the Anchorage School District other than the following: The selection of Contractor, the administration of the Agreement, the observation of the Contractor's services performed or work product produced under the Agreement; the review, approval or acceptance of the Contractor's services or work product; the observation of the Contractor's administration of the Construction Contract; or the observation of the Contractor's observation of the Construction Contractor's Work under the Construction Contract.

**ARTICLE D2 Insurance**

D2.1 The Contractor shall purchase at its own expense and maintain in force at all times for the duration of the Agreement, plus two years following the date of final payment, the policies of insurance identified in provisions D2.1.1 - D2.1.5. Where specific limits are identified below, the Contractor acknowledges that those limits are the minimum acceptable limits. If a policy contains higher limits and broader coverage, the Anchorage School District shall be entitled to the higher limits and broader coverage. Certificates of insurance must be furnished to the Anchorage School District and incorporated into the Agreement with copies attached to this Appendix D. All certificates must provide for a 30-day prior written notice to the Anchorage School District of cancellation or reduction in any limits of liability. Failure to furnish certificates of insurance or lapse of a policy is a material breach of this Agreement and grounds for termination of the Contractor's services, and may preclude other agreements between the Contractor and the Anchorage School District. The Contractor shall require and verify that all subcontractors meet the insurance requirements as stated in D2 Insurance.

D2.1.1 Workers' Compensation Insurance: For all employees of the Contractor engaged in providing services under this Agreement, Workers' Compensation Insurance as required by AS 23.30.045 or the statutes of other states in which Contractor's employees are working, or both. \$1,000,000 Each Accident Limit/\$1,000,000 Disease Policy Limit/ \$1,000,000 Disease Each Employee. Contractor shall also provide Employer's Liability Insurance in an amount not less than \$1,000,000. Where applicable, the Contractor shall provide the insurance coverage required by all federal law (e.g., U.S.L. & H. and Jones Acts/\$1,000,000 Maritime Limit).

Project Name  
Project Number **Insert Number**  
RFP Number **Insert Number**  
Revised 4-18-18

Indemnification and Insurance  
Appendix D

D2.1.2 Commercial General Liability Insurance: Such insurance shall cover all operations by, or on behalf of, the Contractor and provide insurance for bodily injury and property damage liability, including coverage for premises and operations products and completed operations, contractual liability, broad form property damage, and personal injury liability. The minimum limit of liability required is \$1,000,000 per occurrence, \$2,000,000 aggregate for bodily injury and property damage and \$1,000,000 personal and advertising injury.

D2.1.3 Commercial Automobile Liability Insurance: Such insurance shall cover all owned, hired and non-owned, uninsured/underinsured, with coverage limits not less than \$1,000,000 combined single limit for bodily injury and property damage per accident.

D2.1.4 Professional Liability Insurance: Covering all negligent errors or omissions which the Contractor, subcontractor or anyone directly or indirectly employed by them, make in the performance of this Agreement which result in financial loss to the Anchorage School District. The Contractor shall require provisions of this Article in all first tier Subcontracts of land surveyor, architectural, and civil, structural, mechanical, and electrical professional Subcontractors so as to be binding on all such first tier Subcontractors. Minimum limits required are per the following schedule:

<u>Maximum Amount Of Agreement</u>	<u>Combined Per Claim &amp; Annual Aggregate</u>
\$0 to \$999,999	\$1,000,000
\$1,000,000 and Over	Negotiable

**COVERAGE FOR THIS AGREEMENT:** \$X,XXX,XXX

D2.1.5 Umbrella/Excess Liability Limits of \$1,000,000 **(higher limits when required depending on size of contract size)** Occurrence \$1,000,000 and \$1,000,000 Aggregate over primary liability policies: Commercial General Liability, Commercial Auto and Employers Liability

D2.1.6 General Insurance Requirements: Certificates of Insurance must include the following statements:

- A. All policies, except Professional Liability and Workers' Compensation, have been endorsed to add the Anchorage School District and the Municipality of Anchorage as Additional Insureds, Commercial General Liability to include products and completed operations. The Contractors/subcontractors insurance is Primary and Non-Contributory and Anchorage School District and Municipality of Anchorage policies are considered as excess.
- B. All policies, except Professional Liability, have been endorsed to waive the insurer and insured's right of subrogation against the Anchorage School District and Municipality of Anchorage.
- C. Provide the Contracting Officer, Anchorage School District, with at least thirty (30) days written notice of any material change, cancellation or non-renewal of the policy(s) during the Contract period. Certificate of Liability Insurance shall be current ACORD 25-S form, referencing Anchorage School District project number and "description", and name Certificate Holder as:

Anchorage School District  
Capital Planning & Construction  
1301 Labar Street  
Anchorage, AK 99515

**ARTICLE D3 Modification of Insurance Requirements**

D3.1 If the provisions of Article D2 are modified for this Agreement, written justification and approval by the Anchorage School District, Capital Planning & Construction and written approval by the Contractor are required in the spaces indicated below. Check the appropriate box below and complete the following, if applicable.

MODIFICATION NOT APPLICABLE:

X

MODIFICATION APPROVED:

IDENTIFY AND JUSTIFY MODIFICATIONS.

Continue on Additional Sheets as necessary and attach to this Appendix D.

**NOT APPLICABLE**

MODIFICATION(S) APPROVED:

**ANCHORAGE SCHOOL DISTRICT  
CAPITAL PLANNING & CONSTRUCTION**

NOT APPLICABLE, NO MODIFICATIONS

Signature ASD Representative

\_\_\_\_\_ Date

**CONTRACTOR**

NOT APPLICABLE, NO MODIFICATIONS

Signature, Contractor

\_\_\_\_\_ Date

Name: \_\_\_\_\_

Firm: \_\_\_\_\_

Title: \_\_\_\_\_

Contract No:
Date Prepared:

ANCHORAGE SCHOOL DISTRICT  
FORMAL PROFESSIONAL SERVICES AGREEMENT

**ARTICLE E1**

- E1.1 Contractor shall perform all professional services required under this Agreement through its own staff members, or through the Subcontractor(s) listed below in provision E1.3, or as may be allowed in accordance with Appendix A, Article A14.
  
- E1.2 If one or more individual members of Contractor's staff are listed below, such staff member(s) shall perform or supervise the performance of services required hereunder in the position identified, and such staff member(s) shall not be replaced or substituted unless the Contractor receives written approval thereof from the Project Manager.

Staff Member Position

- E1.3 If one or more Subcontractors or individual staff members of a Subcontractor, or both, are listed below, such Subcontractor(s) or individual staff member(s) of the Subcontractor shall perform or supervise the performance of services required hereunder in the position identified, and such Subcontractor(s) or staff member(s) shall not be replaced or substituted unless the Contractor receives written approval thereof from the Project Manager.

<u>Service/Engineering Discipline</u>	<u>% Total Services</u>	<u>Subcontractor</u>	<u>AK Business License No.</u>
---------------------------------------	-------------------------	----------------------	--------------------------------

<u>Staff Member</u>	<u>Position</u>	<u>Subcontractor</u>
---------------------	-----------------	----------------------

Contract No: Date Prepared:
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ANCHORAGE SCHOOL DISTRICT  
FORMAL PROFESSIONAL SERVICES AGREEMENT

- F1.1 Time is of the essence of each and every provision of this Agreement for which a specific time period is set forth for the performance of any act, duty or obligation.
- F2.1 The parties may modify this Master Time Schedule in accordance with and under the conditions set forth in Article A6 ("Changes to the Agreement").
- F3.1 Attached or below is the time schedule, current as of the last date of signature by the parties, and according to which the Contractor has agreed to provide the specified services, as well as the critical dates by which certain identified tasks are to be performed.

**CONTRACTOR:**

By: \_\_\_\_\_  
Its: Principal  
Date: \_\_\_\_\_

**ANCHORAGE SCHOOL DISTRICT**

By: \_\_\_\_\_  
Its: Project Manager  
Date: \_\_\_\_\_

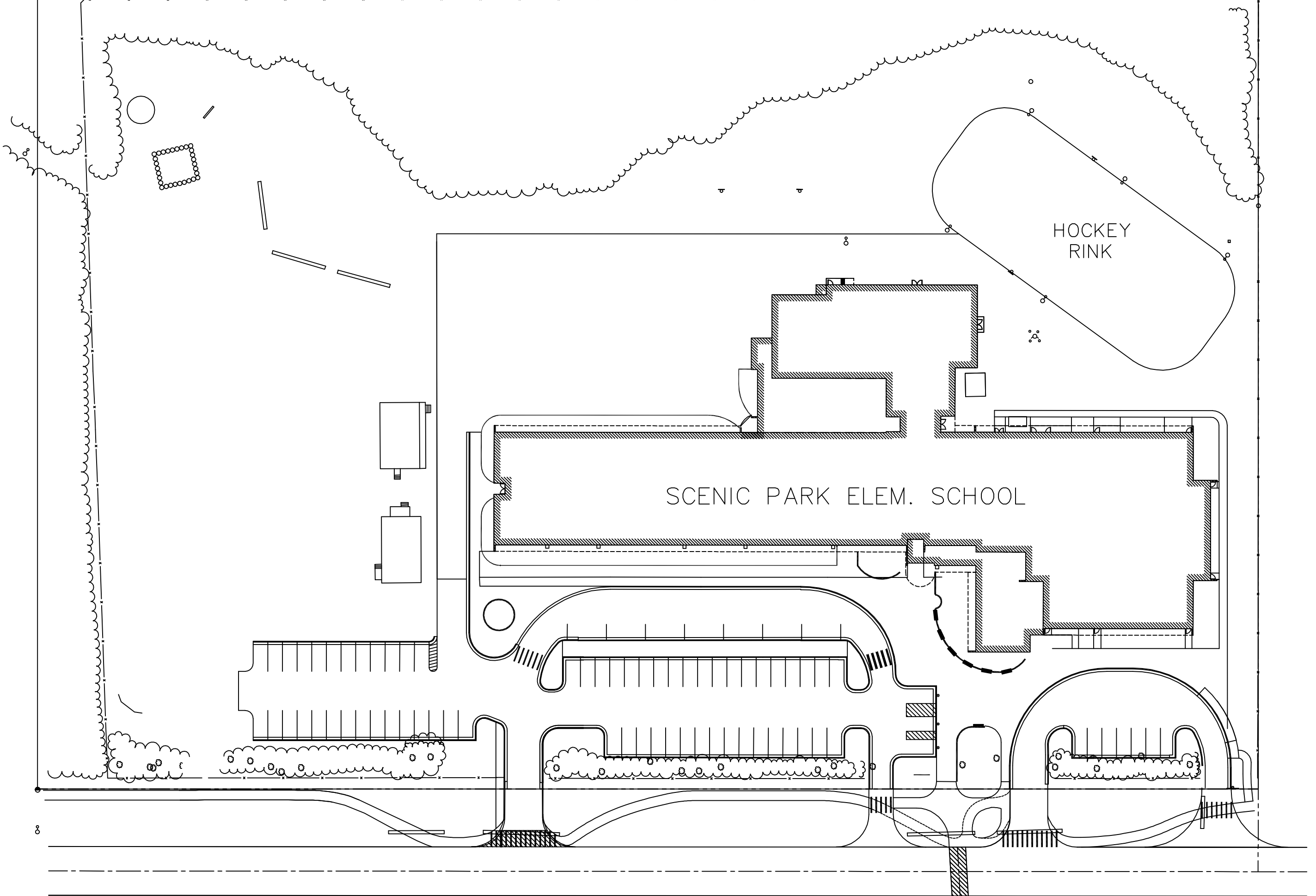
Project Name  
Project Number Insert Number  
RFP Number Insert Number  
Revised 4-18-18





Scenic Park Bible Church





Design Services: Scenic Park Elementary School Roof  
Replacement RFP 2024-607

# SCENIC PARK SITE PLAN



Scenic Park Elementary  
School

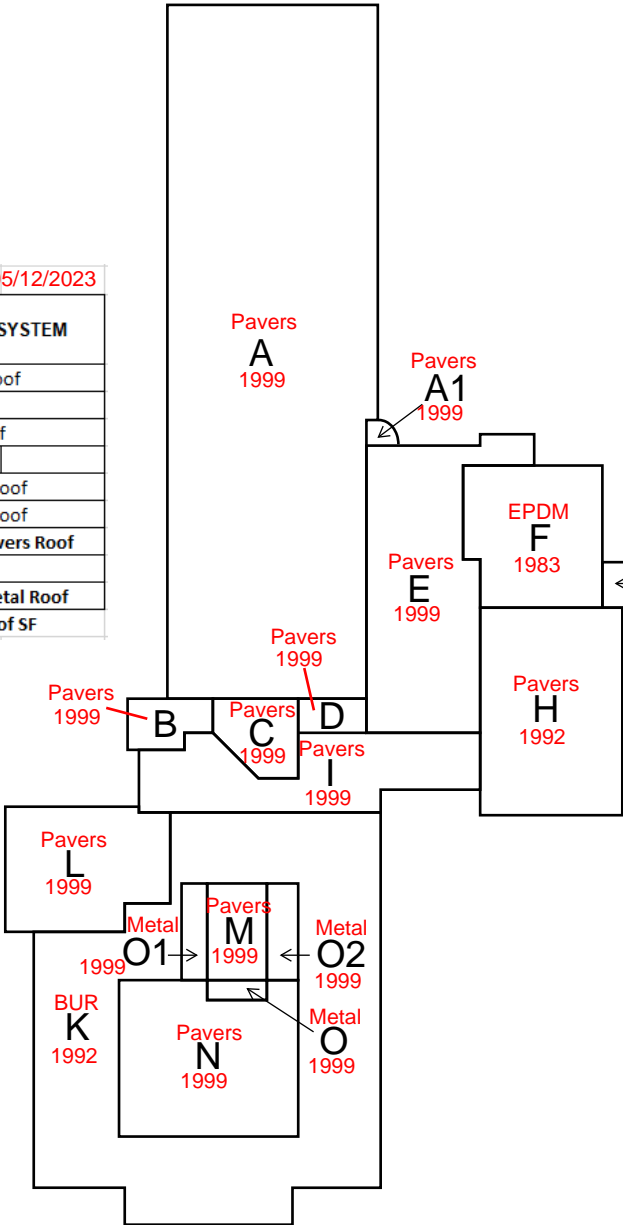
3933 Patterson St  
Anchorage, AK 99504

Drawn By:  
I.O.

Date:  
05/11/2023



ROOF SUMMARY NOTES		By ASD 05/12/2023	
YEAR BUILT/ REPLACED	ROOF SECTION	AREA (SF)	ROOF SYSTEM
1983	F, G	2,601	EPDM Roof
1992	K	10,534	BUR Roof
1992	H	3,785	Pavers Roof
1999	A, A1, B, C, D, E, I, L, M, N	34,735	Pavers Roof
		38,520	Total Pavers Roof
1999	O, O1, O2	858	Total Metal Roof
		52,513	Total Roof SF

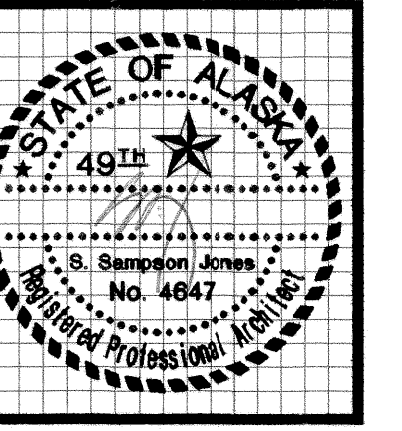


- Roof A: 18,325 sq. ft.
- Roof A1: 983 sq. ft.
- Roof B: 498 sq. ft.
- Roof C: 739 sq. ft.
- Roof D: 314 sq. ft.
- Roof E: 4,203 sq. ft.
- Roof F: 2,435 sq. ft.
- Roof G: 166 sq. ft.
- Roof H: 3,785 sq. ft.
- Roof I: 3,030 sq. ft.
- Roof K: 10,534 sq. ft.
- Roof L: 2,459 sq. ft.
- Roof M: 741 sq. ft.
- Roof N: 3,443 sq. ft.
- Roof O: 152 sq. ft.
- Roof O1: 318 sq. ft.
- Roof O2: 388 sq. ft.
  
- Total: 52,513 sq. ft.





CONFORMED DOCUMENTS  
KUMIN ASSOCIATES, INC.  
Project No: 360-704  
Bid No: 98-119-CF  
Issue Date: MAR 15, 1999

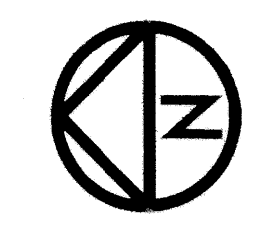
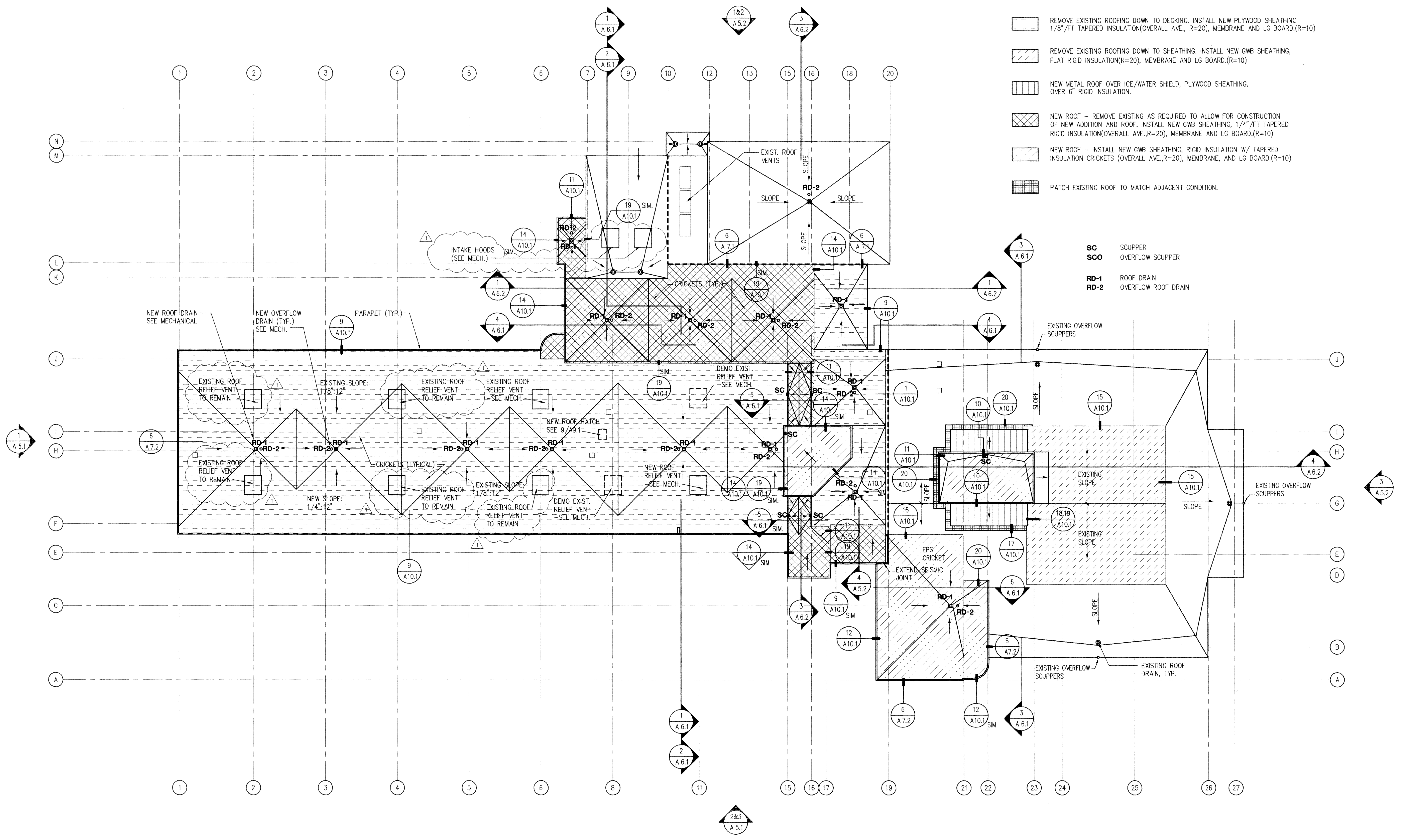


kumin associates, inc.  
architects & planners  
808 E street suite 200 anchorage, alaska 99501 (907) 777-8888

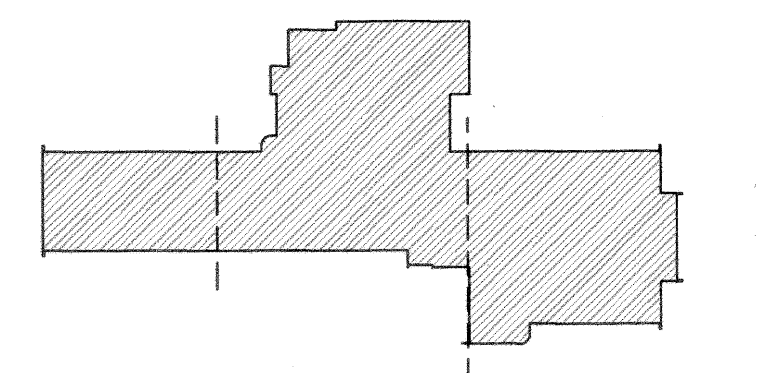
LEGEND:

- EXISTING ROOF TO REMAIN
- REMOVE EXISTING ROOFING DOWN TO DECKING. INSTALL NEW PLYWOOD SHEATHING 1/8" TAPERED INSULATION (OVERALL AVE., R=20), MEMBRANE AND LG BOARD. (R=10)
- REMOVE EXISTING ROOFING DOWN TO SHEATHING. INSTALL NEW GWB SHEATHING, FLAT RIGID INSULATION (R=20), MEMBRANE AND LG BOARD. (R=10)
- NEW METAL ROOF OVER ICE/WATER SHIELD, PLYWOOD SHEATHING, OVER 6" RIGID INSULATION.
- NEW ROOF - REMOVE EXISTING AS REQUIRED TO ALLOW FOR CONSTRUCTION OF NEW ADDITION AND ROOF. INSTALL NEW GWB SHEATHING, 1/4" TAPERED RIGID INSULATION (OVERALL AVE., R=20), MEMBRANE AND LG BOARD. (R=10)
- NEW ROOF - INSTALL NEW GWB SHEATHING, RIGID INSULATION W/ TAPERED INSULATION CRICKETS (OVERALL AVE., R=20), MEMBRANE, AND LG BOARD. (R=10)
- PATCH EXISTING ROOF TO MATCH ADJACENT CONDITION.

- SC SCUPPER
- SCO OVERFLOW SCUPPER
- RD-1 ROOF DRAIN
- RD-2 OVERFLOW ROOF DRAIN



1 ROOF PLAN  
1/16" = 1'-0"



KEY PLAN

SCENIC PARK ELEMENTARY SCHOOL  
RENEWAL AND UPGRADES  
ANCHORAGE SCHOOL DISTRICT

no.	date	revision
1	3/15/99	SAJ ADDENDUM REVISIONS

drawn	RCP III
checked	AM
date	03-15-99
job no.	9725
dwg. title	ROOF PLAN

sheet no. **A2.5**





SCENIC PARK ELEMENTARY SCHOOL  
3933 PATTERSON STREET  
ANCHORAGE, ALASKA 99504

USAGE FLOOR PLAN  
- ROOF LEAKS

DRAWN:  
CHECKED:  
DATE:  
REVISIONS: 03/31/16

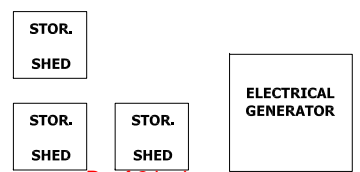
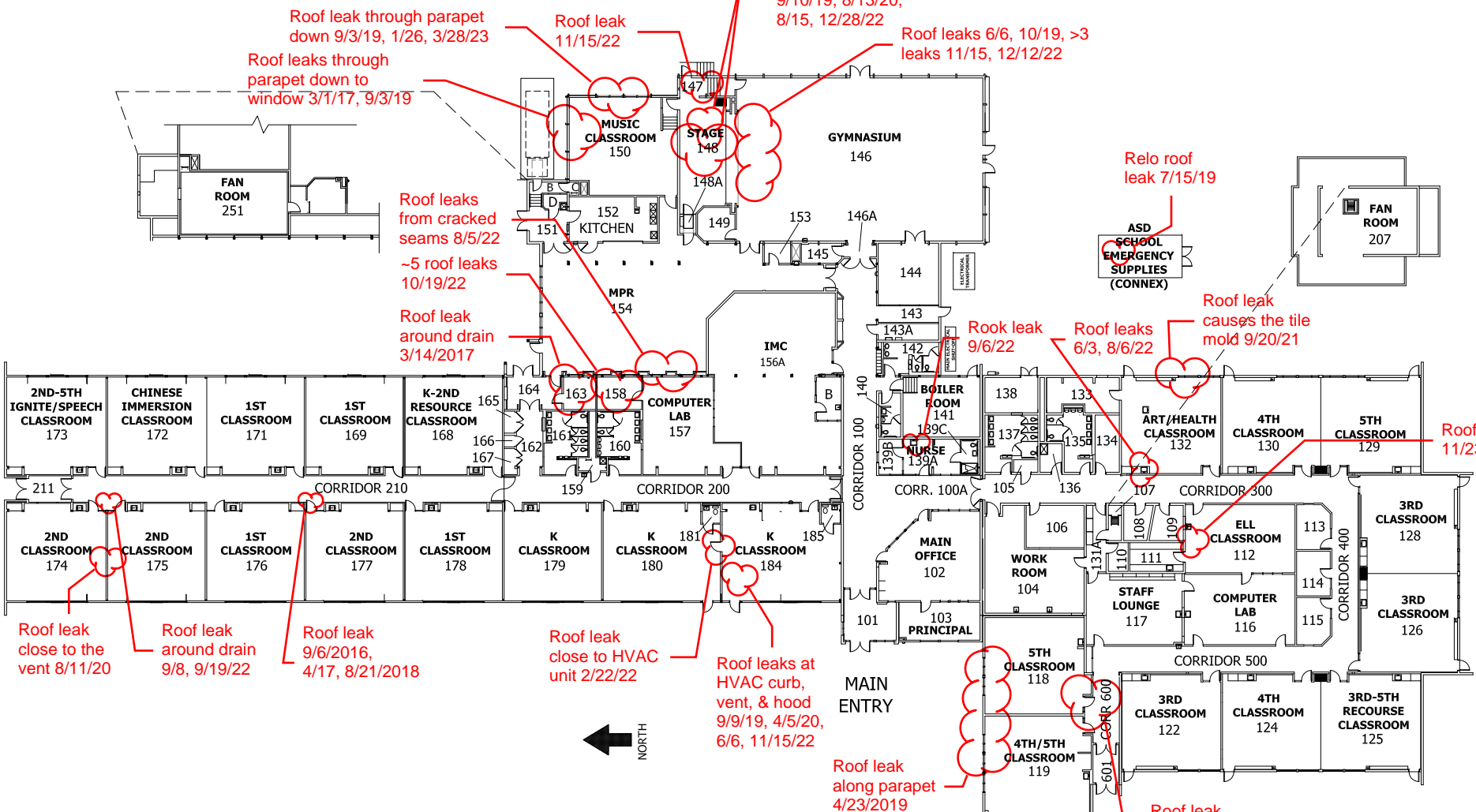
SCALE: NTS

SHEET NO.  
1 OF 1

- ROOM: USE:**
- 105 ELECTRICAL ROOM
  - 106 CONFERENCE ROOM
  - 108 BOOK ROOM/CURRICULUM STORAGE
  - 109 PTO OFFICE
  - 110 GENERAL STORAGE
  - 111 HEALTH STORAGE
  - 113 ITINERANT OFFICE/ SP ED DEPT. CHAIR OFFICE

- ROOM: USE:**
- 114 SPEECH/ SMALL GROUP ROOM
  - 115 PSYCHOLOGIST OFFICE
  - 133 ART STORAGE/ KILN ROOM
  - 134 BOOK ROOM
  - 136 CUSTODIAL CLOSET
  - 138 OUTDOOR STORAGE
  - 143A ELECTRICAL ROOM

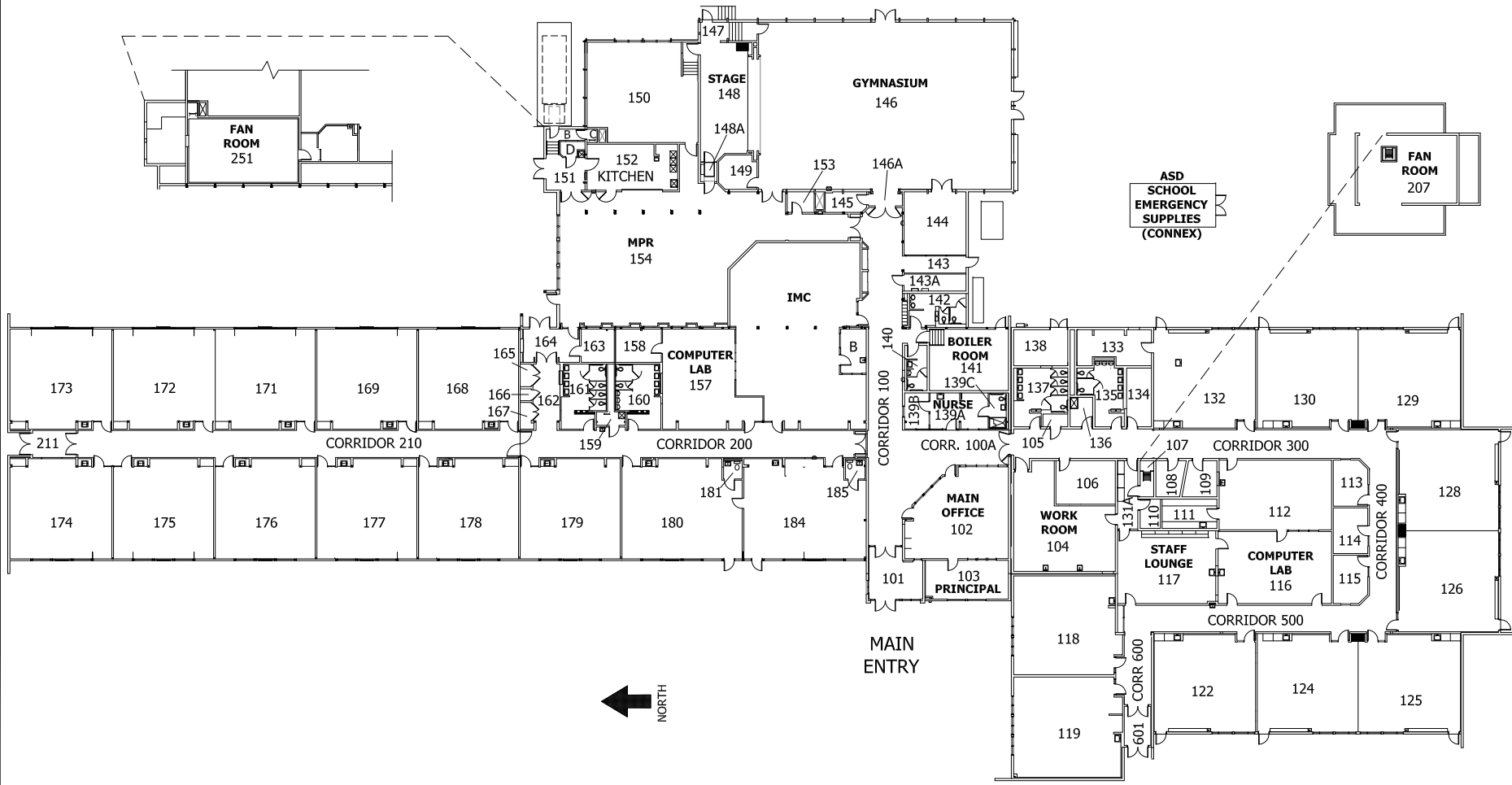
- ROOM: USE:**
- 144 PE STORAGE
  - 145 STORAGE (CAMPFIRE PROGRAM)
  - 149 PE OFFICE/ VIDEO STORAGE
  - 153 VIDEO STORAGE
  - 156B LIBRARIAN OFFICE
  - 158 COMPUTER SUPPLY/ EQUIPMENT STORAGE
  - 163 BPO OFFICE
  - 167 IT EQPT./ COMM. ROOM



SCENIC PARK ELEMENTARY



ANCHORAGE SCHOOL DISTRICT  
SCENIC PARK ELEMENTARY SCHOOL  
3933 PATTERSON STREET  
ANCHORAGE, ALASKA 99504



**SCENIC PARK ELEMENTARY**

Design Services: Scenic Park Elementary School Roof Replacement  
RFP 2024-607

FLOOR PLAN

DRAWN:  
CHECKED:  
DATE:  
REVISIONS: 06/22/16

SCALE: NTS

SHEET NO.  
1 OF 1



# Anchorage School District

## Capital Planning & Construction

1301 Labar Street • Anchorage, AK 99515 • 907-348-5190 • [www.asdk12.org/capitalplanning](http://www.asdk12.org/capitalplanning)

### Maintenance and Operations Acceptance of Roof Standards

I, Darin Hargraves, Senior Director of Maintenance & Operations (M&O) for the Anchorage School District (ASD), have shared the ASD Roof Standards with the appropriate maintenance groups for acceptance.

M&O does not have any objections, with these being the standard for design. M&O understands that these standards will be in place for at least the next three (3) years.

*Darin Hargraves*

Senior Director of Maintenance & Operations

06 / 15 / 2021

Date of Acceptance

*Educating All Students for Success in Life*

Anchorage School Board Margo Bellamy, President

Andy Holleman, Vice President

Kelly Lessens, Treasurer

Pat Higgins

Carl Jacobs, Clerk

Dave Donley

Dora Wilson

Design Services: Scenic Park Elementary School Roof Replacement  
RFP 2024-607

Superintendent Dr. Deena Bishop

## 1 STATEMENT OF PURPOSE

- 1.1 The purpose of Anchorage School District's Design Guidelines and Standards is to communicate to its professional architectural and engineering consultant's basic design requirements for its facilities.

## 2 BASIS OF DESIGNS

- 2.1 SCOPE: This section applies to the general requirements for the design and installation of roofing systems in coordination with other systems.

- 2.2 Ensure roof design complies with Municipality of Anchorage (MOA) and the State Department of Education and Early Development (DEED) requirements.

### 2.3 DESIGN CRITERIA:

- 2.3.1 Items of influence in roof design include, but are not limited to:

- Protection of building entries and exits, including loading docks and service entries
- Selection of roofing materials
- Building aesthetics
- Fire rating required of the roof surface
- Roof drainage system and stormwater management
- Roof structure loads (such as snow, wind, and seismic)
- Impact loads on adjacent lower roofs
- Potential snowdrift, seismic joints, and separation
- Potential hazardous materials
- Access for roofing & equipment maintenance
- Fall protection

- 2.3.2 The minimum planned life expectancy for membrane roofing systems including joints and flashings is 30 years; shingle roofing is 40 years; metal roofing is 50 years before major upgrade or replacement.

- 2.3.3 Roof assembly and covering classification: Class A fire rating is desired.

### 2.4 ROOFING SYSTEM DESCRIPTIONS

#### 2.4.1 LOW SLOPE ROOFING SYSTEM

- 2.4.1.1 This roofing system is typically low-slope, fully adhered, or mechanically attached to the structural deck. The roof assembly consists of:

- Single-ply, fully adhered membrane EPDM (Ethylene propylene diene monomer) is preferred. Single-ply TPO (Thermoplastic Polyolefin) and Multi-ply BUR (Built-up Roof) requires approval from Capital Planning & Construction (CP&C).
- Cover board (high-density, noncombustible, water-resistant, gypsum roof board or mineral fiberboard) or high-density Polyiso cover board.
- Tapered rigid insulation (per new designed roof slope)
- Flat rigid insulation
- Air barrier/vapor retarder



- Baseboard - fire separation board
- Structural deck

#### 2.4.2 SLOPED ROOFING SYSTEM (Warm Roof)

2.4.2.1 This roofing system is typically 4:12 slope or greater and mechanically attached to the structural deck. The roof assembly consists of:

- Water shedding membrane (asphalt shingles, or metal roofing)
- Waterproofing (self-adhering underlayment) adhered to cover board
- Cover board - Plywood
- Flat rigid insulation
- Air barrier/vapor retarder
- Baseboard - fire separation board
- Structural deck

#### 2.4.3 SLOPED ROOFING SYSTEM (Ventilated Cold Roof)

2.4.3.1 This roofing system is typically 4:12 slope or greater and mechanically attached to the structural deck. The roof assembly consists of:

- Water shedding membrane (asphalt shingles or metal roofing)
- Waterproofing (self-adhering underlayment)
- Plywood sheathing
- Air space per code
- Fiberglass insulation under the air space typically in the lower part of the joist space.
- Vapor retarder at the bottom of joists
- Gypsum board

### 3 DESIGN REQUIREMENTS

#### 3.1 GENERAL

Roofing systems require insulation above the heated interior space of the building. Complying with local energy codes required by the MOA and the State Department of Education and Early Development (DEED), whichever is more stringent.

3.1.1.1 Insulation shall be separated from the building's heated interior by a vapor retarder. See 4.1.2 INSULATION for additional roof insulation requirements.

3.1.2 The roofing system shall be designed to remain in place for wind loads required by the MOA.

3.1.3 Roofs that do not shed water, ice, and snow off eaves will require roof drains, overflow roof drains, and rain leaders.

3.1.4 Provide existing roof deck slope and height on the roof plan in lightweight texts or data.

## 3.2 LOW-SLOPED ROOFS

- 3.2.1 New low-slope roofs require 3/8 inch per foot minimum slope for the first 50% (30% for roof sections larger than 6,000 square feet per roof drain) of the total slope from drains; 1/4 inch per foot for the remainder slope, if feasible, dependent on parapet height, building profile, cost-effectiveness, and other project-specifics. Review the conceptual roof design with CP&C for approval at or before the 35% schematic design phase.
  - 3.2.1.1 New low-slope roofs require a minimum 1/4 inch per foot slope at all roof and cricket valleys.
  - 3.2.1.2 Typically roof drainage design should utilize 45-degree angles from drains where feasible.
- 3.2.2 Incorporating roof slope with structure in new buildings is often more cost-effective than achieving the required slope with tapered insulation on flat structure only. Avoid using structure to slope to bearing walls as this causes conflicts with roof drainage. Use tapered insulation as crickets between drains to avoid troughs where water can accumulate.

## 3.3 HIGH-SLOPED ROOFS

- 3.3.1 Snow and ice releases from metal roofs can be hazardous to the public and facility. Roof designs shall only allow potential releases to fall on lower roofs.
- 3.3.2 Provide self-adhering ice and water shield under asphalt shingle and metal roofs to provide continuous coverage over structural roof decking, including eaves and canopies.

## 3.4 SKYLIGHTS AND CLERESTORY WINDOWS

- 3.4.1 Generally, the use of roof skylights is not allowed and requires CP&C approval. Light tubes may be considered in coordination with Planning & Design. New clerestory windowsills shall be located at a minimum of 24 inches above the roof assembly intersection with the clerestory wall.
- 3.4.2 Existing roof replacement, provide a minimum 8 inches height from top of sills to top of roof assembly finish. Coordinate with mechanical to provide HVAC and fire protection for clerestory walls.
  - 3.4.2.1 Some roofs have existing skylights that may contain artwork from the 1% for Art Program, verify with CP&C.

## 3.5 LANDSCAPING

- 3.5.1 Landscaping trees that can grow above the roof edge are not allowed within 30 feet of the roof edges.





### 3.6 ROOF ACCESS

- 3.6.1 All roof areas are to be accessible for maintenance. Provide OSHA compliant roof hatch or door access per every 50,000 square feet or, at a minimum, one roof hatch or access door per facility, including all existing and new construction.
- 3.6.2 Provide access to all roof areas via secured doors, roof hatches, or exterior wall/parapet mounted ladders from roof to roof. Small entry canopies may be exempted with approval from CP&C.
- 3.6.3 Roof access door sill shall be 8 inches minimum and 12 inches maximum to avoid installing a ladder rung or step down above adjacent roof surface.
- 3.6.4 Roof hatch curbs shall be 8 inches minimum and 12 inches maximum above the top of the roof assembly.
- 3.6.5 Avoid locating new roof access hatch and ladder on the pitched roof.
- 3.6.6 Provide a fully integrated connection to the security system for all roof hatches and access doors.
- 3.6.7 Provide locations of roof access points on the floor plan.

### 3.7 ROOF LADDER

- 3.7.1 Provide fixed ladder access to low-slope roofs with differentiating levels (from roof finish to top of parapet) 24 inches or greater in height. Provide roof access per IMC code. All fixed ladders, access, railing, and guards shall be OSHA compliant.

### 3.8 ROOF DRAINS

- 3.8.1 Roofs with drains and overflow drains should coordinate with existing rain leader piping, dry well, or storm drains to minimize backup conditions.
- 3.8.2 Roof drains (above interior spaces) should always be located above heated areas of the building. Use heat trace on roof drains as a last resort, coordinate with electrical.
- 3.8.3 Roof drains for low slope roofs shall be located no closer than 6 feet from the building perimeter. If unable, due to structural or other issues, drains may be located to no less than 30 inches with CP&C approval.
- 3.8.4 No retrofit drains allow for roof renewal projects.
- 3.8.5 Horizontal rain leaders are prohibited above structural roof decking.
- 3.8.6 CP&C prefers drains and overflow drains to be separated by roof slope. If not possible, the use of a common sump is acceptable.

- 3.8.6.1 Provide min: 3/8" slope or double the roof slope at drainage sump area. Avoid flat roofs within the sump area.
  - 3.8.6.2 Provide minimum distance per roof sump slope or minimum 48 inches between roof drain and overflow drain.
  - 3.8.6.3 Provide a minimum 2 inches overflow drain above the primary roof drain. Avoid using 2 inches overflow rings unless conditions do not allow.
  - 3.8.7 When existing low slope roofs are constructed with roof drains and/or scuppers near roof edges, the scuppers and drains shall be replaced with drains and overflow drains.
    - 3.8.7.1 Parapet scuppers and drainage to dry wells are not recommended for large roof areas in place of overflow drains and require CP&C approval.
    - 3.8.7.2 Parapet scuppers are acceptable on small roof areas, such as canopy roofs. If scuppers are utilized for canopies, the stormwater shall be managed not to allow water on walking surfaces.
  - 3.8.8 Drainage shall be through roof drains and rain leaders to existing storm drains. Use of additional or new dry wells for the existing facility requires approval from CP&C.
- 3.9 FALL PROTECTION
- 3.9.1 Fall protection must meet current OSHA 1910 Subpart D Walking Working Surfaces and ANSI/ASSE Z359 standards. Refer to ASD Fall Protection design options. Coordinate options with CP&C.
  - 3.9.2 Design of fall protection systems shall be by a qualified consultant meeting the following minimum requirements:
    - 3.9.2.1 The consulting firm shall be registered as a professional engineering firm and not a manufacturer, distributor, installer, or supplier of access systems, anchors, anchorages, or anchorage connectors.
    - 3.9.2.2 The lead consultant(s) shall be a licensed professional engineer(s) and demonstrate an understanding of current industry best practices and applicable regulations and standards, including OSHA regulations and ANSI standards.
  - 3.9.3 Minimum fall protection is required at, but not limited to, specific roof locations:
    - 3.9.3.1 Provide high visible strips at minimum 6'-0" away from roof edges and higher-level roofs above 4 feet in height.
    - 3.9.3.2 Fall protection anchor point:
      - 3.9.3.2.1 Provide a fall protection anchor point or guardrail at the top of the ladder area where roof level at 6'-0" height and above, minimum 6'-0" away from the roof edge and 2'-0" offset on either side of the ladder.
      - 3.9.3.2.2 If the above items do not apply, provide a minimum of one fall protection anchor point per facility roof. Design consultants and



ASD project manager should discuss the design with ASD Maintenance Department.

- 3.9.3.2.3 Provide an indicator flag 2'-0" above the top of the roof anchor point.

### 3.10 ROOF PENETRATION

- 3.10.1 Minimize roof penetration is the priority consideration. Coordinate with mechanical and electrical design for minimizing rooftop equipment and utility penetrations.
- 3.10.2 Plumbing vents through the roof (VTRs) shall have a vent opening 12 inches minimum above the roof assembly's finished top. All the sleeved connected height overlaps shall be made at or below roof assembly. Couplers shall not be visible above roof assembly.
- 3.10.3 Mechanical roof curbs shall extend a minimum of 12 inches above the top of the roof assembly.
- 3.10.4 The lowest point of curb mounted ventilation air intakes and curb mounted ventilation equipment air intakes shall be 24 inches minimum above the top of the roof assembly.
- 3.10.5 The lowest point of curb mounted ventilation air reliefs or exhausts and curb mounted ventilation equipment air reliefs, or exhausts shall be 18 inches minimum above top of the roof assembly. Applicable to clothes dryer exhausts and non-grease laden range hood exhaust.
- 3.10.6 The lowest point of ventilation air openings inside walls; intakes shall be located 30 inches minimum above top of the roof assembly. Relief or exhaust openings inside walls shall be located 24 inches minimum above the top of the roof assembly.
- 3.10.7 Roof Penetration Schedule is required when the total number of roof penetrations is ten and above.
- 3.10.8 Diversion cricket is required on the uphill side of all roof penetrations greater than 2'-0" wide.
- 3.10.9 Gas line key point supports should attach to the roof deck. The supports are not allowed to rest on the roofing assembly only.

### 3.11 ROOF PARAPET AND FLASHING

- 3.11.1 Typical metal flashings and copings shall be minimum of 10 feet in length; splices shall use a backer plate such that the coping will have a continuous drip line on both inside and outside face.
- 3.11.2 Parapet copings shall slope to inside, have face drip attached over a continuous hold-Down cleat, and be secured on the inside with coated steel screws with neoprene washers at 12 inches o.c. maximum. Coping faces over 6 inches high shall have color matching face screws at 12 inches o.c. maximum.
- 3.11.3 The sloped space beneath the parapet cap and seismic joint shall be supported by durable material such as beveled cedar or high-density foam.

3.11.4 New parapet height shall be a minimum of 8 inches (clearance) from the top of roof assembly to the top of the parapet.

3.11.5 Provide in-wall blocking parapet for mounting of ladders, weather-heads, electrical boxes, etc.

### 3.12 WALKING PADS

3.12.1 Exposed single-ply membranes shall have walking pads installed around the part of the rooftop mechanical units work area, at all ladder access landings, where shedding ice could damage the roof membrane.

### 3.13 ROOF SECTION NAMES:

3.13.1 Roof section naming shall meet ASD naming standards. When a project is full roof replacement or a new school.

#### 3.13.2 FOR TYPICAL ROOF SECTIONS

3.13.2.1 Use capital letters only, and do not use numbers. Sample name: A, B, C...  
New roof construction starts in Plan Northwest and names the roof sections consecutively clockwise.

3.13.2.2 Use double capital letters only after 26 alphabets have been used. Sample name: AA, BB, CC.

3.13.2.3 If the same roof assembly separated by construction or expansion joints, or parapet at the same or similar level, add orientation letters. Sample name: AS, AE, AN, AW.

#### 3.13.3 FOR DIFFERENT LEVEL ROOFS:

3.13.3.1 Such as canopy, or mechanical roofs, add the letter L or H at the adjacent roof. Sample name: AL, AH.

3.13.3.2 If one side of the roof edge has more than one canopies, add a number on the above 3.13.3.1 designated roof section name. Sample name: AL1, AH2.

#### 3.13.4 FOR OVER STRUCTURAL FRAMING ROOFS:

3.13.4.1 Add a letter O on the base roof section name. Sample name: AO, BO

3.13.4.2 If one roof section has more than one over-structural framing roof, add a number on the above 3.13.4.1 designated roof section name.

### 3.14 ROOF SECTION SCHEDULE

3.14.1 Provide Roof Section Schedule for all re-roof design and construction projects. Refer to the Sample of ASD Roof Section Schedule.

3.14.2 The column of "Roof Above Room Names and Numbers" is a list that is required for major space names as bold texts. These room names are required below: **Main**



**Entrance Lobby, Boiler Room, Fan Room, Electrical Room, Nurse Office, Main office, Library, MPR (Multiple Purposes Room), and GYM (Gymnasium).**

3.14.3 ASD Sample of Roof Section Schedule is editable per individual re-roof conditions.

3.14.3.1 The column of "Roof System" indicates Roof System Classified (From top layer material down) - Sublayer primary material - Additional Notes.

3.14.3.2 The column "Year Replaced/Built" indicates the latest year of a roof assembly, and the year should be the project's substantial completion.

3.14.3.3 The columns left to right are based on the roof assembly information from top to down order. The material orders can be edited per the new roof assembly design.

### 3.15 ROOF FIRE SEPARATION

3.15.1 Provide roof fire separation on roof plan per codes if applicable.

### 3.16 ROOF ELEVATIONS

3.16.1 Provide existing structural deck elevations, such as x'-x" (E)

3.16.2 Provide new structural deck elevations.

3.16.3 Provide existing parapet wall heights, such as x'-x" (E)

3.16.4 Provide new parapet wall heights.

## 4 PRODUCTS, MATERIAL, AND EQUIPMENT

### 4.1 EXPOSED MEMBRANE ROOFING SYSTEM (LESS THAN or equal to 3:12 SLOPE)

#### 4.1.1 MEMBRANE

4.1.1.1 Single-ply Elastomeric Roofing: minimum 60-mil reinforced or non-reinforced 90-Mil EPDM; preferred 90-mil EPDM for all exposed roofing area; 60-mil EPDM allowed for all non-exposed areas or auxiliary membrane roofing materials.

4.1.1.2 Membrane shall be fully adhered to cover board; cover board shall be fully adhered.

4.1.1.2.1 EPDM fully adhesive adhered to the cover board. The cover board shall be adhered to the insulation; mechanical fastening shall not include the cover board.

4.1.1.2.2 Mechanical fastening, when used, shall be either on the first layer of Insulation (adhering to subsequent layers) or the entire depth of insulation through the vapor barrier and roof deck.

4.1.1.2.3 Prior to adhering to the membrane, the cover board shall be cleared of all debris.

4.1.1.2.4 Provide material physical properties and technical data of design criteria for membrane in design specifications.

4.1.1.2.5 Field seams shall be sealed with seam tape and sealant.

4.1.1.3 The roof membrane should extend a minimum of 2 feet up from the roof exterior wall base and a minimum of 6 inches overlapped with the exterior wall membrane where feasible. See 3.11.4 above for parapet requirement.

4.1.1.4 A mechanical attachment plan for the specific project wind loads shall be submitted by the manufacturer supplying the roofing system warranty.

#### 4.1.2 INSULATION

4.1.2.1 Provide material physical properties and technical data of design criteria for all types of insulation in design specifications.

4.1.2.2 The minimum R-Value per inch allowed in figuring the required rigid insulation thickness is:

- R=4.35@25 degree F per inch for 1 pound density, Type I, Expanded Polystyrene (EPS), requires CP&C approval.
- R=4.76@25 degree F per inch for 1.5 pound density, Type II, Expanded Polystyrene (EPS)

4.1.2.2.1 Polyisocyanurate (Polyiso) insulation value decreases R-value with cold temperatures. If specifying Polyiso, provide a higher R-value to accommodate a long-term decrease in R-value.

4.1.2.2.2 Polyiso insulation should be coated by glass fiber facer on both sides, and the paper facer is limited.

4.1.2.3 The manufacturer's recommended adhesive shall be required for EPS. The use of hot materials is not allowed.

4.1.2.4 Tapered roof insulation is applied only on top of flat stock insulation.

4.1.2.5 The existing snow-drift roof area where structure over framing is required provides R-value equal to the existing roof assembly.

4.1.2.6 New snow-drift roof area where structural over framing is required, provide minimum insulation R-value per local building and energy code requirements.

4.1.2.7 Provide minimum R-Value at roof drains per code. Indicate insulation thickness at each drain on the roof plan or roof section schedule.



## 4.2 SLOPED ROOFING SYSTEM (greater than 3:12)

### 4.2.1 ASPHALT SHINGLE ROOFING:

- 4.2.1.1 Shall be ANSI/ASTM D3018, Class A, SBS modified asphalt shingles surfaced with mineral granules w/glass fiber matt base.

## 4.3 METAL ROOFING

### 4.3.1 LENGTH

- 4.3.1.1 Up to 12 feet in length – Exposed fastener metal roofing should be avoided. Up to 30 feet in length – Concealed fastener metal roofing such as 24 gauge (minimum).
- 4.3.1.2 Up to 100 feet and higher in length – Requires metal roofing with concealed fasteners clips, which permits longitudinal thermal movement of metal roofing panels through non-abrasive sliding connection with clip bases. Steel metal roofing must be 24 gauge or aluminum, 0.040-inch thickness, a minimum, 16 inches wide metal panels.

- 4.3.1.3 Metal roofing panels shall be one continuous length with no lap joints.

- 4.3.2 Metal roofing shall have continuous ice & water shield underlayment.

- 4.3.3 See similar material requirements for metal roof assembly design.

## 4.4 MATERIALS:

- 4.4.1 Material locally obtained or supported is preferred.

## 4.5 FINISHES

- 4.5.1 Parapet copings, metal flashings, and metal roofing shall be a minimum 24-gauge galvanized metal pre-finished with polyvinylidene fluoride (PVF) baked-on finish a minimum of 1.0 mil dry film thickness. Copings shall be factory finish color on all exposed surfaces.

- 4.5.2 Exposed roof ladders and guardrail materials shall be steel. Steel use exterior zinc coating or with finish (color) coating (optional).

- 4.5.2.1 Avoid zinc spray metalizing coming into contact with mortar, brick, and CMU materials.

- 4.5.2.2 All gasket contact points shall be rubber or weather-resistant membrane.



#### 4.6 ROOF WARRANTY SIGNAGE

- 4.6.1 Roof warranty signage is needed for roof replacement projects. The contractor must submit signage, and it should be reviewed and approved by design consultants and the ASD project manager. See signage design and installation details below:
- 4.6.2 Size: Minimum 8 ½ inches by 11 inches
- 4.6.3 Material: Typewritten photoengraved 0.032-inch thick aluminum card
- 4.6.4 Quantity: Provide roof signage for all roof access points. Each roof access should have one sign.
- 4.6.5 Content: Provide facility name and two types of warranty information below:
- 4.6.5.1 Roof installing contractor warranty information:
- Roof installing contractor name
  - Roof warranty reference number (If applicable)
  - Roof warranty contact information (phone number and email)
  - Date of warranty expiration
- 4.6.5.2 Roof major materials manufacturer warranty information. Provide warranty information for each warranty manufacturer's warranty.
- Roof manufacturer name
  - Roof warranty reference number
  - Roof warranty contact information (phone number and email)
  - Date of warranty expiration
- 4.6.6 Location: Signage board should be located:
- 4.6.6.1 Near the bottom of the ladder, where the ladder goes up to a roof hatch, install the signage on the wall in front or side of the ladder.
- 4.6.6.2 At the roof access door, install the signage on the door, and indicate on the new roof plan or door schedule.



## 5 QUALITY ASSURANCE

### 5.1 QUALITY ASSURANCE

#### 5.1.1 Roofing Membrane Manufacturer:

5.1.1.1 A qualified manufacturer should be listed in FM Global RoofNav standards for the roofing system and have a minimum of 25 years of experience manufacturing adhered EPDM membrane roofing systems of similar size.

5.1.1.2 Obtain primary products of each type required from a single manufacturer to the greatest extent possible. Provide secondary materials only as recommended by the manufacturer of primary materials.

5.1.1.3 Perform work in accordance with the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.

#### 5.1.2 Roofing Contractor: Company specializing in the installation of roofing membranes and insulation certified by the membrane and insulation manufacturer with documented experience in applications of similar systems.

5.1.2.1 A qualified installer should have over 5 years of demonstrated experience installing products of the same type and scope as the manufacturer's product.

#### 5.1.3 Roofing Contractor: Installer shall have written documentation from the membrane and insulation manufacturer stating they are a currently certified applicator in Alaska.

#### 5.1.4 On-site Roofing Manufacturer's Representative: Manufacturer to provide a dedicated quality control representative for on-site inspection after construction. Document conditions and send reports to the Contractor and ASD Project Manager.

#### 5.1.5 The rigid insulation manufacturer shall provide a current written certification by independent third-party quality control test or U. L. to verify insulation quality control.

#### 5.1.6 Roof replacement project should be approved by FM Global – Commercial Property Insurance Plan Review per ASD Risk Management requirement.

### 5.2 WARRANTY

5.2.1 The contractor shall provide ASD a minimum 30-year total roofing system warranty (including but not limited to the roof assembly, roof edge, and parapet assembly) and manufacturer's roofing system and installation warranty that covers wind damage based on code requirements.

5.2.2 The contractor shall provide ASD with a 2-year Roofing Contractor's Warranty covering workmanship on all roofing system components. The roofing installer is responsible for damage to work covered by this warranty but is liable for consequential damages to the building or building contents resulting from leaks or faults or work defects.

5.2.3 Roofing Warranty should be included in the ASD Operation and Maintenance Manual.

- END -



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## **Anchorage School District**

*Educating All Students for Success in Life*

# **Scenic Park Elementary School ASCE 41-17 Tier 2 Seismic Evaluation and Pre-Reroof Report**



**Project No. 402023.020.000**  
**September 12, 2023**

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# 1.0 Introduction

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## 1.1 Background

The Anchorage School District (ASD) engaged Reid Middleton to perform an American Society of Civil Engineers (ASCE) 41-17 Tier 2 Seismic Evaluation and Pre-Reroof Evaluation for Scenic Park Elementary School. PND Engineers, Inc. submitted a Tier 1 Evaluation to ASD for Scenic Park Elementary School in November 2021 (2021 Tier 1 Evaluation); the 2021 Tier 1 Evaluation was used as a starting point for the Tier 2 deficiency-only evaluation. As part of the Tier 2 evaluation, revised Tier 1 checklists are included in this report. Retrofit concepts for both seismic and gravity upgrades have been developed based on the Tier 2 evaluation and a planning level cost estimate is provided.

Scenic Park Elementary will likely be reroofed in the near future. This evaluation serves as a guide for ASD to be aware of possible seismic and gravity deficiencies and to plan for the strengthening of the identified areas during upcoming reroof and renovation projects.

## 1.2 Building Description

Scenic Park Elementary School was originally constructed in 1962 as a one-story building. Since then, Scenic Park Elementary School has had numerous additions and renovations, including some single-story and some two-story spaces.

For the purposes of this report, Scenic Park Elementary School has been divided into six zones based on construction date, type of lateral system, and locations of seismic joints (Figure 1). The five zones are as follows:

- **Zone I: North Classrooms:** This zone includes classrooms that were originally built in 1962. This wing was constructed with exterior CMU bearing walls, interior steel pipe columns, and glue laminated timber beams supporting the roof. In 1999 there was a renovation to raise a portion of the roof and upgrade the entrance in the southern end of this section. The lateral system in this zone is CMU and wood-sheathed shear walls. The roof diaphragm is 2x6 tongue and groove deck (1962) overlaid with plywood (1999).
- **Zone II: East Gym Addition:** This zone is composed of the current gymnasium and multiple small rooms southwest of the gym (gym storage, hall, and electrical room). The East Gym Addition was constructed in 1966 and altered in 1999. Construction in this zone is wood post, wood beams, and wood trusses with plywood roof sheathing (assumed based on limited drawings). The lateral system is a plywood diaphragm (assumed) to wood tongue and groove-sided walls; it is unknown if the tongue and groove siding is overlaid with sheathing. Structural drawings for this addition are limited to one page of exterior sections.

ASD elected not to proceed with removal of finishes/destructive demolition for investigation in Zone II at this time. Reid Middleton recommends that these occur during the next reroof of Scenic Park Elementary School in order to evaluate the existing structure in Zone II.

- Zone III: South Classroom Wing: This zone includes classrooms and was constructed in 1972. The construction in this zone is tube steel columns, glue laminated timber beams, and wood chord/steel open web joists. The lateral system consists of CMU and plywood sheathed shear walls with plywood diaphragms. In 1999 there was a renovation that raised the roof on the mechanical penthouse, added snow drift displacement structures, and added a covered entrance. The structure for these renovated areas is wood timber rafters and wood stud walls.
- Zone IV: Music Room: This zone is comprised of the music room, which was an addition added north of the gym in 1983. The construction of this zone is glue laminated timber columns, glue laminated timber beams, and wood chord/steel open web trusses. The lateral system is wood shear walls with plywood-sheathed diaphragm.
- Zone V: Multipurpose Room (MPR): This zone was constructed in 1999 and connects the classroom sections to the Gym and Music room sections. The construction for this zone is wood stud walls, tube steel columns, and glue laminated timber beams. The lateral system in this area is wood sheathed shear walls with plywood diaphragms.

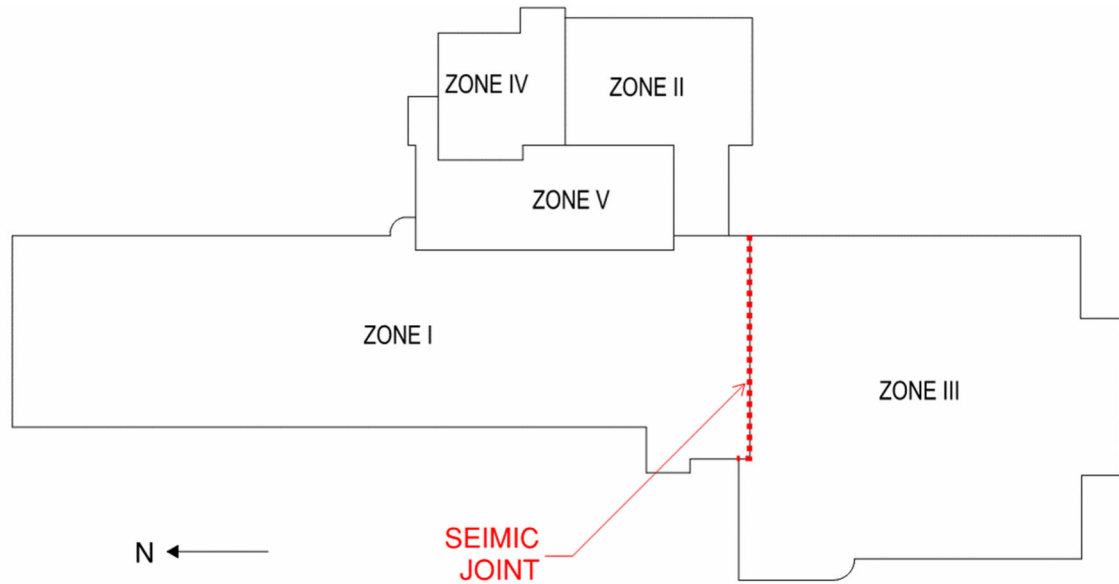


Figure 1: Scenic Park Elementary School Zones

### 1.3 Original Design Criteria

The following table (Table 1) summarizes the design criteria as indicated on the available record documents. In addition, current code information is shown.

Construction Year/Zone	Original Building Code	Roof Snow	Wind	Seismic
1962 Original Construction	1961 UBC (Assumed)	40 psf	30 psf	Zone 3 – Pacific Coast Uniform Building Code
1966 Gym Addition	1964 UBC (Assumed)	Unknown	Unknown	Unknown
1972 South Classrooms	1967 UBC (Assumed)	40 psf	25 psf, basic	ICBO Zone 3
1983 Music Room	1982 UBC	40 psf	20 psf	Zone IV
1999 Renewal & Upgrades	1994 UBC	50 psf + Drifting	100 mph	Zone 4, $R_w = 8$ , $I_e = 1.0$

Table 1: Construction Years and Associated Building Codes

According to the 1999 Addition and Renovations record drawings, roof snow drifting was taken into consideration in the structural design of these portions of the building. However, the



remaining portions of the buildings do not address snow drift in the record drawings (Figure 2). Snow drift could accumulate at the various steps on the roof, including at clerestories.

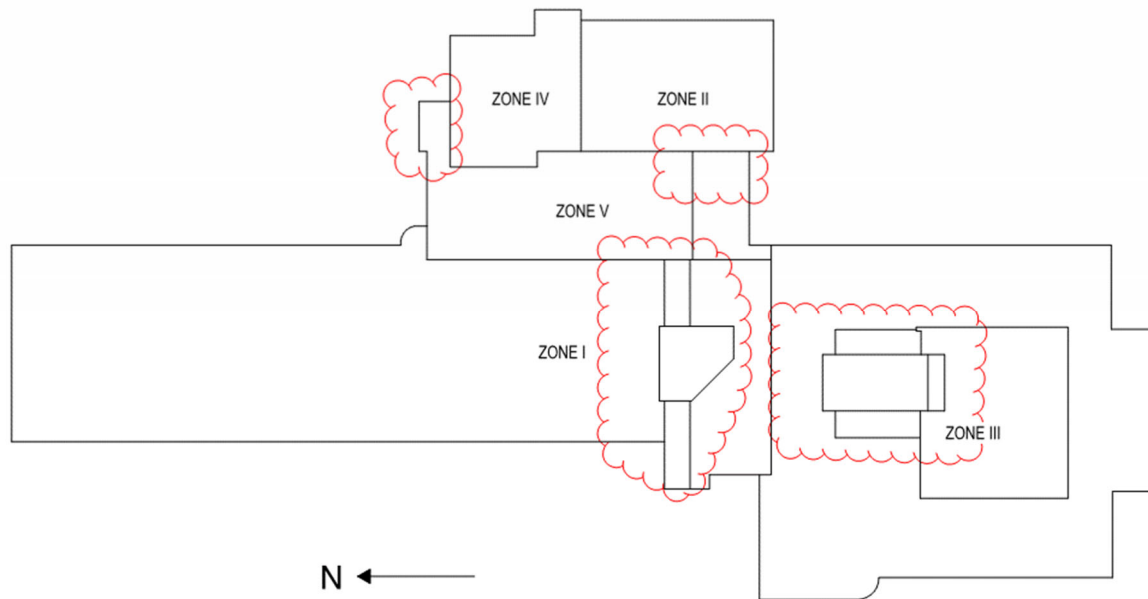


Figure 2: Unaddressed Snow Drift Areas

## 2.0 Methodology

### 2.1 ASCE 41

This study employs the methods contained in the American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) standard ASCE/SEI 41-17: *Seismic Evaluation and Retrofit of Existing Buildings*. This document contains nationally accepted tools for undertaking the seismic evaluation and rehabilitation of buildings. The standard does not, however, explicitly determine if or how a specific rehabilitation project should take place; it only serves as a guide to determine expected levels of performance of the various building systems by using specific probabilities of seismic activity.

ASCE 41 prescribes escalating levels of evaluation called “Tiers”. The methodology begins with a quick review, but can become more thorough as deficiencies are discovered. Hence, the standard allows for rapid evaluation and is able to quickly focus on the actual problem areas.

- *Tier 1* – The screening phase. This tier consists of reviewing the existing building versus a checklist of ‘known deficiencies’ that have been shown to be dangerous in previous earthquakes in similar building types. These known deficiencies were acceptable practice when designed and constructed but have since been shown to be seismically vulnerable.

Potential deficiencies are checked against acceptable standards and determined to be compliant (C), non-compliant (NC), non-applicable (N/A), or unknown (U). Separate checklists are used for Collapse Prevention and for Immediate Occupancy performance levels. No other checklists are available for different performance levels. Tier 1 checklists are 'red-flag' checklists and raise only potential concerns, not verified problems that need repair. Non-compliant items may be shown to not need retrofit at the conclusion of a Tier 2 Evaluation.

- *Tier 2* – This deficiency-only tier is used for evaluation or retrofit after a Tier 1 screening. Tier 2 allows for the elements deemed non-compliant from Tier 1 to be reevaluated with more-detailed calculations to determine the degree of deficiency. Once the degree of deficiency is determined, a decision can be made on whether each element should be retrofitted.
- *Tier 3* – This is an in-depth, comprehensive structural analysis of the entire structure. This analysis does not just look for deficient elements but looks at the interaction of all of the structure's elements. This tier is only used for buildings where the entire structure needs to be upgraded or where buildings do not meet the height limitations for using Tier 1 or 2 evaluations. A Tier 3 retrofit is analogous to a new building design under IBC, IEBC, and ASCE 7, with either full or reduced seismic forces.

In a Tier 1 evaluation, items are flagged as non-conforming either by the Tier 1 checklists or by professional engineering judgement.

## 2.2 Terminology

To better understand the results of the evaluation, a brief description of structural systems and lateral force resisting systems is given.

A structure is an assemblage of many components that are interconnected to form a complete system. In the case of building structures, this includes roof and floor elements, beams, columns, braces, walls, and foundations. Beams and columns are connected together to form a frame. The frame is unstable unless restrained against lateral movement (earthquake or winds). The roof or floor deck is connected to the supporting joists and forms a horizontal diaphragm. This diaphragm has tremendous stiffness in-plane. This stiffness generally holds columns' relative positions under lateral load and stabilizes each floor or roof level. A mechanism is still needed to maintain the position of each floor or roof diaphragm relative to the level above or below. Vertical bracing, shear walls, or moment resisting frames form the mechanism and provide stiffness in the vertical plane. The frame or wall is anchored to footings, which transmits the force into the soil and prevents the building from overturning or sliding in the event of an earthquake or high-wind event.

### Lateral Force Resisting Systems

Braced frames resist seismic load by in-plane axial compression and tension. Diagonal elements are added between building columns and work in combination with the columns to form truss-like frames. The axial stiffness of the brace prevents lateral motion and resists load.

Moment resisting frames resist seismic load through bending of the beam and column. The beam and column joints are connected in such a way that the connection is rigid relative to the attached beams and columns. As the frame sways under seismic or wind load, bending in the beams and columns resists this force and limits displacement. Since even a relatively small bracing member in a braced frame system has a much higher in-plane axial stiffness than a beam or column in bending, a moment frame will exhibit much higher lateral displacement than a braced frame.

Shear walls resist seismic load through in-plane shear stiffness and rotational stiffness of the rigid body. The rigidity of the wall resolves lateral load through in-plane shear and overturning. Shear wall systems typically exhibit the least deformation of any lateral force resisting system.

## 2.3 Seismic Hazards

The seismic hazard caused by ground shaking is based on a building's geographic location, proximity to faults (earthquake epicenter), and soil properties. The level of the ground shaking observed at the epicenter of an earthquake will be much higher than what is observed at the building. This reduction in intensity depends on distance and soil properties between the epicenter and the building site. There are four specified seismic hazard levels that are tied to the intensity of shaking expected over the 50-year life of a building (mean return period), or put inversely, the probability of a certain intensity of shaking occurring at any one time (probability of exceedance). The seismic hazard level chosen for analysis is dependent on the desired performance objective and can be selected by the Owner of a building. ASCE 41 uses the following predefined hazard levels, or basic safety earthquakes (BSE):

- Those noted with an '-E' suffix are more applicable to existing buildings, and those with an '-N' suffix are more applicable to new buildings.
- The hazards noted as '-2' are larger (less frequent/likely) than those noted as '-1' (more frequent/likely).
- *BSE-2N* – Also known as the Maximum Considered Earthquake, Risk-Targeted (MCER), this would be the largest earthquake expected for the area in question. This level of shaking in Anchorage, Alaska could be caused by megathrust faults, such as the Aleutian Subduction Zone (Figure 3), which is capable of M9+ earthquakes. At this intensity of shaking, one would likely see large cracks forming in the ground, significant roadway damage, loss of utilities, and most buildings would be highly damaged.
- *BSE-1N* – This is 2/3 of the MCER, and still a sizeable earthquake. This level of shaking in Anchorage, Alaska could be caused by crustal faults, such as the Castle Mountain

Fault (Figure 3), which is capable of M7+ earthquakes. At this intensity of shaking, one would see ground cracking, damage to houses and office buildings, roadway damage, and underground utility disruption. This is also noted as SDS and SD1 (design level earthquake) in IBC/ASCE 7, and new building codes provide life safety performance during this large of a seismic hazard.

- *BSE-2E* – This level of shaking would be a M8+ earthquake caused by crustal faults (like the Denali Fault (Figure 3), although the Denali Fault is too far from Anchorage to create this level of ground shaking in Anchorage). At this intensity of shaking, one would likely see large cracks forming in the ground, significant roadway damage, loss of utilities, and some buildings would be moderately damaged.
- *BSE-1E* – This would be a smaller earthquake than all others considered above but still capable of a lot of damage. This level of shaking could be caused by a crustal fault, such as the Castle Mountain Fault (Figure 3), which can produce M6+ earthquakes on an annual basis. At this intensity of shaking, there would be general alarm and cracks forming in some building shear walls. For buildings with a shorter remaining useful life, less than 20 years, this may be an acceptable reduced seismic hazard.

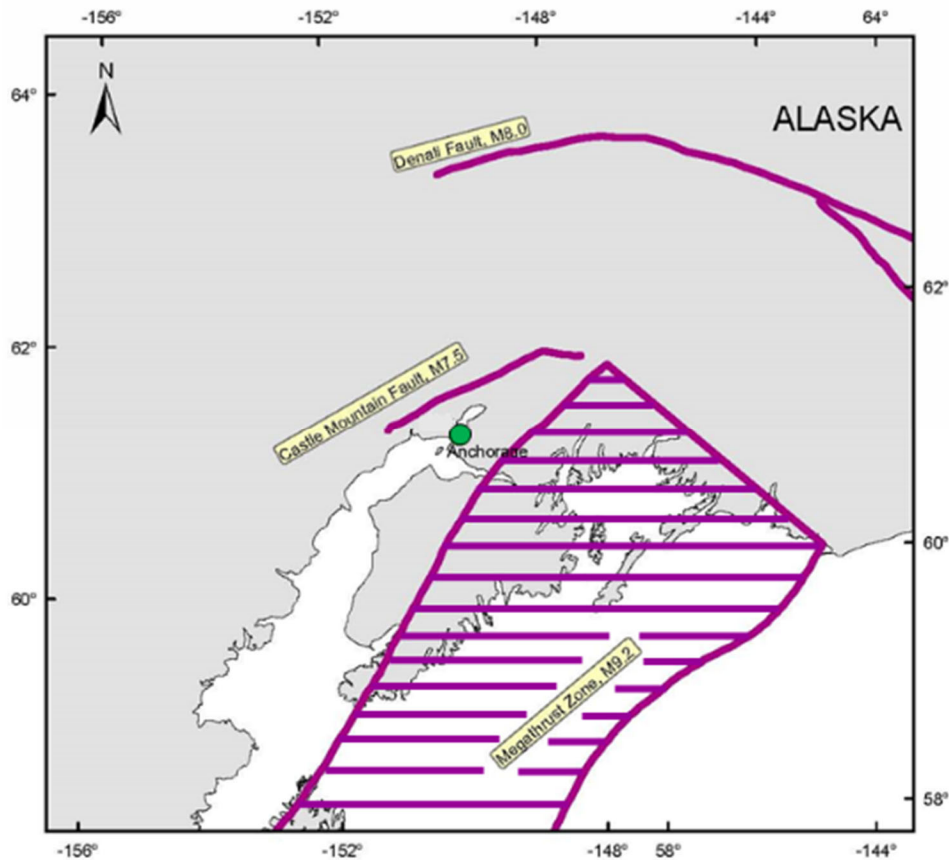


Figure 3: Faults Near Anchorage Capable of Producing High Magnitude Earthquakes

For Anchorage, Alaska, using the ATC Hazard by Location tool (<https://hazards.atcouncil.org/>), and Site Class C, the seismic accelerations (at a short period of 0.2 seconds, SXS, and a longer period of 1.0 seconds, SX1) of the seismic hazards above are (Table 2):

Seismic Hazard	Probability of Exceedance	Mean Return Period	SXS	SX1
BSE-2N (MCER)	2% in 50 years	2475 years	1.800g	0.947g
BSE-1N	2/3 of BSE-2N (~10% in 50 years)	475 years	1.200g	0.631g
IBC/ASCE 7 (RC III), current code, SDS, SD1				
BSE-2E	5% in 50 years	975 years	1.563g	0.832g
BSE-1E	20% in 50 years	225 years	0.945g	0.491g

Table 2: Seismic Accelerations of Anchorage, AK at Predefined Seismic Hazard Levels

## 2.4 Performance Levels

These are the levels at which a building should perform under a given seismic hazard. Levels of performance exist for both structural and nonstructural components.

- Structural – Structural refers to all elements and systems that make up the building's gravity and lateral force resisting system. Structural components would include such items as shear walls, roof deck, braced frame, etc. Structural performance levels are classified with an 'S-' prefix followed by a number, with a lower number representing a better performance.
  - Immediate Occupancy (S-1) - The structure will retain the pre-earthquake strength and stiffness and can be utilized immediately. Few to no injuries should occur to persons within the structure due to building failure.
  - Damage Control (S-2) – Some damage will occur to the building, with small permanent drift. Damage should be economical to repair. Building is capable of being occupied following shaking, but damage should be addressed as soon as feasible.
  - Life Safety (S-3) – Moderate damage will be present in the building, with some residual strength left in the elements. Minor permanent drift will be present.

The building may be beyond economical repair. Injuries due to structural failure should be few.

- Limited Safety (S-4) – Moderate to severe damage. The building will have permanent drift and will be beyond economical repair. The building should not be reused following an earthquake. Damage to structure may cause injuries or obstacles to evacuation, but these should be minor.
- Collapse Prevention (S-5) – Severe damage is present throughout the structure. Little residual strength and stiffness remains, but load-bearing columns and walls should function. Large permanent drifts exist in the structure and exits may be blocked. Building is near collapse. This is a hazard to human safety and will not be reusable. Risk of injury due to structural damage is high.
- Nonstructural – Nonstructural refers to all aspects of a structure that do not provide structural support. This would include architectural elements (soffits, moldings, and drop ceilings), mechanical elements (boilers, generators, and HVAC), and electrical components (fans and lights). Nonstructural levels are classified with an ‘N-’ prefix followed by a letter from A to D, with the lower order letters representing a higher performance.
  - Operational (N-A) – Elements will resume pre-earthquake functions without repair. Power and utilities are available, possibly from a standby source.
  - Position Retention (N-B) – Elements are damaged and may not function but are secured in place following an earthquake. May require repair or replacement before reuse.
  - Life Safety (N-C) – Elements are damaged and may be dislodged from positions, though the consequences of damage do not pose a high risk to life safety, e.g., items are not major falling hazards and will remain anchored until repaired or replaced.
  - Hazards Reduced (N-D) – Elements are damaged, will require replacement, and could become falling hazards.

In accordance with the *“Seismic Evaluation and Retrofit Guide for Existing Anchorage School District Buildings, 2021,”* the ASD standard is to evaluate to the Limited Safety Structural Performance Level (S-4) and the Hazards Reduced Nonstructural Performance Level (N-D).

## 2.5 Site Visit

In March 2023, engineers from Reid Middleton performed multiple site visits to confirm the ‘as-built’ design documents and assess the current structural and non-structural condition of the facility. Any observed areas of structural distress, damage, or settlement are noted in the following report. No material testing or sampling was performed as part of this report.

## 2.6 As-Built Documentation

The seismic evaluation was based on this site visit and a review of the available ‘as-built’ information, including the following major structural sections/renovations of the building:

- 1962 Original Construction, Scenic Park Elementary School
- 1966 Scenic Park Elementary School Addition (Single sheet only – ELEVATIONS – EXTERIOR & INTERIOR – BLDG SECTIONS)
- 1972 Additions & Alterations to Scenic Park Elementary School
- 1983 Scenic Park Elementary School Multi-Purpose Room Addition
- 1999 Scenic Park Elementary School Renewal and Upgrades

## 2.7 References

The following references are used throughout this report:

- ASCE/SEI 41-17: *Seismic Evaluation and Retrofit of Existing Buildings* (copyright 2017)
- Anchorage School District: *Seismic Evaluation and Retrofit Guide for Existing Anchorage School District Buildings, 2021*
- ASCE 7-16: *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (copyright 2017)

## 2.8 Geotechnical Data

Scenic Park Elementary School is located in the “Moderate – Low” Ground Failure Susceptibility per Figure 4. “Moderate – Low” Hazard Zone is defined as mixed coarse and fine-grained glacial deposits in lowland areas, thick deposits of channel, terrace, flood plain, and fan alluvium. Area may have very low susceptibility; may experience minor cracking, localized settlement due to consolidation, and perhaps liquefaction or lurching of localized saturated zones of fine-grained material. “Moderate – Low” areas have Newmark displacements between 0-1 cm and less than 2% chance of landslide occurrence.



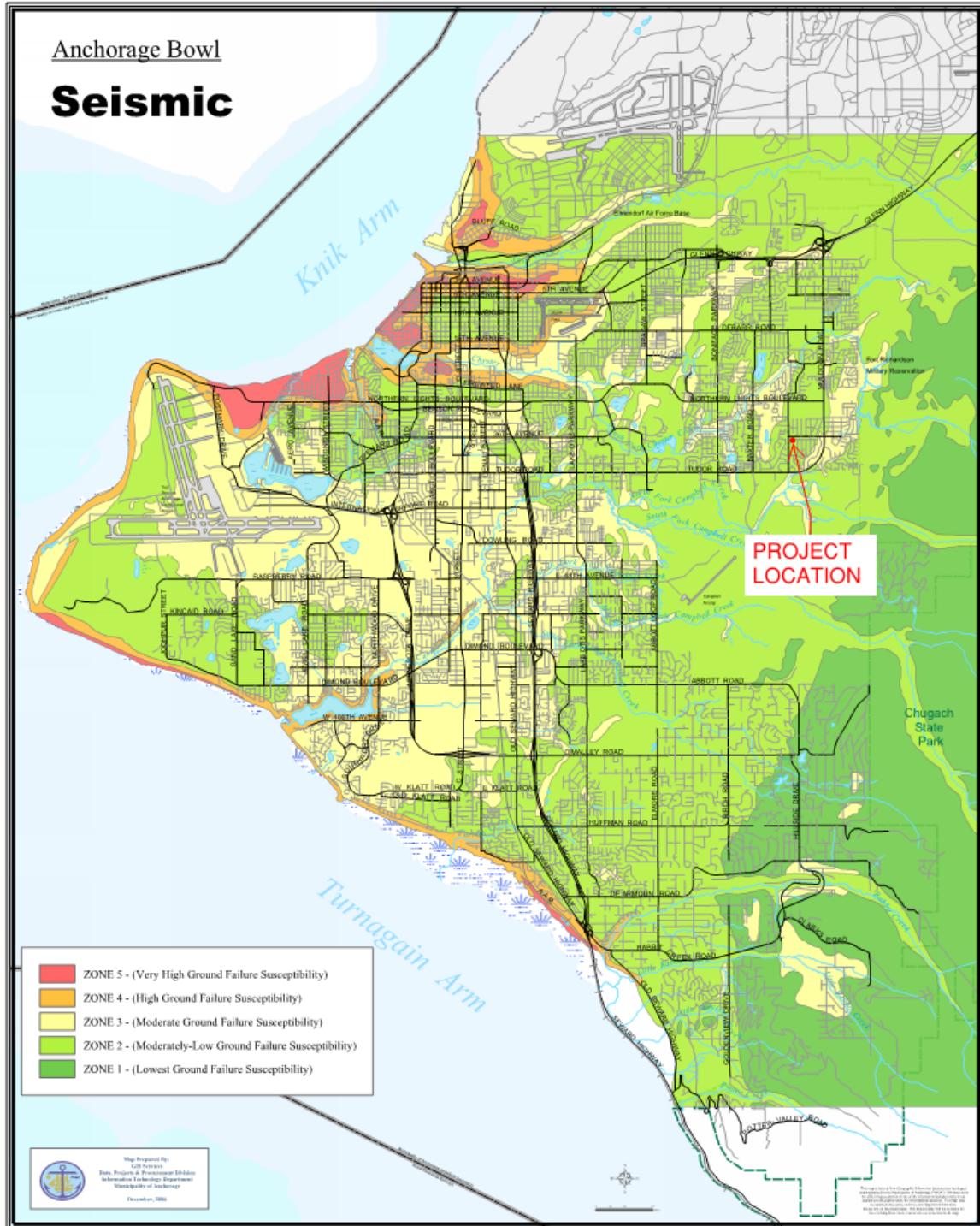


Figure 4: Ground Failure Susceptibility

### 3.0 Seismic Evaluation Results

Per ASD’s request, all Tier 1 structural non-compliant checklist items have been continued to a Tier 2 evaluation. In addition, where applicable, Tier 1 evaluations were revisited and revised. Figure 5 shows the plan locations of Tier 2 structural non-compliant checklist items; see Appendix F for conceptual upgrades.

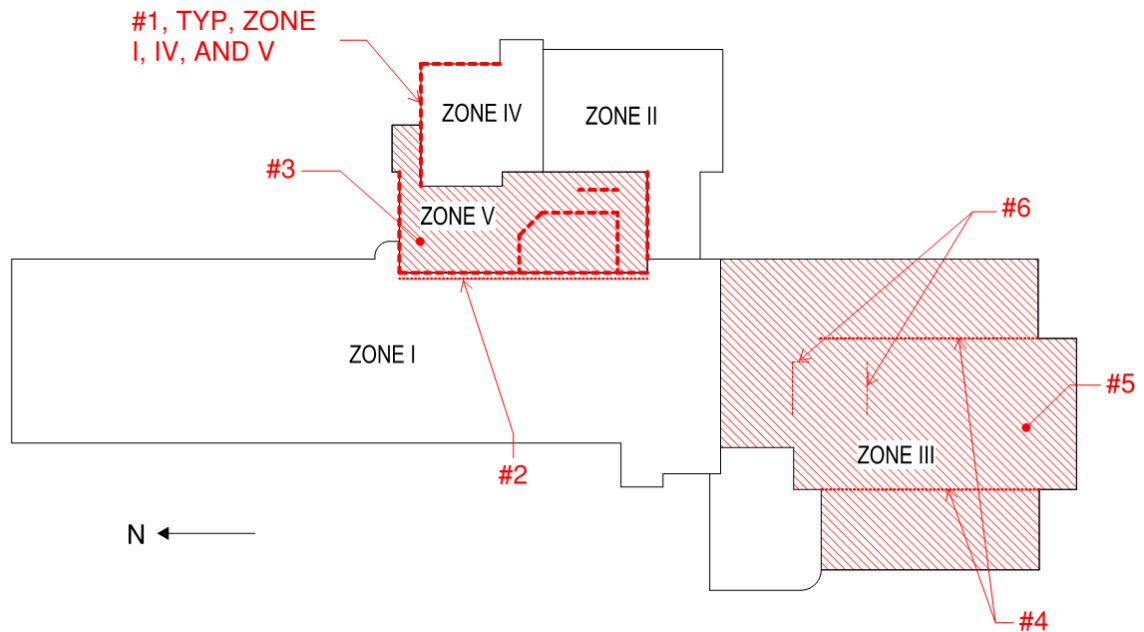


Figure 5: Tier 2 Non-Compliant/Recommended Upgrade Locations, Plan View

#### 3.1 Basic Configuration

##### Tier 1 Review and Revisions

All non-compliant and unknown Basic Configuration Tier 1 Checklist items were reviewed and found to be either compliant or not applicable. The 2021 Tier 1 Evaluation included two checklists: Table 17-1 Very Low Seismicity Checklist and Table 17-2 Limited Safety Checklist. Both Table 17-1 and Table 17-2 non-compliant and unknown items were reviewed; however, per ASCE 41-17, Section 17.1, only Table 17-2 is applicable.

The following Tier 1 Checklist was revised and is included in Appendix D of this report. The Basic Configuration checklist applies to the entire building (original construction and all additions/alterations).

- 17-2 Limited Safety Basic Configuration Checklist
  - LOAD PATH: This item was marked as non-compliant on the 2021 Tier 1 Evaluation due to lack of holdowns at the foundation level. Further review of the drawings shows positive anchorage between shear walls and foundation elements for the 1972 addition and the 1999 addition. Note, the Immediate Occupancy Checklist (Table 17-3) includes holdowns as a checklist item, but holdowns are not a checklist item on the Collapse Prevention/Limited Safety Checklists.
    - Revised Tier 1 check is compliant.
  - VERTICAL IRREGULARITIES: This item was marked as non-compliant on the 2021 Tier 1 Evaluation due to lack of holdowns. As noted in "LOAD PATH", holdowns are not explicitly a requirement and there is positive anchorage from the shear walls to foundation elements.
    - Revised Tier 1 check is compliant.
  - TORSION: This item was marked as unknown in the 2021 Tier 1 Evaluation. The report noted that the building is of irregular shape and the distance between the center of mass and the center of rigidity is unknown. A computer model of the entire structure was recommended. Upon further review of the drawings, we note that the majority of the diaphragms are flexible (with the exception of the mechanical room in the south classroom wing) and all stages of construction have lateral load elements. Note, ASCE 7-16, Section 12.8.4.1 states that inherent torsion is only applicable to diaphragms that are not flexible.
    - Revised Tier 1 check is compliant.
  - LIQUEFACTION: This item was marked as unknown in the 2021 Tier 1 Evaluation due to lack of geotechnical reports available for review. Scenic Park is in Zone 2 - Moderately-Low Ground Failure Susceptibility per the muni.org map titled, Anchorage Bowl, Seismic (Figure 4). Zone 2 is defined as: Mixed coarse and fine-grained glacial deposits in lowland areas, thick deposits of channel, terrace, flood plain, and fan alluvium. May have very low susceptibility; may experience minor ground cracking, localized settlement due to consolidation, and perhaps liquefaction or lurching of localized saturated zones of fine-grained material. Per the GENERALIZED GEOLOGIC MAP OF ANCHORAGE AND VICINITY, ALASKA by Schmoll and Ernest Dobrovoly, Scenic Park Elementary School is located in an area noted as "gm". "gm" is described as "Glacial and (or) marine deposits,

typically in elongate hills. These features consist chiefly of diamicton, but they include some beds of fine sand and silt; thin beds of gravel and sand occur locally. May grade into deposits mapped as unit "mg". Based on these two references, the risk of liquefaction is determined to be low.

- Revised Tier 1 check is compliant.

The following Tier 1 Checklist was reviewed and found not applicable:

- 17-1 Very Low Seismicity Checklist
  - WALL ANCHORAGE: The 2021 Tier 1 Evaluation includes WALL ANCHORAGE as part of the Table 17-1 Very Low Seismicity Checklist. Table 17-1 is not the appropriate basic configuration checklist for this building. Note, WALL ANCHORAGE is a checklist item in Table 17-34 Limited Safety Structural Checklist for Building Types RM1 and RM2 (CMU Walls).
    - Revised Tier 1 check is included in Table 17-34.

### 3.2 North Side of Seismic Joint: Zones I, II, IV, and V

This zone has multiple structure types. Zone I (north classrooms) is laterally supported by a combination of CMU walls and wood shear walls. Zone II is laterally supported by wood shear walls of unknown construction. Zone IV and Zone V are laterally supported by wood shear walls.

#### Tier 1 and Tier 2 Results and Recommendations

All non-compliant and unknown checklist items per the 2021 Tier 1 Evaluation were reviewed. Tier 1 checklist items were either revised or Tier 2 evaluations completed. The following Tier 1 checklists were revised and are included in Appendix D of this report (Zone II was excluded due to lack of structural documentation):

- 17-6 Limited Safety Structural Checklist for Building Type W2(Wood Frames)
- 17-34 Limited Safety Structural Checklist for Building Types RM1 and RM2 (CMU Walls)

The following items were found non-compliant or unknown per the 2021 Tier 1 Evaluation:

- 17-6, W2 (Wood Frames)
  - SHEAR STRESS CHECK: The exterior walls of Zone I (original construction, 1962) and Zone V (1999 addition) portions of the building have a shear stress greater than 1,000 plf per the 2021 Tier 1 Evaluation.
    - **Tier 2 analysis confirmed this deficiency for select walls in Zones I, IV, and V.** Recommend creating double-sided shear walls with increased nailing and providing a strap at the roof level along Grid J (north-south wall, west side of MPR). (Seismic Upgrade #1 and #2)

- SPANS: This item was marked as non-compliant in the 2021 Tier 1 Evaluation for Zone I (original ,1962) construction due to the tongue and groove decking that spans greater than 24 ft. Upon further review of the 1999 documents, details show that the original tongue and groove decking has an 7/16-inch plywood overlap (installed per 1999 documents).
  - Revised Tier 1 check is compliant.
- DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: This item was marked as non-compliant in the 2021 Tier 1 Evaluation for the 1999 addition (Zone V).
  - **Tier 2 analysis confirmed this deficiency.** Recommend overlaying existing diaphragm in Zone V (MPR, 1999) with plywood sheathing. (Seismic Upgrade #3)
- 17-34, RM1 and RM2 (CMU Walls)
  - SHEAR STRESS CHECK: This item was marked as non-compliant for Zone I (original construction, 1962) in the 2021 Tier 1 Evaluation. Multiple errors were found in the 2021 Tier 1 Evaluation calculations by others: the system modification factor (Ms) was not included in the calculations, wall area (Aw) was incorrectly defined, and calculations did not account for vertical distribution of seismic forces. The Tier 1 check for this item was revised.
    - Revised Tier 1 check is compliant.
  - REINFORCING STEEL: This item was marked as non-compliant for Zone I (original construction, 1962) in the 2021 Tier 1 Calculations.
    - Tier 2 analysis resolved this deficiency. Tier 2 Acceptance Ratio < 1.0
  - WALL ANCHORAGE: This item was marked as unknown for Zone I (original construction, 1962) in the 2021 Tier 1 Evaluation. Further review of the 1962 details reveals information for the connection between CMU and glu-lam beam. The capacity of the strap can be calculated; assuming that the anchorages to CMU wall and glu-lam beam have a capacity of at least half the strap capacity, the anchorage is adequate. In addition to review of the 1962 connection detail, an additional check is required at the exterior CMU wall at the entryway (1999 detail). A Tier 1 quick check was completed for this detail and the anchorage is compliant.
    - Revised Tier 1 check is compliant.
  - SPANS: See 17-6, W2 (Wood Frames) - SPANS.
  - DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: See 17-6, W2 (Wood Frames) – DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS.

- STIFFNESS OF WALL ANCHORS: This item was marked as non-compliant in the 2021 Tier 1 Evaluation for Zone I (original construction, 1962). The checklist requires that anchors of concrete or masonry walls to wood structural elements are installed taut and are stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8-inch before engagement of anchors. Review of the 1962 details shows a strap between diaphragm and CMU wall; typical practice is to install the strap with a hole diameter 1/16-inch greater than the connecting element.
  - Revised Tier 1 check is compliant.

### 3.3 South Side of Seismic Joint: Zone III

This zone has multiple structure types. The 1972 south classroom wing has both CMU and wood shear walls. Modifications in 1999 to Zone V also has both CMU and wood shear walls.

#### Tier 1 and Tier 2 Results and Recommendations

All non-compliant and unknown checklist items per the 2021 Tier 1 Evaluation were reviewed; in addition, the WOOD LEDGER checklist item was revised (17-34 Checklist). Tier 1 checklist items were either revised or Tier 2 evaluations completed. In addition, a new check list was completed for the south side of the seismic joint: 17-6 Limited Safety Structural Checklist for Building Type W2 (Wood Frames).

The following new or revised Tier 1 checklists are included in Appendix D of this report:

- 17-6 Limited Safety Structural Checklist for Building Type W2(Wood Frames) (*checklist not included in 2021 Tier 1 Evaluation*)
- 17-34 Limited Safety Structural Checklist for Building Types RM1 and RM2 (CMU Walls) (*revised*)

The following items were found non-compliant per Tier 1 evaluations (Reid Middleton, 2023):

- 17-6 W2 (Wood Frames)
  - SHEAR STRESS CHECK: 2021 Tier 1 Evaluation did not consider wood shear walls in Zone III; only a masonry checklist was considered. A Tier 1 quick check indicates this check is compliant. However, due to the plan distribution of wood walls in this zone, a Tier 2 evaluation was completed.
    - **Tier 2 analysis indicates deficiency.** Recommend adding a strap at the roof level along Grids B and F to reduce the load to the north-south wood exterior walls. (Seismic Upgrade #4)
  - DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: 2021 Tier 1 Evaluation did not consider wood shear walls in Zone III; only a masonry checklist was considered. 2021 RM1/RM2 checklist lists this item as N/A.



Further review of the 1972 documents indicate that the roof diaphragm in Zone III is unblocked and spans are greater than 40 feet.

- Revised Tier 1 is non-complaint.
- **Tier 2 analysis confirmed this deficiency.** Recommend overlaying existing diaphragm with plywood sheathing. (Seismic Upgrade #5)

The following items were found non-compliant or unknown per the 2021 Tier 1 Evaluation. In addition, the Tier 1 checklist item WOOD LEDGERS is revised:

- 17-34 RM1 and RM2 (CMU Walls)
  - WALL ANCHORAGE: This item was marked as noncompliant for Zone III (1999 renewal/upgrades) in the 2021 Tier 1 Evaluation. Tier 1 calculations were reviewed and revised to use nominal capacity rather than ASD (Allowable Stress Design) capacity.
    - Revised Tier 1 check is compliant.
  - WOOD LEDGERS: This item is marked as compliant in the 2021 Tier 1 Evaluation. However, multiple details in the 1972 drawings show cross-grain bending. These deficiencies were not addressed in subsequent additions/remodels.
    - Revised Tier 1 check is non-compliant.
    - **Tier 2 analysis confirmed these deficiencies.** Recommend installing horizontal holdowns to remove cross-grain bending. (Seismic Upgrade #6)
  - TRANSFER TO SHEAR WALLS: This item is marked as non-compliant for Zone III (1999 renewal/upgrades) in the 2021 Tier 1 Evaluation. Upon further review of details and the wood diaphragm nailing schedule, it is noted that there is boundary nailing of the diaphragm and a horizontal anchor into the CMU shear wall.
    - Revised Tier 1 check is compliant.
  - DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: See 17-6, W2 (Wood Frames) – DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS.
  - STIFFNESS OF WALL ANCHORS: This item is marked as non-compliant in for Zone III (1999 renewal/upgrades) in the 2021 Tier 1 Evaluation.
    - Revised Tier 1 check is compliant.



### 3.4 Post-Earthquake Memo, January 2019

A 7.1M earthquake, centered 8 miles north of Anchorage, occurred at approximately 8:30am on Friday, November 30, 2018. Since that time, several aftershocks greater than M5.0 have occurred, including a M5.7 aftershock at 8:35am on November 30, 2018; a M5.2 aftershock at 7:57am on December 1, 2018; and a M5.0 aftershock at 7:45am on Sunday, January 13, 2019.

A GREEN placard was placed on Scenic Park Elementary School on December 8, 2018.

An engineer from Reid Middleton visited Scenic Park Elementary School on January 14, 2019.

The following observations were made by Reid Middleton:

- Cracks in CMU wall (Room 167 and exterior CMU wall, near garbage compactor)
- Damaged ceiling tile (Room 169)
- Damaged light fixture (Room 148)

Reid Middleton recommended that the noted damage be repaired and the existing placard remain GREEN.

## 4.0 Pre-Reroof Gravity Analysis

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In preparation for the upcoming reroof of Scenic Park Elementary School, a gravity evaluation of roof framing to identify gravity load issues pertaining to the roof structure, such as dead load, basic flat roof snow load, or drifting snow has been completed. The analysis considered all roof areas (Zones I thru V), including those areas that previously noted snow drift loading on record drawings.

### Recommendations

Upgrades are recommended for the following areas based on analysis of gravity loading on the existing roof framing: Zone I, Zone II, Zone III, and Zone V. See Figure 6 for a plan view of recommended pre-reroof gravity upgrades. See Appendix G for extents and retrofit concepts.

Recommended pre-roof gravity upgrades per Zone are as follows:

- Zone I:
  - 6-feet north of hallway pop-up roof: Existing glu-lam beams are not adequate for snow drift loads. Recommend sistering new glu-lam beam to existing beams. (Gravity Upgrade A)
- Zone II:
  - For the purposes of this report, it is assumed that the existing non-snow drift areas in Zone II are adequate for 40 psf snow loads. It is unknown if the snow-drift areas in Zone II are adequate for gravity loading; therefore, for the purposes of this report, we have assumed upgrades will be required in the gym storage room, hall, and electrical room southwest of the gym (Gravity Upgrade E)
- Zone III:
  - Middle portion of roof over south classroom wing: Existing joists are not adequate for snow drift loads. Recommend adding new open-web joists between existing joists. (Gravity Upgrade B)
  - Northwest portion of south classroom wing: Existing joists are not adequate for snow loads. Recommend sistering new joists to existing joists. (Gravity Upgrade C)
- Zone V:
  - West end of kitchen/MPR: Existing joists are not adequate for snow drift loads. Recommend sistering similar I-joists to existing I-joists. (Gravity Upgrade D)

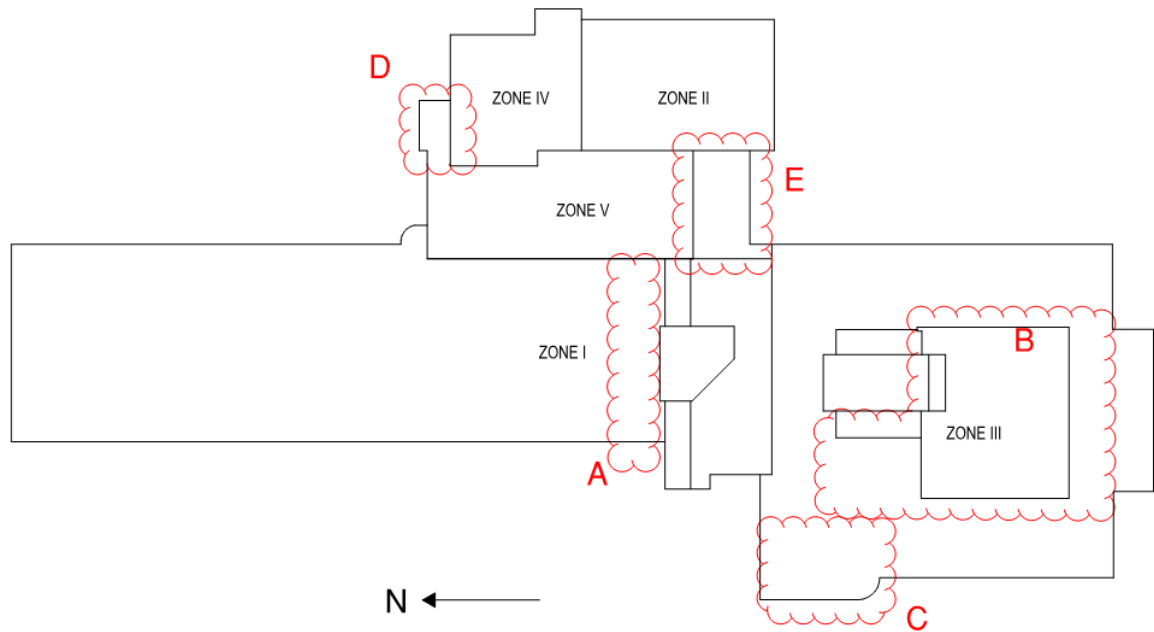


Figure 6: Pre-Reroof Gravity Upgrade Locations, Plan View

## 5.0 Cost Estimate

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Based on the concept sketches in Appendix F – Seismic Evaluation: Retrofit Concepts and Appendix G – Pre-Reroof Gravity Evaluation: Retrofit Concepts, HMS, Inc. has developed a concept-level cost estimate. The cost estimate is included in Appendix H.

## Appendix A – Relative Priority Ranking of Tier 1 and Tier 2 Deficiencies

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The following section contains Relative Priority Rankings of the Tier 1 deficiency items with Tier 2 Acceptance Ratios greater than 1.0 as directed by Appendices 5 and 6 of the “Seismic Evaluation and Retrofit Guide for Existing Anchorage School District Buildings”.

### Structural Deficiency Priority Ranking:

#### *Degree of Deficiency*

The percent of nonconformance should be taken into consideration when prioritizing the deficiencies. Anything considered “code deficient” should be ranked a 5. Use the following six-point scale to rate the degree of deficiency.

- 0 – Elements loaded less than or equal to member capacity (<100%).
- 1 – Elements loaded less than 10% above member capacity (<110%).
- 2 – Elements loaded less than 20% above member capacity (<120%).
- 3 – Elements loaded less than 35% above member capacity (<135%).
- 4 – Elements loaded less than 50% above member capacity (<150%).
- 5 – Elements loaded greater than 50% of member capacity or deemed “code deficient”.

#### *Prevalence*

It is important to recognize how many times this element or connection is repeated throughout the building. Prevalence allows the priority rating to include the amount of the structure that has the element problem described. Use the following five-point scale to rate the prevalence of all deficient elements.

- 1 – Present in 0-10% of the building.
- 2 – Present in 10-25% of the building.
- 3 – Present in 25-50% of the building.
- 4 – Present in 50-80% of the building.
- 5 – Present in 80-100% of the building.

#### *Degree of Threat*

Allowing for engineering judgment, the degree of threat is for including what would happen should this member fail. The threat or hazard to structural integrity should this element fail should be rated on the following four-point scale.

- 1 – The problem is not critical to structural integrity.
- 2 – The problem will create minor problems nearby but does not affect structural integrity.

3 – The problem will create problems nearby and will affect structural integrity.

4 – The problem will create major problems and affect structural integrity of many other members and the system.

By taking the product of the three categories above (deficiency X prevalence X threat), each noncompliant item will be rated on a scale of 0 to 100, creating a Priority Ranking for each element. The Relative Priority Ranking of Tier 2 Deficiencies – Structural is shown in the table below.

Scenic Park Elementary School  
Relative Priority Rating of Tier 2 Screening Deficiencies - Structural Items  
Ref Appendix 4 of ASD Seismic Evaluation & Retrofit Guide

September 2023

Area	Checklist	Item	(0-5)	(1-5)	(1-4)	Priority Rating
			Deficiency	Prevalence	Threat	
Zone I, IV, and V	17-6, W2	SHEAR STRESS CHECK (UPGRADE #1)	5	2	3	30
Zone III	17-6, W2	SHEAR STRESS CHECK (UPGRADE #4)	5	2	3	30
Zone III	17-6, W2	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS (UPGRADE #5)	5	2	3	30
Zone V	17-6, W2	SHEAR STRESS CHECK (UPGRADE #2)	5	1	3	15
Zone V	17-6, W2	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS (UPGRADE #3)	5	1	3	15
Zone III	17-34, RM1 & RM2	WOOD LEDGERS (UPGRADE #6)	5	1	3	15

Note: Prevalence relative to the entire building (Zones I - V)

## Appendix B – Seismic Performance Assessment Scale

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The following section contains the Seismic Performance Assessment Scale per the Tier 1 and Tier 2 seismic evaluations of Scenic Park Elementary School. Reference ASD Seismic Evaluation and Retrofit Guide for Existing ASD Schools for scale definition.



Scenic Park ES, Tier 2/Pre-Reroof  
Project: 402023.020

EH  
9/7/2021

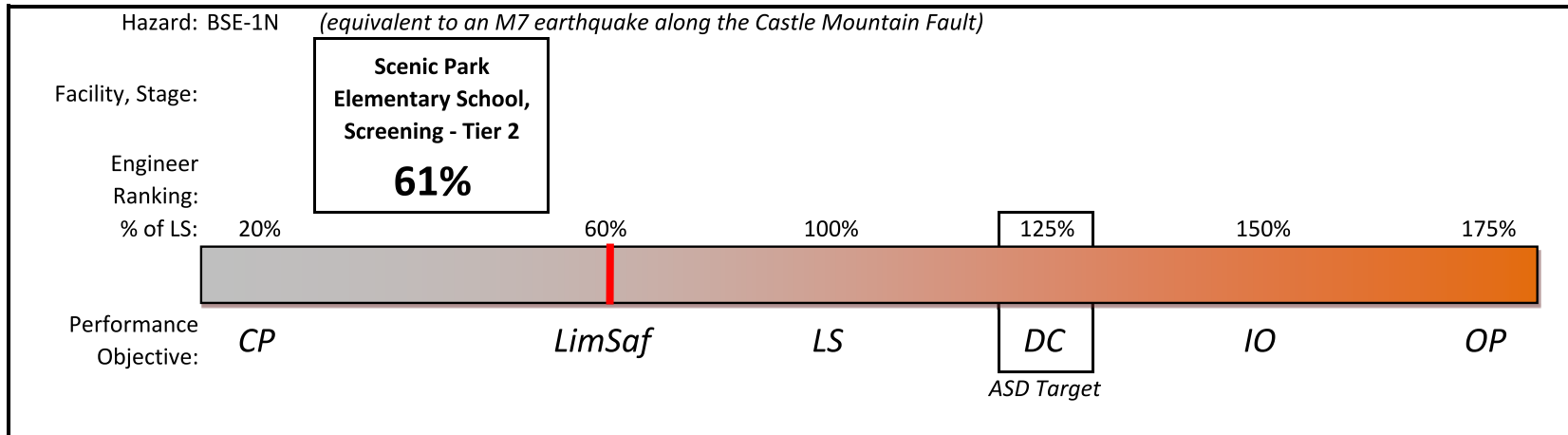
**Seismic Performance Assessment Scale - Tier 2**

Reference ASD Seismic Evaluation and Retrofit Guide for Existing ASD Schools

Bldg Side	Tier 1 Checklist	Approx Sq Ft	Sq Ft / Total Sq Ft	Score <sup>2</sup> (0-133 <sup>1</sup> )	at BSE-2E		BSE-2E		BSE-1N	
					Score (0%-133%)	Ranking x Sq Ft / Total Sq Ft	BSE-2E / 0.76 (0%-175%)	Ranking x Sq Ft / Total Sq Ft		
North	RM 1/RM2 - CMU Walls	17,000	32.2%	55	55%	0.177	72%	0.233		
North	W2 - Wood Frames	17,400	33.0%	40	40%	0.132	53%	0.173		
South	RM 1/RM2 - CMU Walls	14,000	26.5%	45	45%	0.119	59%	0.157		
South	W2 - Wood Frames	4,400	8.3%	40	40%	0.033	53%	0.044		
		52,800	1.00	Weighted Aggregate Rankings:	46% BSE-2E		61% BSE-1N			

<sup>1</sup> 175\*0.76 = 133; 175% = max score (OP) on ASD Guide, Seismic Performance Assessment Scale

<sup>2</sup> 60 in this scale is just passing the Limited Safety checklist items in the Tier 2 evaluation @ BSE-2E; any score above 60 indicates a 'better than LimSaf' performance @ BSE-2E



## Appendix C – Site Visit Photos

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The following section contains photographs captured during Reid Middleton’s site visits to Scenic Park Elementary School in March 2023.



*Figure C1. Cafeteria, Looking at Southwest at Windows Along Grid J*



*Figure C2. Classroom Roof at Cafeteria Step/Grid J*



*Figure C3. Gymnasium, Looking Southeast*



*Figure C4. Seismic Joint at Hallway Adjacent to Main Office, Looking Along Grid H at Grid 19*

## Appendix D – Revised ASCE 41-17 Tier 1 Checklists

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The following section contains the revised ASCE 41-17 Tier 1 Checklists for Scenic Park Elementary School.

Note: Checklist items in red text are either non-compliant (NC) or unknown (U).

# 17-2 Limited Safety Basic Configuration Checklist

## Low Seismicity

### Building System—General

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				LOAD PATH: The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation. <i>(Tier 2: Sec. 5.4.1.1; Commentary: Sec. A.2.1.10)</i>	<b>Revised from 2021 Tier 1 Evaluation.</b>
X				ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 0.25% of the height of the shorter building in low seismicity, 0.5% in moderate seismicity, and 1.5% in high seismicity. <i>(Tier 2: Sec. 5.4.1.2; Commentary: Sec. A.2.1.2)</i>	Per 2021 Tier 1 Evaluation.
		X		MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure. <i>(Tier 2: Sec. 5.4.1.3; Commentary: Sec. A.2.1.3)</i>	Per 2021 Tier 1 Evaluation.

### Building System—Building Configuration

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				WEAK STORY: The sum of the shear strengths of the seismic-force-resisting system in any story in each direction is not less than 80% of the strength in the adjacent story above. <i>(Tier 2: Sec. 5.4.2.1; Commentary: Sec. A.2.2.2)</i>	Per 2021 Tier 1 Evaluation.
X				SOFT STORY: The stiffness of the seismic-force-resisting system in any story is not less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above. <i>(Tier 2: Sec. 5.4.2.2; Commentary: Sec. A.2.2.3)</i>	Per 2021 Tier 1 Evaluation.
X				VERTICAL IRREGULARITIES: All vertical elements in the seismic-force-resisting system are continuous to the foundation. <i>(Tier 2: Sec. 5.4.2.3; Commentary: Sec. A.2.2.4)</i>	<b>Revised from 2021 Tier 1 Evaluation.</b>
X				GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines. <i>(Tier 2: Sec. 5.4.2.4; Commentary: Sec. A.2.2.5)</i>	<b>Revised from 2021 Tier 1 Evaluation.</b>
X				MASS: There is no change in effective mass of more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered. <i>(Tier 2: Sec. 5.4.2.5; Commentary: Sec. A.2.2.6)</i>	<b>Revised from 2021 Tier 1 Evaluation.</b>
X				TORSION: The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension. <i>(Tier 2: Sec. 5.4.2.6; Commentary: Sec. A.2.2.7)</i>	<b>Revised from 2021 Tier 1 Evaluation.</b>

## 17-2 Limited Safety Basic Configuration Checklist

### Moderate Seismicity

(Complete the Following Items in Addition to the Items for Low Seismicity)

#### Geologic Site Hazards

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance do not exist in the foundation soils at depths within 50 ft (15.2 m) under the building. (Tier 2: Sec. 5.4.3.1; Commentary: Sec. A.6.1.1)	<b>Revised from 2021 Tier 1 Evaluation.</b>
X				SLOPE FAILURE: The building site is located away from potential earthquake-induced slope failures or rockfalls so that it is unaffected by such failures or is capable of accommodating any predicted movements without failure. (Tier 2: Sec. 5.4.3.1; Commentary: Sec. A.6.1.2)	Per 2021 Tier 1 Evaluation.
X				SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated. (Tier 2: Sec. 5.4.3.1; Commentary: Sec. A.6.1.3)	Per 2021 Tier 1 Evaluation.

### High Seismicity

(Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)

#### Foundation Configuration

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				OVERTURNING: The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than $0.6S_a$ . (Tier 2: Sec. 5.4.3.3; Commentary: Sec. A.6.2.1)	Per 2021 Tier 1 Evaluation.
X				TIES BETWEEN FOUNDATION ELEMENTS: The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C. (Tier 2: Sec. 5.4.3.4; Commentary: Sec. A.6.2.2)	Per 2021 Tier 1 Evaluation.

Note: C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown.

## 17-6. Limited Safety Structural Checklist for Building Type W2: North Side of Building, Excluding 1966 Addition

### Low and Moderate Seismicity

#### Seismic-Force-Resisting System

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2. <i>(Tier 2: Sec. 5.5.1.1; Commentary: Sec. A.3.2.1.1)</i>	Per 2021 Tier 1 Evaluation.
	X			SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than the following values: Structural panel sheathing – 1,000 lb/ft; Diagonal sheathing – 700 lb/ft; Straight sheathing – 100 lb/ft; All other conditions – 100 lb/ft. <i>(Tier 2: Sec. 5.5.3.1.1; Commentary: Sec. A.3.2.7.1)</i>	Per 2021 Tier 1 Evaluation.
X				STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings do not rely on exterior stucco walls as the primary seismic-force-resisting system. <i>(Tier 2: Sec. 5.5.3.6.1; Commentary: Sec. A.3.2.7.2)</i>	Per 2021 Tier 1 Evaluation.
X				GYPHUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard is not used for shear walls on buildings more than one story high with the exception of the uppermost level of a multi-story building. <i>(Tier 2: Sec. 5.5.3.6.1; Commentary: Sec. A.3.2.7.3)</i>	Per 2021 Tier 1 Evaluation.
X				NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 are not used to resist seismic forces. <i>(Tier 2: Sec. 5.5.3.6.1; Commentary: Sec. A.3.2.7.4)</i>	Per 2021 Tier 1 Evaluation.
		X		WALLS CONNECTED THROUGH FLOORS: Shear walls have an interconnection between stories to transfer overturning and shear forces through the floor. <i>(Tier 2: Sec. 5.5.3.6.2; Commentary: Sec. A.3.2.7.5)</i>	Per 2021 Tier 1 Evaluation.
		X		HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story because of a sloping site, all shear walls on the downhill slope have an aspect ratio less than 1-to-1. <i>(Tier 2: Sec. 5.5.3.6.3; Commentary: Sec. A.3.2.7.6)</i>	Per 2021 Tier 1 Evaluation.
		X		CRIPPLE WALLS: Cripple walls below first-floor-level shear walls are braced to the foundation with wood structural panels. <i>(Tier 2: Sec. 5.5.3.6.4; Commentary: Sec. A.3.2.7.7)</i>	Per 2021 Tier 1 Evaluation.
		X		OPENINGS: Walls with openings greater than 80% of the length are braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or are supported by adjacent construction through positive ties capable of transferring the seismic forces. <i>(Tier 2: Sec. 5.5.3.6.5; Commentary: Sec. A.3.2.7.8)</i>	Per 2021 Tier 1 Evaluation.



## 17-6. Limited Safety Structural Checklist for Building Type W2: North Side of Building, Excluding 1966 Addition

### Connections

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
		X		WOOD POSTS: There is a positive connection of wood posts to the foundation. <i>(Tier 2: Sec. 5.7.3.3; Commentary: Sec. A.5.3.3)</i>	Per 2021 Tier 1 Evaluation.
X				WOOD SILLS: All wood sills are bolted to the foundation. <i>(Tier 2: Sec. 5.7.3.3; Commentary: Sec. A.5.3.4)</i>	Per 2021 Tier 1 Evaluation.
X				GIRDER-COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support. <i>(Tier 2: Sec. 5.7.4.1; Commentary: Sec. A.5.4.1)</i>	Per 2021 Tier 1 Evaluation.

### High Seismicity

*(Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)*

### Connections

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				WOOD SILL BOLTS: Sill bolts are spaced at 6 ft (1.8 m) or less with acceptable edge and end distance provided for wood and concrete. <i>(Tier 2: Sec. 5.7.3.3; Commentary: Sec. A.5.3.7)</i>	Per 2021 Tier 1 Evaluation.

### Diaphragms

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				DIAPHRAGM CONTINUITY: The diaphragms are not composed of split-level floors and do not have expansion joints. <i>(Tier 2: Sec. 5.6.1.1; Commentary: Sec. A.4.1.1)</i>	Per 2021 Tier 1 Evaluation.
X				ROOF CHORD CONTINUITY: All chord elements are continuous, regardless of changes in roof elevation. <i>(Tier 2: Sec. 5.6.1.1; Commentary: Sec. A.4.1.3)</i>	Per 2021 Tier 1 Evaluation.
		X		DIAPHRAGM REINFORCEMENT AT OPENINGS: There is reinforcing around all diaphragm openings larger than 50% of the building width in either major plan dimension. <i>(Tier 2: Sec. 5.6.1.5; Commentary: Sec. A.4.1.8)</i>	Per 2021 Tier 1 Evaluation.
		X		STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.1)</i>	Per 2021 Tier 1 Evaluation.
X				SPANS: All wood diaphragms with spans greater than 24 ft (7.3 m) consist of wood structural panels or diagonal sheathing. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.2)</i>	<b>Revised from 2021 Tier 1 Evaluation.</b>
	X			<b>DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12.2 m) and have aspect ratios less than or equal to 4-to-1. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.3)</i></b>	Per 2021 Tier 1 Evaluation.
X				OTHER DIAPHRAGMS: The diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing. <i>(Tier 2: Sec. 5.6.5; Commentary: Sec. A.4.7.1)</i>	Per 2021 Tier 1 Evaluation.

Note: C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown

# 17-34 Limited Safety Structural Checklist for Building Types RM1 and RM2: North Side of Building, Excluding 1966 Addition

## Low and Moderate Seismicity

### Seismic-Force-Resisting System

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2. ( <i>Tier 2: Sec. 5.5.1.1; Commentary: Sec. A.3.2.1.1</i> )	Per 2021 Tier 1 Evaluation.
X				SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than 70 lb/in. <sup>2</sup> (0.48 MPa). ( <i>Tier 2: Sec. 5.5.3.1.1; Commentary: Sec. A.3.2.4.1</i> )	<b>Revised from 2021 Tier 1 Evaluation.</b>
	X			REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls is greater than 0.002 of the wall with the minimum of 0.0007 in either of the two directions; the spacing of reinforcing steel is less than 48 in. (1220 mm), and all vertical bars extend to the top of the walls. ( <i>Tier 2: Sec. 5.5.3.1.3; Commentary: Sec. A.3.2.4.2</i> )	Per 2021 Tier 1 Evaluation.

### Stiff Diaphragms

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
		X		TOPPING SLAB: Precast concrete diaphragm elements are interconnected by a continuous reinforced concrete topping slab. ( <i>Tier 2: Sec. 5.6.4; Commentary: Sec. A.4.5.1</i> )	Per 2021 Tier 1 Evaluation.

### Connections

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections have strength to resist the connection force calculated in the Quick Check procedure of Section 4.4.3.7. ( <i>Tier 2: Sec. 5.7.1.1; Commentary: Sec. A.5.1.1</i> )	<b>Revised from 2021 Tier 1 Evaluation.</b>
X				WOOD LEDGERS: The connection between the wall panels and the diaphragm does not induce cross-grain bending or tension in the wood ledgers. ( <i>Tier 2: Sec. 5.7.1.3; Commentary: Sec. A.5.1.2</i> )	Per 2021 Tier 1 Evaluation.
X				TRANSFER TO SHEAR WALLS: Diaphragms are connected for transfer of seismic forces to the shear walls. ( <i>Tier 2: Sec. 5.7.2; Commentary: Sec. A.5.2.1</i> )	Per 2021 Tier 1 Evaluation.
		X		TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements are doweled for transfer of forces into the shear wall or frame elements. ( <i>Tier 2: Sec. 5.7.2; Commentary: Sec. A.5.2.</i> )	Per 2021 Tier 1 Evaluation.
X				FOUNDATION DOWELS: Wall reinforcement is doweled into the foundation. ( <i>Tier 2: Sec. 5.7.3.4; Commentary: Sec. A.5.3.5</i> )	Per 2021 Tier 1 Evaluation.

## 17-34 Limited Safety Structural Checklist for Building Types RM1 and RM2: North Side of Building, Excluding 1966 Addition

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				GIRDER–COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support. <i>(Tier 2: Sec. 5.7.4.1; Commentary: Sec. A.5.4.1)</i>	Per 2021 Tier 1 Evaluation.

### High Seismicity

*(Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)*

#### Stiff Diaphragms

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length. <i>(Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.4)</i>	Per 2021 Tier 1 Evaluation.
X				OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long. <i>(Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.6)</i>	Per 2021 Tier 1 Evaluation.

#### Flexible Diaphragms

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				CROSS TIES: There are continuous cross ties between diaphragm chords. <i>(Tier 2: Sec. 5.6.1.2; Commentary: Sec. A.4.1.2)</i>	Per 2021 Tier 1 Evaluation.
X				OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length. <i>(Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.4)</i>	Per 2021 Tier 1 Evaluation.
X				OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long. <i>(Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.6)</i>	Per 2021 Tier 1 Evaluation.
		X		STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.1)</i>	Per 2021 Tier 1 Evaluation.
X				SPANS: All wood diaphragms with spans greater than 24 ft (7.3 m) consist of wood structural panels or diagonal sheathing. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.2)</i>	<b>Revised from 2021 Tier 1 Evaluation.</b>
	X			<b>DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12.2 m) and aspect ratios less than or equal to 4-to-1. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.3)</i></b>	Per 2021 Tier 1 Evaluation.
X				OTHER DIAPHRAGMS: Diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing. <i>(Tier 2: Sec. 5.6.5; Commentary: Sec. A.4.7.1)</i>	Per 2021 Tier 1 Evaluation.

# 17-34 Limited Safety Structural Checklist for Building Types RM1 and RM2: North Side of Building, Excluding 1966 Addition

## Connections

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				STIFFNESS OF WALL ANCHORS: Anchors of concrete or masonry walls to wood structural elements are installed taut and are stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8 in. (3 mm) before engagement of the anchors. <i>(Tier 2: Sec. 5.7.1.2; Commentary: Sec. A.5.1.4)</i>	<b>Revised from 2021 Tier 1 Evaluation.</b>

Note: C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown.

## 17-6. Limited Safety Structural Checklist for Building Type W2: South Side of Building

### Low and Moderate Seismicity

#### Seismic-Force-Resisting System

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2. ( <i>Tier 2: Sec. 5.5.1.1; Commentary: Sec. A.3.2.1.1</i> )	
X				SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than the following values: Structural panel sheathing – 1,000 lb/ft; Diagonal sheathing – 700 lb/ft; Straight sheathing – 100 lb/ft; All other conditions – 100 lb/ft. ( <i>Tier 2: Sec. 5.5.3.1.1; Commentary: Sec. A.3.2.7.1</i> )	Tier 1 check compliant; proceed to a Tier 2 evaluation due to plan distribution of wood walls.
		X		STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings do not rely on exterior stucco walls as the primary seismic-force-resisting system. ( <i>Tier 2: Sec. 5.5.3.6.1; Commentary: Sec. A.3.2.7.2</i> )	No stucco shear walls.
		X		GYPSON WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard is not used for shear walls on buildings more than one story high with the exception of the uppermost level of a multi-story building. ( <i>Tier 2: Sec. 5.5.3.6.1; Commentary: Sec. A.3.2.7.3</i> )	No gypsum wallboard or plaster shear walls.
		X		NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 are not used to resist seismic forces. ( <i>Tier 2: Sec. 5.5.3.6.1; Commentary: Sec. A.3.2.7.4</i> )	No narrow wood shear walls.
		X		WALLS CONNECTED THROUGH FLOORS: Shear walls have an interconnection between stories to transfer overturning and shear forces through the floor. ( <i>Tier 2: Sec. 5.5.3.6.2; Commentary: Sec. A.3.2.7.5</i> )	No walls connected through floors.
		X		HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story because of a sloping site, all shear walls on the downhill slope have an aspect ratio less than 1-to-1. ( <i>Tier 2: Sec. 5.5.3.6.3; Commentary: Sec. A.3.2.7.6</i> )	Not a hillside site.
		X		CRIPPLE WALLS: Cripple walls below first-floor-level shear walls are braced to the foundation with wood structural panels. ( <i>Tier 2: Sec. 5.5.3.6.4; Commentary: Sec. A.3.2.7.7</i> )	No cripple walls.
		X		OPENINGS: Walls with openings greater than 80% of the length are braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or are supported by adjacent construction through positive ties capable of transferring the seismic forces. ( <i>Tier 2: Sec. 5.5.3.6.5; Commentary: Sec. A.3.2.7.8</i> )	No walls with openings greater than 90% of the length.

## 17-6. Limited Safety Structural Checklist for Building Type W2: South Side of Building

### Connections

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
		X		WOOD POSTS: There is a positive connection of wood posts to the foundation. <i>(Tier 2: Sec. 5.7.3.3; Commentary: Sec. A.5.3.3)</i>	No wood posts.
X				WOOD SILLS: All wood sills are bolted to the foundation. <i>(Tier 2: Sec. 5.7.3.3; Commentary: Sec. A.5.3.4)</i>	Sill anchors provided per sheet 6 of 10 on 1972 drawings.
X				GIRDER–COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support. <i>(Tier 2: Sec. 5.7.4.1; Commentary: Sec. A.5.4.1)</i>	Reference sheet S2 of 1972 drawings.

### High Seismicity

*(Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)*

### Connections

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				WOOD SILL BOLTS: Sill bolts are spaced at 6 ft (1.8 m) or less with acceptable edge and end distance provided for wood and concrete. <i>(Tier 2: Sec. 5.7.3.3; Commentary: Sec. A.5.3.7)</i>	Reference sheet 6 of 10 on 1972 drawings.

### Diaphragms

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				DIAPHRAGM CONTINUITY: The diaphragms are not composed of split-level floors and do not have expansion joints. <i>(Tier 2: Sec. 5.6.1.1; Commentary: Sec. A.4.1.1)</i>	
X				ROOF CHORD CONTINUITY: All chord elements are continuous, regardless of changes in roof elevation. <i>(Tier 2: Sec. 5.6.1.1; Commentary: Sec. A.4.1.3)</i>	
		X		DIAPHRAGM REINFORCEMENT AT OPENINGS: There is reinforcing around all diaphragm openings larger than 50% of the building width in either major plan dimension. <i>(Tier 2: Sec. 5.6.1.5; Commentary: Sec. A.4.1.8)</i>	No diaphragm openings larger than 50% of the building width.
		X		STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.1)</i>	No straight-sheathed diaphragms.
X				SPANS: All wood diaphragms with spans greater than 24 ft (7.3 m) consist of wood structural panels or diagonal sheathing. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.2)</i>	
	X			<b>DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS:</b> All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12.2 m) and have aspect ratios less than or equal to 4-to-1. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.3)</i>	Roof diaphragm is unblocked and spans are greater than 40 ft. Reference 1972 drawings, sheet S2.
X				OTHER DIAPHRAGMS: The diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing. <i>(Tier 2: Sec. 5.6.5; Commentary: Sec. A.4.7.1)</i>	

Note: C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown

# 17-34 Limited Safety Structural Checklist for Building Types RM1 and RM2: South Side of Building

## Low and Moderate Seismicity

### Seismic-Force-Resisting System

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2. ( <i>Tier 2: Sec. 5.5.1.1; Commentary: Sec. A.3.2.1.1</i> )	Per 2021 Tier 1 Evaluation.
X				SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than 70 lb/in. <sup>2</sup> (0.48 MPa). ( <i>Tier 2: Sec. 5.5.3.1.1; Commentary: Sec. A.3.2.4.1</i> )	Per 2021 Tier 1 Evaluation.
X				REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls is greater than 0.002 of the wall with the minimum of 0.0007 in either of the two directions; the spacing of reinforcing steel is less than 48 in. (1220 mm), and all vertical bars extend to the top of the walls. ( <i>Tier 2: Sec. 5.5.3.1.3; Commentary: Sec. A.3.2.4.2</i> )	Per 2021 Tier 1 Evaluation.

### Stiff Diaphragms

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
		X		TOPPING SLAB: Precast concrete diaphragm elements are interconnected by a continuous reinforced concrete topping slab. ( <i>Tier 2: Sec. 5.6.4; Commentary: Sec. A.4.5.1</i> )	Per 2021 Tier 1 Evaluation.

### Connections

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections have strength to resist the connection force calculated in the Quick Check procedure of Section 4.4.3.7. ( <i>Tier 2: Sec. 5.7.1.1; Commentary: Sec. A.5.1.1</i> )	<b>Revised from 2021 Tier 1 Evaluation (1998 Addition checklist).</b>
	X			WOOD LEDGERS: The connection between the wall panels and the diaphragm does not induce cross-grain bending or tension in the wood ledgers. ( <i>Tier 2: Sec. 5.7.1.3; Commentary: Sec. A.5.1.2</i> )	<b>Revised from 2021 Tier 1 Evaluation. Reference 1972 drawings, sheet S2.</b>
X				TRANSFER TO SHEAR WALLS: Diaphragms are connected for transfer of seismic forces to the shear walls. ( <i>Tier 2: Sec. 5.7.2; Commentary: Sec. A.5.2.1</i> )	<b>Revised from 2021 Tier 1 Evaluation.</b>
		X		TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements are doweled for transfer of forces into the shear wall or frame elements. ( <i>Tier 2: Sec. 5.7.2; Commentary: Sec. A.5.2.</i> )	Per 2021 Tier 1 Evaluation.
X				FOUNDATION DOWELS: Wall reinforcement is doweled into the foundation. ( <i>Tier 2: Sec. 5.7.3.4; Commentary: Sec. A.5.3.5</i> )	Per 2021 Tier 1 Evaluation.



# 17-34 Limited Safety Structural Checklist for Building Types RM1 and RM2: South Side of Building

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				GIRDER–COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support. <i>(Tier 2: Sec. 5.7.4.1; Commentary: Sec. A.5.4.1)</i>	Per 2021 Tier 1 Evaluation.

## High Seismicity

*(Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)*

### Stiff Diaphragms

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length. <i>(Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.4)</i>	Per 2021 Tier 1 Evaluation.
X				OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long. <i>(Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.6)</i>	Per 2021 Tier 1 Evaluation.

### Flexible Diaphragms

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				CROSS TIES: There are continuous cross ties between diaphragm chords. <i>(Tier 2: Sec. 5.6.1.2; Commentary: Sec. A.4.1.2)</i>	Per 2021 Tier 1 Evaluation.
X				OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length. <i>(Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.4)</i>	Per 2021 Tier 1 Evaluation.
X				OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long. <i>(Tier 2: Sec. 5.6.1.3; Commentary: Sec. A.4.1.6)</i>	Per 2021 Tier 1 Evaluation.
		X		STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.1)</i>	<b>Revised from 2021 Tier 1 Evaluation. No straight-sheathed diaphragms.</b>
X				SPANS: All wood diaphragms with spans greater than 24 ft (7.3 m) consist of wood structural panels or diagonal sheathing. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.2)</i>	Per 2021 Tier 1 Evaluation.
	X			<b>DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12.2 m) and aspect ratios less than or equal to 4-to-1. <i>(Tier 2: Sec. 5.6.2; Commentary: Sec. A.4.2.3)</i></b>	<b>Revised from 2021 Tier 1 Evaluation. Roof diaphragm is unblocked and spans are greater than 40 ft. Reference 1972 drawings, sheet S2.</b>
X				OTHER DIAPHRAGMS: Diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing. <i>(Tier 2: Sec. 5.6.5; Commentary: Sec. A.4.7.1)</i>	Per 2021 Tier 1 Evaluation.

## 17-34 Limited Safety Structural Checklist for Building Types RM1 and RM2: South Side of Building

### Connections

C	NC	N/A	U	EVALUATION STATEMENT	COMMENT
X				STIFFNESS OF WALL ANCHORS: Anchors of concrete or masonry walls to wood structural elements are installed taut and are stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8 in. (3 mm) before engagement of the anchors. <i>(Tier 2: Sec. 5.7.1.2; Commentary: Sec. A.5.1.4)</i>	<b>Revised from 2021 Tier 1 Evaluation.</b>

Note: C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown.

## Appendix E – Supplemental Calculations

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The following section contains supplemental calculations used to complete the ASCE 41-17 Tier 2 deficiency-only evaluation and the pre-reroof gravity evaluation.

# Tier 2 Deficiency-Only Evaluation

Scenic Park ES - North Side, Tier 2  
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## North Side, Tier 2 Deficiency Only Analysis (the portion of the building north of the seismic joint)

ASCE 41-17 Tier 1 Non-Compliant or Unknown Items:

	Item	Checklist	Tier 1 (by others)	Tier 2 (or Revised Tier 1)	Upgrade #
North Side, not including 1966 Addition	Load Path	Basic Config <sup>1</sup>	Non-compliant	Tier 1 Revised - Compliant	
	Wall Anchorage	Basic Config <sup>1,2</sup>	Unknown (1962)	See Wall Anchorage, RM1 and RM2	
	Vertical Irregularities	Basic Config <sup>1</sup>	Non-compliant & Unknown	Tier 1 Revised - Compliant	
	Torsion	Basic Config <sup>1</sup>	Unknown	Tier 1 Revised - Compliant	
	Liquefaction	Basic Config <sup>1</sup>	Unknown	Tier 1 Revised - Compliant	
	Shear Stress Check	RM1 and RM2	Non-compliant	Tier 1 Revised - Compliant	
	Reinforcing Steel	RM1 and RM2	Non-compliant	Tier 2 - Compliant	
	Wall Anchorage	RM1 and RM2	Unknown (1962)	Tier 1 Revised - Compliant	
	Spans	RM1 and RM2	Non-compliant	Tier 1 Revised - Compliant	
	Diagonally Sheathed and Unblocked Diaphragms	RM1 and RM2	Non-compliant	Tier 2 - Noncompliant	#3
	Stiffness of Wall Anchors	RM1 and RM2	Non-compliant	Tier 1 Revised - Compliant	
	Shear Stress Check	W2	Non-compliant	Tier 2 - Non-Compliant	#1 and #2
	Spans	W2	Non-compliant	Tier 1 Revised - Compliant	
	Diagonally Sheathed and Unblocked Diaphragms	W2	Non-compliant	Tier 2 - Noncompliant	#3
1966	Overall Checklist	W2	Unknown	Tier 1/Tier 2 - Unknown	

1. Tier 1 report used both ASCE 41-17, Table 17-1 Very Low Seismicity Checklist and Table 17-2. Collapse Prevention Checklist. Per Section 17.1, only and Table 17-2 is applicable.
2. Tier 1 report checks Wall Anchorage as part of Table 17-1. Table 17-1. is not applicable. The Wall Anchorage check is an item in Table 17-34 Collapse Prevention Structural Checklist for Building Types RM1 and RM2.

### LOAD PATH (BASIC CONFIG)

This item was marked as non-compliant in the Tier 1 check due to lack of holdowns at the foundation level. Further review of the drawings shows positive anchorage between shear walls and foundation elements for the original building and subsequent additions (excluding the 1966 addition). Reference Sheets 9 and 10 of the 1962 drawings, Sheet S-2 of the 1983 drawings, and Sheets S1.1 and S2.1 of the 1999 drawings. Note, Immediate Occupancy checklists include a Holddown checklist item, but this holdowns are not a Collapse Prevention checklist item. Load path is compliant for all areas except the 1966 addition, which is unknown.

#### Tier 1 - Compliant (except for 1966 addition)

For the 1966 addition, this item is unknown.

### VERTICAL IRREGULARITIES (BASIC CONFIG)

See Load Path

#### Tier 1 - Compliant (except for 1966 addition)

For the 1966 addition, this item is unknown.

**TORSION (BASIC CONFIG)**

This item was marked as unknown in the Tier 1. The reviewer noted that the building is of irregular shape and the distance between the center of mass and the center of rigidity was unknown. A computer model of the entire structure was recommended. Upon further review of the drawings, we note that the majority of diaphragms are flexible (with the exception of the mechanical rooms) and all stages of the building (original construction and additions/alterations) have lateral load elements. Note, ASCE 7-16, Section 12.8.4.1 states that inherent torsion is only applicable to diaphragms that are not flexible. Torsion can be marked as compliant.

**Tier 1 - Compliant (except for the 1966 addition)**

For the 1966 addition, this item is unknown.

**LIQUEFACTION (BASIC CONFIG)**

This item was marked as unknown in the Tier 1 check due to lack of geotechnical information. Per the GENERALIZED GEOLOGIC MAP OF ANCHORAGE AND VICINITY, ALASKA by Schmoll and Ernest Dobrovlny, Scenic Park Elementary School is located in an area noted as "gm". "gm" is described as "Glacial and (or) marine deposits, typically in elongate hills. These features consist chiefly of diamicton, but they include some beds of fine sand and silt; thin beds of gravel and sand occur locally. May grade into deposits mapped as unit "mg". Scenic Park is located in Zone 2 - Moderately-Low Ground Failure Susceptibility per the muni.org map titled, Anchorage Bowl, Seismic. Zone 2 is defined as: Mixed coarse and fine-grained glacial deposits in lowland areas, thick deposits of channel, terrace, flood plain, and fan alluvium. May have very low susceptibility; may experience minor ground cracking, localized settlement due to consolidation, and perhaps liquefaction or lurching of localized saturated zones of fine-grained material. Based on these two references, the risk of liquefaction is determined to be low. This item is compliant.

**Tier 1 - Compliant**

**SHEAR STRESS CHECK (RM1 and RM2)**

This item was marked non-compliant for the original construction (1962) - "wall with extension" was marked as non-compliant. Review of the Tier 1 calculations shows that the trib area for "wall with extension" included area to the south of Grid 19 (1999 drawings) in the calculations; this is incorrect as there is a seismic joint at Grid 19. In addition, review of Tier 1 shows that original Tier 1 calculation did not correctly define Aw per ASCE 41-17 Section 4.4.3.3, did not include Ms = system modification factor referenced in ASCE 41-17, equation 4-8, and did not account for vertical distribution of seismic forces.

**Redo Tier 1 calc.**

Revised calculations below (to account for Ms factor, revised Aw, and vertical distribution of seismic forces).

East-West Walls

$$V_{avg}^j = V_j / (M_s A_w) \quad \text{ASCE 41-17, Eqn 4-8}$$

$$V_j = 2290.0 \quad k \text{ (story shear at level } j, \text{ ASCE 41-17 earthquake forces - Tier 1)}$$

Ms per Table 4-8 (Limited Safety = average of CP and Life Safety)

	Limited Safety	CP	Life Safety
Ms =	3.75	4.5	3

Aw = length x tequiv

length =	676.5	ft (total length of walls in direction under consideration, e/w)
tequiv =	3.7	in, per section 9/10 (1962), #5 at 48" OC, 6" block per sheet 13
Aw =	30036.6	sq in
$V_{avg}^j =$	20.3	psi
check < 70 psi,	OK	

**Tier 1 check is compliant; Tier 2 not required**

North-South Walls

$$V_{avg}^j = V_j / (M_s A_w) \quad \text{ASCE 41-17, Eqn 4-8}$$

$$V_j = 2290.0 \quad k \text{ (story shear at level } j, \text{ ASCE 41-17 earthquake forces - Tier 1)}$$

$M_s$  per Table 4-8 (Limited Safety = average of CP and Life Safety)

	Limited Safety	CP	Life Safety
$M_s =$	3.75	4.5	3

$A_w = \text{length} \times \text{tequiv}$

$$\text{length} = 841.25 \text{ ft (total length of walls in direction under consideration, n/s)}$$

$$\text{tequiv} = 2.7 \text{ in, per section 8/10 (1962), \#5 at 48" OC, 4" block}$$

$$A_w = 27256.5 \text{ sq in}$$

$$V_{avg}^j = 22.4 \text{ psi}$$

$$\text{check} < 70 \text{ psi, OK}$$

**Tier 1 check is compliant; Tier 2 not required**

**REINFORCING STEEL (RM1 and RM2)**

This item was marked non-compliant for the original construction (1962).

Tier 2 Reference: 5.5.3.1.3

An analysis shall be performed in accordance with Section 5.2.4, and the adequacy of all noncompliant shear walls shall be evaluated in accordance with Section 5.2.5.

Use Linear Static Procedure of Section 7.2.1

Consider E/W classroom walls in room with folding wall (Rm 101/103) - 6" CMU walls (E/W)

$$V = C_1 C_2 C_m S_d W \quad \text{ASCE 41-17, Eqn 7-21}$$

$$F = C_{vx} V \quad \text{eqn 7-24}$$

Story force per area = 81 psf (Story Force Per Area Calc)

Consider 6" wall at north end of classroom with folding wall

$$W \text{ trib} = 52 \text{ ft (1962, sheet 5)}$$

$$L \text{ trib} = 39.5 \text{ ft (1962, sheet 5)}$$

$$A \text{ trib} = 2054.0 \text{ sf}$$

$$F = 166,999.2 \text{ lb (Story force per area} \times \text{Area)}$$

$$F = 167.0 \text{ k}$$

Determine capacity of typical 6" wall

MSJC Chapter 3

$$V_n = V_{nm} + V_{ns}$$

$$V_n <= 6 A_{nv} \text{ sqrt } f'_m$$

Assuming  $\mu$  is minimal,

$$V_{nm} = 4 A_{nv} \text{ sqrt } f'_m$$

$$\text{tequiv} = 3.7 \text{ inches}$$

$$\text{wall length} = 27.83 \text{ ft (sheet 13)}$$

$$A_{nv} = 1235.8 \text{ sq in}$$

$$f'_m = 1500 \text{ psi (ASCE 41-17, Table 11-2b)}$$

$$V_{nm} = 191.4 \text{ k}$$

$$\text{wall } V_{ns} = 0.0 \text{ kips (neglect horiz steel)}$$

$$V_{nm} + V_{ns} = 191.4 \text{ kips}$$

$$6 A_{nv} \text{ sqrt } f'_m = 287.2 \text{ kips}$$

$$V_n = 191.4 \text{ kips}$$

V is a deformation controlled action

$$m \kappa Q_{CE} > Q_{UD} \quad \text{eqn 7-36}$$

$$m = 2.5 \quad \text{Table 11-6, take average of LS and CP}$$

$$\kappa = 0.75 \quad \text{Table 6-1, default values used}$$

$Q_{CE}$  = expected strength

$Q_{CE} = \text{factor} \times V_n$		
factor =	1.3	Table 11-1
$Q_{CE} =$	248.9	k
$m\kappa Q_{CE} =$	466.7	k
$Q_{UD} = Q_E = F =$	167.0	k

$\text{Acceptance Ratio} = Q_{UD} / m\kappa Q_{CE} =$	0.36
---	------

Consider N/S classroom walls - 4" CMU walls

$V = C_1 C_2 C_m S_a W$	ASCE 41-17, Eqn 7-21
$F = C_{vx} V$	eqn 7-24

Story force per area =	81	psf (Story Force Per Area Calc)
Consider typical 4" wall (n/s)		
W trib =	20.5	ft (1962, sheet 5)
L trib =	30.0	ft (1962, sheet 5)
A trib =	615.0	sf
F =	50,002.2	lb (Story force per area x Area)
F =	50.0	k

Determine capacity of typical 4" wall

MSJC Chapter 3		
$V_n = V_{nm} + V_{ns}$		
$V_n <= 6 A_{nv} \text{ sqrt } f'_m$		
Assuming $\mu$ is minimal,		
$V_{nm} = 4 A_{nv} \text{ sqrt } f'_m$		
tequiv =	2.7	inches (approx)
wall length =	30	ft (sheet 13)
$A_{nv} =$	972	sq in
$f'_m =$	1500	psi (ASCE 41-17, Table 11-2b)
$V_{nm} =$	150.6	k
wall $V_{ns} =$	0.0	kips (neglect horiz steel)
$V_{nm} + V_{ns} =$	150.6	kips
$6 A_{nv} \text{ sqrt } f'_m =$	225.9	kips
$V_n =$	150.6	kips

V is a deformation controlled action

$m\kappa Q_{CE} > Q_{UD}$ eqn 7-36		
m =	2.5	Table 11-6, take average of LS and CP Shear controlled
$\kappa =$	0.75	Table 6-1, default values used

$Q_{CE} = \text{expected strength}$		
$Q_{CE} = \text{factor} \times V_n$		
factor =	1.3	Table 11-1
$Q_{CE} =$	195.8	k
$m\kappa Q_{CE} =$	367.0	k
$Q_{UD} = Q_E = F =$	50.0	k

$\text{Acceptance Ratio} = Q_{UD} / m\kappa Q_{CE} =$	0.14
---	------

**Tier 2 - Compliant**



**WALL ANCHORAGE (RM1 and RM2)**

This item was marked unknown for the original construction (1962).

- 1962 detail 1/9 and 18/10 show a 1/8" x 2" strap between CMU and Glu-lam beam; however, the connection to glulam beam and CMU wall is not detailed. Revisit Tier 1 calculation.

Reference Quick Check, ASCE 41-17, Section 4.4.3.7

$$T_c = \psi S_{XS} w_p A_p$$

$\psi = 1.15$	average of Life Safety and CP (4.4.3.7)
$S_{XS} = 1.56$	ASCE 41-17 Earthquake Forces Tier 1
$w_p = 55$	psf (8" walls w/ verts at 48" OC)
$A_p = 22$	sf (.5 x 11 ft x 4 ft spacing)
$T_c = 2170.7$	lbs

Capacity of strap:

$$T_n = F_y \times l \times w \text{ (no phi factor)}$$

$F_y = 36$	ksi
$l = 0.125$	in
$w = 2$	in
$T_n = 9000$	lbs
$T_c/T_n = 0.24$	<1.0

Assume that the anchorages to CMU wall and GLB have a capacity of at least 1/2 the strap - wall anchorage check adequate.

**Tier 1 - Compliant**

- Additional check is required at exterior CMU wall at entry-way. Reference section J/S3.3, Grid 15 (1999 dwgs). No details shown for connection of GLB to exterior CMU wall, assume sim to H/S3.3: 3/4" epoxy anchor at 32" OC.

8" CMU wall, #5 at 24" OC  
b/c reinf is at 24" OC, consider epoxy anchors at 24" OC

Reference Quick Check, ASCE 41-17, Section 4.4.3.7

$$T_c = \psi S_{XS} w_p A_p$$

$\psi = 1.15$	average of Life Safety and CP (4.4.3.7)
$S_{XS} = 1.56$	ASCE 41-17 Earthquake Forces Tier 1
$w_p = 61$	psf (8" walls w/ verts at 24" OC)
$A_p = 11$	sf (.5 x 11 ft x 2 ft spacing)
$T_c = 1203.8$	lbs

Per ESR 4143, allowable shear for 3/4" epoxy anchor

allowable V = 425	lb (Table 5A)
FOS = 5	
nominal capacity = 2125	lb
Acceptance ratio = 0.57	<1.0

**Tier 1 - Compliant**

**SPANS (RM1 and RM2)**

This item was marked as non-compliant in the Tier 1 report due to the tongue and groove decking that spans greater than 24 ft. Upon further review of the 1999 documents, details show that the original tongue and groove decking has a 7/16" plywood overlay. Reference 1999 Sheet S1.1 and S2.3. Item is compliant.

**Tier 1 - Compliant**

**DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS (RM1 and RM2)**

This item was marked as non-compliant in the Tier 1 report for the 1999 addition. This Tier 1 item states that all diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft and aspect ratios less than or equal to 4-to-1. The 1999 drawings shows agreement that the 1999 roof diaphragms are unblocked (Sheet S1.1 and S2.3); high roof area above the cafeteria has spans greater than 40 ft.

Tier 2 per ASCE 41-17, 5.6.2

BSE-2E diaph force = 1888 kips (Linear Static Procedures)  
 high roof area = 11585 sf  
 diaph force/area = 163 psf  
 trib width, L = 50 ft (S2.3, 1999 drawings)  
 max diaph force,  $Q_{UD}$  = 4074 plf (diaph force per area x L / 2)

Deformation controlled action

$$m\kappa Q_{CE} > Q_{UD} \text{ eqn 7-36}$$

$m$  = 2.75 Table 12-3, take average of LS and CP  
 $\kappa$  = 0.9 Table 6-1, values from drawings

$Q_{CE}$  = expected strength

use 1.5 x yield strength where yield strength is NDS value

NDS value = 430 5/8", 10d nails, 4" at boundary and panel ends (use 6" from SPDWS Table 4.2C)

$G$  = 0.43 hem fir #2

NDS modified for  $G$  = 399.9 plf

$Q_{CE}$  = 599.85 plf (multiply by 1.5)

$m\kappa Q_{CE}$  = 1484.6 plf

Acceptance Ratio = $Q_{UD} / m\kappa Q_{CE}$ =	2.74
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**Tier 2 - Non-compliant**

**STIFFNESS OF WALL ANCHORS (RM1 and RM2)**

This item was marked as non-compliant in the Tier 1 report for the 1962 original construction and the 1999 addition. This Tier 1 items states that anchors of concrete or masonry walls to wood structural elements are installed taut and are stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8 inch before engagement of the anchors.

- 1962 detail 1/9 and 18/10 show a 1/8" x 2" strap between CMU and Glu-lam beam; however, the connection to glulam beam and CMU wall is not detailed. Typical practice would be to install with hole diameter 1/16" greater than connecting element; Tier 1 - Compliant.

**Tier 1 - Compliant**

**SHEAR STRESS CHECK (W2)**

Per the Tier 1 report, the exterior walls of the original (1962) and 1999 addition portions of the building have a shear stress greater than 1000 plf (reference Tier 1 report and ASCE 41-17, Section 4.4.3.3)

**Note: Review of Tier 1 shows that original Tier 1 calculation did not include  $M_s$  = system modification factor referenced in ASCE 41-17, equation 4-8, and did not account for vertical distribution of seismic forces.**

Revised Tier 1 calculation, including  $M_s$ , system modification factor and vertical distribution of seismic forces.

Lower level walls:

$$v_{avg}^j = V_j / (M_s A_w) \quad \text{Eqn 4-8}$$

$V_j = 2290.0 \quad k$  (story shear at level j, ASCE 41-17 earthquake forces - Tier 1)

$M_s$  per Table 4-8 (Limited Safety = average of CP and Life Safety)

	Limited Safety	CP	Life Safety
$M_s$ =	3.75	4.5	3

Aw = length  
 length = 841.25 ft (total length of walls in direction under consideration, n/s)  
 Aw = 841.25 ft  
 $v_{avg}^j = 725.9$  plf  
 OK

Upper level walls: (check n/s, e/w high roof non-compliant by inspection)

$v_{avg}^j = V_j / (M_s Aw)$  Eqn 4-8  
 $V_j = 1153.0$  k (story shear at level j, ASCE 41-17 earthquake forces - Tier 1)

Ms per Table 4-8 (Limited Safety = average of CP and Life Safety)

	Limited Safety	CP	Life Safety
Ms =	3.75	4.5	3

Aw = length  
 length = 267.25 ft (total length of walls in direction under consideration, n/s)  
 Aw = 267.25 ft  
 $v_{avg}^j = 1150.5$  psi  
 NG

**Tier 1 - Compliant (lower), non-compliant (upper)**

Tier 2 per 5.5.3.1.1 (look at both lower and upper)

Check typical lower level classroom wall (n/s)

trib area: Width = 19 ft  
 L = 30 ft  
 area = 570 sf  
 story force per area = 81 psf  
 Force = 46.3 k (story force per area x area)  
 wall length = 30.0 ft  
 $Q_{UD}$ , per ft = 1544.8 plf

SPDWS 2015, Table 4.3A

LRFD capacity = 520 plf, per SPDWS assumes minimal nailing for 1/2" plywood  
 $Q_{CE} = 1.5 \times \text{LRFD} = 780$  plf

specific gravity adjustment

assume hem fir

G = 0.43

modified for G,  $Q_{CE} = 725.4$

m = 4.15 ASCE 41-17, Table 12-3

$\kappa = 0.75$  default

$m\kappa Q_{CE} = 2257.8$  plf

$Q_{UD} / m\kappa Q_{CE} = 0.68$  OK

Check additional walls (spreadsheet)

**Tier 2 - Non-Compliant (see spreadsheet)**

**SPANS (W2)**

This item was marked as non-compliant in the Tier 1 report due to the tongue and groove decking that spans greater than 24 ft. Upon further review of the 1999 documents, details show that the original tongue and groove decking has a 7/16" plywood overlay. Reference 1999 Sheet S1.1 and S2.3. Item is compliant.

**Compliant**

**DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS (W2)**

See RM1/RM2 Tier 2

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**Tier 2 - Wood Shear Walls**

high roof story force/area = 163 psf  
low roof story force/area = 81 psf

Wall Type	t (in)	G	SPDWS value (plf)	Q <sub>CE</sub> (plf)	κ	m	mκQ <sub>CE</sub>	
1962	0.5	0.43	520	725.4	0.75	4.15	2257.8	1/2" plywood, nailing unknown
1983	0.5	0.43	920	1283.4	0.9	4.15	4793.5	1/2" plywood, 10d, 4" spacing (1983, S-2)
1999-1	0.625	0.43	1020	1422.9	0.9	4.15	5314.5	5/8" plywood, 10d, 4" spacing (1999, S1.1)

**high roof**

Wall	Type	direction	mκQ <sub>CE</sub> (plf)	Trib Length (ft)	Trib Width (ft)	Area (sf)	Wall Length (ft)	Force on Wall (k)	Q <sub>UD</sub> =Force/Length (plf)	Acceptance Ratio
a	1999-1	e/w	5314.5	18.5	25	462.5	6.5	75	11595.9	2.2
b	1999-1	e/w	5314.5	18.5	25	462.5	6.5	75	11595.9	2.2
c	1999-1	n/s	5314.5	45	13.5	607.5	6	99	16500.6	3.1
d	1999-1	n/s	5314.5	55	13.5	742.5	9	121	13445.0	2.5
e	1999-1	e/w	5314.5	40	45	1800	16.5	293	17778.5	3.3
f	1999-1	n/s	5314.5	100	17	1700	30	277	9234.9	1.7
g	1999-1	e/w	5314.5	40	26	1040	16.5	169	10272.0	1.9
h	1999-1	n/s	5314.5	100	7.5	750	16.5	122	7407.7	1.4
i	1999-1	e/w	5314.5	40	6	240	7	39	5587.5	1.1
j	1983	e/w	4793.5	44	62.5	2750	44	448	10185.6	2.1
k	1983	n/s	4793.5	16.5	21.5	354.75	7.75	58	7459.8	1.6
m	1983	n/s	4793.5	16.5	21.5	354.75	8.25	58	7007.7	1.5

wall l = 174.5  
h = 22.5  
area = 3926.25 sf

consider wall to the north adding to length

**low roof (consider shear walls along grid J)**

Wall	Type	direction	mκQ <sub>CE</sub> (plf)	Trib Length (ft)	Trib Width (ft)	Area (sf)	Wall Length (ft)	Force on Wall (low roof) (k)	Force on Wall (high roof) (k)	Total Force on Wall (k)	Q <sub>UD</sub> =Force/Length (plf)	Acceptance Ratio
cc/dd	1962	n/s	2257.8	102	15	1530	60	124	220	344	5740.1	2.5

\*\*consider cc/dd as sharing load due to drag strut along grid line (steel beams along the grid line transfer lateral load)

wall l = 60  
h = 12  
720  
total A = 4646.25

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**North Side, Story Weights**

Story	Area	Seismic Dead Load	Snow Load	Ext Wall Dead Load	Building Perimeter	Story Height	Story Weight
High Roof	11585 sq ft	25 psf	40 psf	10 psf	286 ft	12.5 ft	414.48 k
Low Roof	22877 sq ft	31 psf	40 psf	10 psf	565 ft	10 ft	920.45 k
							1334.9 k

\*consider 6 psf load plus 25 psf for low roof areas to account for CMU walls

Consider mezzanines as separate elements.

**For use in shear wall calculations (Story Force per Area)**

**TIER 1 CALCULATIONS**

	Area (sf)	BSE 2E Story Shear (k)	BSE 2E Story Force (k)	BSE-2E Load (psf)	
High Roof	11585	1153	1153	100	(story force from ASCE 41-17 Tier 1 earthquake forces)
Low Roof	22877	2290	1138	50	(story force from ASCE 41-17 Tier 1 earthquake forces)

**TIER 2 CALCULATIONS**

	Area (sf)	BSE 2E Story Force (k)	BSE-2E Load (psf)	
High Roof	11585	1888	163	(story force from ELF calc / area)
Low Roof	22877	1860	81	(story force from ELF calc / area)

<b>Reid Middleton</b> 4300 B Street, Suite 302 Anchorage, AK 99503 Ph: 907 562-3439 Fax: 907 561-5319	Client <u>ASD</u>	Sheet <u>    </u> of <u>    </u>
	Project <u>Scenic Park ES - north side of building</u>	Design by <u>EH</u>
	<u>Tier 1 Evaluation BSE-2E</u>	Date <u>03/16/23</u>
	Project No. <u>402022.020</u>	Checked by <u>    </u> Date <u>    </u>

**ASCE 41 -17 EARTHQUAKE FORCES - Tier 1**

**I.D.:** BSE-2E

INPUT:		Ref:
Mapped short period accel. (T=0.2 s):	$S_s =$ 1.303 g	
Mapped acceleration @ T=1 s:	$S_1 =$ 0.599 g	
Spectral Response Parameter (from Design Maps Summary)	$S_{xs} =$ 1.56 g	ASCE 41-17 Section 2.4.16 and ASCE 7-16 Section 11.4.3
Spectral Response Parameter (from Design Maps Summary)	$S_{x1} =$ 1.019 g	ASCE 41-17 Section 2.4.16 and ASCE 7-16 Section 11.4.4
Site Class:	D default	
Building Type:	<b>W2</b> Wood Frame, Commercial & Industrial	Conservative (both masonry and wood lateral systems)
Life Safety or IO	<b>LS</b>	PLACEHOLDER, USE LIMITED SAFETY
Benchmark Year (FIO):	2000 IBC	
Number of Stories:	N = 2	Tbl 3-2
Building height:	$h_n =$ 22.5 ft	

PSEUDO FORCE CALCULATION:		Ref:
Modification Factor:	C = 1.1	Tbl 4-7
Period coefficient:	$C_t =$ 0.020	4.4.2.3
Period exponent:	$\beta =$ 0.75	4.4.2.3
Approximate fundamental period:	T = $C_t \cdot h_n^\beta =$ 0.207 s	(4-4)
Spectral Acceleration:	$S_a =$ $S_{x1}/T < S_{xs} =$ 1.560 g	(4-3)

SEISMIC VERTICAL LOAD DISTRIBUTION:		Ref:																																				
$F_x = \frac{w_x h_x^k}{\sum_{i=1}^n w_i h_i^k} V$																																						
Snow Load 40 psf																																						
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Level	Area	$h_x$	$W_x$ kips	$w_x \cdot h_x^k$	$\frac{w_x \cdot h_x^k}{\sum w_x \cdot h_x^k}$	$V$	$E_v$	$V_i$																														
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Client: ASD  
 Project: Scenic Park Tier 2  
           North Section of Building  
           0  
 Project No.: 402023.02

Sheet: \_\_\_\_\_  
 Design By: EH  
 Date: 45001  
 Checked By: 0  
 Date: 0

**Linear Static Procedure (LSP, ASCE 41-17 Section 7.4.1)**

Structural Properties	Code Ref.
Building height: $h_n = 22.5$ ft	ASCE 41 Sec 7.2.3.6 ASCE 41 Sec 7.4.1.2.2 ASCE 41 Sec 7.4.1.2.2 ASCE 41 Sec 7.4.1.2.2 ASCE 41 Sec 7.4.1.2.2
Effective damping ratio: $\beta = 5.00\%$	
Lateral system: Other	
Period coefficient: $C_t = 0.020$	
Period exponent: $\beta = 0.75$	
Empirical period: $T = C_t h_n^\beta = 0.21$ sec	

Response Spectra Characteristic Periods		Code Ref.
BSE-2E spectra: $T_{S2} = S_{X12E}/S_{XS2E} = 0.65$ sec	ASCE 41 Sec. 2.4.1.7.1	
$T_{O2} = 0.2*(S_{X12E}/S_{XS2E}) = 0.13$ sec	ASCE 41 Sec. 2.4.1.7.1	
BSE-1E spectra: $T_{S1} = S_{X11E}/S_{XS1E} = 0.69$ sec	ASCE 41 Sec. 2.4.1.7.1	
$T_{O1} = 0.2*(S_{X11E}/S_{XS1E}) = 0.14$ sec	ASCE 41 Sec. 2.4.1.7.1	

Pseudo Seismic Force	Code Ref.
Building seismic weight: $W = 1335$ kip	ASCE 41 Sec 7.4.1.3.1
Number of stories: $n = 2$	
$m_{max}$ @ BSE-2E: $m_{max2} = 6$ (pivotal m values: 2.0 & 6.0)	ASCE 41 Table 7-3
$m_{max}$ @ BSE-1E: $m_{max1} = 6$ (pivotal m values: 2.0 & 6.0)	ASCE 41 Table 7-3
Damping coefficient: $B_1 = 4/(5.6-\ln(100\beta)) = 1.00$	ASCE 41 Eq 2-3
BSE-2E mod. factors product: $(C_1 C_2)_{2E} = 1.80$	ASCE 41 Table 7-3
BSE-1E mod. factors product: $(C_1 C_2)_{1E} = 1.80$	ASCE 41 Table 7-3
Effective mass factor: $C_m = 1.00$	ASCE 41 Table 7-4
BSE-2E spectral acceleration: $S_{a2} = 1.56$ g	ASCE 41 Sec 2.4.1.7
BSE-1E spectral acceleration: $S_{a1} = 0.94$ g	ASCE 41 Sec 2.4.1.7
<b>BSE-2E pseudo lateral load:</b> $V_{2E} = (C_1 C_2)_{2E} C_m S_{a2} W = 3748$ kip	ASCE 41 Eq 7-21
<b>BSE-1E pseudo lateral load:</b> $V_{1E} = (C_1 C_2)_{1E} C_m S_{a1} W = 2261$ kip	ASCE 41 Eq 7-21

**LSP Vertical Distribution of Seismic Forces (Sec. 7.4.1.3.2)**

LSP Vertical Distribution of Seismic Forces (Sec. 7.4.1.3.2)	Code Ref.
Story force: $F_x = w_x h_x^k / (\sum w_i h_i^k) * V =$ See Table Below	ASCE 41 Eq. 7-24 & 25
Story height exponent factor: $k = 1.00$	ASCE 41 Sec 7.4.1.3.2
Diaphragm force: $F_{px} = (\sum F_i / \sum w_i) * w_{px}$ See Table Below	ASCE 41 Eq. 7-26

Story Name	Story Weight $w_x$ & $w_{px}$ (kip)	Story Height $h_x$ (ft)	$w_x * h_x^k$ (kip*ft)	BSE-2E Story Force $F_{x2}$ (kip)	BSE-1E Story Force $F_{x1}$ (kip)	BSE-2E Story Shear $V_{x2}$ (kip)	BSE-1E Story Shear $V_{x1}$ (kip)	Total Weight Above $W_x$ (kip)	BSE-2E Diaph. Force $F_{px2}$ (kip)	BSE-1E Diaph. Force $F_{px1}$ (kip)
HighRoof	415	22.5	9338	1888	1139	1888	1139	415	1888	1139
LowRoof	920	10	9200	1860	1122	3748	2261	1335	2583	1558
SUM =	1335		18538							

Scenic Park ES - South Side, Tier 2  
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**South Side, Tier 2 Deficiency Only Analysis**  
**(the portion of the building south of the seismic joint)**

ASCE 41-17 Tier 1 Non-Compliant or Unknown Items:

	Item	Checklist	Tier 1 (by others)	Tier 2 (or Revised Tier 1)	Upgrade #
SOUTH SIDE	Load Path	Basic Config <sup>1</sup>	Non-compliant	Tier 1 Revised - Compliant	
	Wall Anchorage	Basic Config <sup>1,2</sup>	Non-compliant (1999)	See Wall Anchorage, RM1 and RM2	
	Vertical Irregularities	Basic Config <sup>1</sup>	Non-compliant	Tier 1 Revised - Compliant	
	Torsion	Basic Config <sup>1</sup>	Unknown	Tier 1 Revised - Compliant	
	Liquefaction	Basic Config <sup>1</sup>	Unknown	Tier 1 Revised - Compliant	
	Wall Anchorage	RM1 and RM2	Non-compliant (1999)	Tier 1 Revised - Compliant	
	Wood Ledgers	RM1 and RM2	Compliant <sup>3</sup>	Tier 1/2 - Non-compliant	#6
	Transfer to Shear Walls	RM1 and RM2	Non-compliant	Tier 1 Revised - Compliant	
	Diagonally Sheathed and Unblocked Diaphragms	RM1 and RM2	N/A	Tier 1 Revised and Tier 2 - Non-Compliant	#5
	Stiffness of Wall Anchors	RM1 and RM2	Non-compliant	Tier 1 Revised - Compliant	
	Shear Stress Check	W2	Checklist not performed	Tier 2 - Non-Compliant	#4
	Diagonally Sheathed and Unblocked Diaphragms	W2	Checklist not performed	Tier 1 Revised and Tier 2 - Non-Compliant	#5

1. Tier 1 report used both ASCE 41-17, Table 17-1 Very Low Seismicity Checklist and Table 17-2. Collapse Prevention Checklist. Per Section 17.1, only and Table 17-2 is applicable.
2. Tier 1 report checks Wall Anchorage as part of Table 17-1. Table 17-1. is not applicable. The Wall Anchorage check is an item in Table 17-34 Collapse Prevention Structural Checklist for Building Types RM1 and RM2.
3. Tier 1 - Wood Ledgers is marked as Compliant in Tier 1 report; however, (2) details in the 1972 Addition drawings show cross-grain bending. These deficiencies were not addressed in subsequent additions/remodels.

**LOAD PATH (BASIC CONFIG)**

This item was marked as non-compliant in the Tier 1 check due to lack of holdowns at the foundation level. Further review of the drawings shows positive anchorage between shear walls and foundation elements for the the 1972 addition and the 1999 addition. Reference Sheet 6 and S1 of the 1972 drawings and Sheets S1.1 and S2.1 of the 1999 drawings. Note, Immediate Occupancy checklists include a Holddown checklist item, but holdowns are not a Collapse Prevention checklist item. Load path is compliant.

**Tier 1 - Compliant**

**VERTICAL IRREGULARITIES (BASIC CONFIG)**

See Load Path

**Tier 1 - Compliant**

**TORSION (BASIC CONFIG)**

This item was marked as unknown in the Tier 1. The reviewer noted that the building is of irregular shape and the distance between the center of mass and the center of rigidity was unknown. A computer model of the entire structure was recommended. Upon further review of the drawings, we note that the majority of diaphragms are flexible (with the exception of the mechanical room) and all stages of the building (original construction and additions/alterations) have lateral load elements. Note, ASCE 7-16, Section 12.8.4.1 states that inherent torsion is only applicable to diaphragms that are not flexible. Torsion can be marked as compliant.

**Tier 1 - Compliant**

**LIQUEFACTION (BASIC CONFIG)**

This item was marked as non-compliant in the Tier 1 check due to lack of geotechnical information. Per the GENERALIZED GEOLOGIC MAP OF ANCHORAGE AND VICINITY, ALASKA by Schmoll and Ernest Dobrovlny, Scenic Park Elementary School is located in an area noted as "gm". "gm" is described as "Glacial and (or) marine deposits, typically in elongate hills. These features consist chiefly of diamicton, but they include some beds of fine sand and silt; thin beds of gravel and sand occur locally. May grade into deposits mapped as unit "mg". Scenic Park is located in Zone 2 - Moderately-Low Ground Failure Susceptibility per the muni.org map titled, Anchorage Bowl, Seismic. Zone 2 is defined as: Mixed coarse and fine-grained glacial deposits in lowland areas, thick deposits of channel, terrace, flood plain, and fan alluvium. May have very low susceptibility; may experience minor ground cracking, localized settlement due to consolidation, and perhaps liquefaction or lurching of localized saturated zones of fine-grained material. Based on these two references, the risk of liquefaction is determined to be low. This item is compliant.

**Tier 1 - Compliant**

**WALL ANCHORAGE (RM1 and RM2)**

This item was marked as noncompliant for the 1999 renewal/upgrades.

- 1999 renewal/upgrades, Tier 1 check per detail A/S3.5 (LTT20 strap at 4'-0" OC)

Tier 1 calculations used ASD Tension Load rather than nominal capacity when determining the capacity of the Simpson LTT20 strap.

Revise Tier 1 Calculation

Nominal capacity of Simpson LTT20 = 4625 lb (Simpson catalog)

Reference Quick Check, ASCE 41-17, Section 4.4.3.7

$T_c = \psi S_{XS} w_p A_p$		
$\psi =$	1.15	average of Life Safety and CP (4.4.3.7)
$S_{XS} =$	1.56	ASCE 41-17 Earthquake Forces Tier 1
$w_p =$	61	psf (8" walls w/ verts at 24" OC)
$A_p =$	24	sf (.5 x 12 ft x 4 ft spacing)
$T_c =$	2626.4	lbs

ratio  $T_c / \text{Capacity} = 0.57 < 1.0$

**Tier 1 - Compliant**

**WOOD LEDGERS (RM1 and RM2)**

Tier 1 - Wood Ledgers is marked as Compliant in Tier 1 report; however, (2) details in the 1972 Addition drawings show cross-grain bending. These deficiencies were not addressed in subsequent additions/remodels.

Reference details 8 and 12/1972 drawings and Sheets S3.6 and S3.7 of 1999 drawings

**Non-Compliant**

**TRANSFER TO SHEAR WALLS (RM1 and RM2)**

This item was marked non-compliant for the 1999 renewal/upgrades, referencing detail A/S3.5. Upon further review of this detail and the Wood Diaphragm Nailing Schedule on Sheet S1.1, it is noted that there is boundary nailing of the diaphragm and a horizontal anchor into the CMU shear wall (A/S3.5). This checklist item is compliant.

**Tier 1 - Compliant**

**DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS (RM1 and RM2)**

This item was marked as N/A for the 1972 addition; further review of 1972 Sheet S2 does not indicate that the roof diaphragm is blocked and the diaphragm has spans greater than 40 ft.

**Tier 1 - Non-Compliant**

Tier 2 per ASCE 41-17, 5.6.2

BSE-2E diaph force = 1811 kips (Linear Static Procedures)  
 roof area = 18741 sf  
 diaph force/area = 97 psf  
 trib width, L = 128 ft (S2.3, 1999 drawings)  
 max diaph force,  $Q_{UD}$  = 6185 plf (diaph force per area x L / 2)

Deformation controlled action

$$m\kappa Q_{CE} > Q_{UD} \text{ eqn 7-36}$$

m = 2.75 Table 12-3, take average of LS and CP  
 $\kappa$  = 0.9 Table 6-1, values from drawings

$Q_{CE}$  = expected strength

use 1.5 x yield strength where yield strength is NDS value

ESR 1539, Table 7 Allowable Shear (note footnote 10) = 115 2-4-1 plywood, stapled w/ 1", 16 GA @ 12" OC

note: Table 7 max spacing = 6"

G = 0.43 hem fir #2  
 modify for G per footnote 4 = 94.3 plf  
 $Q_{CE}$  = 141.45 plf (multiply by 1.5)  
 $m\kappa Q_{CE}$  = 350.1 plf

Acceptance Ratio = $Q_{UD} / m\kappa Q_{CE}$ = 17.7
---

**Tier 2 - Non-compliant**

**STIFFNESS OF WALL ANCHORS (RM1 and RM2)**

Anchors of concrete or masonry walls to wood structural elements are installed taut and are stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8 in before engagement of the anchors.

- 1999 renewal/upgrades, Tier 1 check per details A/S3.5 (LTT20 strap at 4'-0" OC); NON-COMPLIANT

Deflection at ASD load = 0.125 in (Simpson catalog)

This deflection includes fastener slip, holdown deformation, and anchor rod elongation.

**Tier 1 - Compliant**

**SHEAR STRESS CHECK (W2)**

Tier 1 report by others did not consider the wood shear wall checklist; only a masonry checklist was considered.

Tier 1:

$$v_{avg}^j = V_j / (M_s A_w) \text{ Eqn 4-8}$$

$V_j = 1106.0$  k (story shear at level j, ASCE 41-17 earthquake forces - Tier 1)

$M_s$  per Table 4-8 (Limited Safety = average of CP and Life Safety)

	Limited Safety	CP	Life Safety
$M_s =$	3.75	4.5	3

$A_w$  = length

length = 325.67 ft (total length of walls in direction under consideration, n/s)

$A_w = 325.67$  ft

$v_{avg}^j = 905.6$  plf

check  $v_{avg}^j < 1000$  plf OK

**Tier 1 - Compliant**

Due to plan distribution of wood walls, consider Tier 2 analysis for wood walls. See spreadsheet.

**Tier 2 - Non-compliant**

**DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS (W2)**

See RM1/RM2 Tier 2

Scenic Park ES - South Side, Tier 2  
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**Tier 2 - Wood Shear Walls**

Consider a Tier 2 analysis of the wood shear walls based on distribution of walls and diaphragm span

story force/area = 97 psf

Wall Type	t (in)	G	SPDWS value (plf)	Q <sub>CE</sub> (plf)	κ	m	mκQ <sub>CE</sub>
1972	0.625	0.43	680	948.6	0.75	4.15	2952.5

5/8" plywood, nailing unknown

**high roof**

Wall	Type	mκQ <sub>CE</sub> (plf)	Trib Length (ft)	Trib Width (ft)	Area (sf)	Wall Length (ft)	Force on Wall (k)	Q <sub>UD</sub> = Force/Length (plf)	Acceptance Ratio
a	1972	2952.5	91.16	60	5469.6	42	529	12584.4	4.3

wall a = walls along exterior grid A

Scenic Park ES - South Side, Tier 2  
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**North Side, Story Weights**

Story	Area	Seismic Dead Load	Snow Load	Ext Wall Dead Load	Building Perimeter	Story Height	Story Weight
Main	18741 sq ft	25 psf	40 psf	10 psf	434 ft	12 ft	644.49 k
							644.49 k

**For use in shear wall calculations (Story Force per Area)**

**TIER 1 CALCULATIONS**

	Area (sf)	BSE 2E Story Shear (k)	BSE 2E Story Force (k)	BSE-2E Load (psf)	
Main	18741	1106	1106	59	(story force from ASCE 41-17 Tier 1 earthquake forces)

**TIER 2 CALCULATIONS**

	Area (sf)	BSE 2E Story Force (k)	BSE-2E Load (psf)	
Main	18741	1811	97	(story force from ELF calc / area)

<b>ReidMiddleton</b> 4300 13 Street, Suite 302 Anchorage, AK 99503 Ph: 907 562-3439 Fax: 907 561-5319	Client <u>ASD</u>	Sheet _____ of _____
	Project <u>Scenic Park ES - SOUTH side of building</u>	Design by <u>EH</u>
	<u>Tier 1 Evaluation BSE-2E</u>	Date <u>03/16/23</u>
	Project No. <u>402022.020</u>	Checked by _____ Date _____

**ASCE 41 -17 EARTHQUAKE FORCES - Tier 1**

**I.D.:** BSE-2E

INPUT:	Ref:
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Mapped acceleration @ T=1 s: $S_1 =$ 0.599 g	
Spectral Response Parameter (from Design Maps Summary) $S_{xs} =$ 1.56 g	ASCE 41-17 Section 2.4.16 and ASCE 7-16 Section 11.4.3
Spectral Response Parameter (from Design Maps Summary) $S_{x1} =$ 1.019 g	ASCE 41-17 Section 2.4.16 and ASCE 7-16 Section 11.4.4
Site Class: D default	
Building Type: <b>W2</b> Wood Frame, Commercial & Industrial	
Life Safety or IO: <b>LS</b> PLACEHOLDER, USE LIMITED SAFETY	
Benchmark Year (FIO): 2000 IBC	Tbl 3-2
Number of Stories: N = 2	
Building height: $h_n =$ 22.5 ft	

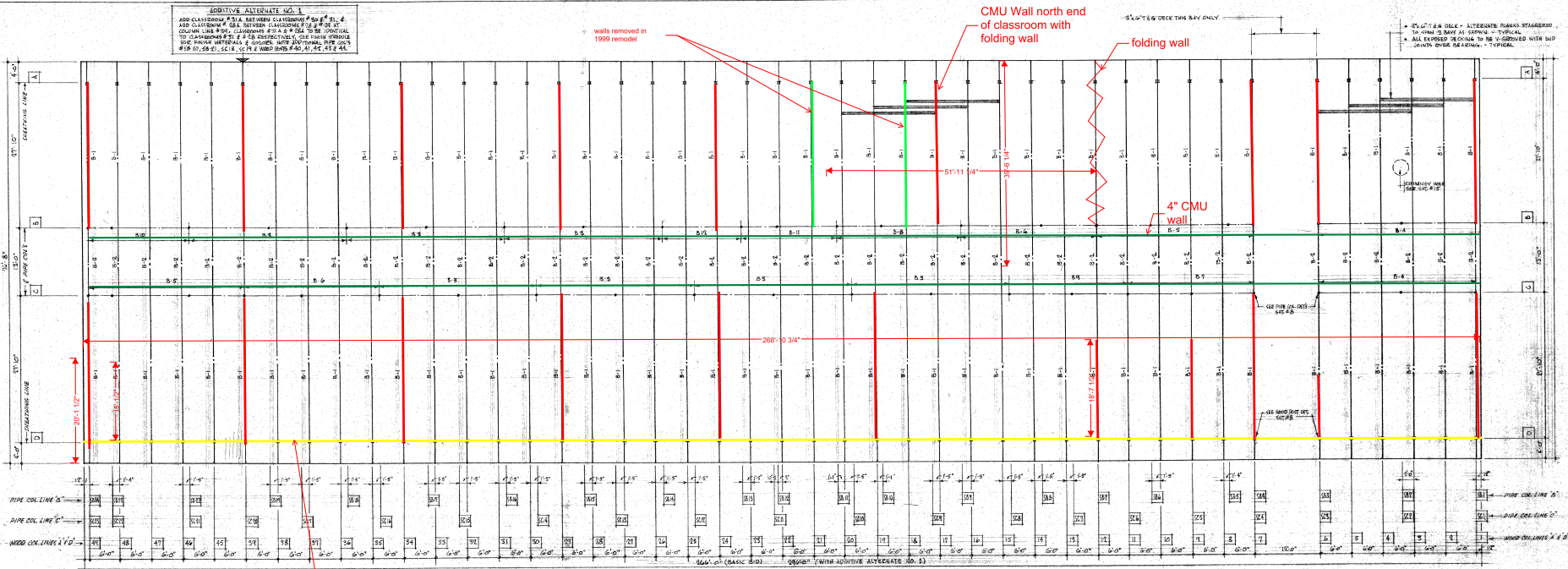
PSEUDO FORCE CALCULATION:	Ref:
Modification Factor: C = 1.1	Tbl 4-7
Period coefficient: $C_t =$ 0.020	4.4.2.3
Period exponent: $\beta =$ 0.75	4.4.2.3
Approximate fundamental period: T = $C_t \cdot h_n^\beta =$ 0.207 s	(4-4)
Spectral Acceleration: $S_a =$ $S_{x1}/T < S_{xs} =$ 1.560 g	(4-3)

SEISMIC VERTICAL LOAD DISTRIBUTION:	Ref:																											
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Level	Area	$h_x$	$w_x$ kips	$w_x \cdot h_x^k$	$\frac{w_x \cdot h_x^k}{\sum w_x \cdot h_x^k}$	V	$E_v$	V <sub>i</sub>																				
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total seismic mass				644	7,734	100%	<b>Force, V = 1106 k</b>	<b>100%</b>																				





EH: 3/3/23

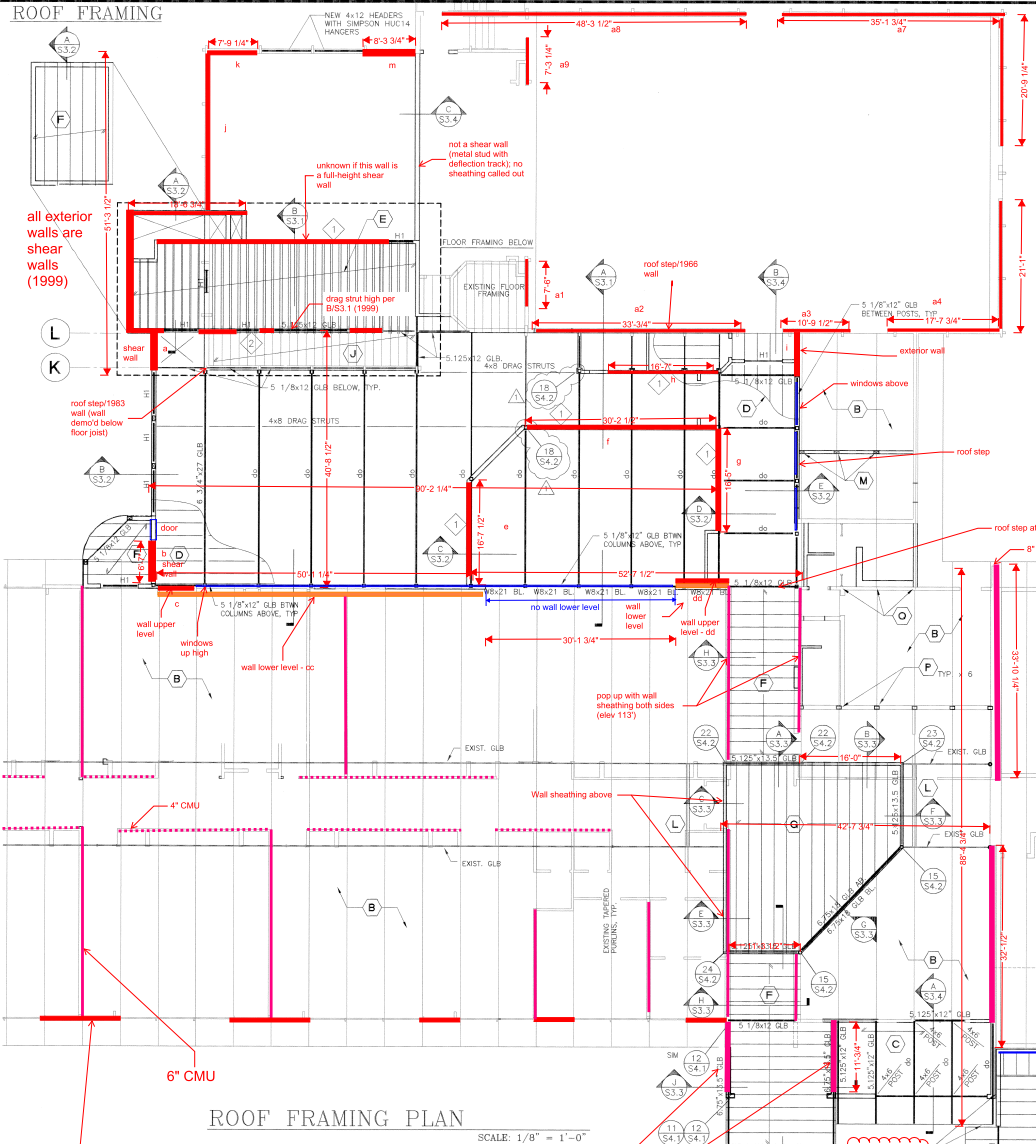


Exterior wood-sheathed wall

Length of 1962 CMU walls (e/w):  
 $17 \times 27 \text{ ft} + 2 \times 18.5 \text{ ft} + 12 \text{ ft} = 508 \text{ ft}$

ROOF FRAMING PLAN

DATE 14 JULY 1982	ROOF FRAMING PLAN	DRAWN
	SCENIC PARK ELEMENTARY SCHOOL	CHECKED
	ANCHORAGE INDEPENDENT SCHOOL DISTRICT	APPROVED
	ANCHORAGE, ALASKA	SHEET NO. <b>5</b> of 18
M. ENTIRE & PENDERGRAST ARCHITECTS 834 EIGHTH AVENUE ANCHORAGE, ALASKA		

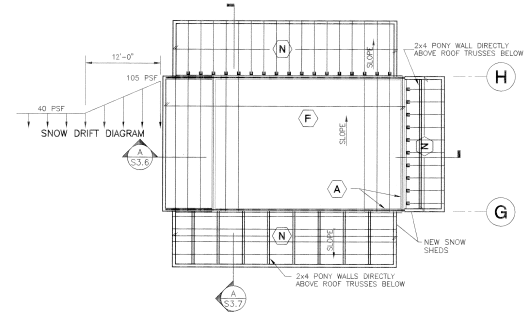


ROOF FRAMING PLAN  
SCALE: 1/8" = 1'-0"

KEYNOTES

- A 2x8 STUDS @ 1'-4" OC. ON EXISTING CMU WALLS
- B SHEATHING OVERLAY ON EXISTING 2" WOOD DECKING THROUGHOUT NORTH CLASSROOM WING. SEE DIAPHRAGM SCHEDULE FOR NAILING.
- C 2" TAG WOOD DECKING ON GLB'S
- D ROOF SHEATHING OVER 2x8 JOISTS @ 2'-0" OC. DBL JOISTS WITHIN 10' OF SWM WALLS FOR DIRT LOADS. SHOWN WITH 2x8 JOISTS @ 1'-4" OC. MATCH EXISTING FLOOR ELEVATION.
- E ROOF SHEATHING ON 14" LG JOISTS @ 2'-0" OC.
- F ROOF SHEATHING ON 2x10 LG JOISTS @ 2'-0" OC.
- G WOOD FRAMED BEARING WALL FOR EXISTING ROOF TRUSSES
- H EXISTING 2x10 FLOOR JOIST TO REMAIN
- K CONTRACTOR TO MODIFY AND STRENGTHEN EXISTING ROOF TRUSSES THIS AREA FOR SNOW DRIFTING AND TO INCORPORATE NEW BEARING POINT AT NEW WALL. THIS JOIST MOMENTUM WILL DESIGN THE MODIFICATION AND SUPPLY MATERIALS. REPAIRS WILL EFFECT 3-ROOF TRUSSES. THE DESIGN SNOW DRIFT LOAD IS SHOWN IN THE DIAGRAM ABOVE.
- L REINFORCE EXISTING S12x8 GLB WITH 1 3/4"x4" LV. EACH SIDE. W/ (2) 3/4"x9 BOLTS @ 2'-0" O.C.
- M NEW WOOD POST UNDER EXISTING GLB
- N SHEATHING OVER 2x6 OR 2x10 RAFTERS @ 2'-0" O.C.
- P 3/4" BELOW EXISTING GLB TO PROVIDE BEARING FOR GLB TO EXISTING CMU WALL.
- O NEW STEEL HANGER TO MASONRY WALL.

- NOTES:
- SEE S1.1 FOR SHEARWALL, HEADER, AND DIAPHRAGM SCHEDULES.
  - SEE FOUNDATION PLAN FOR COLUMN SIZES.
- I - SHEARWALLS, SEE S1.1  
 H - HEADERS, SEE SCHEDULE ON S1.1



FAN ROOM ROOF #2 FRAMING PLAN  
SCALE: 1/8" = 1'-0"



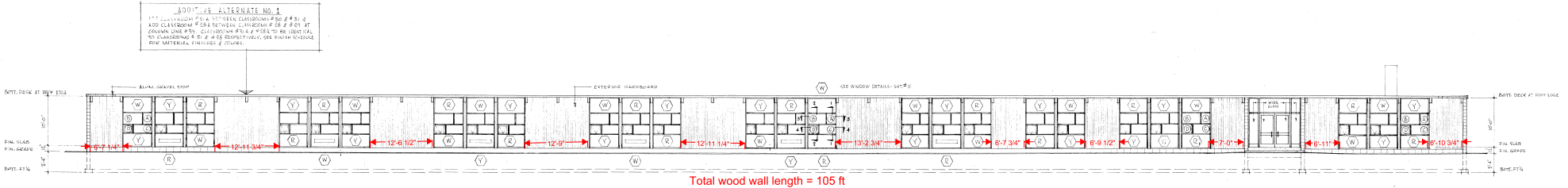
kumlin associates, inc.  
architects & planners  
500 E Street, Suite 200  
Anchorage, Alaska 99501  
907.570.6633  
Partridge, Nottingham & Drain, Inc.  
Professional Engineers  
1001 West 14th Ave.

SCENIC PARK ELEMENTARY SCHOOL  
RENEWAL AND UPGRADES  
ANCHORAGE SCHOOL DISTRICT

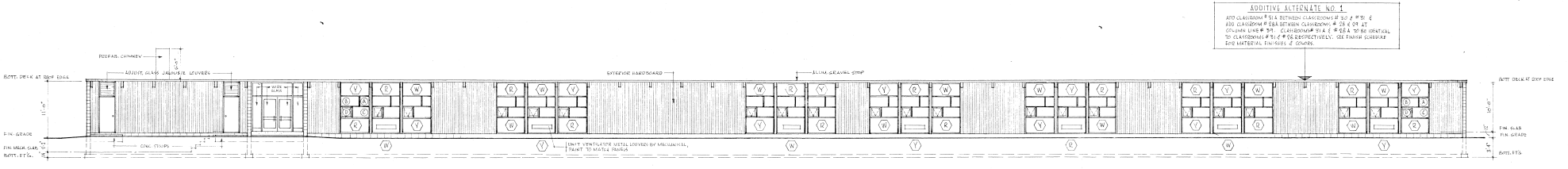
no.	date	revision
1	3-15-19	ADDENDUM REVISION

drawn by: WAT  
checked by: CK  
date: 11-21-19  
job no.: 19740  
dwg. title: PARTIAL ROOF PLAN NEW FRAMING

sheet no.  
**S2.3**

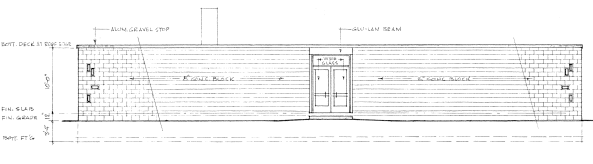


WEST ELEVATION  
SCALE 1/8" = 1'-0"

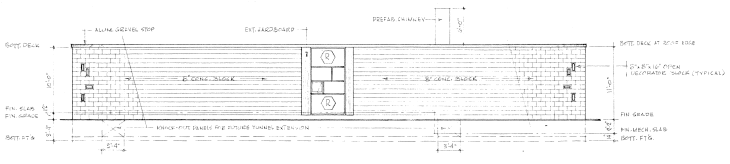


EAST ELEVATION  
SCALE 1/8" = 1'-0"

WINDOW SCHEDULE					
MARK	GLASS SIZE	GLASS TYPE	INSTALLATION	REMARKS	
(A)	30" x 30"	INUL - DKA WINDOW	FIXED	SEE DETAIL CUT # II	
(B)	45 1/2" x 65 1/2"	" - " - " - " - "	" - " - " - " - "	" - " - " - " - "	
(C)	36" x 24"	" - " - " - " - "	" - " - " - " - "	" - " - " - " - "	
(D)	22" x 18"	" - D.S.A. GLASS	KOPPER VENT	SEE DETAIL CUT # II AND DRUITE GLASS.	



NORTH ELEVATION  
SCALE 1/8" = 1'-0"

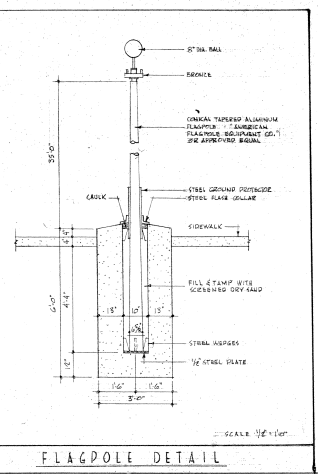
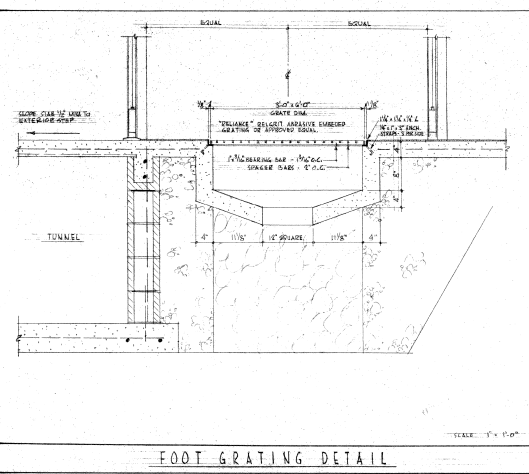
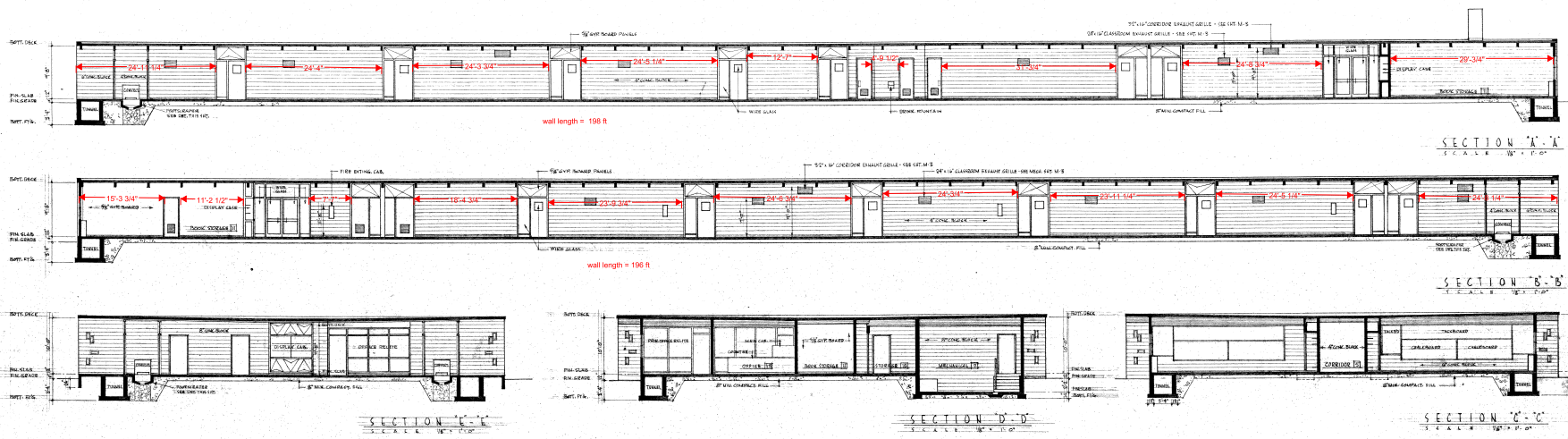


SOUTH ELEVATION  
SCALE 1/8" = 1'-0"

PANEL COLORS - (SEE EXTERIOR COLOR SCHEDULE - CH 7.4)  
 (W) - 22018  
 (Y) - 25901  
 (B) - 04501

DATE 04 JULY 1980	EXTERIOR ELEVATIONS	DRAWN
 M. ENTIRE & PENDERGRAST ARCHITECTS 634 EIGHTH AVENUE ANCHORAGE, ALASKA	SCENIC PARK ELEMENTARY SCHOOL	CHECKED
	ANCHORAGE INDEPENDENT SCHOOL DISTRICT	APPROVED
	ANCHORAGE, ALASKA	SHEET NO. <b>65</b> OF 18





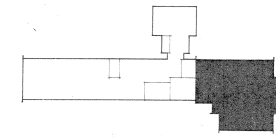
DATE 24 JULY 1992	BUILDING CROSS SECTIONS	DRAWN
	SCENIC PARK ELEMENTARY SCHOOL	CHECKED
	ANCHORAGE INDEPENDENT SCHOOL DISTRICT	APPROVED
	ANCHORAGE ALASKA	SHEET NO.
M'ENTIRE & PENDERGRAST ARCHITECTS		7 of 18
634 EIGHTH AVENUE ANCHORAGE, ALASKA		



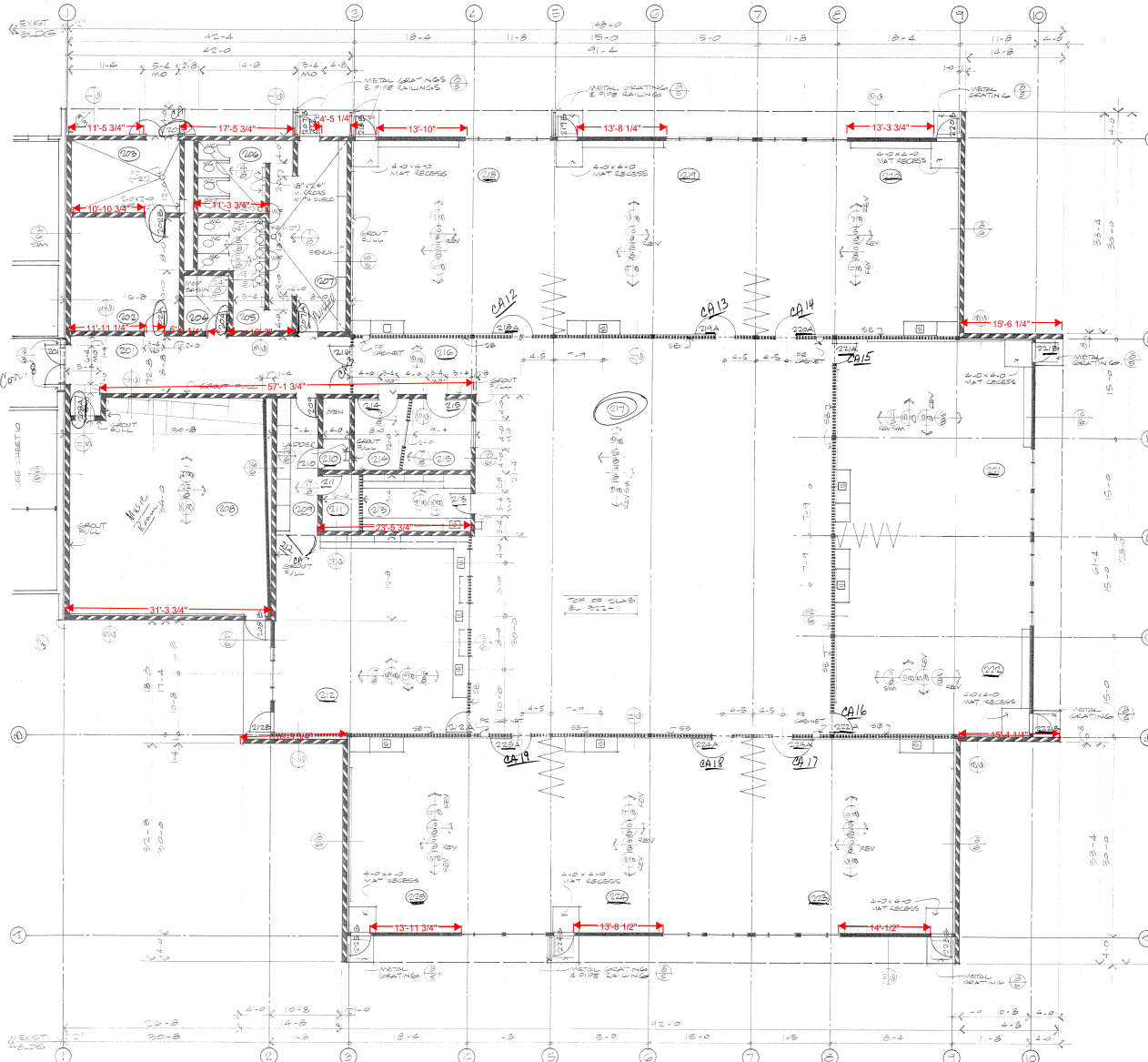
**EARL FULLINGIM a.i.a.**  
architect  
ANCHORAGE, ALASKA

**ADDITIONS & ALTERATIONS  
SCENIC PARK  
ELEMENTARY SCHOOL**  
Greater Anchorage Area Borough  
School District

FILE NO. 2071 SHEET NO. **2**  
DRAWN BY [Signature] OF 10  
DATE 28 JULY 72 OF 10



KEY PLAN



**ROOM FINISH SCHEDULE**

ROOM NO	NAME	FLOOR	WALL	FIN	BASE	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL	CEILING	HT	REMARKS	
						MAT	MAT	MAT	MAT	MAT			
201	CORRIDOR	VAT	WAX	FB	CMU	EGG	CMU	EGG	GBX	EGG	CMU	EGG	ACP - 9-0 EGG ON HM
202	STORAGE	CONC	SEAL	RB	CMU	EGG	CMU	EGG	CMU	EGG	CMU	EGG	EGP - 8-11 CONC. EGG 8-11
203	STORAGE	CONC	SEAL	-	CMU	EGG	CMU	EGG	CMU	EGG	CMU	EGG	EGP - 8-11 EGG ON HM
204	CUSTODIAN	CONC	SEAL	-	CMU	EGG	CMU	EGG	CMU	EGG	CMU	EGG	EGP - 8-0 EGG ON HM
205	BOYS	EV	WAX	RB	CMU	EGG	CMU	EGG	CMU	EGG	CMU	EGG	ACP PF 8-11
206	GIRLS	EV	WAX	RB	CMU	EGG	CMU	EGG	CMU	EGG	CMU	EGG	ACP PF 8-11
207	NARVAIP	EV	WAX	RB	CMU	EGG	CMU	EGG	CMU	EGG	CMU	EGG	ACP PF 8-11 EGG ON HM IN 8-11
208	MUSIC	CARPET	FB	CMU	EGG	CMU	EGG	GBX	EGG	GBX	EGG	ACP	- 10-3
209	CORRIDOR	EV	WAX	RB	CMU	EGG	CMU	EGG	CMU	EGG	-	-	ACT - 8-11 1/2
210	SHAFT	CONC	SEAL	-	CMU	EG	CMU	EG	CMU	EG	-	-	GE AT LADDER
211	STORAGE	EV	WAX	RB	CMU	EGG	CMU	EGG	GBX	EGG	CMU	EGG	ACT - 8-11 1/2
212	ART	EV	WAX	RB	CMU	EGG	CMU	EGG	GBX	EGG	CMU	EGG	ACP 9-0
213	WORK	EV	WAX	2RB	GBX	EGG	CMU	EGG	CMU	EGG	CMU	EGG	ACT - 8-11 1/2
214	PRACTICE	CARPET	FB	CMU	EGG	CMU	EGG	GBX	EGG	CMU	EGG	ACT	- 8-11 1/2
215	AUDIO	CARPET	RB	GBX	EGG	CMU	EGG	CMU	EGG	CMU	EGG	ACT	- 8-11 1/2
216	CORRIDOR	CARPET	RB	GBX	EGG	GBX	EGG	-	-	CMU	EGG	ACP	- 9-0 EGG ON HM AT 2005S 214, 215, 217
217	I.M.C	CARPET	RB	CMU	EGG	GBX	EGG	GBX	EGG	GBX	EGG	ACP	- 11-3/4 EGG ON HM IN CMU WALLS
218	CLASSROOM	CARPET	RB	CMU	EGG	GBX	EGG	-	-	GBX	EGG	ACP	- 9-0
219	CLASSROOM	CARPET	RB	-	-	GBX	EGG	-	-	GBX	EGG	ACP	- 9-0
220	CLASSROOM	CARPET	RB	-	-	GBX	EGG	GBX	EGG	GBX	EGG	ACP	- 9-0
221	CLASSROOM	CARPET	RB	GBX	EGG	GBX	EGG	GBX	EGG	-	-	ACP	- 9-0
222	CLASSROOM	CARPET	RB	GBX	EGG	-	-	GBX	EGG	GBX	EGG	ACP	- 9-0
223	CLASSROOM	CARPET	RB	-	-	GBX	EGG	GBX	EGG	GBX	EGG	ACP	- 9-0
224	CLASSROOM	CARPET	RB	-	-	GBX	EGG	-	-	GBX	EGG	ACP	- 9-0
225	CLASSROOM	CARPET	RB	GBX	EGG	GBX	EGG	-	-	GBX	EGG	ACP	- 9-0

(20) MECHANICAL CONC SEAL - CMU - CMU GE CMU GE CMU GE GBX GE 8-3/4 GE ON MISC METAL

**FIRST FLOOR PLAN**



SEE SHEET 1 FOR CEILING  
SEE SHEET 2 FOR CROSS SECTIONS

1/8" = 1'-0"

# PRE-REROOF GRAVITY ANALYSIS

## Roof Load Takeoffs

Type 1: (New in 1999) Roof Dead Load Take Off		USE 20PSF FOR THESE LOCATIONS
Insulation w/ Thin Paver Top	5.5 psf	
2" LG Board	3.6 psf	
EPDM	0.333 psf	
R-20 Rigid Insulation	0.56 psf	
Gypsum Sheathing	1.6 psf	
Vapor Retarder	0.05 psf	
5/8" Plywood	1.8 psf	
Framing	2.88 psf	
Misc	2.2 psf	
<b>Total</b>	<b>18.5 psf</b>	

Type 2: (1972 Roof and PH Drift Displacement) Roof Dead Load Take Off		USE 20PSF FOR THESE LOCATIONS
Built-Up Roofing (Estimate)	5 psf	
3" Roof Insulation	5.4 psf	
Laminated Vapor Barrier	0.33 psf	
2 4 1 Plywood (using values for 3/4")	2.2 psf	
Vapor Retarder	0.05 psf	
Truss Joist	1.44 psf	
Misc	2.5 psf	
<b>Total</b>	<b>16.9 psf</b>	

Type 3: (With Plywood Overlay Over T&G, 1962 and 1983) Roof Dead Load Take Off		USE 25PSF FOR THESE LOCATIONS
Insulation w/ Thin Paver Top	5.5 psf	
2" LG Board	3.6 psf	
EPDM	0.33 psf	
R-20 Rigid Insulation	0.56 psf	
Gypsum Sheathing	1.6 psf	
Vapor Retarder	0.05 psf	
7/16" Plywood (using values for 15/32")	1.4 psf	
2x T&G Decking	3.9 psf	
Existing Framing	3.9 psf	
Misc	2.7 psf	
<b>Total</b>	<b>23.5 psf</b>	



CONFORMED DOCUMENT  
KUMIN ASSOCIATES, INC.  
Project No. 360-704  
Bid No. 98-119-CF  
Issue Date: MAR 15, 1999



kumin associates, inc.  
architects & planners  
100 E. Street, Suite 200  
Anchorage, Alaska 99501  
907.562.4433

SCENIC PARK ELEMENTARY SCHOOL  
RENEWAL AND UPGRADES  
ANCHORAGE SCHOOL DISTRICT

no.	date	by	revision
1	3/15/19	SM	ADDITIONAL REVISIONS

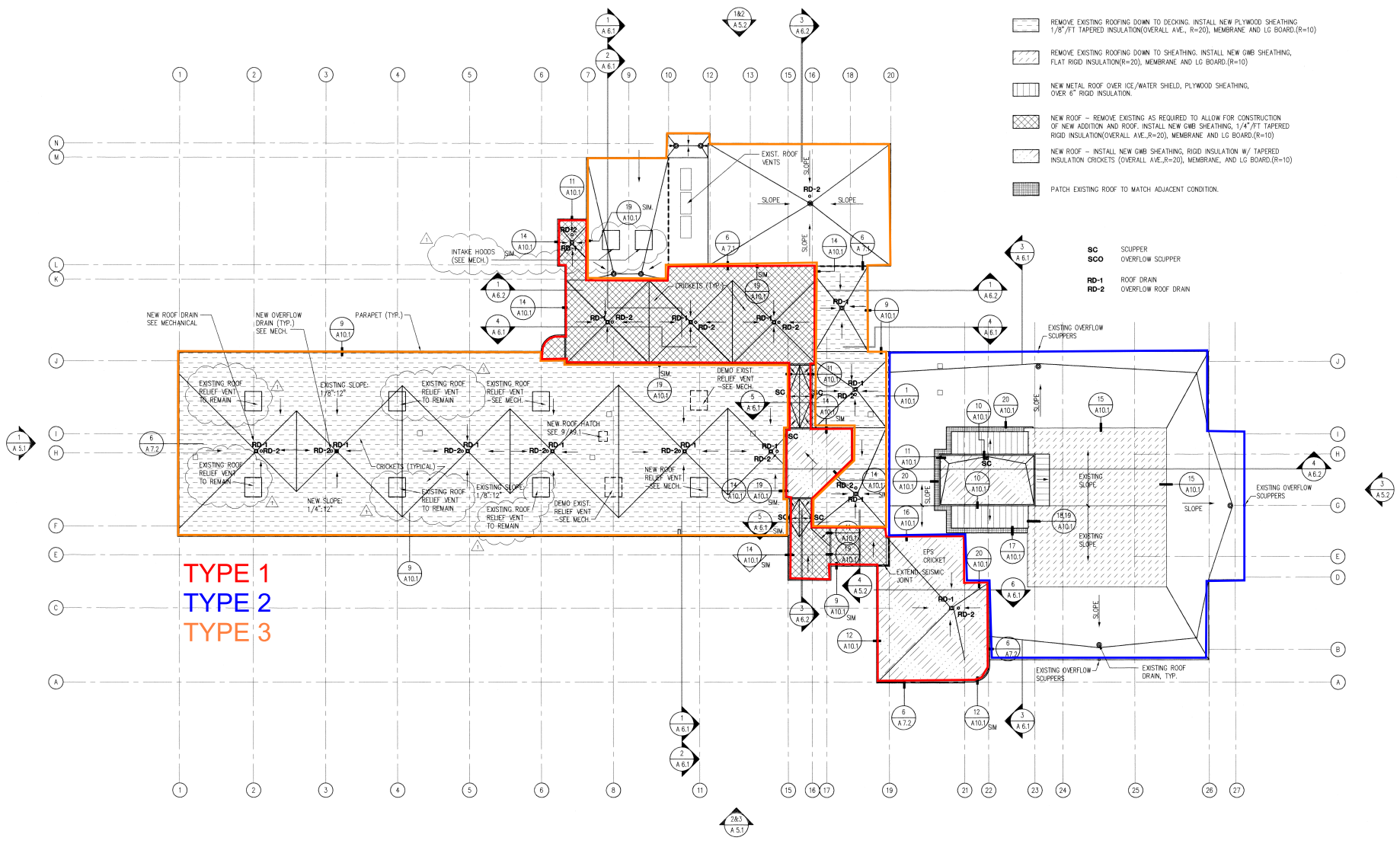
drawn: RFP #1  
checked: JH  
date: 03-15-19  
job no.: 9-25  
dwg. title:  
ROOF PLAN

sheet no.  
**A.2.5**

LEGEND:

- EXISTING ROOF TO REMAIN
- REMOVE EXISTING ROOFING DOWN TO DECKING. INSTALL NEW PLYWOOD SHEATHING, 1/8"/FT TAPERED INSULATION(OVERALL AVE. R=20), MEMBRANE AND LG BOARD(R=10)
- REMOVE EXISTING ROOFING DOWN TO SHEATHING. INSTALL NEW GWB SHEATHING, FLAT RIGID INSULATION(R=20), MEMBRANE AND LG BOARD(R=10)
- NEW METAL ROOF OVER ICE/WATER SHIELD, PLYWOOD SHEATHING, OVER 6" RIGID INSULATION.
- NEW ROOF - REMOVE EXISTING AS REQUIRED TO ALLOW FOR CONSTRUCTION OF NEW ADDITION AND ROOF. INSTALL NEW GWB SHEATHING, 1/4"/FT TAPERED RIGID INSULATION(OVERALL AVE. R=20), MEMBRANE AND LG BOARD(R=10)
- NEW ROOF - INSTALL NEW GWB SHEATHING, RIGID INSULATION W/ TAPERED INSULATION CRICKETS (OVERALL AVE. R=20), MEMBRANE, AND LG BOARD(R=10)
- PATCH EXISTING ROOF TO MATCH ADJACENT CONDITION.

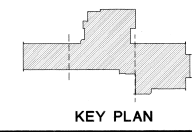
- SC** SCUPPER
- SCO** OVERFLOW SCUPPER
- RD-1** ROOF DRAIN
- RD-2** OVERFLOW ROOF DRAIN



**TYPE 1**  
**TYPE 2**  
**TYPE 3**



**1 ROOF PLAN**  
1/16" = 1'-0"



KEY PLAN

**Snow Load**

**ASCE 7-16**

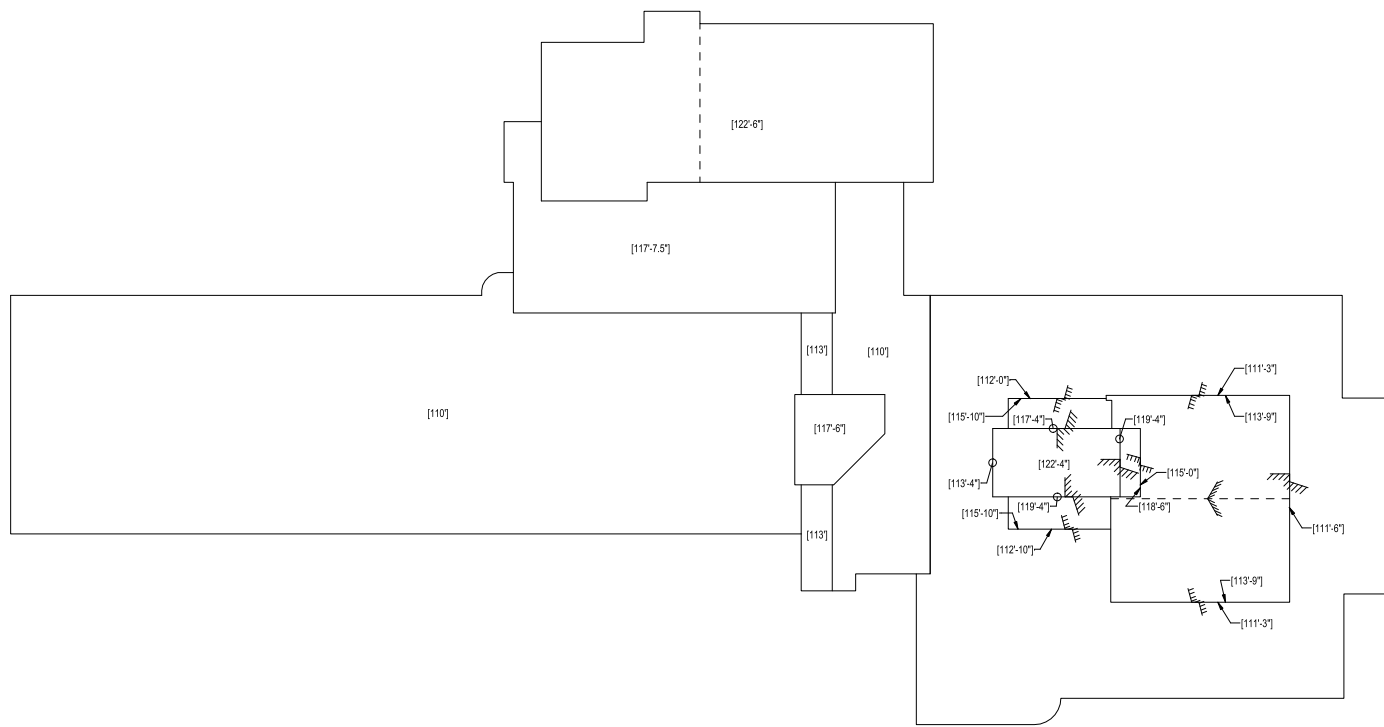
Section 7.3, p. 51-54

Scenic Park Elementary  
Project: Reroof Report  
Job Number: 402023.020  
Date: 3/27/2023

Location ("Anchorage" or other):	<b>Anchorage</b>	<i>elevation addition</i>	<i>0.0 psf</i>
Anchorage, Eagle River, or Homer?	<b>Yes</b>		
Ground Snow Load, $p_g$ =	<b>50 psf</b>	<b>Final <math>p_g</math>: 50.0 psf</b>	
Elevation =	<b>326 ft</b>		
Importance Factor, $I_s$ =	Risk Category III		
	<b>1.10</b>	Table 1.5-2, p. 5	
Exposure Factor, $C_e$ =	<b>1.00</b>	Table 7-3.1, p. 58	
Thermal Factor, $C_t$ =	All other structures		
	<b>1.00</b>	Table 7-3.2, p. 58	
Roof Slope Factor, $C_s$ =	All Other Surfaces		
	<b>1.000</b>	Figure 7-4.1, p. 59	
Roof Slope Calculator:	<b>0.00</b>	:12 =	<b>0.00°</b>
Roof Pitch, $\theta$ =	<b>0.00</b>	deg	
Flat Roof Snow Load (per calc), $p_f = 0.7 * I_s * C_e * C_t * p_g$ =	<b>39 psf</b>	Eq 7.3-1	
Local Amendment Flat Roof Snow Load (if any), $p_{f-local}$ =	<b>40 psf</b>		
Req'd Sloped Roof Snow Load $p_s = p_{f-max} * C_s$ =	<b>40 psf</b>	Eq 7.4-1	

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SCENIC PARK ELEMENTARY REROOF REPORT  
3933 PATTERSON ST, ANCHORAGE, AK 99504  
ANCHORAGE SCHOOL DISTRICT



1 ROOF PLAN W/ ELEVATION  
1" = 20'-0"

REVISION SCHEDULE		
#	DESCRIPTION	DATE

DATE: 3/27/2023  
PROJECT #: 402023.020  
DRAWN BY: TM  
CHECKED BY: EH

SHEET DESCRIPTION:  
ROOF ELEVATION  
MAP

SHEET NO:  
**S1.02**

Drifting per ASCE 7-16 Sect 7.7:

Ground Snow Load,  $p_g = 50$  psf  
Basic Roof Snow Load,  $p_f = 40$  psf  
Importance Factor,  $I_s = 1.1$

<b>Job Name:</b>	Scenic Park Elementary Reroof Report
	<b>RM Job Number:</b> 402023.020

Location:		Plan North, Grid J-K/7-16 Drift	Plan North, Grid I-J/7-16 Drift	Plan North, Grid F-G/15-16 Drift
Width of upper roof, 20' min	$l_u$	55.0 ft	42.0 ft	28.8 ft
Width of Lower Roof, 20' min in equation	$l_l$	32.0 ft	71.0 ft	34.0 ft
Difference in roof heights	$h_r$	6.5 ft	9.1 ft	6.0 ft
Is this a parapet or roof projection? (if no = no change, if yes = 3/4 of drift per Sect 7.8)		no	no	no
$h_c = h_r - h_b$	$h_c$	4.5 ft	7.2 ft	4.0 ft
Height of drift = $I_s^{1/2} * [(0.43 * I_x^{1/3} * (p_g + 10)^{1/4}) - 1.5]$ , (limited to 60% of length of lower roof)	$h_d$	3.2 ft	2.8 ft	2.3 ft
Governing direction (leeward or windward)		leeward	leeward	leeward
Width of drift = $4 * h_d, 4h_d^2/h_c, 8h_c$ max	$W$	12.8 ft	11.2 ft	9.1 ft
Density of snow = $0.13p_g + 14$ , 30pcf max	$\gamma$	20.5 pcf	20.5 pcf	20.5 pcf
Depth of balance snow load = $p_f/\gamma$	$h_b$	2.0 ft	2.0 ft	2.0 ft
Consider drift? Is $h_c/h_b > 0.2$ ?		YES	YES	YES
<b>Added Snow Drift at high point</b>	$P_{max} =$	<b>66 psf</b>	<b>57 psf</b>	<b>47 psf</b>
<b>Added Snow Drift at low point</b>	$P_{min} =$	<b>0 psf</b>	<b>0 psf</b>	<b>0 psf</b>

Location:		Plan South, Grid I-J/15-16 Drift	Plan North, Grid I-J/15-16 Drift	Plan North, Grid J-K/17-18 Drift
Width of upper roof, 20' min	$l_u$	28.8 ft	42.0 ft	51.0 ft
Width of Lower Roof, 20' min in equation	$l_l$	26.5 ft	26.5 ft	68.5 ft
difference in roof heights	$h_r$	6.0 ft	6.1 ft	12.7 ft
Is this a parapet or roof projection? (if no = no change, if yes = 3/4 of drift per Sect 7.8)		no	no	no
$h_c = h_r - h_b$	$h_c$	4.0 ft	4.2 ft	10.7 ft
Height of drift = $\text{sqrt}(I_s) * [(0.43 * I_x^{1/3} * (p_g + 10)^{1/4}) - 1.5]$ , (limited to 60% of length of lower roof)	$h_d$	2.3 ft	2.8 ft	3.1 ft
governing direction (leeward or windward)		leeward	leeward	leeward
Width of drift = $4 * h_d, 4h_d^2/h_c, 8h_c$ max	$W$	9.1 ft	11.2 ft	12.3 ft
Density of snow = $.13p_g + 14$ , 30 max	$\gamma$	20.5 pcf	20.5 pcf	20.5 pcf
Depth of balance snow load = $p_f/\gamma$	$h_b$	2.0 ft	2.0 ft	2.0 ft
Consider drift?		YES	YES	YES
<b>Added Snow Drift at high point</b>	$P_{max} =$	<b>47 psf</b>	<b>57 psf</b>	<b>63 psf</b>
<b>Added Snow Drift at low point</b>	$P_{min} =$	<b>0 psf</b>	<b>0 psf</b>	<b>0 psf</b>

Location:		Plan West, Grid I-J/16-18 Drift	Plan East, Grid 1-15/F-G Drift	Plan West, Grid 16-19/F-G Drift
Width of upper roof, 20' min	$l_u$	103.5 ft	254.3 ft	31.5 ft
Width of Lower Roof, 20' min in equation	$l_l$	22.0 ft	10.0 ft	10.0 ft
Difference in roof heights	$h_r$	9.1 ft	3.0 ft	3.0 ft
Is this a parapet or roof projection? (if no = no change, if yes = 3/4 of drift per Sect 7.8)		no	no	no
$h_c = h_r - h_b$	$h_c$	7.2 ft	1.0 ft	1.0 ft
Height of drift = $l_s^{1/2} * [(0.43 * l_x^{1/3} * (p_g + 10)^{1/4}) - 1.5]$ , (limited to 60% of length of lower roof)	$h_d$	4.3 ft	6.3 ft	2.4 ft
Governing direction (leeward or windward)		leeward	leeward	leeward
Width of drift = $4 * h_d, 4h_d^2/h_c, 8h_c$ max	$W$	17.3 ft	8.4 ft	8.4 ft
Density of snow = $0.13p_g + 14$ , 30pcf max	$\gamma$	20.5 pcf	20.5 pcf	20.5 pcf
Depth of balance snow load = $p_f/\gamma$	$h_b$	2.0 ft	2.0 ft	2.0 ft
Consider drift? Is $h_c/h_b > 0.2$ ?		YES	YES	YES
<b>Added Snow Drift at high point</b>	$P_{max} =$	<b>89 psf</b>	<b>22 psf</b>	<b>22 psf</b>
<b>Added Snow Drift at low point</b>	$P_{min} =$	<b>0 psf</b>	<b>0 psf</b>	<b>0 psf</b>

Location:		Daigonal Drift to Mid Roof	Plan West, Grid I-H/18-20 Drift	Plan East, Grid 20-20.5/G-H Drift
Width of upper roof, 20' min	$l_u$	30.0 ft	29.0 ft	47.5 ft
Width of Lower Roof, 20' min in equation	$l_l$	42.0 ft	14.5 ft	20.1 ft
difference in roof heights	$h_r$	9.0 ft	9.0 ft	9.0 ft
Is this a parapet or roof projection? (if no = no change, if yes = 3/4 of drift per Sect 7.8)		no	no	no
$h_c = h_r - h_b$	$h_c$	7.0 ft	7.0 ft	7.0 ft
Height of drift = $\text{sqrt}(l_s) * [(0.43 * l^{1/3} * (p_g + 10)^{1/4}) - 1.5]$ , (limited to 60% of length of lower roof)	$h_d$	2.3 ft	2.3 ft	3.0 ft
governing direction (leeward or windward)		leeward	leeward	leeward
Width of drift = $4 * h_d, 4h_d^2/h_c, 8h_c$ max	$W$	9.3 ft	9.1 ft	11.9 ft
Density of snow = $.13p_g + 14$ , 30 max	$\gamma$	20.5 pcf	20.5 pcf	20.5 pcf
Depth of balance snow load = $p_f/\gamma$	$h_b$	2.0 ft	2.0 ft	2.0 ft
Consider drift?		YES	YES	YES
<b>Added Snow Drift at high point</b>	$P_{max} =$	<b>48 psf</b>	<b>47 psf</b>	<b>61 psf</b>
<b>Added Snow Drift at low point</b>	$P_{min} =$	<b>0 psf</b>	<b>0 psf</b>	<b>0 psf</b>

Location:		Plan North, Grid B-D/23-25 Drift	Plan South, Grid I-J/23-25 Drift	Plan West, Grid 25.5-27/D-I Drift
Width of upper roof, 20' min	$l_u$	66.5 ft	66.5 ft	47.5 ft
Width of Lower Roof, 20' min in equation	$l_l$	31.0 ft	32.1 ft	33.0 ft
Difference in roof heights	$h_r$	2.5 ft	2.5 ft	3.5 ft
Is this a parapet or roof projection? (if no = no change, if yes = 3/4 of drift per Sect 7.8)		no	no	no
$h_c = h_r - h_b$	$h_c$	0.5 ft	0.5 ft	1.5 ft
Height of drift = $l_s^{1/2} * [(0.43 * l_x^{1/3} * (p_g + 10)^{1/4}) - 1.5]$ , (limited to 60% of length of lower roof)	$h_d$	3.5 ft	3.5 ft	3.0 ft
Governing direction (leeward or windward)		leeward	leeward	leeward
Width of drift = $4 * h_d, 4h_d^2/h_c, 8h_c$ max	$W$	4.4 ft	4.4 ft	12.4 ft
Density of snow = $0.13p_g + 14$ , 30pcf max	$\gamma$	20.5 pcf	20.5 pcf	20.5 pcf
Depth of balance snow load = $p_f/\gamma$	$h_b$	2.0 ft	2.0 ft	2.0 ft
Consider drift? Is $h_c/h_b > 0.2$ ?		YES	YES	YES
<b>Added Snow Drift at high point</b>	$P_{max} =$	<b>11 psf</b>	<b>11 psf</b>	<b>32 psf</b>
<b>Added Snow Drift at low point</b>	$P_{min} =$	<b>0 psf</b>	<b>0 psf</b>	<b>0 psf</b>

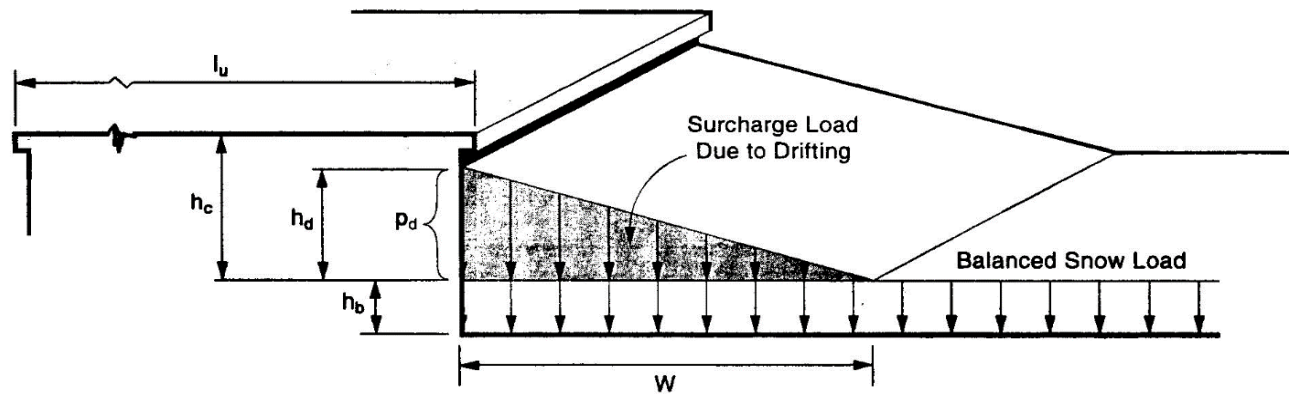
Location:		Plan East, Grid 20-23/D-F Drift	Plan West, Grid 24-25/G-H Drift	Plan West, Grid 23-23.5/G-H Drift
Width of upper roof, 20' min	$l_u$	57.5 ft	5.8 ft	42.0 ft
Width of Lower Roof, 20' min in equation	$l_l$	58.1 ft	48.0 ft	5.8 ft
difference in roof heights	$h_r$	3.5 ft	3.5 ft	3.0 ft
Is this a parapet or roof projection? (if no = no change, if yes = 3/4 of drift per Sect 7.8)		no	no	no
$h_c = h_r - h_b$	$h_c$	1.5 ft	1.5 ft	1.0 ft
Height of drift = $\text{sqrt}(l_s) * [(0.43 * l_x^{1/3} * (p_g + 10)^{1/4}) - 1.5]$ , (limited to 60% of length of lower roof)	$h_d$	3.3 ft	2.2 ft	2.8 ft
governing direction (leeward or windward)		leeward	windward	leeward
Width of drift = $4 * h_d, 4h_d^2/h_c, 8h_c$ max	$W$	12.4 ft	12.4 ft	8.4 ft
Density of snow = $.13p_g + 14$ , 30 max	$\gamma$	20.5 pcf	20.5 pcf	20.5 pcf
Depth of balance snow load = $p_f/\gamma$	$h_b$	2.0 ft	2.0 ft	2.0 ft
Consider drift?		YES	YES	YES
<b>Added Snow Drift at high point</b>	$P_{max} =$	<b>32 psf</b>	<b>32 psf</b>	<b>22 psf</b>
<b>Added Snow Drift at low point</b>	$P_{min} =$	<b>0 psf</b>	<b>0 psf</b>	<b>0 psf</b>

Location:		Plan North, Grid A-F/21-23 Drift	Plan North, Grid F-G/21-23 Drift	Plan South, Grid I-J/21-23 Drift
Width of upper roof, 20' min	$l_u$	10.3 ft	22.0 ft	9.8 ft
Width of Lower Roof, 20' min in equation	$l_l$	363.1 ft	10.3 ft	33.1 ft
Difference in roof heights	$h_r$	3.0 ft	3.0 ft	3.0 ft
Is this a parapet or roof projection? (if no = no change, if yes = 3/4 of drift per Sect 7.8)		no	no	no
$h_c = h_r - h_b$	$h_c$	1.0 ft	1.0 ft	1.0 ft
Height of drift = $l_s^{1/2} * [(0.43 * l_x^{1/3} * (p_g + 10)^{1/4}) - 1.5]$ , (limited to 60% of length of lower roof)	$h_d$	5.5 ft	1.9 ft	1.8 ft
Governing direction (leeward or windward)		windward	leeward	windward
Width of drift = $4 * h_d, 4h_d^2/h_c, 8h_c$ max	$W$	8.4 ft	8.4 ft	8.4 ft
Density of snow = $0.13p_g + 14$ , 30pcf max	$\gamma$	20.5 pcf	20.5 pcf	20.5 pcf
Depth of balance snow load = $p_f/\gamma$	$h_b$	2.0 ft	2.0 ft	2.0 ft
Consider drift? Is $h_c/h_b > 0.2$ ?		YES	YES	YES
<b>Added Snow Drift at high point</b>	$P_{max} =$	<b>22 psf</b>	<b>22 psf</b>	<b>22 psf</b>
<b>Added Snow Drift at low point</b>	$P_{min} =$	<b>0 psf</b>	<b>0 psf</b>	<b>0 psf</b>

Location:		Plan South, Grid H-I/21-23 Drift	Plan East, Grid 1-15/G-I Drift	Plan East, Grid 6-7/L-L.5 Drift
Width of upper roof, 20' min	$l_u$	22.0 ft	29.0 ft	126.0 ft
Width of Lower Roof, 20' min in equation	$l_l$	9.8 ft	254.3 ft	12.0 ft
difference in roof heights	$h_r$	5.3 ft	9.0 ft	6.5 ft
Is this a parapet or roof projection? (if no = no change, if yes = 3/4 of drift per Sect 7.8)		no	no	no
$h_c = h_r - h_b$	$h_c$	3.4 ft	7.0 ft	4.5 ft
Height of drift = $\text{sqrt}(l_s) * [(0.43 * l_x^{1/3} * (p_g + 10)^{1/4}) - 1.5]$ , (limited to 60% of length of lower roof)	$h_d$	1.9 ft	4.8 ft	4.7 ft
governing direction (leeward or windward)		leeward	windward	leeward
Width of drift = $4 * h_d, 4h_d^2/h_c, 8h_c$ max	$W$	7.8 ft	19.1 ft	19.6 ft
Density of snow = $.13p_g + 14$ , 30 max	$\gamma$	20.5 pcf	20.5 pcf	20.5 pcf
Depth of balance snow load = $p_f/\gamma$	$h_b$	2.0 ft	2.0 ft	2.0 ft
Consider drift?		YES	YES	YES
<b>Added Snow Drift at high point</b>	$P_{max} =$	<b>40 psf</b>	<b>98 psf</b>	<b>93 psf</b>
<b>Added Snow Drift at low point</b>	$P_{min} =$	<b>0 psf</b>	<b>0 psf</b>	<b>0 psf</b>



Location:		Plan East, Grid 1-6/J-J.3 Drift	Plan South, Grid L-I/16-18 Drift
Width of upper roof, 20' min	$l_u$	103.5 ft	28.8 ft
Width of Lower Roof, 20' min in equation	$l_l$	161.7 ft	68.5 ft
difference in roof heights	$h_r$	9.1 ft	9.0 ft
Is this a parapet or roof projection? (if no = no change, if yes = 3/4 of drift per Sect 7.8)		no	no
$h_c = h_r - h_b$	$h_c$	7.2 ft	7.0 ft
Height of drift = $\text{sqrt}(l_s) * [(0.43 * l^{1/3} * (p_g + 10)^{1/4}) - 1.5]$ , (limited to 60% of length of lower roof)	$h_d$	4.3 ft	2.7 ft
governing direction (leeward or windward)		leeward	windward
Width of drift = $4 * h_d, 4h_d^2/h_c, 8h_c$ max	$W$	17.3 ft	10.7 ft
Density of snow = $.13p_g + 14, 30$ max	$\gamma$	20.5 pcf	20.5 pcf
Depth of balance snow load = $p/\gamma$	$h_b$	2.0 ft	2.0 ft
Consider drift?		YES	YES
<b>Added Snow Drift at high point</b>	$P_{\text{max}} =$	<b>89 psf</b>	<b>55 psf</b>
<b>Added Snow Drift at low point</b>	$P_{\text{min}} =$	<b>0 psf</b>	<b>0 psf</b>



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SCENIC PARK ELEMENTARY REROOF REPORT

3933 PATTERSON ST, ANCHORAGE, AK 99504

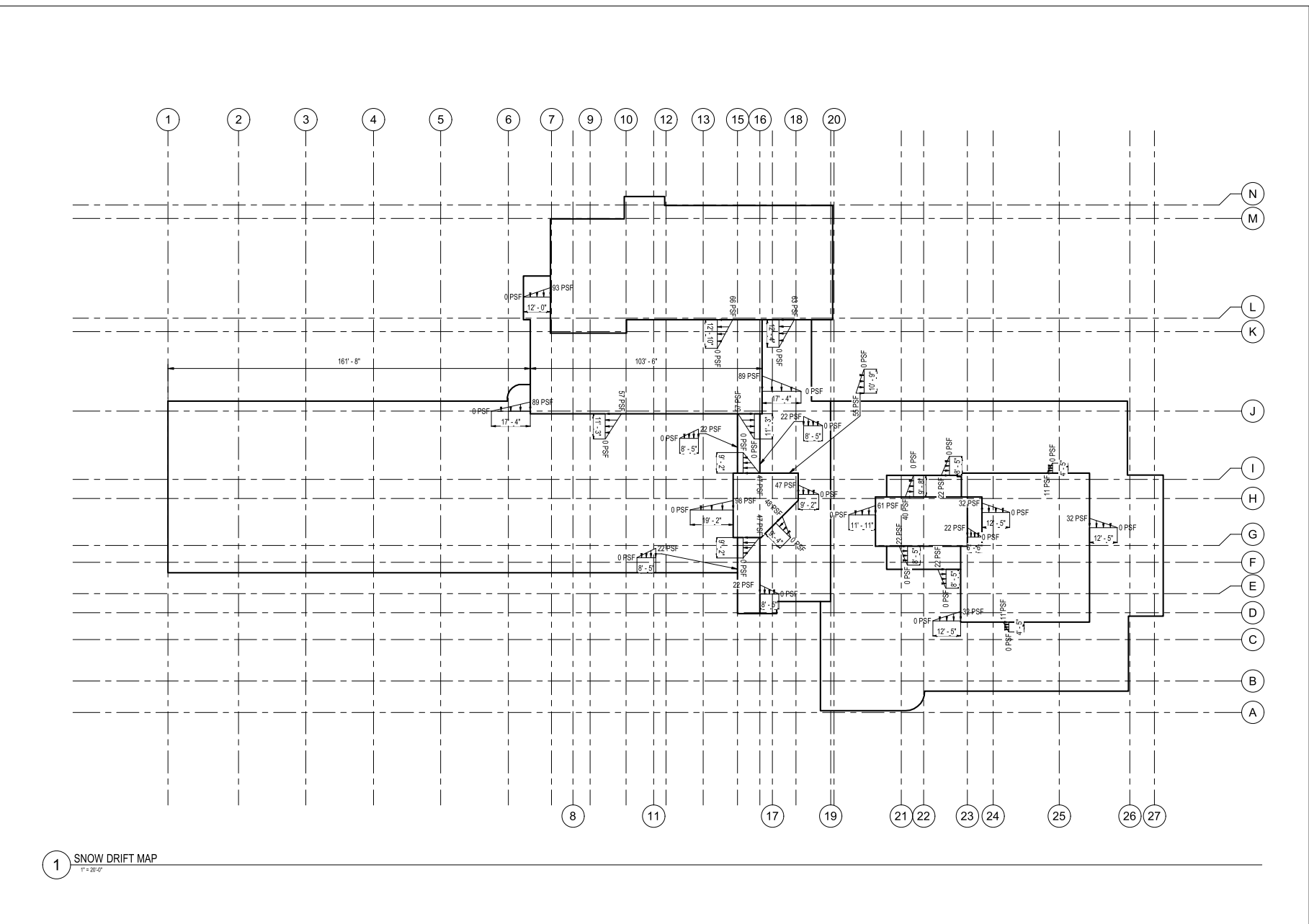
ANCHORAGE SCHOOL DISTRICT

REVISION SCHEDULE		
#	DESCRIPTION	DATE

DATE: 3/27/2023  
PROJECT #: 402023.020  
DRAWN BY: TM  
CHECKED BY: EH

SHEET DESCRIPTION:  
SNOW DRIFT PLAN

SHEET NO:  
**S1.01**



1 SNOW DRIFT MAP  
1" = 20'-0"

# 1962, ORIGINAL BUILDING STRUCTURE

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ecb

LIC# : KW-06017698, Build:20.23.2.14

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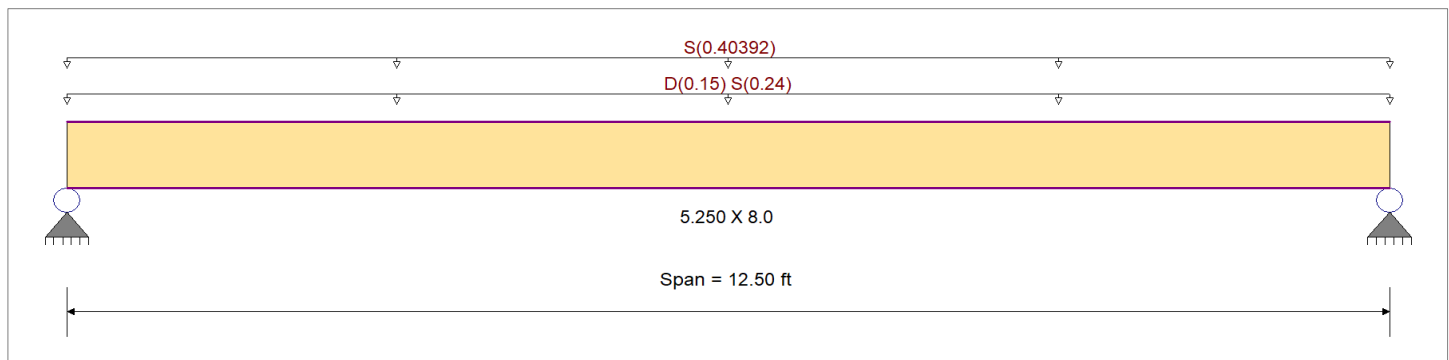
**DESCRIPTION:** Grid I-H/13-15 GLB (First Beam Not Under Wall)

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2300 psi	<i>E : Modulus of Elasticity</i>	
Load Combination : ASCE 7-16	Fb -	2300 psi	Ebend- xx	1400ksi
	Fc - Prll	2100 psi	Eminbend - xx	1400ksi
Wood Species : UBC 1964 LD-3 C Select On	Fc - Perp	385 psi	Ebend- yy	0ksi
Wood Grade : GLB - Western	Fv	165 psi	Eminbend - yy	0ksi
	Ft	2300 psi	Density	35pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.0250, S = 0.040 ksf, Tributary Width = 6.0 ft, (Flat Loads)  
Uniform Load : S = 0.06732 ksf, Tributary Width = 6.0 ft

### DESIGN SUMMARY

**Design N.G.**

<b>Maximum Bending Stress Ratio</b>	=	<b>1.256</b> 1	<b>Maximum Shear Stress Ratio</b>	=	<b>0.838</b> : 1
Section used for this span		<b>5.250 X 8.0</b>	Section used for this span		<b>5.250 X 8.0</b>
fb: Actual	=	3,322.77 psi	fv: Actual	=	159.10 psi
F'b	=	2,645.00 psi	F'v	=	189.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	6.250ft	Location of maximum on span	=	11.861 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection	1.135 in	Ratio =	<b>132</b> <360	Span: 1 : S Only	
Max Upward Transient Deflection	0 in	Ratio =	<b>0</b> <360	n/a	
Max Downward Total Deflection	1.399 in	Ratio =	<b>107</b> <180	Span: 1 : +D+S	
Max Upward Total Deflection	0 in	Ratio =	<b>0</b> <180	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>F</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only																				
Length = 12.50 ft	1	0.303	0.202	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.93	627.8	2,070.0	0.84	30.1	148.5			
+D+S																				
Length = 12.50 ft	1	1.256	0.838	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	15.51	3,322.8	2,645.0	4.45	159.1	189.8			
+D+0.750S																				
Length = 12.50 ft	1	1.002	0.668	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	12.36	2,649.0	2,645.0	3.55	126.8	189.8			
+0.60D																				
Length = 12.50 ft	1	0.102	0.068	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.76	376.7	3,680.0	0.51	18.0	264.0			

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION: Grid I-H/13-15 GLB (First Beam Not Under Wall)**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.3988	6.296		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	4.962	4.962
Max Upward from Load Combinations	4.962	4.962
Max Upward from Load Cases	4.025	4.025
D Only	0.938	0.938
+D+S	4.962	4.962
+D+0.750S	3.956	3.956
+0.60D	0.563	0.563
S Only	4.025	4.025

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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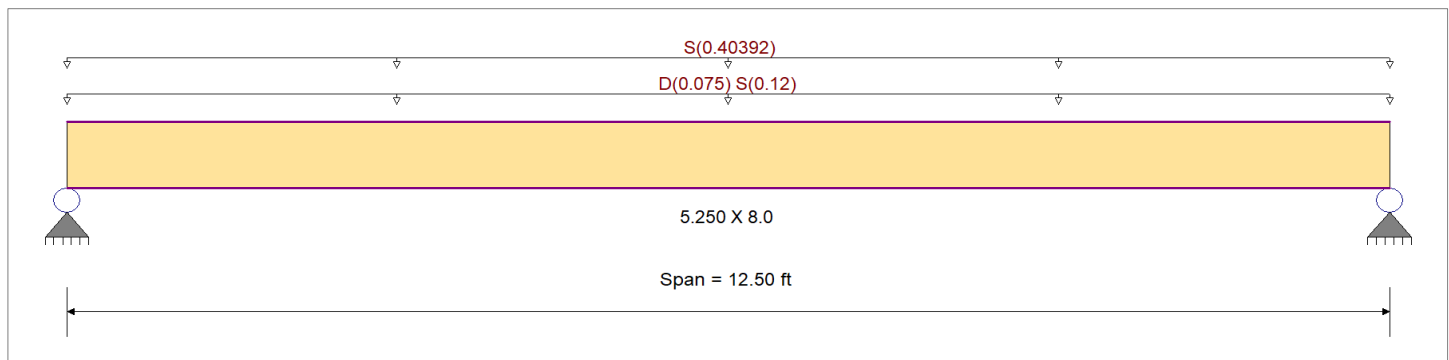
**DESCRIPTION:** [REPAIR] Grid I-H/13-15 GLB (First Beam Not Under Wall)

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,400.0 psi	<i>E : Modulus of Elasticity</i>	
Load Combination : ASCE 7-16	Fb -	1,850.0 psi	Ebend- xx	1,800.0ksi
	Fc - Prll	1,650.0 psi	Eminbend - xx	950.0ksi
Wood Species : DF/DF	Fc - Perp	650.0 psi	Ebend- yy	1,600.0ksi
Wood Grade : 24F-V4	Fv	265.0 psi	Eminbend - yy	850.0ksi
	Ft	1,100.0 psi	Density	31.210pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.0250, S = 0.040 ksf, Tributary Width = 3.0 ft, (Flat Loads)  
Uniform Load : S = 0.06732 ksf, Tributary Width = 6.0 ft

### DESIGN SUMMARY

**Design OK**

<b>Maximum Bending Stress Ratio</b>	=	<b>0.908</b> : 1	<b>Maximum Shear Stress Ratio</b>	=	<b>0.394</b> : 1
Section used for this span		<b>5.250 X 8.0</b>	Section used for this span		<b>5.250 X 8.0</b>
fb: Actual	=	2,506.64 psi	fv: Actual	=	120.03 psi
F'b	=	2,760.00 psi	F'v	=	304.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	6.250ft	Location of maximum on span	=	11.861 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection	0.718 in	Ratio =	<b>208</b> >=180	Span: 1 : S Only	
Max Upward Transient Deflection	0 in	Ratio =	<b>0</b> <180	n/a	
Max Downward Total Deflection	0.821 in	Ratio =	<b>182</b> >=120	Span: 1 : +D+S	
Max Upward Total Deflection	0 in	Ratio =	<b>0</b> <120	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>F</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only																				
Length = 12.50 ft	1		0.145	0.063	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.46	313.9	2,160.0	0.0	0.00	0.0	0.0	0.0
+D+S																				
Length = 12.50 ft	1		0.908	0.394	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	11.70	2,506.6	2,760.0	3.36	120.0	304.8	0.0	0.0
+D+0.750S																				
Length = 12.50 ft	1		0.710	0.308	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	9.14	1,958.5	2,760.0	2.63	93.8	304.8	0.0	0.0
+0.60D																				
Length = 12.50 ft	1		0.049	0.021	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.88	188.3	3,840.0	0.25	9.0	424.0	0.0	0.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION:** [REPAIR] Grid I-H/13-15 GLB (First Beam Not Under Wall)

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.8207	6.296		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.743	3.743
Max Upward from Load Combinations	3.743	3.743
Max Upward from Load Cases	3.275	3.275
D Only	0.469	0.469
+D+S	3.743	3.743
+D+0.750S	2.925	2.925
+0.60D	0.281	0.281
S Only	3.275	3.275



Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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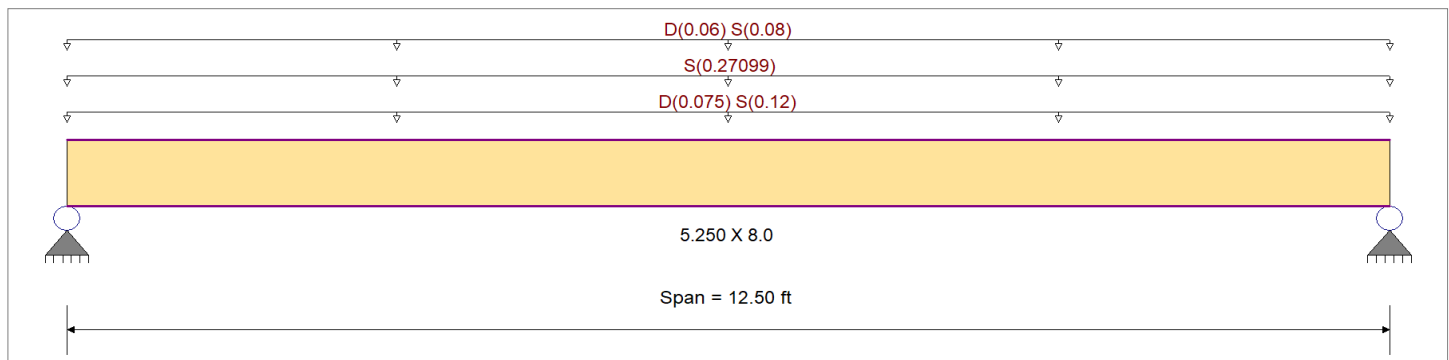
**DESCRIPTION:** Grid I-H/13-15 GLB (Beam Under Wall)

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2300 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	2300 psi	Ebend- xx	1400ksi
	Fc - Prll	2100 psi	Eminbend - xx	1400ksi
Wood Species : UBC 1964 LD-3 C Select On	Fc - Perp	385 psi	Ebend- yy	0ksi
Wood Grade : GLB - Western	Fv	165 psi	Eminbend - yy	0ksi
	Ft	2300 psi	Density	35pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.0250, S = 0.040 ksf, Tributary Width = 3.0 ft, (Flat Loads)

Uniform Load : S = 0.09033 ksf, Tributary Width = 3.0 ft

Uniform Load : D = 0.030, S = 0.040 ksf, Tributary Width = 2.0 ft, (From Top of Wall Above)

### DESIGN SUMMARY

**Design N.G.**

Maximum Bending Stress Ratio	=	<b>0.959</b> : 1	Maximum Shear Stress Ratio	=	<b>0.640</b> : 1
Section used for this span		<b>5.250 X 8.0</b>	Section used for this span		<b>5.250 X 8.0</b>
fb: Actual	=	2,536.23 psi	fv: Actual	=	121.44 psi
F'b	=	2,645.00 psi	F'v	=	189.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	6.250ft	Location of maximum on span	=	11.861 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection		0.830 in Ratio =	<b>180</b> < 360	Span: 1 : S Only	
Max Upward Transient Deflection		0 in Ratio =	<b>0</b> < 360	n/a	
Max Downward Total Deflection		1.068 in Ratio =	<b>140</b> < 180	Span: 1 : +D+S	
Max Upward Total Deflection		0 in Ratio =	<b>0</b> < 180	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>F</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only																				
	Length = 12.50 ft	1	0.273	0.182	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.64	565.0	2,070.0	0.0	0.00	0.0	0.0	0.0
+D+S																				
	Length = 12.50 ft	1	0.959	0.640	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	11.84	2,536.2	2,645.0	3.40	121.4	189.8	0.0	0.0
+D+0.750S																				
	Length = 12.50 ft	1	0.773	0.516	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	9.54	2,043.4	2,645.0	2.74	97.8	189.8	0.0	0.0
+0.60D																				
	Length = 12.50 ft	1	0.092	0.061	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.58	339.0	3,680.0	0.45	16.2	264.0	0.0	0.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** Grid I-H/13-15 GLB (Beam Under Wall)

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.0677	6.296		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.787	3.787
Max Upward from Load Combinations	3.787	3.787
Max Upward from Load Cases	2.944	2.944
D Only	0.844	0.844
+D+S	3.787	3.787
+D+0.750S	3.052	3.052
+0.60D	0.506	0.506
S Only	2.944	2.944



Project Title:  
Engineer:  
Project ID:  
Project Descr:

<b>Wood Beam</b>	Project File: Scenic Park Reroof Calcs.ec6
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LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** General Original Building GLB (Grid I-H/1-12)

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.6871	6.296		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	2.438	2.438
Max Upward from Load Combinations	2.438	2.438
Max Upward from Load Cases	1.500	1.500
D Only	0.938	0.938
+D+S	2.438	2.438
+D+0.750S	2.063	2.063
+0.60D	0.563	0.563
S Only	1.500	1.500

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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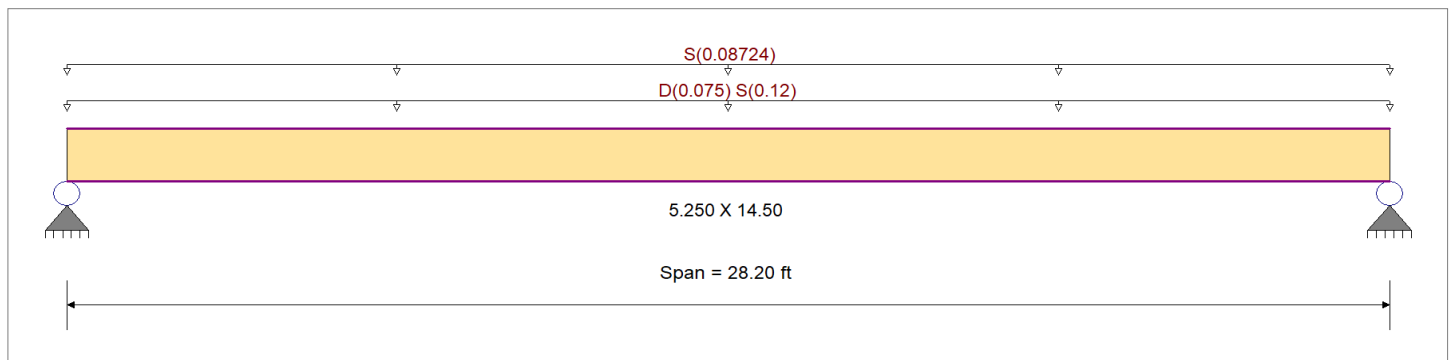
**DESCRIPTION:** Grid I-J/13-15 GLB (Beam Immediately Adjacent to Wall)

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,300.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	2,300.0 psi	Ebend- xx	1,400.0ksi
	Fc - Prll	2,100.0 psi	Eminbend - xx	1,400.0ksi
Wood Species : UBC 1964 LD-3 C Select On	Fc - Perp	385.0 psi	Ebend- yy	ksi
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy	ksi
	Ft	2,300.0 psi	Density	35.0pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.0250, S = 0.040 ksf, Tributary Width = 3.0 ft, (Flat Loads)

Uniform Load : S = 0.02908 ksf, Tributary Width = 3.0 ft, (Drift)

### DESIGN SUMMARY

**Design N.G.**

<b>Maximum Bending Stress Ratio</b>	=	<b>0.692</b> : 1	<b>Maximum Shear Stress Ratio</b>	=	<b>0.380</b> : 1
Section used for this span		<b>5.250 X 14.50</b>	Section used for this span		<b>5.250 X 14.50</b>
fb: Actual	=	1,830.05psi	fv: Actual	=	72.12 psi
F'b	=	2,645.00psi	F'v	=	189.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	14.100ft	Location of maximum on span	=	0.000ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection		1.588 in Ratio =	213 < 360	Span: 1 : S Only	
Max Upward Transient Deflection		0 in Ratio =	0 < 360	n/a	
Max Downward Total Deflection		2.163 in Ratio =	156 < 180	Span: 1 : +D+S	
Max Upward Total Deflection		0 in Ratio =	0 < 180	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>F</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only																				
Length = 28.20 ft	1		0.235	0.129	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	7.46	486.3	2,070.0	0.97	19.2	148.5		
+D+S																				
Length = 28.20 ft	1		0.692	0.380	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	28.06	1,830.1	2,645.0	3.66	72.1	189.8		
+D+0.750S																				
Length = 28.20 ft	1		0.565	0.310	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	22.91	1,494.1	2,645.0	2.99	58.9	189.8		
+0.60D																				
Length = 28.20 ft	1		0.079	0.044	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.47	291.8	3,680.0	0.58	11.5	264.0		

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** Grid I-J/13-15 GLB (Beam Immediately Adjacent to Wall)

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	2.1633	14.203		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.980	3.980
Max Upward from Load Combinations	3.980	3.980
Max Upward from Load Cases	2.922	2.922
D Only	1.058	1.058
+D+S	3.980	3.980
+D+0.750S	3.249	3.249
+0.60D	0.635	0.635
S Only	2.922	2.922





Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** Grid I-J/13-15 GLB (First Beam after Beam Next to Wall)

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	3.2832	14.203		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	6.040	6.040
Max Upward from Load Combinations	6.040	6.040
Max Upward from Load Cases	3.925	3.925
D Only	2.115	2.115
+D+S	6.040	6.040
+D+0.750S	5.059	5.059
+0.60D	1.269	1.269
S Only	3.925	3.925

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

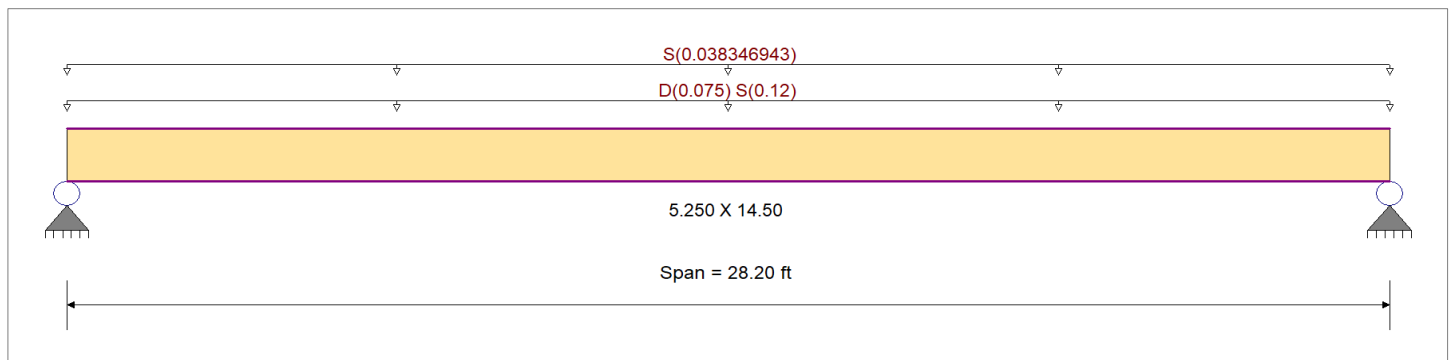
**DESCRIPTION:** [REPAIR] Grid I-J/13-15 GLB (First Beam after Beam Next to Wall)

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,300.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	2,300.0 psi	Ebend- xx	1,400.0ksi
	Fc - Prll	2,100.0 psi	Eminbend - xx	1,400.0ksi
Wood Species : UBC 1964 LD-3 C Select On	Fc - Perp	385.0 psi	Ebend- yy	ksi
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy	ksi
	Ft	2,300.0 psi	Density	35.0pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.0250, S = 0.040 ksf, Tributary Width = 3.0 ft, (Flat Loads)

Uniform Load : S = 0.007079 ksf, Tributary Width = 5.417 ft, (Drift)

### DESIGN SUMMARY

**Design OK**

<b>Maximum Bending Stress Ratio</b>	=	<b>0.572</b>	1	<b>Maximum Shear Stress Ratio</b>	=	<b>0.314</b>	: 1
Section used for this span		<b>5.250 X 14.50</b>		Section used for this span		<b>5.250 X 14.50</b>	
fb: Actual	=	1,513.03 psi		fv: Actual	=	59.63 psi	
F'b	=	2,645.00 psi		F'v	=	189.75 psi	
Load Combination		+D+S		Load Combination		+D+S	
Location of maximum on span	=	14.100ft		Location of maximum on span	=	0.000ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
<b>Maximum Deflection</b>							
Max Downward Transient Deflection		1.214 in	Ratio =	<b>278</b>	>=180	Span: 1 : S Only	
Max Upward Transient Deflection		0 in	Ratio =	<b>0</b>	<180	n/a	
Max Downward Total Deflection		1.789 in	Ratio =	<b>189</b>	>=120	Span: 1 : +D+S	
Max Upward Total Deflection		0 in	Ratio =	<b>0</b>	<120	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>F</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v
D Only															0.0	0.00	0.0	0.0
Length = 28.20 ft	1	0.235	0.129	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	7.46	486.3	2,070.0	0.97	19.2	148.5	
+D+S															0.0	0.00	0.0	0.0
Length = 28.20 ft	1	0.572	0.314	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	23.20	1,513.0	2,645.0	3.03	59.6	189.8	
+D+0.750S															0.0	0.00	0.0	0.0
Length = 28.20 ft	1	0.475	0.261	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	19.26	1,256.3	2,645.0	2.51	49.5	189.8	
+0.60D															0.0	0.00	0.0	0.0
Length = 28.20 ft	1	0.079	0.044	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.47	291.8	3,680.0	0.58	11.5	264.0	

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** [REPAIR] Grid I-J/13-15 GLB (First Beam after Beam Next to Wall)

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.7885	14.203		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.290	3.290
Max Upward from Load Combinations	3.290	3.290
Max Upward from Load Cases	2.233	2.233
D Only	1.058	1.058
+D+S	3.290	3.290
+D+0.750S	2.732	2.732
+0.60D	0.635	0.635
S Only	2.233	2.233



Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** General Original Building GLB (Grid I-J/1-12)

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	2.9893	14.203		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	5.499	5.499
Max Upward from Load Combinations	5.499	5.499
Max Upward from Load Cases	3.384	3.384
D Only	2.115	2.115
+D+S	5.499	5.499
+D+0.750S	4.653	4.653
+0.60D	1.269	1.269
S Only	3.384	3.384

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017697, Build:20.23.08.01

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** BRACED (E) Longer GLB Framing into Diagonal Girder

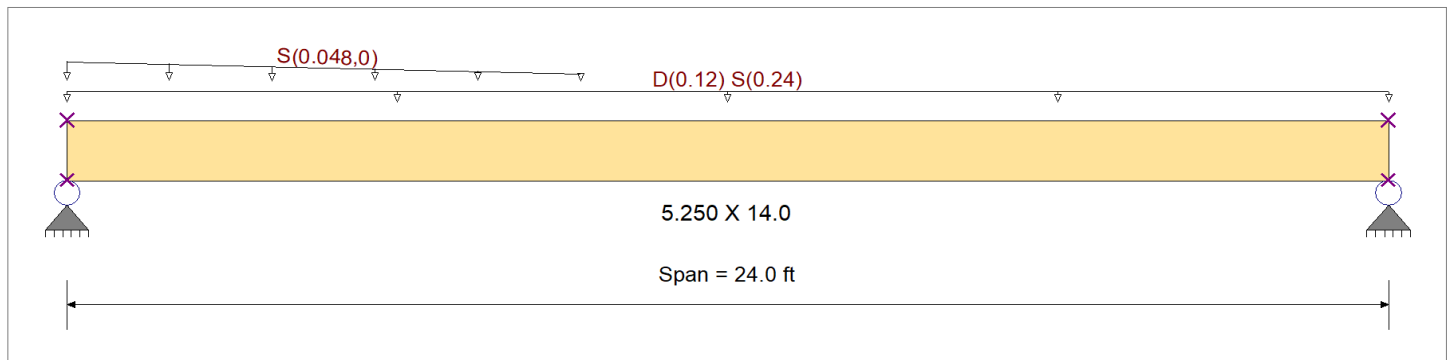
### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,300.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	2,300.0 psi	Ebend- xx	1,400.0ksi
	Fc - Prll	2,100.0 psi	Eminbend - xx	1,400.0ksi
Wood Species : UBC 1964 LD-3 C Select On	Fc - Perp	385.0 psi	Ebend- yy	ksi
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy	ksi
	Ft	2,300.0 psi	Density	35.0pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 6.0 ft  
Varying Uniform Load : S= 0.0480->0.0 k/ft, Extent = 0.0 -->> 9.333 ft, Trib Width = 1.0 ft

### DESIGN SUMMARY

**Design N.G.**

Maximum Bending Stress Ratio	=	<b>0.719</b> < 1	Maximum Shear Stress Ratio	=	<b>0.436</b> < 1
Section used for this span	=	<b>5.250 X 14.0</b>	Section used for this span	=	<b>5.250 X 14.0</b>
fb: Actual	=	1,838.10 psi	fv: Actual	=	82.73 psi
F'b	=	2,556.34 psi	F'v	=	189.75 psi
Load Combination	=	+D+S	Load Combination	=	+D+S
Location of maximum on span	=	11.912ft	Location of maximum on span	=	0.000ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection	1.097 in	Ratio =	<b>262</b> < 360	Span: 1 : S Only	
Max Upward Transient Deflection	0 in	Ratio =	<b>0</b> < 360	n/a	
Max Downward Total Deflection	1.633 in	Ratio =	<b>176</b> < 180	Span: 1 : +D+S	
Max Upward Total Deflection	0 in	Ratio =	<b>0</b> < 180	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values			
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v	
D Only	Length = 24.0 ft	1	0.301	0.179	0.90	1.00	1.00	0.98	0.969	1.00	1.00	1.00	8.64	604.5	2,006.5	0.0	0.00	0.0	0.0
+D+S	Length = 24.0 ft	1	0.719	0.436	1.15	1.00	1.00	0.97	0.969	1.00	1.00	1.00	26.27	1,838.1	2,556.3	4.05	82.7	189.8	0.0
+D+0.750S	Length = 24.0 ft	1	0.598	0.362	1.15	1.00	1.00	0.97	0.969	1.00	1.00	1.00	21.86	1,529.7	2,556.3	3.37	68.7	189.8	0.0
+0.60D	Length = 24.0 ft	1	0.105	0.060	1.60	1.00	1.00	0.94	0.969	1.00	1.00	1.00	5.18	362.7	3,464.0	0.78	16.0	264.0	0.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017697, Build:20.23.08.01

REID MIDDLETON, INC.

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**DESCRIPTION: BRACED (E) Longer GLB Framing into Diagonal Girder**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.6327	12.000		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	4.515	4.349
Max Upward from Load Combinations	4.515	4.349
Max Upward from Load Cases	3.075	2.909
D Only	1.440	1.440
+D+S	4.515	4.349
+D+0.750S	3.746	3.622
+0.60D	0.864	0.864
S Only	3.075	2.909



Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017697, Build:20.23.08.01

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** BRACED (E) Shorter GLB Framing into Diagonal Girder

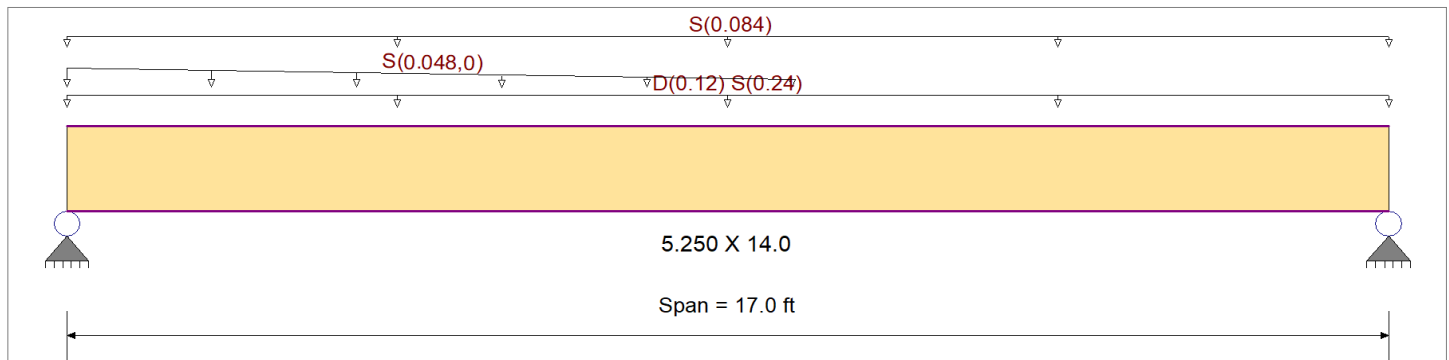
**CODE REFERENCES**

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method : Allowable Stress Design	Fb +	2,300.0 psi	E : Modulus of Elasticity
Load Combination : ASCE 7-16	Fb -	2,300.0 psi	Ebend- xx
	Fc - Prll	2,100.0 psi	Eminbend - xx
Wood Species : UBC 1964 LD-3 C Select On	Fc - Perp	385.0 psi	Ebend- yy
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy
	Ft	2,300.0 psi	Density
			35.0pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 6.0 ft  
Varying Uniform Load : S= 0.0480->0.0 k/ft, Extent = 0.0 -->> 9.333 ft, Trib Width = 1.0 ft  
  
Uniform Load : S = 0.0140 ksf, Tributary Width = 6.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio	=	<b>0.434</b> : 1	Maximum Shear Stress Ratio	=	<b>0.367</b> : 1
Section used for this span		<b>5.250 X 14.0</b>	Section used for this span		<b>5.250 X 14.0</b>
fb: Actual	=	1,146.75psi	fv: Actual	=	69.61 psi
F'b	=	2,645.00psi	F'v	=	189.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	8.438ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection	0.376 in	Ratio =	<b>542</b> >=360	Span: 1 : S Only	
Max Upward Transient Deflection	0 in	Ratio =	<b>0</b> <360	n/a	
Max Downward Total Deflection	0.511 in	Ratio =	<b>399</b> >=180	Span: 1 : +D+S	
Max Upward Total Deflection	0 in	Ratio =	<b>0</b> <180	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only																				
Length = 17.0 ft	1	0.147	0.122	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.34	303.3	2,070.0	0.0	0.00	0.0	0.0	18.1	148.5
+D+S																				
Length = 17.0 ft	1	0.434	0.367	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	16.39	1,146.8	2,645.0	0.0	0.00	0.0	0.0	69.6	189.8
+D+0.750S																				
Length = 17.0 ft	1	0.354	0.299	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	13.38	935.9	2,645.0	0.0	0.00	0.0	0.0	56.7	189.8
+0.60D																				
Length = 17.0 ft	1	0.049	0.041	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.60	182.0	3,680.0	0.0	0.00	0.0	0.0	10.8	264.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017697, Build:20.23.08.01

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2023

**DESCRIPTION: BRACED (E) Shorter GLB Framing into Diagonal Girder**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.5108	8.500		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.957	3.815
Max Upward from Load Combinations	3.957	3.815
Max Upward from Load Cases	2.937	2.795
D Only	1.020	1.020
+D+S	3.957	3.815
+D+0.750S	3.223	3.116
+0.60D	0.612	0.612
S Only	2.937	2.795

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

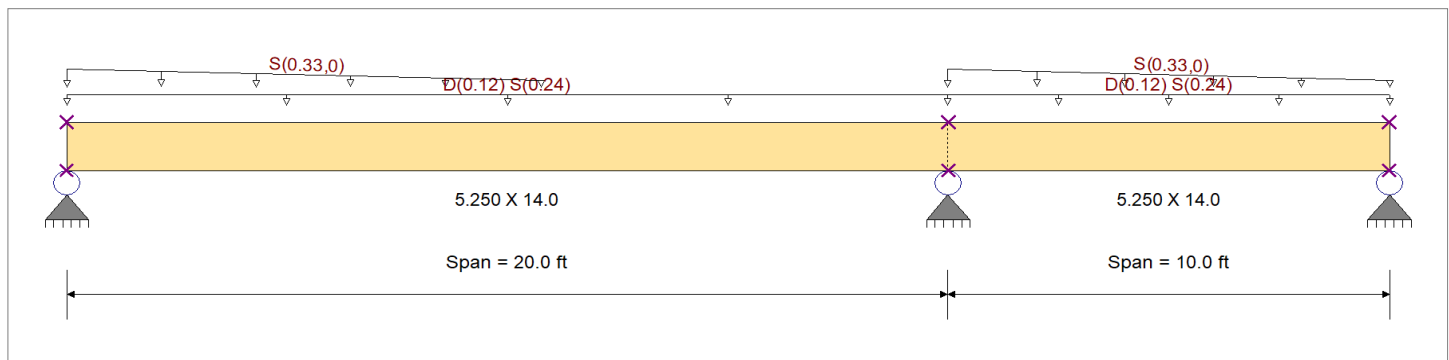
**DESCRIPTION:** Grid I-J/15-18 GLB Framing into Diagonal Girder

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,300.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	2,300.0 psi	Ebend- xx	1,400.0ksi
	Fc - Prll	2,100.0 psi	Eminbend - xx	1,400.0ksi
Wood Species : UBC 1964 LD-3 C Select On	Fc - Perp	385.0 psi	Ebend- yy	ksi
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy	ksi
	Ft	2,300.0 psi	Density	35.0pcf
Beam Bracing : Completely Unbraced				



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Load for Span Number 1

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 6.0 ft

Varying Uniform Load : S = 0.0550->0.0 ksf, Extent = 0.0 -->> 10.750 ft, Trib Width = 6.0 ft

Load for Span Number 2

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 6.0 ft

Varying Uniform Load : S = 0.0550->0.0 ksf, Extent = 0.0 -->> 10.0 ft, Trib Width = 6.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio	=	<b>0.439</b>	1	Maximum Shear Stress Ratio	=	<b>0.465</b>	: 1
Section used for this span		<b>5.250 X 14.0</b>		Section used for this span		<b>5.250 X 14.0</b>	
fb: Actual	=	1,131.31 psi		fv: Actual	=	88.24 psi	
F'b	=	2,577.39 psi		F'v	=	189.75 psi	
Load Combination		+D+S		Load Combination		+D+S	
Location of maximum on span	=	20.000ft		Location of maximum on span	=	18.883 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
<b>Maximum Deflection</b>							
Max Downward Transient Deflection		0.372 in	Ratio =	<b>645</b>	>=	360	Span: 1 : S Only
Max Upward Transient Deflection		-0.027 in	Ratio =	<b>4398</b>	>=	360	Span: 2 : S Only
Max Downward Total Deflection		0.516 in	Ratio =	<b>464</b>	>=	180	Span: 1 : +D+S
Max Upward Total Deflection		-0.042 in	Ratio =	<b>2854</b>	>=	180	Span: 2 : +D+S

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only																				
	Length = 20.0 ft	1	0.155	0.177	0.90	1.00	1.00	0.98	0.987	1.00	1.00	1.00	4.50	314.9	2,032.2	0.0	0.00	0.0	0.0	148.5
	Length = 10.0 ft	2	0.153	0.177	0.90	1.00	1.00	0.99	1.000	1.00	1.00	1.00	4.50	314.9	2,052.3	0.92	26.3	148.5	148.5	148.5
+D+S						1.00	1.00	0.99	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0	0.0	0.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

Project File: Scenic Park Reroof Calcs.ec6

**Wood Beam**

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION: Grid I-J/15-18 GLB Framing into Diagonal Girder**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values			
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v
Length = 20.0 ft	1		0.439	0.465	1.15	1.00	1.00	0.97	0.987	1.00	1.00	1.00	16.17	1,131.3	2,577.4	4.32	88.2	189.8
Length = 10.0 ft	2		0.433	0.465	1.15	1.00	1.00	0.99	1.000	1.00	1.00	1.00	16.17	1,131.3	2,614.8	3.77	88.2	189.8
+D+0.750S															0.0	0.00	0.0	0.0
Length = 20.0 ft	1		0.360	0.384	1.15	1.00	1.00	0.97	0.987	1.00	1.00	1.00	13.25	927.2	2,577.4	3.57	72.8	189.8
Length = 10.0 ft	2		0.355	0.384	1.15	1.00	1.00	0.99	1.000	1.00	1.00	1.00	13.25	927.2	2,614.8	3.05	72.8	189.8
+0.60D															0.0	0.00	0.0	0.0
Length = 20.0 ft	1		0.054	0.060	1.60	1.00	1.00	0.96	0.987	1.00	1.00	1.00	2.70	188.9	3,523.5	0.77	15.8	264.0
Length = 10.0 ft	2		0.052	0.060	1.60	1.00	1.00	0.98	1.000	1.00	1.00	1.00	2.70	188.9	3,616.5	0.55	15.8	264.0

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.5163	8.827	+D+S	0.0000	0.000
	2	0.0000	8.827		-0.0420	3.073

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	4.248	9.243	0.733
Max Upward from Load Combinations	4.248	9.243	0.733
Max Upward from Load Cases	3.273	6.768	0.583
D Only	0.975	2.475	0.150
+D+S	4.248	9.243	0.733
+D+0.750S	3.429	7.551	0.587
+0.60D	0.585	1.485	0.090
S Only	3.273	6.768	0.583

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** Grid H/15-20 Original Building Girders

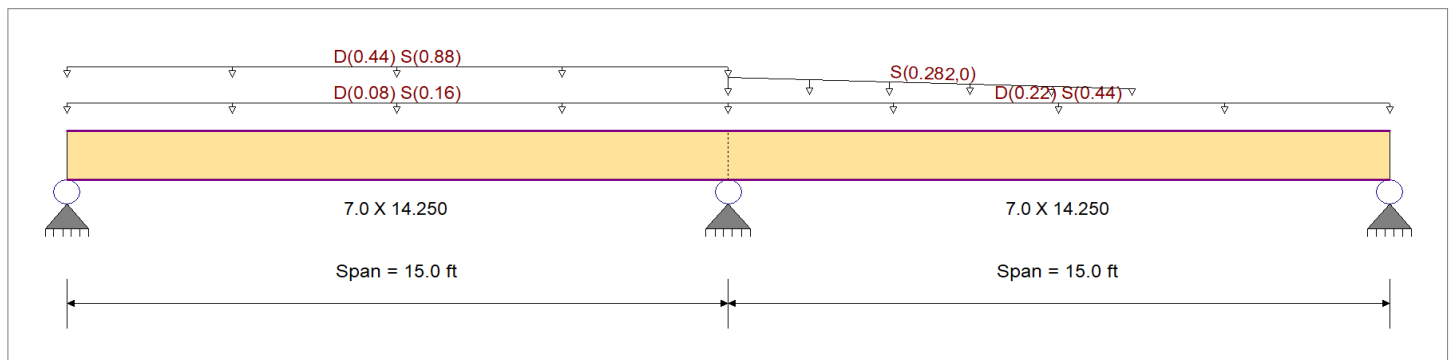
### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,300.0 psi	E : Modulus of Elasticity
Load Combination : ASCE 7-16	Fb -	2,300.0 psi	Ebend- xx
	Fc - Prll	2,100.0 psi	Eminbend - xx
Wood Species : UBC 1964 LD-3 C Select On	Fc - Perp	385.0 psi	Ebend- yy
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy
	Ft	2,300.0 psi	Density
			35.0pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Load for Span Number 1

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 4.0 ft

Uniform Load : D = 0.020, S = 0.040 ksf, Extent = 0.0 --> 15.0 ft, Tributary Width = 22.0 ft

Load for Span Number 2

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 11.0 ft

Varying Uniform Load : S = 0.0470->0.0 ksf, Extent = 0.0 --> 9.167 ft, Trib Width = 6.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio	=	<b>0.630</b> : 1	Maximum Shear Stress Ratio	=	<b>0.953</b> : 1
Section used for this span		<b>7.0 X 14.250</b>	Section used for this span		<b>7.0 X 14.250</b>
fb: Actual	=	1,641.11 psi	fv: Actual	=	180.90 psi
F'b	=	2,606.36 psi	F'v	=	189.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	15.000ft	Location of maximum on span	=	13.827 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection		0.282 in Ratio = <b>639</b> >=360	Span: 2 : S Only		
Max Upward Transient Deflection		-0.028 in Ratio = <b>6521</b> >=360	Span: 2 : S Only		
Max Downward Total Deflection		0.428 in Ratio = <b>420</b> >=180	Span: 2 : +D+S		
Max Upward Total Deflection		-0.047 in Ratio = <b>3826</b> >=180	Span: 2 : +D+S		

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v	
D Only																			
	Length = 15.0 ft	1	0.258	0.403	0.90	1.00	1.00	1.00	0.985	1.00	1.00	1.00	10.41	527.1	2,039.8	0.0	3.98	59.9	148.5
	Length = 15.0 ft	2	0.258	0.403	0.90	1.00	1.00	1.00	0.985	1.00	1.00	1.00	10.41	527.1	2,039.8	0.0	2.09	59.9	148.5
+D+S																			
	Length = 15.0 ft	1	0.630	0.953	1.15	1.00	1.00	1.00	0.985	1.00	1.00	1.00	32.40	1,641.1	2,606.4	0.0	12.03	180.9	189.8

Project Title:  
Engineer:  
Project ID:  
Project Descr:

Project File: Scenic Park Reroof Calcs.ec6

**Wood Beam**

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION: Grid H/15-20 Original Building Girders**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values		
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	f <sub>v</sub>
Length = 15.0 ft +D+0.750S	2	0.630	0.953	1.15	1.00	1.00	1.00	0.985	1.00	1.00	1.00	32.40	1,641.1	2,606.4	7.06	180.9	189.8
														0.0	0.00	0.0	0.0
Length = 15.0 ft +0.60D	1	0.523	0.794	1.15	1.00	1.00	1.00	0.985	1.00	1.00	1.00	26.90	1,362.6	2,606.4	10.02	150.7	189.8
	2	0.523	0.794	1.15	1.00	1.00	1.00	0.985	1.00	1.00	1.00	26.90	1,362.6	2,606.4	5.81	150.7	189.8
Length = 15.0 ft	1	0.087	0.136	1.60	1.00	1.00	1.00	0.985	1.00	1.00	1.00	6.24	316.3	3,626.2	2.39	35.9	264.0
	2	0.087	0.136	1.60	1.00	1.00	1.00	0.985	1.00	1.00	1.00	6.24	316.3	3,626.2	1.25	35.9	264.0

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.4284	6.788		0.0000	0.000
+D+S	2	0.0403	10.559	+D+S	-0.0470	2.514

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	9.540	21.999	3.053
Max Upward from Load Combinations	9.540	21.999	3.053
Max Upward from Load Cases	6.334	15.062	2.097
D Only	3.206	6.937	0.956
+D+S	9.540	21.999	3.053
+D+0.750S	7.957	18.234	2.529
+0.60D	1.924	4.162	0.574
S Only	6.334	15.062	2.097

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

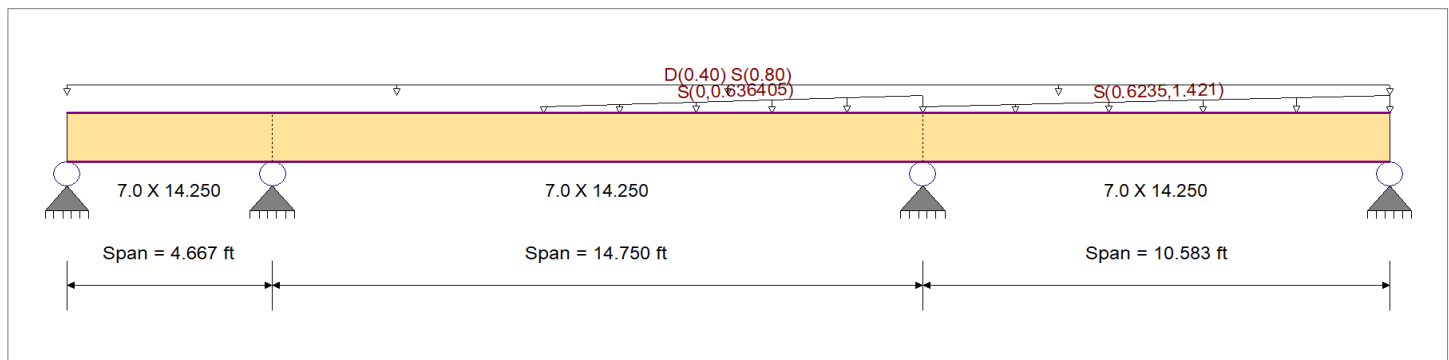
**DESCRIPTION:** Grid H/12-15 Original Building Girders

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,300.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	2,300.0 psi	Ebend- xx	1,400.0ksi
	Fc - Prll	2,100.0 psi	Eminbend - xx	1,400.0ksi
Wood Species : UBC 1964 LD-3 C Select On	Fc - Perp	385.0 psi	Ebend- yy	ksi
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy	ksi
	Ft	2,300.0 psi	Density	35.0pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Loads on all spans...

Uniform Load on ALL spans : D = 0.020, S = 0.040 ksf, Tributary Width = 20.0 ft

Load for Span Number 2

Varying Uniform Load : S= 0.0->0.04389 ksf, Extent = 6.167 --> 14.750 ft, Trib Width = 14.50 ft

Load for Span Number 3

Varying Uniform Load : S= 0.0430->0.0980 ksf, Extent = 0.0 --> 10.583 ft, Trib Width = 14.50 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio	=	<b>0.576</b>	1	Maximum Shear Stress Ratio	=	<b>0.928</b>	: 1
Section used for this span		<b>7.0 X 14.250</b>		Section used for this span		<b>7.0 X 14.250</b>	
fb: Actual	=	1,504.44 psi		fv: Actual	=	176.00 psi	
F'b	=	2,610.75 psi		F'v	=	189.75 psi	
Load Combination		+D+S		Load Combination		+D+S	
Location of maximum on span	=	14.750ft		Location of maximum on span	=	14.750 ft	
Span # where maximum occurs	=	Span # 2		Span # where maximum occurs	=	Span # 2	
<b>Maximum Deflection</b>							
Max Downward Transient Deflection		0.105 in	Ratio =	<b>1213</b>	>=360	Span: 3 : S Only	
Max Upward Transient Deflection		-0.008 in	Ratio =	<b>7057</b>	>=360	Span: 2 : S Only	
Max Downward Total Deflection		0.118 in	Ratio =	<b>1077</b>	>=180	Span: 3 : +D+S	
Max Upward Total Deflection		-0.012 in	Ratio =	<b>4570</b>	>=180	Span: 3 : D Only	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only																				
	Length = 4.667 ft	<b>1</b>	0.144	0.246	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	5.88	297.9	2,070.0	0.0	2.43	36.6	148.5	0.0
	Length = 14.750 ft	<b>2</b>	0.173	0.261	0.90	1.00	1.00	1.00	0.987	1.00	1.00	1.00	6.96	352.6	2,043.2	2.58	38.8	148.5	2.58	38.8
	Length = 10.583 ft	<b>3</b>	0.170	0.261	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.96	352.6	2,070.0	2.31	38.8	148.5	2.31	38.8



Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION: Grid H/12-15 Original Building Girders**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values			
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v
+D+S						1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 4.667 ft	1		0.325	0.569	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	16.96	859.1	2,645.0	7.18	107.9	189.8
Length = 14.750 ft	2		0.576	0.928	1.15	1.00	1.00	1.00	0.987	1.00	1.00	1.00	29.70	1,504.4	2,610.7	11.70	176.0	189.8
Length = 10.583 ft	3		0.569	0.928	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	29.70	1,504.4	2,645.0	11.70	176.0	189.8
+D+0.750S						1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 4.667 ft	1		0.272	0.475	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	14.19	718.8	2,645.0	5.99	90.1	189.8
Length = 14.750 ft	2		0.466	0.741	1.15	1.00	1.00	1.00	0.987	1.00	1.00	1.00	24.02	1,216.5	2,610.7	9.36	140.7	189.8
Length = 10.583 ft	3		0.460	0.741	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	24.02	1,216.5	2,645.0	9.36	140.7	189.8
+0.60D						1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 4.667 ft	1		0.049	0.083	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.53	178.7	3,680.0	1.46	21.9	264.0
Length = 14.750 ft	2		0.058	0.088	1.60	1.00	1.00	1.00	0.987	1.00	1.00	1.00	4.18	211.6	3,632.3	1.55	23.3	264.0
Length = 10.583 ft	3		0.057	0.088	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.18	211.6	3,680.0	1.39	23.3	264.0

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+S	-0.0123	2.863
+D+S	2	0.1457	7.065		0.0000	2.863
+D+S	3	0.1179	6.137		0.0000	2.863

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions		14.951	25.778	9.656
Max Upward from Load Combinations		14.951	25.778	9.656
Max Upward from Load Cases		9.880	19.980	8.197
Max Downward from all Load Conditio	-0.834			
Max Downward from Load Combinations	-0.834			
Max Downward from Load Cases (Resis	-0.508			
D Only	-0.327	5.070	5.798	1.459
+D+S	-0.834	14.951	25.778	9.656
+D+0.750S	-0.708	12.481	20.783	7.607
+0.60D	-0.196	3.042	3.479	0.875
S Only	-0.508	9.880	19.980	8.197

## 1972 ADDITION ROOF CAPACITY CHECKS

PER ORIGINAL 1972 DRAWINGS, TRUSSES ARE DESIGNED FOR FLAT ROOF LOADS OF 40 PSF, THIS MATCHES CURRENT CODE REQUIREMENT

PER 1999 RENOVATION DRAWINGS, (3) TRUSSES TO THE PLAN WEST OF THE PENTHOUSE WERE TO BE MODIFIED AND STRENGTHENED FOR SNOW DRIFTING AND TO INCORPORATE NEW BEARING POINT AT NEW WALL. SHOP DRAWINGS FOR THESE TRUSS UPGRADES WERE NOT AVAILABLE. 1999 SNOW DRIFT LOADS IN THIS LOCATION MATCH CURRENT RMI CALCULATIONS.

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

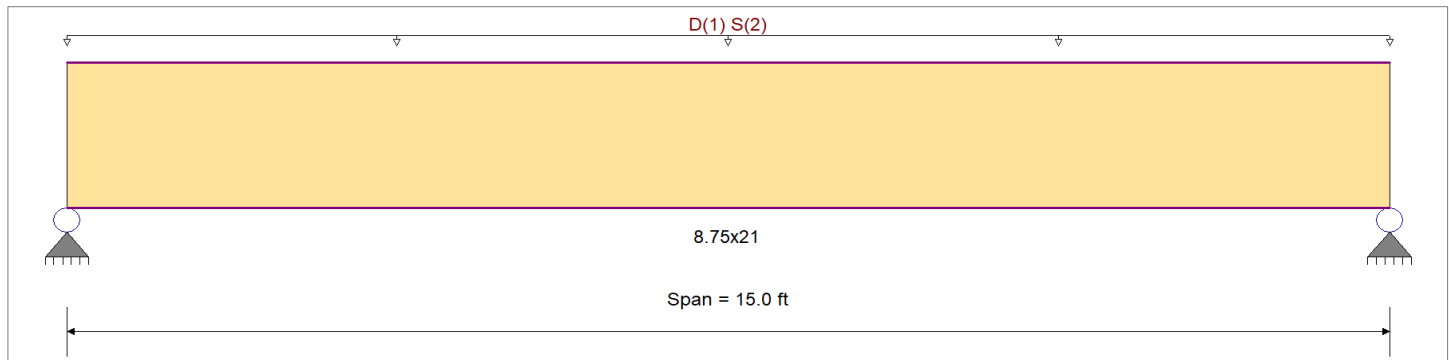
**DESCRIPTION:** 72 Addition GLB Grid D/23-25

**CODE REFERENCES**

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method : Allowable Stress Design	Fb +	2,200.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	2,200.0 psi	Ebend- xx	1,800.0ksi
	Fc - Prll	1,500.0 psi	Eminbend - xx	1,400.0ksi
Wood Species : UBC 1970 DF&L B GLB	Fc - Perp	450.0 psi	Ebend- yy	ksi
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy	ksi
	Ft	1,600.0 psi	Density	35.0pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 50.0 ft

**DESIGN SUMMARY**

**Design OK**

<b>Maximum Bending Stress Ratio</b>	=	<b>0.671</b> : 1	<b>Maximum Shear Stress Ratio</b>	=	<b>0.749</b> : 1
Section used for this span		<b>8.75x21</b>	Section used for this span		<b>8.75x21</b>
fb: Actual	=	1,574.34 psi	fv: Actual	=	142.11 psi
F'b	=	2,345.30 psi	F'v	=	189.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	7.500ft	Location of maximum on span	=	13.303 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection	0.189 in	Ratio = 954 >=360	Span: 1 : S Only		
Max Upward Transient Deflection	0 in	Ratio = 0 <360	n/a		
Max Downward Total Deflection	0.283 in	Ratio = 636 >=180	Span: 1 : +D+S		
Max Upward Total Deflection	0 in	Ratio = 0 <180	n/a		

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values					
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v			
D Only																					
Length = 15.0 ft	1		0.286	0.319	0.90	1.00	1.00	1.00	0.927	1.00	1.00	1.00	28.13	524.8	1,835.5	0.0	0.00	0.0	0.0	0.0	148.5
+D+S																					
Length = 15.0 ft	1		0.671	0.749	1.15	1.00	1.00	1.00	0.927	1.00	1.00	1.00	84.38	1,574.3	2,345.3	0.0	0.00	0.0	0.0	0.0	189.8
+D+0.750S																					
Length = 15.0 ft	1		0.559	0.624	1.15	1.00	1.00	1.00	0.927	1.00	1.00	1.00	70.31	1,312.0	2,345.3	0.0	0.00	0.0	0.0	0.0	189.8
+0.60D																					
Length = 15.0 ft	1		0.096	0.108	1.60	1.00	1.00	1.00	0.927	1.00	1.00	1.00	16.88	314.9	3,263.0	0.0	0.00	0.0	0.0	0.0	264.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION:** 72 Addition GLB Grid D/23-25

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.2828	7.555		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	22.500	22.500
Max Upward from Load Combinations	22.500	22.500
Max Upward from Load Cases	15.000	15.000
D Only	7.500	7.500
+D+S	22.500	22.500
+D+0.750S	18.750	18.750
+0.60D	4.500	4.500
S Only	15.000	15.000

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

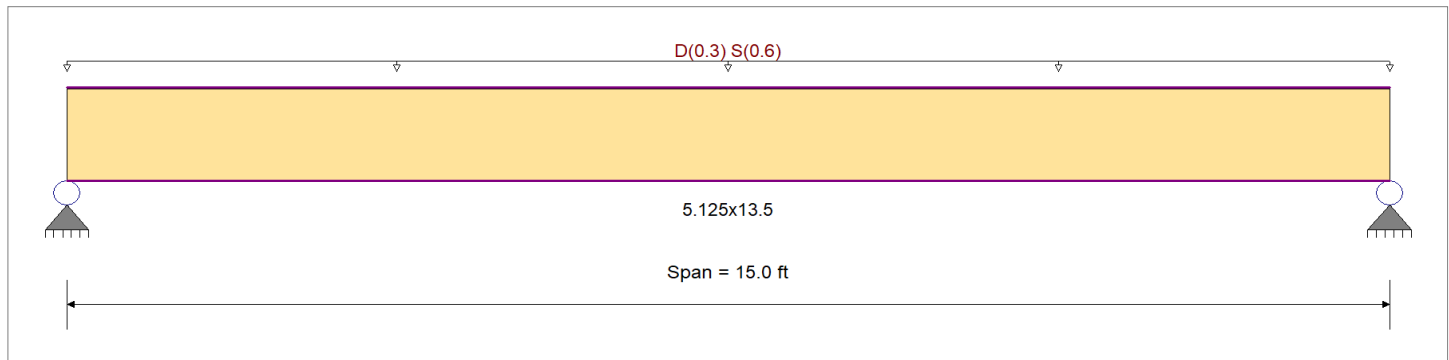
**DESCRIPTION:** Other 72 Addition GLB Grid D/25.5-26

**CODE REFERENCES**

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method : Allowable Stress Design	Fb +	2,200.0 psi	<i>E : Modulus of Elasticity</i>
Load Combination : ASCE 7-16	Fb -	2,200.0 psi	Ebend- xx 1,800.0ksi
	Fc - Prll	1,500.0 psi	Eminbend - xx 1,400.0ksi
Wood Species : UBC 1970 DF&L B GLB	Fc - Perp	450.0 psi	Ebend- yy ksi
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy ksi
	Ft	1,600.0 psi	Density 35.0pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling			



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 15.0 ft

**DESIGN SUMMARY**

**Design OK**

<b>Maximum Bending Stress Ratio</b> =	<b>0.771</b> : 1	<b>Maximum Shear Stress Ratio</b> =	<b>0.659</b> : 1
Section used for this span	<b>5.125x13.5</b>	Section used for this span	<b>5.125x13.5</b>
fb: Actual =	1,951.22 psi	fv: Actual =	124.98 psi
F'b =	2,530.00 psi	F'v =	189.75 psi
Load Combination	+D+S	Load Combination	+D+S
Location of maximum on span	= 7.500ft	Location of maximum on span	= 13.905 ft
Span # where maximum occurs	= Span # 1	Span # where maximum occurs	= Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.363 in Ratio =	495 >=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in Ratio =	0 <360	n/a
Max Downward Total Deflection	0.545 in Ratio =	330 >=180	Span: 1 : +D+S
Max Upward Total Deflection	0 in Ratio =	0 <180	n/a

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values			
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v	
D Only	Length = 15.0 ft	1	0.328	0.281	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	8.44	650.4	1,980.0	0.0	0.00	0.0	0.0
+D+S	Length = 15.0 ft	1	0.771	0.659	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	25.31	1,951.2	2,530.0	5.76	125.0	189.8	0.0
+D+0.750S	Length = 15.0 ft	1	0.643	0.549	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	21.09	1,626.0	2,530.0	4.80	104.1	189.8	0.0
+0.60D	Length = 15.0 ft	1	0.111	0.095	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	5.06	390.2	3,520.0	1.15	25.0	264.0	0.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION:** Other 72 Addition GLB Grid D/25.5-26

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.5452	7.555		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	6.750	6.750
Max Upward from Load Combinations	6.750	6.750
Max Upward from Load Cases	4.500	4.500
D Only	2.250	2.250
+D+S	6.750	6.750
+D+0.750S	5.625	5.625
+0.60D	1.350	1.350
S Only	4.500	4.500

## General Beam Analysis

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

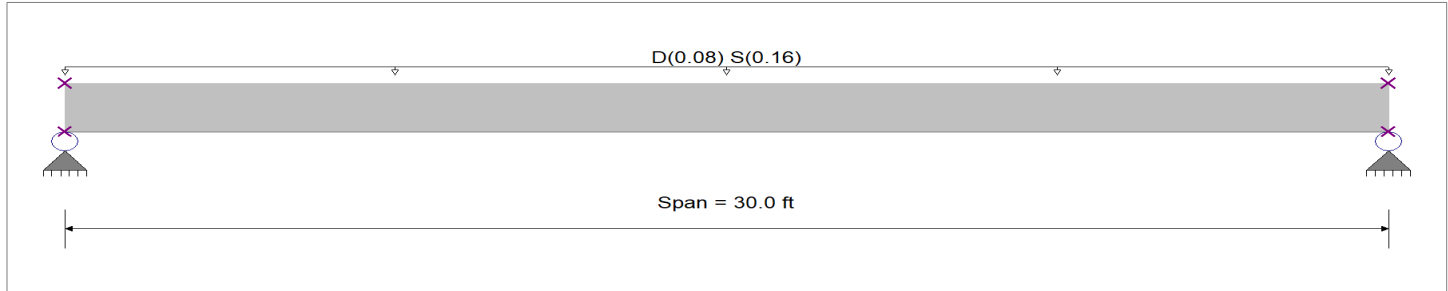
REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

### DESCRIPTION: 72 Addition North Taper Truss Flat Snow

### General Beam Properties

Elastic Modulus = 29,000.0 ksi  
**Span #1** Span Length = 30.0 ft Area = 10.0 in<sup>2</sup> Moment of Inertia = 100.0 in<sup>4</sup>



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 4.0 ft

### DESIGN SUMMARY

<b>Maximum Bending =</b>	27.000 k-ft	<b>Maximum Shear =</b>	3.60 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	15.000 ft	Location of maximum on span	0.000 ft
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	1.014 in	355	
Max Upward Transient Deflection	0.016 in	22376	
Max Downward Total Deflection	1.520 in	236	
Max Upward Total Deflection	0.005 in	74588	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values (k-ft)					Shear Values (k)		
			M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega Cb	Rm	Va Max	Vnx/Vnx/Omega
Overall MAXimum Envelope												
D Only	Dsgn. L = 30.00 ft	1			27.00		27.00				3.60	
+D+S	Dsgn. L = 30.00 ft	1			9.00		9.00				1.20	
+D+0.750S	Dsgn. L = 30.00 ft	1			27.00		27.00				3.60	
+0.60D	Dsgn. L = 30.00 ft	1			22.50		22.50				3.00	
	Dsgn. L = 30.00 ft	1			5.40		5.40				0.72	

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.5203	15.150		0.0000	0.000

### Vertical Reactions

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Overall MAXimum	3.600	3.600		
Overall MINimum				
D Only	1.200	1.200		
+D+S	3.600	3.600		
+D+0.750S	3.000	3.000		
+0.60D	0.720	0.720		
S Only	2.400	2.400		



Project Title:  
Engineer:  
Project ID:  
Project Descr:

## General Beam Analysis

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

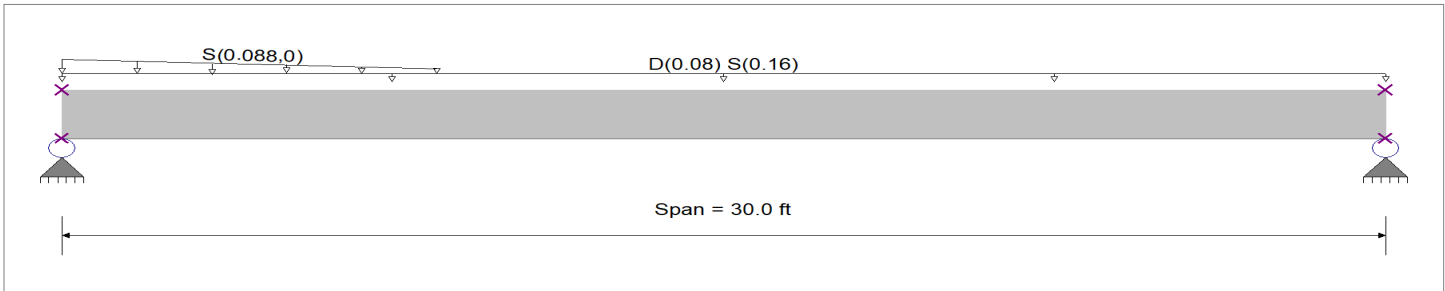
REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** 72 Addition North Taper Truss Drift Snow

### General Beam Properties

Elastic Modulus 29,000.0 ksi  
Span #1 Span Length = 30.0 ft Area = 10.0 in<sup>2</sup> Moment of Inertia = 100.0 in<sup>4</sup>



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 4.0 ft

Varying Uniform Load : S= 0.0220->0.0 ksf, Extent = 0.0 -->> 8.50 ft, Trib Width = 4.0 ft

### DESIGN SUMMARY

<b>Maximum Bending =</b>	27.532 k-ft	<b>Maximum Shear =</b>	3.939 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	14.850 ft	Location of maximum on span	0.000 ft
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	1.048 in	343	
Max Upward Transient Deflection	0.017 in	21442	
Max Downward Total Deflection	1.555 in	231	
Max Upward Total Deflection	0.005 in	74588	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values (k-ft)					Shear Values (k)		
			M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega Cb	Rm	Va Max	Vnx/Vnx/Omega
Overall MAXimum Envelope												
D Only	Dsgn. L = 30.00 ft	1			27.53		27.53				3.94	
+D+S	Dsgn. L = 30.00 ft	1			9.00		9.00				1.20	
+D+0.750S	Dsgn. L = 30.00 ft	1			27.53		27.53				3.94	
+0.60D	Dsgn. L = 30.00 ft	1			22.90		22.90				3.25	
	Dsgn. L = 30.00 ft	1			5.40		5.40				0.72	

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.5552	15.000		0.0000	0.000

### Vertical Reactions

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Overall MAXimum	3.939	3.635		
Overall MINimum				
D Only	1.200	1.200		
+D+S	3.939	3.635		
+D+0.750S	3.254	3.026		
+0.60D	0.720	0.720		
S Only	2.739	2.435		

## General Beam Analysis

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

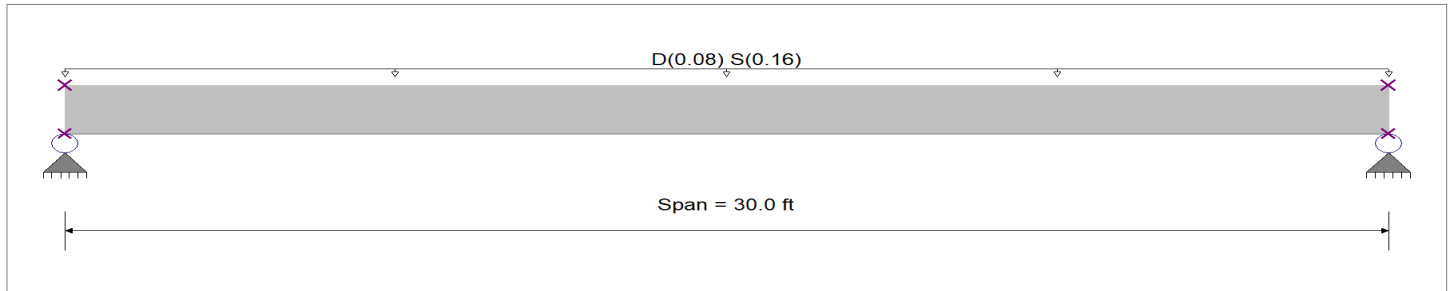
REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

### DESCRIPTION: 72 Addition East Taper Truss Flat Snow

### General Beam Properties

Elastic Modulus = 29,000.0 ksi  
**Span #1** Span Length = 30.0 ft Area = 10.0 in<sup>2</sup> Moment of Inertia = 100.0 in<sup>4</sup>



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 4.0 ft

### DESIGN SUMMARY

<b>Maximum Bending =</b>	27.000 k-ft	<b>Maximum Shear =</b>	3.60 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	15.000 ft	Location of maximum on span	0.000 ft
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	1.014 in	355	
Max Upward Transient Deflection	0.016 in	22376	
Max Downward Total Deflection	1.520 in	236	
Max Upward Total Deflection	0.005 in	74588	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values (k-ft)				Shear Values (k)		
			M	V	Mmax +	Mmax -	Ma - Max	Mnx Mnx/Omega Cb	Rm	Va Max	VnxVnx/Omega
Overall MAXimum Envelope											
D Only	Dsgn. L = 30.00 ft	1			27.00		27.00			3.60	
+D+S	Dsgn. L = 30.00 ft	1			9.00		9.00			1.20	
+D+0.750S	Dsgn. L = 30.00 ft	1			27.00		27.00			3.60	
+0.60D	Dsgn. L = 30.00 ft	1			22.50		22.50			3.00	
	Dsgn. L = 30.00 ft	1			5.40		5.40			0.72	

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.5203	15.150		0.0000	0.000

### Vertical Reactions

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Overall MAXimum	3.600	3.600		
Overall MINimum				
D Only	1.200	1.200		
+D+S	3.600	3.600		
+D+0.750S	3.000	3.000		
+0.60D	0.720	0.720		
S Only	2.400	2.400		

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## General Beam Analysis

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

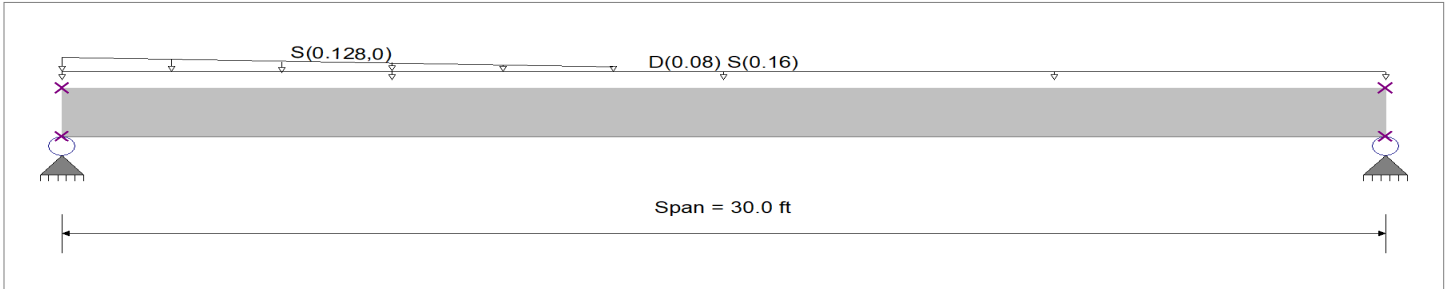
REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** 72 Addition East Taper Truss Drift Snow

### General Beam Properties

Elastic Modulus = 29,000.0 ksi  
**Span #1** Span Length = 30.0 ft Area = 10.0 in<sup>2</sup> Moment of Inertia = 100.0 in<sup>4</sup>



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 4.0 ft

Varying Uniform Load : S= 0.0320->0.0 ksf, Extent = 0.0 -->> 12.50 ft, Trib Width = 4.0 ft

### DESIGN SUMMARY

<b>Maximum Bending =</b>	28.692 k-ft	<b>Maximum Shear =</b>	4.289 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	14.550 ft	Location of maximum on span	0.000 ft
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	1.119 in	321	
Max Upward Transient Deflection	0.018 in	20044	
Max Downward Total Deflection	1.626 in	221	
Max Upward Total Deflection	0.005 in	74588	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values (k-ft)				Shear Values (k)		
			M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega Cb	Rm	Va Max
Overall MAXimum Envelope											
D Only	Dsgn. L = 30.00 ft	1			28.69		28.69				4.29
+D+S	Dsgn. L = 30.00 ft	1			9.00		9.00				1.20
+D+0.750S	Dsgn. L = 30.00 ft	1			28.69		28.69				4.29
+0.60D	Dsgn. L = 30.00 ft	1			23.77		23.77				3.52
	Dsgn. L = 30.00 ft	1			5.40		5.40				0.72

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.6255	15.000		0.0000	0.000

### Vertical Reactions

Load Combination	Support 1	Support 2
Overall MAXimum	4.289	3.711
Overall MINimum		
D Only	1.200	1.200
+D+S	4.289	3.711
+D+0.750S	3.517	3.083
+0.60D	0.720	0.720
S Only	3.089	2.511

## General Beam Analysis

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

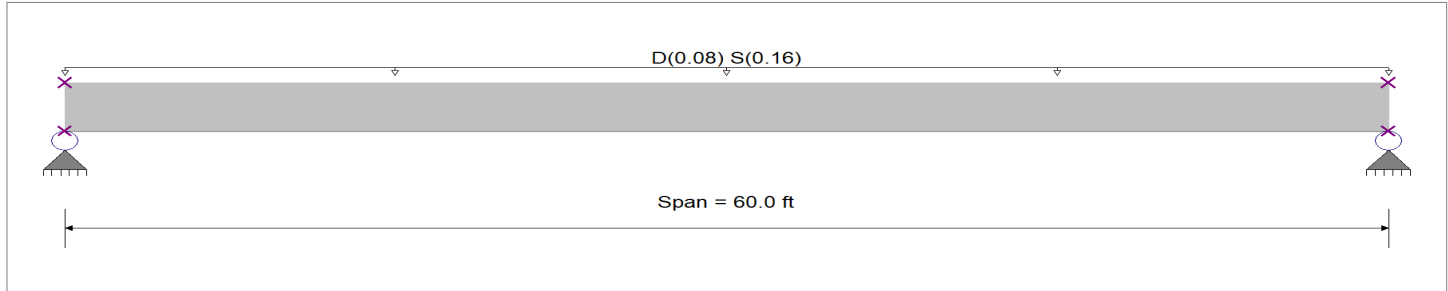
REID MIDDLETON, INC.

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### DESCRIPTION: 72 Addition Gable Truss Flat Snow

### General Beam Properties

Elastic Modulus = 29,000.0 ksi  
**Span #1** Span Length = 60.0 ft Area = 10.0 in<sup>2</sup> Moment of Inertia = 100.0 in<sup>4</sup>



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 4.0 ft

### DESIGN SUMMARY

<b>Maximum Bending =</b>	108.000 k-ft	<b>Maximum Shear =</b>	7.20 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	30.000 ft	Location of maximum on span	0.000 ft
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	16.217 in	44	
Max Upward Transient Deflection	0.257 in	2797	
Max Downward Total Deflection	24.325 in	29	
Max Upward Total Deflection	0.077 in	9323	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values (k-ft)				Shear Values (k)		
			M	V	Mmax +	Mmax -	Ma - Max	Mnx Mnx/Omega Cb	Rm	Va Max	VnxVnx/Omega
Overall MAXimum Envelope											
D Only	Dsgn. L = 60.00 ft	1			108.00		108.00			7.20	
+D+S	Dsgn. L = 60.00 ft	1			36.00		36.00			2.40	
+D+0.750S	Dsgn. L = 60.00 ft	1			108.00		108.00			7.20	
+0.60D	Dsgn. L = 60.00 ft	1			90.00		90.00			6.00	
	Dsgn. L = 60.00 ft	1			21.60		21.60			1.44	

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	24.3255	30.300		0.0000	0.000

### Vertical Reactions

Load Combination	Support notation : Far left is #'		Values in KIPS
	Support 1	Support 2	
Overall MAXimum	7.200	7.200	
Overall MINimum			
D Only	2.400	2.400	
+D+S	7.200	7.200	
+D+0.750S	6.000	6.000	
+0.60D	1.440	1.440	
S Only	4.800	4.800	

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## General Beam Analysis

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

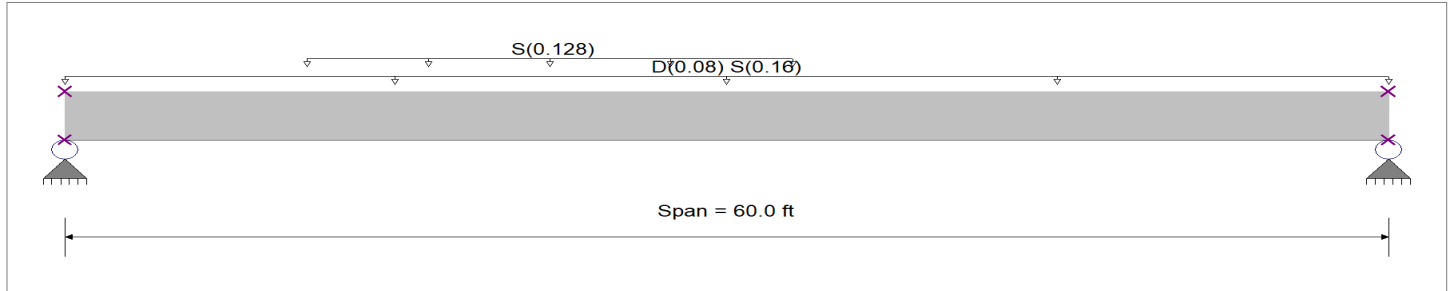
REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

### DESCRIPTION: 72 Addition Gable Truss Drift Snow

### General Beam Properties

Elastic Modulus = 29,000.0 ksi  
Span #1      Span Length = 60.0 ft      Area = 10.0 in<sup>2</sup>      Moment of Inertia = 100.0 in<sup>4</sup>



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 4.0 ft

Uniform Load : S = 0.0320 ksf, Extent = 11.0 --> 33.0 ft, Tributary Width = 4.0 ft

### DESIGN SUMMARY

<b>Maximum Bending =</b>	138.971 k-ft	<b>Maximum Shear =</b>	8.983 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	28.200 ft	Location of maximum on span	0.000 ft
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	22.724 in	31	
Max Upward Transient Deflection	0.359 in	2003	
Max Downward Total Deflection	30.831 in	23	
Max Upward Total Deflection	0.077 in	9323	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values (k-ft)				Shear Values (k)		
			M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega Cb	Rm	Va Max
Overall MAXimum Envelope											
D Only	Dsgn. L = 60.00 ft	1			138.97		138.97				8.98
+D+S	Dsgn. L = 60.00 ft	1			36.00		36.00				2.40
+D+0.750S	Dsgn. L = 60.00 ft	1			138.97		138.97				8.98
+0.60D	Dsgn. L = 60.00 ft	1			113.20		113.20				7.34
	Dsgn. L = 60.00 ft	1			21.60		21.60				1.44

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	30.8308	29.700		0.0000	0.000

### Vertical Reactions

Load Combination	Support 1	Support 2
Overall MAXimum	8.983	8.233
Overall MINimum		
D Only	2.400	2.400
+D+S	8.983	8.233
+D+0.750S	7.338	6.774
+0.60D	1.440	1.440
S Only	6.583	5.833

## General Beam Analysis

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

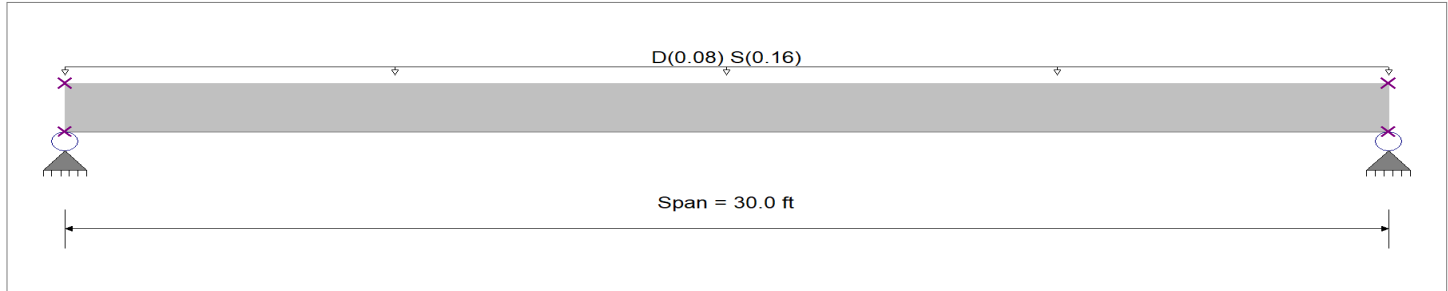
REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

### DESCRIPTION: 72 Addition South Truss Flat Snow

### General Beam Properties

Elastic Modulus = 29,000.0 ksi  
**Span #1** Span Length = 30.0 ft Area = 10.0 in<sup>2</sup> Moment of Inertia = 100.0 in<sup>4</sup>



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 4.0 ft

### DESIGN SUMMARY

<b>Maximum Bending =</b>	27.000 k-ft	<b>Maximum Shear =</b>	3.60 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	15.000 ft	Location of maximum on span	0.000 ft
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	1.014 in	355	
Max Upward Transient Deflection	0.016 in	22376	
Max Downward Total Deflection	1.520 in	236	
Max Upward Total Deflection	0.005 in	74588	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values (k-ft)					Shear Values (k)		
			M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega Cb	Rm	Va Max	VnxVnx/Omega
Overall MAXimum Envelope												
D Only	Dsgn. L = 30.00 ft	1			27.00		27.00				3.60	
+D+S	Dsgn. L = 30.00 ft	1			9.00		9.00				1.20	
+D+0.750S	Dsgn. L = 30.00 ft	1			27.00		27.00				3.60	
+0.60D	Dsgn. L = 30.00 ft	1			22.50		22.50				3.00	
	Dsgn. L = 30.00 ft	1			5.40		5.40				0.72	

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.5203	15.150		0.0000	0.000

### Vertical Reactions

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Overall MAXimum	3.600	3.600		
Overall MINimum				
D Only	1.200	1.200		
+D+S	3.600	3.600		
+D+0.750S	3.000	3.000		
+0.60D	0.720	0.720		
S Only	2.400	2.400		

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## General Beam Analysis

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

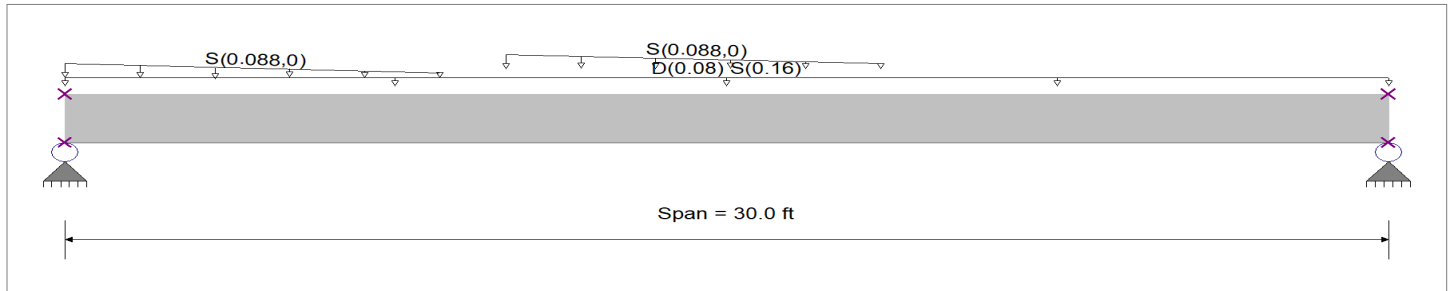
REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

### DESCRIPTION: 72 Addition South Truss Drift Snow

### General Beam Properties

Elastic Modulus 29,000.0 ksi  
Span #1 Span Length = 30.0 ft Area = 10.0 in<sup>2</sup> Moment of Inertia = 100.0 in<sup>4</sup>



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 4.0 ft

Varying Uniform Load : S= 0.0220->0.0 ksf, Extent = 0.0 -->> 8.50 ft, Trib Width = 4.0 ft

Varying Uniform Load : S= 0.0220->0.0 ksf, Extent = 10.0 -->> 18.50 ft, Trib Width = 4.0 ft

### DESIGN SUMMARY

Maximum Bending =	29.887 k-ft	Maximum Shear =	4.153 k
Load Combination	+D+S	Load Combination	+D+S
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Location of maximum on span	14.550 ft	Location of maximum on span	0.000 ft
Maximum Deflection			
Max Downward Transient Deflection	1.168 in	308	
Max Upward Transient Deflection	0.019 in	19350	
Max Downward Total Deflection	1.675 in	214	
Max Upward Total Deflection	0.005 in	74588	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values (k-ft)				Shear Values (k)	
			M	V	Mmax +	Mmax -	Ma - Max	Mnx Mnx/Omega Cb	Rm	Va Max
Overall MAXimum Envelope										
D Only	Dsgn. L = 30.00 ft	1			29.89		29.89			4.15
+D+S	Dsgn. L = 30.00 ft	1			9.00		9.00			1.20
+D+0.750S	Dsgn. L = 30.00 ft	1			29.89		29.89			4.15
+0.60D	Dsgn. L = 30.00 ft	1			24.66		24.66			3.41
	Dsgn. L = 30.00 ft	1			5.40		5.40			0.72

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.6749	15.000		0.0000	0.000

### Vertical Reactions

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Overall MAXimum	4.153	3.795		
Overall MINimum				
D Only	1.200	1.200		
+D+S	4.153	3.795		
+D+0.750S	3.415	3.146		
+0.60D	0.720	0.720		
S Only	2.953	2.595		

Location	Truss Joist Length (ft)	Truss Trib Area (ft)	Flat Snow Moment	Flat Snow + Drift Moment	Stress Difference	MOA Amendment 23.65.503.3
Taper Trusses North/South of Penthouse	30	4	27.0	27.5	1.97%	Stress Increase <10%, No Further Analysis Required
Taper Trusses East of Penthouse	30	4	27.0	28.7	6.27%	Stress Increase <10%, No Further Analysis Required
Gable Trusses East of Penthouse	60	4	108	138.971	28.68%	Stress Increase >10%, Further Analysis Required
Trusses South of Penthouse	30	4	27	29.887	10.69%	Stress Increase >10%, Further Analysis Required





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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/30/23 9:48 AM  
**Designer:**  
**Comment:**

**Type: G Truss E PH**  
Gable trusses east of penthouse as they exist.

## PITCHED 44-47.8-44" Red-H™ @ 48" o.c. **OVERLOADED**

**Design control at critical component = 272.8% Contact your RedBuilt™ technical representative for assistance.**  
This truss design is NOT feasible. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	119%	2.378	2.000	L / 303	L / 360	FAIL
Span Total	107%	3.224	3.000	L / 223	L / 240	FAIL

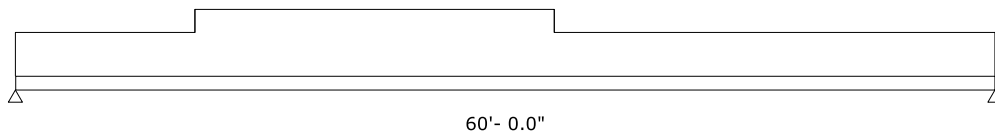
HISTORICAL DATA NOT AVAILABLE FOR AS BUILT TRUSSES, THEREFORE CURRENT RED BUILT DESIGN SOFTWARE WAS USED IN THIS REVIEW

SUPPORTS	Support 1	Support 2
Live Reaction (lb) (DOL%)	6657 (100)	5906 (100)
Dead Reaction (lb)	2437	2437
Total Reaction (lb) (DOL%)	9094 (100)	8342 (100)
Bearing Support	Top Chord Wall	Top Chord Wall
Bearing Clip	(Red-H) Z-Clip	(Red-H) Z-Clip
Approx. Clip Height	5.75"	5.75"
Approx. Clip Width	8"	8"
Assumed Bearing Width	5.5"	5.5"

### SPANS AND LOADS

Dimensions represent horizontal clear span.

Top Chord Slope: 0.125/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	48"	Snow Roof Joist

### ADDITIONAL LOADS

Type	Units	DOL	Live	Dead	Location from left	Application	Comment
Uniform	psf	Floor(100%)	32	0	11'-0.0" to 33'-0.0"	Adds To	

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- No repetitive member increase applied in design.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 286
- Pricing Index (plf) = 286

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The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/30/23 9:59 AM  
**Designer:**  
**Comment:**

**Type: G Truss E PH RP**  
Gable trusses east  
of penthouse  
upgrade.

## PITCHED 44-47.8-44" Red-H™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

This truss design is feasible. The finished design shall be produced by RedBuilt Engineering. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	61%	1.212	2.000	L / 594	L / 360	PASS
Span Total	55%	1.646	3.000	L / 437	L / 240	PASS

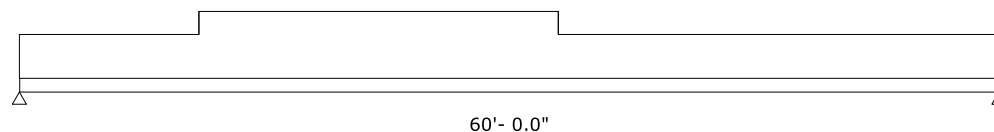
SUPPORTS	Support 1	Support 2
Live Reaction (lb) (DOL%)	3328 (100)	2953 (100)
Dead Reaction (lb)	1218	1218
Total Reaction (lb) (DOL%)	4547 (100)	4171 (100)
Bearing Support	Top Chord Wall	Top Chord Wall
Bearing Clip	(Red-H) Z-Clip	(Red-H) Z-Clip
Approx. Clip Height	5.75"	5.75"
Approx. Clip Width	8"	8"
Assumed Bearing Width	5.5"	5.5"

**HISTORICAL DATA NOT AVAILABLE FOR AS BUILT TRUSSES, THEREFORE CURRENT RED BUILT DESIGN SOFTWARE WAS USED IN THIS REVIEW**

### SPANS AND LOADS

Dimensions represent horizontal clear span.

Top Chord Slope: 0.125/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	24"	Snow Roof Joist

### ADDITIONAL LOADS

Type	Units	DOL	Live	Dead	Location from left	Application	Comment
Uniform	psf	Floor(100%)	32	0	11'-0.0" to 33'-0.0"	Adds To	

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Repetitive member increase applied in design.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 143
- Pricing Index (plf) = 143

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The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/30/23 10:08 AM  
**Designer:**  
**Comment:**

**Type: TT S P H E**  
Taper trusses  
south of penthouse  
as they exist.

## 24" Red-S™ @ 48" o.c. **OVERLOADED**

**Design control at critical component = 146% Contact your RedBuilt™ technical representative for assistance.**  
This truss design is NOT feasible. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	112%	1.124	1.000	L / 320	L / 360	FAIL
Span Total	107%	1.612	1.500	L / 223	L / 240	FAIL

### SUPPORTS

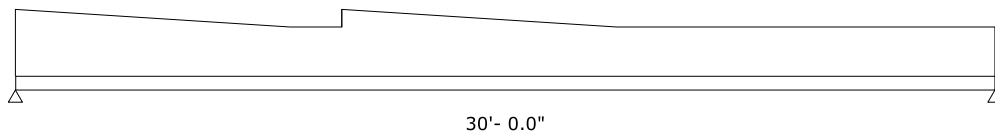
	Support 1	Support 2
Live Reaction (lb) (DOL%)	2994 (100)	2640 (100)
Dead Reaction (lb)	1223	1223
Total Reaction (lb) (DOL%)	4217 (100)	3863 (100)
Bearing Support	Top Chord Wall	Top Chord Wall
Bearing Clip	(Red-S) S-Clip	(Red-S) S-Clip
Approx. Clip Height	3.5"	3.5"
Approx. Clip Width	5.5"	5.5"
Assumed Bearing Width	3.5"	3.5"

HISTORICAL DATA NOT AVAILABLE FOR AS BUILT TRUSSES, THEREFORE CURRENT RED BUILT DESIGN SOFTWARE WAS USED IN THIS REVIEW

### SPANS AND LOADS

Dimensions represent horizontal clear span.

Member Slope: 0.125/12 ↙



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	48"	Snow Roof Joist

### ADDITIONAL LOADS

Type	Units	DOL	Live	Dead	Location from left	Application	Comment
Tapered	psf	Floor(100%)	22 to 0	0 to 0	0'-0.0" to 8'-5.0"	Adds To	
Tapered	psf	Floor(100%)	22 to 0	0 to 0	10'-0.0" to 18'-5.0"	Adds To	

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- No repetitive member increase applied in design.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 264
- Pricing Index (plf) = 264

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The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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v7.1.14

**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/30/23 10:09 AM  
**Designer:**  
**Comment:**

**Type:** TT S PH RP  
Taper trusses  
south of penthouse  
upgrade.

## 24" Red-S™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

This truss design is feasible. The finished design shall be produced by RedBuilt Engineering. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	57%	0.573	1.000	L / 628	L / 360	PASS
Span Total	55%	0.821	1.500	L / 439	L / 240	PASS

### SUPPORTS

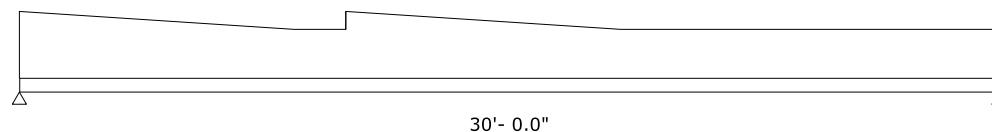
	Support 1	Support 2
Live Reaction (lb) (DOL%)	1497 (100)	1320 (100)
Dead Reaction (lb)	612	612
Total Reaction (lb) (DOL%)	2109 (100)	1932 (100)
Bearing Support	Top Chord Wall	Top Chord Wall
Bearing Clip	(Red-S) S-Clip	(Red-S) S-Clip
Approx. Clip Height	3.5"	3.5"
Approx. Clip Width	5.5"	5.5"
Assumed Bearing Width	3.5"	3.5"

**HISTORICAL DATA NOT AVAILABLE FOR AS BUILT TRUSSES, THEREFORE CURRENT RED BUILT DESIGN SOFTWARE WAS USED IN THIS REVIEW**

### SPANS AND LOADS

Dimensions represent horizontal clear span.

Member Slope: 0.125/12 ↙



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	24"	Snow Roof Joist

### ADDITIONAL LOADS

Type	Units	DOL	Live	Dead	Location from left	Application	Comment
Tapered	psf	Floor(100%)	22 to 0	0 to 0	0'-0.0" to 8'-5.0"	Adds To	
Tapered	psf	Floor(100%)	22 to 0	0 to 0	10'-0.0" to 18'-5.0"	Adds To	

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Repetitive member increase applied in design.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 132
- Pricing Index (plf) = 132

X:\Engineering\Jobs\40\23\020-ASD Scenic Park ES Tier 2 & Reroof Reports\Design & Calculations\Pre-reroof gravity\Redbuilt Joist.red

The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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## 1983 ADDITION

PER ORIGINAL 1983 DRAWINGS, TRUSSES ARE DESIGNED FOR FLAT ROOF LOADS OF 40 PSF, THIS MATCHES CURRENT CODE REQUIREMENT

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** GLB Girder Along Grid K (from 7-10)

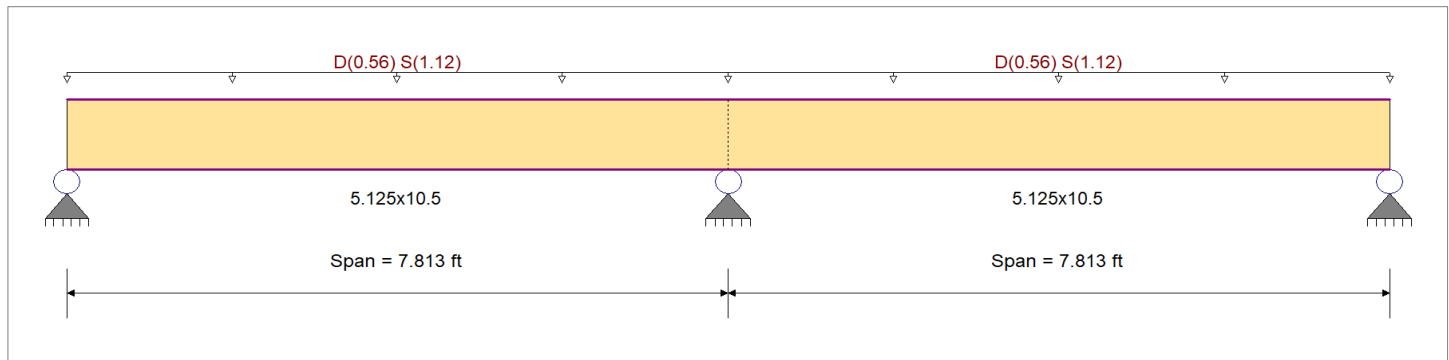
**CODE REFERENCES**

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method : Allowable Stress Design	Fb +	2,400.0 psi	E : Modulus of Elasticity
Load Combination : ASCE 7-16	Fb -	2,400.0 psi	Ebend- xx
	Fc - Prll	1,500.0 psi	Eminbend - xx
Wood Species : UBC1979 DF 24F	Fc - Perp	385.0 psi	Ebend- yy
Wood Grade : GLB - Western	Fv	165.0 psi	Eminbend - yy
	Ft	1,000.0 psi	Density
			35.0pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Load for Span Number 1  
Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 28.0 ft  
Load for Span Number 2  
Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 28.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio = <b>0.592</b> 1	Maximum Shear Stress Ratio = <b>0.990</b> : 1
Section used for this span = <b>5.125x10.5</b>	Section used for this span = <b>5.125x10.5</b>
fb: Actual = 1,633.28 psi	fv: Actual = 187.78 psi
F'b = 2,760.00 psi	F'v = 189.75 psi
Load Combination = +D+S	Load Combination = +D+S
Location of maximum on span = 7.813ft	Location of maximum on span = 6.940 ft
Span # where maximum occurs = Span # 1	Span # where maximum occurs = Span # 1
<b>Maximum Deflection</b>	
Max Downward Transient Deflection = 0.044 in Ratio = <b>2113</b> >=360	Span: 2 : S Only
Max Upward Transient Deflection = 0 in Ratio = <b>0</b> <360	n/a
Max Downward Total Deflection = 0.067 in Ratio = <b>1409</b> >=180	Span: 2 : +D+S
Max Upward Total Deflection = 0 in Ratio = <b>0</b> <180	n/a

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values			
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v	
D Only	Length = 7.813 ft	<b>1</b>	0.252	0.422	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.27	544.4	2,160.0	0.00	0.00	0.0	148.5
	Length = 7.813 ft	<b>2</b>	0.252	0.422	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	4.27	544.4	2,160.0	2.25	62.6	148.5	
+D+S	Length = 7.813 ft	<b>1</b>	0.592	0.990	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	12.82	1,633.3	2,760.0	6.74	187.8	189.8	
	Length = 7.813 ft	<b>2</b>	0.592	0.990	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	12.82	1,633.3	2,760.0	6.74	187.8	189.8	
+D+0.750S	Length = 7.813 ft	<b>1</b>	0.493	0.825	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	10.68	1,361.1	2,760.0	5.61	156.5	189.8	

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION: GLB Girder Along Grid K (from 7-10)**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	f <sub>v</sub>	F'v
Length = 7.813 ft	2	0.493	0.825	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	10.68	1,361.1	2,760.0	5.61	156.5	189.8	
+0.60D														0.0	0.00	0.0	0.0	
Length = 7.813 ft	1	0.085	0.142	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.56	326.7	3,840.0	1.35	37.6	264.0	
Length = 7.813 ft	2	0.085	0.142	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.56	326.7	3,840.0	1.35	37.6	264.0	

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.0665	3.317		0.0000	0.000
+D+S	2	0.0658	4.539		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	4.922	16.406	4.922
Max Upward from Load Combinations	4.922	16.406	4.922
Max Upward from Load Cases	3.281	10.937	3.281
D Only	1.641	5.469	1.641
+D+S	4.922	16.406	4.922
+D+0.750S	4.102	13.672	4.102
+0.60D	0.984	3.281	0.984
S Only	3.281	10.937	3.281



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v7.1.14

**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/28/23 10:13 AM  
**Designer:**  
**Comment:**

**Type:** MR RF Long (E)

## 30" Red-M™ @ 24" o.c. **OVERLOADED**

**Design control at critical component = 134.5% Contact your RedBuilt™ technical representative for assistance.**  
This truss design is NOT feasible. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	96%	1.620	1.692	L / 376	L / 360	PASS
Span Total	120%	3.038	2.538	L / 200	L / 240	FAIL

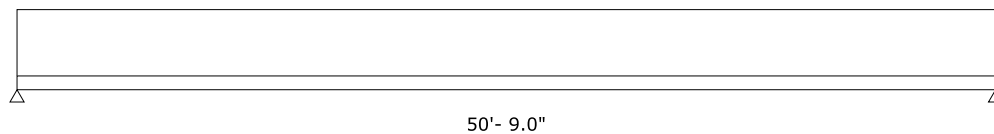
SUPPORTS	Support 1	Support 2
Live Reaction (lb) (DOL%)	2053 (125)	2053 (125)
Dead Reaction (lb)	1797	1797
Total Reaction (lb) (DOL%)	3850 (125)	3850 (125)
Bearing Support	Top Chord Wall	Top Chord Wall
Bearing Clip	(Red-M) Z-Clip	(Red-M) Z-Clip
Approx. Clip Height	3.6875"	3.6875"
Approx. Clip Width	7"	7"
Assumed Bearing Width	3.5"	3.5"

**HISTORICAL DATA NOT AVAILABLE FOR AS BUILT TRUSSES, THEREFORE CURRENT RED BUILT DESIGN SOFTWARE WAS USED IN THIS REVIEW**

### SPANS AND LOADS

Dimensions represent horizontal clear span.

Member Slope: 0/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Roof(125%)	40	35	0	24"	Roof Joist

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Repetitive member increase applied in design.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 150
- Pricing Index (plf) = 150

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The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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v7.1.14

**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/28/23 10:13 AM  
**Designer:**  
**Comment:**

**Type: MR RF Long RP**

## 30" Red-M™ @ 12" o.c.

This product meets or exceeds the set design controls for the application and loads listed

This truss design is feasible. The finished design shall be produced by RedBuilt Engineering. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	48%	0.811	1.692	L / 751	L / 360	PASS
Span Total	60%	1.521	2.538	L / 400	L / 240	PASS

HISTORICAL DATA NOT AVAILABLE FOR AS BUILT TRUSSES, THEREFORE CURRENT RED BUILT DESIGN SOFTWARE WAS USED IN THIS REVIEW

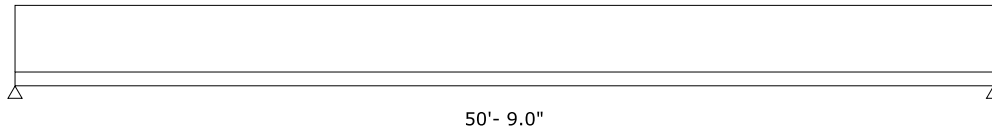
### SUPPORTS

	Support 1	Support 2
Live Reaction (lb) (DOL%)	1027 (125)	1027 (125)
Dead Reaction (lb)	898	898
Total Reaction (lb) (DOL%)	1925 (125)	1925 (125)
Bearing Support	Top Chord Wall	Top Chord Wall
Bearing Clip	(Red-M) Z-Clip	(Red-M) Z-Clip
Approx. Clip Height	3.6875"	3.6875"
Approx. Clip Width	7"	7"
Assumed Bearing Width	3.5"	3.5"

### SPANS AND LOADS

Dimensions represent horizontal clear span.

Member Slope: 0.125/12 ↙



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Roof(125%)	40	35	0	12"	Roof Joist

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Repetitive member increase applied in design.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 75
- Pricing Index (plf) = 75

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The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/28/23 10:13 AM  
**Designer:**  
**Comment:**

**Type: MR RF Short (E)**

## 30" Red-M™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

This truss design is feasible. The finished design shall be produced by RedBuilt Engineering. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	61%	0.890	1.450	L / 587	L / 360	PASS
Span Total	61%	1.334	2.175	L / 391	L / 240	PASS

**HISTORICAL DATA NOT AVAILABLE FOR AS BUILT TRUSSES, THEREFORE CURRENT RED BUILT DESIGN SOFTWARE WAS USED IN THIS REVIEW**

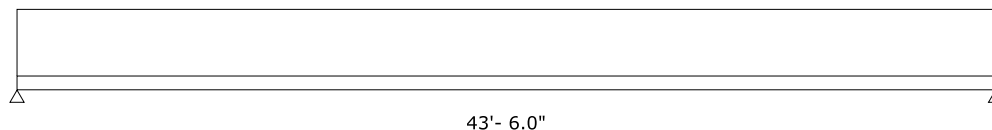
### SUPPORTS

	Support 1	Support 2
Live Reaction (lb) (DOL%)	1763 (125)	1763 (125)
Dead Reaction (lb)	882	882
Total Reaction (lb) (DOL%)	2645 (125)	2645 (125)
Bearing Support	Top Chord Wall	Top Chord Wall
Bearing Clip	(Red-M) Z-Clip	(Red-M) Z-Clip
Approx. Clip Height	3.6875"	3.6875"
Approx. Clip Width	7"	7"
Assumed Bearing Width	3.5"	3.5"

### SPANS AND LOADS

Dimensions represent horizontal clear span.

Member Slope: 0.125/12 ↙



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Roof(125%)	40	20	0	24"	Roof Joist

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Repetitive member increase applied in design.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 120
- Pricing Index (plf) = 120

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Project : Folder : MR RF Short (E)

Page 1 of 1

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# 1999 RENOVATION/ADDITION

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

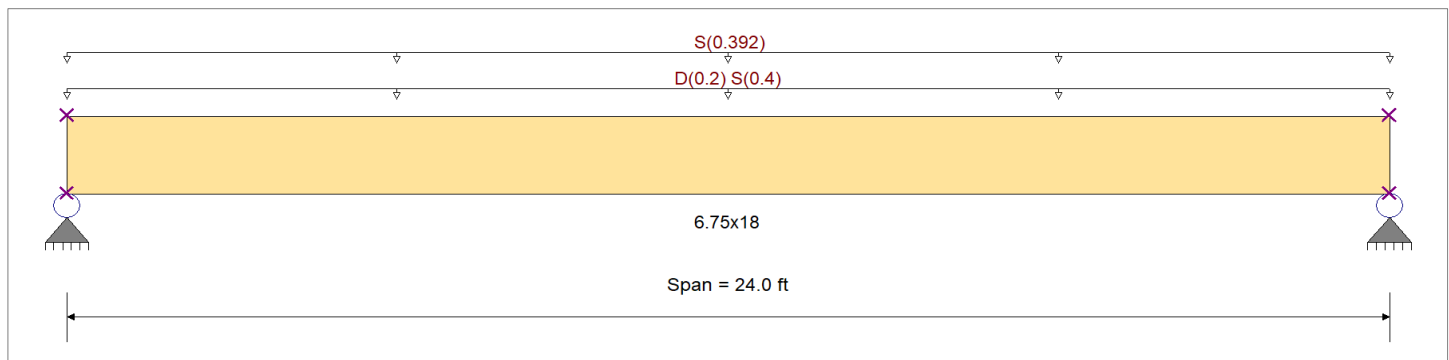
**DESCRIPTION:** Diagonal GLB Girder Along from G15-H18

**CODE REFERENCES**

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method : Allowable Stress Design	Fb +	2400 psi	<i>E : Modulus of Elasticity</i>	
Load Combination : ASCE 7-16	Fb -	1200 psi	Ebend- xx	1600ksi
	Fc - Prll	1650 psi	Eminbend - xx	1600ksi
Wood Species : UBC 1994 24F-V4 GLB	Fc - Perp	560 psi	Ebend- yy	0ksi
Wood Grade : GLB - Western	Fv	145 psi	Eminbend - yy	0ksi
	Ft	1150 psi	Density	35pcf
Beam Bracing : Completely Unbraced				



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 10.0 ft  
Uniform Load : S = 0.3920 , Tributary Width = 1.0 ft

**DESIGN SUMMARY**

**Design N.G.**

<b>Maximum Bending Stress Ratio</b>	=	<b>0.924</b> : 1	<b>Maximum Shear Stress Ratio</b>	=	<b>0.772</b> : 1
Section used for this span		<b>6.75x18</b>	Section used for this span		<b>6.75x18</b>
fb: Actual	=	2,351.41 psi	fv: Actual	=	128.73 psi
F'b	=	2,544.13 psi	F'v	=	166.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	12.000ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection	1.133 in	Ratio =	<b>254</b> <360	Span: 1 : S Only	
Max Upward Transient Deflection	0 in	Ratio =	<b>0</b> <360	n/a	
Max Downward Total Deflection	1.419 in	Ratio =	<b>202</b> >=180	Span: 1 : +D+S	
Max Upward Total Deflection	0 in	Ratio =	<b>0</b> <180	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values			
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v	
D Only	Length = 24.0 ft	1	0.238	0.199	0.90	1.00	1.00	0.99	0.922	1.00	1.00	1.00	14.40	474.1	1,991.1	0.0	0.00	0.0	0.0
+D+S	Length = 24.0 ft	1	0.924	0.772	1.15	1.00	1.00	0.99	0.922	1.00	1.00	1.00	71.42	2,351.4	2,544.1	10.43	128.7	166.8	0.0
+D+0.750S	Length = 24.0 ft	1	0.740	0.618	1.15	1.00	1.00	0.99	0.922	1.00	1.00	1.00	57.17	1,882.1	2,544.1	8.35	103.0	166.8	0.0
+0.60D	Length = 24.0 ft	1	0.080	0.067	1.60	1.00	1.00	0.99	0.922	1.00	1.00	1.00	8.64	284.4	3,539.7	1.26	15.6	232.0	0.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** Diagonal GLB Girder Along from G15-H18

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.4191	12.088		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	11.904	11.904
Max Upward from Load Combinations	11.904	11.904
Max Upward from Load Cases	9.504	9.504
D Only	2.400	2.400
+D+S	11.904	11.904
+D+0.750S	9.528	9.528
+0.60D	1.440	1.440
S Only	9.504	9.504

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

(c) ENERCALC INC 1983-2022

**DESCRIPTION:** Grid 17-18.5/E-F GLB

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

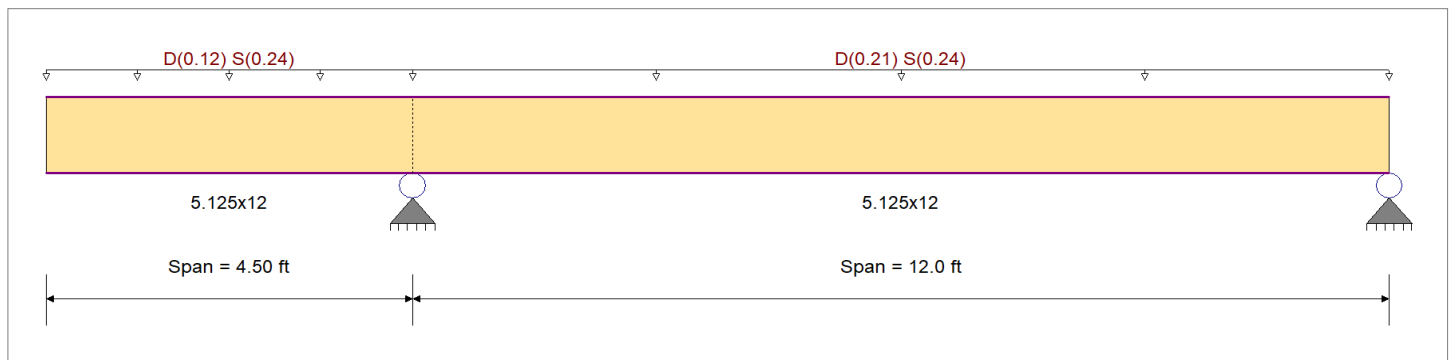
### Material Properties

Analysis Method : Allowable Stress Design  
Load Combination : ASCE 7-16

Wood Species : UBC 1994 24F-V4 GLB  
Wood Grade : GLB - Western

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	2,400.0 psi	<i>E : Modulus of Elasticity</i>	
Fb -	1,200.0 psi	Ebend- xx	1,600.0ksi
Fc - Prll	1,650.0 psi	Eminbend - xx	1,600.0ksi
Fc - Perp	560.0 psi	Ebend- yy	ksi
Fv	145.0 psi	Eminbend - yy	ksi
Ft	1,150.0 psi	Density	35.0pcf



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Load for Span Number 1

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 6.0 ft

Load for Span Number 2

Uniform Load : D = 0.0350, S = 0.040 ksf, Tributary Width = 6.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio	=	<b>0.258</b> < 1	Maximum Shear Stress Ratio	=	<b>0.378</b> < 1
Section used for this span	=	<b>5.125x12</b>	Section used for this span	=	<b>5.125x12</b>
fb: Actual	=	355.61 psi	fv: Actual	=	62.96 psi
F'b	=	1,380.00 psi	F'v	=	166.75 psi
Load Combination	=	+D+S	Load Combination	=	+D+S
Location of maximum on span	=	4.500ft	Location of maximum on span	=	4.500 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

### Maximum Deflection

Max Downward Transient Deflection	0.064 in	Ratio =	<b>2266</b> >= 360	Span: 2 : S Only
Max Upward Transient Deflection	-0.032 in	Ratio =	<b>3404</b> >= 360	Span: 1 : S Only
Max Downward Total Deflection	0.131 in	Ratio =	<b>1098</b> >= 180	Span: 2 : +D+S
Max Upward Total Deflection	-0.090 in	Ratio =	<b>1196</b> >= 180	Span: 1 : +D+S

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v	
D Only																			
	Length = 4.50 ft	<b>1</b>	0.110	0.218	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.22	118.5	1,080.0	0.0	0.00	0.0	0.0
	Length = 12.0 ft	<b>2</b>	0.144	0.218	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.20	311.9	2,160.0	1.16	28.4	130.5	130.5
+D+S																			
	Length = 4.50 ft	<b>1</b>	0.258	0.378	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.65	355.6	1,380.0	2.58	63.0	166.8	166.8
	Length = 12.0 ft	<b>2</b>	0.226	0.378	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	6.38	622.4	2,760.0	2.58	63.0	166.8	166.8
+D+0.750S																			
	Length = 4.50 ft	<b>1</b>	0.215	0.326	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.04	296.3	1,380.0	2.23	54.3	166.8	166.8

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION:** Grid 17-18.5/E-F GLB

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	f <sub>v</sub>	F <sub>v</sub>
Length = 12.0 ft	2		0.197	0.326	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	5.58	544.7	2,760.0	2.23	54.3	166.8
+0.60D						1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 4.50 ft	1		0.037	0.073	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.73	71.1	1,920.0	0.70	17.0	232.0
Length = 12.0 ft	2		0.049	0.073	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.92	187.1	3,840.0	0.70	17.0	232.0

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+S	-0.0902	0.000
+D+S	2	0.1311	6.302		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions		4.624	2.396
Max Upward from Load Combinations		4.624	2.396
Max Upward from Load Cases		2.723	1.238
D Only		1.901	1.159
+D+S		4.624	2.396
+D+0.750S		3.943	2.087
+0.60D		1.141	0.695
S Only		2.723	1.238

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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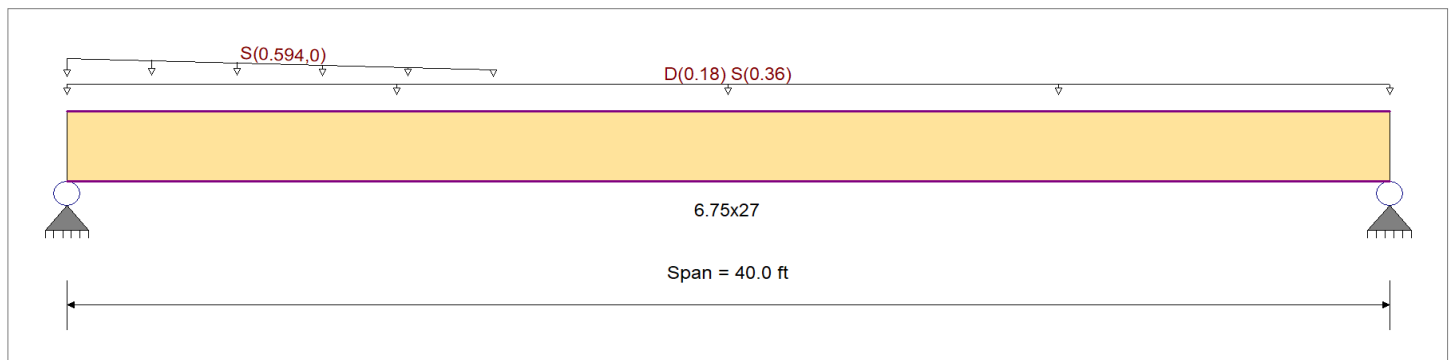
**DESCRIPTION:** Grid J-L/7-15 GLB

**CODE REFERENCES**

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method : Allowable Stress Design	Fb +	2,400.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	1,200.0 psi	Ebend- xx	1,600.0ksi
	Fc - Prll	1,650.0 psi	Eminbend - xx	1,600.0ksi
Wood Species : UBC 1994 24F-V4 GLB	Fc - Perp	560.0 psi	Ebend- yy	ksi
Wood Grade : GLB - Western	Fv	145.0 psi	Eminbend - yy	ksi
	Ft	1,150.0 psi	Density	35.0pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 9.0 ft  
Varying Uniform Load : S = 0.0660->0.0 ksf, Extent = 0.0 -->> 12.90 ft, Trib Width = 9.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.734</b> : 1	Maximum Shear Stress Ratio =	<b>0.585</b> : 1
Section used for this span	<b>6.75x27</b>	Section used for this span	<b>6.75x27</b>
fb: Actual =	1,703.07 psi	fv: Actual =	97.50 psi
F'b =	2,321.38 psi	F'v =	166.75 psi
Load Combination	+D+S	Load Combination	+D+S
Location of maximum on span =	19.270ft	Location of maximum on span =	0.000ft
Span # where maximum occurs =	Span # 1	Span # where maximum occurs =	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	1.333 in Ratio =	<b>360</b> >=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in Ratio =	<b>0</b> <360	n/a
Max Downward Total Deflection	1.922 in Ratio =	<b>249</b> >=180	Span: 1 : +D+S
Max Upward Total Deflection	0 in Ratio =	<b>0</b> <180	n/a

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values			
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v	
D Only	Length = 40.0 ft	1	0.290	0.202	0.90	1.00	1.00	1.00	0.841	1.00	1.00	1.00	36.00	526.7	1,816.7	0.0	0.00	0.0	0.0
+D+S	Length = 40.0 ft	1	0.734	0.585	1.15	1.00	1.00	1.00	0.841	1.00	1.00	1.00	116.39	1,703.1	2,321.4	11.85	97.5	166.8	0.0
+D+0.750S	Length = 40.0 ft	1	0.607	0.478	1.15	1.00	1.00	1.00	0.841	1.00	1.00	1.00	96.28	1,408.8	2,321.4	9.69	79.7	166.8	0.0
+0.60D	Length = 40.0 ft	1	0.098	0.068	1.60	1.00	1.00	1.00	0.841	1.00	1.00	1.00	21.60	316.0	3,229.7	1.92	15.8	232.0	0.0



Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION:** Grid J-L/7-15 GLB

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	1.9216	19.854		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	14.219	11.212
Max Upward from Load Combinations	14.219	11.212
Max Upward from Load Cases	10.619	7.612
D Only	3.600	3.600
+D+S	14.219	11.212
+D+0.750S	11.565	9.309
+0.60D	2.160	2.160
S Only	10.619	7.612

Project Title:  
Engineer:  
Project ID:  
Project Descr:

## Wood Beam

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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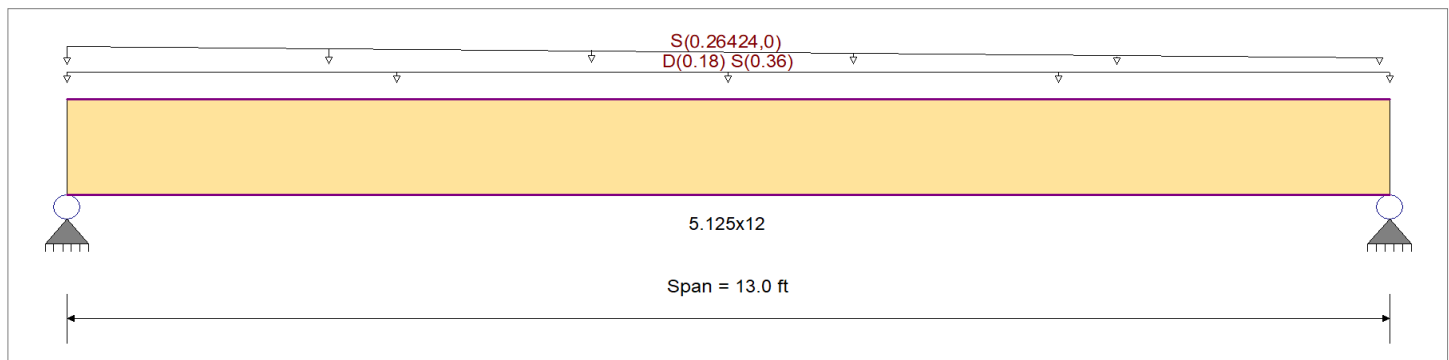
**DESCRIPTION:** Grid J-L/15-16 GLB

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,400.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	1,200.0 psi	Ebend- xx	1,600.0ksi
	Fc - Prll	1,650.0 psi	Eminbend - xx	1,600.0ksi
Wood Species : UBC 1994 24F-V4 GLB	Fc - Perp	560.0 psi	Ebend- yy	ksi
Wood Grade : GLB - Western	Fv	145.0 psi	Eminbend - yy	ksi
	Ft	1,150.0 psi	Density	35.0pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 9.0 ft  
Varying Uniform Load : S = 0.02936->0.0 ksf, Extent = 0.0 -->> 12.90 ft, Trib Width = 9.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio	=	<b>0.502</b>	1	Maximum Shear Stress Ratio	=	<b>0.565</b>	: 1
Section used for this span		<b>5.125x12</b>		Section used for this span		<b>5.125x12</b>	
fb: Actual	=	1,384.60	psi	fv: Actual	=	94.13	psi
F'b	=	2,760.00	psi	F'v	=	166.75	psi
Load Combination		+D+S		Load Combination		+D+S	
Location of maximum on span	=	6.263	ft	Location of maximum on span	=	0.000	ft
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
<b>Maximum Deflection</b>							
Max Downward Transient Deflection		0.269	in	Ratio =	<b>580</b>	>=360	Span: 1 : S Only
Max Upward Transient Deflection		0	in	Ratio =	<b>0</b>	<360	n/a
Max Downward Total Deflection		0.367	in	Ratio =	<b>424</b>	>=180	Span: 1 : +D+S
Max Upward Total Deflection		0	in	Ratio =	<b>0</b>	<180	n/a

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only																				
	Length = 13.0 ft	1	0.172	0.185	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	3.80	371.0	2,160.0	0.0	0.00	0.0	0.0	0.0
+D+S																				
	Length = 13.0 ft	1	0.502	0.565	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	14.19	1,384.6	2,760.0	3.86	94.1	166.8	0.0	0.0
+D+0.750S																				
	Length = 13.0 ft	1	0.410	0.460	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	11.59	1,131.1	2,760.0	3.14	76.6	166.8	0.0	0.0
+0.60D																				
	Length = 13.0 ft	1	0.058	0.062	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	2.28	222.6	3,840.0	0.59	14.5	232.0	0.0	0.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION:** Grid J-L/15-16 GLB

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.3674	6.453		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	4.651	4.074
Max Upward from Load Combinations	4.651	4.074
Max Upward from Load Cases	3.481	2.904
D Only	1.170	1.170
+D+S	4.651	4.074
+D+0.750S	3.780	3.348
+0.60D	0.702	0.702
S Only	3.481	2.904

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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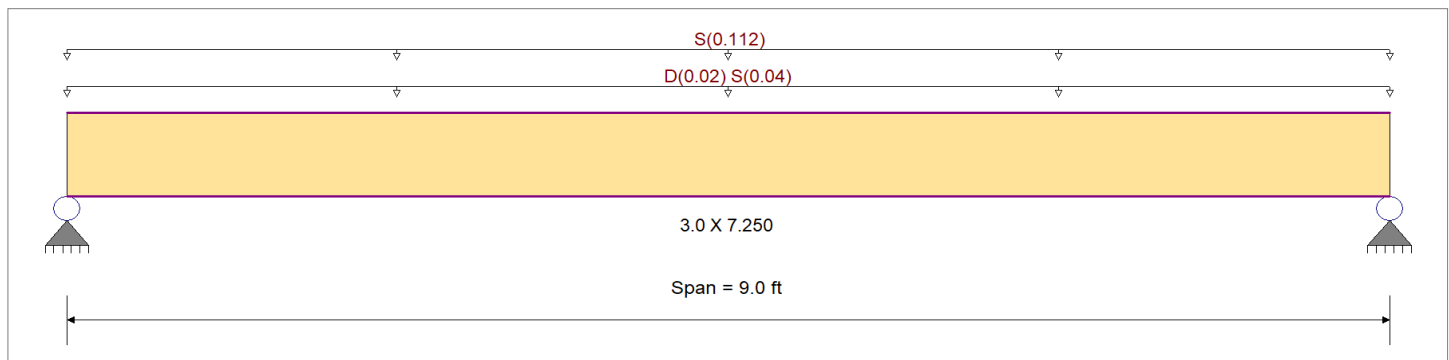
**DESCRIPTION:** 2x8 Joist Between GLBs (Double 2x8)

**CODE REFERENCES**

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method : Allowable Stress Design	Fb +	850 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	850 psi	Ebend- xx	1300ksi
	Fc - Prll	1250 psi	Eminbend - xx	1400ksi
Wood Species : UBC 1994 Hem Fir No. 2	Fc - Perp	405 psi		
Wood Grade : Sawn, No. 3 -> Sel Str	Fv	75 psi		
	Ft	500 psi	Density	35pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.020, S = 0.040, Tributary Width = 1.0 ft  
Uniform Load : S = 0.0560 ksf, Tributary Width = 2.0 ft, (Drift)

**DESIGN SUMMARY**

**Design OK**

<b>Maximum Bending Stress Ratio</b>	=	<b>0.813</b> : 1	<b>Maximum Shear Stress Ratio</b>	=	<b>0.538</b> : 1
Section used for this span		<b>3.0 X 7.250</b>	Section used for this span		<b>3.0 X 7.250</b>
fb: Actual	=	795.17 psi	fv: Actual	=	46.37 psi
F'b	=	977.50 psi	F'v	=	86.25 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	4.500ft	Location of maximum on span	=	8.409ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection	0.182 in	Ratio = 592 >=360	Span: 1 : S Only		
Max Upward Transient Deflection	0 in	Ratio = 0 <360	n/a		
Max Downward Total Deflection	0.206 in	Ratio = 523 >=180	Span: 1 : +D+S		
Max Upward Total Deflection	0 in	Ratio = 0 <180	n/a		

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>F</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only	Length = 9.0 ft	1	0.121	0.080	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.20	92.5	765.0	0.00	0.00	0.0	0.0	0.0
+D+S	Length = 9.0 ft	1	0.813	0.538	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.74	795.2	977.5	0.67	46.4	86.3	0.0	0.0
+D+0.750S	Length = 9.0 ft	1	0.634	0.419	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.36	619.5	977.5	0.52	36.1	86.3	0.0	0.0
+0.60D	Length = 9.0 ft	1	0.041	0.027	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.12	55.5	1,360.0	0.05	3.2	120.0	0.0	0.0

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION:** 2x8 Joist Between GLBs (Double 2x8)

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.2062	4.533		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	0.774	0.774
Max Upward from Load Combinations	0.774	0.774
Max Upward from Load Cases	0.684	0.684
D Only	0.090	0.090
+D+S	0.774	0.774
+D+0.750S	0.603	0.603
+0.60D	0.054	0.054
S Only	0.684	0.684

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ecb

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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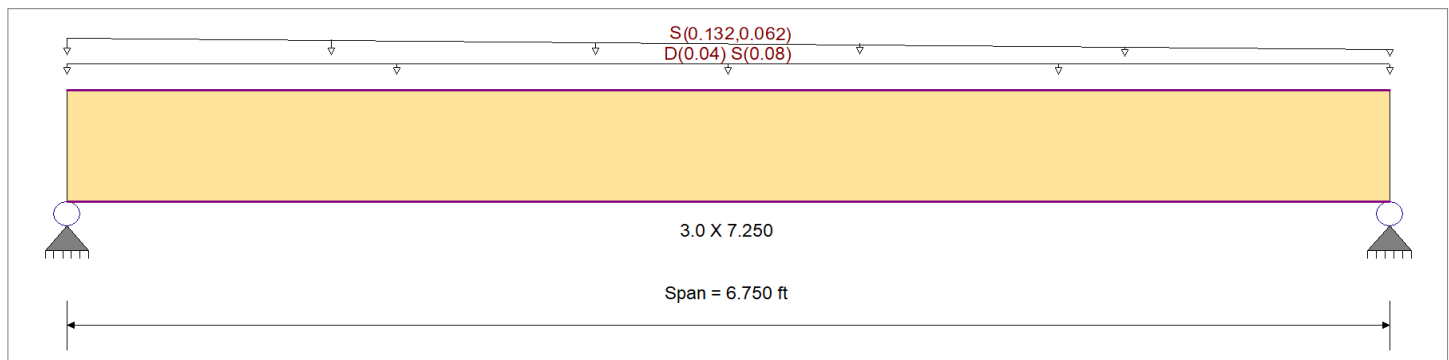
**DESCRIPTION:** 2x8 Joist Between GLBs (Perpendicular to the Others) (Double 2x8)

**CODE REFERENCES**

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method : Allowable Stress Design	Fb +	850 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	850 psi	Ebend- xx	1300ksi
	Fc - Prll	1250 psi	Eminbend - xx	1400ksi
Wood Species : UBC 1994 Hem Fir No. 2	Fc - Perp	405 psi		
Wood Grade : Sawn, No. 3 -> Sel Str	Fv	75 psi		
	Ft	500 psi	Density	35pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.020, S = 0.040 ksf, Tributary Width = 2.0 ft

Varying Uniform Load : S = 0.0660->0.0310 ksf, Extent = 0.0 --> 6.750 ft, Trib Width = 2.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.578</b> : 1	Maximum Shear Stress Ratio =	<b>0.499</b> : 1
Section used for this span	<b>3.0 X 7.250</b>	Section used for this span	<b>3.0 X 7.250</b>
fb: Actual =	564.71 psi	fv: Actual =	43.07 psi
F'b =	977.50 psi	F'v =	86.25 psi
Load Combination	+D+S	Load Combination	+D+S
Location of maximum on span =	3.276ft	Location of maximum on span =	0.000ft
Span # where maximum occurs =	Span # 1	Span # where maximum occurs =	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.067 in Ratio =	1206 >=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in Ratio =	0 <360	n/a
Max Downward Total Deflection	0.082 in Ratio =	983 >=180	Span: 1 : +D+S
Max Upward Total Deflection	0 in Ratio =	0 <180	n/a

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values			
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>F</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v	
D Only																			
	Length = 6.725 ft	1	0.136	0.114	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.23	104.0	765.0	0.11	7.7	67.5	
	Length = 0.02464 ft	1	0.002	0.114	0.90	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.00	1.5	765.0	0.11	7.7	67.5	
+D+S																			
	Length = 6.725 ft	1	0.578	0.499	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	1.24	564.7	977.5	0.62	43.1	86.3	
	Length = 0.02464 ft	1	0.008	0.499	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.02	7.8	977.5	0.58	43.1	86.3	
+D+0.750S																			
	Length = 6.725 ft	1	0.460	0.397	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.98	449.5	977.5	0.50	34.2	86.3	
	Length = 0.02464 ft	1	0.006	0.397	1.15	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.01	6.2	977.5	0.47	34.2	86.3	

Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION: 2x8 Joist Between GLBs (Perpendicular to the Others) (Double 2x8)**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>F</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F <sub>b</sub>	V	f <sub>v</sub>	F <sub>v</sub>
+0.60D						1.00	1.00	1.00	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 6.725 ft	1		0.046	0.038	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.14	62.4	1,360.0	0.07	4.6	120.0
Length = 0.02464 ft	1		0.001	0.038	1.60	1.00	1.00	1.00	1.000	1.00	1.00	1.00	0.00	0.9	1,360.0	0.07	4.6	120.0

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.0823	3.375		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	0.772	0.693
Max Upward from Load Combinations	0.772	0.693
Max Upward from Load Cases	0.637	0.558
D Only	0.135	0.135
+D+S	0.772	0.693
+D+0.750S	0.613	0.554
+0.60D	0.081	0.081
S Only	0.637	0.558

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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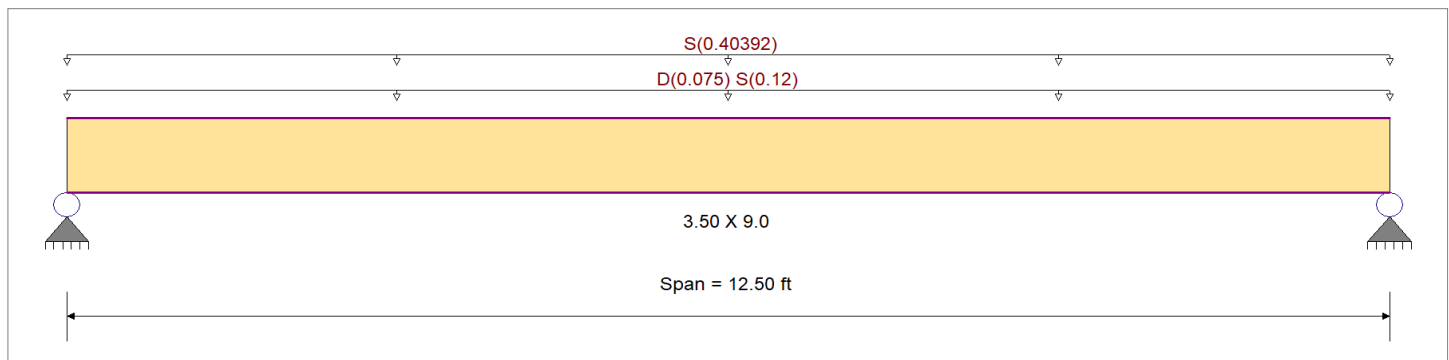
**DESCRIPTION:** [99 Upgrade] Grid I-H/13-15 GLB (First Beam Not Under Wall)

**CODE REFERENCES**

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method : Allowable Stress Design	Fb +	2,800.0 psi	E : Modulus of Elasticity
Load Combination : ASCE 7-16	Fb -	2,800.0 psi	Ebend- xx
	Fc - Prll	3,000.0 psi	Eminbend - xx
Wood Species : Boise Cascade	Fc - Perp	750.0 psi	
Wood Grade : Versa Lam 2800	Fv	285.0 psi	
	Ft	2,100.0 psi	Density
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling			41.760pcf



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
Uniform Load : D = 0.0250, S = 0.040 ksf, Tributary Width = 3.0 ft, (Flat Loads)  
Uniform Load : S = 0.06732 ksf, Tributary Width = 6.0 ft

**DESIGN SUMMARY**

**Design N.G.**

<b>Maximum Bending Stress Ratio</b>	=	<b>0.896</b> : 1	<b>Maximum Shear Stress Ratio</b>	=	<b>0.480</b> : 1
Section used for this span	=	<b>3.50 X 9.0</b>	Section used for this span	=	<b>3.50 X 9.0</b>
fb: Actual	=	2,970.83psi	fv: Actual	=	157.43 psi
F'b	=	3,314.48psi	F'v	=	327.75 psi
Load Combination	=	+D+S	Load Combination	=	+D+S
Location of maximum on span	=	6.250ft	Location of maximum on span	=	11.770 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
<b>Maximum Deflection</b>					
Max Downward Transient Deflection	0.681 in	Ratio =	220 <360	Span: 1 : S Only	
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a	
Max Downward Total Deflection	0.778 in	Ratio =	192 >=180	Span: 1 : +D+S	
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values				
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>F</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv	F'v		
D Only																				
Length = 12.50 ft	1		0.143	0.077	0.90	1.00	1.00	1.00	1.029	1.00	1.00	1.00	1.46	372.0	2,593.9	0.0	0.00	0.0	0.0	0.0
+D+S																				
Length = 12.50 ft	1		0.896	0.480	1.15	1.00	1.00	1.00	1.029	1.00	1.00	1.00	11.70	2,970.8	3,314.5	0.0	0.00	0.0	0.0	0.0
+D+0.750S																				
Length = 12.50 ft	1		0.700	0.375	1.15	1.00	1.00	1.00	1.029	1.00	1.00	1.00	9.14	2,321.1	3,314.5	0.0	0.00	0.0	0.0	0.0
+0.60D																				
Length = 12.50 ft	1		0.048	0.026	1.60	1.00	1.00	1.00	1.029	1.00	1.00	1.00	0.88	223.2	4,611.5	0.0	0.00	0.0	0.0	0.0



Project Title:  
Engineer:  
Project ID:  
Project Descr:

**Wood Beam**

Project File: Scenic Park Reroof Calcs.ec6

LIC# : KW-06017698, Build:20.23.2.14

REID MIDDLETON, INC.

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**DESCRIPTION:** [99 Upgrade] Grid I-H/13-15 GLB (First Beam Not Under Wall)

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.7782	6.296		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.743	3.743
Max Upward from Load Combinations	3.743	3.743
Max Upward from Load Cases	3.275	3.275
D Only	0.469	0.469
+D+S	3.743	3.743
+D+0.750S	2.925	2.925
+0.60D	0.281	0.281
S Only	3.275	3.275



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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/28/23 11:09 AM  
**Designer:**  
**Comment:**

**Type: Grid 15-16 Joist**

## 14" Red-I65™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

DESIGN CONTROLS	%	Design	Allow.	DOL	Combination	Pattern	Pass/Fail
Shear (lb)	35%	890	2540	Snow(100%)	1.0D+0.75L+0.75S	All Spans	PASS
Positive Moment (ft-lb)	28%	2225	8030	Snow(100%)	1.0D+0.75L+0.75S	All Spans	PASS

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Combination	Pattern	Pass/Fail
Span Live	21%	0.069	0.333	L / 999+	L / 360	1.0D+0.75L+0.75S	All Spans	PASS
Span Total	18%	0.089	0.500	L / 999+	L / 240	1.0D+0.75L+0.75S	All Spans	PASS

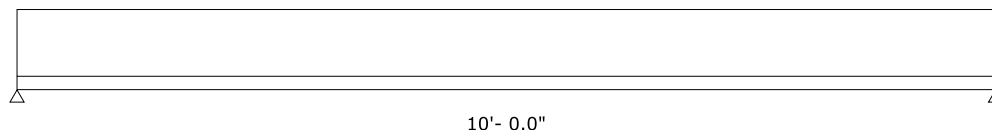
SUPPORTS	Support 1	Support 2
Live Reaction, Critical (lb) (DOL%)	690 (100)	690 (100)
Dead Reaction (lb)	200	200
Total Reaction (lb) (DOL%)	890 (100)	890 (100)
Bearing Support	Flush	Flush
Req'd Bearing, No Stiffeners (in)	Wall	Wall
Req'd Bearing, Stiffeners (in)	1.75	1.75
	-	-

HANGERS	Model	Top	Face	Member	Header	Size
Left	None Selected					
Right	None Selected					

### SPANS AND LOADS

Dimensions represent horizontal design spans.

Member Slope: 0/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	24"	Snow Roof Joist

### ADDITIONAL LOADS

Type	Units	DOL	Live	Dead	Location from left	Application	Comment
Uniform	psf	Floor(100%)	52	0	0'-0.0" to 10'-0.0"	Adds To	

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Product Acceptance: ICC-ES ESR-2994 and LABC/LARC Supplement.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.

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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/28/23 11:09 AM  
**Designer:**  
**Comment:**

**Type:** Grid 19-21B-E

## 20" Red-I65™ @ 24" o.c. OVERLOADED

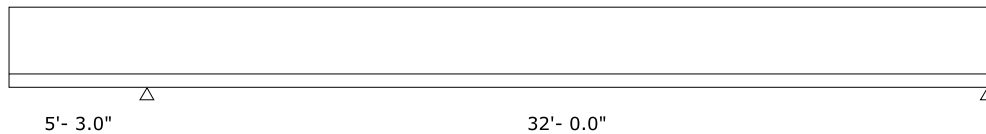
<b>DESIGN CONTROLS</b>		<b>Design</b>	<b>Allow.</b>	<b>DOL</b>	<b>Combination</b>	<b>Pattern</b>	<b>Pass/Fail</b>
Shear (lb)	57%	-1903	3345	Snow(100%)	1.0D+1.0S	Even Members	PASS
Positive Moment (ft-lb)	131%	15086	11540	Snow(100%)	1.0D+1.0S	Even Members	FAIL
Negative Moment (ft-lb)	14%	-1654	11540	Snow(100%)	1.0D+1.0S	All Spans	PASS
<b>DEFLECTIONS (in)</b>	<b>%</b>	<b>Design</b>	<b>Allow.</b>	<b>Design</b>	<b>Allow.</b>	<b>Combination</b>	<b>Pattern</b>
Span Live	123%	1.315	1.067	L / 292	L / 360	1.0D+1.0S	Even Members
Span Total	121%	1.934	1.600	L / 199	L / 240	1.0D+1.0S	Even Members
Overhang Live (down)	25%	0.088	0.350	2L / 999+	2L / 360	1.0D+1.0S	Odd Members
Overhang Total (down)		0.000	0.525	2L / 999+	2L / 240	1.0D+1.0S	
Overhang Live (up)		-0.641		2L / 196			
Overhang Total (up)		-0.918		2L / 137			
<b>SUPPORTS</b>		<b>Support 1</b>	<b>Support 2</b>				
Live Reaction, Critical (lb) (DOL%)		1734 (100)	1280 (100)				
Dead Reaction (lb)		867	623				
Total Reaction (lb) (DOL%)		2602 (100)	1903 (100)				
Bearing Support		Bottom	Flush				
Req'd Bearing, No Stiffeners (in)		Wall	Wall				
Req'd Bearing, Stiffeners (in)		-	-				
		3.50	1.98				

<b>HANGERS</b>	<b>Model</b>	<b>Top</b>	<b>Face</b>	<b>Member</b>	<b>Header</b>	<b>Size</b>
Right	None Selected					

**SPANS AND LOADS**

Dimensions represent horizontal design spans.

Member Slope: 0/12



**APPLICATION LOADS**

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	24"	Snow Roof Joist

**NOTES**

- Building code and design methodology: 2018 IBC ASD (US).
- Product Acceptance: ICC-ES ESR-2994 and LABC/LARC Supplement.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.

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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/30/23 10:22 AM  
**Designer:**  
**Comment:**

**Type:** Grid 19-21B-E Upgrad

## 20" Red-I65™ @ 12" o.c.

This product meets or exceeds the set design controls for the application and loads listed

DESIGN CONTROLS	%	Design	Allow.	DOL	Combination	Pattern	Pass/Fail
Shear (lb)	28%	-951	3345	Snow(100%)	1.0D+1.0S	Even Members	PASS
Positive Moment (ft-lb)	65%	7543	11540	Snow(100%)	1.0D+1.0S	Even Members	PASS
Negative Moment (ft-lb)	7%	-827	11540	Snow(100%)	1.0D+1.0S	All Spans	PASS

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Combination	Pattern	Pass/Fail
Span Live	62%	0.658	1.067	L / 584	L / 360	1.0D+1.0S	Even Members	PASS
Span Total	60%	0.967	1.600	L / 397	L / 240	1.0D+1.0S	Even Members	PASS
Overhang Live (down)	13%	0.044	0.350	2L / 999+	2L / 360	1.0D+1.0S	Odd Members	PASS
Overhang Total (down)		0.000	0.525	2L / 999+	2L / 240	1.0D+1.0S		PASS
Overhang Live (up)		-0.321		2L / 393				
Overhang Total (up)		-0.459		2L / 274				

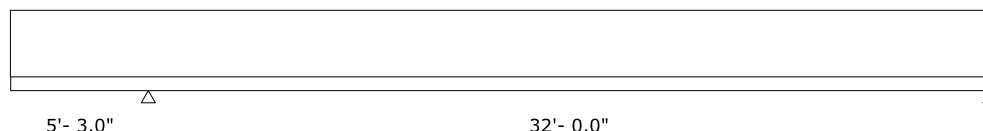
SUPPORTS	Support 1	Support 2
Live Reaction, Critical (lb) (DOL%)	867 (100)	640 (100)
Dead Reaction (lb)	434	311
Total Reaction (lb) (DOL%)	1301 (100)	951 (100)
Bearing	Bottom	Flush
Support	Wall	Wall
Req'd Bearing, No Stiffeners (in)	-	-
Req'd Bearing, Stiffeners (in)	3.50	1.75

HANGERS	Model	Top	Face	Member	Header	Size
Right	None Selected					

### SPANS AND LOADS

Dimensions represent horizontal design spans.

Member Slope: 0/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	12"	Snow Roof Joist

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Product Acceptance: ICC-ES ESR-2994 and LABC/LARC Supplement.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.

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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/28/23 11:09 AM  
**Designer:**  
**Comment:**

**Type:** Grid 19-21B-E Sh

## 14" Red-I65™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

<b>DESIGN CONTROLS</b>		<b>Design</b>	<b>Allow.</b>	<b>DOL</b>	<b>Combination</b>	<b>Pattern</b>	<b>Pass/Fail</b>
Shear (lb)	20%	510	2540	Snow(100%)	1.0D+1.0S	All Spans	PASS
Positive Moment (ft-lb)	13%	1084	8030	Snow(100%)	1.0D+1.0S	All Spans	PASS

<b>DEFLECTIONS (in)</b>		<b>Design</b>	<b>Allow.</b>	<b>Design</b>	<b>Allow.</b>	<b>Combination</b>	<b>Pattern</b>	<b>Pass/Fail</b>
Span Live	8%	0.024	0.283	L / 999+	L / 360	1.0D+1.0S	All Spans	PASS
Span Total	8%	0.035	0.425	L / 999+	L / 240	1.0D+1.0S	All Spans	PASS

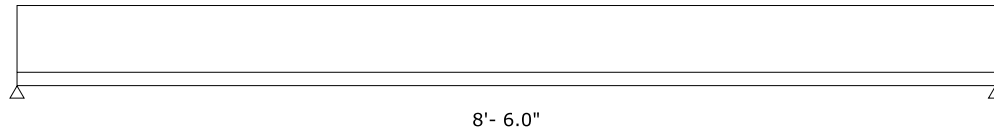
<b>SUPPORTS</b>	<b>Support 1</b>	<b>Support 2</b>
Live Reaction, Critical (lb) (DOL%)	340 (100)	340 (100)
Dead Reaction (lb)	170	170
Total Reaction (lb) (DOL%)	510 (100)	510 (100)
Bearing	Flush	Flush
Support	Wall	Wall
Req'd Bearing, No Stiffeners (in)	1.75	1.75
Req'd Bearing, Stiffeners (in)	-	-

<b>HANGERS</b>	<b>Model</b>	<b>Top</b>	<b>Face</b>	<b>Member</b>	<b>Header</b>	<b>Size</b>
Left	None Selected					
Right	None Selected					

### SPANS AND LOADS

Dimensions represent horizontal design spans.

Member Slope: 0/12



### APPLICATION LOADS

<b>Type</b>	<b>Units</b>	<b>DOL</b>	<b>Live</b>	<b>Dead</b>	<b>Partition</b>	<b>Tributary</b>	<b>Member Type</b>
Uniform	psf	Snow(100%)	40	20	0	24"	Snow Roof Joist

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Product Acceptance: ICC-ES ESR-2994 and LABC/LARC Supplement.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.

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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/28/23 11:09 AM  
**Designer:**  
**Comment:**

**Type:** Grid 6-6.5J-J.5

## 14" Red-I65™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

DESIGN CONTROLS	%	Design	Allow.	DOL	Combination	Pattern	Pass/Fail
Shear (lb)	44%	1129	2540	Snow(100%)	1.0D+0.75L+0.75S	All Spans	PASS
Positive Moment (ft-lb)	36%	2895	8030	Snow(100%)	1.0D+0.75L+0.75S	All Spans	PASS

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Combination	Pattern	Pass/Fail
Span Live	28%	0.104	0.367	L / 999+	L / 360	1.0D+0.75L+0.75S	All Spans	PASS
Span Total	24%	0.132	0.550	L / 999+	L / 240	1.0D+0.75L+0.75S	All Spans	PASS

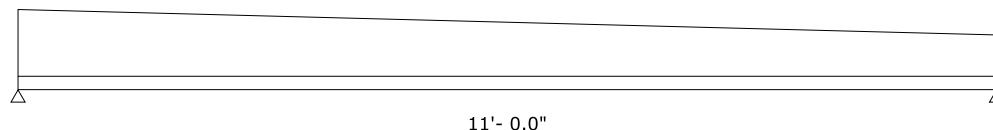
SUPPORTS	Support 1	Support 2
Live Reaction, Critical (lb) (DOL%)	909 (100)	754 (100)
Dead Reaction (lb)	220	220
Total Reaction (lb) (DOL%)	1129 (100)	974 (100)
Bearing Support	Flush	Flush
Req'd Bearing, No Stiffeners (in)	Wall	Wall
Req'd Bearing, Stiffeners (in)	1.75	1.75
	-	-

HANGERS	Model	Top	Face	Member	Header	Size
Left	None Selected					
Right	None Selected					

### SPANS AND LOADS

Dimensions represent horizontal design spans.

Member Slope: 0/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	24"	Snow Roof Joist

### ADDITIONAL LOADS

Type	Units	DOL	Live	Dead	Location from left	Application	Comment
Tapered	psf	Floor(100%)	89 to 32.5	0 to 0	0'-0.0" to 11'-0.0"	Adds To	

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Product Acceptance: ICC-ES ESR-2994 and LABC/LARC Supplement.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.

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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/28/23 11:09 AM  
**Designer:**  
**Comment:**

**Type:** Grid G-I15-18 Lo

## 20" Red-I65™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

DESIGN CONTROLS	%	Design	Allow.	DOL	Combination	Pattern	Pass/Fail
Shear (lb)	48%	1620	3345	Snow(100%)	1.0D+1.0S	All Spans	PASS
Positive Moment (ft-lb)	95%	10935	11540	Snow(100%)	1.0D+1.0S	All Spans	PASS

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Combination	Pattern	Pass/Fail
Span Live	76%	0.686	0.900	L / 472	L / 360	1.0D+1.0S	All Spans	PASS
Span Total	76%	1.029	1.350	L / 315	L / 240	1.0D+1.0S	All Spans	PASS

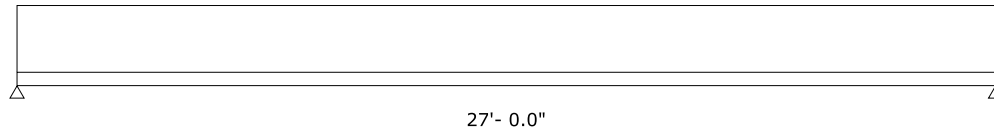
SUPPORTS	Support 1	Support 2
Live Reaction, Critical (lb) (DOL%)	1080 (100)	1080 (100)
Dead Reaction (lb)	540	540
Total Reaction (lb) (DOL%)	1620 (100)	1620 (100)
Bearing Support	Flush	Flush
Req'd Bearing, No Stiffeners (in)	Wall	Wall
Req'd Bearing, Stiffeners (in)	-	-

HANGERS	Model	Top	Face	Member	Header	Size
Left	None Selected					
Right	None Selected					

### SPANS AND LOADS

Dimensions represent horizontal design spans.

Member Slope: 0/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	24"	Snow Roof Joist

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Product Acceptance: ICC-ES ESR-2994 and LABC/LARC Supplement.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.

X:\Engineering\Jobs\40\23\020-ASD Scenic Park ES Tier 2 & Reroof Reports\Design & Calculations\Pre-reroof gravity\Redbuilt Joist.red

The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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v7.1.14

**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/30/23 1:11 PM  
**Designer:**  
**Comment:**

**Type:** Grid L-L.56-7 (E)

## 14" Red-I65™ @ 24" o.c. **OVERLOADED**

DESIGN CONTROLS	%	Design	Allow.	DOL	Combination	Pattern	Pass/Fail
Shear (lb)	77%	1946	2540	Snow(100%)	1.0D+0.75L+0.75S	All Spans	PASS
Positive Moment (ft-lb)	109%	8758	8030	Snow(100%)	1.0D+0.75L+0.75S	All Spans	FAIL

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Combination	Pattern	Pass/Fail
Span Live	120%	0.718	0.600	L / 301	L / 360	1.0D+0.75L+0.75S	All Spans	FAIL
Span Total	98%	0.881	0.900	L / 245	L / 240	1.0D+0.75L+0.75S	All Spans	PASS

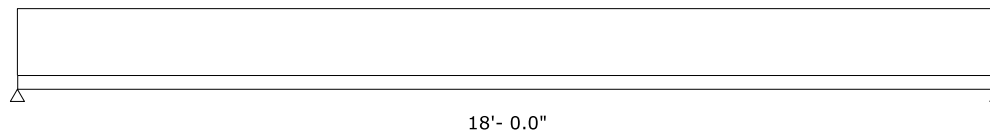
SUPPORTS	Support 1	Support 2
Live Reaction, Critical (lb) (DOL%)	1586 (100)	1586 (100)
Dead Reaction (lb)	360	360
Total Reaction (lb) (DOL%)	1946 (100)	1946 (100)
Bearing	Flush	Flush
Support	Wall	Wall
Req'd Bearing, No Stiffeners (in)	-	-
Req'd Bearing, Stiffeners (in)	2.20	2.20

HANGERS	Model	Top	Face	Member	Header	Size
Left	None Selected					
Right	None Selected					

### SPANS AND LOADS

Dimensions represent horizontal design spans.

Member Slope: 0/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	24"	Snow Roof Joist

### ADDITIONAL LOADS

Type	Units	DOL	Live	Dead	Location from left	Application	Comment
Uniform	psf	Floor(100%)	77.5	0	0'-0.0" to 18'-0.0"	Adds To	

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Product Acceptance: ICC-ES ESR-2994 and LABC/LARC Supplement.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.

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The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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v7.1.14

**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/30/23 1:13 PM  
**Designer:**  
**Comment:**

**Type:** Grid L-L.56-7 RP

## 14" Red-I65™ @ 12" o.c.

This product meets or exceeds the set design controls for the application and loads listed

DESIGN CONTROLS	%	Design	Allow.	DOL	Combination	Pattern	Pass/Fail
Shear (lb)	38%	973	2540	Snow(100%)	1.0D+0.75L+0.75S	All Spans	PASS
Positive Moment (ft-lb)	55%	4379	8030	Snow(100%)	1.0D+0.75L+0.75S	All Spans	PASS

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Combination	Pattern	Pass/Fail
Span Live	60%	0.359	0.600	L / 601	L / 360	1.0D+0.75L+0.75S	All Spans	PASS
Span Total	49%	0.441	0.900	L / 490	L / 240	1.0D+0.75L+0.75S	All Spans	PASS

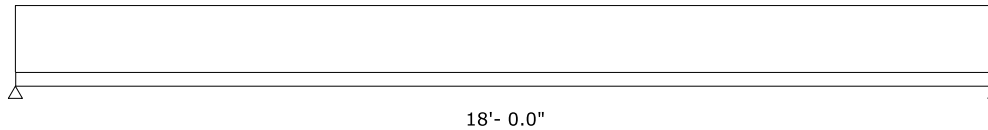
SUPPORTS	Support 1	Support 2
Live Reaction, Critical (lb) (DOL%)	793 (100)	793 (100)
Dead Reaction (lb)	180	180
Total Reaction (lb) (DOL%)	973 (100)	973 (100)
Bearing Support	Flush	Flush
Req'd Bearing, No Stiffeners (in)	Wall	Wall
Req'd Bearing, Stiffeners (in)	1.75	1.75
	-	-

HANGERS	Model	Top	Face	Member	Header	Size
Left	None Selected					
Right	None Selected					

### SPANS AND LOADS

Dimensions represent horizontal design spans.

Member Slope: 0/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	12"	Snow Roof Joist

### ADDITIONAL LOADS

Type	Units	DOL	Live	Dead	Location from left	Application	Comment
Uniform	psf	Floor(100%)	77.5	0	0'-0.0" to 18'-0.0"	Adds To	

### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Product Acceptance: ICC-ES ESR-2994 and LABC/LARC Supplement.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.

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The products noted are intended for interior, untreated, non-corrosive applications with normal temperatures and dry conditions of use, and must be installed in accordance with local building code requirements and RedBuilt™ recommendations. The loads, spans, and spacing have been provided by others and must be approved for the specific application by the design professional for the project. Unless otherwise noted, this output has not been reviewed by a RedBuilt™ associate. PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.

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**Project:** Project  
**Location:**  
**Folder:** Folder  
**Date:** 3/28/23 11:09 AM  
**Designer:**  
**Comment:**

**Type: PentHouse Roof**

## 14" Red-I65™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

DESIGN CONTROLS	%	Design	Allow.	DOL	Combination	Pattern	Pass/Fail
Shear (lb)	50%	1265	2540	Snow(100%)	1.0D+1.0S	All Spans	PASS
Positive Moment (ft-lb)	83%	6668	8030	Snow(100%)	1.0D+1.0S	All Spans	PASS

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Combination	Pattern	Pass/Fail
Span Live	84%	0.592	0.703	L / 427	L / 360	1.0D+1.0S	All Spans	PASS
Span Total	84%	0.888	1.054	L / 285	L / 240	1.0D+1.0S	All Spans	PASS

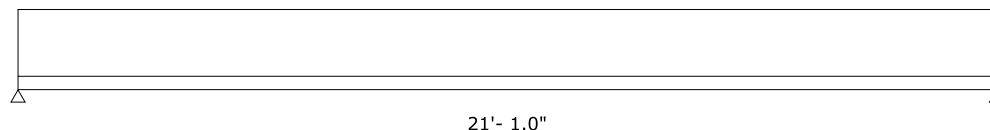
SUPPORTS	Support 1	Support 2
Live Reaction, Critical (lb) (DOL%)	843 (100)	843 (100)
Dead Reaction (lb)	422	422
Total Reaction (lb) (DOL%)	1265 (100)	1265 (100)
Bearing Support	Flush	Flush
Req'd Bearing, No Stiffeners (in)	Wall	Wall
Req'd Bearing, Stiffeners (in)	1.75	1.75
	-	-

HANGERS	Model	Top	Face	Member	Header	Size
Left	None Selected					
Right	None Selected					

### SPANS AND LOADS

Dimensions represent horizontal design spans.

Member Slope: 0/12



### APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(100%)	40	20	0	24"	Snow Roof Joist

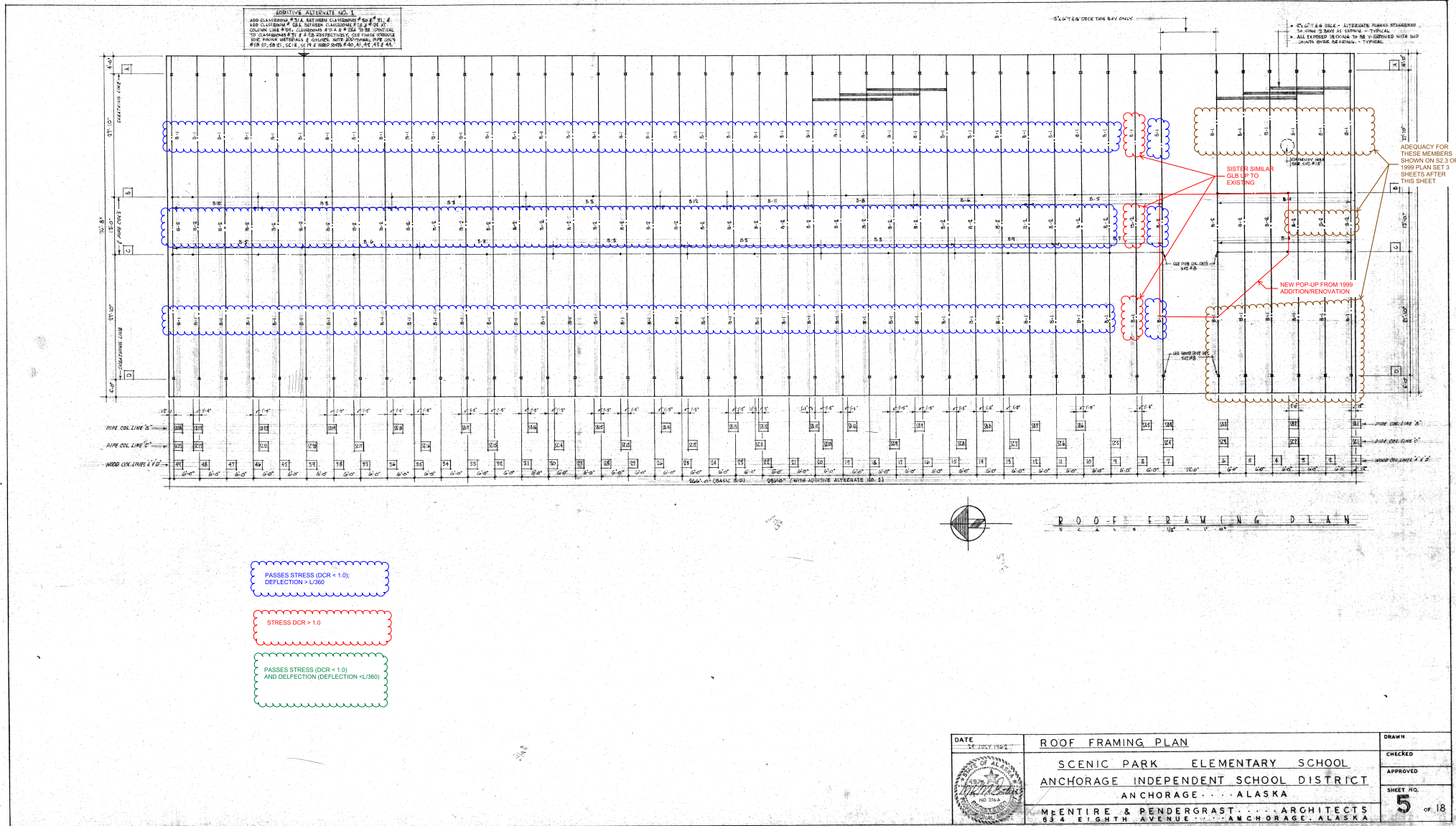
### NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Product Acceptance: ICC-ES ESR-2994 and LABC/LARC Supplement.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.

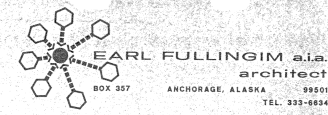
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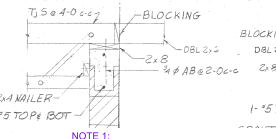
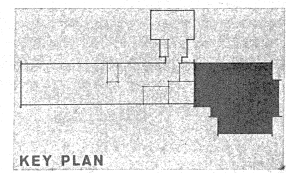
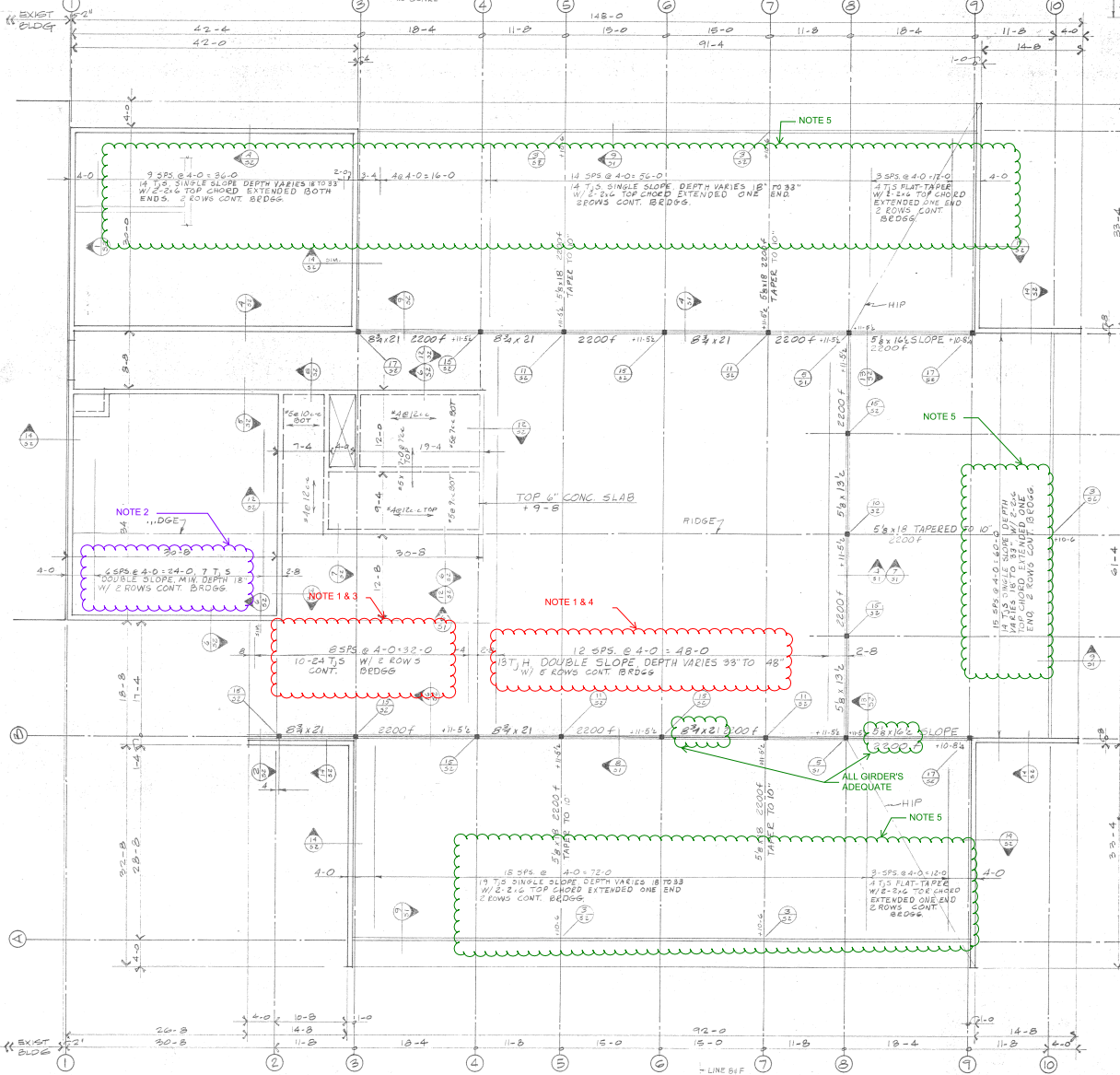


ADDITIONS & ALTERATIONS  
SCENIC PARK  
ELEMENTARY SCHOOL  
Greater Anchorage Area Borough  
School District

FILE NO. 2071 SHEET NO. S2  
DRAWN BY JA  
DATE 28 JULY 1972

- NOTE:
1. ALL 2'-4" PLYWOOD EDGES (#4) TO BE STAPLED N 1/4" @ 12" ON MIN.
  2. ALL 2'-4" PLYWOOD-PERIMETER PANELS TO BE NAILED WITH 10d COMMON @ 24" C.C. # @ 12" C.C. @ INTERMEDIATE SUPPORTS.
  3. ALL 1/2" PLYWOOD TO BE NAILED WITH 10d COMMON @ 4" C.C. @ PERIMETER EDGES & @ 12" C.C. @ INTERMEDIATE SUPPORTS.

TYP. DOOR & WINDOW LINTEL



NOTE 1: PER OUR CALCULATIONS USING CURRENT RED-BUILT JOIST DATA, STRESS DCR VALUES FOR TRUSSES IN THIS AREA ARE GREATER THAN 1.0

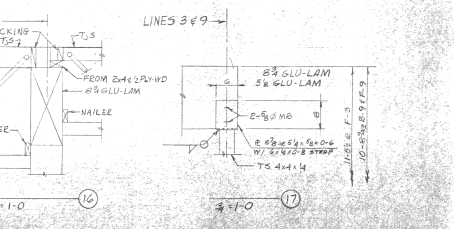
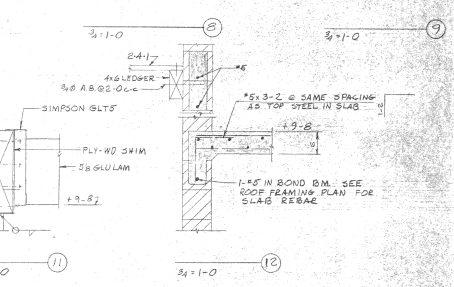
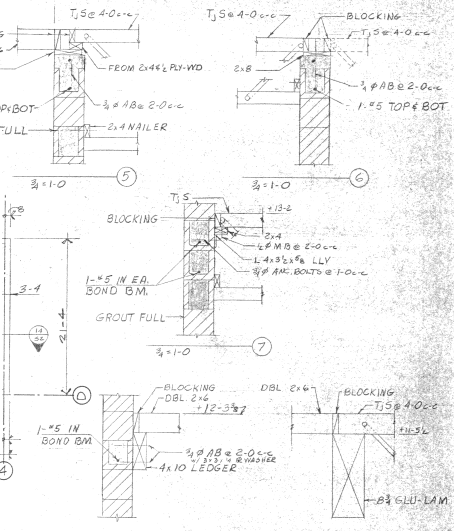
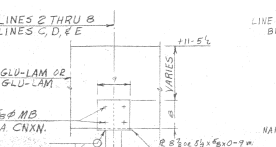
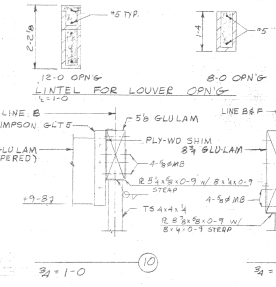
NOTE 2: PER 1072 ADDITION DRAWINGS, SHEET S1 ROOF JOISTS SHALL BE MODIFIED IN ACCORDANCE WITH DESIGN REQUIREMENTS, WHICH LIST SLOPE = 40PFS

NOTE 3: OVER 10% STRESS INCREASE W/ DRIFTS, SISTER (N) TRUSSES SIM TO (E) TRUSSES FOR ALL TRUSSES AT LOCATION

NOTE 4: OVER 10% STRESS INCREASE W/ DRIFTS, SISTER (N) TRUSSES SIM TO (E) TRUSSES FOR FIRST (A) TRUSSES TO THE RIGHT OF THIS SHEETS GRID 4

NOTE 5: TRUSS STRESS CHANGE LESS THAN 10%, NO FURTHER ANALYSIS NECESSARY

ROOF FRAMING MECH ROOM 301  
1/8" = 1'-0"



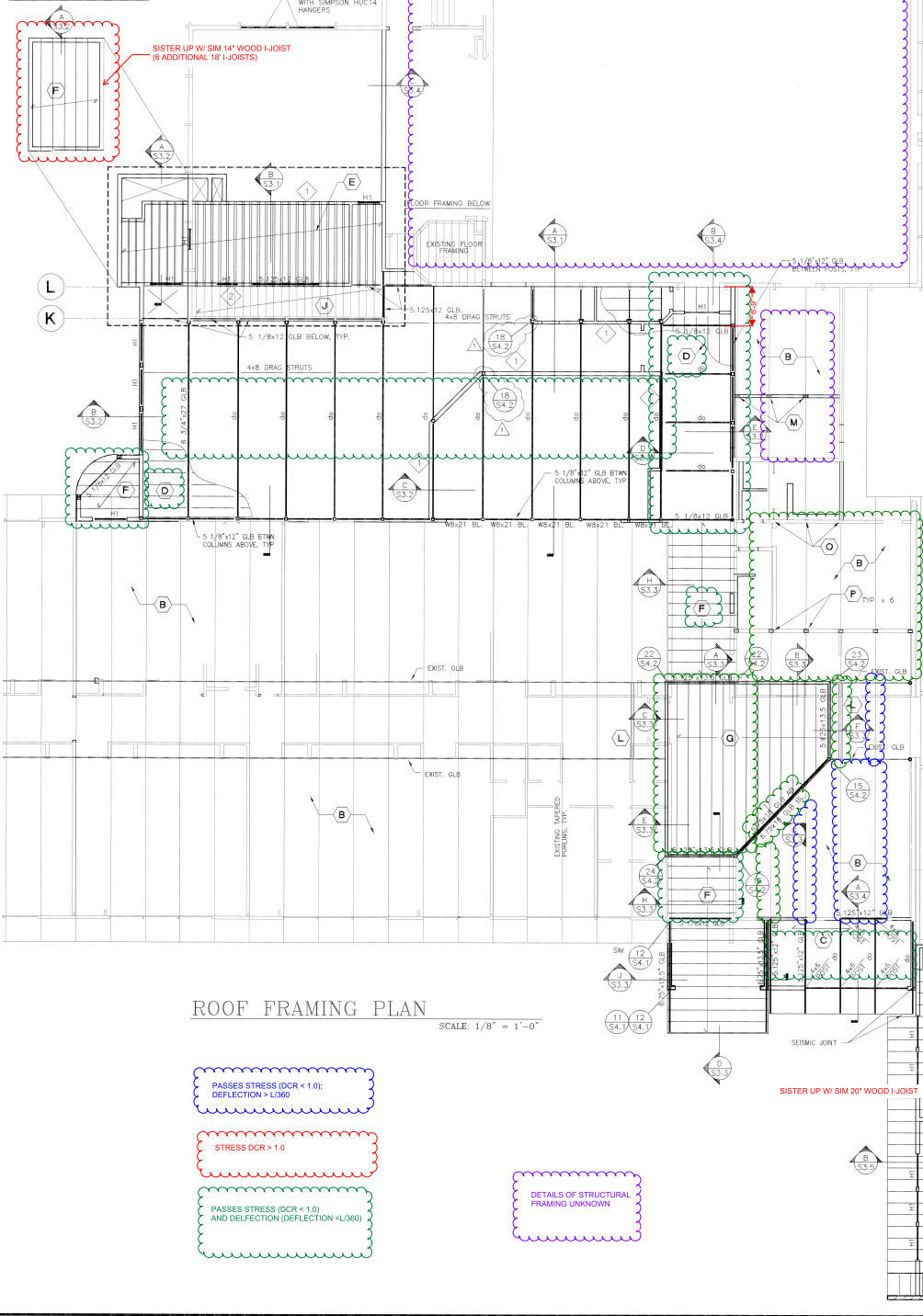
ROOF FRAMING PLAN NORTH

1/8" = 1'-0"





ROOF FRAMING



ROOF FRAMING PLAN

SCALE: 1/8" = 1'-0"

PASSES STRESS (DCR < 1.0);  
DEFLECTION > L/360

STRESS DCR > 1.0

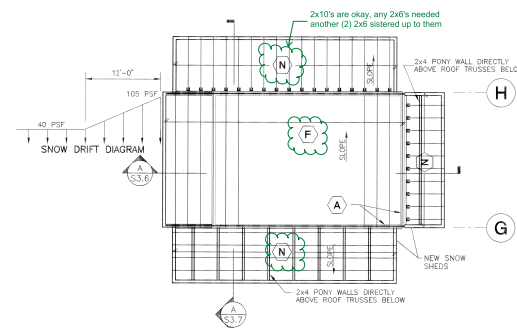
PASSES STRESS (DCR < 1.0)  
AND DEFLECTION (DEFLECTION < L/360)

DETAILS OF STRUCTURAL  
FRAMING UNKNOWN

KEYNOTES

- A 2x8 STUDS @ 1'-4" OC. ON EXISTING CMU WALLS
- B SHEATHING OVERLAY ON EXISTING 2" WOOD DECKING THROUGHOUT NORTH CLASSROOM WING. SEE DIAPHRAGM SCHEDULE FOR NAILING.
- C 2" TAG WOOD DECKING ON GLB'S
- D ROOF SHEATHING OVER 2x8 JOISTS @ 2'-0" OC. DBL JOISTS WITHIN 10' OF SWM WALLS FOR DEET LONGS. "SHANNON" OVER DEET 2x10 JOISTS @ 1'-4" O.C. MATCH EXISTING FLOOR ELEVATION
- E ROOF SHEATHING ON 14" LG JOISTS @ 2'-0" OC
- F ROOF SHEATHING ON 20" LG JOISTS @ 2'-0" OC
- G WOOD FRAMED BEARING WALL FOR EXISTING ROOF TRUSSES
- H EXISTING 2x10 FLOOR JOIST TO REMAIN
- I CONTRACTOR TO MODIFY AND STRENGTHEN EXISTING ROOF TRUSSES THIS AREA FOR SNOW DRIFTING AND TO INCORPORATE NEW BEARING POINT AT NEW WALL TRUSSES. JUST MAXIMLEN WILL DESIGN THE MODIFICATION AND SUPPLY MATERIALS. REPAIRS WILL EFFECT 3-ROOF TRUSSES. THE DESIGN SNOW DRIFT LOAD IS SHOWN IN THE DIAGRAM ABOVE.
- J REINFORCE EXISTING S1258 GLB WITH 1 3/4"x4" LVL EACH SIDE W/ (2) 3/4" BOLTS @ 2'-0" O.C.
- K NEW WOOD POST UNDER EXISTING GLB
- L SHEATHING OVER 2x6 OR 2x10 RAFTERS @ 2'-0" O.C.
- M SHIM BELOW EXISTING GLB TO PROVIDE BEARING FOR GLB TO EXISTING CMU WALL
- N NEW STEEL HANGER TO MASONRY WALL

- NOTES:
- SEE S1.1 FOR SHEARWALL, HEADER, AND DIAPHRAGM SCHEDULES.
  - SEE FOUNDATION PLAN FOR COLUMN SIZES.
- ◇ - SHEARWALLS, SEE S1.1  
H - HEADERS, SEE SCHEDULE ON S1.1



FAN ROOM ROOF #2 FRAMING PLAN  
SCALE: 1/8" = 1'-0"



kumlin associates, inc.  
architects & planners  
500 E Street, Suite 200  
Anchorage, Alaska 99501  
907.578.6838  
Partridge, Nottingham & Drain, Inc.  
Professional Engineer  
No. 100729

SCENIC PARK ELEMENTARY SCHOOL  
RENEWAL AND UPGRADES  
ANCHORAGE SCHOOL DISTRICT

no.	date	revision
1	3-15-19	ADDENDUM REVISION

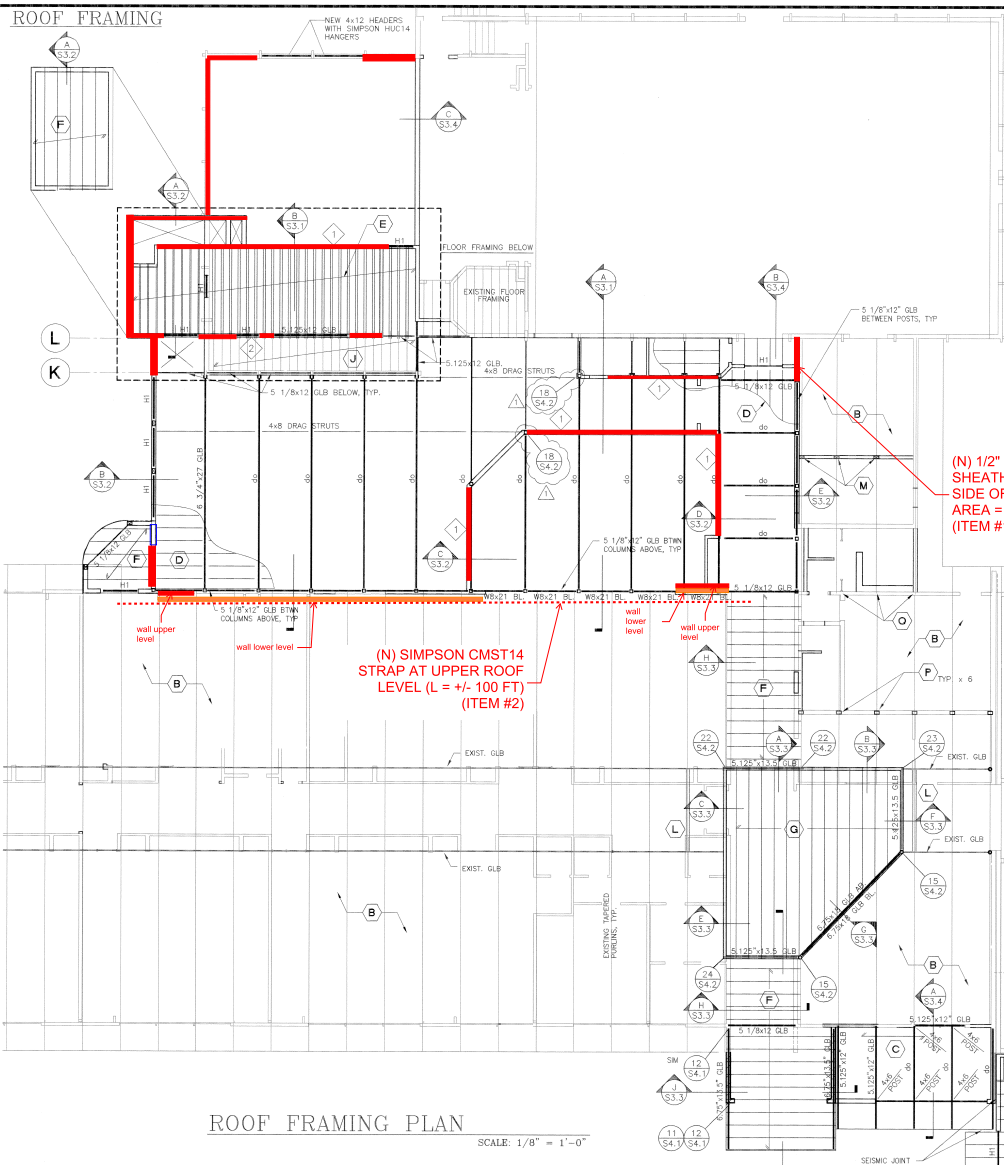
drawn	checked	date	job no.	dwg. title
WAT	CK	11-21-19	9700	PARTIAL ROOF PLAN NEW FRAMING

sheet no.  
**S2.3**

## Appendix F – Seismic Evaluation: Retrofit Concepts

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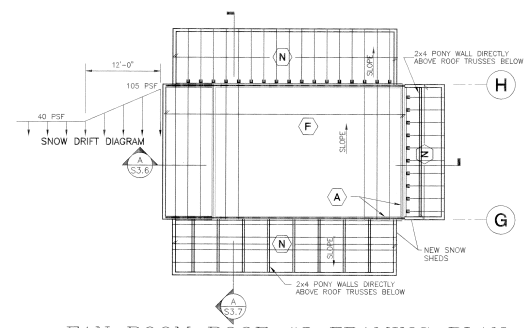
This section contains concept-level sketches that address deficiencies per the ASCE 41-17, Tier 2 seismic analysis.



**KEYNOTES**

- A 2x8 STUDS @ 1'-4" OC ON EXISTING CMU WALLS
  - B SHEATHING OVERLAY ON EXISTING 2" WOOD DECKING THROUGHOUT NORTH CLASSROOM WING. SEE DIAPHRAGM SCHEDULE FOR NAILING.
  - C 2" TAG WOOD DECKING ON GLB'S
  - D ROOF SHEATHING OVER 2x8 JOISTS @ 2'-0" OC. DBL JOISTS WITHIN 10' OF SWM WALLS FOR DIRT LOADS. SHOWN WITHIN THE 2x8 JOIST @ 1'-4" OC. MATCH EXISTING FLOOR ELEVATION.
  - E ROOF SHEATHING ON 14" T&G JOISTS @ 2'-0" OC
  - F ROOF SHEATHING ON 20" T&G JOISTS @ 2'-0" OC
  - G WOOD FRAMED BEARING WALL FOR EXISTING ROOF TRUSSES
  - H EXISTING 2x10 FLOOR JOIST TO REMAIN
  - J CONTRACTOR TO MODIFY AND STRENGTHEN EXISTING ROOF TRUSSES THIS AREA FOR SNOW DRIFTING AND TO INCORPORATE NEW BEARING POINT AT NEW WALL THIS JOIST MOMENTUM WILL REDUCE THE MODIFICATION AND SUPPLY MATERIALS. REPAIRS WILL EFFECT 3-ROOF TRUSSES. THE DESIGN SNOW DRIFT LOAD IS SHOWN IN THE DIAGRAM ABOVE.
  - L REINFORCE EXISTING S125x12 GLB WITH 1 3/4"x4" LVL EACH SIDE W/ (2) 3/4"x9 BOLTS @ 2'-0" O.C.
  - M NEW WOOD POST UNDER EXISTING GLB
  - N SHEATHING OVER 2x6 OR 2x10 RAFTERS @ 2'-0" O.C.
  - P 3/4" BELOW EXISTING GLB TO PROVIDE BEARING FOR GLB TO EXISTING CMU WALL
  - O NEW STEEL HANGER TO MASONRY WALL
- NOTES:  
 1. SEE S1.1 FOR SHEARWALL, HEADER, AND DIAPHRAGM SCHEDULES.  
 2. SEE FOUNDATION PLAN FOR COLUMN SIZES.  
 1 - SHEARWALLS, SEE S1.1  
 H - HEADERS, SEE SCHEDULE ON S1.1

(N) 1/2" PLYWOOD SHEATHING ONE SIDE OF WALL, TOTAL AREA = 5,000 SF (ITEM #1)



**SEISMIC UPGRADE #1 AND #2**



kumlin associates, inc.  
 architects & planners  
 800 E Street Suite 200  
 Anchorage, Alaska 99501  
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 Professional Engineer  
 License No. 10271  
 907.564.6111

SCENIC PARK ELEMENTARY SCHOOL  
 RENEWAL AND UPGRADES  
 ANCHORAGE SCHOOL DISTRICT

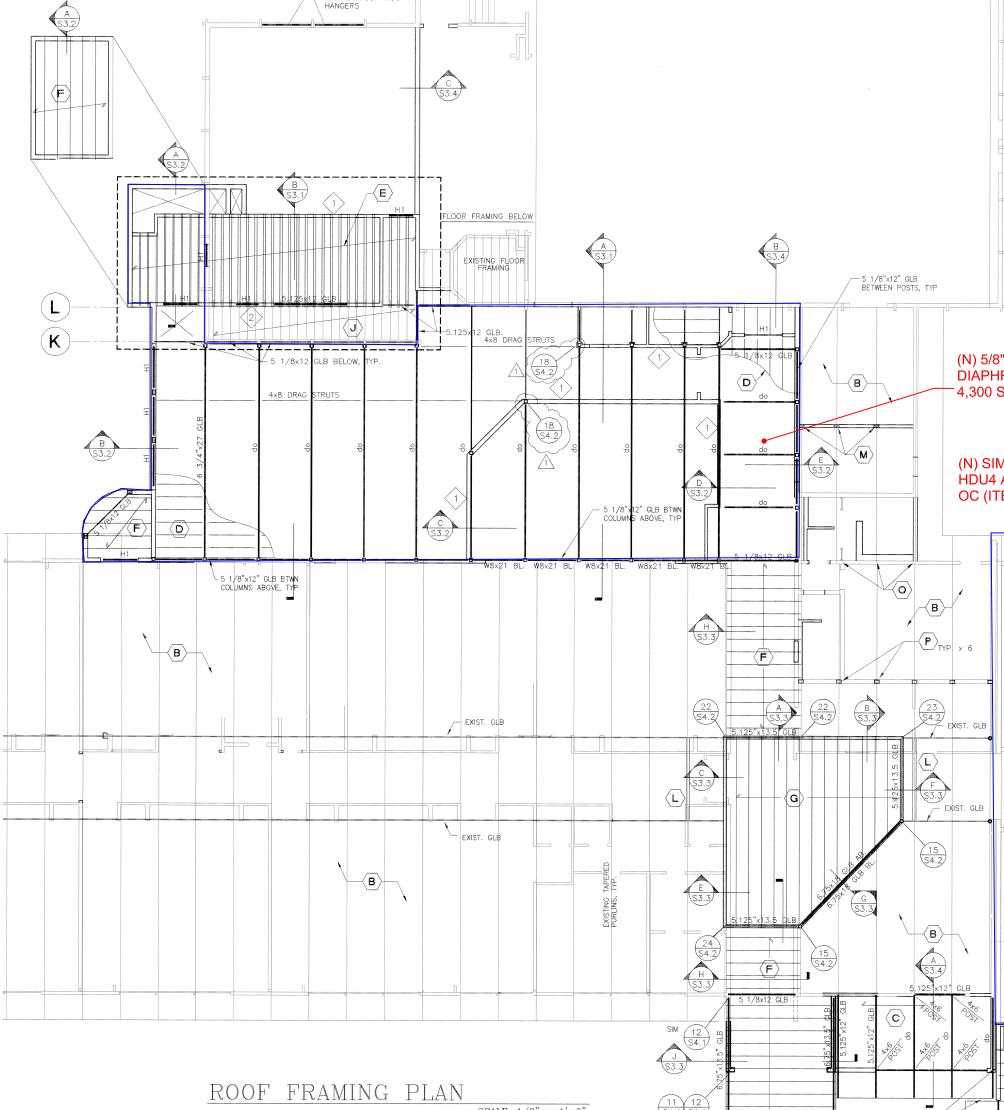
no.	date	revision	by
1	3-15-19	ADDENDUM	CK

drawn	WAY
checked	CK
date	11-21-19
job no.	9700
dwg. title	PARTIAL ROOF PLAN NEW FRAMING

sheet no.  
**S2.3**



ROOF FRAMING



ROOF FRAMING PLAN

SCALE: 1/8" = 1'-0"

KEYNOTES

- A 2x8 STUDS @ 1'-4" OC ON EXISTING CMU WALLS
- B SHEATHING OVERLAY ON EXISTING 2" WOOD DECKING THROUGHOUT NORTH CLASSROOM WING. SEE DIAPHRAGM SCHEDULE FOR NAILING.
- C 2" TAG WOOD DECKING ON GLB'S
- D ROOF SHEATHING OVER 2x8 JOISTS @ 2'-0" OC. DBL JOISTS WITHIN 10" OF SPAN W/SLA FOR DIRT LOADS. W/SLA W/SLA OVER 2x8 JOISTS @ 1'-4" OC. MATCH EXISTING FLOOR ELEVATION.
- E ROOF SHEATHING ON 14" LG 60 JOISTS @ 2'-0" OC
- F ROOF SHEATHING ON 20" LG 60 JOISTS @ 2'-0" OC
- G WOOD FRAMED BEARING WALL FOR EXISTING ROOF TRUSSES
- H EXISTING 2x10 FLOOR JOIST TO REMAIN
- J CONTRACTOR TO MODIFY AND STRENGTHEN EXISTING ROOF TRUSSES THIS AREA FOR SNOW DRIFTING AND TO INCORPORATE NEW BEARING POINT AT NEW WALL THIS JOIST MANIPULATION WILL DESIGN THE MODIFICATION AND SUPPLY MATERIALS. REPAIRS WILL EFFECT 3-RIDGE TRUSSES. THE DESIGN SNOW DRIFT LOAD IS SHOWN IN THE DIAGRAM ABOVE.
- L REINFORCE EXISTING S125GLB WITH 1 3/4"x4" LVL EACH SIDE W/ (2) 3/4"x9 BOLTS @ 2'-0" O.C.
- M NEW WOOD POST UNDER EXISTING GLB
- N SHEATHING OVER 2x6 OR 2x10 RAFTERS @ 2'-0" O.C.
- P SIM BELOW EXISTING GLB TO PROVIDE BEARING FOR GLB TO EXISTING CMU WALL
- O NEW STEEL HANGER TO MASONRY WALL

(N) 5/8" PLYWOOD DIAPHRAGM, 4,300 SF (ITEM #3)

(N) SIMPSON HDU4 AT 4'-0" OC (ITEM #6)

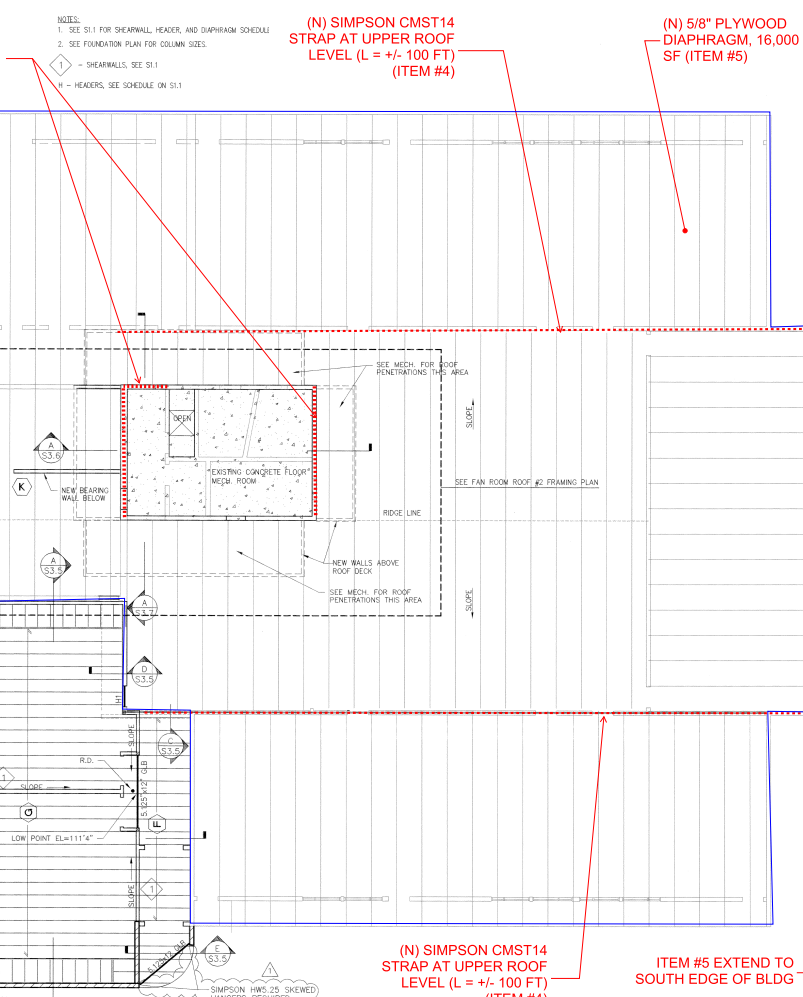
(N) SIMPSON CMST14 STRAP AT UPPER ROOF LEVEL (L = +/- 100 FT) (ITEM #4)

(N) 5/8" PLYWOOD DIAPHRAGM, 16,000 SF (ITEM #5)

FAN ROOM ROOF #2 FRAMING PLAN

SCALE: 1/8" = 1'-0"

SEISMIC UPGRADE #3, #4, #5, AND #6



(N) SIMPSON CMST14 STRAP AT UPPER ROOF LEVEL (L = +/- 100 FT) (ITEM #4)

ITEM #5 EXTEND TO SOUTH EDGE OF BLDG



kumlin associates, inc.  
architects & planners  
100 E Street, Suite 200  
Anchorage, Alaska 99501  
907.570.0000  
Patrick J. Nottelmann, Inc.  
Professional Engineer  
License No. 100720-0003

SCENIC PARK ELEMENTARY SCHOOL  
RENEWAL AND UPGRADES  
ANCHORAGE SCHOOL DISTRICT

no.	date	by	revision
1	3-15-24	CK	ADDENDUM REVISION

drawn	way
checked	CK
date	11-21-23
job no.	9700
dwg. title	PARTIAL ROOF PLAN NEW FRAMING

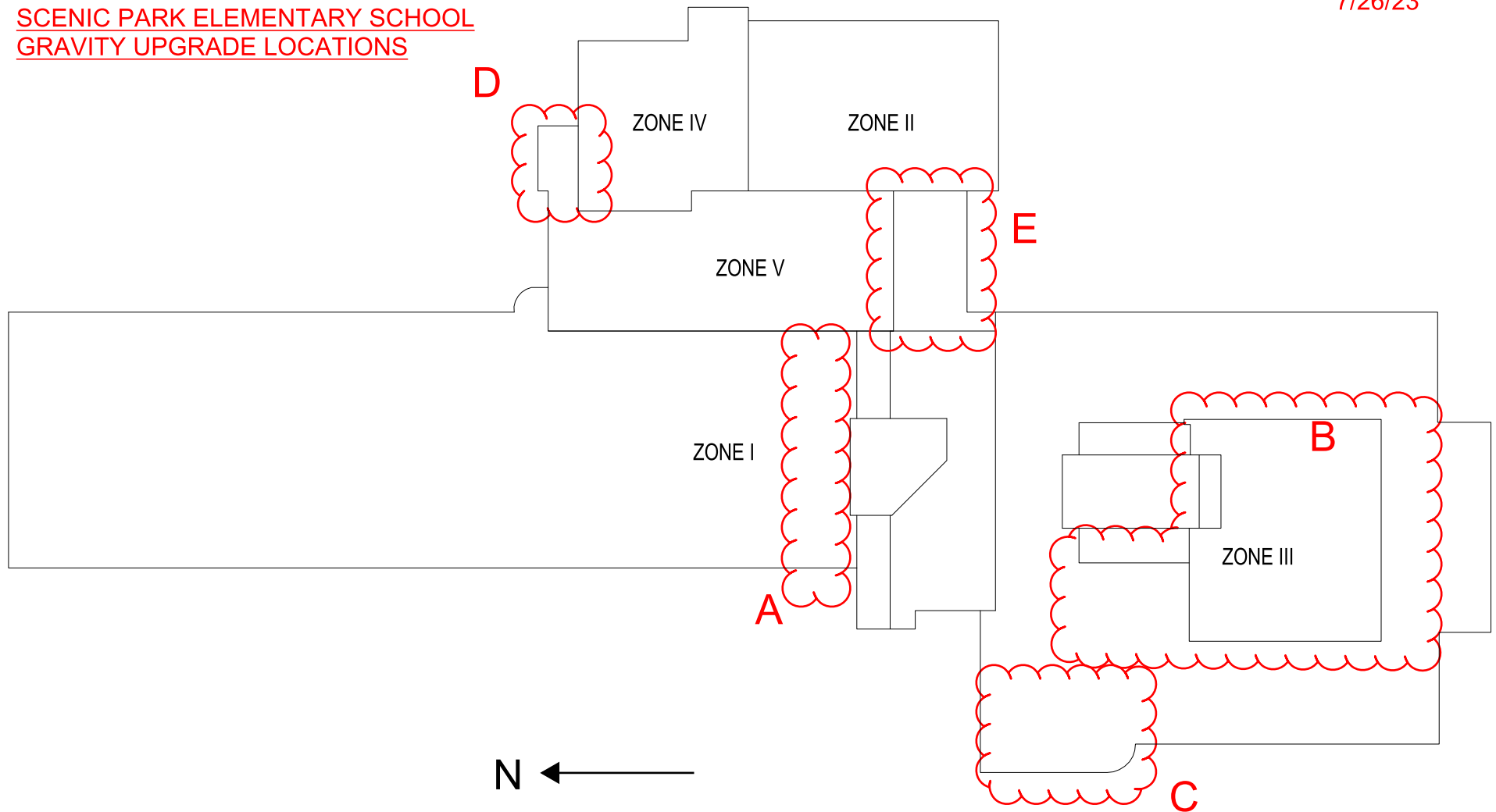
sheet no.  
**S2.3**

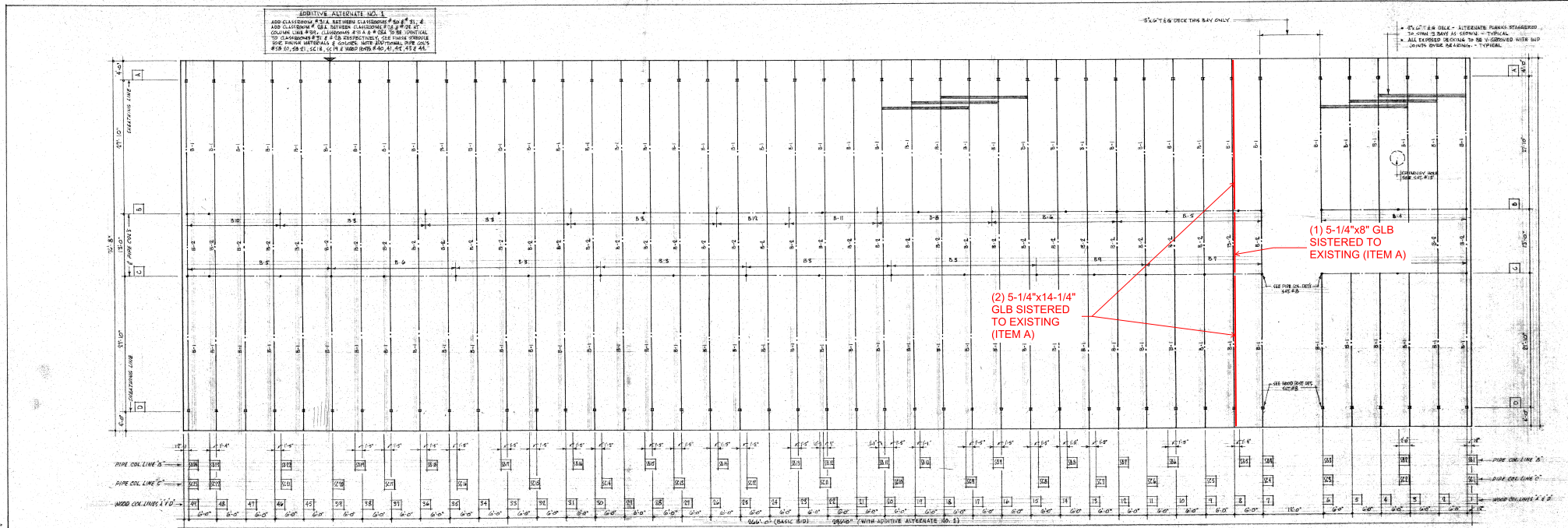
## Appendix G – Pre-Reroof Gravity Evaluation: Retrofit Concepts

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This section contains concept-level sketches for recommended upgraded per the pre-reroof gravity analysis of Scenic Park Elementary School.

SCENIC PARK ELEMENTARY SCHOOL  
GRAVITY UPGRADE LOCATIONS





ROOF FRAMING PLAN

**GRAVITY UPGRADE A**

DATE 17 JULY 1982	ROOF FRAMING PLAN	DRAWN
	SCENIC PARK ELEMENTARY SCHOOL	CHECKED
	ANCHORAGE INDEPENDENT SCHOOL DISTRICT	APPROVED
	ANCHORAGE, ALASKA	SHEET NO. <b>5</b> of 18
M. ENTIRE & PENDERGRAST ARCHITECTS 834 EIGHTH AVENUE ANCHORAGE, ALASKA		



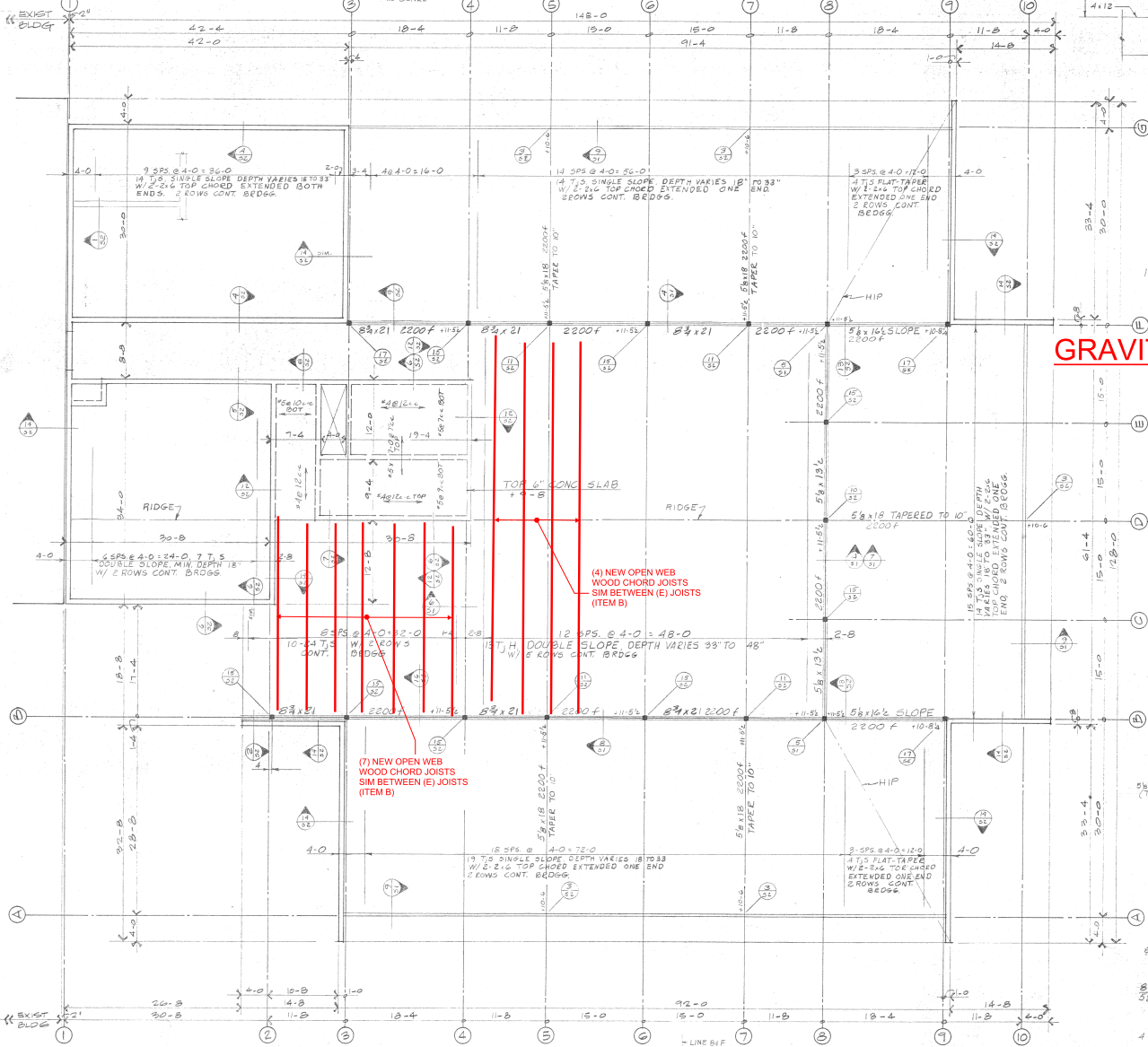


ADDITIONS & ALTERATIONS  
SCENIC PARK  
ELEMENTARY SCHOOL  
Greater Anchorage Area Borough  
School District

FILE NO. 2071 SHEET NO. S2  
DRAWN BY JA  
DATE 28 JULY 1972

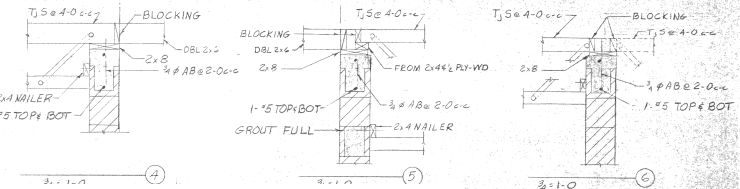
- NOTE:
1. ALL 2-4-1 PLYWOOD EDGES (#4) TO BE STAPLED  $\forall$  1/4" GA. #12 @ 12" ON C.
  2. ALL 2-4-1 PLYWOOD-PERIMETER PANELS TO BE NAILED WITH 10# COMMON @ 24" C-C. # @ 12" C-C @ INTERMEDIATE SUPPORTS.
  3. ALL 1/2" PLYWOOD TO BE NAILED WITH 10# COMMON @ 4" C-C @ PERIMETER EDGES & @ 12" C-C @ INTERMEDIATE SUPPORTS.

TYP. DOOR & WINDOW LINTEL

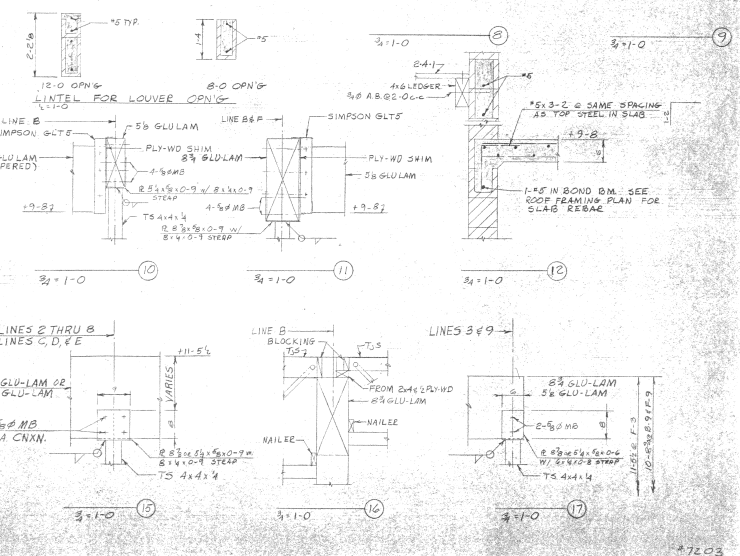


**GRAVITY UPGRADE B**

KEY PLAN

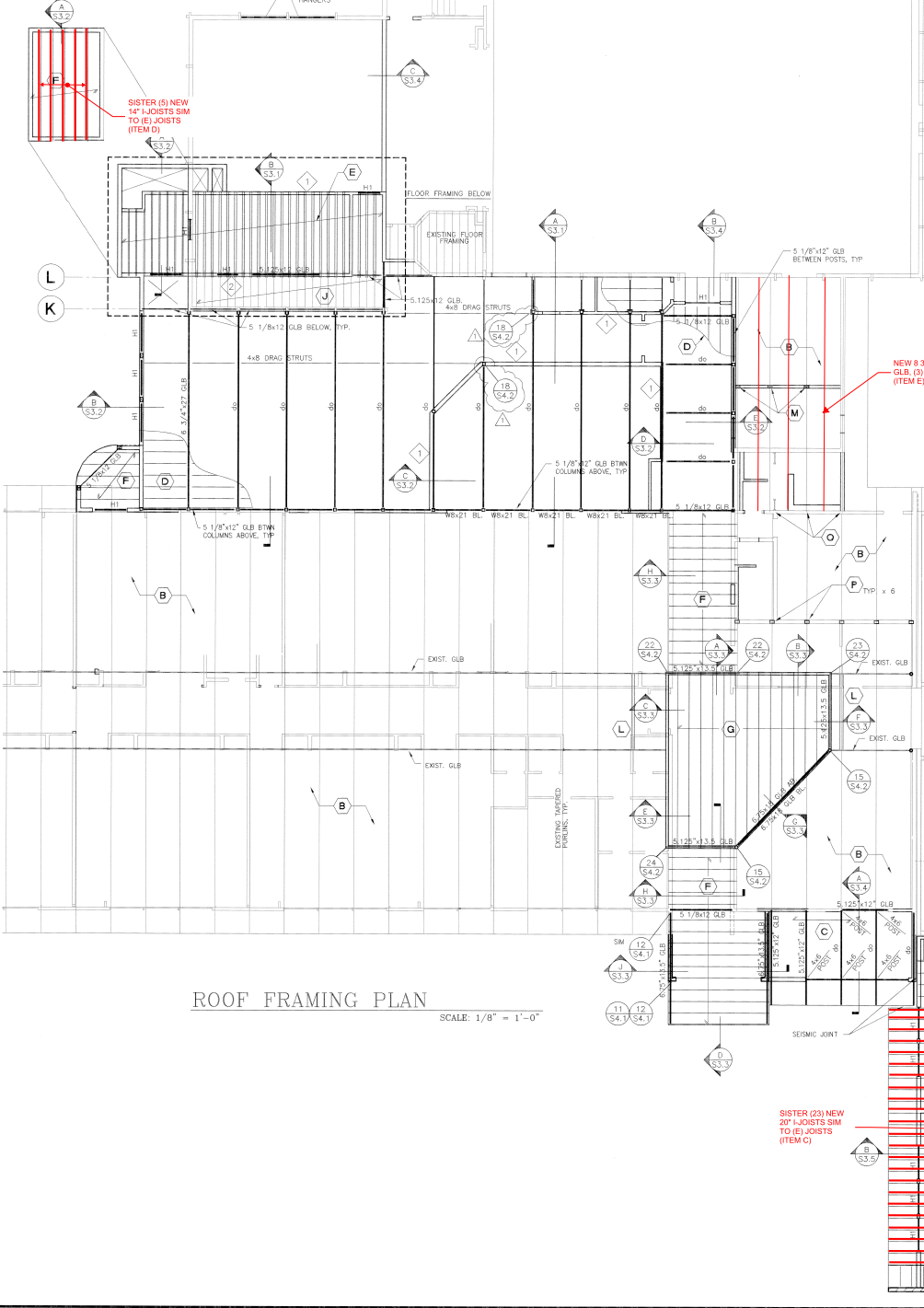


ROOF FRAMING MECH ROOM 301



ROOF FRAMING PLAN NORTH

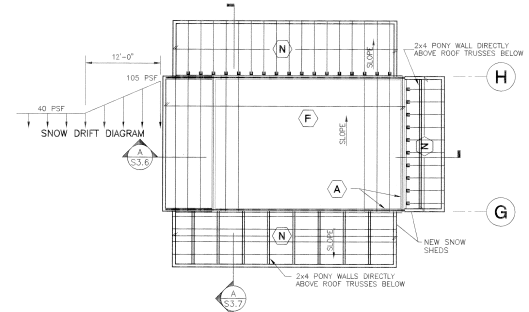
ROOF FRAMING



ROOF FRAMING PLAN  
SCALE: 1/8" = 1'-0"

KEYNOTES

- A 2x8 STUDS @ 1'-4" OC. ON EXISTING CMU WALLS
  - B SHEATHING OVERLAY ON EXISTING 2" WOOD DECKING THROUGHOUT NORTH CLASSROOM WING. SEE DIAPHRAGM SCHEDULE FOR NAILING.
  - C 2" TAG WOOD DECKING ON GLB'S
  - D ROOF SHEATHING OVER 2x8 JOISTS @ 2'-0" OC. DBL JOISTS WITHIN 10" OF SWL WALLS FOR DIRT LOADS. MATCH EXISTING FLOOR ELEVATION
  - E ROOF SHEATHING ON 14" LG 6x JOISTS @ 2'-0" OC
  - F ROOF SHEATHING ON 20" LG 6x JOISTS @ 2'-0" OC
  - G WOOD FRAMED BEARING WALL FOR EXISTING ROOF TRUSSES
  - H EXISTING 2x10 FLOOR JOIST TO REMAIN
  - J CONTRACTOR TO MODIFY AND STRENGTHEN EXISTING ROOF TRUSSES THIS AREA FOR SNOW DRIFTING AND TO INCORPORATE NEW BEARING POINT AT NEW WALL THIS JOIST MOMENTUM WILL REDUCE THE MODIFICATION AND SUPPLY MATERIALS. REPAIRS WILL EFFECT 3-ROOF TRUSSES. THE DESIGN SNOW DRIFT LOAD IS SHOWN IN THE DIAGRAM ABOVE.
  - L REINFORCE EXISTING S125x8 GLB WITH 1 3/4"x4" LVL EACH SIDE W/ (2) 3/4" BOLTS @ 2'-0" O.C.
  - M NEW WOOD POST UNDER EXISTING GLB
  - N SHEATHING OVER 2x6 OR 2x10 RAFTERS @ 2'-0" O.C.
  - O SHIM BELOW EXISTING GLB TO PROVIDE BEARING FOR GLB TO EXISTING CMU WALL
  - P NEW STEEL HANGER TO MASONRY WALL
- NOTES:  
1. SEE S1.1 FOR SHEARWALL, HEADER, AND DIAPHRAGM SCHEDULES.  
2. SEE FOUNDATION PLAN FOR COLUMN SIZES.  
3. - SHEARWALLS, SEE S1.1  
H - HEADERS, SEE SCHEDULE ON S1.1



FAN ROOM ROOF #2 FRAMING PLAN  
SCALE: 1/8" = 1'-0"

**GRAVITY UPGRADES C, D, AND E**



kumlin associates, inc.  
architects & planners  
900 E Street, Suite 200  
Anchorage, Alaska 99501  
907.570.6633  
Partridge, Nottingham & Drain, Inc.  
Professional Engineer  
1007 66th St

SCENIC PARK ELEMENTARY SCHOOL  
RENEWAL AND UPGRADES  
ANCHORAGE SCHOOL DISTRICT

no.	date	revision	by
1	3-15-19	CK	ADDENDUM

drawn	checked	date	job no.	dwg. title
WAY	CK	11-21-19	9700	PARTIAL ROOF PLAN NEW FRAMING

sheet no.  
**S2.3**

## Appendix H – Cost Estimate

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This section contains the concept-level cost estimate developed by HMS, Inc. based on the concept-level sketches in Appendices F and G.



35% DESIGN SUBMITTAL  
CONSTRUCTION COST ESTIMATE

SCENIC PARK ELEMENTARY SCHOOL  
SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
ANCHORAGE, ALASKA

*PREPARED FOR:*

Reid Middleton  
4300 B Street, Suite 302  
Anchorage, Alaska 99503

August 16, 2023



4103 Minnesota Drive • Anchorage, Alaska 99503 p: 907.561.1653 • f: 907.562.0420 • e: [mail@hmsalaska.com](mailto:mail@hmsalaska.com)

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

PAGE 2

DATE: 8/16/2023

HMS Project No.: 23094

**NOTES REGARDING THE PREPARATION OF THIS ESTIMATE**

**DRAWINGS AND DOCUMENTS**

*Level of Documents:* (7) 35% design drawings  
*Date:* July 26, 2023  
*Provided By:* Reid Middleton and their subconsultants of Anchorage, Alaska

**RATES**

Pricing is based on current material, equipment and freight costs.

*Labor Rates:* A.S. Title 36 working 60 hours per week  
*Premium Time:* 16.70%  
*Subcontractor's Mark-Up:* 30.00%

**BIDDING ASSUMPTIONS**

*Contract:* Standard construction contract without restrictive bidding clauses  
*Bidding Situation:* Competitive bids assumed  
*Bid Date:* Spring 2024  
*Start of Construction:* Summer 2024  
*Months to Complete:* Within (3) months

**EXCLUDED COSTS**

1. A/E design fees
2. Administrative and management costs
3. Furniture, furnishings and equipment (except those specifically included)
4. Remediation of contaminated soils or abatement of any hazardous materials, if found during construction

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

PAGE 3

DATE: 8/16/2023

HMS Project No.: 23094

***NOTES REGARDING THE PREPARATION OF THIS ESTIMATE (Continued)***

**GENERAL**

When included in HMS Inc.'s scope of services, opinions or estimates of probable construction costs are prepared on the basis of HMS Inc.'s experience and qualifications and represent HMS Inc.'s judgment as a professional generally familiar with the industry. However, since HMS Inc. has no control over the cost of labor, materials, equipment or services furnished by others, over contractor's methods of determining prices, or over competitive bidding or market conditions, HMS Inc. cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from HMS Inc.'s opinions or estimates of probable construction cost.

Due to the lingering effects of the COVID-19 pandemic on the global supply chain and labor market, as well as ongoing geopolitical impacts to energy prices, HMS Inc. has included an additional contingency titled '**Unique Market Risk**'. This amount provided for in the estimate will be adjusted as the situation continues to change and the effect on construction pricing becomes better understood.

This estimate assumes escalation based on the most recent 3-month rolling average of the U.S. Consumer Price Index. HMS Inc. will continue to monitor this, as well as other international, domestic and local events, and the resulting construction climate, and will adjust costs and contingencies as deemed appropriate.

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

**35% DESIGN COST SUMMARY**

	<i>Material</i>	<i>Labor</i>	<i>Total</i>
01 - SITE WORK	\$ 37,576	\$ 209,163	\$ 246,739
02 - SUBSTRUCTURE	0	0	0
03 - SUPERSTRUCTURE	99,678	63,461	163,139
04 - EXTERIOR CLOSURE	0	0	0
05 - ROOF SYSTEMS	326,193	204,303	530,496
06 - INTERIOR CONSTRUCTION	19,549	31,653	51,202
07 - CONVEYING SYSTEMS	0	0	0
08 - MECHANICAL	3,250	17,068	20,318
09 - ELECTRICAL	3,250	17,068	20,318
10 - EQUIPMENT	0	0	0
11 - SPECIAL CONSTRUCTION	0	0	0
<i>SUBTOTAL:</i>	<i>\$ 489,496</i>	<i>\$ 542,716</i>	<i>\$ 1,032,212</i>
12 - GENERAL REQUIREMENTS			308,398
<i>SUBTOTAL:</i>			<i>\$ 1,340,610</i>
13 - CONTINGENCIES			393,491
<b>TOTAL ESTIMATED CONSTRUCTION COST:</b>			<b>\$ 1,734,101</b>

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

**ELEMENTAL SUMMARY**

<i>Element</i>	<i>Material</i>	<i>Labor</i>	<i>Total Material/Labor</i>	<i>Total Cost</i>
<b>01 - SITE WORK</b>				<b>\$ 246,739</b>
011 - Selective Demolition (Non-Hazmat)	\$ 37,576	\$ 209,163	\$ 246,739	
012 - Site Preparation	0	0	0	
013 - Site Improvements	0	0	0	
014 - Site Mechanical	0	0	0	
015 - Site Electrical	0	0	0	
<b>02 - SUBSTRUCTURE</b>				<b>\$ 0</b>
021 - Standard Foundations	\$ 0	\$ 0	\$ 0	
022 - Slab on Grade	0	0	0	
023 - Basement	0	0	0	
024 - Special Foundations	0	0	0	
<b>03 - SUPERSTRUCTURE</b>				<b>\$ 163,139</b>
031 - Floor Construction	\$ 0	\$ 0	\$ 0	
032 - Roof Construction	99,678	63,461	163,139	
033 - Stair Construction	0	0	0	
<b>04 - EXTERIOR CLOSURE</b>				<b>\$ 0</b>
041 - Exterior Walls	\$ 0	\$ 0	\$ 0	
042 - Exterior Doors and Windows	0	0	0	
<b>05 - ROOF SYSTEMS</b>				<b>\$ 530,496</b>
051 - Roofing	\$ 326,193	\$ 204,303	\$ 530,496	
052 - Skylights	0	0	0	
<b>06 - INTERIOR CONSTRUCTION</b>				<b>\$ 51,202</b>
061 - Partitions and Doors	\$ 19,549	\$ 31,653	\$ 51,202	
062 - Interior Finishes	0	0	0	
063 - Specialties	0	0	0	
<b>07 - CONVEYING SYSTEMS</b>	<b>\$ 0</b>	<b>\$ 0</b>		<b>\$ 0</b>

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

**ELEMENTAL SUMMARY**

<i>Element</i>	<i>Material</i>	<i>Labor</i>	<i>Total Material/Labor</i>	<i>Total Cost</i>
<b>08 - MECHANICAL</b>				<b>\$ 20,318</b>
081 - Demolition	\$ 0	\$ 5,689	\$ 5,689	
082 - Plumbing	0	0	0	
083 - HVAC	3,250	11,379	14,629	
084 - Fire Protection	0	0	0	
085 - Special Mechanical Systems	0	0	0	
<b>09 - ELECTRICAL</b>				<b>\$ 20,318</b>
091 - Demolition	\$ 0	\$ 5,689	\$ 5,689	
092 - Service and Distribution	0	0	0	
093 - Lighting and Power	3,250	11,379	14,629	
094 - Special Electrical Systems	0	0	0	
<b>10 - EQUIPMENT</b>				<b>\$ 0</b>
101 - Fixed and Movable Equipment	\$ 0	\$ 0	\$ 0	
102 - Furnishings	0	0	0	
<b>11 - SPECIAL CONSTRUCTION</b>	<b>\$ 0</b>	<b>\$ 0</b>		<b>\$ 0</b>
<b>SUBTOTAL DIRECT WORK:</b>	<b>\$ 489,496</b>	<b>\$ 542,716</b>		<b>\$ 1,032,212</b>
<b>12 - GENERAL REQUIREMENTS</b>				<b>\$ 308,398</b>
121 - Mobilization			\$ 11,620	
122 - Operation Costs			151,476	
123 - Profit			145,302	
<b>13 - CONTINGENCIES</b>				<b>\$ 393,491</b>
131 - Estimator's Contingency	20.00%		\$ 268,122	
131 - Unique Market Risk	5.00%		80,437	
132 - Escalation Contingency	2.66%		44,932	
<b>TOTAL ESTIMATED CONSTRUCTION COST:</b>				<b>\$ 1,734,101</b>

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

01 - SITE WORK  011 - Selective Demolition (Non-Hazmat)	QUANTITY	UNIT	MATERIAL		LABOR		TOTAL	TOTAL
			RATE	TOTAL	RATE	TOTAL	UNIT RATE	MATERIAL/LABOR
			\$	\$	\$	\$	\$	\$
Temporary fall protection railing	1,200	LF	4.80	5,760	3.20	3,840	8.00	9,600
Demolish roof assembly as required for new structural upgrades, complete	23,020	SF			4.00	92,080	4.00	92,080
Demolish roof sheathing and dispose	20,300	SF			1.00	20,300	1.00	20,300
Demolish ceiling finishes as required for new structural upgrades	685	SF			3.80	2,603	3.80	2,603
Remove mechanical curbs and salvage for reinstallation	1	LOT			500.00	500	500.00	500
Demolish interior wall finishes as required for new structural upgrades	5,600	SF			1.70	9,520	1.70	9,520
Protect existing finishes, casework, etc. (allowance)	25,308	SF	0.15	3,796	0.35	8,858	0.50	12,654
Cover exposed area of roof for working in sections, weather protection as required	23,020	SF	1.00	23,020	1.50	34,530	2.50	57,550
Dispose of debris at local landfill including fee	20	LD	250.00	5,000	350.00	7,000	600.00	12,000
<b>SUBTOTAL:</b>				<b>\$ 37,576</b>		<b>\$ 179,231</b>		<b>\$ 216,807</b>
Labor Premium Time	16.70%					29,932		29,932
<b>TOTAL ESTIMATED COST:</b>				<b>\$ 37,576</b>		<b>\$ 209,163</b>		<b>\$ 246,739</b>



ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

<b>03 - SUPERSTRUCTURE</b>	QUANTITY	UNIT	MATERIAL		LABOR		TOTAL	TOTAL
			RATE	TOTAL	RATE	TOTAL	UNIT RATE	MATERIAL/LABOR
			\$	\$	\$	\$	\$	\$
<b>032 - Roof Construction</b>								
5 1/4"x14 1/4" glulam beam sistered to existing	64	LF	33.70	2,157	16.50	1,056	50.20	3,213
5 1/4"x8" glulam beam sistered to existing	13	LF	21.00	273	13.50	176	34.50	449
8 3/4"x27" glulam beam	120	LF	51.98	6,238	18.50	2,220	70.48	8,458
Open web wood chord joists sistered to existing	450	LF	8.60	3,870	2.95	1,328	11.55	5,198
20" I joists sistered to existing	869	LF	16.93	14,712	4.87	4,232	21.80	18,944
14" I joists sistered to existing	96	LF	6.67	640	1.70	163	8.37	803
Replace 5/8" plywood roof sheathing	20,300	SF	1.95	39,585	1.25	25,375	3.20	64,960
Simpson CMST14 strap at upper roof	200	LF	4.60	920	2.90	580	7.50	1,500
Simpson HDU4, 4'0" o/c	14	EA	45.00	630	125.00	1,750	170.00	2,380
Reinstall salvaged mechanical curbs	1	LOT	200.00	200	750.00	750	950.00	950
Miscellaneous blocking and backing	1	LOT	250.00	250	500.00	500	750.00	750
Crane and operator	1	MO	3200.00	3,200	1200.00	1,200	4400.00	4,400
Miscellaneous rough hardware, fasteners, and connections	1	LOT	1500.00	1,500	2500.00	2,500	4000.00	4,000
Special inspections	1	LOT	2500.00	2,500			2500.00	2,500
<b>SUBTOTAL:</b>				<b>\$ 76,675</b>		<b>\$ 41,830</b>		<b>\$ 118,505</b>

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

<b>03 - SUPERSTRUCTURE</b>	<i>QUANTITY</i>	<i>UNIT</i>	<i>MATERIAL</i>		<i>LABOR</i>		<i>TOTAL</i>	<i>TOTAL</i>
			<i>RATE</i>	<i>TOTAL</i>	<i>RATE</i>	<i>TOTAL</i>	<i>UNIT RATE</i>	<i>MATERIAL/LABOR</i>
			\$	\$	\$	\$	\$	\$
<b>032 - Roof Construction</b>								
Labor Premium Time	16.70%					6,986		6,986
<b>SUBTOTAL:</b>				<b>\$ 76,675</b>		<b>\$ 48,816</b>		<b>\$ 125,491</b>
Subcontractor's Overhead and Profit on Material and Labor	30.00%			23,003		14,645		37,648
<b>TOTAL ESTIMATED COST:</b>				<b>\$ 99,678</b>		<b>\$ 63,461</b>		<b>\$ 163,139</b>

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

<b>05 - ROOF SYSTEMS</b>	<i>QUANTITY</i>	<i>UNIT</i>	<i>MATERIAL</i>		<i>LABOR</i>		<i>TOTAL</i>	<i>TOTAL</i>
			<i>RATE</i>	<i>TOTAL</i>	<i>RATE</i>	<i>TOTAL</i>	<i>UNIT RATE</i>	<i>MATERIAL/LABOR</i>
			\$	\$	\$	\$	\$	\$
<b>051 - Roofing</b>								
New roofing at structural upgrades	23,020	SF	10.90	250,918	5.85	134,667	16.75	385,585
<i>SUBTOTAL:</i>				<u>\$ 250,918</u>		<u>\$ 134,667</u>		<u>\$ 385,585</u>
Labor Premium Time	16.70%					22,489		22,489
<i>SUBTOTAL:</i>				<u>\$ 250,918</u>		<u>\$ 157,156</u>		<u>\$ 408,074</u>
Subcontractor's Overhead and Profit on Material and Labor	30.00%			75,275		47,147		122,422
<b>TOTAL ESTIMATED COST:</b>				<b>\$ 326,193</b>		<b>\$ 204,303</b>		<b>\$ 530,496</b>

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

<b>06 - INTERIOR CONSTRUCTION</b>	QUANTITY	UNIT	MATERIAL		LABOR		TOTAL	TOTAL
			RATE	TOTAL	RATE	TOTAL	UNIT RATE	MATERIAL/LABOR
			\$	\$	\$	\$	\$	\$
<b>061 - Partitions and Doors</b>								

WALLS

1/2" plywood sheathing	5,000	SF	2.10	10,500	1.30	6,500	3.40	17,000
5/8" Type X gypboard	5,600	SF	0.75	4,200	1.50	8,400	2.25	12,600
Acoustical sealants	785	LF	0.80	628	1.80	1,413	2.60	2,041
Paint new gypboard	5,600	SF	0.35	1,960	1.60	8,960	1.95	10,920

CEILINGS

2'0"x2'0" acoustical ceiling tile assembly with seismic bracing (assumed)	685	SF	3.30	2,261	2.70	1,850	6.00	4,111
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<b>SUBTOTAL:</b>				<b>\$ 19,549</b>		<b>\$ 27,123</b>		<b>\$ 46,672</b>
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Labor Premium Time	16.70%					4,530		4,530
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<b>TOTAL ESTIMATED COST:</b>				<b>\$ 19,549</b>		<b>\$ 31,653</b>		<b>\$ 51,202</b>
------------------------------	--	--	--	------------------	--	------------------	--	------------------

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

<b>08 - MECHANICAL</b>	QUANTITY	UNIT	MATERIAL		LABOR		TOTAL	TOTAL
			RATE	TOTAL	RATE	TOTAL	UNIT RATE	MATERIAL/LABOR
			\$	\$	\$	\$	\$	\$
<b>081 - Demolition</b>								
Remove and salvage roof mounted mechanical equipment for reinstallation	1	LOT			3750.00	3,750	3750.00	3,750
<b>SUBTOTAL:</b>							\$ 3,750	\$ 3,750
Labor Premium Time	16.70%					626		626
<b>SUBTOTAL:</b>							\$ 4,376	\$ 4,376
Subcontractor's Overhead and Profit on Material and Labor	30.00%					1,313		1,313
<b>TOTAL ESTIMATED COST:</b>							<b>\$ 5,689</b>	<b>\$ 5,689</b>

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

<b>08 - MECHANICAL</b>	QUANTITY	UNIT	MATERIAL		LABOR		TOTAL	TOTAL
			RATE	TOTAL	RATE	TOTAL	UNIT RATE	MATERIAL/LABOR
<b>083 - HVAC</b>			\$	\$	\$	\$	\$	\$
Reinstall mechanical equipment, modify piping as required, and reconnect	1	LOT	2500.00	2,500	7500.00	7,500	10000.00	10,000
<b>SUBTOTAL:</b>				<b>\$ 2,500</b>		<b>\$ 7,500</b>		<b>\$ 10,000</b>
Labor Premium Time	16.70%					1,253		1,253
<b>SUBTOTAL:</b>				<b>\$ 2,500</b>		<b>\$ 8,753</b>		<b>\$ 11,253</b>
Subcontractor's Overhead and Profit on Material and Labor	30.00%			750		2,626		3,376
<b>TOTAL ESTIMATED COST:</b>				<b>\$ 3,250</b>		<b>\$ 11,379</b>		<b>\$ 14,629</b>

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

<b>09 - ELECTRICAL</b>	<i>QUANTITY</i>	<i>UNIT</i>	<i>MATERIAL</i>		<i>LABOR</i>		<i>TOTAL</i>	<i>TOTAL</i>	
			<i>RATE</i>	<i>TOTAL</i>	<i>RATE</i>	<i>TOTAL</i>	<i>UNIT RATE</i>	<i>MATERIAL/LABOR</i>	
			\$	\$	\$	\$	\$	\$	
<b>091 - Demolition</b>									
Remove and salvage lighting and power equipment for reinstallation	1	LOT			3750.00	3,750	3750.00	3,750	
<i>SUBTOTAL:</i>						\$ 3,750		\$ 3,750	
Labor Premium Time	16.70%					626		626	
<i>SUBTOTAL:</i>						\$ 4,376		\$ 4,376	
Subcontractor's Overhead and Profit on Material and Labor	30.00%					1,313		1,313	
<b>TOTAL ESTIMATED COST:</b>							<b>\$ 5,689</b>		<b>\$ 5,689</b>



ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

<b>09 - ELECTRICAL</b>	<i>QUANTITY</i>	<i>UNIT</i>	<i>MATERIAL</i>		<i>LABOR</i>		<i>TOTAL</i>	<i>TOTAL</i>
			<i>RATE</i>	<i>TOTAL</i>	<i>RATE</i>	<i>TOTAL</i>	<i>UNIT RATE</i>	<i>MATERIAL/LABOR</i>
			\$	\$	\$	\$	\$	\$
<b>093 - Lighting and Power</b>								

Reinstall lighting and power equipment, modify conduit and conductors as required, and reconnect

1 LOT 2500.00 2,500 7500.00 7,500 10000.00 10,000

*SUBTOTAL:* \$ 2,500 \$ 7,500 \$ 10,000

Labor Premium Time 16.70% 1,253 1,253

*SUBTOTAL:* \$ 2,500 \$ 8,753 \$ 11,253

Subcontractor's Overhead and Profit on Material and Labor 30.00% 750 2,626 3,376

**TOTAL ESTIMATED COST:** \$ 3,250 \$ 11,379 \$ 14,629

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

12 - GENERAL REQUIREMENTS	QUANTITY	UNIT	MATERIAL		LABOR		TOTAL	TOTAL
			RATE	TOTAL	RATE	TOTAL	UNIT RATE	MATERIAL/LABOR
			\$	\$	\$	\$	\$	\$

MOBILIZATION AND DEMOBILIZATION

Mobilization and demobilization	1	LS	2000.00	2,000	3500.00	3,500	5500.00	5,500
Temporary fences, gates, barriers, etc.	150	LF	11.00	1,650	4.80	720	15.80	2,370
Barge freight (incidental, rest with unit rates)	5	TONS	500.00	2,500	100.00	500	600.00	3,000
Miscellaneous air freight	500	LBS	1.25	625	0.25	125	1.50	750

SITE STAFF

Project manager (part time)	60	HRS			125.00	7,500	125.00	7,500
Superintendent	3	MO	200.00	600	10500.00	31,500	10700.00	32,100
Quality control (part time)	3	MO					By Superintendent	
Expediting (part time)	3	MO	150.00	450	1000.00	3,000	1150.00	3,450

TEMPORARY CONSTRUCTION

Site offices (trailers, etc.)	3	MO	500.00	1,500	350.00	1,050	850.00	2,550
Staging areas, signs, temporary protection, etc.	1	LOT	750.00	750	1000.00	1,000	1750.00	1,750
Utilities - power, lighting, water	3	MO	300.00	900	150.00	450	450.00	1,350
Porta cans and cleaning (2)	3	MO	220.00	660	70.00	210	290.00	870

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
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DATE: 8/16/2023

HMS Project No.: 23094

12 - GENERAL REQUIREMENTS	QUANTITY	UNIT	MATERIAL		LABOR		TOTAL	TOTAL
			RATE	TOTAL	RATE	TOTAL	UNIT RATE	MATERIAL/LABOR
			\$	\$	\$	\$	\$	\$

TEMPORARY CONSTRUCTION (Continued)

Communications, faxes, etc.	3	MO	500.00	1,500	50.00	150	550.00	1,650
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EQUIPMENT AND TOOLS

Pick-ups, trucks, forklift, compressors, miscellaneous equipment, etc.	3	MO	3500.00	10,500	500.00	1,500	4000.00	12,000
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Power and hand tools, etc.	3	MO	750.00	2,250	100.00	300	850.00	2,550
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Consumables: cleaning products, safety equipment, etc.	3	MO	250.00	750	50.00	150	300.00	900
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Fuel for equipment	3	MO	1000.00	3,000			1000.00	3,000
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Labor for equipment repairs	24	HRS			65.00	1,560	65.00	1,560
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MISCELLANEOUS

Submittals, as-builts, etc.	1	LOT	300.00	300	1500.00	1,500	1800.00	1,800
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Building permits	1	LOT						By Owner
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Miscellaneous materials testing	1	LOT						With Direct Work
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Regular clean-up	3	MO	100.00	300	600.00	1,800	700.00	2,100
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ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

12 - GENERAL REQUIREMENTS	QUANTITY	UNIT	MATERIAL		LABOR		TOTAL	TOTAL
			RATE	TOTAL	RATE	TOTAL	UNIT RATE	MATERIAL/LABOR
			\$	\$	\$	\$	\$	\$

MISCELLANEOUS (Continued)

Final clean-up	1	LOT	150.00	150	850.00	850	1000.00	1,000
Dumpster (1)	3	MO	400.00	1,200			400.00	1,200
Daily loading/unloading	3	MO	150.00	450	650.00	1,950	800.00	2,400
Debris disposal and fees	1	LOT						With Direct Work

LABOR EMPLOYMENT COSTS

Per diem (imported crew)	0	MD						Local Crew
Travel costs (imported crew)	0	RT						Local Crew
Alaska Dept. of Labor filing fee	1	LOT	5000.00	5,000			5000.00	5,000

**SUBTOTAL:** \$ 37,035                      \$ 59,315                      \$ 96,350

Home Office	3.00%							33,857
Overhead and Profit	12.50%							145,302
Bonds	1.00%							13,077
Insurances	1.50%							19,812

**TOTAL ESTIMATED COST:** **\$ 308,398**

ASD SCENIC PARK ELEMENTARY SCHOOL SEISMIC RETROFIT AND ROOF BEAM UPGRADES  
35% DESIGN SUBMITTAL CONSTRUCTION COST ESTIMATE

DATE: 8/16/2023

HMS Project No.: 23094

<b>13 - CONTINGENCIES</b>	QUANTITY	UNIT	MATERIAL		LABOR		TOTAL	TOTAL
			RATE	TOTAL	RATE	TOTAL	UNIT RATE	MATERIAL/LABOR
			\$	\$	\$	\$	\$	\$

131 - ESTIMATOR'S CONTINGENCY

The estimator's allowance for architectural and engineering requirements that are not apparent and may change by addenda, etc.

20.00%

\$ 268,122

Unique market risk

5.00%

\$ 80,437

132 - ESCALATION CONTINGENCY

The allowance for escalation from the date of estimate to the proposed bid date of spring 2024 at the rate of 4.00% per annum (8 months)

2.66%

\$ 44,932

**TOTAL ESTIMATED COST:**

**\$ 393,491**