

**WHATCOM COUNTY**  
Planning & Development Services  
5280 Northwest Drive,  
Bellingham, WA 98226-9097  
360-778-5900, TTY 800-833-6384  
360-778-5901 Fax



**Mark Personius, AICP**  
Director

**PRE2023-00097 ABC Recycling**

**Commercial Building Permit Application** Building # 2  
One Structure per Permit

**Permit #** \_\_\_\_\_

**Agent/Contact Name:** \_\_\_\_\_

Mailing Address: \_\_\_\_\_ City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_ Phone # ( ) \_\_\_\_\_

Email \_\_\_\_\_

**Property Owner Name** \_\_\_\_\_

Mailing Address: \_\_\_\_\_ City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_ Phone # ( ) \_\_\_\_\_

Email \_\_\_\_\_

**Contractor Name** \_\_\_\_\_

Business Name: \_\_\_\_\_ License#: \_\_\_\_\_

Mailing Address: \_\_\_\_\_ City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_ Phone # ( ) \_\_\_\_\_

Email \_\_\_\_\_

**Site Information**

Assessor's Parcel # \_\_\_\_\_ Div# \_\_\_\_\_ Block# \_\_\_\_\_ Lot# \_\_\_\_\_

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

Site address \_\_\_\_\_

Number of Buildings currently on site: \_\_\_\_\_

Valuation (cost of completed project less value of land) \$ \_\_\_\_\_

**Project Description** (example: New 2400 sq. ft. Warehouse w/ office space)

New  Addition  Remodel  Repair  Change of Occupancy  Tenant Improvement

Building Height: (in feet) \_\_\_\_\_ # of Stories: \_\_\_\_\_ # Employees: \_\_\_\_\_ # Parking Spaces: \_\_\_\_\_

# Company Vehicles: \_\_\_\_\_ Note: # of employees/parking spaces & vehicles are for entire complex

Please Check Applicable Water & Sanitary Services: Water:  Well  Water Assoc.

Water District Name of Water Purveyor (if applicable): \_\_\_\_\_

Fees will be assessed in accordance with the Whatcom County Unified Fee Schedule (UFS) in effect at the time of application submittal. Please contact Planning and Development Services to determine project specific fees. Click [here](#) to see the 2019/2020 UFS. Per UFS 2843 all permits and applications are subject to a Technology fee. The fee is calculated on the permit/application fees due.

Septic:  Yes  No / Septic Installed:  Yes  No

Sewer:  Yes  No Name of Sewer Purveyor (if applicable):

**Proposed Square Footages for this project (measured to outside wall):**

Basement	sq.ft.	Main Floor	sq.ft.
Basement Type: <input type="checkbox"/> Heated <input type="checkbox"/> Unheated		Second Floor	sq.ft.
Other:	sq.ft.	<b>Total Square Feet</b>	sq.ft.

**Heat Source** (Check the primary fuel source for Heat / Hot Water)

Heating:  Natural Gas  Propane  Electric  Oil  Geothermal  Other

Hot Water:  Natural Gas  Propane  Electric  Oil  Geothermal  Other

**Driveway Access and Utility Connection** (work within the county right-of-way)

Does your project involve any work within the County road right-of-way (example: a new driveway or connection to utilities)?  Yes  No

If yes, please describe: \_\_\_\_\_

**Please note:** If upon inspection PW Encroachment staff determines an additional Encroachment Permit is required; you will be notified and received an invoice for the fees.

**List materials used in the process of business activity (be specific & list quantities used or stored)**


**Any proposed fill, excavation or clearing must be noted below \***

<b>FILL</b> The deposit of earth material by artificial means.						
BY FEET	Length (ft)	Width (ft)	Depth (ft)	Volume (ft <sup>3</sup> )	÷ By 27	= Cubic Yard
Septic	X	X	=		/ 27 =	CY
Driveway/Road/Parking	X	X	=		/ 27 =	CY
Building site	X	X	=		/ 27 =	CY
Other	X	X	=		/ 27 =	CY
<b>MATERIAL SOURCE:</b>					<b>TOTAL VOLUME:</b>	<b>CY</b>

<b>EXCAVATION</b> The mechanical removal of earth materials. Grading is an excavation or filling or combination thereof. Earth material is any rock, natural soil, fill, or any combination thereof.						
BY FEET	Length (ft)	Width (ft)	Depth (ft)	Volume (ft <sup>3</sup> )	÷ By 27	= Cubic Yard
Septic	X	X	=		/ 27 =	CY
Driveway/Road/Parking	X	X	=		/ 27 =	CY
Building site	X	X	=		/ 27 =	CY
Ditching/Trenching	X	X	=		/ 27 =	CY
Other	X	X	=		/ 27 =	CY
<b>MATERIAL DESTINATION:</b>					<b>TOTAL VOLUME:</b>	<b>CY</b>

\* Cut/Fill for individual building permit only! All SITE cut/fill are included with permit for Building #1

<b>CLEARING/CONVERSION</b>	Defined as, "the destruction of vegetation by manual, mechanical, or chemical methods resulting in exposed soils. WCC20.97.053				
<b>Required TOTAL AREA TO BE CLEARED and/or GRUBBED, IN ACRES:</b>					
<b>AREA OF TREE CLEARING, IN ACRES:</b>					
<b>TIMBER USE</b>	Personal Use:	% Sell:	% Burn:	% Give Away:	%
<b>FPA NUMBER</b> (if applicable)					
If your project includes any tree cutting, a Forest Practices Application / Notification may be required. For questions related to permit requirements, contact the Washington Department of Natural Resources (DNR) at 360-856-3500.					

**RECEIVED**  
**Date: 10/24/2023 Staff: AHK**

Please complete the following Agent Authorization only if an agent (someone other than the property owner) is applying for permit(s) on the property owner's behalf.

### Agent Authorization

If you are authorizing an agent to apply for permits on your behalf you must complete this form and have it notarized, which will provide authorization for a designated agent to apply for permits on your behalf.

I/we, ABC RECYCLING REalty Corp., the owner(s) of the subject property, understand by completing this form I/we hereby authorize Scott Goodall to act as agent. I/we understand said agent will be authorized to submit applications on my behalf, and any fees associated with submitted applications are due to me and not to the said agent. I/we also understand once an application has been submitted all future correspondence will be directed to the agent.

ANDREW ANTHONY  
Property Owner Printed Name

Property Owner Printed Name

[Signature]  
Property Owner Signature

Property Owner Signature

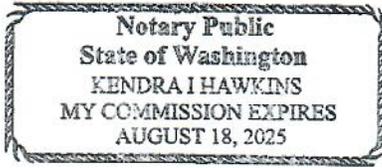
10/04/2023  
Date

Date

I certify that I know or have satisfactory evidence that Andrew Anthony is/are the person(s) who appeared before me, and said person(s) acknowledged it to be his/her free and voluntary act for the uses and purposes mentioned in this instrument.

Dated 10/04/2023

[Signature]  
Notary Public Signature



Kendra I Hawkins  
Notary Public Printed Name  
Notary Public in and for the State of Washington  
Residing at Whatcom Co.  
My appointment expires: Aug/ 18/ 2025

### Disclaimer

The permittee verifies, acknowledges and agrees by their signature that:

- 1) If this permit is for installation of a dwelling, the dwelling is/will be served by potable water;
- 2) The property owner is the owner of this Whatcom County Permit;
- 3) The signatory is the property owner or someone who has permission to represent the property owner in this transaction;
- 4) All construction is to be done in accordance with Whatcom County codes or ordinances- *referenced codes and ordinances are available for review at Whatcom County Planning and Development Services;*
- 5) This Whatcom County Permit does not permit or approve any violation of federal, state or local laws, codes or ordinances;
- 6) Submission of plans or additional information and subsequent approval may be required before this application can be processed;
- 7) Notwithstanding that this application has been submitted in the name of a company, I personally guarantee payment (or guarantee payment on behalf of the client I am representing, noted on the Agent Authorization Form above) of the fees accrued according to the terms listed in the Whatcom County Unified Fee Schedule, including the Application of Fees from Different UFS Schedule Policy PL1-74-003Z, and agree to be bound personally as a principal and not as a surety. I recognize my personal guarantee is part of the consideration for review of the application.

Scott Goodall  
Print Name

[Signature]  
Owner or Agent Signature

10/21/23  
Date

# ABC RECYCLING BUILDING 2 SEPARATION

## 741 MARINE DRIVE, Bellingham, WA

### PROJECT CRITERIA

#### GENERAL SITE INFORMATION:

ADDRESS: 741 MARINE DRIVE, BELLINGHAM WA  
 PARCEL #S: 3802231063740000

THAT PTN OF ENOCH COMPTON DON  
 CLAIM DAF-BEG ON SLY LI OF MARIETTA RD 992.4 FT S-613.2 FT E OF  
 NW COR SEC 23 BEING COR COMM TO SECS 14-15-22-23-TH S 25 DEG  
 50'00" W 1170 FT M/L TO GOVT  
 MEANDER LI OF BELLINGHAM BAY-TH SELY FOL SD MEANDER LI TO  
 SE COR OF  
 NEIGHBORHOOD:  
 SUB AREA: 2  
 ZONING: HEAVY IMPACT INDUSTRIAL

#### PROJECT DESCRIPTION/WORK TO BE PERFORMED:

NEW CONSTRUCTION OF A PRE ENGINEERED METAL BUILDING

#### GENERAL BUILDING INFORMATION:

TYPE OF CONSTRUCTION: IIB  
 NUMBER OF STORIES: 1 STORY  
 OCCUPANCY CLASSIFICATION(S): F-2  
 MIXED OCCUPANCY  
 COMPLIANCE METHODS: FIRE PROTECTED SEPARATIONS  
 SPRINKLER SYSTEM: NOT PROVIDED  
 ALLOWABLE BUILDING HEIGHT: 37'-4.25"  
 ACTUAL BUILDING HEIGHT:  
 HEAT TYPE: NON HEATED

#### Site Coverage Information

SEE CIVIL PLANS

#### PARKING REQUIREMENTS: (TOTAL PROJECT)

1 PER EMPLOYEE/SHIFT = 15 PER SHIFT =15 STALLS

PARKING PROVIDED =18 STALLS INCL. 2 H.C.

#### DEFERRED SUBMITTAL ITEMS:

- PRE FAB STEEL BUILDING PLANS & ENGINEERING

#### APPLICABLE BUILDING CODES:

2018 INTERNATIONAL BUILDING CODE AND AMENDMENTS – CHAPTER 51-50 WAC  
 2018 INTERNATIONAL MECHANICAL CODE AND AMENDMENTS – CHAPTER 51-52 WAC  
 2018 INTERNATIONAL FUEL GAS CODE AND AMENDMENTS – CHAPTER 51-52 WAC  
 2018 INTERNATIONAL ENERGY CONSERVATION CODE (WECC) AND AMENDMENTS – CHAPTER 51-11C & 51-11R WAC  
 2017 NATIONAL FUEL GAS CODE (NFPA 54) – CHAPTER 51-52 WAC  
 2018 UNIFORM PLUMBING CODE (UPC) AND AMENDMENTS – CHAPTERS 51-56, 51-57 WAC  
 2020 NATIONAL ELECTRIC CODE (NFPA 70) – CHAPTER 296-46B WAC  
 2018 INTERNATIONAL FIRE CODE (IFC) AND AMENDMENTS – CHAPTER 51-54 WAC  
 THE IFC IS ADOPTED AND AMENDED PER REGULATIONS SET FORTH IN BMC 17.20.

#### ALLOWABLE AREA (PER IBC TABLE 506.2) (MOST RESTRICTIVE USE):

BASIC AREA ALLOWANCE NS, IIB, (F2) =23000 SF PER FLOOR

ACTUAL AREA =13058 SF

BASIC STORY ALLOWANCE NS, IIB, (F2) =2 STORIES

ACTUAL STORY =1 STORY

BUILDING COMPLIES WITH AREA AND STORIES

#### OCCUPANT LOADS (IBC 1004.1.2):

OCCUPANT LOAD 200 SF (GROSS) = 13058/200 =65 OCC.

### DRAWING SHEET LIST

Sheet List	
Sheet Number	Sheet Name
A1.0	Cover Sheet
A1.1	General Notes
A1.3	Site Plan
A2.0	Floor Plan
A3.0	Elevations
A3.2	Perspective Views
A4.0	Building Section
A5.0	Roof & RCP Plan

#### STRUCTURAL SHEETS:

SEE STRUCTURAL COVER SHEET

#### CIVIL SHEETS:

SEE CIVIL COVER SHEET

#### BUILDING MANUFACTURER:

SEE MANUFACTURER COVER SHEET

### PROJECT TEAM

#### ARCHITECT:

TRC ARCHITECTURE, LLC  
 ROBERT MATICHUK  
 PO BOX 1075  
 BELLINGHAM, WA 98227  
 p/f: 360.393.3131

#### BUILDING JURISDICTION:

WHATCOM COUNTY  
 BUILDING SERVICES  
 5280 NORTHWEST DR.  
 BELLINGHAM, WA 98226  
 360.778.5900

#### OWNER:

A B C RECYCLING REALTY CORP  
 2219 RIMLAND DR STE 301  
 BELLINGHAM, WA 98226-8759

#### STRUCTURAL ENGINEER:

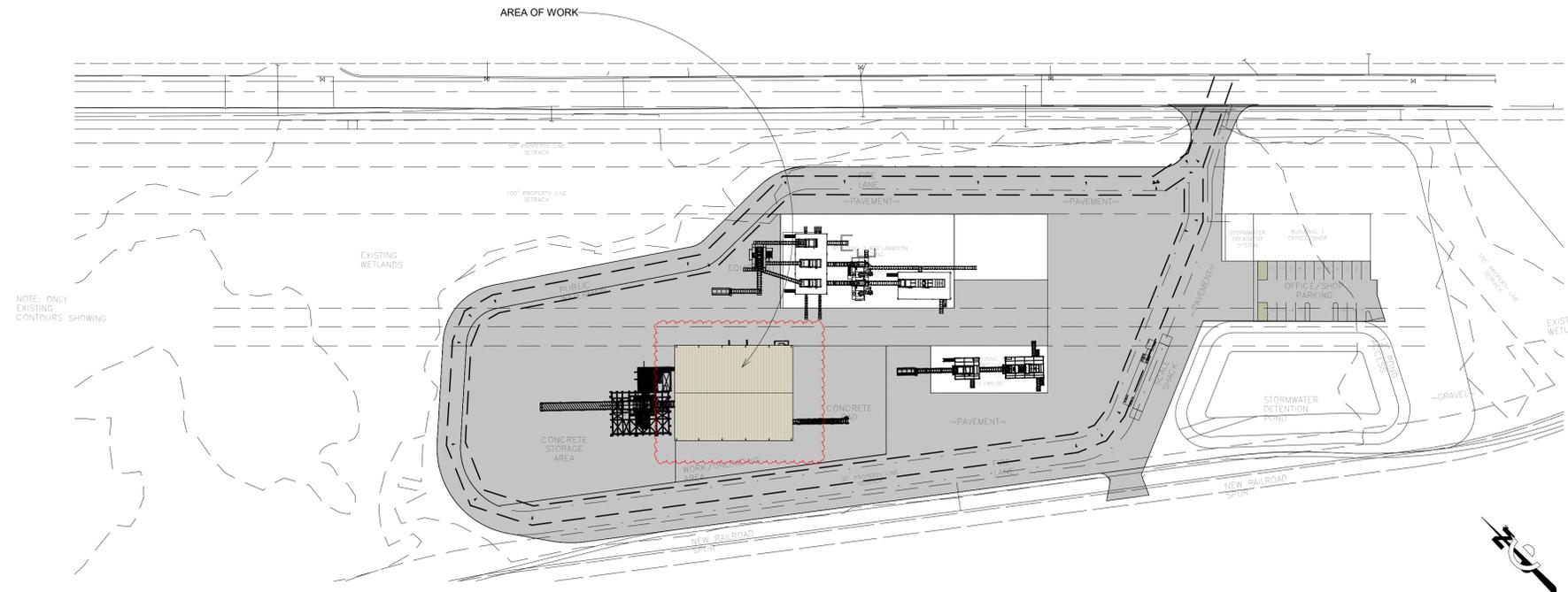
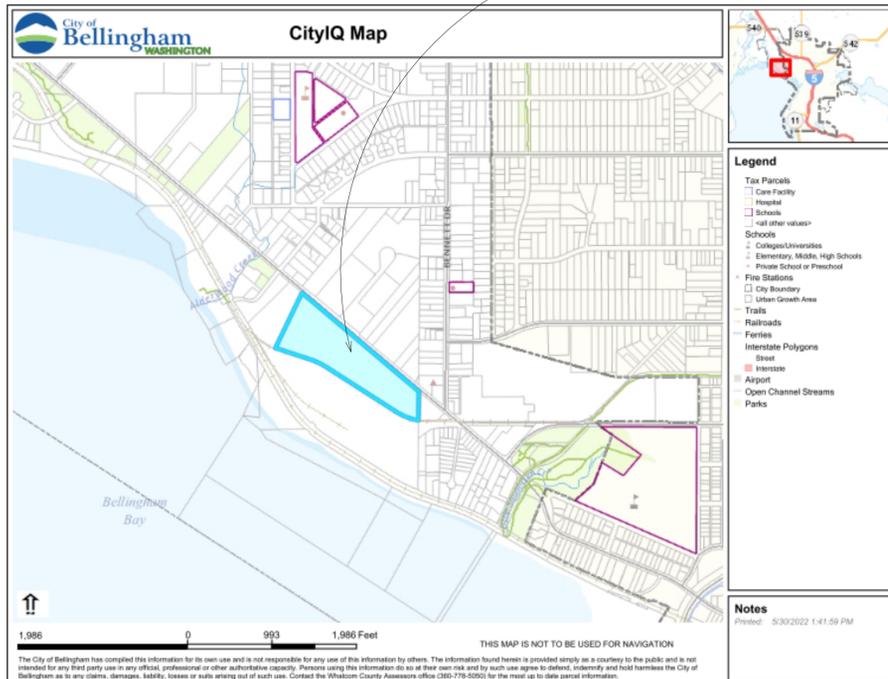
Brandon Hausmann, PE  
 Principal  
 Direct: (360) 474-7541  
 Office: (360) 200-8703 ex 1  
 203 W. Chestnut St.  
 Bellingham WA 98225

#### GENERAL CONTRACTOR:

T.B.D.

#### CIVIL ENGINEER:

Scott Goodall, MS, PE  
 Principal  
 Impact Design, LLC  
 5426 Barrett Road, Suite A103  
 Ferndale, WA 98248  
 (360) 389-8138  
 www.bold-impact.com



2 Site -Cover Sheet  
 1" = 80'-0"

I HEREBY CERTIFY THAT THIS DOCUMENT, CONSISTING OF PLANS, DESIGN SPECIFICATIONS, AND CALCULATIONS, WAS PREPARED UNDER MY PERSONAL SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT COMPLIES WITH ALL THE REQUIREMENTS OF THE CURRENT EDITION OF THE IBC/CODE. ALL PLANS & CALCULATIONS IN THIS DOCUMENT ARE THE PROPERTY OF TRC ARCHITECTURE. ANY REPRODUCTION OF THESE PLANS WITHOUT THE WRITTEN PERMISSION OF TRC ARCHITECTURE IS STRICTLY PROHIBITED. TRC ARCHITECTURE SHALL BE RESPONSIBLE FOR ANY VARIATIONS IN THE FIELD AND NOTIFY TRC ARCHITECTURE OF ANY SUCH VARIATIONS. CONSTRUCTION SHALL CONFORM TO THE CURRENT EDITION OF THE IBC/CODE.



Custom Design For: ABC RECYCLING  
 Building 2 Separation  
 741 Marine Dr  
 Bellingham WA 98226

Project number	TRC 22-001
Date	Oct 20 2023
Design	RKM
Drawn by:	RKM
Checked by:	RKM
Set Description:	Permit Set

Cover Sheet

# A1.0



PROPERTY LINE  
SETBACK

PROPERTY LINE  
SETBACK

PUBLIC  
WATER MAIN

CONCRETE  
STORAGE  
AREA

WORK/UNLOADING  
AREA

NEW RAILROAD  
SPUR

FIRE  
LANE

~PAVEMENT~

~PAVEMENT~

~PAVEMENT~

FIRE  
LANE

CONCRETE  
PAD

30' PROPERTY LINE  
SETBACK

BUILDING 3 RECLAMATION  
BUILDING

BUILDING 5  
SWITCH

EQUIPMENT

55.00'

FE=85.00'

240' - 1"

211.6' - .16

① Site -Architectural  
1" = 20'-0"

HEREBY CERTIFY THAT THIS DOCUMENT, CONSISTING OF PLANS, DESIGNS AND SPECIFICATIONS WAS PREPARED UNDER MY PERSONAL SUPERVISION AND MEETS THE CURRENT EDITION OF THE IBC/CODE. ALL PLANS & CALCULATIONS MEET THE GENERALLY ACCEPTED STANDARDS OF PRACTICE WITHIN THE STATE OF WASHINGTON.  
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Bellingham, WA 98227  
360.393.3131



7852 REGISTERED ARCHITECT  
ROBERT L. HATCHER  
STATE OF WASHINGTON



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Site Plan  
**A1.3**

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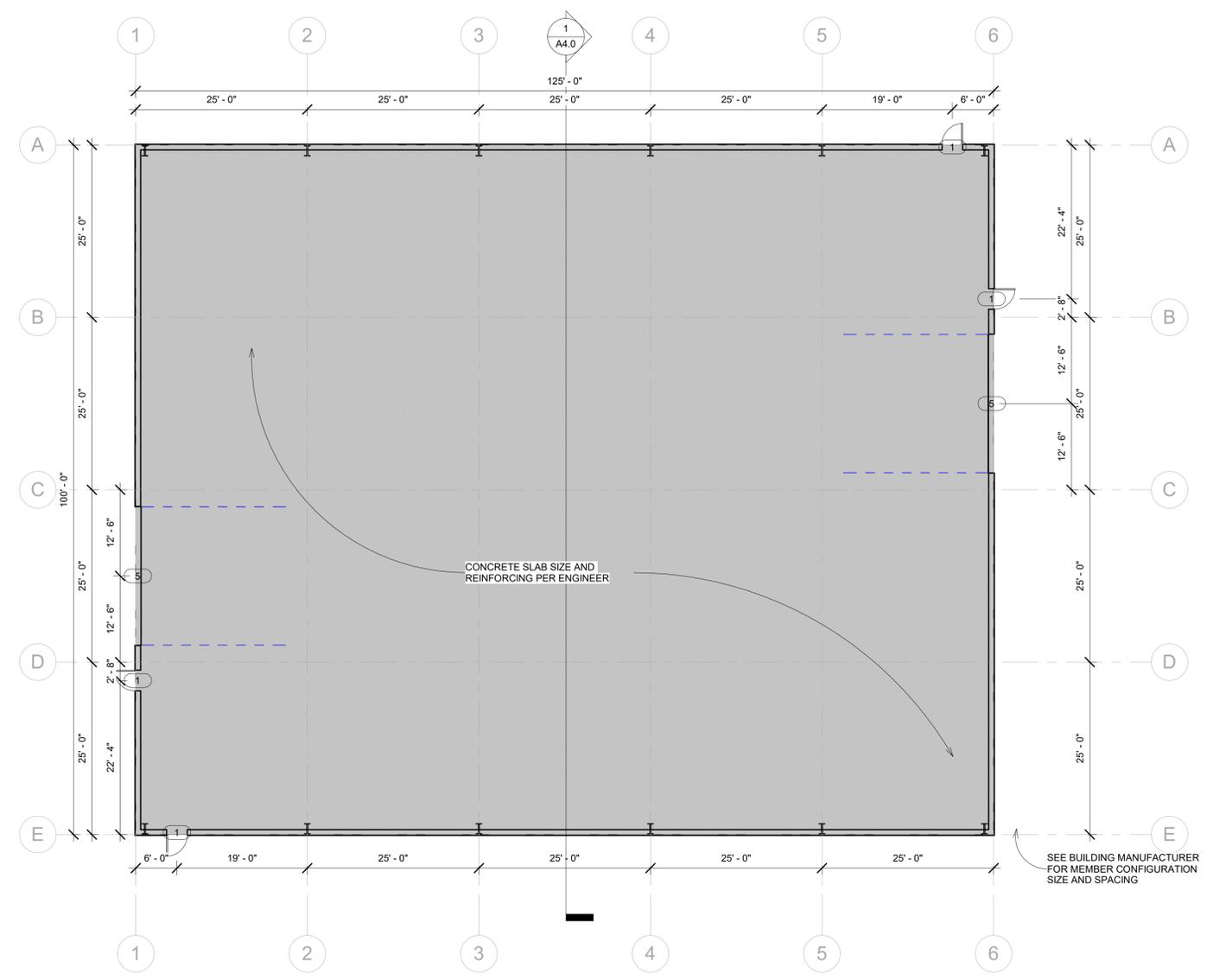


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 STATE OF WASHINGTON

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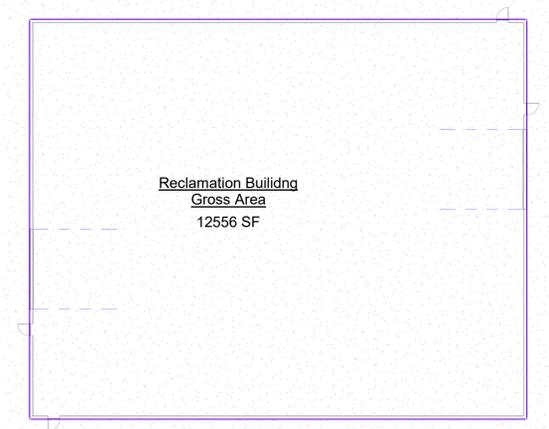
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Floor Plan  
**A2.0**



① Main Floor Plan  
 3/32" = 1'-0"

Door Schedule				
Door Type	Count	Function	Door Size	Type Comments
1	4	Exterior	3/0 7/0 Flush Steel	Insulated metal door and frame, key pad exterior lock, ADA lever latches required
5	2	Exterior	20' x 20' Overhead	W/Locking Pull Chain
Grand total: 6				



Reclamation Building  
 Gross Area  
 12556 SF

② Main Floor  
 3/64" = 1'-0"

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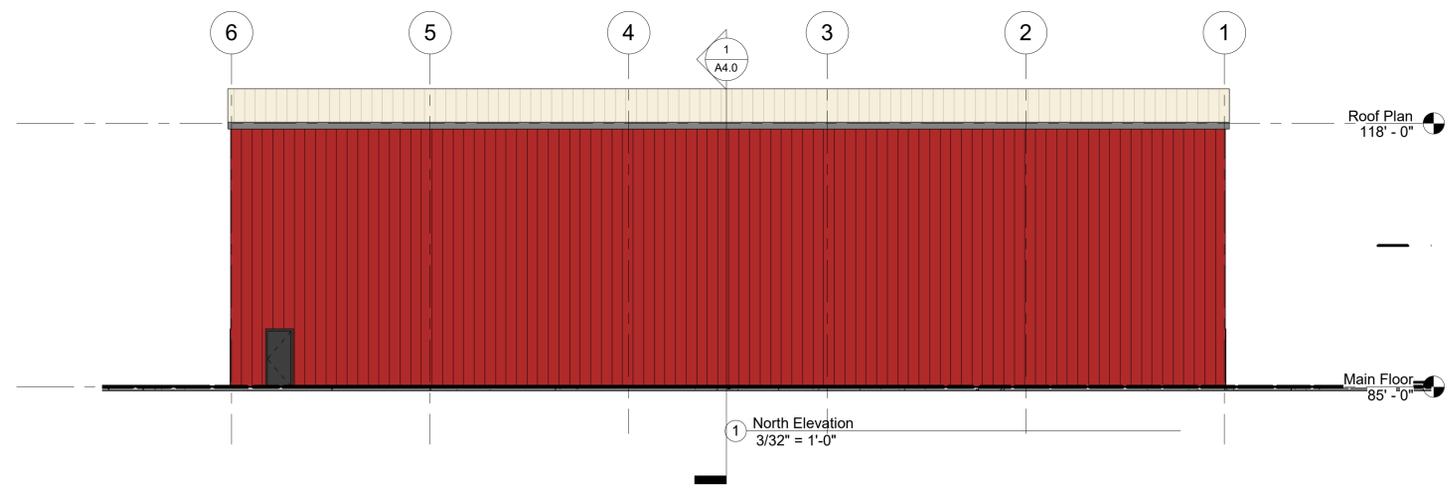
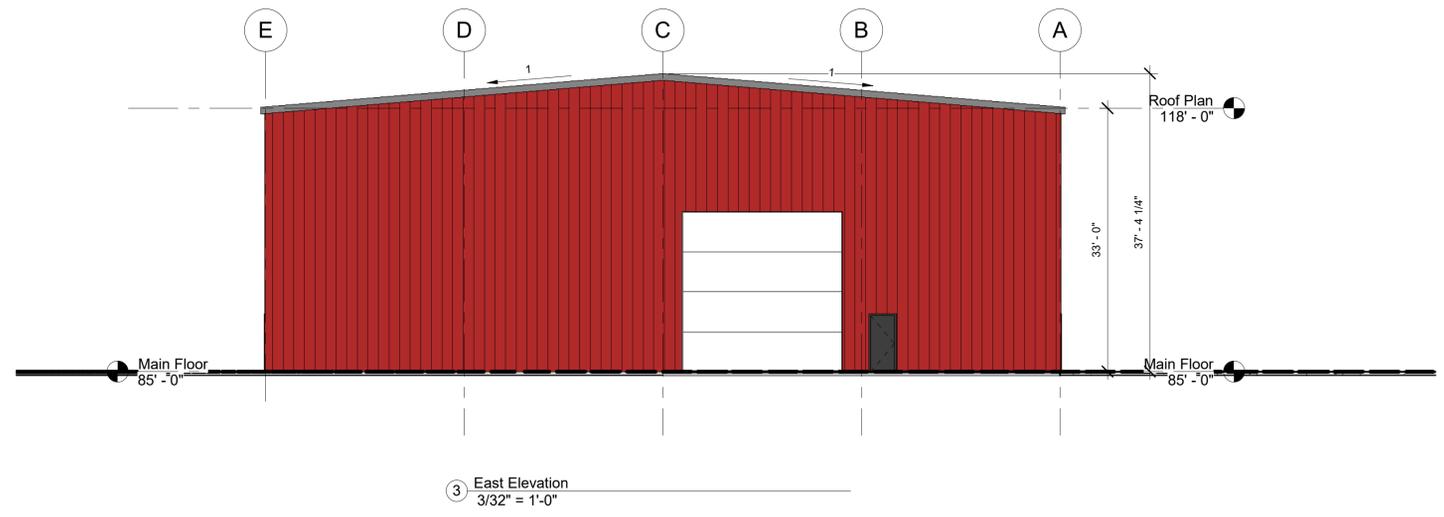
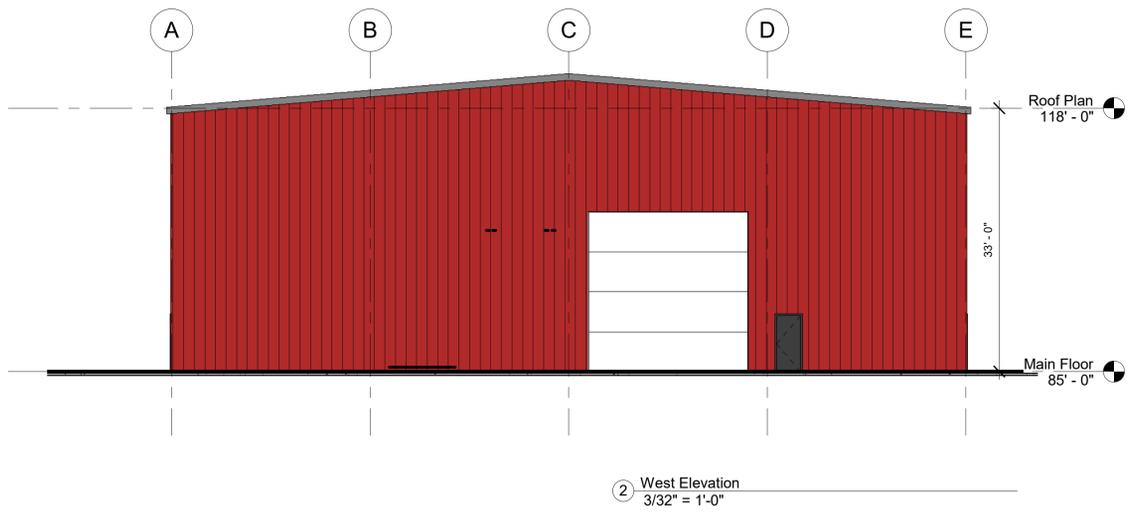
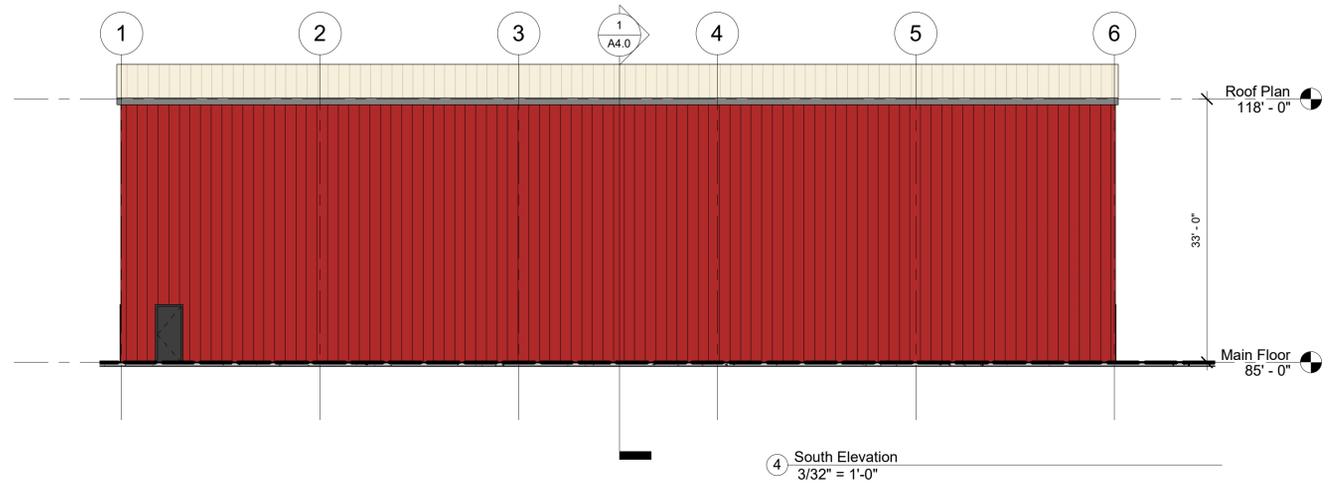
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Elevations  
**A3.0**



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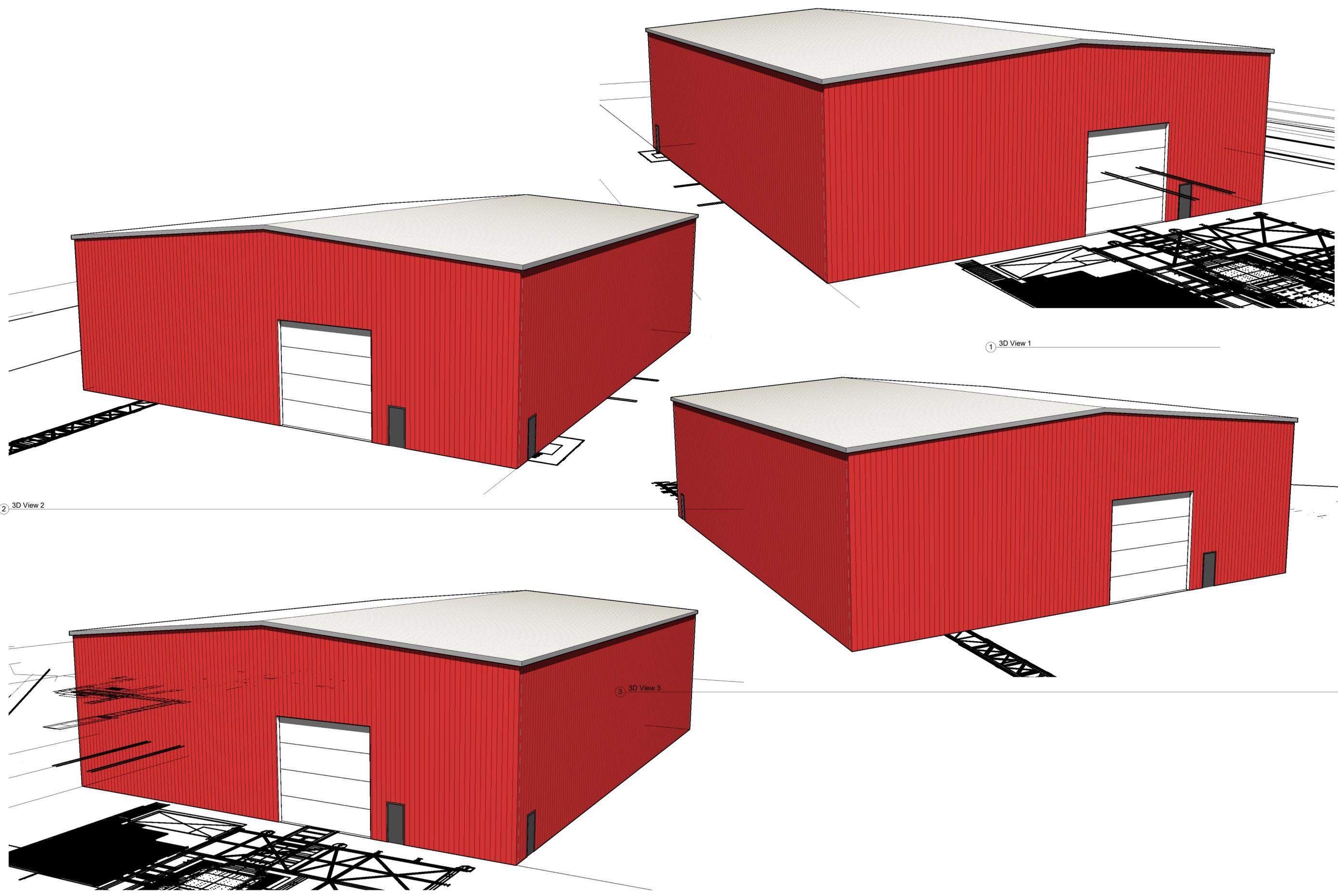


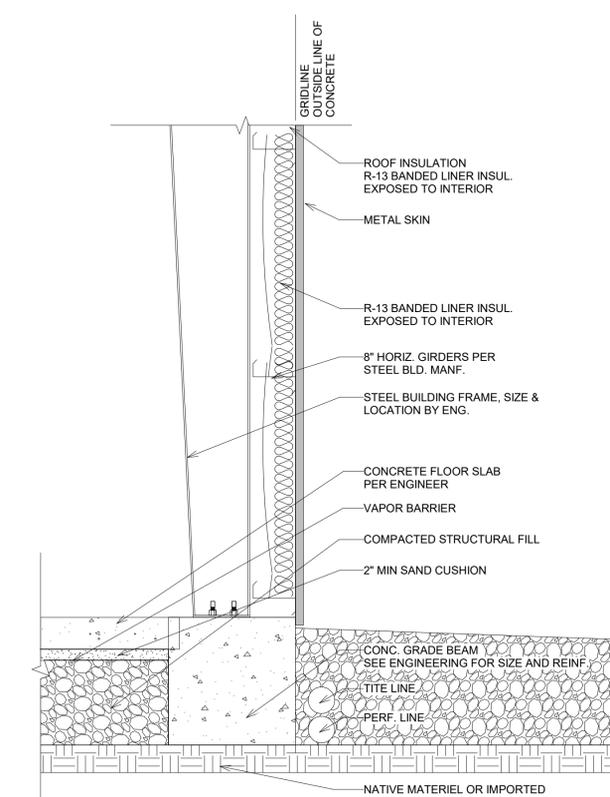
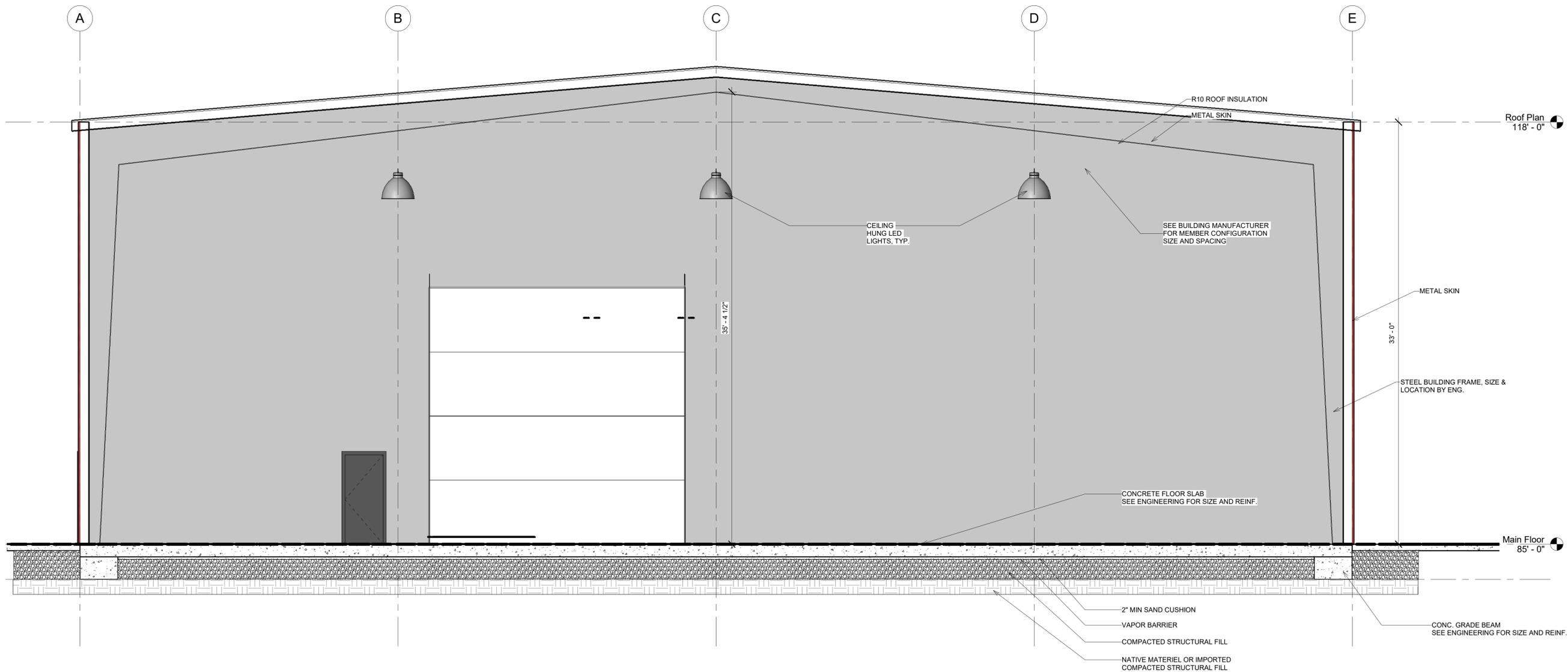
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Perspective Views  
**A3.2**





③ Wall - Non Rated Exterior Main Frame  
3/4" = 1'-0"

① Section 1  
1/4" = 1'-0"

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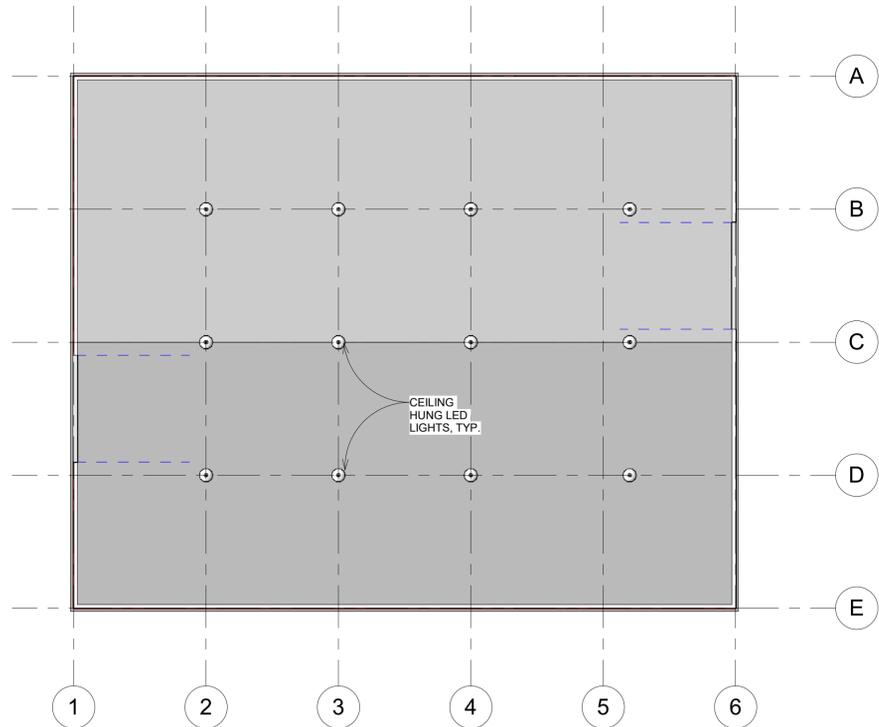
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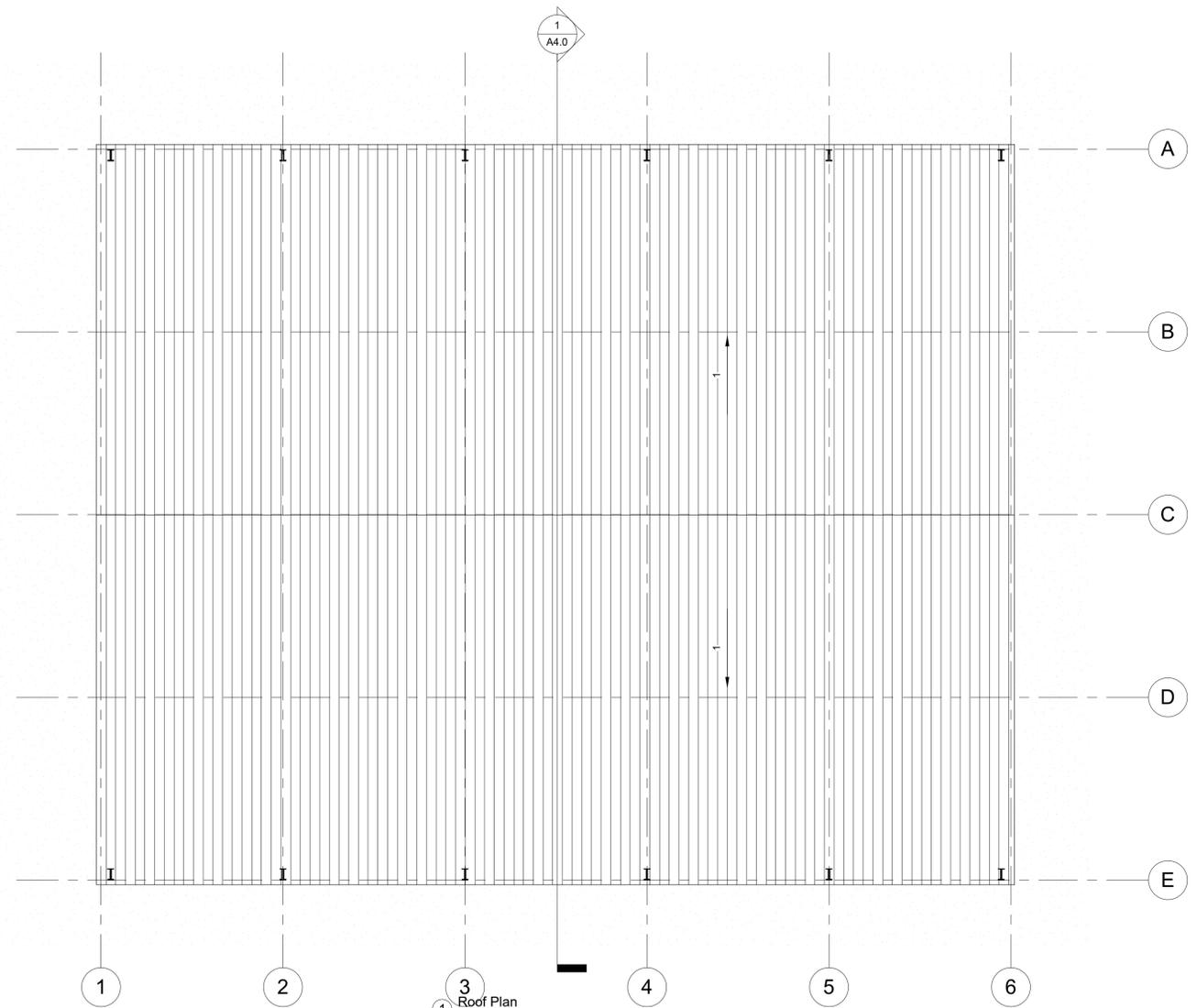
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Building Section  
**A4.0**



2 Reflected Ceiling Plan  
1/16" = 1'-0"



3 Roof Plan  
3/32" = 1'-0"

### E-HTH Series

LED Round UFO High Bay Light  
Replaces up to 400W PSMH



EHTH3A-HK40W	13000 Lumens	Neutral White (4000K)	100W	80-CRI	White	250W PSMH
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3 Lighting - High Bay LED  
12" = 1'-0"

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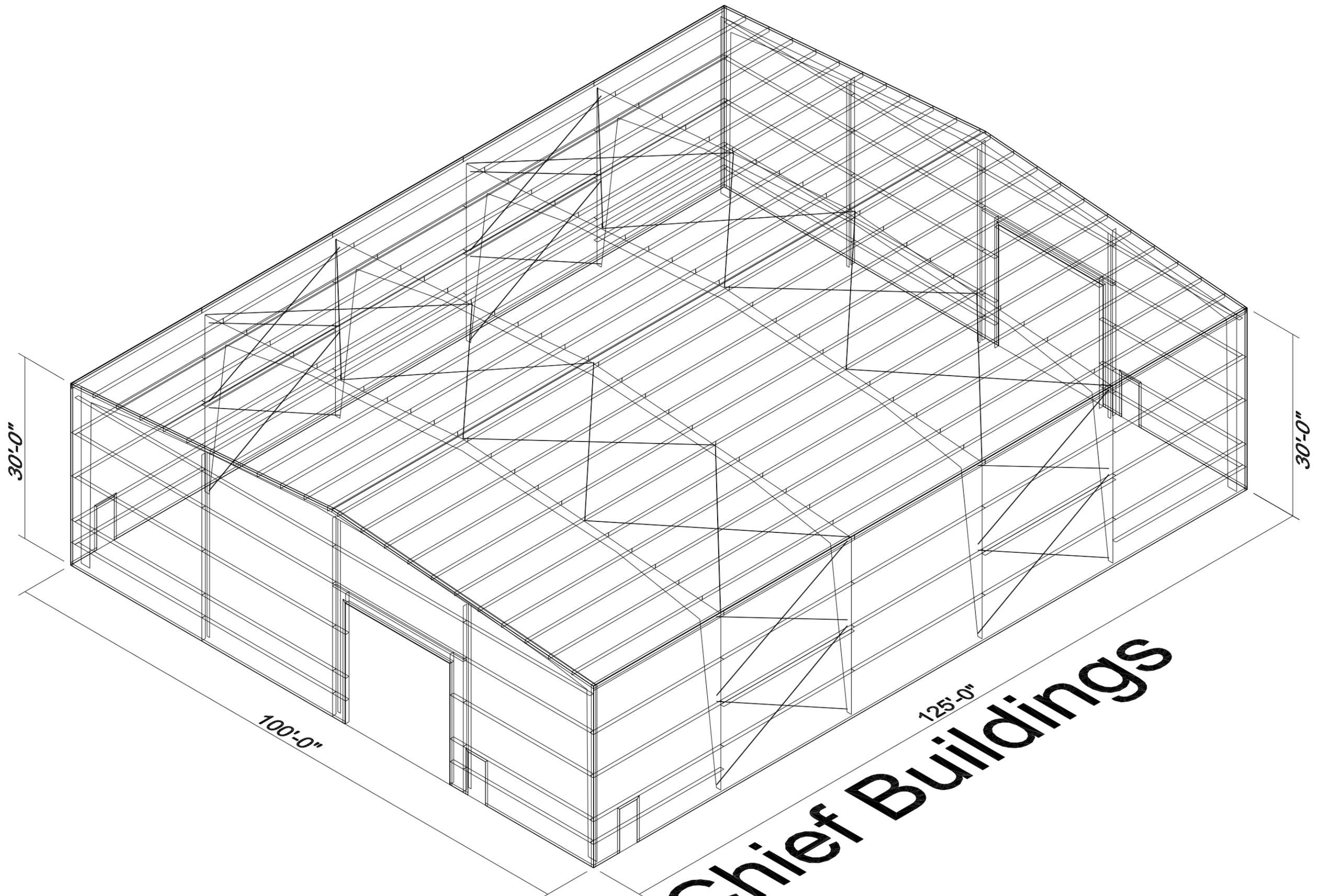


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 741 Marine Dr  
 Bellingham WA 98226

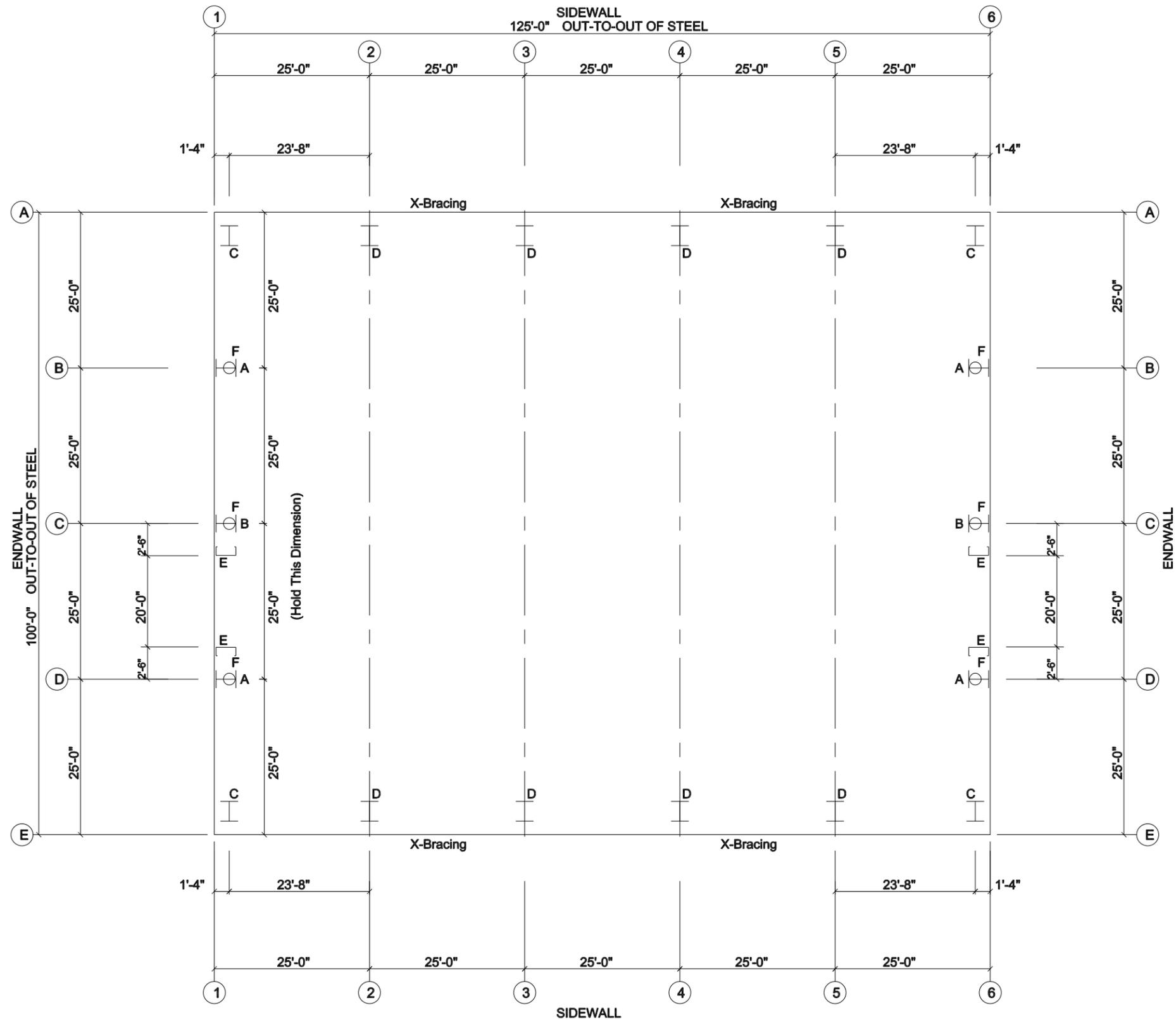
Project number	TRC 22-001
Date	Oct 20 2023
Design	RKM
Drawn by:	RKM
Checked by:	RKM
Set Description:	Permit Set

Roof & RCP Plan

**A5.0**



**Chief Buildings**



**ANCHOR ROD PLAN**  
NOTE: All Base Plates @ 100'-0" (U.N.)

- REFERENCE NOTES:**
- All Anchor Rods including nuts and washers for same are not furnished by CHIEF BUILDINGS.
  - Anchor Rod material shall conform to ASTM F1554 having a yield of 36 KSI or greater.
  - Rod projections are recommended minimums based on the base plate bearing directly on the concrete pier. If the base plate is to bear on grout, the rod projection must be increased accordingly.
  - Concrete shall have a minimum strength of 3000 PSI.
  - ALL DRAWINGS ARE NOT TO SCALE.
  - Anchor Rod Summary Table
    - Quantity includes all buildings, all phases.
    - However anchor rods for Partitions and Smart Canopies are found on separate pages (when applicable).

ANCHOR ROD SUMMARY				
Qty	Locate	Dia (in)	Type	Proj (in)
● 8	Jamb	1/2"	F1554	1.50
⊕ 24	Endwall	3/4"	F1554	2.00
⊕ 72	Frame	3/4"	F1554	2.00

**PRELIMINARY**

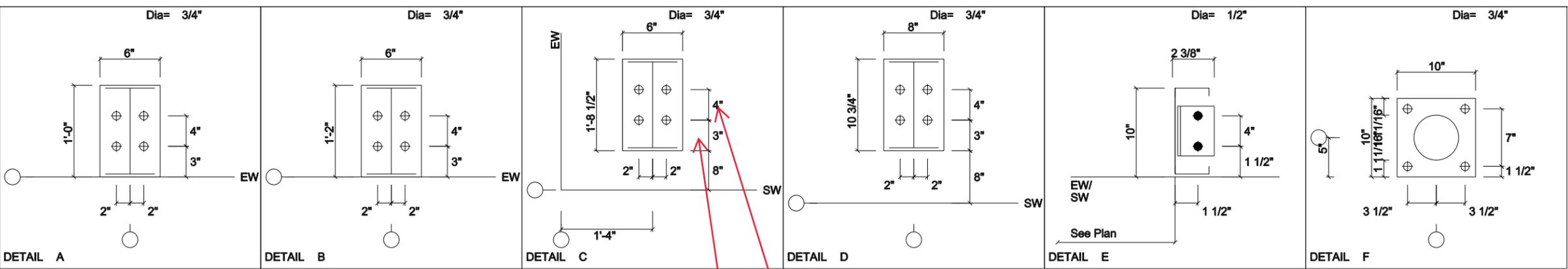
•Preliminary drawings for sales and estimating purposes only.

•Subject to change during order process.

**NOT FOR CONSTRUCTION**

Drawing	ANCHOR ROD	
Buyer	Steel Buildings Northwest, Inc	
Customer	ABC Recycling Bellingham, WA 98225	
Project Name	ABC Recycling - bldg 1	
	DATE DRAWN	QUOTE NO.
	8/25/23	FQ74501A





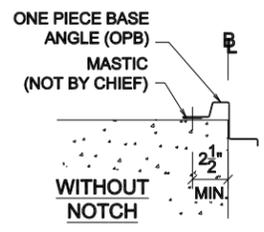
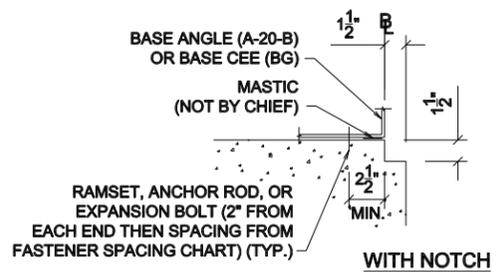
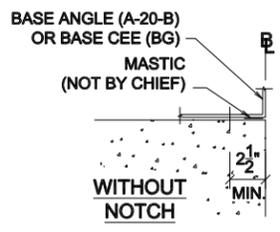
needs to be 6" Min

12" to edge needed

**BASE ANCHORAGE SPACING FOR STANDARD BASE ANGLE, BASE CEE OR ONE PIECE BASE WITH CS OR AP WALLS**

FASTENER TYPE & DIAMETER	MINIMUM EMBEDMENT	MAXIMUM SPACING
1/4" WEDGE ANCHOR ①	1 1/4"	3'-0"
1/4" SCREW TYPE ANCHOR ②	1 1/2"	3'-0"
3/8" CAST-IN ANCHOR	4" WITH HOOK OR HEAD	3'-0"
1/4" HAMMER-IN ③	1 3/8"	2'-0"
0.14 POWDER ACTUATED ④	1 1/4"	1'-6"

① HILTI KWIK BOLT®, RAMSET TRUBOLT®, POWERS POWERSTUD®, OR EQUAL  
 ② CFS TAPCON®, HILTI KWIK-CON II®, POWERS WEDGE-BOLT®, OR EQUAL  
 ③ POWERS ZAMAC HAMMER SCREW®, HILTI METAL HIT ANCHOR®, OR EQUAL  
 ④ POWERS BALLISTIC POINT PIN, RAMSET 1500/1600 SERIES, HILTI UNIVERSAL NAIL OR EQUAL



**BASE MEMBER DETAILS**  
 CONTRACTOR IS RESPONSIBLE FOR ANCHORING BASE MEMBER TO CONCRETE.

FASTENER SPACING CHART

REFERENCE NOTES:  
 1. ACTUAL BASE PLATE DIMENSIONS MAY BE SMALLER THAN BASE PLATE DIMENSIONS SHOWN.

**PRELIMINARY**

- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

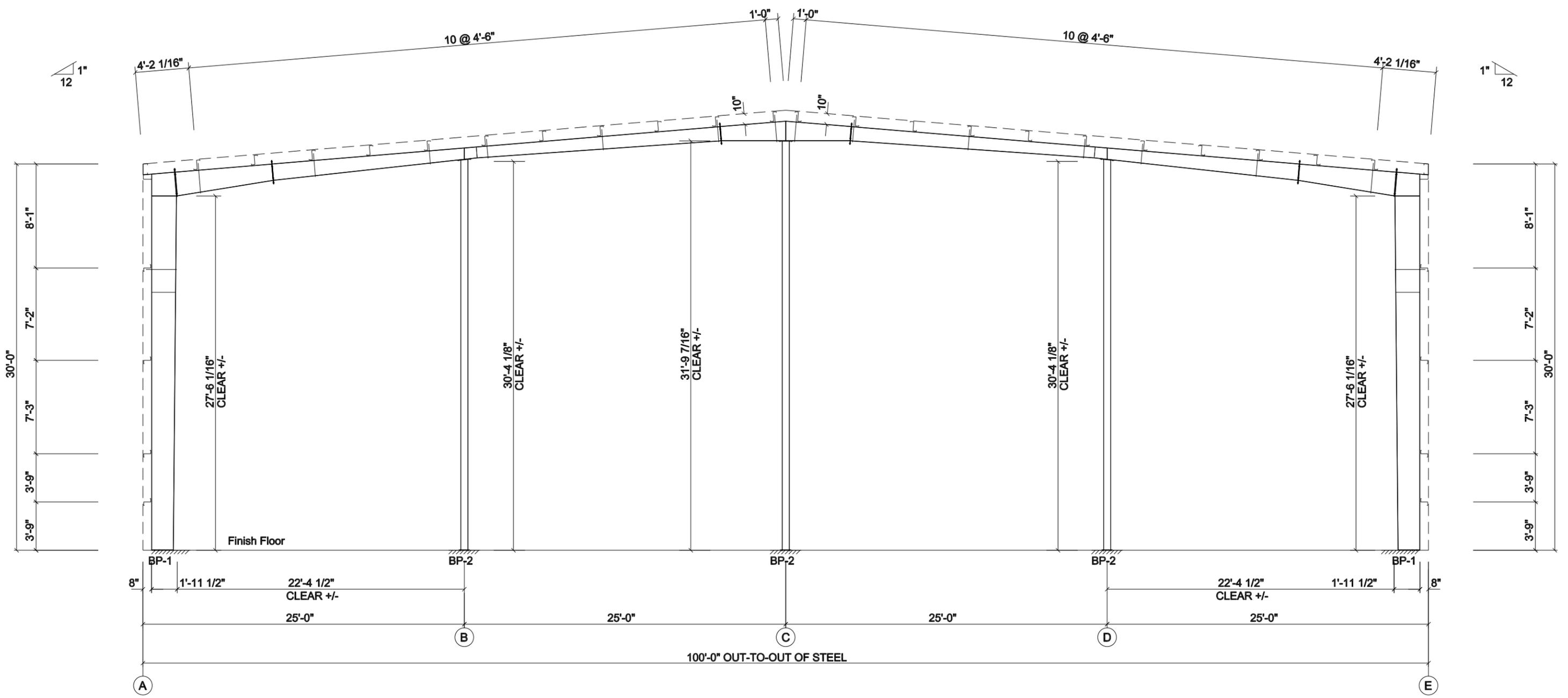
**NOT FOR CONSTRUCTION**

Drawing	ANCHOR ROD		
Buyer	Steel Buildings Northwest, Inc		
Customer	ABC Recycling Bellingham, WA 98225		
Project Name	ABC Recycling - bldg 1		
	DATE DRAWN	QUOTE NO.	
	8/25/23	FQ74501A	

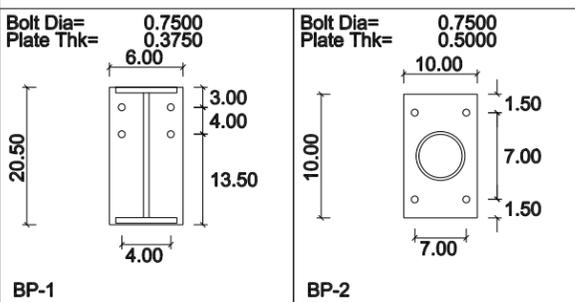




STIFFENER TABLE				
Mark	Stiff Mark	Plate Size		
		Width	Thick	Length
RF1-1	ST1	2.750	0.250	22.94
RF1-3	ST2	2.750	0.250	10.31
RF1-4	ST3	2.750	0.250	18.00



RIGID FRAME ELEVATION: FRAME LINE 1 6



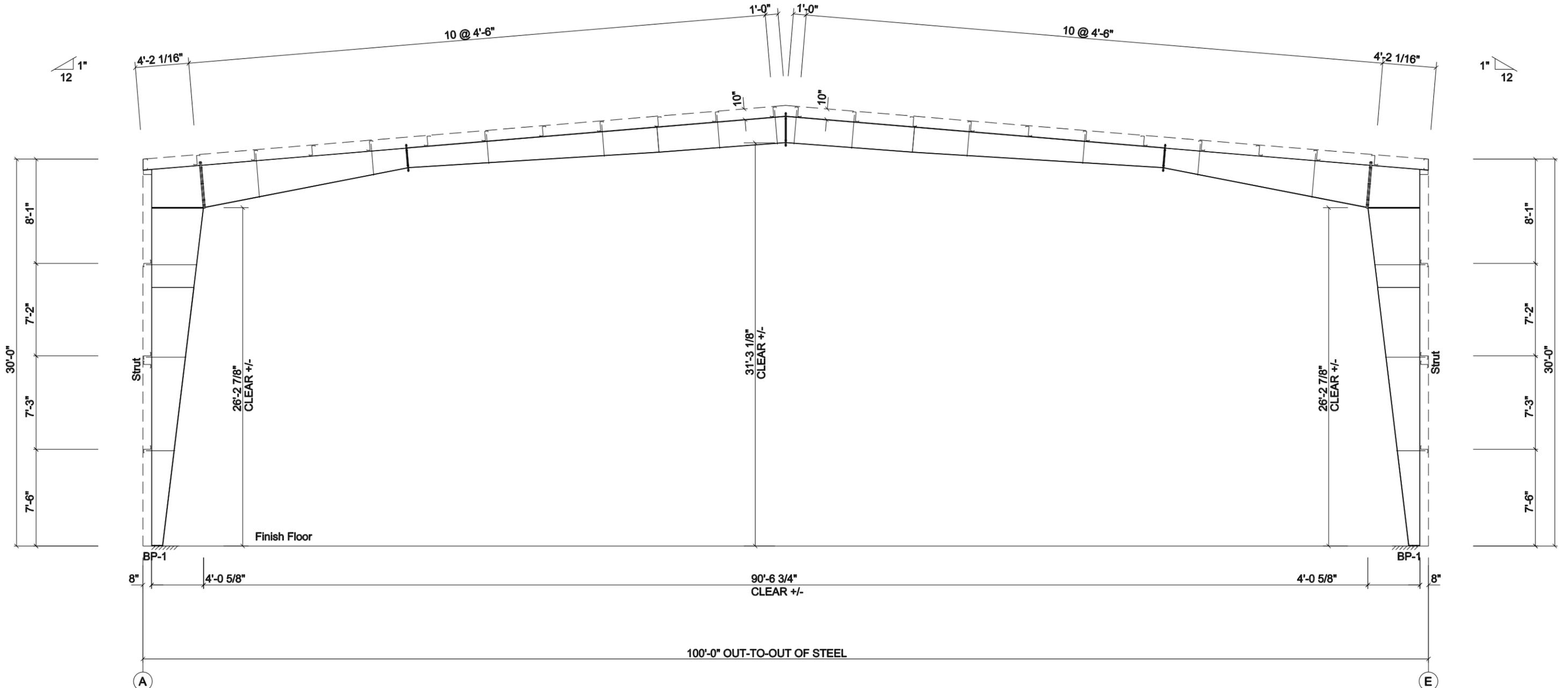
**PRELIMINARY**

- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

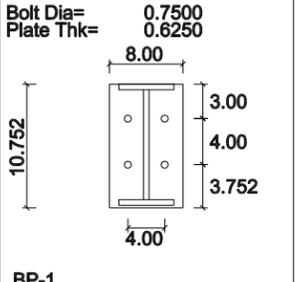
**NOT FOR CONSTRUCTION**

Drawing	CROSS SECTION	
Buyer	Steel Buildings Northwest, Inc	
Customer	ABC Recycling Bellingham, WA 98225	
Project Name	ABC Recycling - bldg 1	
	DATE DRAWN	QUOTE NO.
	8/25/23	FQ74501A

STIFFENER TABLE				
Mark	Stiff Mark	Plate Size		Length
		Width	Thick	
RF2-1	ST1	3.750	0.313	47.94
RF2-5	ST2	3.750	0.313	47.88



RIGID FRAME ELEVATION: FRAME LINE 2 3 4 5

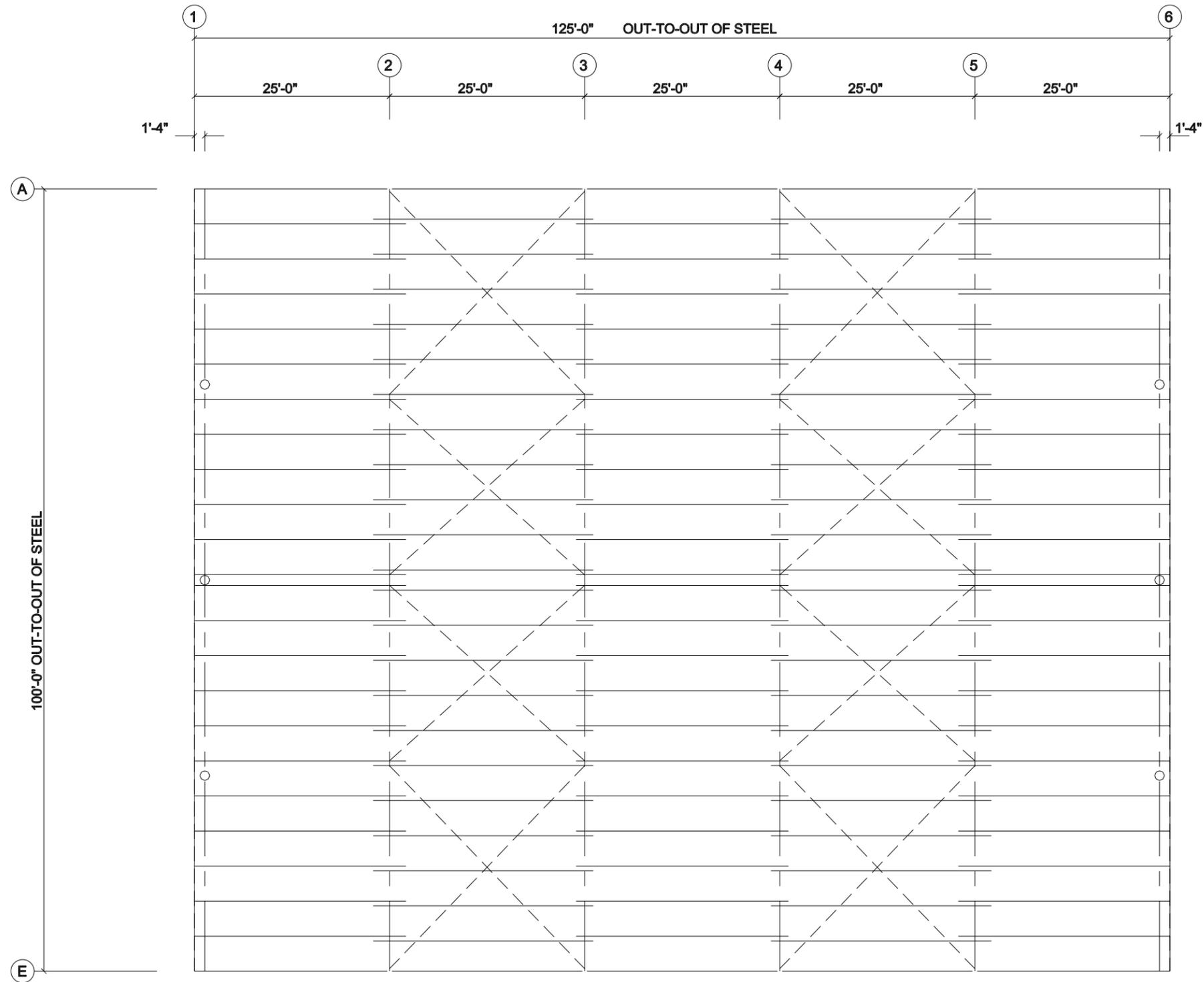


**PRELIMINARY**

- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

**NOT FOR CONSTRUCTION**

Drawing	CROSS SECTION	
Buyer	Steel Buildings Northwest, Inc	
Customer	ABC Recycling Bellingham, WA 98225	
Project Name	ABC Recycling - bldg 1	
<b>CHIEF BUILDINGS</b>	DATE DRAWN	QUOTE NO.
	8/25/23	FQ74501A



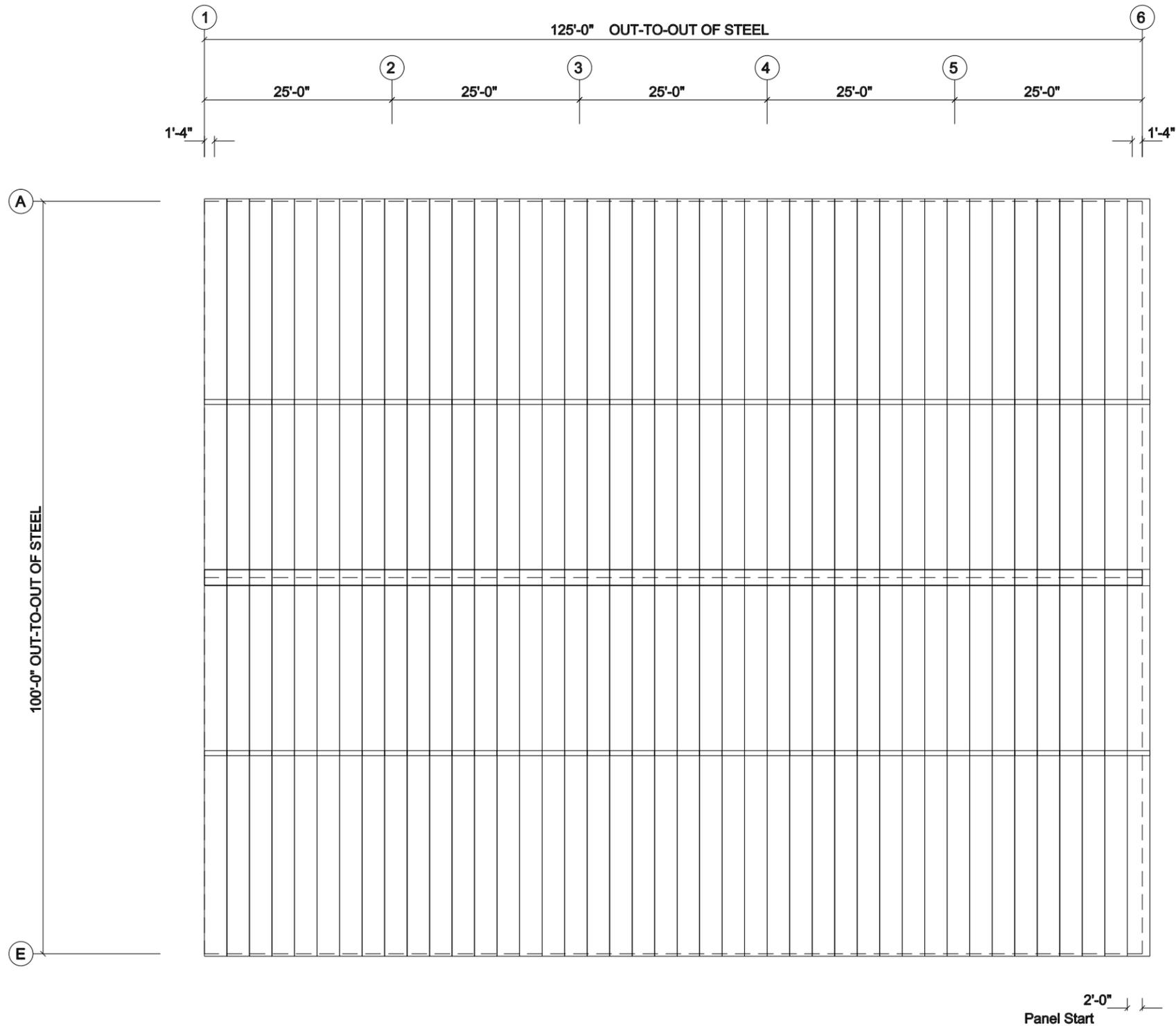
ROOF FRAMING PLAN

**PRELIMINARY**

- Preliminary drawings for sales and estimating purposes only.
  - Subject to change during order process.
- NOT FOR CONSTRUCTION**

Drawing	ROOF FRAMING	
Buyer	Steel Buildings Northwest, Inc	
Customer	ABC Recycling Bellingham, WA 98225	
Project Name	ABC Recycling - bldg 1	
	DATE DRAWN	QUOTE NO.
	8/25/23	FQ74501A





**ROOF SHEETING PLAN**  
 PANELS: 26 Ga. CS - Std.PVDF-FEVE Finish

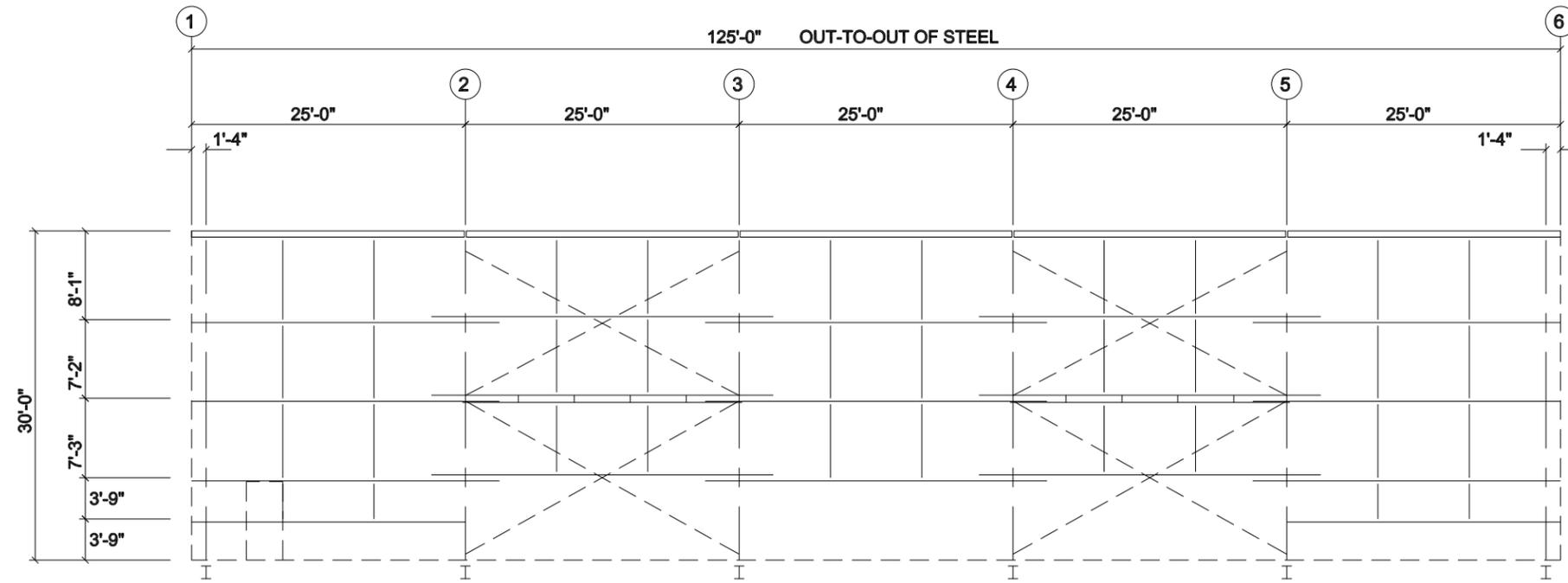
**PRELIMINARY**

- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

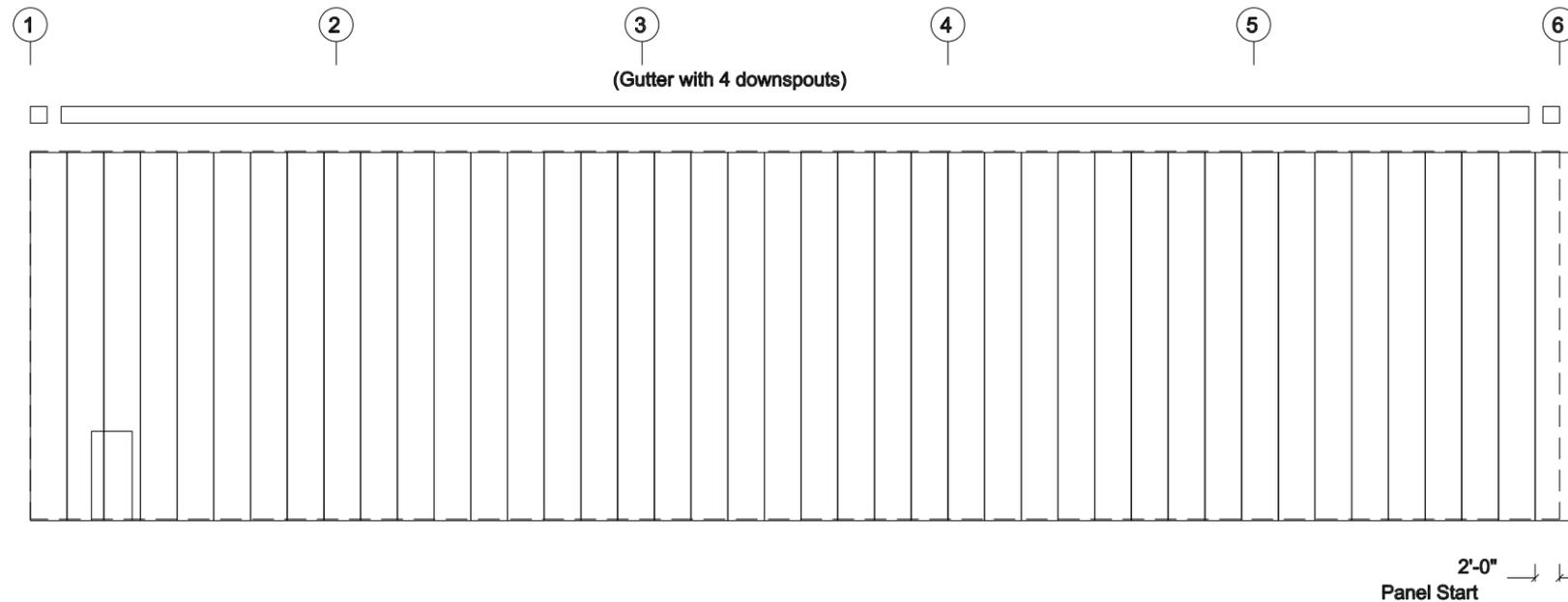
**NOT FOR CONSTRUCTION**

Drawing	ROOF SHEETING	
Buyer	Steel Buildings Northwest, Inc	
Customer	ABC Recycling Bellingham, WA 98225	
Project Name	ABC Recycling - bldg 1	
	DATE DRAWN	QUOTE NO.
	8/25/23	FQ74501A





**SIDEWALL FRAMING: FRAME LINE E**



**SIDEWALL SHEETING & TRIM: FRAME LINE E**

PANELS: 26 Ga. TBD - Std. SMP Finish

GIRT DEPTH: 8.00

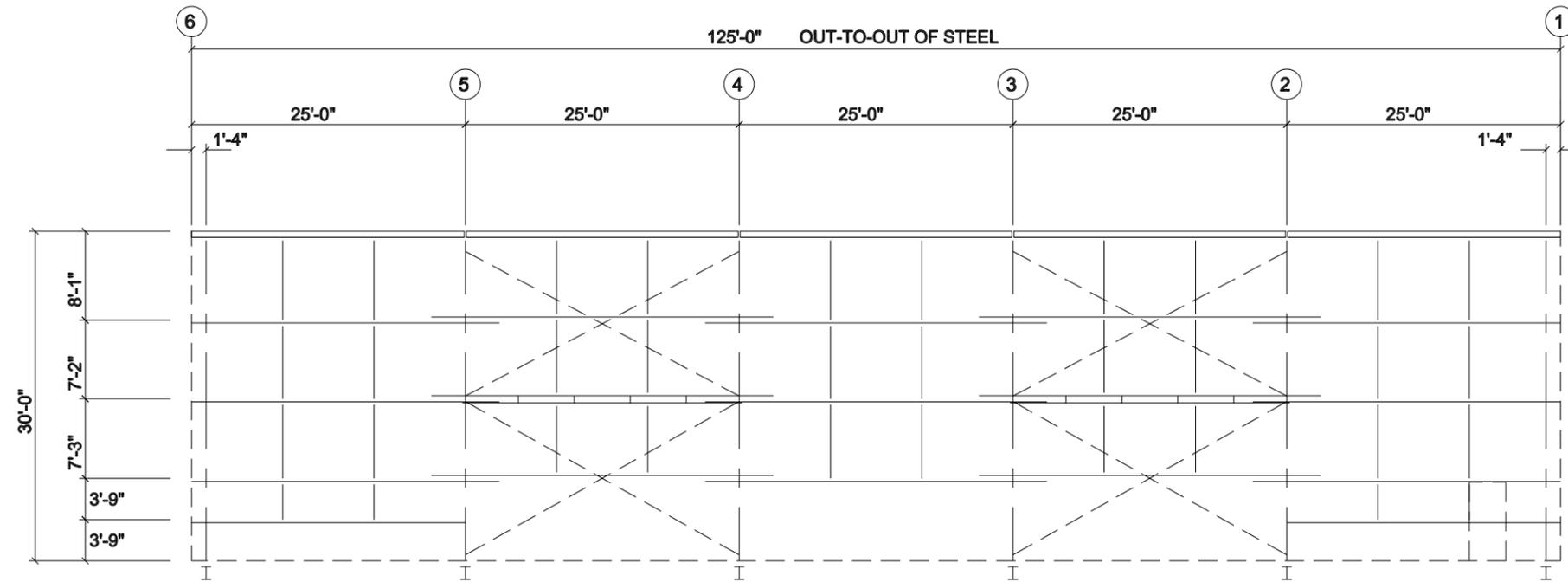
**PRELIMINARY**

- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

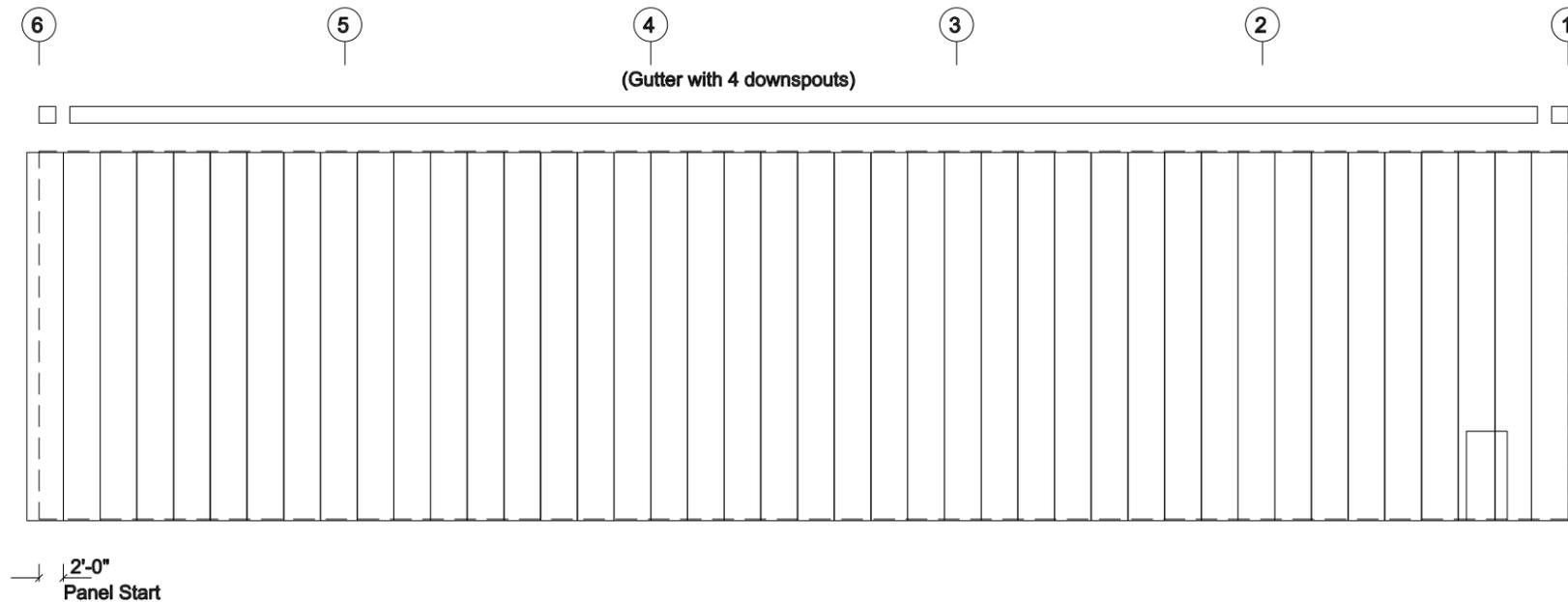
**NOT FOR CONSTRUCTION**

Drawing	SIDEWALL DRAWING	
Buyer	Steel Buildings Northwest, Inc	
Customer	ABC Recycling Bellingham, WA 98225	
Project Name	ABC Recycling - bldg 1	
	DATE DRAWN	QUOTE NO.
	8/25/23	FQ74501A





**SIDEWALL FRAMING: FRAME LINE A**



**SIDEWALL SHEETING & TRIM: FRAME LINE A**

PANELS: 26 Ga. TBD - Std. SMP Finish

GIRT DEPTH: 8.00

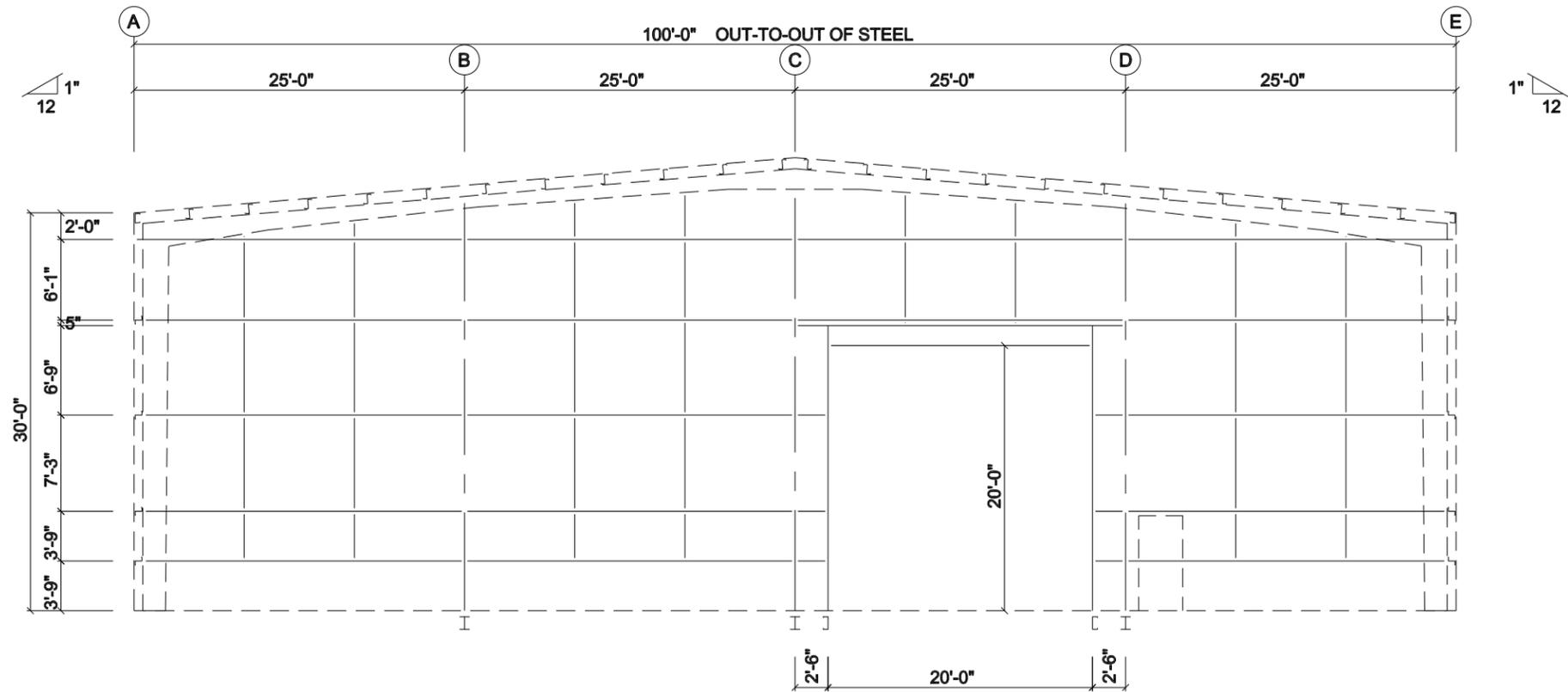
**PRELIMINARY**

- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

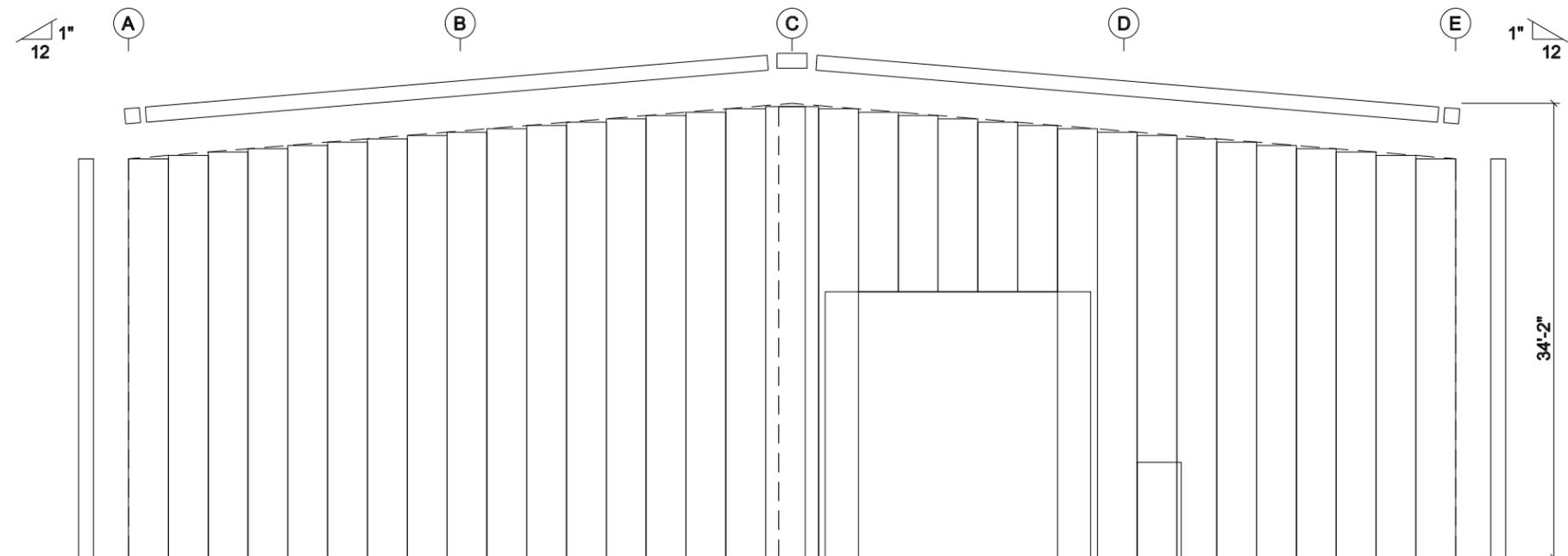
**NOT FOR CONSTRUCTION**

Drawing	SIDEWALL DRAWING	
Buyer	Steel Buildings Northwest, Inc	
Customer	ABC Recycling Bellingham, WA 98225	
Project Name	ABC Recycling - bldg 1	
	DATE DRAWN	QUOTE NO.
	8/25/23	FQ74501A





**ENDWALL FRAMING: FRAME LINE 1**



**ENDWALL SHEETING & TRIM: FRAME LINE 1**

PANELS: 26 Ga. TBD - Std. SMP Finish

GIRT DEPTH: 10.00

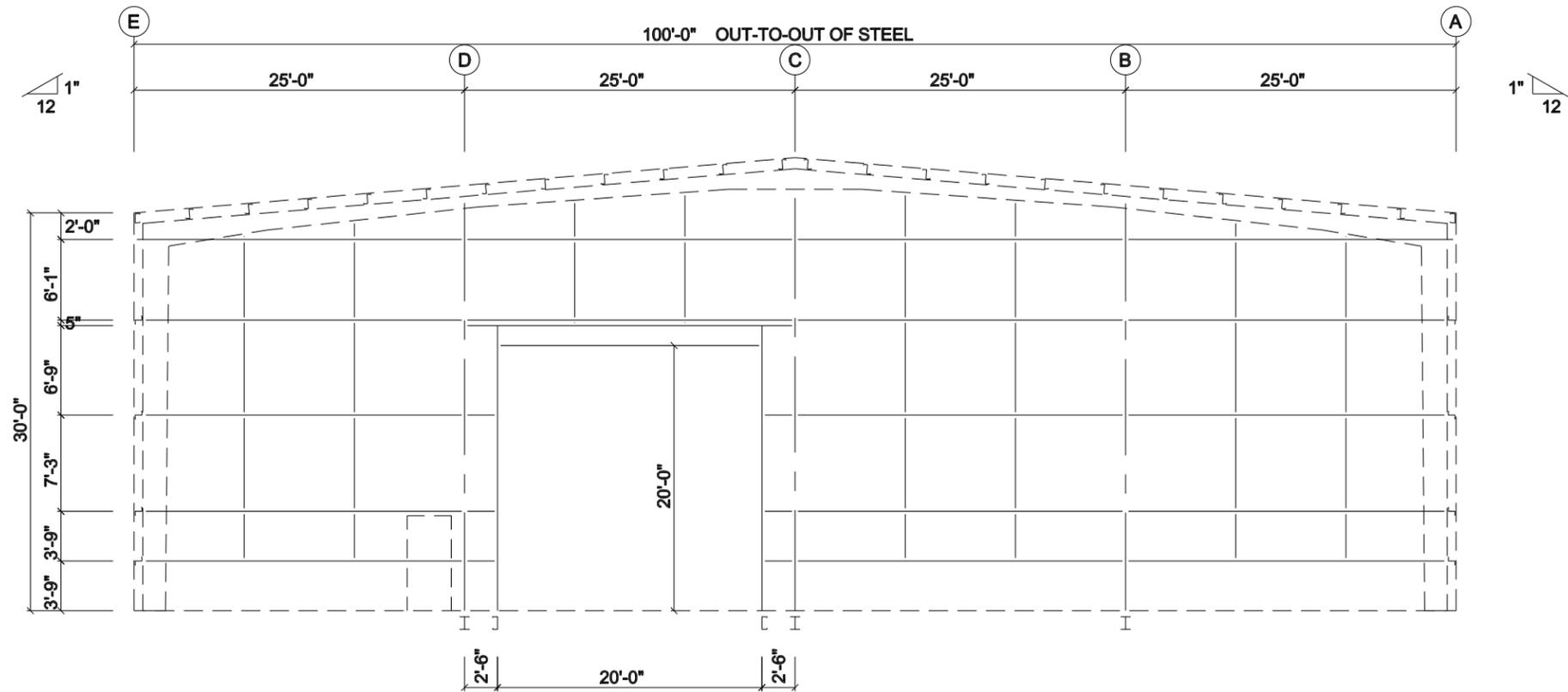
**PRELIMINARY**

- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

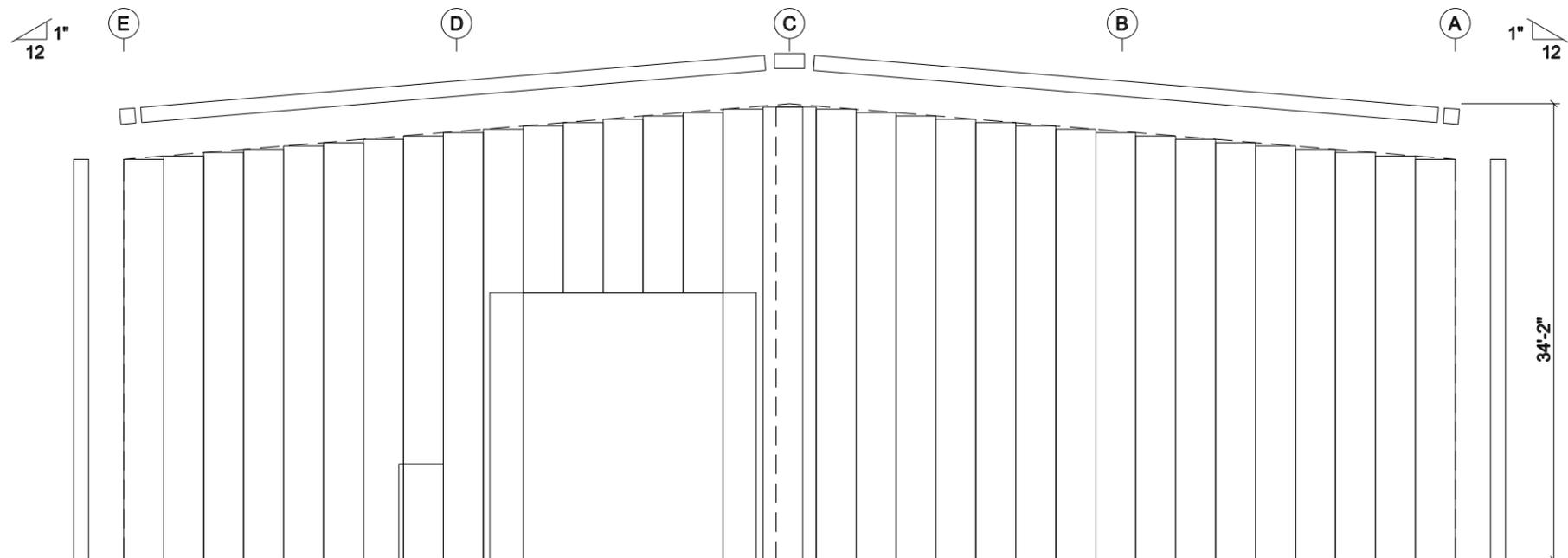
**NOT FOR CONSTRUCTION**

Drawing	ENDWALL DRAWING	
Buyer	Steel Buildings Northwest, Inc	
Customer	ABC Recycling Bellingham, WA 98225	
Project Name	ABC Recycling - bldg 1	
	DATE DRAWN	QUOTE NO.
	8/25/23	FQ74501A





**ENDWALL FRAMING: FRAME LINE 6**



**ENDWALL SHEETING & TRIM: FRAME LINE 6**

PANELS: 26 Ga. TBD - Std. SMP Finish

GIRT DEPTH: 10.00

**PRELIMINARY**

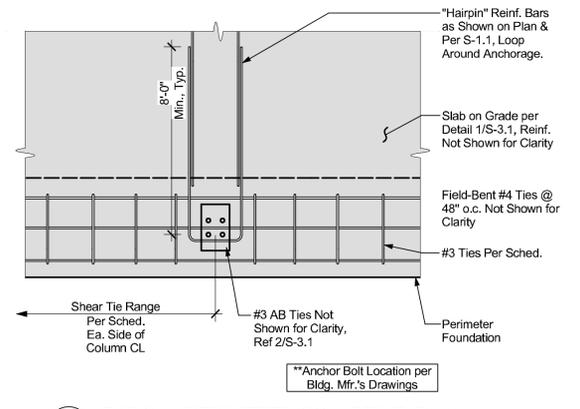
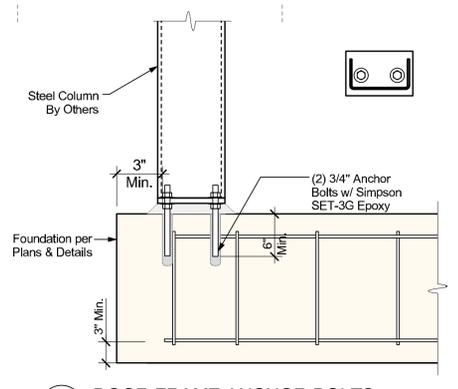
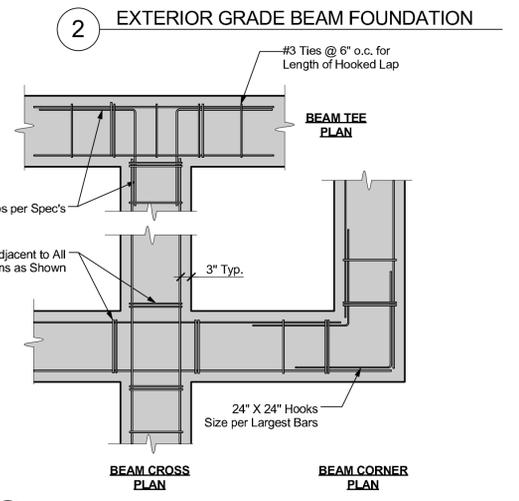
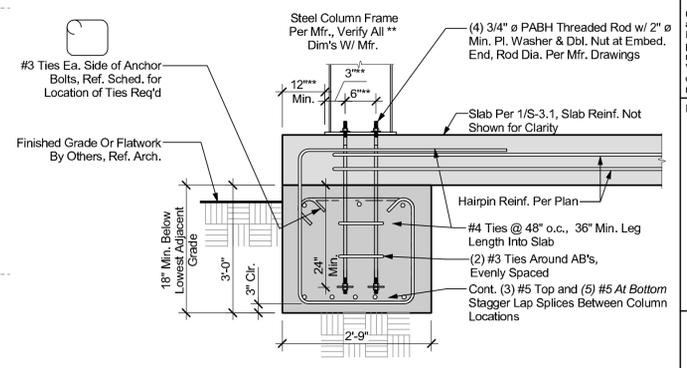
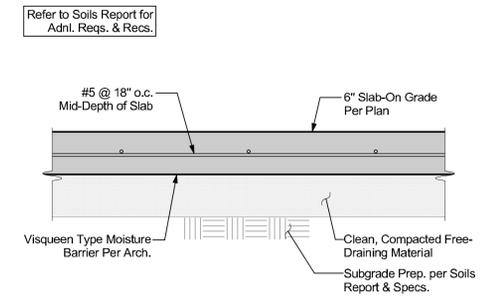
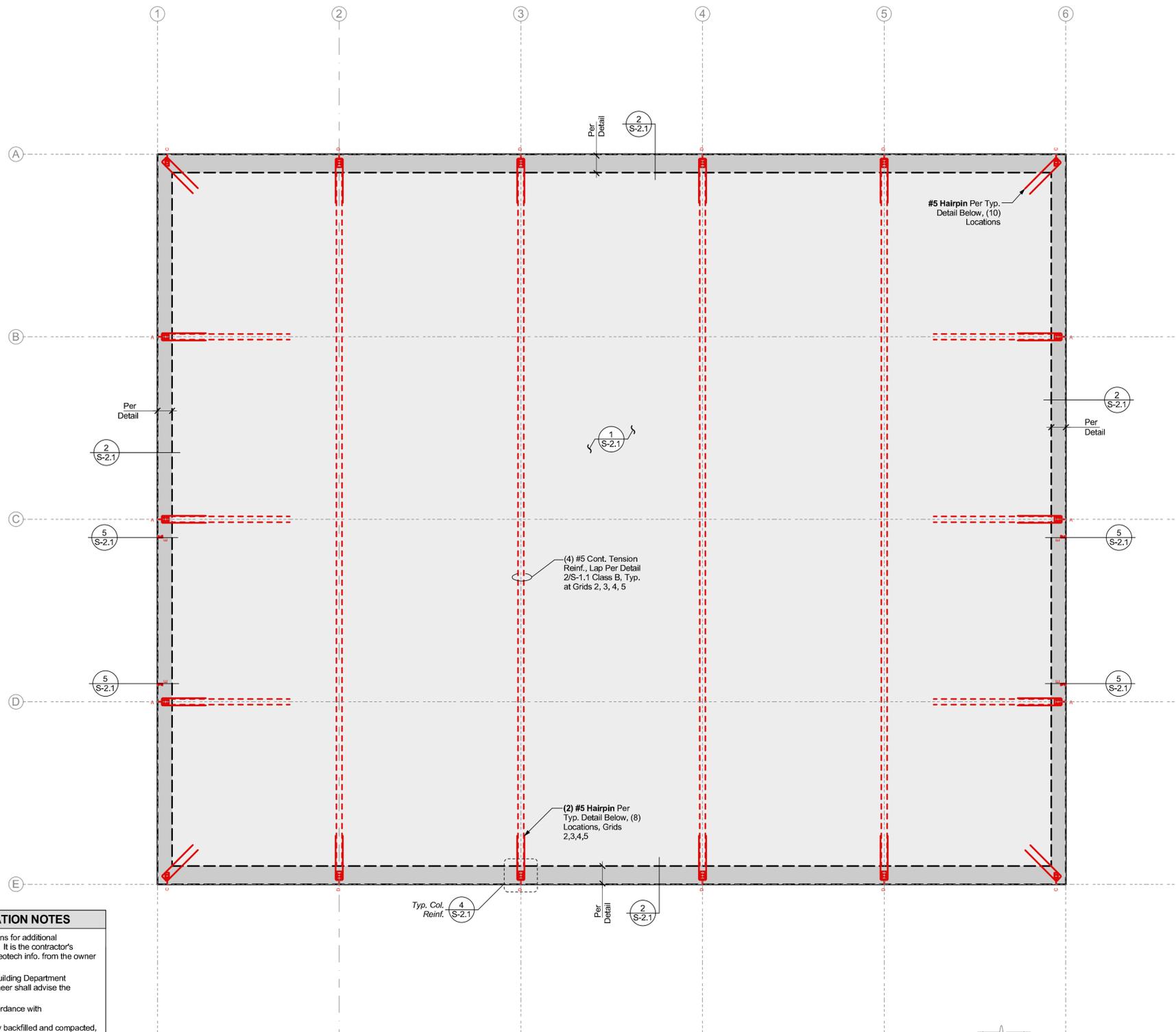
- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

**NOT FOR CONSTRUCTION**

Drawing	ENDWALL DRAWING	
Buyer	Steel Buildings Northwest, Inc	
Customer	ABC Recycling Bellingham, WA 98225	
Project Name	ABC Recycling - bldg 1	
	DATE DRAWN	QUOTE NO.
	8/25/23	FQ74501A







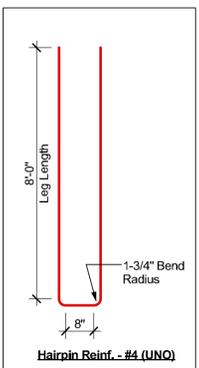
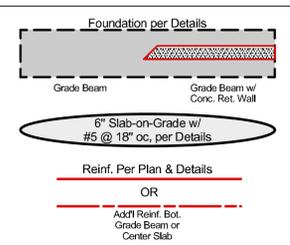
**GENERAL FOUNDATION NOTES**

Please see Geotech Recommendations for additional specifications and recommendations. It is the contractor's responsibility to obtain a copy of all geotech info. from the owner or owners representative.

Prior to the contractor requesting a Building Department foundation inspection, the Soils Engineer shall advise the building inspector in writing that:

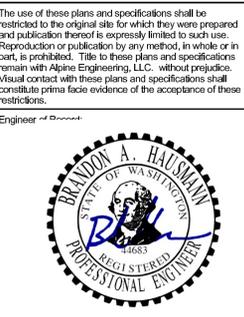
- Building pad was prepared in accordance with recommendations
- Utility trenches have been properly backfilled and compacted, and
- Foundation excavations, the soil's expansive characteristics and bearing capacity conform to the recommendations

See General Notes & Specifications for additional requirements and material specifications.  
 All dimensions per Architectural plans  
 Contractor to VERIFY all dimensions w/ Architectural plans PRIOR to commencement of construction.



SHEAR TIE GRID LOCATIONS	
Grid	Tie Spacing & Range
2A, 3A, 4A, 5A	6" o.c., 3'-0" Ea. Side AB
2E, 3E, 4E, 5E	6" o.c., 3'-0" Ea. Side AB

Note: All Shear Ties to be #3



**ABC Recycling**  
 Building 2 Shredder  
 741 Marine Drive  
 Bellingham, Washington

Revision:


Proj. Engr.: S. Williamson  
 Proj. Mngr.: B. Hausmann  
 Date: 05 Oct. 2023 Scale: NTS  
 Alpine Eng. Job No.: No. 20004



**ALPINE**  
ENGINEERING, LLC

203 W. Chestnut  
Bellingham, WA 98225

(360) 200-8703  
alpineengineer.com

**STRUCTURAL CALCULATIONS**

**PREPARED FOR:**

**DATE:**

October 18, 2023

**PROJECT NO.:**

20004

**PROJECT NAME:**

ABC Recycling; Building 2 Shredder

**PROJECT TYPE:**

PEMB Foundation Design

**PROJECT ADDRESS:**

741 Marine Drive  
Bellingham, WA

**ARCHITECT:**

TRC Architecture  
PO Box 1075  
Bellingham, WA 98227  
(360) 393-3131

**PROJECT ENGINEER:**

Brandon Hausmann, PE





## TABLE OF CONTENTS

DESIGN PARAMETERS	
Foundation Layout	1.1
Design Criteria	1.2
FOUNDATIONS	1.4 – 1.12
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PEMB Column Reactions & Load Combo	1.7
Uplift Calculations	1.8
Hairpin Tension Calculation	1.8
Anchor Bolt Calculation	1.10



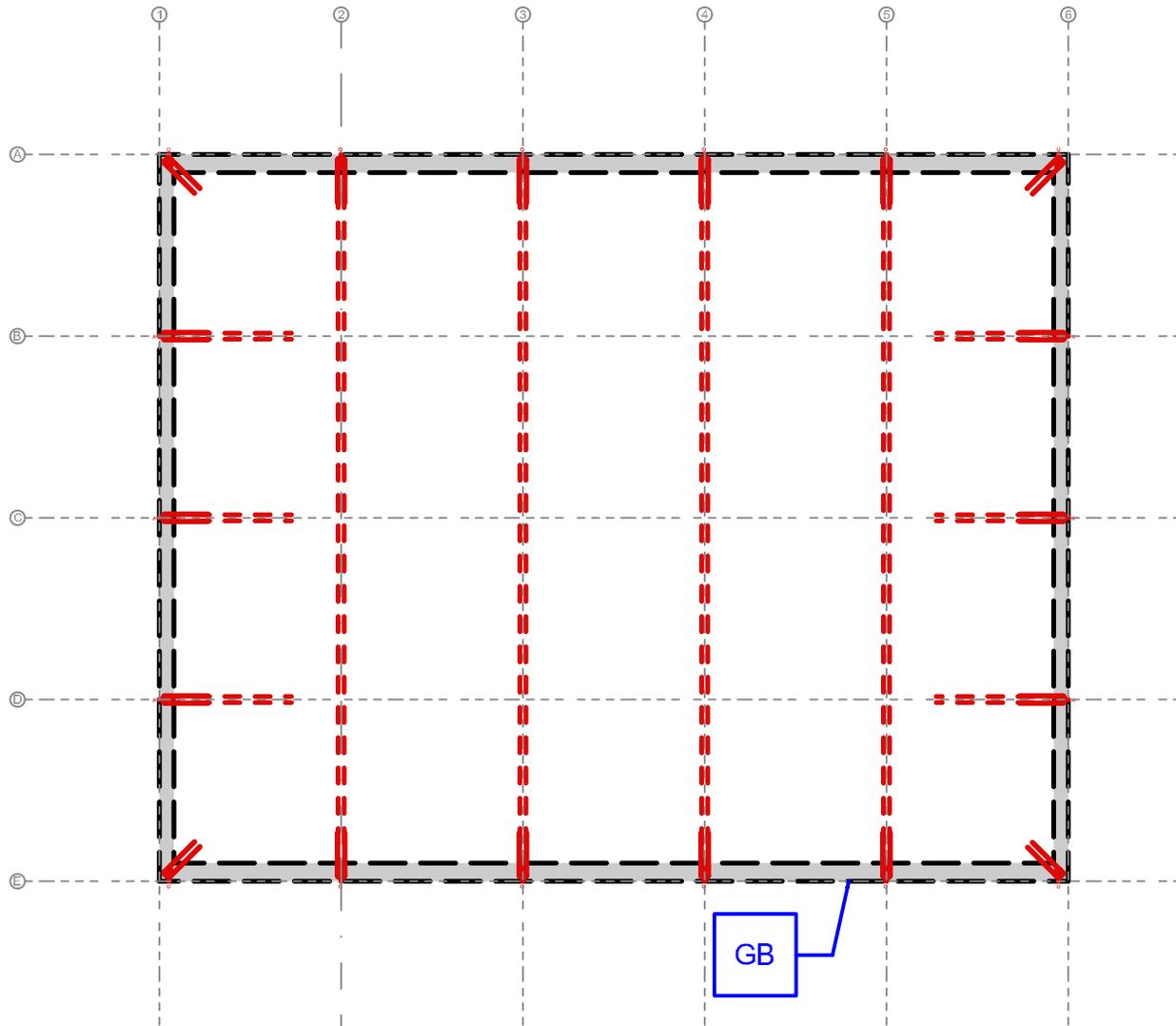
**ALPINE**  
ENGINEERING, LLC

**ABC Recycling**

Building 2 Shredder  
741 Marine Drive  
Bellingham, Washington

Job No.: No. 20004

Foundation Layout



PROJECT:	BLDG. 2 SHREDDER
LOCATION:	BELLINGHA, WA
CLIENT:	TRC
ENGR:	BAH
JOB #:	20004
DATE:	10/3/2023



**ALPINE**  
ENGINEERING, LLC

## STRUCTURAL DESIGN CRITERIA

### STRUCTURAL L ABSTRACT / SCOPE OF WORK:

STRUCTURAL ENGINEERING IS PROVIDED FOR THE ABC RECYCLING BUILDING No. 2 SHREDDER LOCATED IN WHATCOM COUNTY WA. THE STRUCTURE IS A 1-STORY PRE-ENGINEERED METAL BUILDING (PEMB). FOUNDATION IS A CONTINUOUS PERIMETER CONCRETE GRADE BEAM, PAD AND INTERIOR SLAB-ON-GRADE. FOUNDATION DESIGN IS BASED ON ARCHITECTURAL PLANS PROVIDED BY TRC ARCHITECTS (PROJECT #22-001, DATED SEPT. 29 2023) AND STEEL BUILDINGS NORTHWEST INC. (QUOTE # FQ74801A, DATED 8/25/23.). THE STRUCTURAL SCOPE OF WORK IS FOR THE FOUNDATION ONLY, NO ANALYSIS OF THE SUPERSTRUCTURE OR FUTURE TENANT IMPROVEMENT HAS BEEN PERFORMED; ALL COLUMN REACTIONS ARE PROVIDED BY THE PEMB MANUFACTURER.

GRADE BEAM CALCULATIONS AT GRID L ARE SHOWN AS 3 SEPARATE CALCULATIONS: COMPOSITE SECTION, POSITIVE BENDING AND NEGATIVE BENDING. THE POSITIVE AND NEGATIVE BENDING CALCULATIONS ARE SHOWN FOR REFERENCE AND ARE NOT FAILING AS INDICATED IN THE CALCULATIONS. THE MODELING LIMITATIONS CANNOT SHOW THE COMPLETE PICTURE, AND ARE USED TO GRAPH THE BENDING MOMENTS AT THE WORST CASE POSITIVE (AT THE COLUMN POINT LOADS) AND NEGATIVE (MID WAY BETWEEN COLUMNS) MOMENTS TO DESIGN FOR THE MINIMUM AMOUNT OF REINFORCEMENT REQUIRED AT THOSE POINTS.

### GENERAL:

BUILDING DEPARTMENT:	WHATCOM Co.
APPLICABLE BUILDING CODE:	2018 IBC
IMPORTANCE CATEGORY:	II

### GRAVITY LOADING:

*PER MFR. REACTIONS*

### SOILS DATA:

GEOTECHNICAL ENGINEER:	NA	
ALLOWABLE BEARING PRESSURE:	2000 PSF	**FIELD VERIFIED
MIN. FROST EMBEDMENT:	18 "	(PER WHATCOM Co.)

PROJECT:	BLDG. 2 SHREDDER
LOCATION:	BELLINGHA, WA
CLIENT:	TRC
ENGR:	BAH
JOB #:	20004
DATE:	10/3/2023



**ALPINE**  
ENGINEERING, LLC

### Design Parameters

Code: 2018 IBC

*\* Please Refer to Structural Specification on S-1.1 for more detailed information*

Foundations:	Concrete	3000 psi
	Rebar (#5 & larger)	60 ksi
	Rebar (#3 & #4)	40 ksi

### Note:

The intent of lateral design is to prevent structural failures in the event of seismic activities or high winds, but not to prevent the damage of architectural finishes or systems. The lateral calculations herein conform to the specifications of the current International Building Code (IBC).

These calculations, specifications, details and drawings are instruments of service and are the property of Alpine Engineering, LLC. The information contained herein is for use on the specific project referenced above and shall not be used otherwise without the written authorization of Alpine Engineering, LLC.

**Beam on Elastic Foundation**

Project File: ABC Bldg 2 Shredder - [130x100].ec6

LIC# : KW-06012917, Build:20.23.08.30

Alpine Engineering, LLC

(c) ENERCALC INC 1983-2023

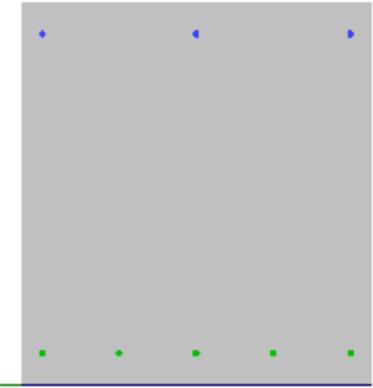
**DESCRIPTION:** Grid A - Composite Section

**CODE REFERENCES**

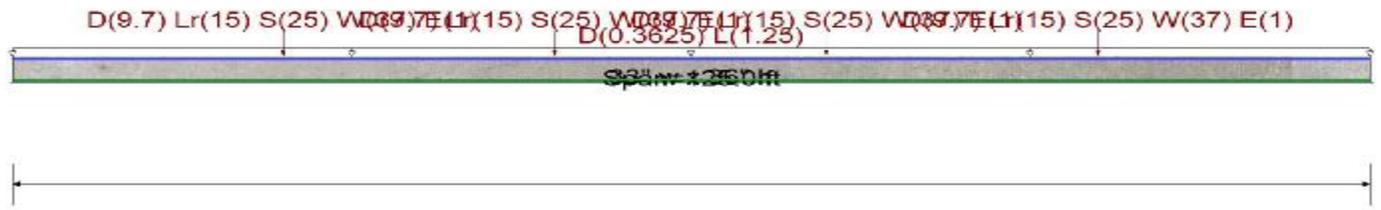
Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**Material Properties**

f'c	=	2.50 ksi	φ Phi Values	Flexure :	0.90
fr = f'c <sup>1/2</sup>	=	375.0 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β <sub>1</sub>	=	0.850
λ Lt Wt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi			
Soil Subgrade Modulus	=	250.0 psi / (inch deflection)			
Load Combination	ASCE 7-16				
fy - Main Rebar	=	60.0 ksi	Fy - Stirrups	=	40.0 ksi
E - Main Rebar	=	29,000.0 ksi	E - Stirrups	=	29,000.0 ksi
			Stirrup Bar Size #	=	# 3
			Number of Resisting Legs Per Stirrup	=	2.0



Beam is supported on an elastic foundation.



**Cross Section & Reinforcing Details**

Rectangular Section, Width = 33.0 in, Height = 36.0 in  
 Span #1 Reinforcing....

3-#5 at 3.0 in from Top, from 0.0 to 125.0 ft in this span

5-#5 at 3.0 in from Bottom, from 0.0 to 125.0 ft in this s

Service loads entered. Load Factors will be applied for calculations.

**Applied Loads**

**Beam self weight calculated and added to loads**

- Point Load : D = 9.70, Lr = 15.0, S = 25.0, W = 37.0, E = 1.0 k @ 25.0 ft
- Point Load : D = 9.70, Lr = 15.0, S = 25.0, W = 37.0, E = 1.0 k @ 50.0 ft
- Point Load : D = 9.70, Lr = 15.0, S = 25.0, W = 37.0, E = 1.0 k @ 75.0 ft
- Point Load : D = 9.70, Lr = 15.0, S = 25.0, W = 37.0, E = 1.0 k @ 100.0 ft
- Uniform Load : D = 0.07250, L = 0.250 ksf, Tributary Width = 5.0 ft

**DESIGN SUMMARY**

Design OK

Maximum Bending Stress Ratio =	<b>0.675</b> : 1	Maximum Deflection	
Section used for this span	<b>Typical Section</b>	Max Downward L+Lr+S Deflection	0.000 in
Mu : Applied	154.588 k-ft	Max Upward L+Lr+S Deflection	0.000 in
Mn * Phi : Allowable	229.153 k-ft	Max Downward Total Deflection	0.048 in
Load Combination	+1.20D+1.60S+0.50W	Max Upward Total Deflection	0.007 in
Location of maximum on span	###.### ft		
Span # where maximum occurs	Span # 1		
Maximum Soil Pressure =	<b>1.722</b> ksf	at	26.39 ft LdComb: +D+0.750L+0.750S+0.4
Allowable Soil Pressure =	<b>2.0</b> ksf	<b>OK</b>	

**Shear Stirrup Requirements**

- Between 0.00 to 98.53 ft, Vu < PhiVc/2, Req'd Vs = Not Req'd, use stirrups spaced at 0.000 in
- Between 100.00 to 100.00 ft, PhiVc/2 < Vu <= PhiVc, Req'd Vs = Min 11.5.6.3, use stirrups spaced at 5.333 in
- Between 101.47 to 122.06 ft, Vu < PhiVc/2, Req'd Vs = Not Req'd, use stirrups spaced at 0.000 in

**Maximum Forces & Stresses for Load Combinatio**

**Beam on Elastic Foundation**

Project File: ABC Bldg 2 Shredder - [130x100].ec6

LIC# : KW-06012917, Build:20.23.08.30

Alpine Engineering, LLC

(c) ENERCALC INC 1983-2023

**DESCRIPTION: Grid A - Composite Section**

Load Combination	Segment Length	Span #	Location (ft) in Span	Bending Stress Results (k-ft)		
				Mu : Max	Phi*Mnx	Stress Ratio
<b>MAXimum Bending Envelope</b>						
Span # 1		1	##.###	154.59	229.15	0.67
+1.40D						
Span # 1		1	##.###	29.67	229.15	0.13
+1.20D+0.50Lr+1.60L						
Span # 1		1	##.###	41.60	229.15	0.18
+1.20D+1.60L+0.50S						
Span # 1		1	##.###	52.64	229.15	0.23
+1.20D+1.60Lr+L						
Span # 1		1	##.###	78.17	229.15	0.34
+1.20D+1.60Lr+0.50W						
Span # 1		1	##.###	119.26	229.15	0.52
+1.20D+1.60Lr-0.50W						
Span # 1		1	##.###	37.55	229.15	0.16
+1.20D+L+1.60S						
Span # 1		1	##.###	113.50	229.15	0.50
+1.20D+1.60S+0.50W						
Span # 1		1	##.###	154.59	229.15	0.67
+1.20D+1.60S-0.50W						
Span # 1		1	##.###	72.88	229.15	0.32
+1.20D+0.50Lr+L+W						
Span # 1		1	##.###	123.44	229.15	0.54
+1.20D+0.50Lr+L-W						
Span # 1		1	##.###	5.05	229.15	0.02
+1.20D+L+0.50S+W						
Span # 1		1	##.###	134.48	229.15	0.59
+1.20D+L+0.50S-W						
Span # 1		1	##.###	3.55	229.15	0.02
+0.90D+W						
Span # 1		1	##.###	100.70	229.15	0.44
+0.90D-W						
Span # 1		1	##.###	8.33	229.15	0.04
+1.20D+L+0.20S+E						
Span # 1		1	##.###	38.42	229.15	0.17
+1.20D+L+0.20S-E						
Span # 1		1	##.###	34.01	229.15	0.15
+0.90D+E						
Span # 1		1	##.###	21.21	229.15	0.09
+0.90D-E						
Span # 1		1	##.###	16.79	229.15	0.07

**Overall Maximum Deflections - Unfactored Lr**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
Span 1	1	0.0478	26.389		0.0000	0.000

**Detailed Shear Information**

Load Combination	Span Number	Distance 'd'		Vu (k)		Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Spacing (in)	
		(ft)	(in)	Actual	Design						Req'd	Suggest
+1.20D+0.50Lr+1.60L	1	0.00	33.00	2.48	2.48	0.00	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+0.50Lr+L-W	1	1.47	33.00	2.52	2.52	0.23	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+0.50Lr+L-W	1	2.94	33.00	2.68	2.68	0.82	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+0.50Lr+L-W	1	4.41	33.00	2.76	2.76	1.64	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+0.50Lr+L-W	1	5.88	33.00	2.76	2.76	2.58	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+0.50Lr+L-W	1	7.35	33.00	2.68	2.68	3.53	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+0.50Lr+L-W	1	8.82	33.00	2.50	2.50	4.35	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+0.50Lr+1.60L	1	10.29	33.00	2.49	2.49	5.89	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60L+0.50S	1	11.76	33.00	2.98	2.98	7.66	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+L+0.50S+W	1	13.24	33.00	4.66	4.66	17.48	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+L+0.50S+W	1	14.71	33.00	6.78	6.78	13.73	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	16.18	33.00	9.49	9.49	7.63	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	17.65	33.00	12.91	12.91	4.56	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	19.12	33.00	16.83	16.83	21.78	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	20.59	33.00	21.21	21.21	44.77	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	22.06	33.00	25.99	25.99	74.20	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	23.53	33.00	31.07	31.07	110.66	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	25.00	33.00	36.29	36.29	154.59	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	26.47	33.00	-28.67	28.67	103.04	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	27.94	33.00	-23.69	23.69	59.11	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00
+1.20D+1.60S+0.50W	1	29.41	33.00	-18.96	18.96	22.52	1.00	82.24	Vu < PhiVc/2	Not Req'd	0.00	0.00

**Beam on Elastic Foundation**

Project File: ABC Bldg 2 Shredder - [130x100].ec6

LIC# : KW-06012917, Build:20.23.08.30

Alpine Engineering, LLC

(c) ENERCALC INC 1983-2023

**DESCRIPTION: Grid A - Composite Section**

**Detailed Shear Information**

Load Combination	Span Number	Distance 'd'		Vu (k)		Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Spacing (in)	
		(ft)	(in)	Actual	Design						Req'd	Suggest
+1.20D+1.60S+0.50W	1	30.88	33.00	-14.55	14.55	7.14	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	32.35	33.00	-10.42	10.42	30.29	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	33.82	33.00	-6.55	6.55	47.38	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+0.50Lr+L-W	1	35.29	33.00	3.16	3.16	14.35	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+0.50Lr+1.60L	1	36.76	33.00	2.53	2.53	18.26	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	38.24	33.00	4.77	4.77	57.36	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	39.71	33.00	7.90	7.90	53.47	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	41.18	33.00	11.58	11.58	51.28	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	42.65	33.00	15.53	15.53	36.02	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	44.12	33.00	19.73	19.73	14.95	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	45.59	33.00	24.22	24.22	12.30	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	47.06	33.00	28.96	28.96	46.15	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	48.53	33.00	33.89	33.89	86.97	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	50.00	33.00	38.89	38.89	135.04	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	51.47	33.00	-26.34	26.34	87.32	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	52.94	33.00	-21.63	21.63	46.82	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	54.41	33.00	-17.21	17.21	13.24	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	55.88	33.00	-13.08	13.08	13.83	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	57.35	33.00	-9.23	9.23	34.83	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	58.82	33.00	-5.61	5.61	50.16	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+0.50Lr+L-W	1	60.29	33.00	2.97	2.97	14.73	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+0.50Lr+1.60L	1	61.76	33.00	2.67	2.67	18.34	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	63.24	33.00	5.05	5.05	57.03	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	64.71	33.00	8.06	8.06	52.72	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	66.18	33.00	11.63	11.63	50.16	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	67.65	33.00	15.48	15.48	34.83	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	69.12	33.00	19.61	19.61	13.83	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	70.59	33.00	24.03	24.03	13.24	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	72.06	33.00	28.74	28.74	46.82	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	73.53	33.00	33.65	33.65	87.32	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	75.00	33.00	-31.49	31.49	135.04	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	76.47	33.00	-26.56	26.56	86.97	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	77.94	33.00	-21.82	21.82	46.15	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	79.41	33.00	-17.33	17.33	12.30	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	80.88	33.00	-13.13	13.13	14.95	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	82.35	33.00	-9.18	9.18	36.02	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	83.82	33.00	-5.44	5.44	51.28	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+0.50Lr+L-W	1	85.29	33.00	2.89	2.89	14.93	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60L+0.50S	1	86.76	33.00	2.84	2.84	23.11	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	88.24	33.00	5.66	5.66	56.72	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	89.71	33.00	8.95	8.95	58.77	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	91.18	33.00	12.82	12.82	47.38	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	92.65	33.00	16.94	16.94	30.29	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	94.12	33.00	21.36	21.36	7.14	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	95.59	33.00	26.08	26.08	22.52	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	97.06	33.00	31.07	31.07	59.11	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	98.53	33.00	36.25	36.25	103.04	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	100.00	33.00	41.47	41.47	154.59	1.00	82.24	PhiVc/2 < Vu <= PhiVc	Min 11.5.6.3	0.00	5.33
+1.20D+1.60S+0.50W	1	101.47	33.00	-23.59	23.59	110.66	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	102.94	33.00	-18.81	18.81	74.20	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	104.41	33.00	-14.43	14.43	44.77	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	105.88	33.00	-10.51	10.51	21.78	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	107.35	33.00	-7.09	7.09	4.56	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60S+0.50W	1	108.82	33.00	-4.17	4.17	7.63	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+0.50Lr+L-W	1	110.29	33.00	2.89	2.89	3.50	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+0.50Lr+1.60L	1	111.76	33.00	2.44	2.44	5.81	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60L+0.50S	1	113.24	33.00	2.89	2.89	7.66	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	114.71	33.00	3.56	3.56	17.99	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	116.18	33.00	4.17	4.17	15.87	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	117.65	33.00	4.47	4.47	12.85	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	119.12	33.00	4.45	4.45	9.40	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	120.59	33.00	4.15	4.15	5.96	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+L+0.50S+W	1	122.06	33.00	3.56	3.56	2.97	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00
+1.20D+1.60L+0.50S	1	123.53	33.00	2.90	2.90	0.34	1.00	82.24	Vu < PhiVc/2	Not Reqd	0.00	0.00

PROJECT:	ABC BUILDING 2 SHREDDER
LOCATION:	WHATCOM COUNTY, WA
CLIENT:	TRC
ENGR:	BAH
JOB #:	20004
DATE:	10/4/2023



PEMB Column Reactions & Load Combinations

Load Combinations per ASCE 7-10

ASD Load Combinations		LRFD Load Combinations									PEMB Reaction definitions				ASD load combos							
Grid	Combination	D	Coll	Snow	L	E	W (max)	RS	LS	D	Coll	Snow	L	E	W (max)	RS	LS	E	W (max)	Max Horiz	Max Vert	Max OOP
1	D	1.2	0.5	3	2.1	1.3	-9.4	1.1	2.6	D + Coll	Total Dead Load			0	0			0	0	4.3	8.2	0.0
2	D+L	1.5	0.9	5.4	3.7	6.7	-7.1	1.2	4.7	W+	Wind acting inward			5.3	8.5			5.3	8.5	0.0	9.6	5.1
3	D+(Lr or S or R)	1.7	1.1	6.2	7.2	-1.4	-6.6	6.3	6.3	W-	Wind acting outward (suction)			5.3	8.5			5.3	8.5	0.0	11.2	5.1
4	D+0.75L+0.75(Lr or S or R)	1.5	0.9	5.4	4.2	0.5	-9.3	7.5	0.8	E+	Seismic acting inward			5.3	8.5			5.3	8.5	0.0	12.2	5.1
5	D+(0.6W or 0.7E)	1.2	0.5	3	2.1	0	-5.2	7.5	0.8	E-	Seismic acting outward			5.3	8.5			5.3	8.5	4.2	9.7	5.1
6a	D+0.75L+0.75(0.6W)+0.75(Lr or S or R)	5.9	3.8	25	15	-1	-37	12.8	22	W (max)	Total concurrent Wind Loading, worst case			5.3	8.5			5.3	8.5	24.1	45.1	5.1
6b	D+0.75L+0.75(0.6E)+0.75S	5.9	3.8	25	15	-1	-37	12.8	22											11.9	45.1	5.1
7	0.6D+0.6W																					
8	0.6D+0.7E																					

2\* Corresponds to Frames at Grids 2,3,4,5

1\* Corresponds to Frames at Grids 1,6

PROJECT:	ABC BUILDING 2 SHREDDER
LOCATION:	WHATCOM COUNTY, WA
CLIENT:	TRC
ENGR:	BAH
JOB #:	20004
DATE:	10/4/2023



**ALPINE**  
ENGINEERING, LLC

Wind & Seismic Uplift Calculations:

Grid	PEMB		UPLIFT		ASD UPLIFT		LRFD UPLIFT		Down +	lateral	
	D+Coll	E	W	SEIS	WIND	SEIS	WIND				
1	A	1.7	1.3	-9.4	39.3	31.2	59.6	-7.9	OK	31.2	7.39
2*	A	9.7	1	-37	44.4	8.4	67.1	-28.3	OK	8.4	40.61

Conc. Unit Weight	145 lb/cf
Fdn. Trib Length	40 ft
Fdn. Depth	36 in
Fdn. Width	33 in
Slab Trib. Area	250 sf
Slab Thickness	6 in
Total Trib. Fdn. Weight =	66.0 kips

2\* Corresponds to Frames at Grids 2,3,4,5

1\* Corresponds to Frames at Grids 1,6

Hairpin Tension Calculations:

fy hairpin =	60 ksi	Area Req'd =	0.752 in <sup>2</sup>	USE:	(2)#5 Hairpins
Max Horiz. Force	40.61 kip				





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Address:			
Phone:			
E-mail:			

### 1. Project information

Customer company:  
Customer contact name:  
Customer e-mail:  
Comment:

Project description:  
Location:  
Fastening description:

### 2. Input Data & Anchor Parameters

#### General

Design method: ACI 318-14  
Units: Imperial units

#### Anchor Information:

Anchor type: Cast-in-place  
Material: AB\_H  
Diameter (inch): 0.750  
Effective Embedment depth,  $h_{ef}$  (inch): 24.000  
Anchor category: -  
Anchor ductility: Yes  
 $h_{min}$  (inch): 26.25  
 $C_{min}$  (inch): 1.63  
 $S_{min}$  (inch): 3.00

#### Base Material

Concrete: Normal-weight  
Concrete thickness,  $h$  (inch): 36.00  
State: Cracked  
Compressive strength,  $f'_c$  (psi): 3000  
 $\Psi_{c,v}$ : 1.0  
Reinforcement condition: B tension, B shear  
Supplemental edge reinforcement: Not applicable  
Reinforcement provided at corners: No  
Ignore concrete breakout in tension: No  
Ignore concrete breakout in shear: No  
Ignore 6do requirement: Yes  
Build-up grout pad: No

#### Base Plate

Length x Width x Thickness (inch): 10.50 x 6.00 x 0.38

#### Recommended Anchor

Anchor Name: PAB Pre-Assembled Anchor Bolt - PAB6H (3/4"Ø)



Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.



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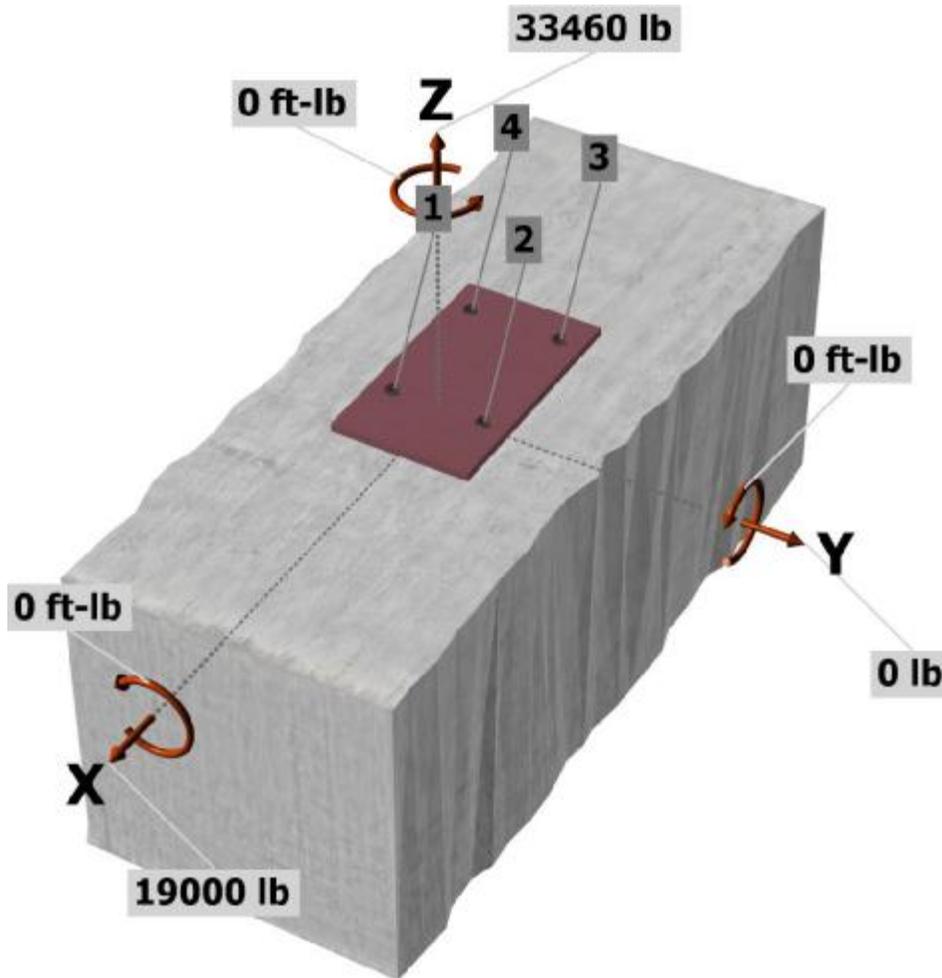
**Load and Geometry**

Load factor source: ACI 318 Section 5.3  
 Load combination: not set  
 Seismic design: No  
 Anchors subjected to sustained tension: Not applicable  
 Apply entire shear load at front row: No  
 Anchors only resisting wind and/or seismic loads: No

Strength level loads:

$N_{ua}$  [lb]: 33460  
 $V_{uax}$  [lb]: 19000  
 $V_{uay}$  [lb]: 0  
 $M_{ux}$  [ft-lb]: 0  
 $M_{uy}$  [ft-lb]: 0  
 $M_{uz}$  [ft-lb]: 0

<Figure 1>



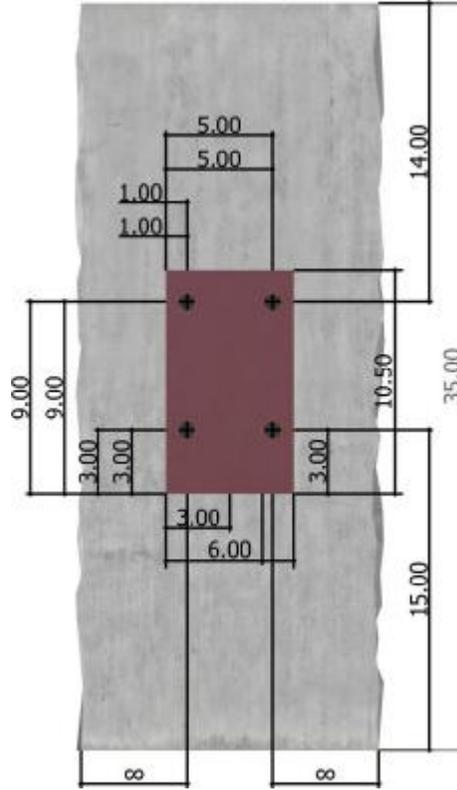
Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.



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<Figure 2>





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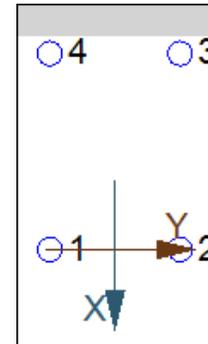
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### 3. Resulting Anchor Forces

Anchor	Tension load, $N_{ua}$ (lb)	Shear load x, $V_{uax}$ (lb)	Shear load y, $V_{uay}$ (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	16507.3	4750.0	0.0	4750.0
2	16507.3	4750.0	0.0	4750.0
3	1355.5	4750.0	0.0	4750.0
4	1355.5	4750.0	0.0	4750.0
Sum	35725.7	19000.0	0.0	19000.0

Maximum concrete compression strain (%): 0.18  
Maximum concrete compression stress (psi): 784  
Resultant tension force (lb): 35726  
Resultant compression force (lb): 2266  
Eccentricity of resultant tension forces in x-axis,  $e'_{Nx}$  (inch): 0.00  
Eccentricity of resultant tension forces in y-axis,  $e'_{Ny}$  (inch): 2.54  
Eccentricity of resultant shear forces in x-axis,  $e'_{Vx}$  (inch): 0.00  
Eccentricity of resultant shear forces in y-axis,  $e'_{Vy}$  (inch): 0.00

<Figure 3>



### 4. Steel Strength of Anchor in Tension (Sec. 17.4.1)

$N_{sa}$ (lb)	$\phi$	$\phi N_{sa}$ (lb)
40080	0.75	30060

### 5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.4.2)

$$N_b = 16\lambda_a \sqrt{f_c} h_{ef}^{5/3} \text{ (Eq. 17.4.2.2b)}$$

$\lambda_a$	$f_c$ (psi)	$h_{ef}$ (in)	$N_b$ (lb)
1.00	3000	24.000	174998

$$\phi N_{cbg} = \phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.3.1 \& Eq. 17.4.2.1b)}$$

$A_{Nc}$ (in <sup>2</sup> )	$A_{Nco}$ (in <sup>2</sup> )	$c_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	$N_b$ (lb)	$\phi$	$\phi N_{cbg}$ (lb)
2738.75	5184.00	14.00	0.934	0.817	1.00	1.000	174998	0.70	49363

### 6. Pullout Strength of Anchor in Tension (Sec. 17.4.3)

$$\phi N_{pn} = \phi \Psi_{c,P} N_p = \phi \Psi_{c,P} 8 A_{brg} f_c \text{ (Sec. 17.3.1, Eq. 17.4.3.1 \& 17.4.3.4)}$$

$\Psi_{c,P}$	$A_{brg}$ (in <sup>2</sup> )	$f_c$ (psi)	$\phi$	$\phi N_{pn}$ (lb)
1.0	3.53	3000	0.70	59371

Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.



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### 8. Steel Strength of Anchor in Shear (Sec. 17.5.1)

$V_{sa}$ (lb)	$\phi_{grout}$	$\phi$	$\phi_{grout}\phi V_{sa}$ (lb)
24050	1.0	0.65	15633

### 9. Concrete Breakout Strength of Anchor in Shear (Sec. 17.5.2)

Shear perpendicular to edge in x-direction:

$$V_{bx} = \min[7(l_e/d_a)^{0.2}\sqrt{d_a}\lambda_a\sqrt{f'_c}c_{a1}^{1.5}; 9\lambda_a\sqrt{f'_c}c_{a1}^{1.5}] \text{ (Eq. 17.5.2.2a \& Eq. 17.5.2.2b)}$$

$l_e$ (in)	$d_a$ (in)	$\lambda_a$	$f'_c$ (psi)	$c_{a1}$ (in)	$V_{bx}$ (lb)
6.00	0.750	1.00	3000	21.00	47439

$$\phi V_{cbgx} = \phi (A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{bx} \text{ (Sec. 17.3.1 \& Eq. 17.5.2.1b)}$$

$A_{Vc}$ (in <sup>2</sup> )	$A_{Vco}$ (in <sup>2</sup> )	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	$V_{bx}$ (lb)	$\phi$	$\phi V_{cbgx}$ (lb)
2110.50	1984.50	1.000	1.000	1.000	1.000	47439	0.70	35315

### 10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.5.3)

$$\phi V_{cbpg} = \phi k_{cp} N_{cbg} = \phi k_{cp} (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.3.1 \& Eq. 17.5.3.1b)}$$

$k_{cp}$	$A_{Nc}$ (in <sup>2</sup> )	$A_{Nco}$ (in <sup>2</sup> )	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	$N_b$ (lb)	$\phi$	$\phi V_{cbpg}$ (lb)
2.0	2738.75	5184.00	1.000	0.817	1.000	1.000	174998	0.70	105704

## 11. Results

### Interaction of Tensile and Shear Forces (Sec. R17.6)

Tension	Factored Load, $N_{ua}$ (lb)	Design Strength, $\phi N_n$ (lb)	Ratio	Status	
Steel	16507	30060	0.55	Pass	
<b>Concrete breakout</b>	<b>35726</b>	<b>49363</b>	<b>0.72</b>	<b>Pass (Governs)</b>	
Pullout	16507	59371	0.28	Pass	
Shear	Factored Load, $V_{ua}$ (lb)	Design Strength, $\phi V_n$ (lb)	Ratio	Status	
Steel	4750	15633	0.30	Pass	
<b>T Concrete breakout x+</b>	<b>19000</b>	<b>35315</b>	<b>0.54</b>	<b>Pass (Governs)</b>	
Pryout	19000	105704	0.18	Pass	
Interaction check	$(N_{ua}/\phi N_{ua})^{5/3}$	$(V_{ua}/\phi V_{ua})^{5/3}$	Combined Ratio	Permissible	Status
Sec. R17.6	0.58	0.36	93.9%	1.0	Pass

**PAB6H (3/4"Ø) with hef = 24.000 inch meets the selected design criteria.**

### 12. Warnings

- Minimum spacing and edge distance requirement of 6da per ACI 318 Sections 17.7.1 and 17.7.2 for torqued cast-in-place anchor is waived per designer option.

- Designer must exercise own judgement to determine if this design is suitable.

Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

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