

North Maintenance Facility (SNMF) City of Shoreline



Preliminary SD Supplemental Report



TCF Project No. 2015-016

January 16, 2017

ACKNOWLEDGEMENTS

OVERVIEW

TCF wishes to extend its gratitude to the many individuals who provided time and insight to the Preliminary SD work.

Name	Title	Representing
Owner		
Randy Witt	Public Works Director	City of Shoreline
Lance Newkirk	Operations Manager	City of Shoreline
Noel Hupprich	Capital Project Manager	City of Shoreline
Juniper Nammi	Associate Planner	City of Shoreline
Dan Johnson	Central Services Manager	City of Shoreline
Katherine Moriarty	IT Manager	City of Shoreline
Study Team		
Randy Cook, AIA	Managing Principal	TCF Architecture
Mark Hurley, AIA	Project Architect	TCF Architecture
Darrel Smith	Civil Engineer	Perteet
Dustin Dekoekkoek	Civil Engineer	Perteet
Jason Walker		Perteet
Chuck Heaton	Electrical Engineer	BCE Engineers
Chris Caffee	Mechanical Engineer	BCE Engineers
Jeff Hardwick	Mechanical Engineer	BCE Engineers
Dennis Stettler	Geotech	Terracon
Drew McEachern	Structural Engineer	AHBL



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1 – EXECUTIVE SUMMARY REPORT

SCOPE OVERVIEW

TCF Architecture and its consulting team completed the full scope outlined in the original Phase 1 - Predesign proposal, with additional fee remaining. The Predesign work exposed several high risk or high uncertainty items including storm water management system design, retaining wall system design, possible increased wetland setbacks, and soil contamination remediation. See the Draft Predesign report for additional information. TCF and the City of Shoreline agreed to use the remaining Predesign fee to continue exploring high risk items and to further develop the architectural design of the buildings to provide a more detailed preliminary Schematic Design project estimate for use in establishing the Maximum Allowable Construction Cost (MACC) budget for the Project.

APPROACH

ARCHITECTURAL (TCF ARCHITECTURE)

Building Development: Expanding on work initiated in the Predesign Phase, the architecture of each building was further developed. Building massing, heights, and materials and finishes are suggested in the Predesign architectural narrative and conceptual renderings. The final design concept and materiality have not yet been thoroughly reviewed or approved by the City and will be used as the basis for estimating and budget-setting.

Cost Estimate Information: The building information was provided to the project's cost estimator in order to determine a more detailed estimate for architectural elements.



Concept C – Rendering and design used for budgeting purposes

STRUCTURAL ENGINEERING (AHBL)

Building Development: Expanding on work initiated in the Predesign Phase, structural framing and foundation plans for each building were developed. Updated soils information provided by the Geotechnical Engineer informed over excavation (see civil) and foundation sizing requirements.

Retaining Wall Development: As discovered in the initial Predesign phase, the site requires retaining walls along several edges of the site ranging from 3' - 20'+ in order to best utilize the site available and fit the recommended program. AHBL provided retaining wall preliminary designs, including concrete cantilever wall up to 4' above grade, a concrete cantilevered wall with increased footings from 4'-8' above grade, and a soldier pile wall for walls over 8' above grade. All retaining wall options are without tie back anchors, adding these will potentially reduce cost, but it will require coordination with WSDOT and the use of the right-of-way along Ballinger Way (SR 104).

Cost Estimate Information: Building structural layouts and retaining wall information were provided to the project's cost estimator in order to determine a more detailed estimate of structural elements.

MECHANICAL & ELECTRICAL ENGINEERING (BCE ENGINEERS)

Systems Development: The Mechanical and Electrical engineers met with City representatives to discuss mechanical, electrical, plumbing, security and communication systems to confirm design approach and understand the extent of systems to meet the city's project goals.

Cost Estimate Information: With the information collected from the meeting with the City, BCE provided an estimate for these systems to the project's cost estimator for inclusion into the overall project estimate.

CIVIL ENGINEERING (PERTEET)

Expanding on work initiated in the Predesign Phase, Perteet further developed the grading and stormwater pre-design site concepts and updated the cost estimate for these portions of the design. There were some minor modifications to other aspects of the civil design, but the majority of the changes were to the stormwater and grading costs.

Stormwater / Grading Development: Information obtained from the Geotechnical Engineer, as well as the City's consultant on the 25th Avenue NE Flood Reduction project that helped Perteet further develop the stormwater and grading costs. The Geotechnical Engineer was able to perform additional borings on the site and provided information pertaining to



approximate groundwater elevation and the condition of the soil underlying the site (see below), resulting in added dewatering costs and increased costs due to a greater estimated quantity of excavation.

The 25th Avenue NE Flood Reduction project team provided the likely future 2-year storm event water surface elevation of 210.3 as well as the likely future invert elevation of 208.7 just downstream of the North Maintenance Facility site. Preliminary stormwater modeling was performed to size two separate detention vaults on the site as well as two water quality (stormfilter) vaults downstream of the detention vaults. Since the only water surface elevation provided was from the 2-year event, the preliminary layout and elevation of the stormwater system was set such that flow during the 2-year event would not back up in to the two water quality vaults. As designs for both the 25th Avenue NE Flood Reduction project and the North Maintenance Facility progress, continued coordination will be required to make sure the stormwater system on the North Maintenance Facility site function properly during more intense storm events such as the 25 and 100-year event.

Stream / Wetland Buffer: After further discussion with the City of Shoreline planning department, it has been determined, based on the City's Code, that the wetland buffer ends at the existing pavement edge. Therefore, no wetland mitigation is required as long as the project work limits stay within the site boundaries along the wetland edge

GEOTECHNICAL ENGINEERING (TERRACON)

Terracon provided additional subsurface explorations, analysis and structure-specific recommendations for buildings and retaining structures. The updated information is reflected in the updated designs and cost estimate. A summary of the findings are below.

Soil Findings:

1. Temporary cut slopes for construction of a wall along SR 104 portion of the site have the potential to undermine the existing gabion wall or trigger slope instability in the WSDOT right-of-way. Terracon recommends significantly limiting the depth and extent of any temporary excavations for retaining wall construction at the toe of this existing steep slope in order to limit the potential for slope instability on the WSDOT right-of-way. It is Terracon's opinion that the soil is not well suited for soil nails. A cantilever soldier pile wall for cuts up to a maximum height of about 10 feet or so, and a soldier pile wall is recommended with permanent tieback anchors for cuts greater than about 10 feet.
2. At two test pit locations, some soil with a noticeable hydrocarbon odor was detected. Some of the test pits disclosed pieces of metal, wood, plastic, asphalt, organic material, etc. mixed in with the soil fill. Because of the highly variable and undocumented nature of the fill, it is recommended that the buildings not be supported directly on the existing fill.

Ground Improvement at Buildings:

There are three basic approaches to providing a good subgrade for foundation and floor slab support in the building areas:

1. Overexcavate and remove the existing fill and highly organic soil and replace the removed soil with compacted structural fill;
2. Implement some type of ground improvement such as rammed aggregate piers, geopiers, etc. that effectively improves the poor soil and helps transfer the building loads down to more competent soil layers at depth; or
3. Provide pile support for the building and slab.

Installation of ground improvement such as rammed aggregate piers, geopiers, or similar contractor-designed ground improvement techniques could be implemented within the building footprints for support of both the building and floor slabs. It is expected that this alternative will be more economical than overexcavation and removal of the existing fill and backfilling with compacted structural fill given the depth involved and the presence of groundwater in the overexcavation.

Ground Improvement at Pavement:

For planning purposes, a minimum one-foot thickness of compacted granular fill as subbase beneath the pavement section is assumed. In areas of fill this could be satisfied by the placement and compaction of good quality fill. In cut areas, it may require cutting an additional foot of material in order to accommodate the suggested subbase layer. During construction it is also likely that there may be localized areas of poor subgrade that could require overexcavation and removal.

Differential settlement resulting from consolidation of the poor soil at the depth that is not removed has the potential to be more noticeable in terms of cracking and distress of the rigid PCC pavement. This presents a cost / risk / performance issue that needs to be considered by the design team and the City. Post-construction differential settlement of paved areas can be reduced by delaying the time between fill placement and paving to allow a portion of the settlement to occur prior to paving. The integrity of a PCC pavement section can be improved by thickening the PCC section and adding additional reinforcement and placing a thicker section of base course material below the PCC.

Use of Cut Soil:

Only very limited areas of the site contain cut soil that would be suitable for use as structural fill under most conditions. The majority of the soil to be cut is silty sand. During wet weather construction it would not be practical to use this silty material because of its sensitivity to moisture. During dry weather, the silty sand could potentially be useable for use as structural fill on the site provided it is at the proper moisture content, can be effectively segregated from the unsuitable soil, and can be placed and properly compacted. Given the potential difficulty and uncertainty with the reusing the on-site soil for structural fill, it is recommended that the cut soil be removed from the site for preliminary estimating purposes

COST ESTIMATING (THE ROBINSON COMPANY)

The Robinson Company provided cost estimating services for Preliminary Schematic Level design documentation to establish overall cost budgets for all site and building elements (based on public works bidding and prevailing wage process), estimated off-site costs, FF&E (fixtures, furnishings & equipment), soft costs (sales tax, professional services, permits, etc.), construction contingencies, and escalation factors. Cost estimates for civil systems, mechanical, plumbing, fire protection and electrical systems and landscaping were provided to The Robinson Company by the consultants for incorporation into the total project estimate.

PROJECT ECONOMICS

Preliminary schematic design level cost estimates were developed for Alternative B.1 and Alternative B, providing a budgetary financial baseline for use in decision-making. The budgetary estimates are summarized below in tables 1 and 2. Escalation is included in the costs through July 2017. Add escalation at minimum 3-4% per year beyond July 2017. See additional break down of cost in section 2a of this report.

Table 1 – Alternative B.1 Budgetary Cost Estimate (Includes additional south parcel)

Description	Estimate	Notes
Site Development	\$7,376,647	Retaining wall, grading, site utilities, paving and street improvements, etc
Building A	\$4,771,519	Admin/Crew/Shops
Building B	\$827,901	Vehicle and materials storage
Building C	\$3,224,893	Vehicle and materials storage, fuel and wash
Building D	\$363,436	Bulk materials storage
Deicer Tank Equip	\$15,000	Equipment for deicer operation
Cost Reduction	\$532,059	Geopiers in lieu of overexcavation at buildings
Subtotal Direct Costs	\$16,047,337	MACC (Construction costs)
Soft Costs Budget	\$6,579,408	Sales tax, professional services, construction contingency, permits, etc
Subtotal with Soft Costs	\$22,626,746	
Land acquisition	\$650,000	Preliminary budget only
Furnishings and Technology	\$90,000	Preliminary budget only
B.1 Budgetary Estimate	\$23,371,746	

Table 1 – Alternative B Budgetary Cost Estimate (Does not include acquisition of the south parcel)

Description	Estimate	Notes
Site Development	\$7,076,647	Retaining wall, grading, site utilities, paving and street improvements, etc
Building A	\$4,771,519	Admin/Crew/Shops
Building B	\$531,492	Vehicle and materials storage, reduced square footage
Building C	\$3,224,893	Vehicle and materials storage, fuel and wash
Building D	\$363,436	Bulk materials storage
Deicer Tank Equip	\$15,000	Equipment for deicer operation
Cost Reduction	\$532,059	Geopiers in lieu of overexcavation at buildings
Subtotal Direct Costs	\$15,450,929	MACC (Construction costs)
Soft Costs Budget	\$6,334,881	Sales tax, professional services, construction contingency, permits, etc
Subtotal with Soft Costs	\$21,785,809	
Land acquisition	\$0	
Furnishings and Technology	\$90,000	Preliminary budget only
B Budgetary Estimate	\$21,880,809	

2A – PROJECT ECONOMICS

OVERVIEW

This section includes preliminary SD cost estimate summaries and detailed estimate sheets.

Project Scope Description	Qty	Unit	Unit Cost	Estimate	Remarks
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Estimates are developed based on the Pre-Schematic Design estimate prepared by The Robinson Company, dated July 25th, 2016. The estimate is inclusive of mobilization, general conditions and 4%/Year escalation to July 2017.

A1 - SITE WORK

Site Work (including 25th ave street improvement)	3.16	AC	\$2,258,433	7,136,647	
Ballinger Way Street Improvement	1.00	LS	\$150,000	\$150,000	Confirm with planning what extent will be required
Soil Remediation Allowance	1.00	LS	\$90,000	\$90,000	
Total Estimated Site Costs				\$7,376,647	

A2 - BUILDINGS

Building A - Admin/Crew/Shops	15,018	SF	\$317.72	\$4,771,519	Two-story wood-framed building
Building B - Covered Storage	8,100	SF	\$102.21	\$827,901	Pre-engineered metal, shed roof with walls on 3 sides
Building C - Enclosed/Canopy Storage, Fuel/Wash	20,683	SF	\$155.92	\$3,224,893	Pre-engineered metal bldg system, enclosed, heated,
Building D - Covered Storage/Decant	4,300	SF	\$84.52	\$363,436	Pre-engineered metal, shed roof with walls on 3 sides
Deicer Tank & Pump Equipment	1	LS	\$15,000.00	\$15,000	
Total Estimated Building Costs	48,102	SF	\$191	\$9,202,749	

Subtotal Site & Building MACC (A1+A2)				\$16,579,397	
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A3 - POSSIBLE COST REDUCTION STRATEGIES

Geopiers in lieu of Overexcavation at Bldg's	1	LS	\$532,059	\$532,059	
Total Estimated Scope/Cost Reductions				\$532,059	

Adjusted Site & Building MACC (A1+A2-A3)				\$16,047,338	
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B - SOFT COSTS ON MACC

Washington State Sales Tax			9.50%	\$1,524,497	
Professional Services			14.00%	\$2,246,627	Budgetary only
Construction Management			5.00%	\$802,367	
Permitting / Misc Fees			1.50%	\$240,710	Confirm
Special Testing Services			1.00%	\$160,473	
Construction Contingency			10.00%	\$1,604,734	Unforeseen Conditions / Additional Scope
Total Estimated Soft Costs on MACC			41.00%	\$6,579,408	

Total Estimate (A1+A2+B)				\$22,626,746	
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C - FURNISHINGS FIXTURES AND EQUIPMENT (FF&E) OWNER-PROVIDED

Office Furnishings	1	LS	\$45,000	\$45,000	
Technology Systems by Owner (Telecomm/data)	1	LS	\$50,000	\$50,000	
Total Estimated FF&E Cost Budget				\$95,000	

Subtotal MACC, Soft Costs and FF&E (A1+A2+B+C)				\$22,721,746	
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D - PROPERTY ACQUISITION

Purchase South Parcel	1	LS	\$650,000	\$650,000	
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GRAND TOTAL PROJECT COST BUDGET				\$23,371,746	
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Project Scope Description	Qty	Unit	Unit Cost	Estimate	Remarks
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Estimates are developed based on the Pre-Schematic Design estimate prepared by The Robinson Company, dated July 25th, 2016. The estimate is inclusive of mobilization, general conditions and 4%/Year escalation to July 2017.

A1 - SITE WORK

Site Work (including 25th ave street improvement)	3.16	AC	\$2,258,433	7,136,647	
Ballinger Way Street Improvement	1.00	LS	\$150,000	\$150,000	Confirm with planning what extent will be required
Soil Remediation Allowance	1.00	LS	\$90,000	\$90,000	
Total Estimated Site Costs				\$7,376,647	

A2 - BUILDINGS

Building A - Admin/Crew/Shops	15,018	SF	\$317.72	\$4,771,519	Two-story wood-framed building
Building B - Covered Storage	8,100	SF	\$102.21	\$827,901	Pre-engineered metal, shed roof with walls on 3 sides
Building C - Enclosed/Canopy Storage, Fuel/Wash	20,683	SF	\$155.92	\$3,224,893	Pre-engineered metal bldg system, enclosed, heated,
Building D - Covered Storage/Decant	4,300	SF	\$84.52	\$363,436	Pre-engineered metal, shed roof with walls on 3 sides
Deicer Tank & Pump Equipment	1	LS	\$15,000.00	\$15,000	
Total Estimated Building Costs	48,102	SF	\$191	\$9,202,749	

Subtotal Site & Building MACC (A1+A2)				\$16,579,397	
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A3 - POSSIBLE COST REDUCTION STRATEGIES

Geopiers in lieu of Overexcavation at Bldg's	1	LS	\$532,059	\$532,059	
Site Alternative B - Civil Cost Changes	1	LS	\$300,000	\$300,000	
Site Alternative B - Bldg B Cost Changes	2,900	SF	\$102.21	\$296,409	Reduction of 2,900 SF
Total Estimated Scope/Cost Reductions				\$1,128,468	

Adjusted Site & Building MACC (A1+A2-A3)				\$15,450,929	
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B - SOFT COSTS ON MACC

Washington State Sales Tax			9.50%	\$1,467,838	
Professional Services			14.00%	\$2,163,130	Budgetary only
Construction Management			5.00%	\$772,546	
Permitting / Misc Fees			1.50%	\$231,764	Confirm
Special Testing Services			1.00%	\$154,509	
Construction Contingency			10.00%	\$1,545,093	Unforeseen Conditions / Additional Scope
Total Estimated Soft Costs on MACC			41.00%	\$6,334,881	

Total Estimate (A1+A2+B)				\$21,785,809	
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C - FURNISHINGS FIXTURES AND EQUIPMENT (FF&E) OWNER-PROVIDED

Office Furnishings	1	LS	\$45,000	\$45,000	
Technology Systems by Owner (Telecomm/data)	1	LS	\$50,000	\$50,000	
Total Estimated FF&E Cost Budget				\$95,000	

Subtotal MACC, Soft Costs and FF&E (A1+A2+B+C)				\$21,880,809	
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D - PROPERTY ACQUISITION

Purchase South Parcel	1	LS		\$0	
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GRAND TOTAL PROJECT COST BUDGET				\$21,880,809	
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**CITY OF SHORELINE
NORTH MAINTENANCE FACILITY
PRE-SCHEMATIC ESTIMATE
JULY 25, 2016 Rev. 8/8/2016**

Building A	4,771,465
Building B	827,890
Building C	3,224,840
Building D	363,456
Site Development	7,136,647
Total Construction/MACC	\$ 16,324,298

Alternates:

Geopiers in lieu of Over-excavation and Dewatering	\$ (532,059)
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Exclusions:

Preconstruction Services/Fees
Construction Management/District Mgmt Fees
Project Development/Soft Costs
Asbestos Abatement
Alternative Contract Premiums (Add 10% for GC/CM)



THE
ROBINSON
COMPANY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - BUILDING A
LOCATION: SHORELINE, WA
BLDG SF: 15,018
ESTIMATE: 2016115
EST TYPE:

DIVISION	DESCRIPTION		TOTAL	\$/SF
A10	FOUNDATIONS		158,387	10.55
B10	SUPERSTRUCTURE		320,580	21.35
B20	EXTERIOR CLOSURE		707,527	47.11
B30	ROOFING		268,750	17.90
C10	INTERIOR CONSTRUCTION		351,382	23.40
C20	STAIRS		28,295	1.88
C30	INTERIOR FINISHES		204,028	13.59
D10	CONVEYING SYSTEMS		110,000	7.32
D20	PLUMBING		159,770	10.64
D30	HVAC		581,550	38.72
D40	FIRE PROTECTION		105,613	7.03
D50	ELECTRICAL		545,100	36.30
E10	EQUIPMENT		98,697	6.57
E20	FURNISHINGS		16,725	1.11
Z10	GENERAL REQUIREMENTS			
ESTIMATE SUBTOTAL			3,656,403	243.47
	DESIGN CONTINGENCY @	10.00%	365,640	
	SUBTOTAL		4,022,043	
	GENERAL CONDITIONS @	6.00%	241,323	
	SUBTOTAL		4,263,366	
	GENERAL CONTRACTOR'S OH & P @	7.50%	319,752	
	SUBTOTAL		4,583,118	
	ESCALATION TO 25-JUL-17 (4.00%/YR) @	4.11%	188,347	
TOTAL			4,771,465	317.72

EXCLUSIONS:
SEE ESTIMATE SUMMARY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - BUILDING A
LOCATION: SHORELINE, WA
BLDG SF: 15,018
ESTIMATE: 2016115
EST TYPE:

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
A10	FOUNDATIONS					
02315	OVER-EX AND STRUCT FILL		CY	45.00		
03000	ELEVATOR PIT	1	LS	10,000	10,000	
03000	FOOTING DRAINS	397	LF	15.00	5,955	
03300	COLUMN FOUNDATIONS	32	CY	475	15,200	
03300	CONTINUOUS FOUNDATIONS	39	CY	550	21,450	
03300	STEM WALL	81	CY	675	54,675	
03310	4" SLAB ON GRADE W/REBAR	2,057	SF	5.75	11,828	
03310	6" SLAB ON GRADE W/REBAR	5,378	SF	6.75	36,302	
07210	INSULATION AT SLAB ON GRADE	1,191	SF	2.50	2,978	
A10	FOUNDATIONS	DIVISION TOTAL			158,387	10.55
B10	SUPERSTRUCTURE					
03000	CONCRETE TOPPING SLAB	6,156	SF	3.65	22,469	
05120	C12 FRAMING AT CANOPY	3,978	LBS	2.30	9,149	
05120	STEEL COLUMNS @ FLOOR	15,234	LBS	2.30	35,038	
05120	STEEL COLUMNS @ ROOF	2,844	LBS	2.30	6,541	
05120	STRUCTURAL STEEL BEAMS @ FLOOR	9,569	LBS	2.30	22,009	
05120	STRUCTURAL STEEL BEAMS @ ROOF	120	LBS	2.30	276	
05140	MISC STEEL/WOOD TO WOOD CONNECTIONS @ FLOOR	7,195	LBS	2.75	19,786	
06000	MISC BLOCKING/FRAMING @ FLOOR	7,435	SFA	1.50	11,153	
06000	MISC BLOCKING/FRAMING @ ROOF	12,236	SFA	1.50	18,354	
06000	MISC STEEL/WOOD TO WOOD CONNECTIONS @ ROOF	14,030	LBS	2.75	38,583	
06150	2X DECKING AT CANOPIES	736	SF	8.50	6,256	
06160	PLYWOOD FLOOR SHEATHING	7,435	SF	2.75	20,446	
06160	PLYWOOD ROOF SHEATHING	12,236	SF	2.75	33,649	
06170	11-7/8" RED I JOISTS @ 16" OC-FLOOR	544	SF	4.50	2,448	
06170	11-7/8" RED I JOISTS @ 16" OC-ROOF	184	SF	4.50	828	
06170	14"RED I JOISTS	1,783	SF	5.50	9,807	
06170	16"RED I JOISTS	1,308	SF	5.50	7,194	
06170	18" RED I JOISTS	291	SF	6.50	1,892	
06170	18" RED I JOISTS	1,335	SF	6.50	8,678	
06170	20" RED I JOISTS	289	SF	9.10	2,630	
06170	24" RED I JOISTS	1,131	SF	9.10	10,292	
06170	2X JOIST FRAMING - ENTRY CANOPY	204	SF	8.00	1,632	
06180	GLU-LAM BEAMS @ FLOOR	6,724	BF	4.25	28,577	
06180	GLU-LAM BEAMS @ ROOF	681	BF	4.25	2,894	
B10	SUPERSTRUCTURE	DIVISION TOTAL			320,580	21.35
B20	EXTERIOR CLOSURE					
01100	GROSS EXT AREA	13,400	SF			
04210	CMU @ GREENSCREEN	536	SF	20.00	10,720	
04210	CMU MASONRY VENEER	2,431	SF	22.00	53,482	
05000	GREEN SCREEN TRELLIS AND PLANTING	536	SF	30.00	16,080	
06000	FIBER CEMENT SIDING	1,836	SF	15.00	27,540	
06000	FIBER CEMENT SOFFIT BOARD	1,533	SF	15.00	22,995	

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
06100	MISC ROUGH CARPENTRY/HEADERS @ EXT OPENINGS	13,400	SF	4.00	53,600	
06120	EXT FRAMED WALL SYSTEM LVL-FRAME/SHEET/INSUL/WB	9,511	SF	19.95	189,744	
06120	EXTERIOR FRAMED WALL SYSTEM 2X	2,138	SF	17.45	37,308	
07410	METAL SIDING TYPE 1 & 2 W/HAT CHANNEL	6,232	SF	18.00	112,176	
08110	EXT. H.M. DOOR/FRM/HDWRE	8	LVS	2,000	16,000	
08360	GLAZED OVERHEAD DOORS	575	SF	50.00	28,750	
08400	WINDOWS/STOREFRONT	1,293	SF	62.00	80,166	
08410	CURTAIN WALL SYSTEM	640	SF	90.00	57,600	
08520	PREMIUM OPERABLE VENT	273	SF	5.00	1,365	
B20	EXTERIOR CLOSURE	DIVISION TOTAL			707,527	47.11
B30	ROOFING					
07330	METAL ROOFING/INSUL/SHEETMETAL	10,898	SF	23.00	250,654	
07540	MEMBRANE ROOF/VB/INSUL/SHEETMETAL	602	SF	16.00	9,632	
07540	MEMBRANE ROOF/VB/INSUL/SHEETMETAL @ CANOPIES	736	SF	11.50	8,464	
B30	ROOFING	DIVISION TOTAL			268,750	17.90
C10	INTERIOR CONSTRUCTION					
03100	INTERIOR PARTITION WALLS	17,458	SF	12.35	215,606	
06160	INTERIOR SHEAR WALL PLYWOOD	2,497	SF	2.50	6,243	
08000	INTERIOR DOORS/FRAME/HARDWARE	28	EA	1,500	42,000	
08360	INTERIOR OVERHEAD DOOR	80	SF	45.00	3,600	
08510	INTERIOR RELITES	170	SF	50.00	8,500	
10000	FITTINGS/MISC SPECIALTIES-BASIC	15,018	SFA	3.25	48,809	
10500	LOCKERS FULL SIZE	51	OPG	275	14,025	
10500	MUD ROOM LOCKERS	36	EA	350	12,600	
C10	INTERIOR CONSTRUCTION	DIVISION TOTAL			351,382	23.40
C20	STAIRS					
05000	EXTERIOR STAIRS	1	EA	9,500	9,500	
05000	INTERIOR STAIRS	1	EA	15,000	15,000	
05520	INTERIOR RAILING	23	LF	165	3,795	
C20	STAIRS	DIVISION TOTAL			28,295	1.88
C30	INTERIOR FINISHES					
03360	CONCRETE SEALER/HARDENER	6,946	SF	2.25	15,629	
06200	FINISH CARPENTRY/TRIM	15,018	SFA	0.55	8,260	
06200	FINISHED CARPENTRY	15,018	SFA	0.75	11,264	
06200	MDO WALL PANEL	3,357	SF	3.50	11,750	
06200	PLYWOOD WALL PANEL	1,904	SF	2.50	4,760	
09000	INTERIOR PAINTING	15,018	SFA	2.25	33,791	
09250	GWB CEILINGS - LOCKERS/RESTROMS	1,101	SF	7.50	8,258	
09300	CERAMIC TILE FLOOR/BASE	1,101	SF	15.00	16,515	
09300	CERAMIC TILE WALLS-7"	1,995	SF	15.00	29,925	
09500	ACT CEILINGS	5,110	SF	3.75	19,163	
09600	BASE RUBBER/COVE-ALLOWANCE	15,018	SFA	0.45	6,758	
09600	POLISHED CONCRETE	1,542	SF	6.50	10,023	
09650	LVT FLOORING	3,504	SF	5.50	19,272	
09680	CARPET	1,925	SF	4.50	8,663	
C30	INTERIOR FINISHES	DIVISION TOTAL			204,028	13.59

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
D10	CONVEYING SYSTEMS					
14000	ELEVATOR 2-STOP (KONE)	1	LS	110,000	110,000	
D10	CONVEYING SYSTEMS			DIVISION TOTAL	110,000	7.32
D20	PLUMBING					
15000	PLUMBING	1	LS	159,770	159,770	
			BCE			
D20	PLUMBING			DIVISION TOTAL	159,770	10.64
D30	HVAC					
15500	HVAC/EXHAUST	1	LS	581,550	581,550	
			BCE			
D30	HVAC			DIVISION TOTAL	581,550	38.72
D40	FIRE PROTECTION					
15300	FIRE PROTECTION	1	LS	105,613	105,613	
			BCE			
D40	FIRE PROTECTION			DIVISION TOTAL	105,613	7.03
D50	ELECTRICAL					
16000	ELECTRICAL	1	LS	545,100	545,100	
			BCE ELECT			
D50	ELECTRICAL			DIVISION TOTAL	545,100	36.30
E10	EQUIPMENT					
11000	MISC EQUIPMENT (DIV. 11)	15,018	SFA	0.50	7,509	
11010	CARPENTRY SHOP EQUIPMENT	1	LS	15,734	15,734	
			PINNACLE			
11010	FABRICATION SHOP EQUIPMENT	1	LS	21,015	21,015	
			PINNACLE			
11010	FACILITIES SHOP EQUIPMENT	1	LS	12,999	12,999	
			PINNACLE			
11010	MULTI USE BAY 1 & 2 EQUIPMENT	1	LS	21,944	21,944	
			PINNACLE			
11010	WASTE WATER SHOP EQUIPMENT	1	LS	6,931	6,931	
			PINNACLE			
12000	WINDOW COVERINGS	1,933	SFA	6.50	12,565	
E10	EQUIPMENT			DIVISION TOTAL	98,697	6.57
E20	FURNISHINGS					
06415	ISLAND CASEWORK	12	LF	400	4,800	
06415	KITCHENETTE BASE CABINETS	14	LF	225	3,150	
06415	RECEPTION COUNTER	21	LF	375	7,875	
12000	WORK COUNTER	12	LF	75.00	900	
E20	FURNISHINGS			DIVISION TOTAL	16,725	1.11

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
Z10	GENERAL REQUIREMENTS					
01000	BUILDING AREA	15,018	SF			
Z10	GENERAL REQUIREMENTS				DIVISION TOTAL	
				ESTIMATE SUBTOTAL	3,656,403	243.47



THE
ROBINSON
COMPANY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - BUILDING B
LOCATION: SHORELINE, WA
BLDG SF: 8,100
ESTIMATE: 2016115
EST TYPE:

DIVISION	DESCRIPTION		TOTAL	\$/SF
A10	FOUNDATIONS		84,647	10.45
B20	EXTERIOR CLOSURE		27,480	3.39
D50	ELECTRICAL		223,901	27.64
F10	SPECIAL CONSTRUCTION		298,389	36.84
	ESTIMATE SUBTOTAL		634,417	78.32
	DESIGN CONTINGENCY @	10.00%	63,442	
	SUBTOTAL		697,858	
	GENERAL CONDITIONS @	6.00%	41,872	
	SUBTOTAL		739,730	
	GENERAL CONTRACTOR'S OH & P @	7.50%	55,480	
	SUBTOTAL		795,210	
	ESCALATION TO 25-JUL-17 (4.00%/YR) @	4.11%	32,680	
	TOTAL		827,890	102.21

EXCLUSIONS:
SEE ESTIMATE SUMMARY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - BUILDING B
LOCATION: SHORELINE, WA
BLDG SF: 8,100
ESTIMATE: 2016115
EST TYPE:

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
A10	FOUNDATIONS					
02315	OVER-EX AND STRUCT FILL		CY	45.00		
03300	COLUMN FOUNDATIONS	19	CY	475	9,025	
03300	CONTINUOUS FOUNDATIONS/THICKENED SLAB EDGE	38	CY	550	20,900	
03310	6" SLAB ON GRADE W/REBAR	8,107	SF	6.75	54,722	
A10	FOUNDATIONS			DIVISION TOTAL	84,647	10.45
B20	EXTERIOR CLOSURE					
04210	CMU WALLS	1,374	SF	20.00	27,480	
B20	EXTERIOR CLOSURE			DIVISION TOTAL	27,480	3.39
D50	ELECTRICAL					
16000	20KW PV SYSTEM	1	LS	100,000	100,000	
	BCE ELECT					
16000	ELECTRICAL	1	LS	123,901	123,901	
	BCE ELECT					
D50	ELECTRICAL			DIVISION TOTAL	223,901	27.64
F10	SPECIAL CONSTRUCTION					
13000	MFG METAL BUILDING W/ROOF AND WALL SIDING	11,031	SF	27.05	298,389	
F10	SPECIAL CONSTRUCTION			DIVISION TOTAL	298,389	36.84
				ESTIMATE SUBTOTAL	634,417	78.32



THE
ROBINSON
COMPANY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - BUILDING C
LOCATION: SHORELINE, WA
BLDG SF: 20,683
ESTIMATE: 2016115
EST TYPE:

DIVISION	DESCRIPTION		TOTAL	\$/SF
A10	FOUNDATIONS		231,886	11.21
B10	SUPERSTRUCTURE		130,347	6.30
B20	EXTERIOR CLOSURE		266,851	12.90
B30	ROOFING			
C10	INTERIOR CONSTRUCTION		43,575	2.11
C20	STAIRS		3,500	0.17
C30	INTERIOR FINISHES		98,696	4.77
D20	PLUMBING		399,164	19.30
D30	HVAC		60,348	2.92
D40	FIRE PROTECTION		120,743	5.84
D50	ELECTRICAL		433,956	20.98
E10	EQUIPMENT		85,630	4.14
F10	SPECIAL CONSTRUCTION		596,519	28.84
ESTIMATE SUBTOTAL			2,471,215	119.48
	DESIGN CONTINGENCY @	10.00%	247,121	
	SUBTOTAL		2,718,336	
	GENERAL CONDITIONS @	6.00%	163,100	
	SUBTOTAL		2,881,436	
	GENERAL CONTRACTOR'S OH & P @	7.50%	216,108	
	SUBTOTAL		3,097,544	
	ESCALATION TO 25-JUL-17 (4.00%/YR) @	4.11%	127,296	
TOTAL			3,224,840	155.92

EXCLUSIONS:
SEE ESTIMATE SUMMARY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - BUILDING C
LOCATION: SHORELINE, WA
BLDG SF: 20,683
ESTIMATE: 2016115
EST TYPE:

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
A10	FOUNDATIONS					
02315	OVER-EX AND STRUCT FILL		CY	45.00		
03000	FOOTING DRAINS	436	LF	15.00	6,540	
03300	COLUMN FOUNDATIONS	67	CY	475	31,825	
03300	CONCRETE WALL AT STEPPED FOUNDATION	16	CY	750	12,000	
03300	CONTINUOUS FOUNDATIONS/THICKENED SLAB EDGE	71	CY	550	39,050	
03310	4" SLAB ON GRADE W/REBAR	409	SF	5.75	2,352	
03310	6" SLAB ON GRADE W/REBAR	20,274	SF	6.75	136,850	
07210	INSULATION AT SLAB ON GRADE	1,308	SF	2.50	3,270	
A10	FOUNDATIONS			DIVISION TOTAL	231,886	11.21
B10	SUPERSTRUCTURE					
05120	PORTAL FRAME - WF BEAMS/COLUMNS	8	EA	6,500	52,000	
05120	STEEL COLUMNS @ ROOF	2,497	LBS	2.50	6,243	
	5X5'S GALVANIZED					
06000	MISC BLOCKING/FRAMING @ ROOF	21,092	SFA	1.50	31,638	
06000	MISC STEEL/PLATES/ANGLES	10,546	LBS	2.75	29,002	
06160	STORAGE PLATFORM FRAMING/SHEATHING	300	SF	12.50	3,750	
06160	WASH BAY ROOF FRAMING	417	SF	18.50	7,715	
B10	SUPERSTRUCTURE			DIVISION TOTAL	130,347	6.30
B20	EXTERIOR CLOSURE					
04210	CMU MASONRY VENEER	1,276	SF	22.00	28,072	
06000	BOLLARDS	15	EA	950	14,250	
06100	MISC ROUGH CARPENTRY/HEADERS @ EXT OPENINGS	11,330	SF	4.00	45,320	
06120	EXTERIOR WALL SHEAT/INSUL/VB - GIRTS BY OTHERS	8,946	SF	4.50	40,257	
06120	EXTERIOR WALL WALL @ WASH BAY -SIDING BY MFG BLDG SUPPLIER	1,384	SF	17.05	23,597	
06120	MDO SHEATHING TO 10'	3,190	SF	4.50	14,355	
07410	METAL SIDING AND ROOFING					
	BY MFG BLDG SUPPLIER					
08110	EXT. H.M. DOOR/FRM/HDWRE	5	LVS	2,000	10,000	
08360	OVERHEAD DOORS W/GLAZING	14	EA	6,500	91,000	
B20	EXTERIOR CLOSURE			DIVISION TOTAL	266,851	12.90
B30	ROOFING					
07410	ROOFING AND SHEETMETAL BY MFG BLDG SUPPLIER					
B30	ROOFING			DIVISION TOTAL		
C10	INTERIOR CONSTRUCTION					
03100	INTERIOR PARTITION WALLS	2,140	SF	12.35	26,429	
08000	INTERIOR DOORS/FRAME/HARDWARE	2	EA	1,500	3,000	
08360	INTERIOR OVERHEAD DOOR	80	SF	45.00	3,600	

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
10000	FITTINGS/MISC SPECIALTIES-BASIC	21,092	SFA	0.50	10,546	
C10	INTERIOR CONSTRUCTION			DIVISION TOTAL	43,575	2.11
C20	STAIRS					
05000	STORAGE PLATFORM ACCESS	1	LS	3,500	3,500	
C20	STAIRS			DIVISION TOTAL	3,500	0.17
C30	INTERIOR FINISHES					
03360	CONCRETE SEALER/HARDENER	21,003	SF	2.25	47,257	
06200	FINISHED CARPENTRY	21,092	SFA	0.25	5,273	
09250	GWB CEILINGS - UNDERSIDE STORAGE PLATFORM	300	SF	7.50	2,250	
09300	CERAMIC TILE WALLS-7'	378	SF	15.00	5,670	
09300	INTERIOR PAINTING	21,092	SFA	1.75	36,911	
09310	CERAMIC TILE FLOOR/BASE	89	SF	15.00	1,335	
C30	INTERIOR FINISHES			DIVISION TOTAL	98,696	4.77
D20	PLUMBING					
15000	PLUMBING	1	LS	149,164	149,164	
			BCE			
15160	RAIN WATER COLLECTION SYSTEM	1	LS	120,000	120,000	
			BCE			
15190	FUELING SYSTEM	1	LS	130,000	130,000	
			BCE			
D20	PLUMBING			DIVISION TOTAL	399,164	19.30
D30	HVAC					
15500	HEAT/EXHAUST	1	LS	60,348	60,348	
			BCE			
D30	HVAC			DIVISION TOTAL	60,348	2.92
D40	FIRE PROTECTION					
15300	FIRE PROTECTION	1	LS	120,743	120,743	
			BCE			
D40	FIRE PROTECTION			DIVISION TOTAL	120,743	5.84
D50	ELECTRICAL					
16000	ELECTRICAL	1	LS	433,956	433,956	
			BCE ELECT			
D50	ELECTRICAL			DIVISION TOTAL	433,956	20.98
E10	EQUIPMENT					
11010	DE-ICER TANK AREA FLAMMABLE CABINET	1	LS	1,725	1,725	
			PINNACLE			
11010	HAZMAT AREA EQUIPMENT/SHELVING	1	LS	4,133	4,133	
			PINNACLE			
11010	INDUSTRIAL VACUUMS	1	LS	2,101	2,101	

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
11010	TOOL STORAGE EQUIPMENT	PINNACLE	1 LS	4,094	4,094	
11010	WASH BAY MANUAL WASH WATER RECLAIM SYSTEM	PINNACLE	1 LS	63,542	63,542	
11010	WORKING STOCK BAY EQUIPMENT	PINNACLE	1 LS	10,035	10,035	
		PINNACLE				
E10	EQUIPMENT			DIVISION TOTAL	85,630	4.14
F10	SPECIAL CONSTRUCTION					
01000	MFG METAL BLDG FRAME W/ROOFING ONLY	12,644	SF	22.75	287,651	
	INCLUDES CANOPIES					
13000	MFG METAL BUILDING W/ROOF AND WALL SIDING	11,031	SF	28.00	308,868	
F10	SPECIAL CONSTRUCTION			DIVISION TOTAL	596,519	28.84
				ESTIMATE SUBTOTAL	2,471,215	119.48



THE
ROBINSON
COMPANY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - BUILDING D
LOCATION: SHORELINE, WA
BLDG SF: 4,300
ESTIMATE: 2016115
EST TYPE:

DIVISION	DESCRIPTION		TOTAL	\$/SF
A10	FOUNDATIONS		55,415	12.89
B20	EXTERIOR CLOSURE		50,816	11.82
D50	ELECTRICAL		57,007	13.26
F10	SPECIAL CONSTRUCTION		115,281	26.81
	ESTIMATE SUBTOTAL		278,518	64.77
	DESIGN CONTINGENCY @	10.00%	27,852	
	SUBTOTAL		306,370	
	GENERAL CONDITIONS @	6.00%	18,382	
	SUBTOTAL		324,752	
	GENERAL CONTRACTOR'S OH & P @	7.50%	24,356	
	SUBTOTAL		349,109	
	ESCALATION TO 25-JUL-17 (4.00%/YR) @	4.11%	14,347	
	TOTAL		363,456	84.52

EXCLUSIONS:
SEE ESTIMATE SUMMARY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - BUILDING D
LOCATION: SHORELINE, WA
BLDG SF: 4,300
ESTIMATE: 2016115
EST TYPE:

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
A10	FOUNDATIONS					
02315	OVER-EX AND STRUCT FILL		CY	45.00		
03300	COLUMN FOUNDATIONS	14	CY	475	6,650	
03300	CONTINUOUS FOUNDATIONS/THICKENED SLAB EDGE	32	CY	550	17,600	
03310	6" SLAB ON GRADE W/REBAR	4,617	SF	6.75	31,165	
A10	FOUNDATIONS			DIVISION TOTAL	55,415	12.89
B20	EXTERIOR CLOSURE					
04210	CMU WALLS	352	SF	20.00	7,040	
04210	ECOLOGY BLOCK WALL	1,368	SF	32.00	43,776	
B20	EXTERIOR CLOSURE			DIVISION TOTAL	50,816	11.82
D50	ELECTRICAL					
16000	ELECTRICAL	1	LS	57,007	57,007	
	BCE ELECT					
D50	ELECTRICAL			DIVISION TOTAL	57,007	13.26
F10	SPECIAL CONSTRUCTION					
13000	MFG METAL BUILDING W/ROOF AND WALL SIDING	4,370	SF	26.38	115,281	
F10	SPECIAL CONSTRUCTION			DIVISION TOTAL	115,281	26.81
				ESTIMATE SUBTOTAL	278,518	64.77



THE
ROBINSON
COMPANY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - SITEWORK
LOCATION: SHORELINE, WA
BLDG SF:
ESTIMATE: 2016115
EST TYPE:

DIVISION	DESCRIPTION		TOTAL	\$/SF
A10	FOUNDATIONS		668,343	
G10	SITE PREPARATION		1,776,150	
G20	SITE IMPROVEMENTS		908,625	
G30	SITE CIVIL / MECHANICAL UTILITIES		1,266,000	
G40	SITE ELECTRICAL UTILITIES		394,000	
	ESTIMATE SUBTOTAL		5,013,118	
	DESIGN CONTINGENCY @	20.00%	1,002,624	
	SUBTOTAL		6,015,742	
	GENERAL CONDITIONS @	6.00%	360,944	
	SUBTOTAL		6,376,686	
	GENERAL CONTRACTOR'S OH & P @	7.50%	478,251	
	SUBTOTAL		6,854,938	
	ESCALATION TO 25-JUL-17 (4.00%/YR) @	4.11%	281,710	
	TOTAL		7,136,647	

EXCLUSIONS:
SEE ESTIMATE SUMMARY

PROJECT: SHORELINE NO MAINTENANCE FACILITY - SITEWORK
LOCATION: SHORELINE, WA
BLDG SF:
ESTIMATE: 2016115
EST TYPE:

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
A10	FOUNDATIONS					
02830	CONCRETE FACING ON SHORED WALLS	3,265	SF	34.00	111,010	
02830	RETAINING WALL FOOTINGS	138	CY	550	75,900	
02830	RETAINING WALLS	5,366	SF	38.00	203,908	
02830	SHORED RETAINING WALLS - LAGGING AND 20' EMBEDMENT	3,265	SF	85.00	277,525	
A10	FOUNDATIONS			DIVISION TOTAL	668,343	
G10	SITE PREPARATION					
01000	CIVIL MOBILIZATION	1	LS	95,000	95,000	
			PERTEET			
02220	SITE DEMOLITION/CLEARING	1	LS	398,750	398,750	
			PERTEET			
02300	EARTHWORK AND GRADING	1	LS	472,800	472,800	
			PERTEET			
02300	OVER-EXCAVATION BUILDING PAD AND FOOTINGS	1	LS	727,200	727,200	
			PERTEET			
02310	FINE GRADING	1	LS	52,800	52,800	
			PERTEET			
02370	EROSION CONTROL	1	LS	29,600	29,600	
			PERTEET			
G10	SITE PREPARATION			DIVISION TOTAL	1,776,150	
G20	SITE IMPROVEMENTS					
02740	25TH AVENUE IMPROVEMENTS	1	LS	63,200	63,200	
			PERTEET			
02740	ASPHALT PAVING	1	LS	64,800	64,800	
			PERTEET			
02750	CONCRETE PAVING	1	LS	556,800	556,800	
			PERTEET			
02775	PEDESTRIAN PAVING	1	LS	86,400	86,400	
			PERTEET			
02820	FENCING/TEMP GATES/MISC	1	LS	14,400	14,400	
			PERTEET			
02870	SITE FURNISHINGS/SIGNAGE	1	LS	25,000	25,000	
02900	PLANTING/LANDSCAPE/IRRIGATION	1	LS	74,825	74,825	
			BERGER			
02900	STREET FRONTAGE IMPROVEMENTS	1	LS	23,200	23,200	
			BERGER			
G20	SITE IMPROVEMENTS			DIVISION TOTAL	908,625	
G30	SITE CIVIL / MECHANICAL UTILITIES					
02510	WATER SYSTEMS	1	LS	83,200	83,200	
			PERTEET			

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL	\$/SF
02530	SANITARY SEWER	1	LS	70,000	70,000	
			PERTEET			
02630	STORM DRAINAGE	1	LS	1,112,800	1,112,800	
			PERTEET			
G30	SITE CIVIL / MECHANICAL UTILITIES			DIVISION TOTAL	1,266,000	
G40	SITE ELECTRICAL UTILITIES					
16000	400 KW GENERATOR	1	LS	200,000	200,000	
			BCE ELECT			
16000	SITE ELECTRICAL	1	LS	194,000	194,000	
			BCE ELECT			
G40	SITE ELECTRICAL UTILITIES			DIVISION TOTAL	394,000	
				ESTIMATE SUBTOTAL	5,013,118	

PROJECT: SHORELINE NO MAINTENANCE FACILITY
LOCATION: SHORELINE, WA
ESTIMATE: 2016115
EST TYPE:

ALT # 1
GEOPIERS ILO OVER EXCAVATION

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
02290	DELETE DEWATERING	1	LS	-150,000	-150,000
		PER CIVIL			
02315	DELETE OVER-EX AT BLDG	14,000	CY	-40.00	-560,000
		PER CIVIL			
02475	GEOPIERS 24" DIA 12' OC 12' DEEP	1,212	LF	55.00	66,660
		BLDG B			
02475	GEOPIERS 24" DIA 12' OC 12' DEEP	588	LF	55.00	32,340
		BLDG D			
02475	GEOPIERS 24" DIA 12' OC 12' DEEP	1,128	LF	55.00	62,040
		BLDG A			
02475	GEOPIERS 24" DIA 12' OC 12' DEEP	2,568	LF	55.00	141,240
		BLDG C			
ALTERNATE SUBTOTAL					-407,720
MARKUP @				30.5%	-124,339
TOTAL					-532,059

Planning Level Opinion of Cost City of Shoreline - North Maintenance Facility 7/24/2016					Project Number: 20150180.000
ITEM	UNITS	QUANTITY	UNIT PRICE	AMOUNT	
Phase 1					\$ 2,435,500
Demo/Clearing/ESC					\$ 268,500
Removal of Structures and Obstructions	LS	1	\$ 140,000	\$	140,000
Clearing and Grading	AC	0.1	\$ 20,000	\$	2,000
Pulverizing Existing Pavement	SY	10,150	\$ 10	\$	101,500
Erosion Control	LS	1	\$ 25,000	\$	25,000
Grading					\$ 461,000
Excavation Incl. Haul	CY	12,600	\$ 20	\$	252,000
Import Inc. Haul	TON	9,700	\$ 20	\$	194,000
Survey	LS	1	\$ 15,000	\$	15,000
Stormwater Systems					\$ 982,000
Storm Detention	LS	1	\$ 852,000	\$	852,000
Storm Water Quality	LS	1	\$ 30,000	\$	30,000
Dewatering	LS	1	\$ 100,000	\$	100,000
Fencing/Temp Gates/Misc					\$ 14,000
Temporary Fencing	LF	1,400	\$ 10	\$	14,000
Buliding Overexcavation					\$ 710,000
Excavation Incl. Haul	CY	14,000	\$ 20	\$	280,000
Import Inc. Haul	CY	14,000	\$ 20	\$	280,000
Dewatering	LS	1	\$ 150,000	\$	150,000
Phase 2					\$ 1,153,180
Fine Grading					\$ 51,400
Fine Grading	SY	15,700	\$ 2	\$	31,400
Survey	LS	1	\$ 20,000	\$	20,000
Erosion Control	LS	1	\$ 12,000	\$	12,000
CSTC for Buliding Pads	CY	1,570	\$ 30	\$	47,100
Fencing/Gates/Misc Site Accessories					\$ 51,000
Coated Chain Link Fence Type 3	LF	1,700	\$ 30	\$	51,000
Stormwater Systems					\$ 105,000
Catch Basin Type 1	EA	12	\$ 1,500	\$	18,000
Catch Basin Type 2 48 In. Diam.	EA	4	\$ 3,000	\$	12,000
Storm Pipe	LF	1,000	\$ 75	\$	75,000
Hardscaping					\$ 84,500
Cement Concrete Sidewalk	SY	490	\$ 50	\$	24,500
Cement Concrete Curb and Gutter	LF	2,000	\$ 30	\$	60,000
Utilities					\$ 192,400
PVC Sanitary Sewer Pipe 6 In. Diam.	LF	600	\$ 100	\$	60,000
Sewer Manhole	EA	5	\$ 5,500	\$	27,500
Fire Hydrants	EA	2	\$ 6,200	\$	12,400
6" DI Water Pipe	LF	750	\$ 110	\$	82,500
Misc Water	LS	1	\$ 10,000	\$	10,000
Surfacing - Concrete					\$ 543,600
Cement Pavement	SY	7,750	\$ 60	\$	465,000
Crushed Surfacing Top Course	TON	1,260	\$ 30	\$	37,800
Crushed Surfacing Base Course	TON	1,360	\$ 30	\$	40,800
Surfacing - HMA					\$ 63,400
HMA CL. 1/2 IN. PG. 64-22	TON	230	\$ 110	\$	25,300
ATB	TON	450	\$ 70	\$	31,500
Crushed Surfacing Top Course	TON	220	\$ 30	\$	6,600
Off-Site Work					\$ 61,880
Cement Concrete Sidewalk	SY	170	\$ 50	\$	8,500
Cement Concrete Curb and Gutter	LF	300	\$ 25	\$	7,500
HMA CL. 1/2 IN. PG. 64-22	TON	80	\$ 110	\$	8,800
ATB	TON	60	\$ 80	\$	4,800
Crushed Surfacing Top Course	TON	120	\$ 30	\$	3,600
Sawcutting	LF	420	\$ 4	\$	1,680
Catch Basin Type 1	EA	3	\$ 1,500	\$	4,500
Storm Pipe	LF	300	\$ 75	\$	22,500
Subtotal					\$ 3,588,680
Mobilization		8%			\$ 287,094.40
Contingency		20%			\$ 717,736
Construction Subtotal					\$ 4,593,510



BCE Engineers, Inc.
6021 12th St E, Ste 200
Fife, WA 98424
253.922.0446

Project Number: 215-274

Date: 7/22/2016

Project Name: Shoreline N. Maint. Fac. BLDG A

Prepared by:

Project Status: Schematic Cost Opinion Rev #1 - Electrical

Chuck Heaton, PE

Item No.	Item Description			Material		Labor		Total Item Cost
		Units	Quantity	Price/Unit	Total	Price/Unit	Total	
1	General Conditions (1)	SF	15500			\$1.50	\$23,250.00	\$23,250.00
2	Conduit, Wiring and Feeders	SF	15500	\$6.70	\$103,850.00	\$3.50	\$54,250.00	\$158,100.00
3	Devices and Gear	SF	15500	\$2.75	\$42,625.00	\$1.50	\$23,250.00	\$65,875.00
4	Interior Lighting	SF	15500	\$6.00	\$93,000.00	\$2.00	\$31,000.00	\$124,000.00
5	Lighting Controls	SF	15500	\$1.00	\$15,500.00	\$0.50	\$7,750.00	\$23,250.00
6	Fire Alarm	SF	15500	\$1.75	\$27,125.00	\$0.75	\$11,625.00	\$38,750.00
7	Intrusion Alarm	SF	15500	\$0.50	\$7,750.00	\$0.25	\$3,875.00	\$11,625.00
8	Data	SF	15500	\$1.75	\$27,125.00	\$0.75	\$11,625.00	\$38,750.00
9	Access control (7 doors)	EA	7	\$2,300.00	\$16,100.00	\$1,200.00	\$8,400.00	\$24,500.00
10	CCTV (6 locations)	EA	6	\$2,300.00	\$13,800.00	\$1,200.00	\$7,200.00	\$21,000.00
11	A/V System (2 rooms)	EA	2	\$5,500.00	\$11,000.00	\$2,500.00	\$5,000.00	\$16,000.00
12								
13								
14								
15								
16								
17								
18								
19								

Total Sheet Cost

\$545,100.00

Notes:

1) Includes Mobilization, Submittals, O&M's, and Project Closeout.

* Estimate based on present day construction costs, excluding GC OH&P, Bonds and WSST.

\$35.17



BCE Engineers, Inc.
6021 12th St E, Ste 200
Fife, WA 98424
253.922.0446

Project Number: 215-274

Project Name: Shoreline N. Maint. Fac. BLDG B

Project Status: Schematic Cost Opinion Rev #1 - Electrical

Date: 7/22/2016

Prepared by:

Chuck Heaton, PE

Item No.	Item Description			Material		Labor		Total Item Cost
		Units	Quantity	Price/Unit	Total	Price/Unit	Total	
1	General Conditions (1)	SF	8090			\$1.00	\$8,090.00	\$8,090.00
2	Conduit, Wiring and Feeders	SF	8090	\$2.50	\$20,225.00	\$1.50	\$12,135.00	\$32,360.00
3	Devices and Gear	SF	8090	\$1.75	\$14,157.50	\$1.00	\$8,090.00	\$22,247.50
4	Interior Lighting	SF	8090	\$2.50	\$20,225.00	\$1.00	\$8,090.00	\$28,315.00
5	Lighting Controls	SF	8090	\$0.75	\$6,067.50	\$0.30	\$2,427.00	\$8,494.50
6	Fire Alarm	SF	8090	\$0.75	\$6,067.50	\$0.30	\$2,427.00	\$8,494.50
7	Intrusion Alarm	SF						
8	Data	SF	8090	\$0.75	\$6,067.50	\$0.35	\$2,831.50	\$8,899.00
9	Access control	EA						
10	CCTV (2 locations)	EA	2	\$2,300.00	\$4,600.00	\$1,200.00	\$2,400.00	\$7,000.00
11	A/V System	EA						
12								
13	20KW PV System	EA	1	\$70,000.00	\$70,000.00	\$30,000.00	\$30,000.00	\$100,000.00
14								
15								
16								
17								
18								
19								

Total Sheet Cost

\$223,900.50

Notes:

1) Includes Mobilization, Submittals, O&M's, and Project Closeout.

* Estimate based on present day construction costs, excluding GC OH&P, Bonds and WSST.

\$27.68



BCE Engineers, Inc.
6021 12th St E, Ste 200
Fife, WA 98424
253.922.0446

Project Number: 215-274

Date: 7/22/2016

Project Name: Shoreline N. Maint. Fac. BLDG C

Prepared by:

Project Status: Schematic C Schematic Cost Opinion Rev #1 - Ele

Chuck Heaton, PE

Item No.	Item Description			Material		Labor		Total Item Cost
		Units	Quantity	Price/Unit	Total	Price/Unit	Total	
1	General Conditions (1)	SF	23675			\$0.75	\$17,756.25	\$17,756.25
2	Conduit, Wiring and Feeders	SF	23675	\$2.60	\$61,555.00	\$1.00	\$23,675.00	\$85,230.00
3	Devices and Gear	SF	23675	\$2.00	\$47,350.00	\$1.00	\$23,675.00	\$71,025.00
4	Interior Lighting	SF	23675	\$3.50	\$82,862.50	\$1.00	\$23,675.00	\$106,537.50
5	Lighting Controls	SF	23675	\$0.77	\$18,229.75	\$0.39	\$9,233.25	\$27,463.00
6	Fire Alarm	SF	23675	\$1.25	\$29,593.75	\$0.50	\$11,837.50	\$41,431.25
7	Intrusion Alarm	SF	23675	\$0.50	\$11,837.50	\$0.25	\$5,918.75	\$17,756.25
8	Data	SF	23675	\$0.50	\$11,837.50	\$0.25	\$5,918.75	\$17,756.25
9	Access control (4 doors)	EA	8	\$2,300.00	\$18,400.00	\$1,200.00	\$9,600.00	\$28,000.00
10	CCTV (6 locations)	EA	6	\$2,300.00	\$13,800.00	\$1,200.00	\$7,200.00	\$21,000.00
11	A/V System (2 rooms)	EA						
12								
13								
14								
15								
16								
17								
18								
19								

Total Sheet Cost

\$433,955.50

Notes:

- 1) Includes Mobilization, Submittals, O&M's, and Project Closeout.
- * Estimate based on present day construction costs, excluding GC OH&P, Bonds and WSST.

\$18.33



BCE Engineers, Inc.
6021 12th St E, Ste 200
Fife, WA 98424
253.922.0446

Project Number: 215-274

Project Name: Shoreline N. Maint. Fac. BLDG D

Project Status: Schematic C Schematic Cost Opinion Rev #1 - Ele

Date: 7/22/2016

Prepared by:

Chuck Heaton, PE

Item No.	Item Description			Material		Labor		Total Item Cost
		Units	Quantity	Price/Unit	Total	Price/Unit	Total	
1	General Conditions (1)	SF	4220			\$1.00	\$4,220.00	\$4,220.00
2	Conduit, Wiring and Feeders	SF	4220	\$2.00	\$8,440.00	\$1.00	\$4,220.00	\$12,660.00
3	Devices and Gear	SF	4220	\$1.50	\$6,330.00	\$0.75	\$3,165.00	\$9,495.00
4	Interior Lighting	SF	4220	\$2.50	\$10,550.00	\$1.00	\$4,220.00	\$14,770.00
5	Lighting Controls	SF	4220	\$0.75	\$3,165.00	\$0.30	\$1,266.00	\$4,431.00
6	Fire Alarm	SF	4220	\$0.75	\$3,165.00	\$0.30	\$1,266.00	\$4,431.00
7	Intrusion Alarm	SF						
8	Data	SF						
9	Access control	EA						
10	CCTV (2 locations)	EA	2	\$2,300.00	\$4,600.00	\$1,200.00	\$2,400.00	\$7,000.00
11	A/V System (2 rooms)	EA						
12								
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14								
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Total Sheet Cost

\$57,007.00

Notes:

- 1) Includes Mobilization, Submittals, O&M's, and Project Closeout.
- * Estimate based on present day construction costs, excluding GC OH&P, Bonds and WSST.

\$13.51



BCE Engineers, Inc.
6021 12th St E, Ste 200
Fife, WA 98424
253.922.0446

Project Number: 215-274

Date: 7/22/2016

Project Name: Shoreline N. Maint. Fac. SITE

Prepared by:

Project Status: Schematic Cost Opinion Rev #1 - Electrical

Chuck Heaton, PE

Item No.	Item Description			Material		Labor		Total Item Cost
		Units	Quantity	Price/Unit	Total	Price/Unit	Total	
1	Electrical Vaults and Conduit	LS	1	\$50,000.00	\$50,000.00	\$25,000.00	\$25,000.00	\$75,000.00
2	Communcation Vaults and Conduits	LS	1	\$30,000.00	\$30,000.00	\$15,000.00	\$15,000.00	\$45,000.00
3	Parking and Site Lighting	EA	12	\$3,000.00	\$36,000.00	\$1,000.00	\$12,000.00	\$48,000.00
4	Card gate access (2 locations)	EA	2	\$4,000.00	\$8,000.00	\$2,000.00	\$4,000.00	\$12,000.00
5	Generator (est 400kw) Complete	EA	1	\$150,000.00	\$150,000.00	\$50,000.00	\$50,000.00	\$200,000.00
6	CCTV (6 locations)	EA	4	\$2,300.00	\$9,200.00	\$1,200.00	\$4,800.00	\$14,000.00
7								
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18								
19								
Total Sheet Cost								\$394,000.00

\$197,000.00

Notes:

- 1) Includes Mobilization, Submittals, O&M's, and Project Closeout.
- * Estimate based on present day construction costs, excluding GC OH&P, Bonds and WSST.



BCE Engineers, Inc.
6021 12th St E, Ste 200
Fife, WA 98424
253.922.0446

Project Number: 215-274

Date: 8/5/2016

Project Name: Shoreline N. Maint. Fac. BLDG C

Prepared by:

Project Status: Schematic Cost Opinion

Jeff Hardwick, PE

Item No.	Item Description			Material		Labor		Total Item Cost
		Units	Quantity	Price/Unit	Total	Price/Unit	Total	
1	General Conditions (1)(3)(4)(5)	SF	11031			\$0.80	\$8,824.80	\$8,824.80
2	Rainwater Collection System (7)	EA	1	\$90,000.00	\$90,000.00	\$30,000.00	\$30,000.00	\$120,000.00
3	Plumbing Connections to Wash Bay (2)	EA	2	\$1,000.00	\$2,000.00	\$500.00	\$1,000.00	\$3,000.00
4	Trench Drains Large Area Drain	LF	450	\$100.00	\$45,000.00	\$16.00	\$7,200.00	\$52,200.00
5	Heat in Shops & Bays	SF	11031	\$0.50	\$5,515.50	\$0.30	\$3,309.30	\$8,824.80
6	Garage Exhaust Fans	EA	1	\$2,400.00	\$2,400.00	\$1,000.00	\$1,000.00	\$3,400.00
7	TAB	SF	11031			\$0.50	\$5,515.50	\$5,515.50
8	EMCS/Controls	SF	11031	\$1.50	\$16,546.50	\$2.00	\$22,062.00	\$38,608.50
9	CO / NOX Sensor	EA	1	\$3,500.00	\$3,500.00	\$500.00	\$500.00	\$4,000.00
10	Plumbing Fixtures	EA	6	\$2,500.00	\$15,000.00	\$500.00	\$3,000.00	\$18,000.00
11	Emergency Shower/Eye Wash	EA	1	\$3,500.00	\$3,500.00	\$1,500.00	\$1,500.00	\$5,000.00
12	Oil / Water Separator	EA	2	\$2,600.00	\$5,200.00	\$1,400.00	\$2,800.00	\$8,000.00
13	Plumbing, Waste and Vent	SF	11031	\$1.00	\$11,031.00	\$1.00	\$11,031.00	\$22,062.00
14	Domestic Plumbing Piping	SF	11031	\$1.50	\$16,546.50	\$1.00	\$11,031.00	\$27,577.50
15	Water Heaters	EA	1	\$4,000.00	\$4,000.00	\$500.00	\$500.00	\$4,500.00
16	Fire Protection (6)	SF	23675	\$3.18	\$75,286.50	\$1.92	\$45,456.00	\$120,742.50
17	Fuel System and Controls	EA	1	\$80,000.00	\$80,000.00	\$50,000.00	\$50,000.00	\$130,000.00
Total Sheet Cost								\$580,255.60

\$52.60

Notes:

- 1) Includes Mobilization, Submittals, O&M's, and Project Closeout.
 - 2) Assumes equipment is in Pinnacle's scope of work.
 - 3) Assumes building is heat only.
 - 4) Assumes fuel equipment and tank in Pinnacle's scope of work.
 - 5) Assumes de-icer tank water source by civil.
 - 6) Total cost figures from 2016 RS Means. Includes canopies, exterior covered storage and heated interior storage.
 - 7) Includes 20,000 gallon cistern, pumping, filtration and distribution for toilet flushing.
- * Estimate based on present day construction costs, excluding GC OH&P, Bonds and WSST.

2B - PRELIMINARY DRAWINGS

OVERVIEW

Included in this section are preliminary SD architectural plans, sections elevations and renderings, and structural layout drawings and retaining wall designs.



- ADMIN/CREW
- BUILDING CIRCULATION
- ENCLOSED/HEATED SHOPS & VEHICLE STORAGE
- CANOPY COVER
- EXISTING STRUCTURES ON ADJACENT PROPERTIES

SITE
127,530 SF
13,400 SF ADJACENT PARCEL
140,930 SF TOTAL

BUILDINGS
BUILDING A
7,000 SF - LEVEL 1 CREW/SHOPS
8,500 SF - LEVEL 2 ADMIN/CREW
15,500 SF - TOTAL

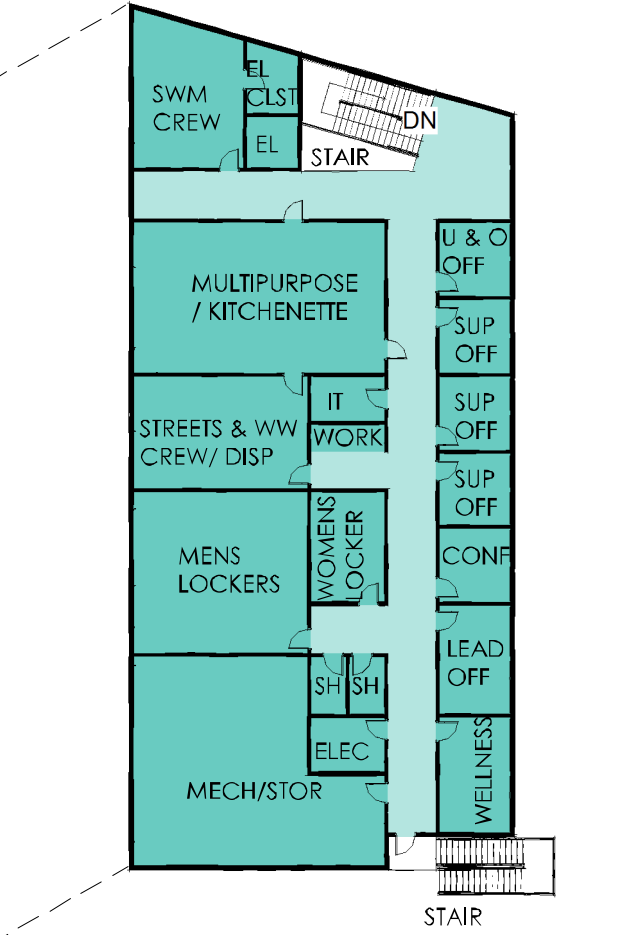
BUILDING B
8,090 SF - CANOPY TOTAL

BUILDING C
10,660 SF - HEATED/ENCLOSED
5,000 SF - CANOPY STORAGE
1,000 SF - CANOPY WASH BAY
1,000 SF - CANOPY FUEL BAY
17,660 SF - TOTAL

BUILDING D
4,220 SF - CANOPY TOTAL
45,470 SF TOTAL PROGRAM AREA

- PARKING**
- 4 - VISITOR
 - 40 - PERSONNEL
- CITY-OWNED (SHADED)**
- LARGE 12' x 40' (3)
 - MEDIUM 10' x 30' (16)
 - SMALL 10' x 20' (26)
 - X-SMALL 8' x 12' (9)
 - XX-SMALL 8' x 8' (21)

- BULK MATERIALS**
- 18' x 20' 5/8" MINUS
 - 18' x 20' 1 1/4" MINUS
 - 12' x 20' CONCRETE WASTE
 - 12' x 20' ASPHALT WASTE
 - 12' x 20' BRUSH



BUILDING A - LEVEL 2



CITY OF SHORELINE - NORTH MAINTENANCE FACILITY

19547 25TH AVENUE SEATTLE, WA 98155 7 JULY 2016 PRE DESIGN PHASE

CONCEPTUAL BUILDING DESIGN - CONCEPT C



TCF Architecture

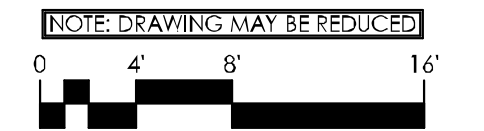


Project Title
**NORTH
MAINTENANCE
FACILITY**
19547 25TH AVE NE
SEATTLE, WA 98155

Project Numbers
2015 - 016

Issue & Revision Dates
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SCHEMATIC DESIGN
NOT FOR CONSTRUCTION



Sheet Title
**BUILDING A -
FLOOR PLAN -
LEVEL 1**

Drawn By
Author

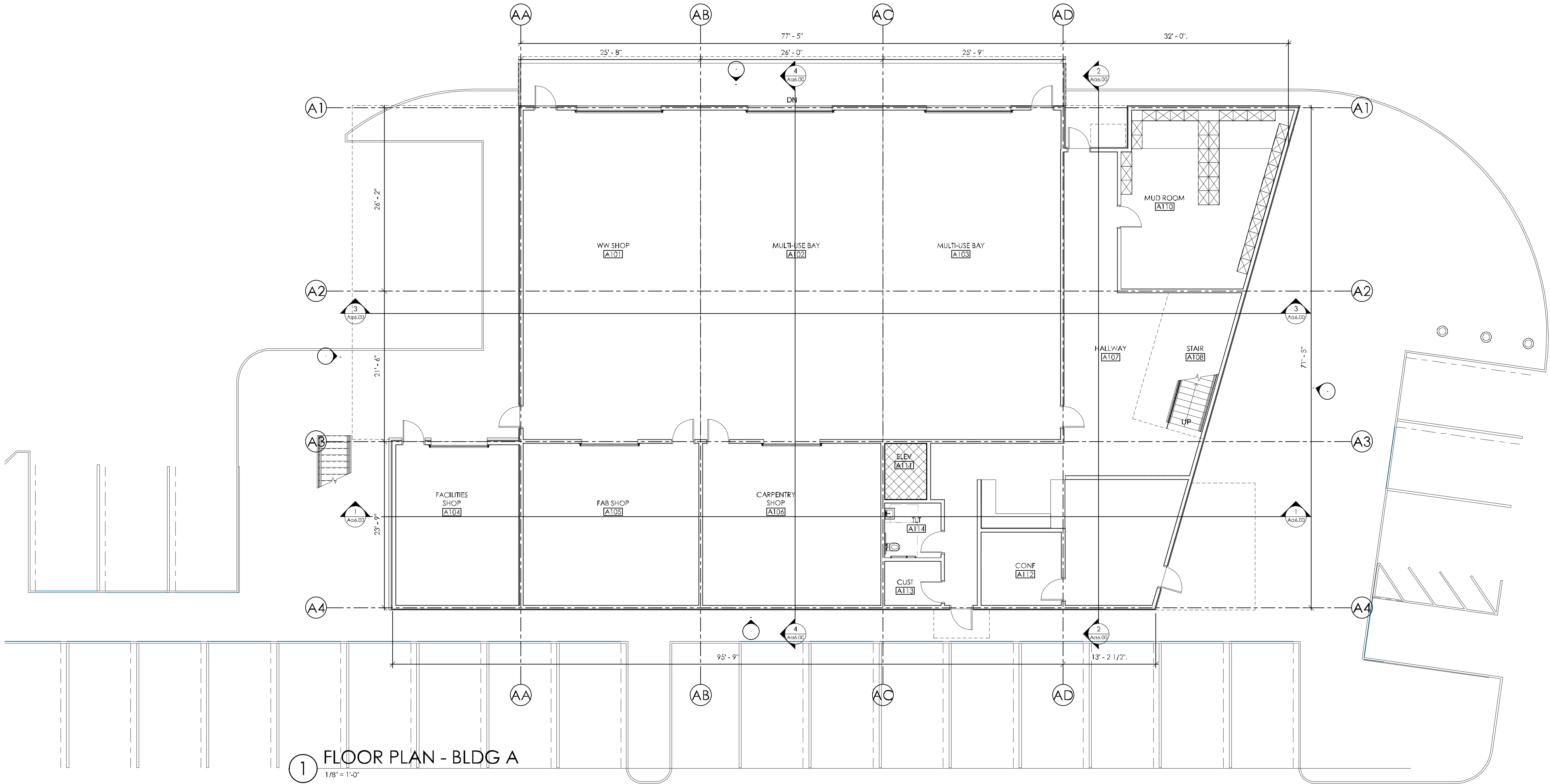
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ROOM FINISH SCHEDULE

NUMBER	ROOM NAME	FLOOR MAT	WALL BASE MAT	WALL FINISH				CEILING MAT
				N	E	S	W	
A101	WW SHOP	SC	RB	MDO	MDO	MDO	MDO	OTS
A102	MULTI-USE BAY	SC	RB	MDO	MDO	MDO	MDO	OTS
A103	MULTI-USE BAY	SC	RB	MDO	MDO	MDO	MDO	OTS
A104	FACILITIES SHOP	SC	RB	MDO	MDO	MDO	MDO	OTS
A105	FAB SHOP	SC	RB	MDO	MDO	MDO	MDO	OTS
A106	CARPENTRY SHOP	SC	RB	MDO	MDO	MDO	MDO	OTS
A107	HALLWAY	PC	RB	GW8	GW8	GW8	GW8	ACP
A108	STAIR	PC	RB	GW8	GW8	GW8	GW8	ACP
A109	LOBBY	PC	RB	GW8	GW8	GW8	GW8	ACP
A110	MUD ROOM	PC	RB	GW8	GW8	GW8	GW8	OTS
A111	ELEV	-	RB	GW8	GW8	GW8	GW8	OTS
A112	CONF	CPT	RB	GW8	GW8	GW8	GW8	ACP
A113	CUST	SC	RB	GW8	GW8	GW8	GW8	OTS
A114	TLT	CT	CT	CT-7/GWB	CT-7/GWB	CT-7/GWB	CT-7/GWB	GW8
A201	SWM CREW	LVT	RB	GW8	GW8	GW8	GW8	ACP
A202	MULTIPURPOSE / KITCHENETTE	LVT	RB	GW8	GW8	GW8	GW8	OTS
A203	STREETS & WW CREW / DISP	LVT	RB	GW8	GW8	GW8	GW8	ACP

FINISH SCHEDULE LEGEND

LVT	LUXURY VINYL TILE
OTS	OPEN TO STRUCTURE
SC	SEALED CONCRETE
PC	POLISHED CONCRETE
CPT	CARPET
RB	RUBBER BASE
ACP	ACOUSTIC CEILING PANEL
MDO	MEDIUM DENSITY OVERLAY PANEL
PLW	PLYWOOD WAINSCOT

NUMBER	ROOM NAME	FLOOR MAT	WALL BASE MAT	WALL FINISH				CEILING MAT
				N	E	S	W	
A204	MEN'S LOCKER	CT	CT	CT	CT	CT	CT	GW8
A205	MECH/ELEC STORAGE	SC	CT	PLY	PLY	PLY	PLY	OTS
A206	USO OFF	CPT	RB	GW8	GW8	GW8	GW8	ACP
A207	SUP OFF	CPT	RB	GW8	GW8	GW8	GW8	ACP
A208	SUP OFF	CPT	RB	GW8	GW8	GW8	GW8	ACP
A209	SUP OFF	CPT	RB	GW8	GW8	GW8	GW8	ACP
A210	CONF	CPT	RB	GW8	GW8	GW8	GW8	ACP
A211	WELLNESS	CPT	RB	GW8	GW8	GW8	GW8	ACP
A212	HALLWAY	LVT	RB	GW8	GW8	GW8	GW8	ACP
A213	STAIR	LVT	RB	GW8	GW8	GW8	GW8	ACP
A214	LEAD OFF	SC	RB	GW8	GW8	GW8	GW8	ACP
A215	ELEV CLST	SC	RB	PLY	PLY	PLY	PLY	ACP
A216	ELEV	-	RB	PLY	PLY	PLY	PLY	OTS
A217	IT	SC	RB	PLY	PLY	PLY	PLY	OTS
A218	WOMEN'S LOCKER	CT	CT	CT	CT	CT	CT	GW8
A219	SH	CT	CT	CT	CT	CT	CT	GW8
A220	SH	CT	CT	CT	CT	CT	CT	GW8



Project Title
**NORTH
MAINTENANCE
FACILITY**
19547 25TH AVE NE
SEATTLE, WA 98155

Project Numbers
2015 - 016

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SCHEMATIC DESIGN
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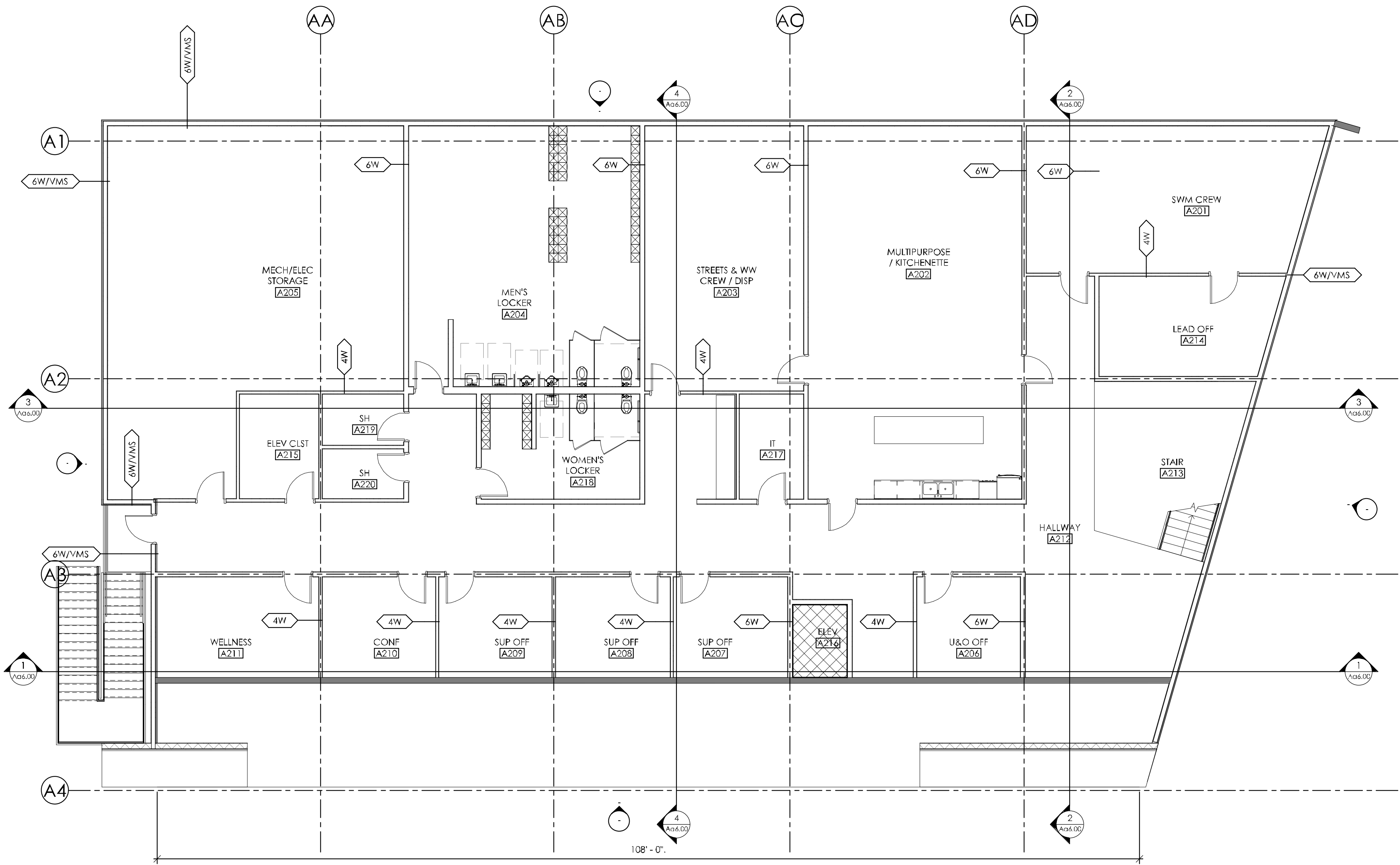
Sheet Title
**BUILDING A -
FLOOR PLAN -
LEVEL 2**

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Author Checker

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1 FLOOR PLAN - BLDG A
1/8" = 1'-0"



Project Title
NORTH
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19547 25TH AVE NE
SEATTLE, WA 98155

Project Numbers
2015 - 016

Issue & Revision Dates
MONTH 201_ SET NAME

SCHEMATIC DESIGN
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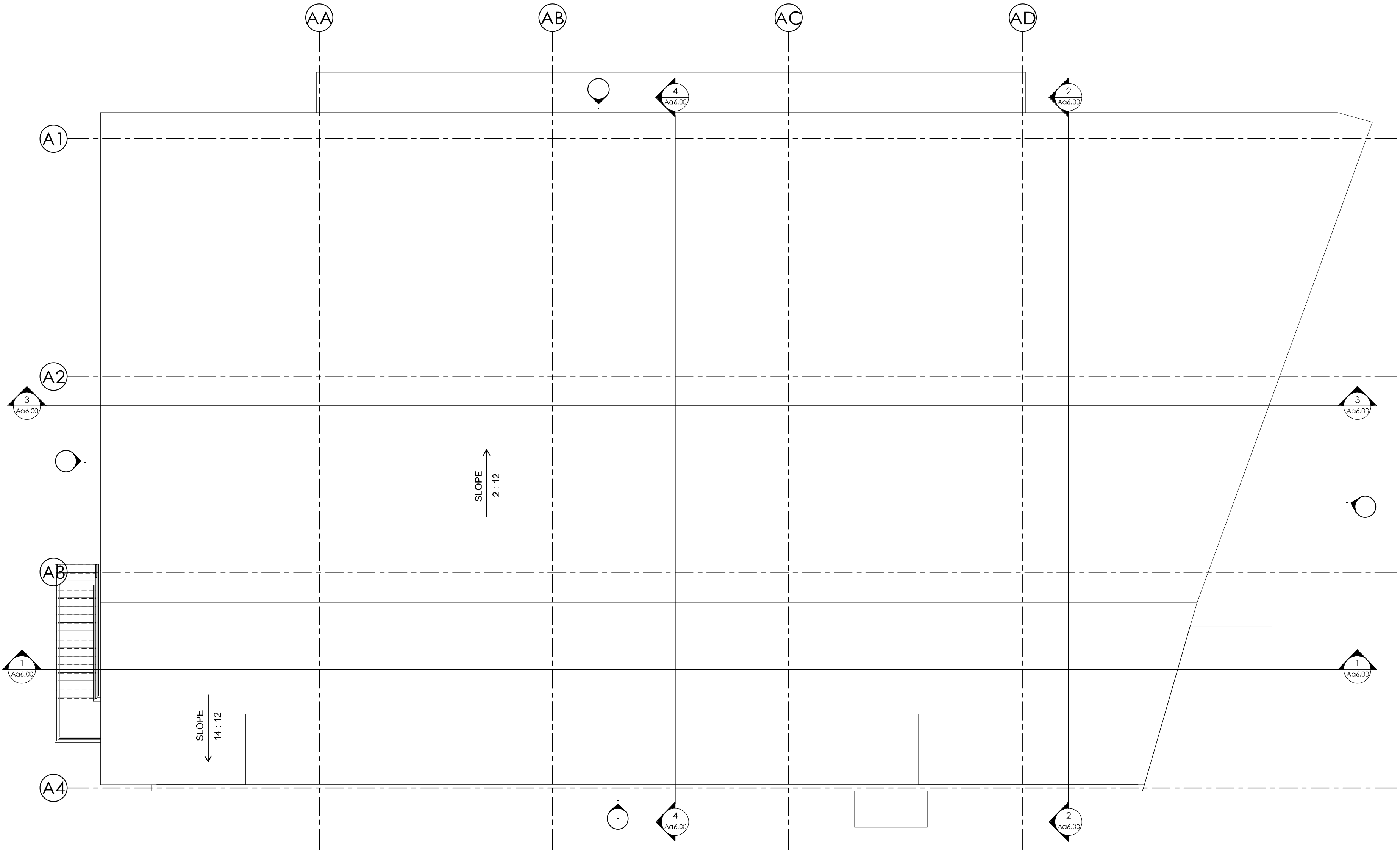
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BUILDING A -
ROOF PLAN

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DV MH

Sheet Number

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1 ROOF PLAN - BLDG A
1/8" = 1'-0"



Project Title
NORTH
MAINTENANCE
FACILITY
19547 25TH AVE NE
SEATTLE, WA 98155

Project Numbers
2015 - 016

Issue & Revision Dates
MONTH 201_ SET NAME

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Sheet Title
BUILDING A -
EXTERIOR
ELEVATIONS

Drawn By
DV

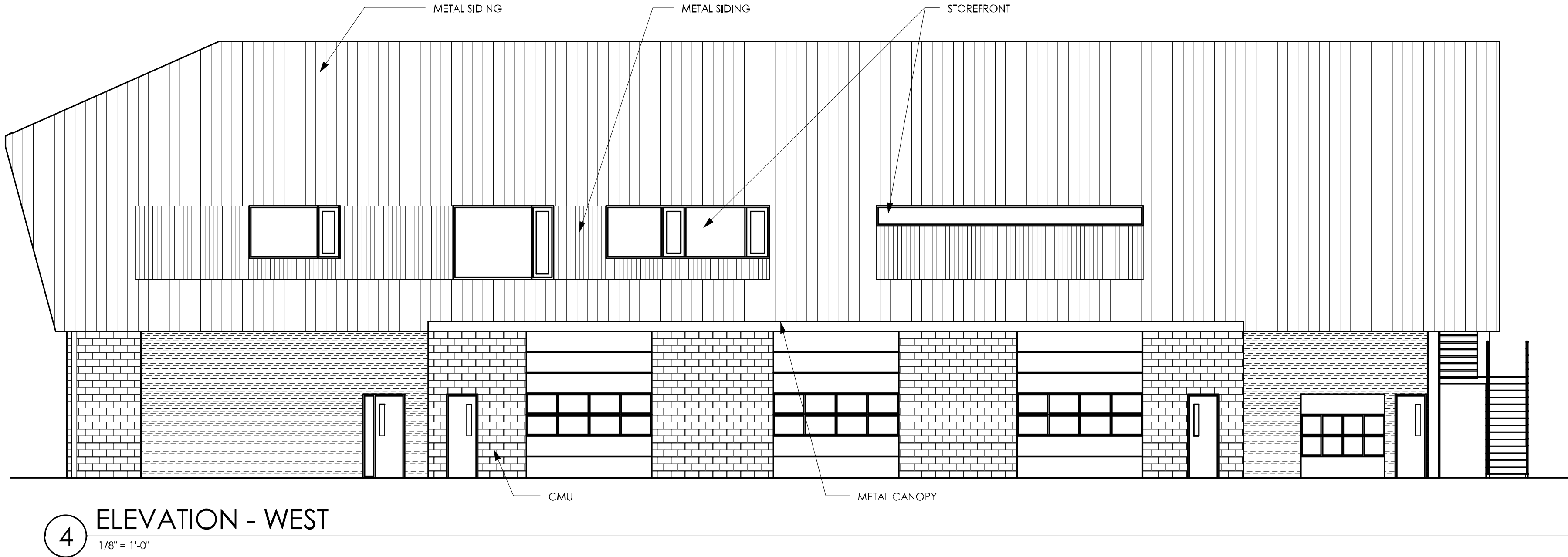
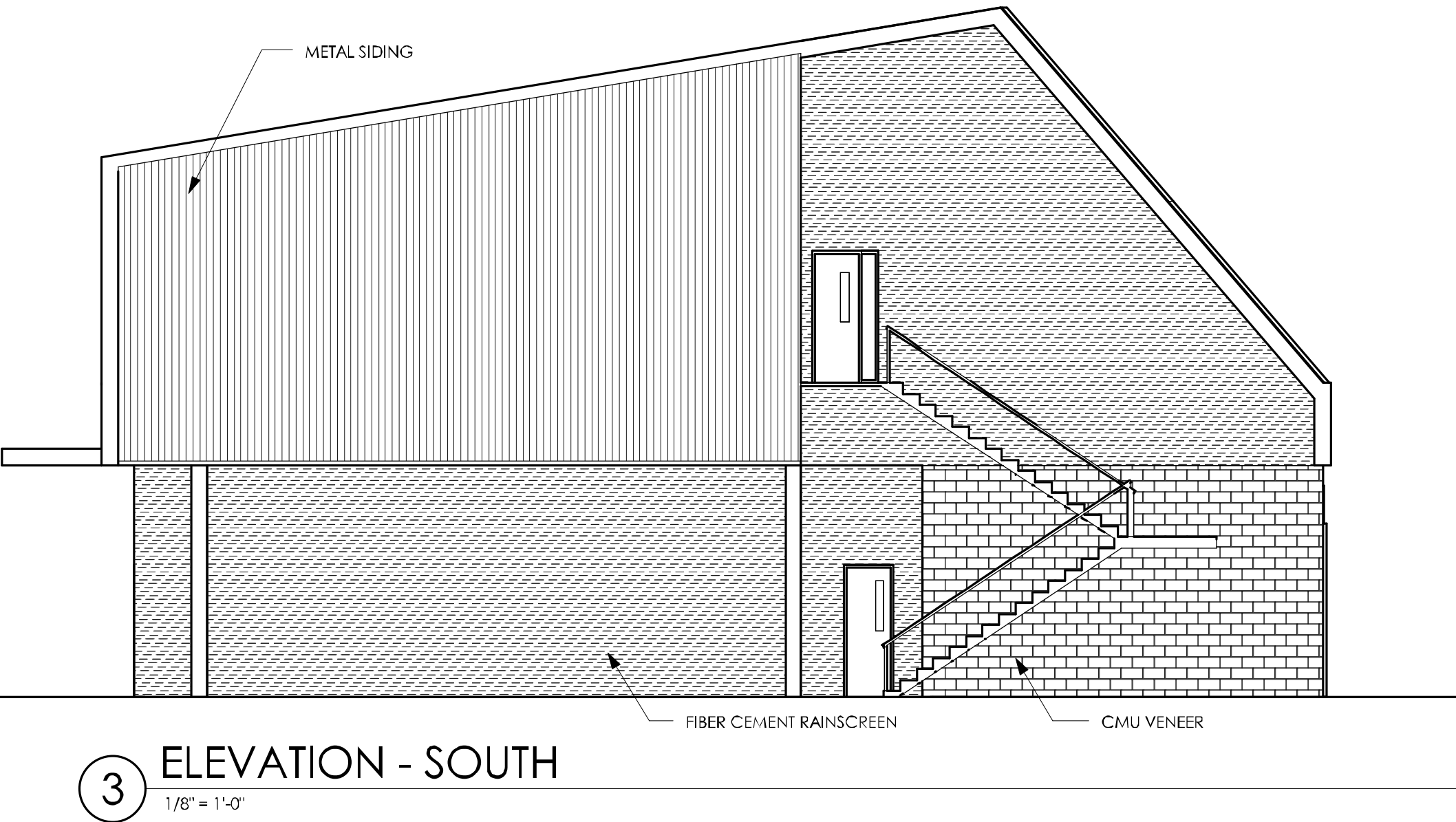
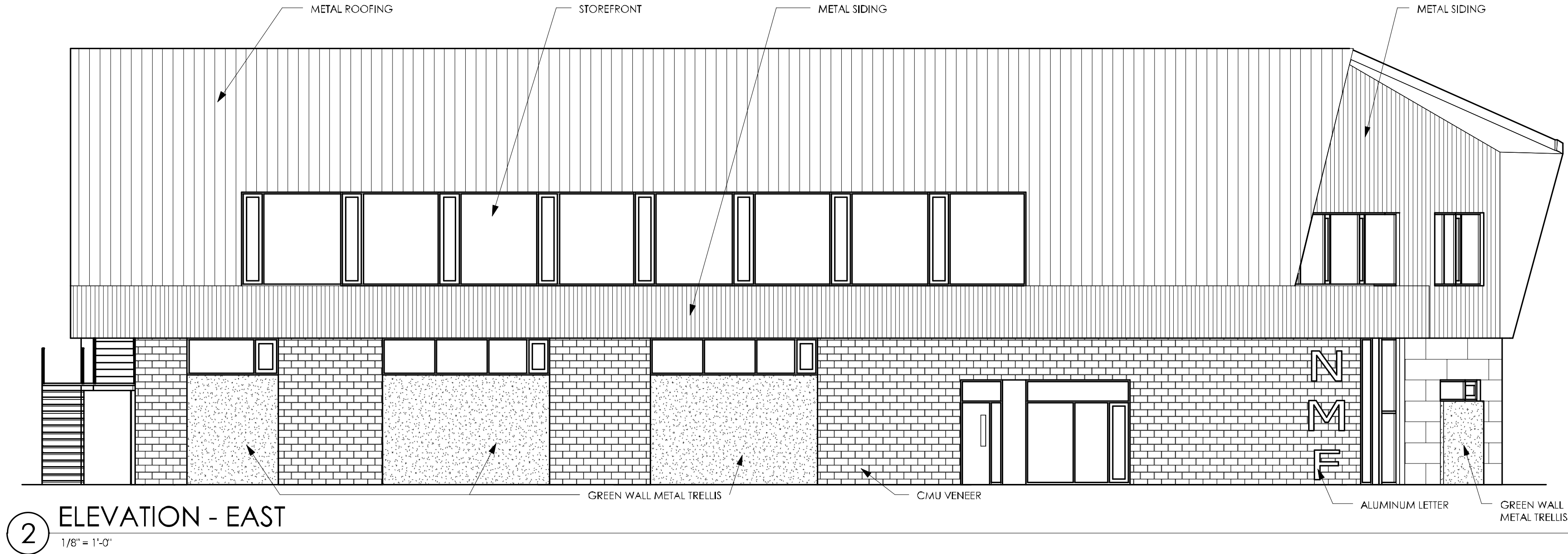
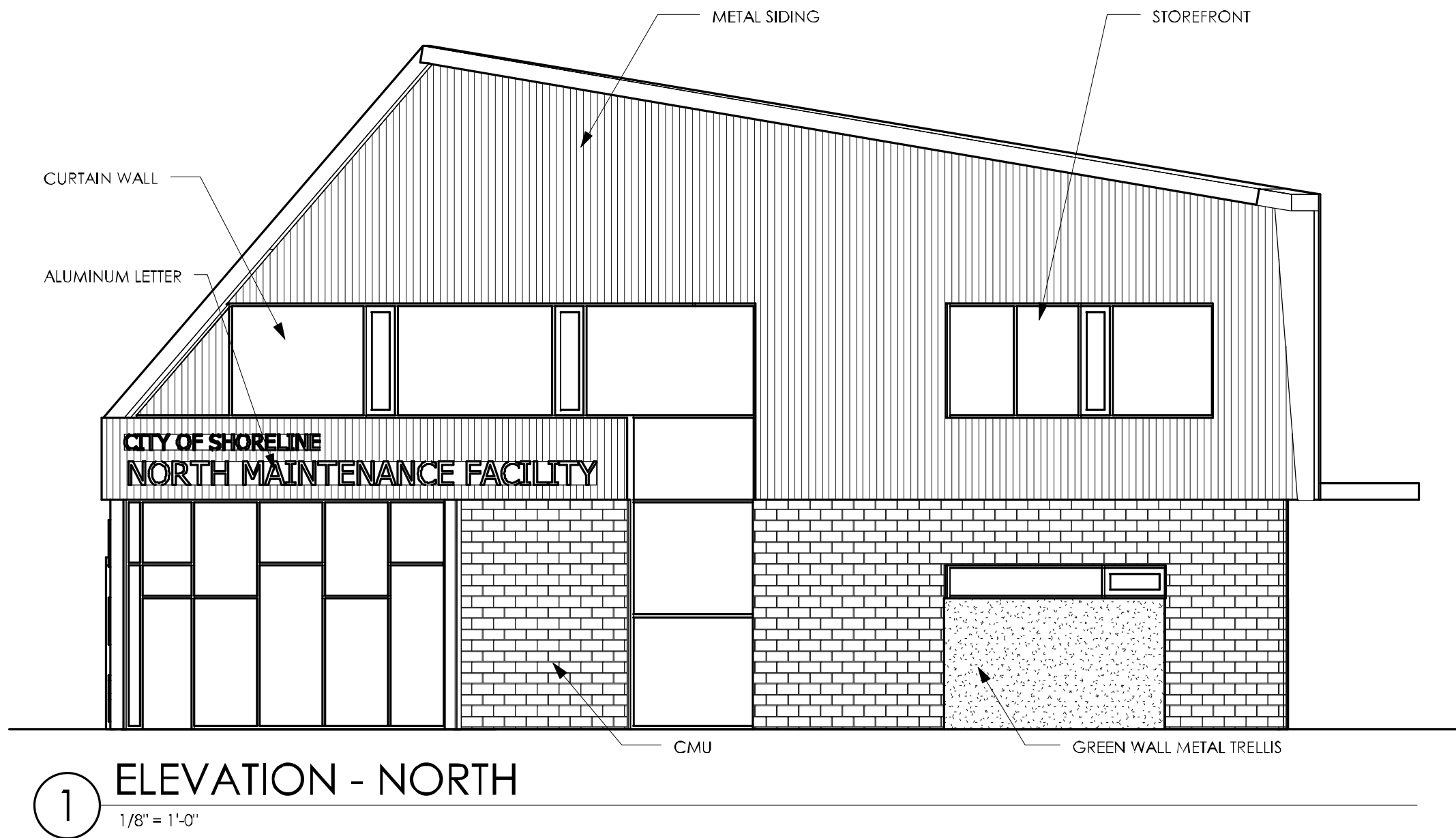
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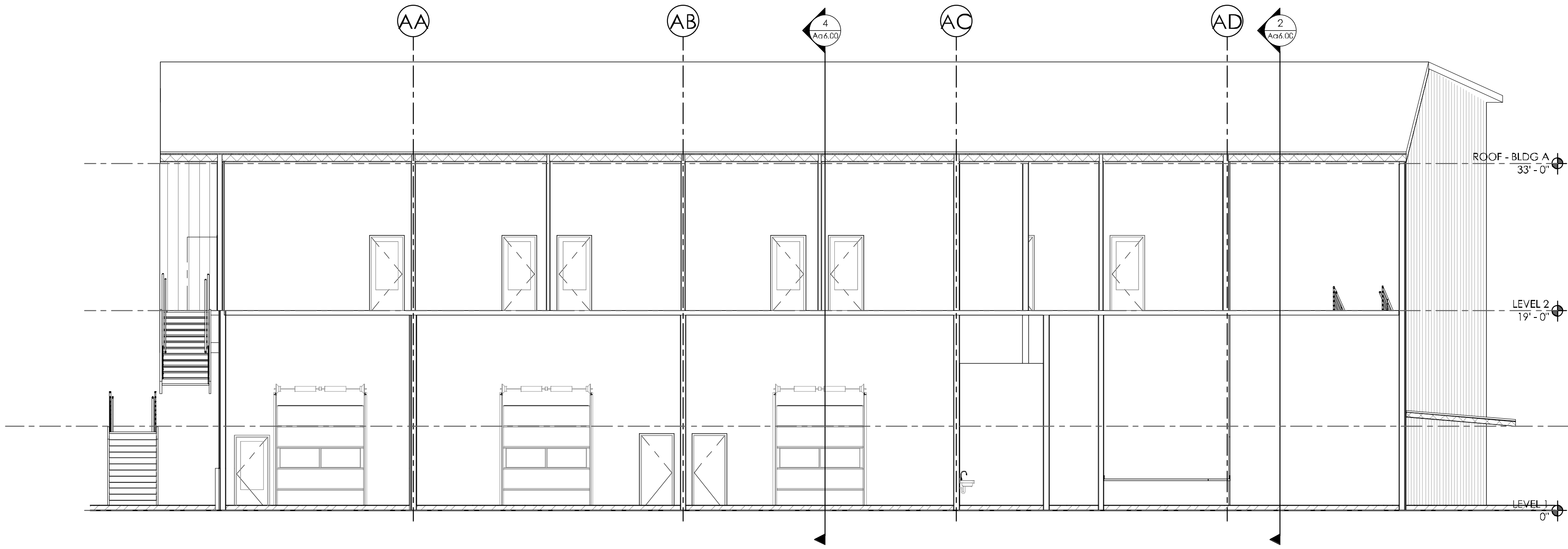
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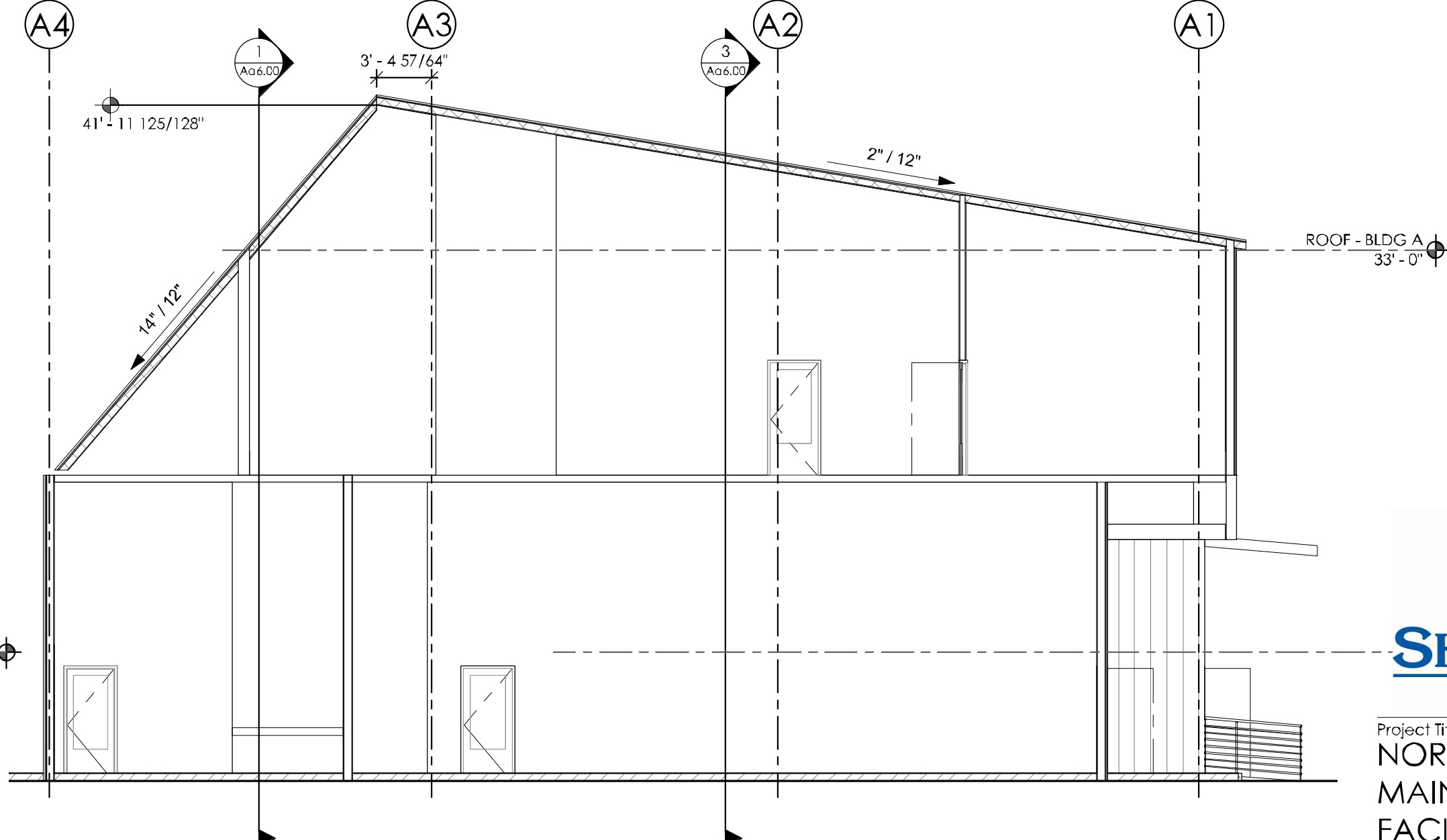
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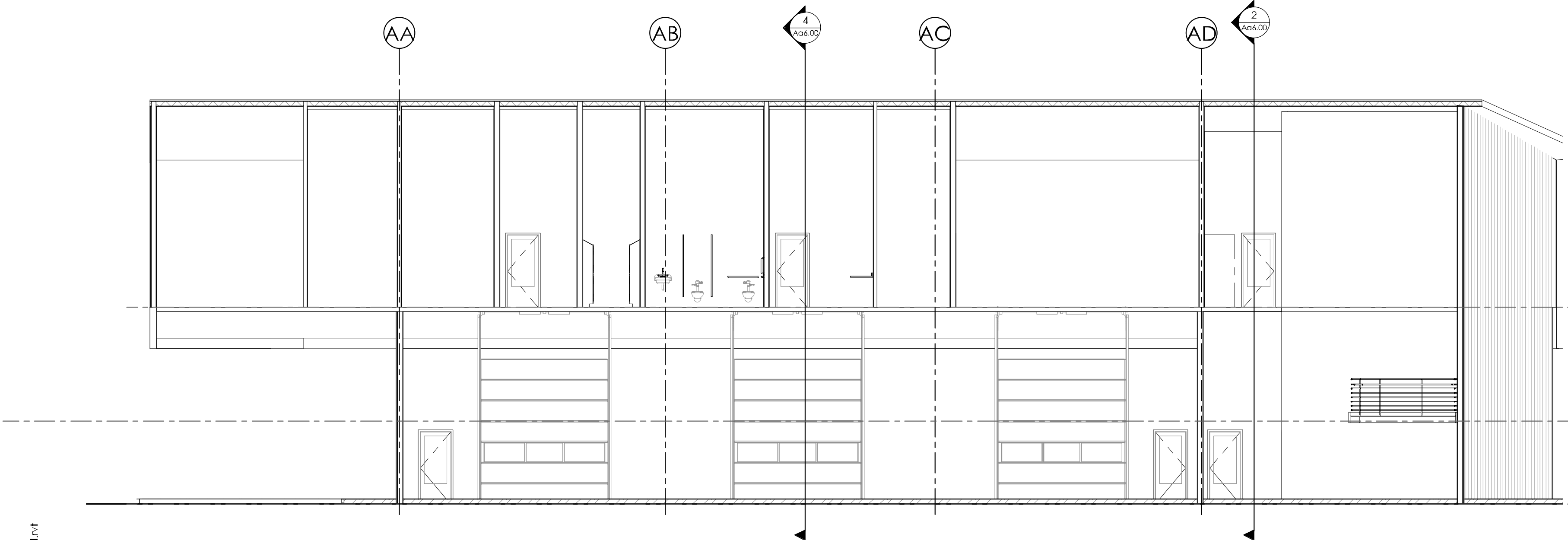




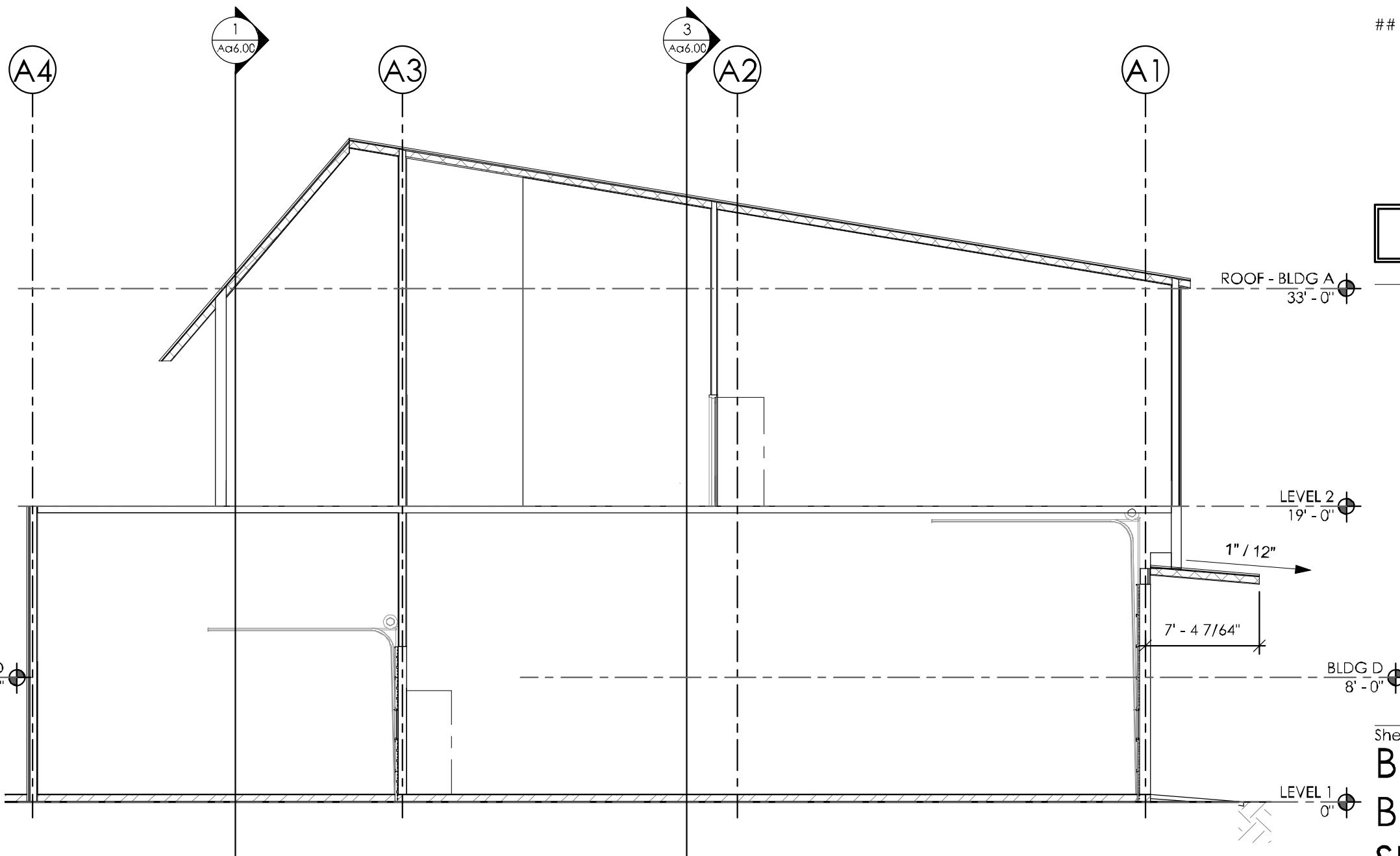
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1/8" = 1'-0"



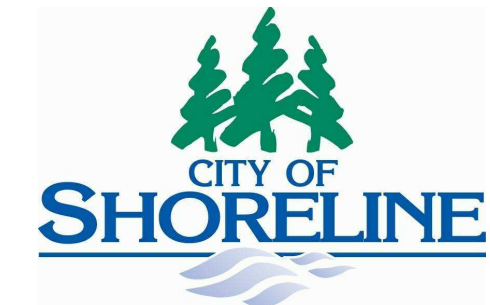
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1/8" = 1'-0"



3 BUILDING SECTION - BLDG A
1/8" = 1'-0"



4 BUILDING SECTION - BLDG A
1/8" = 1'-0"

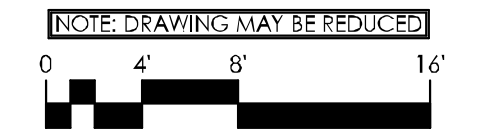


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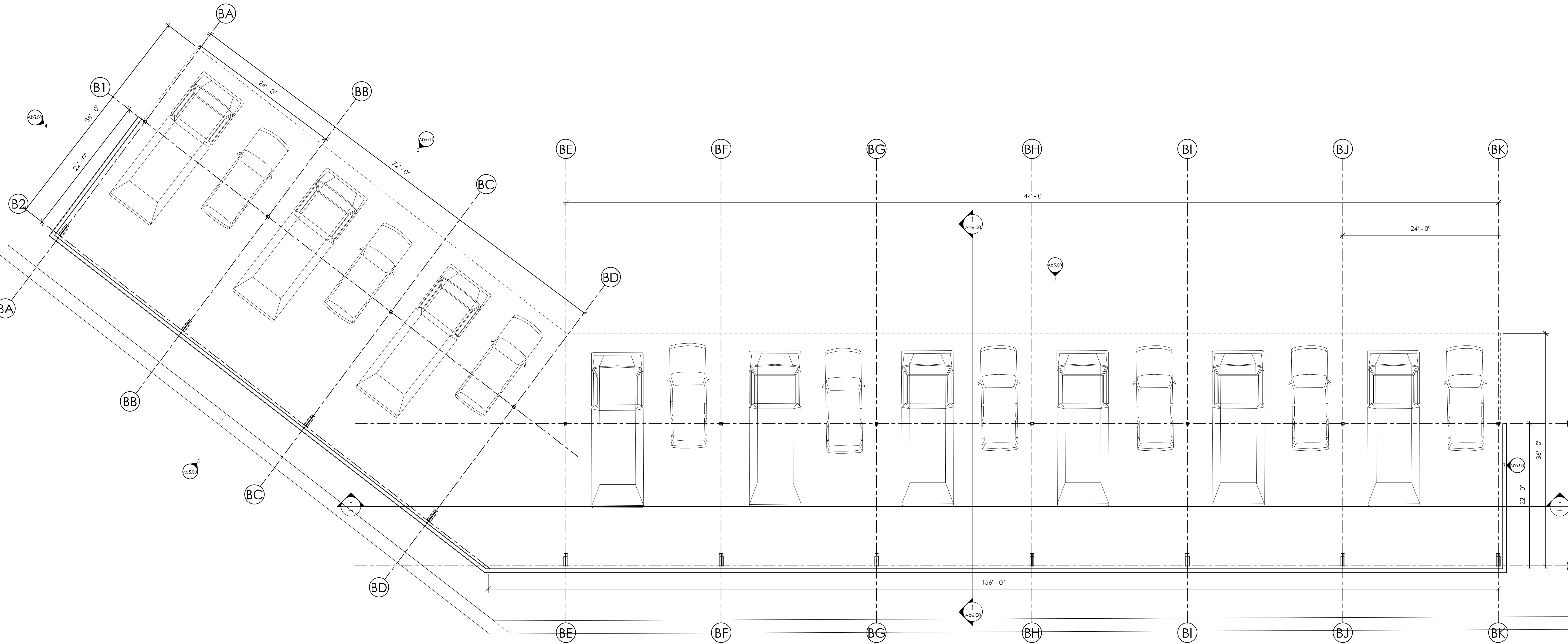
Sheet Title
BUILDING B -
FLOOR PLAN

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Sheet Number

Ab2.01

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1 FLOOR PLAN - BLDG B
1/8" = 1'-0"



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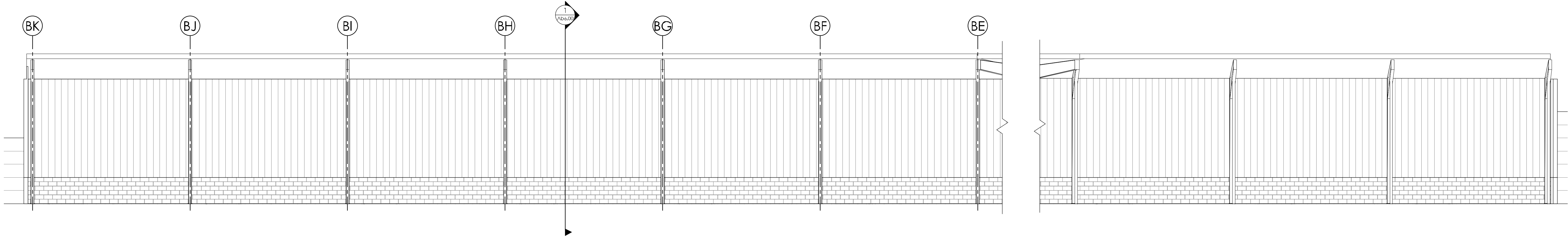
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BUILDING B -
EXTERIOR
ELEVATIONS

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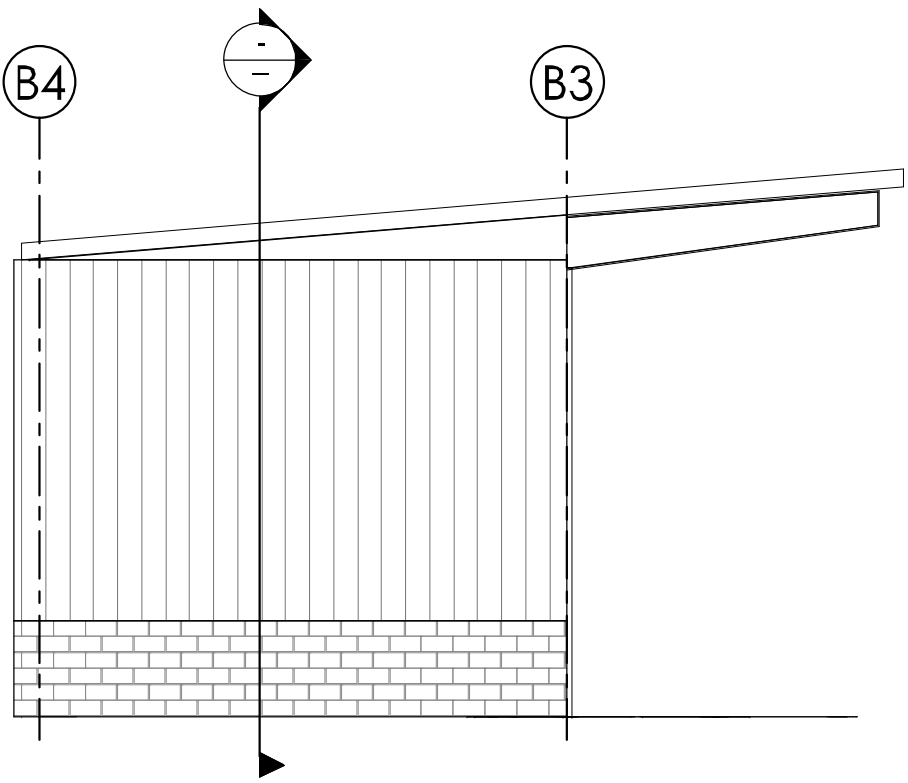
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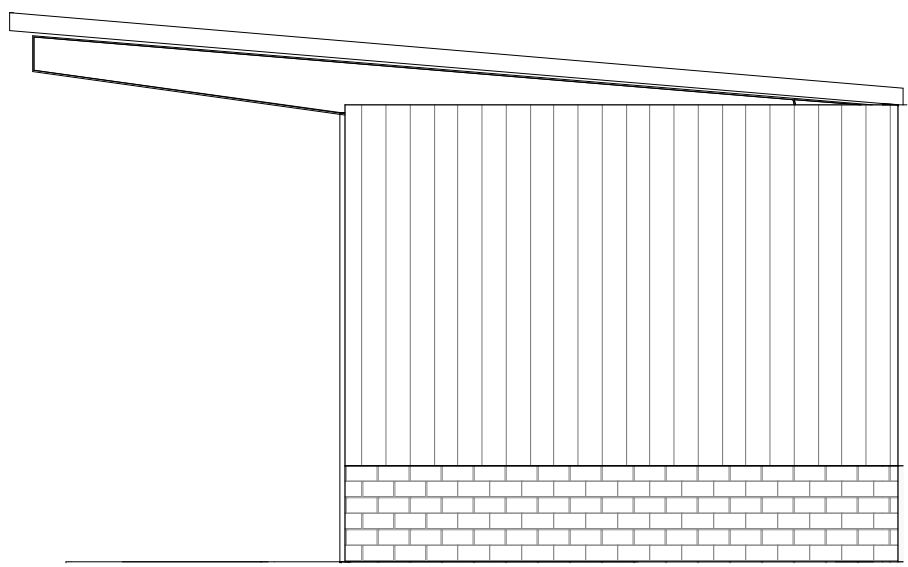


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1/8" = 1'-0"

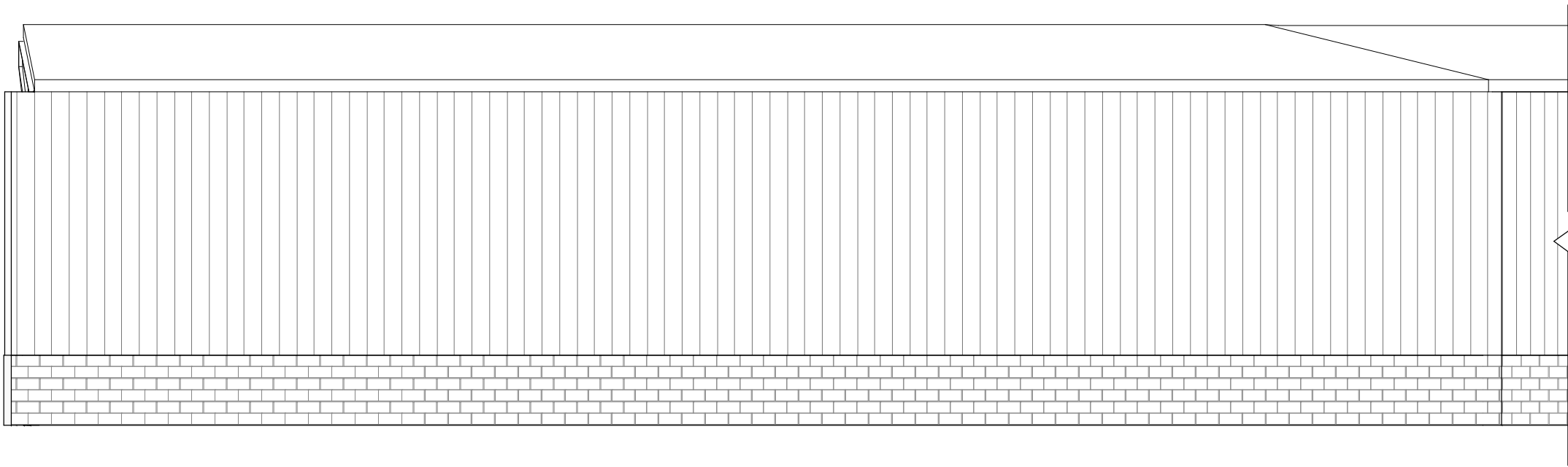
2 ELEVATION - NORTH
1/8" = 1'-0"



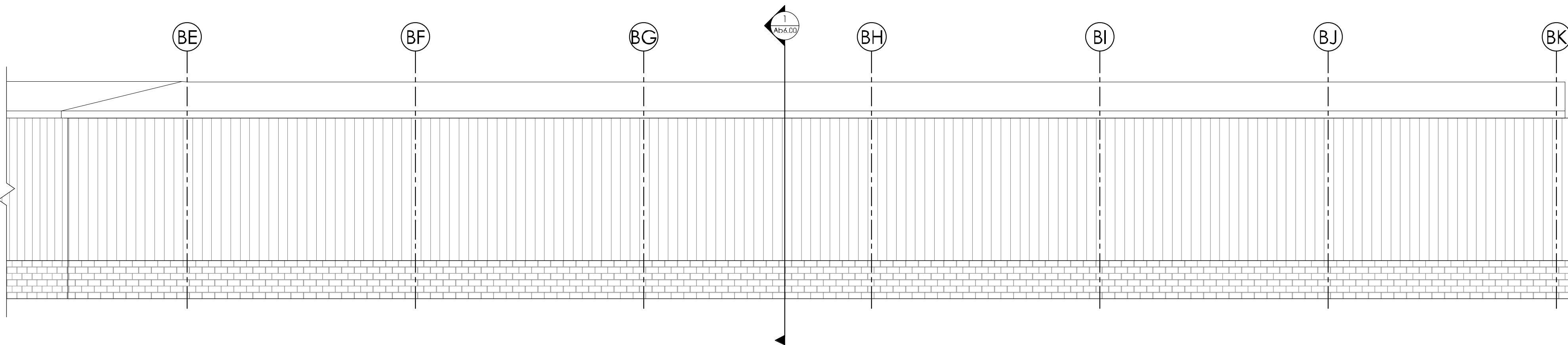
3 ELEVATION - EAST
1/8" = 1'-0"



4 ELEVATION - WEST
1/8" = 1'-0"



5 ELEVATION - SOUTH
1/8" = 1'-0"



6 ELEVATION - SOUTH
1/8" = 1'-0"



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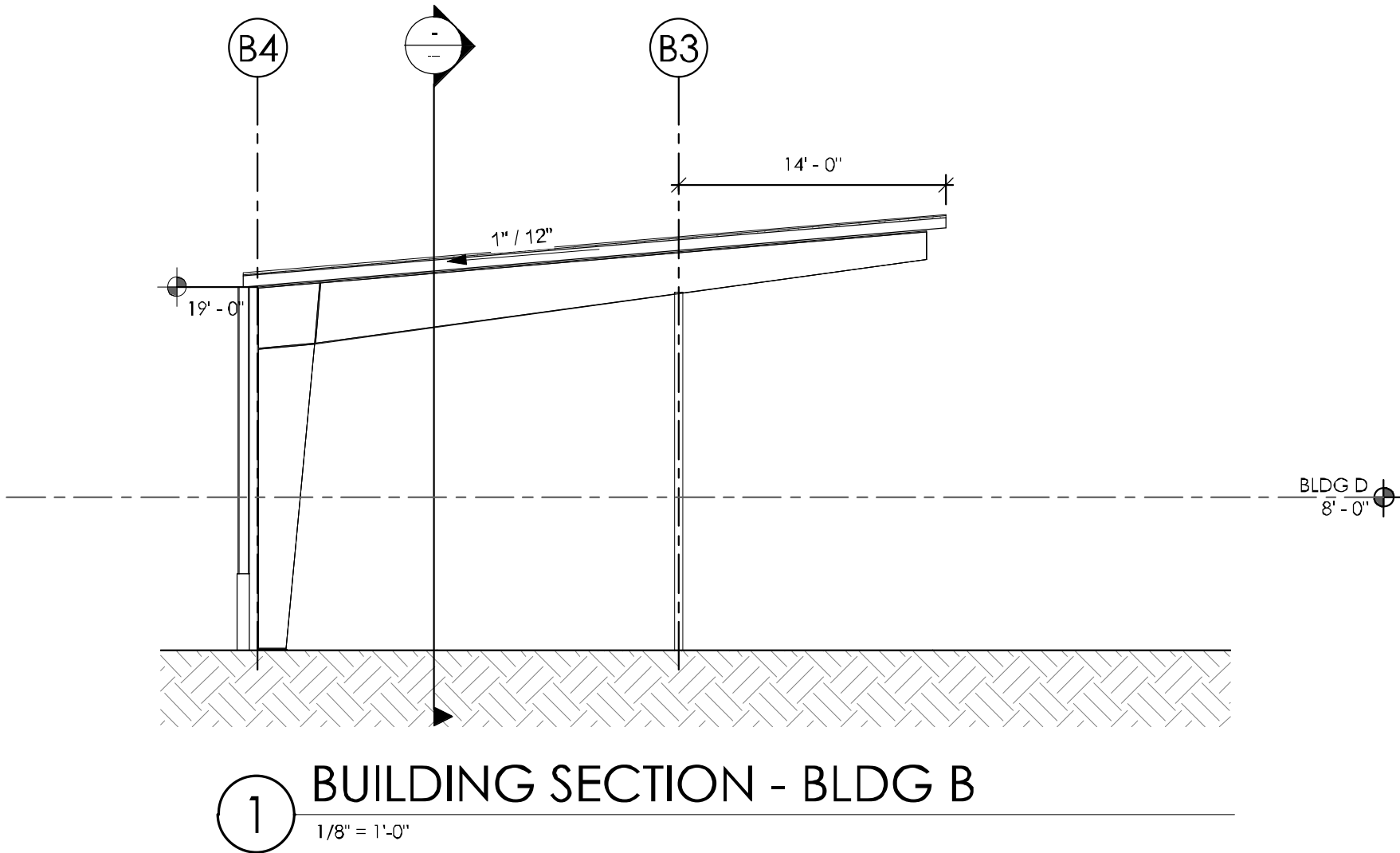
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BUILDING
SECTIONS

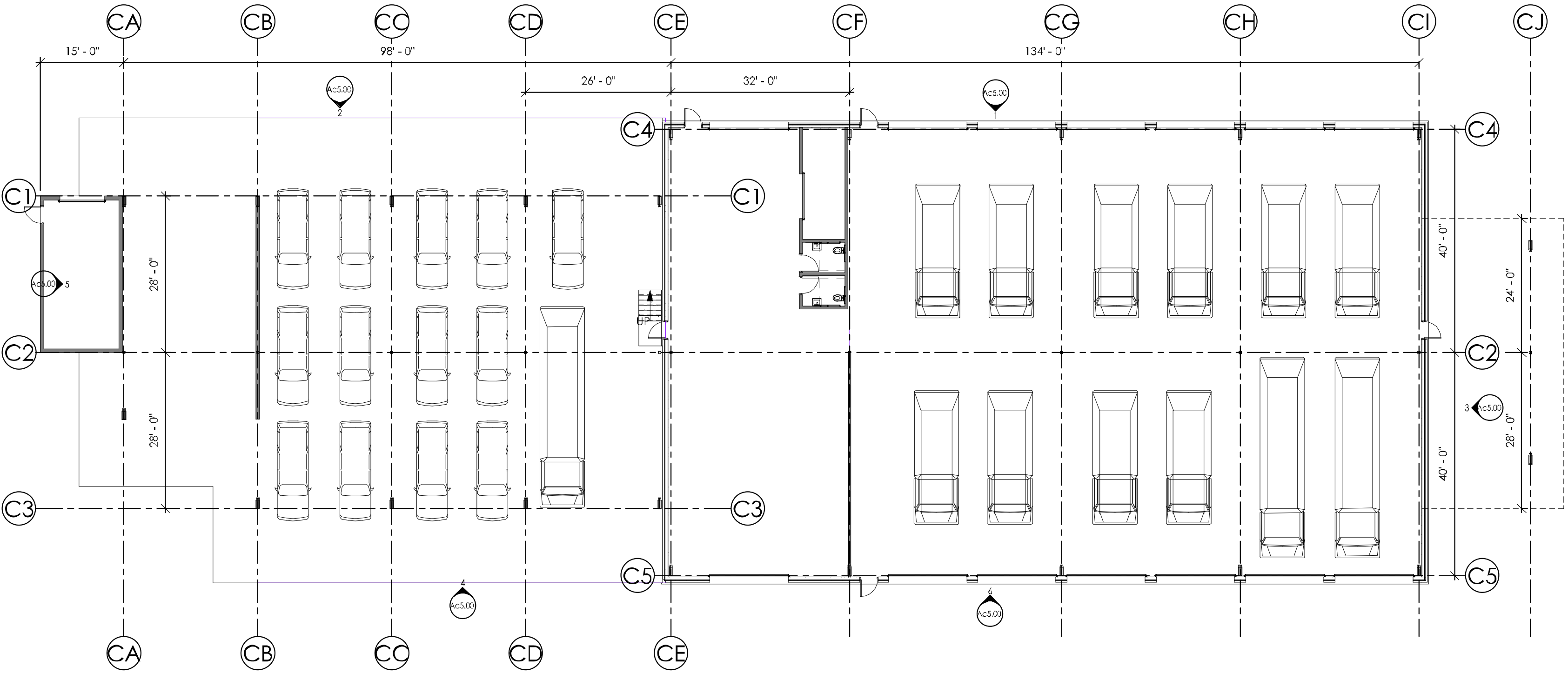
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1 REFERENCE FLOOR PLAN - BLDG C
1/16" = 1'-0"

ROOM FINISH SCHEDULE

NUMBER	ROOM NAME	FLOOR MAT	WALL BASE MAT	WALL FINISH				CEILING MAT
				N	E	S	W	
C101	WASHBAY EQUIPMENT	SC	RB	MDO	MDO	MDO	MDO	OTS
C102	WORKING STOCK	SC	RB	MDO	MDO	MDO	MDO	OTS
C103	ENCLOSED VEHICLE STORAGE	SC	RB	MDO	MDO	MDO	MDO	OTS
C104	HAZMAT	SC	RB	MDO	MDO	MDO	MDO	OTS
C105	TLT	CT	CT	CT-7/GWB	CT-7/GWB	CT-7/GWB	CT-7/GWB	GWB
C106	TLT	CT	CT	CT-7/GWB	CT-7/GWB	CT-7/GWB	CT-7/GWB	GWB

FINISH SCHEDULE LEGEND

LVT	LUXURY VINYL TILE
OTS	OPEN TO STRUCTURE
SC	SEALED CONCRETE
PC	POLISHED CONCRETE
CPT	CARPET
RB	RUBBER BASE
ACP	ACOUSTIC CEILING PANEL
MDO	MEDIUM DENSITY OVERLAY PANEL
PLW	PLYWOOD WAINSCOT

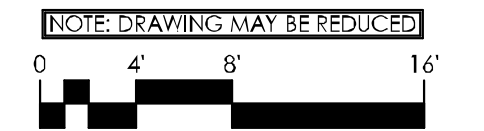


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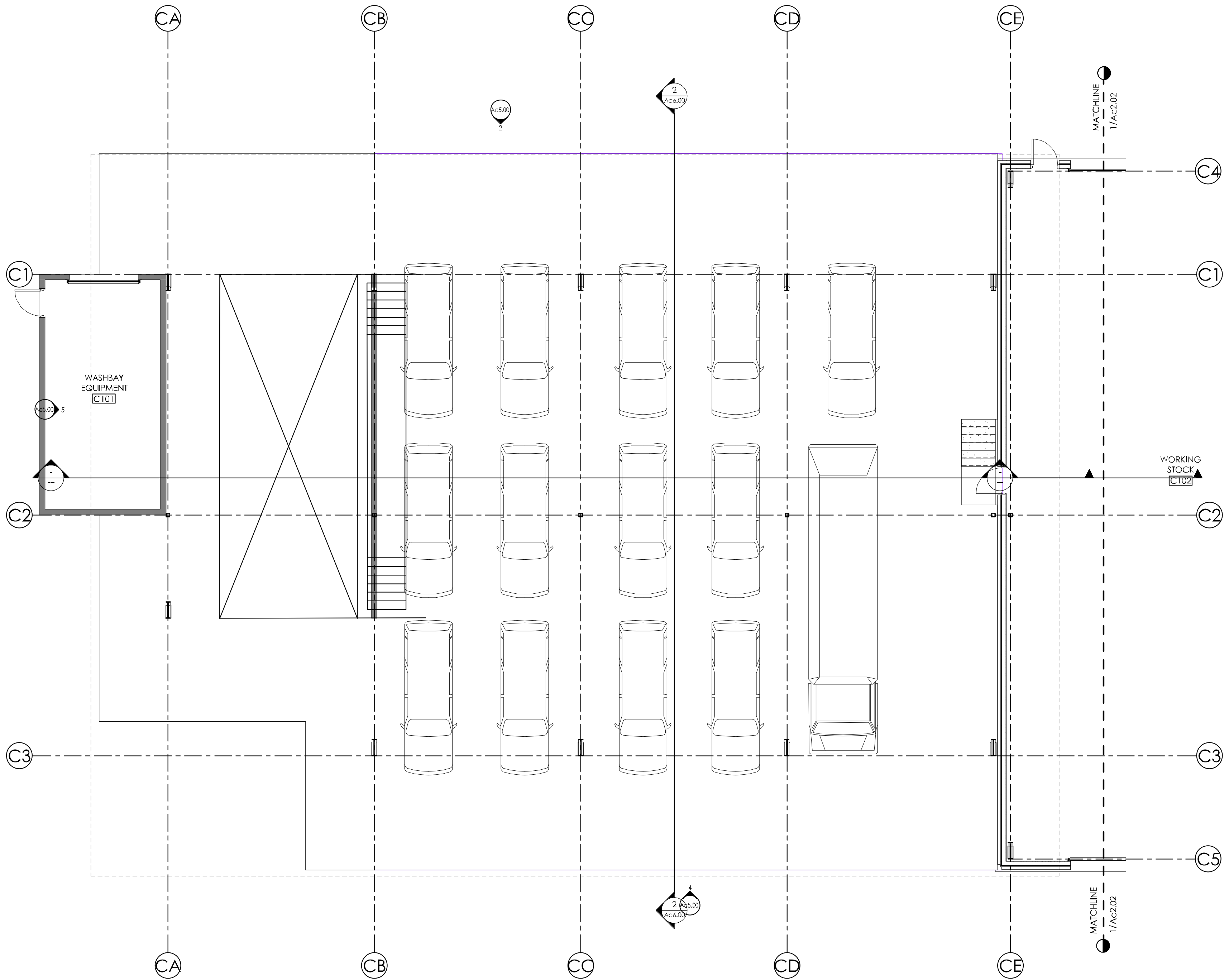
Sheet Title
**BUILDING C -
FLOOR PLAN**

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1 FLOOR PLAN - BLDG C
1/8" = 1'-0"



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Sheet Title
BUILDING C -
FLOOR PLAN

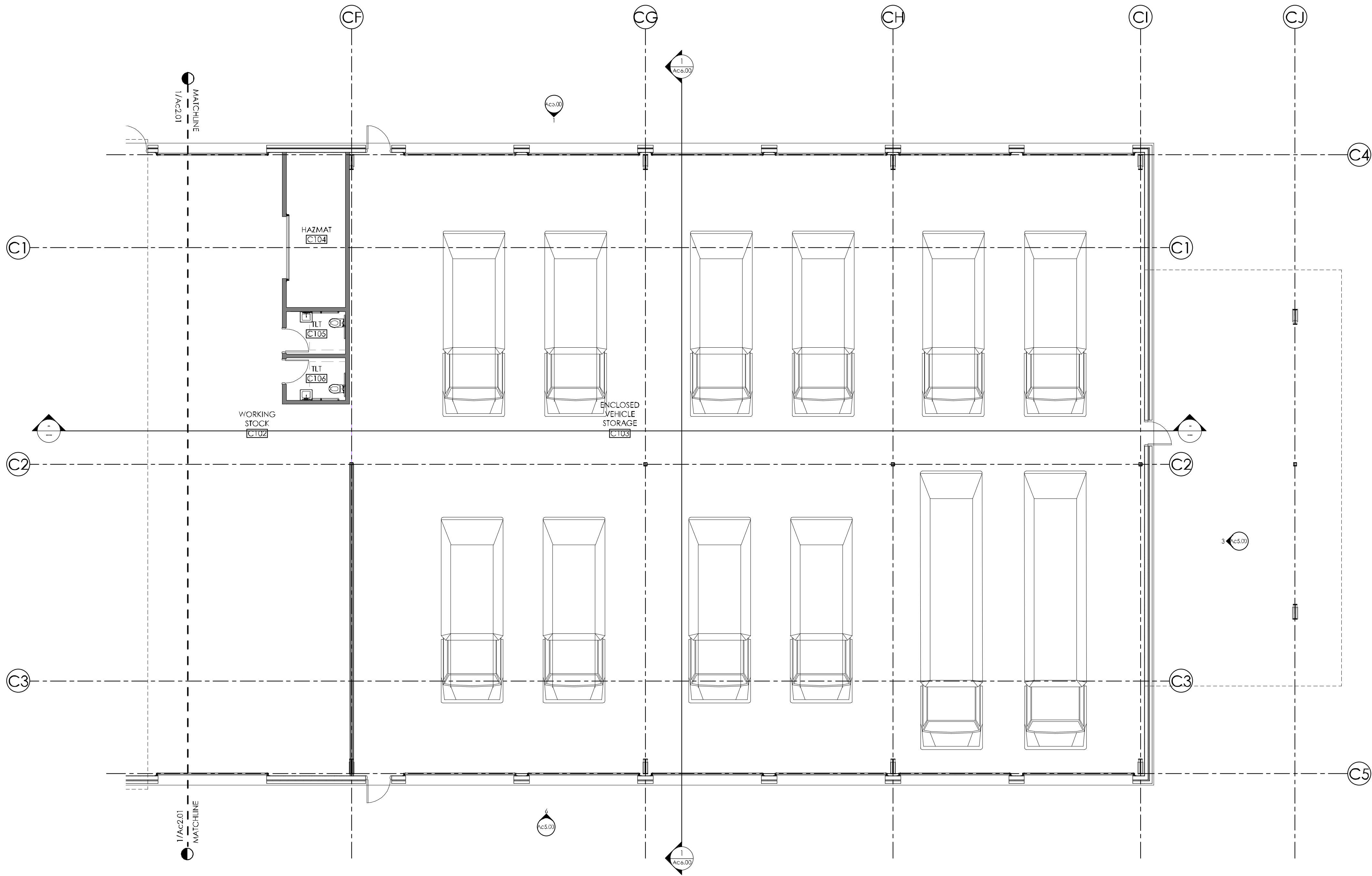
Drawn By
Author

Checked By
Checker

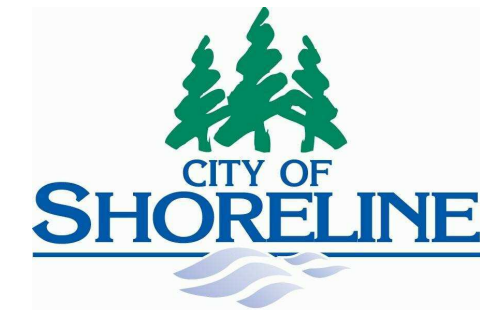
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1 FLOOR PLAN - BLDG C
1/8" = 1'-0"



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Sheet Title
**BUILDING C -
ROOF PLAN**

Drawn By
DV

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MH

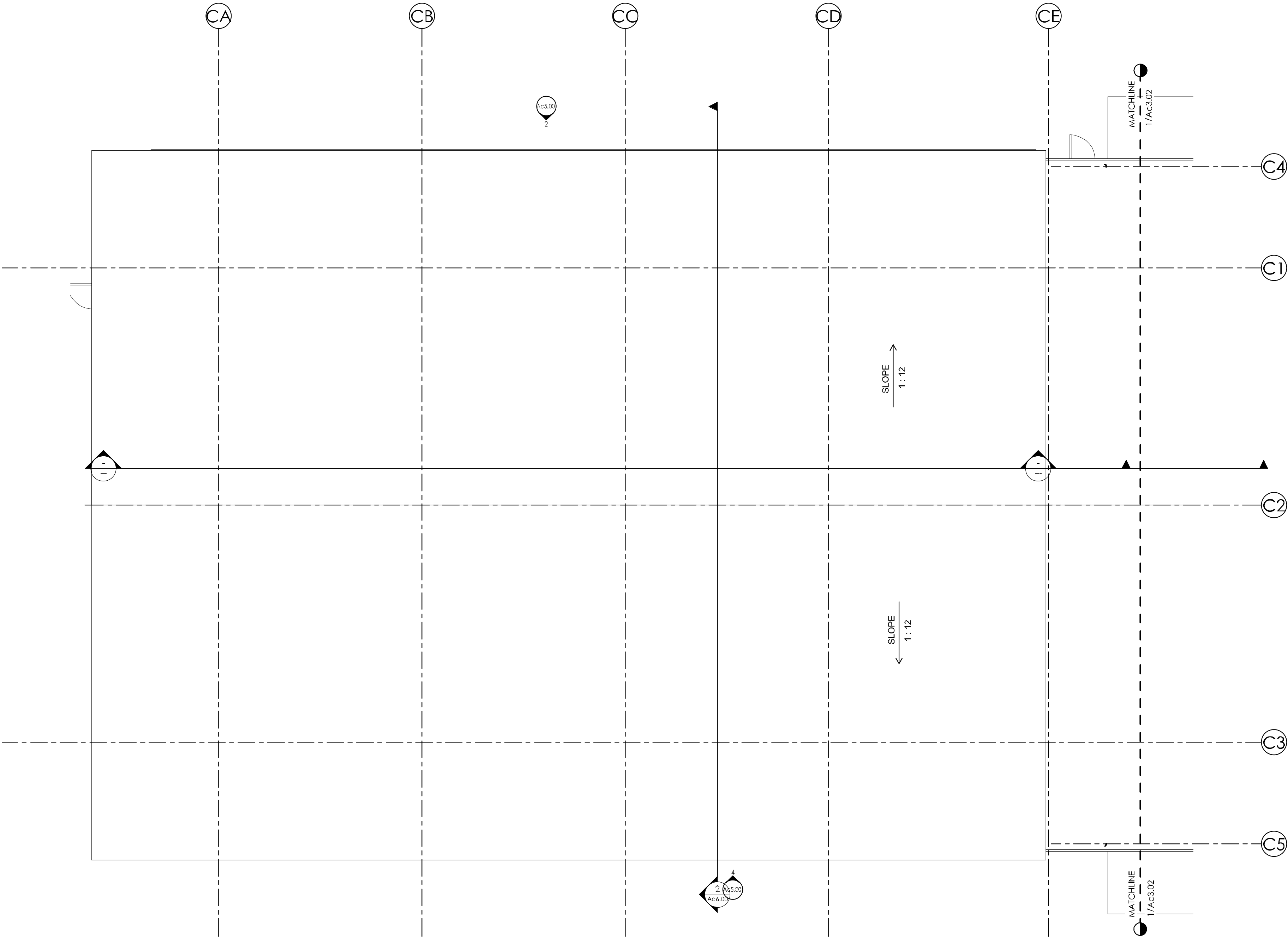
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Sheet Number

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1

ROOF PLAN - BLDG C

1/8" = 1'-0"



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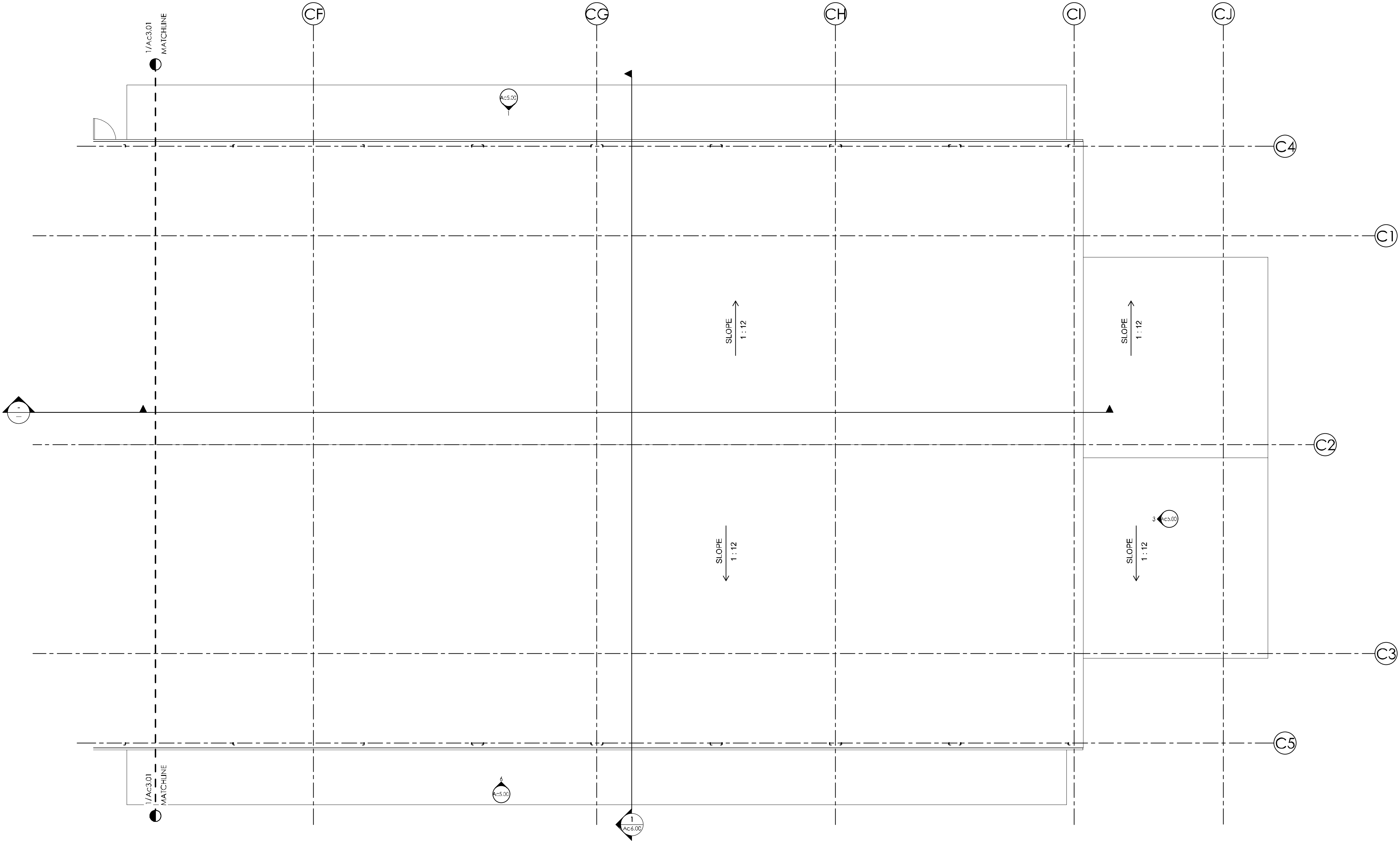
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BUILDING C -
ROOF PLAN

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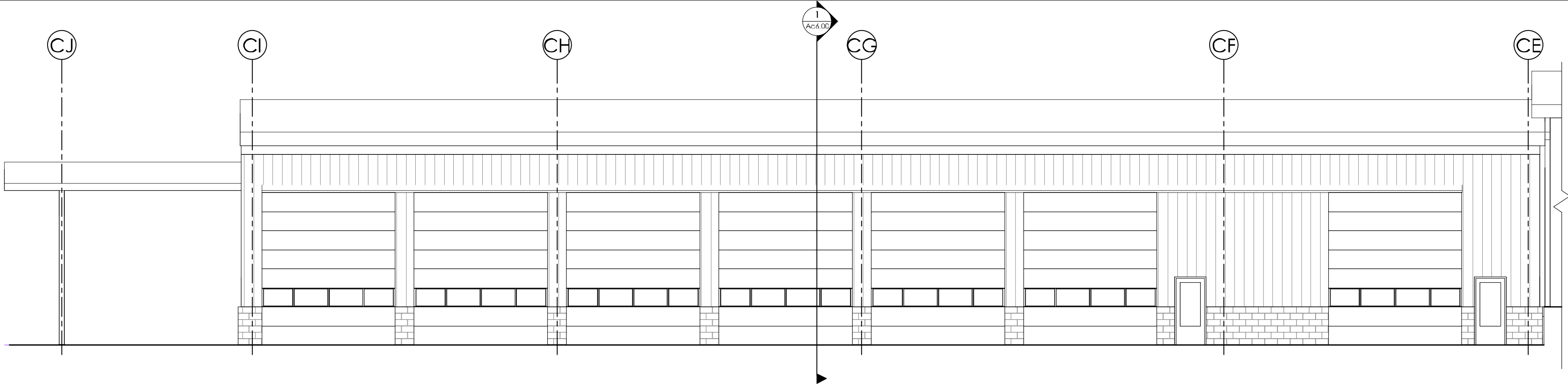
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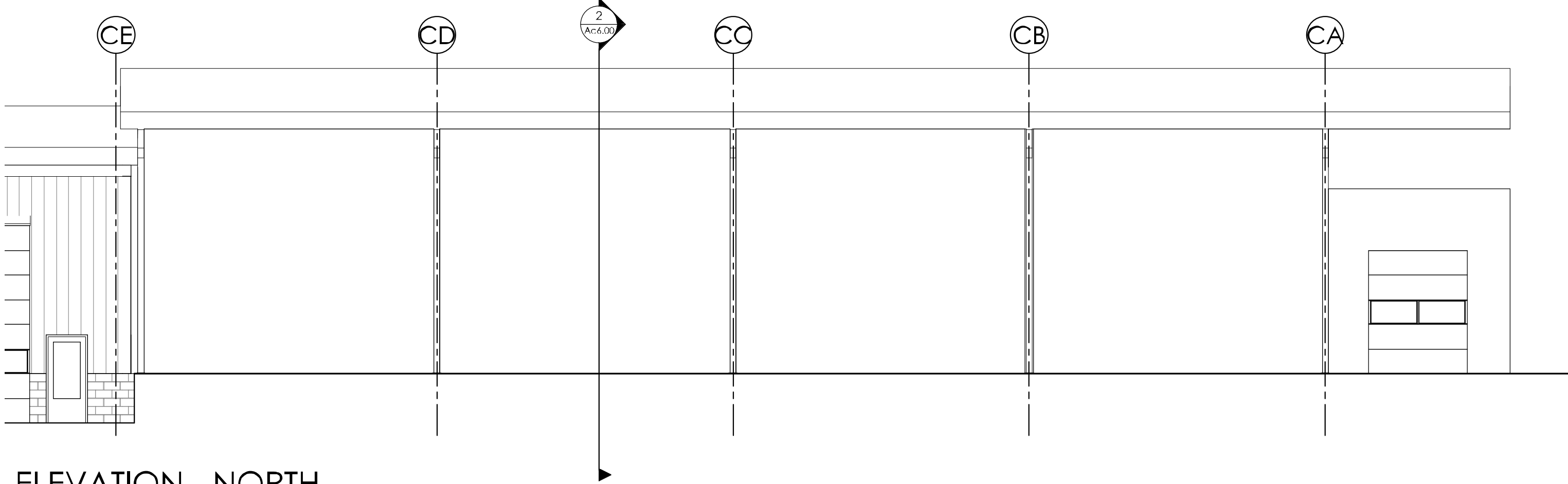
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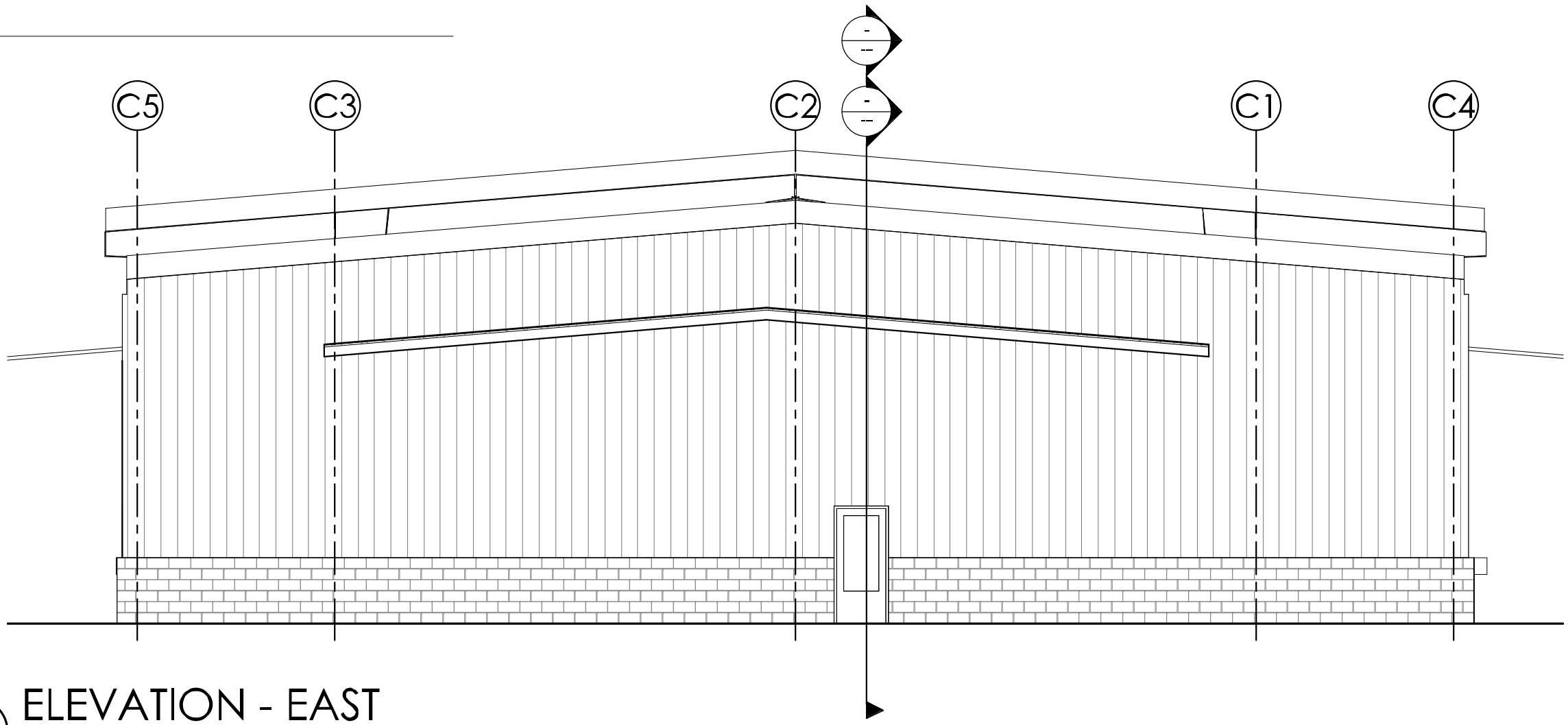
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1/8" = 1'-0"



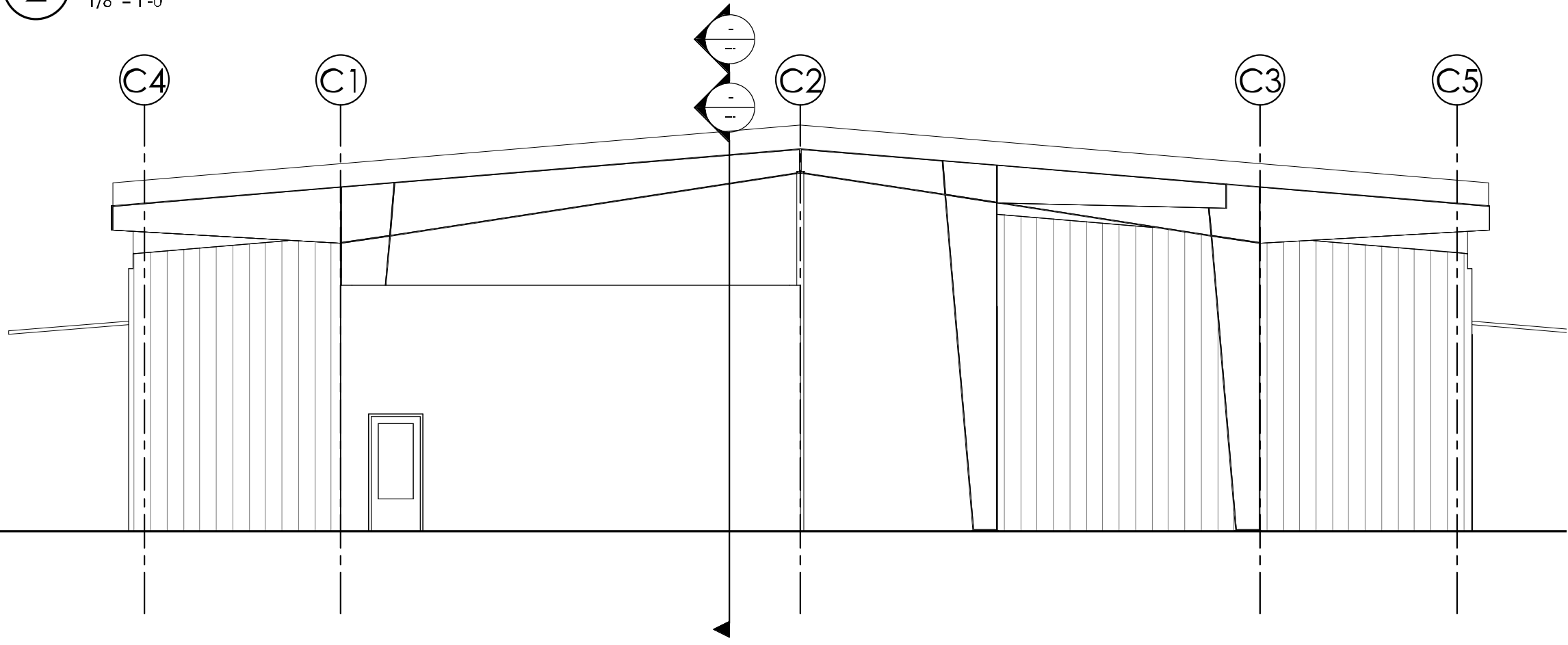
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1/8" = 1'-0"



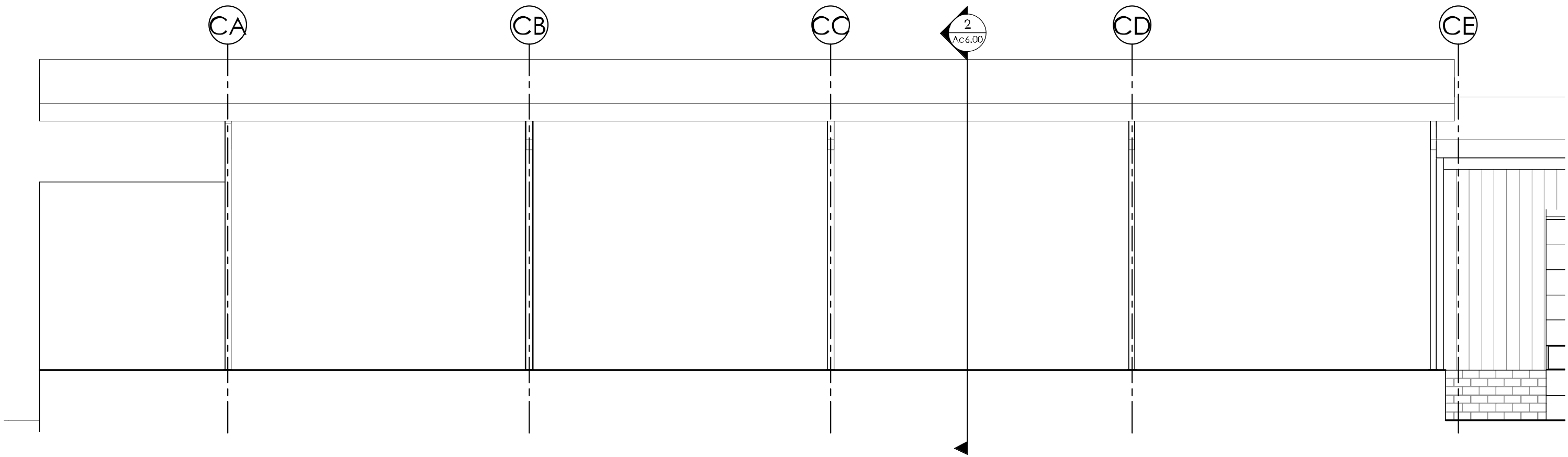
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1/8" = 1'-0"



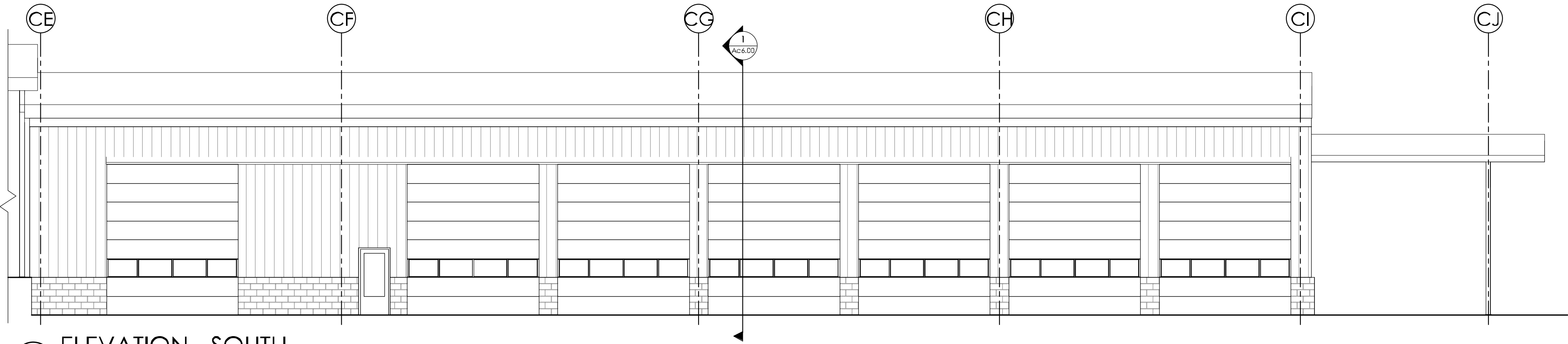
3 ELEVATION - EAST
1/8" = 1'-0"



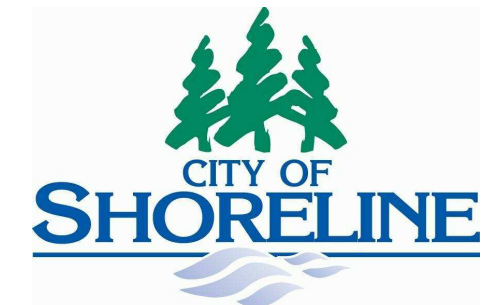
5 ELEVATION - WEST
1/8" = 1'-0"



4 ELEVATION - SOUTH
1/8" = 1'-0"



6 ELEVATION - SOUTH
1/8" = 1'-0"



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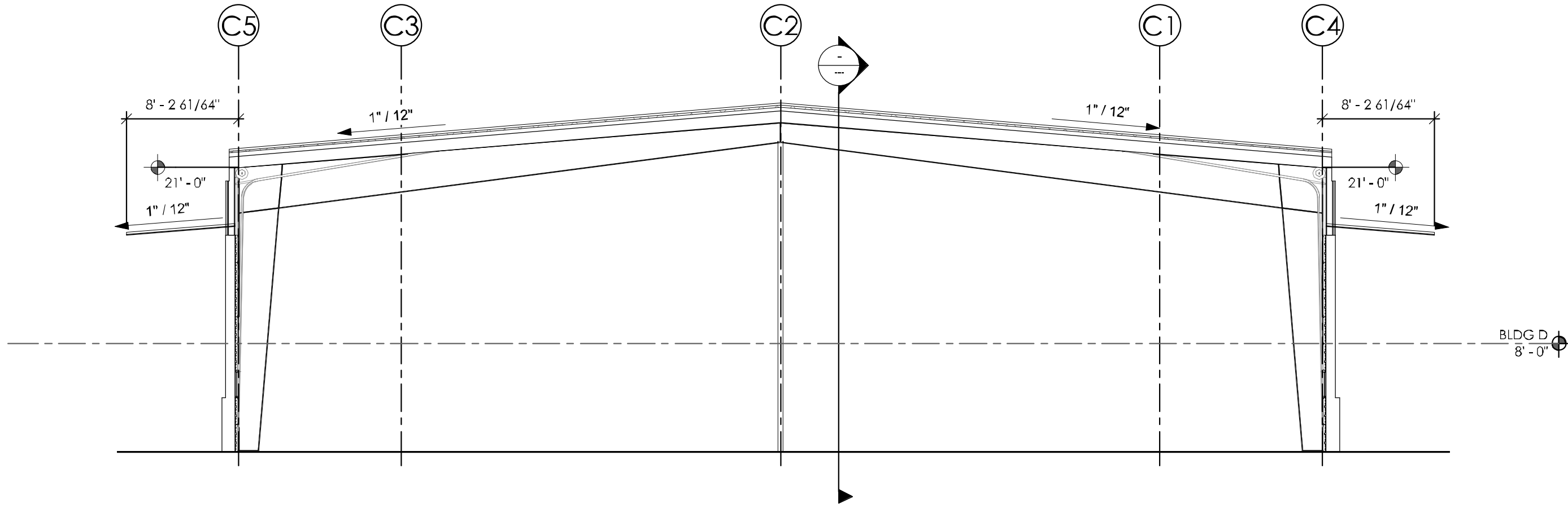
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BUILDING C -
BUILDING
SECTIONS

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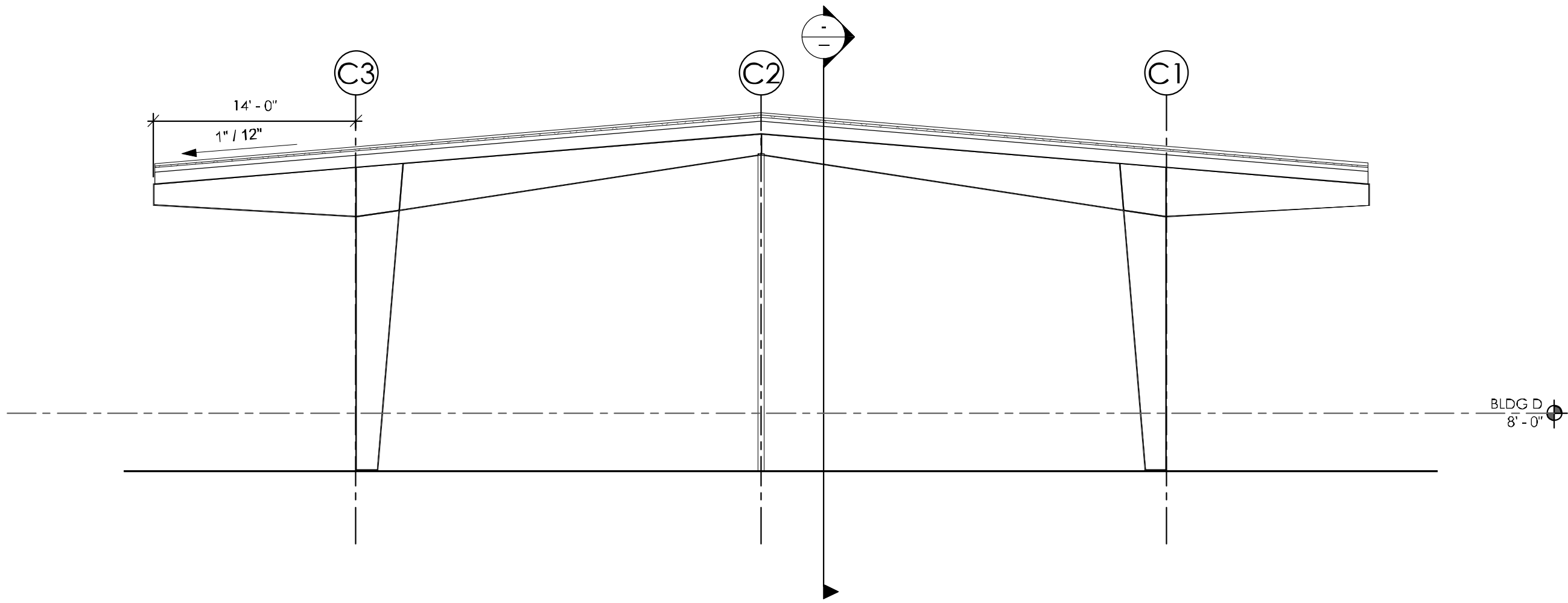
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1 BUILDING SECTION - BLDG C
1/8" = 1'-0"



2 BUILDING SECTION - BLDG C
1/8" = 1'-0"

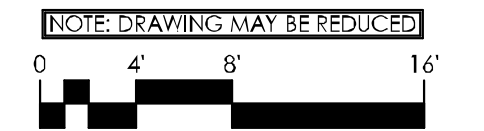


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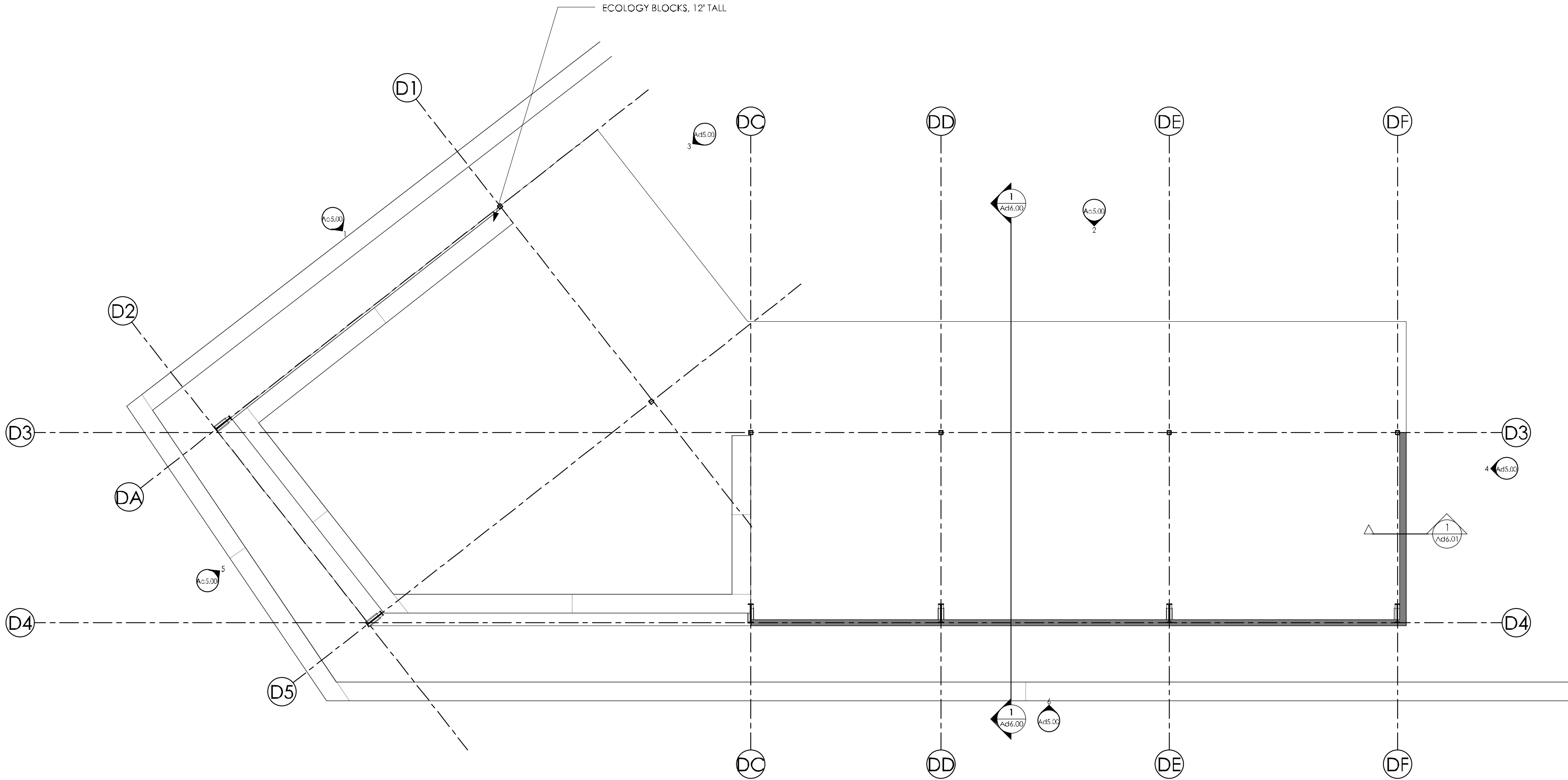
Sheet Title
BUILDING D -
FLOOR PLAN

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1 FLOOR PLAN - BLDG D
1/8" = 1'-0"



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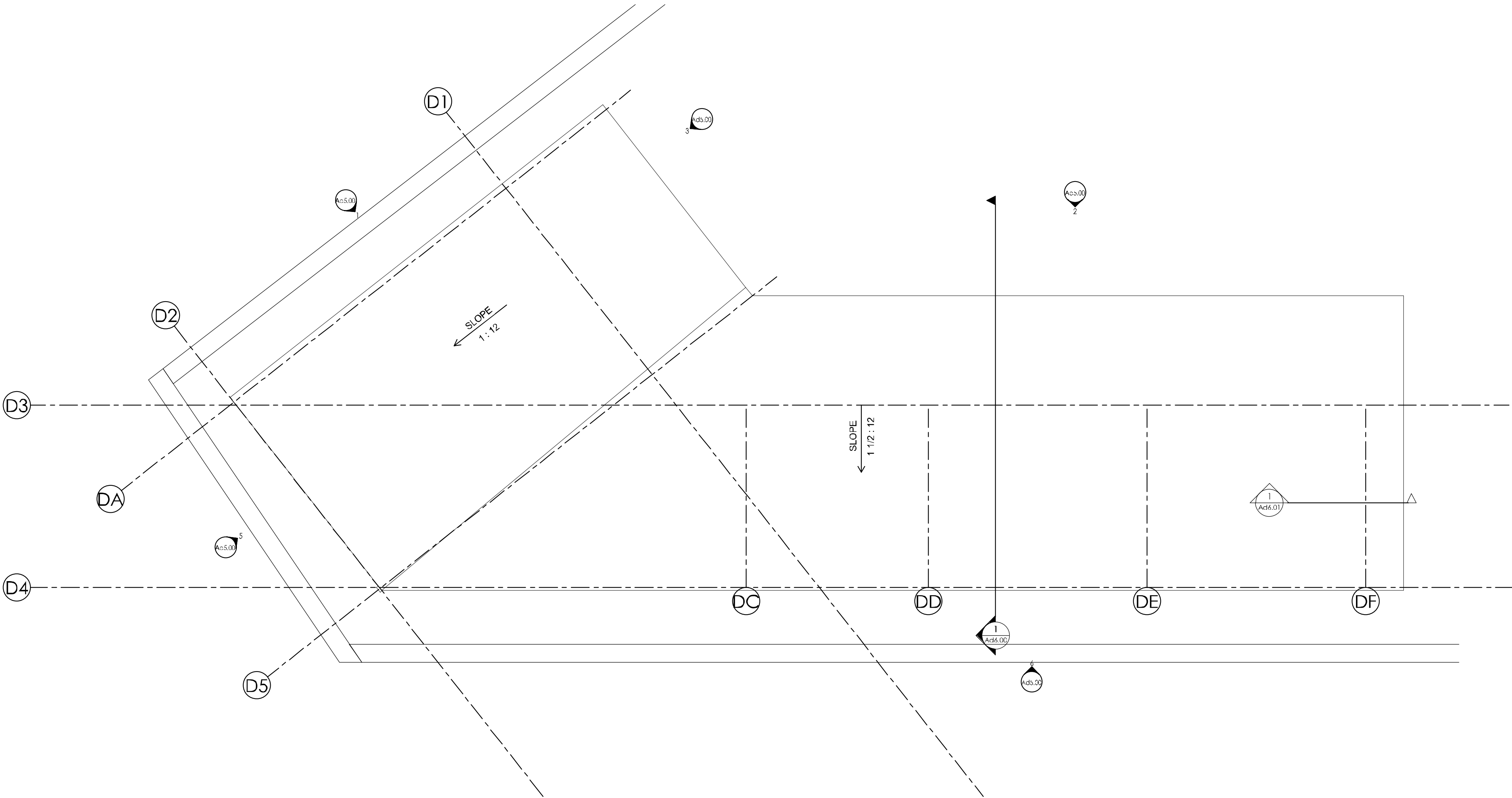
Sheet Title
BUILDING D -
ROOF PLAN

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1 ROOF PLAN - BLDG D
1/8" = 1'-0"



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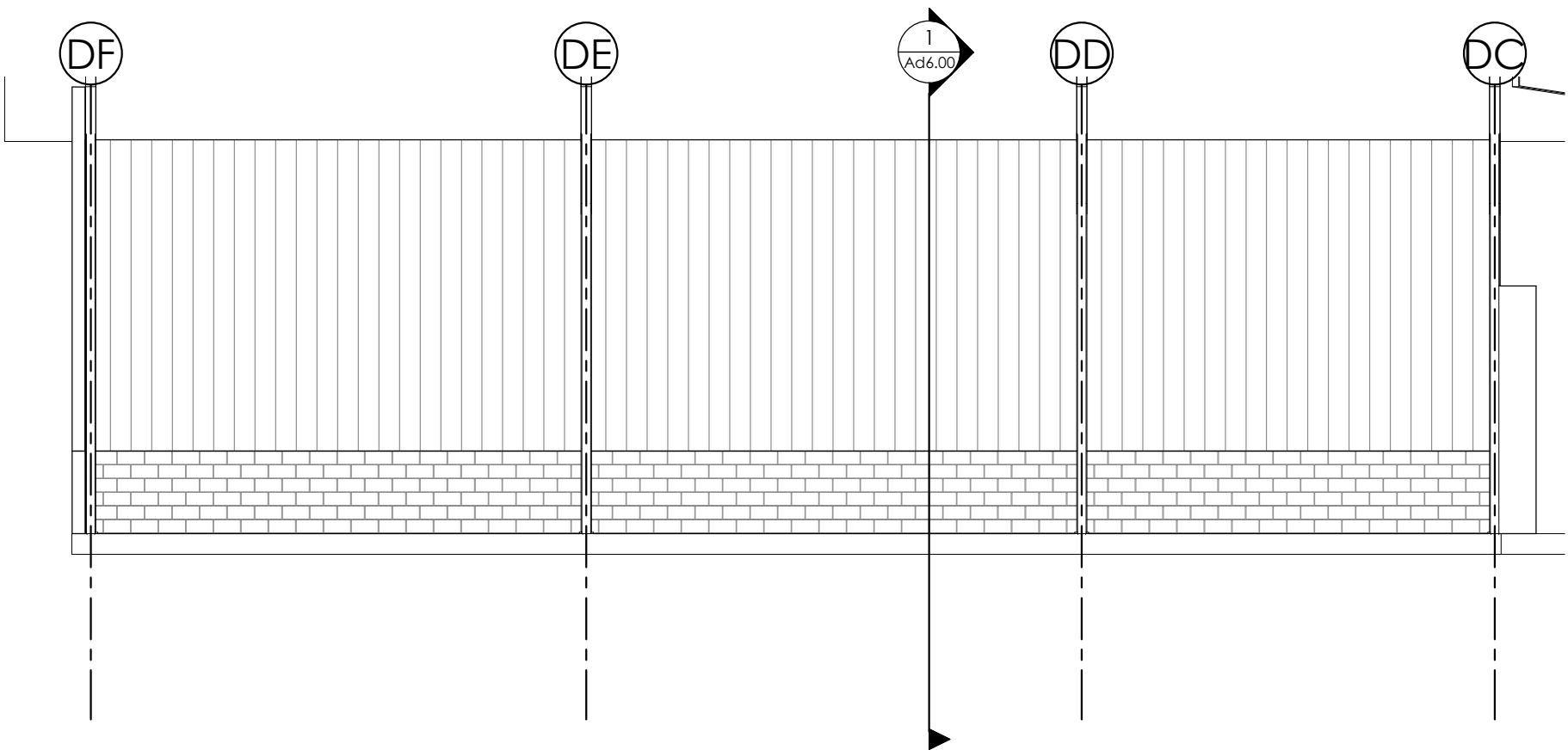
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BUILDING D -
EXTERIOR
ELEVATIONS

Drawn By DV Checked By MH

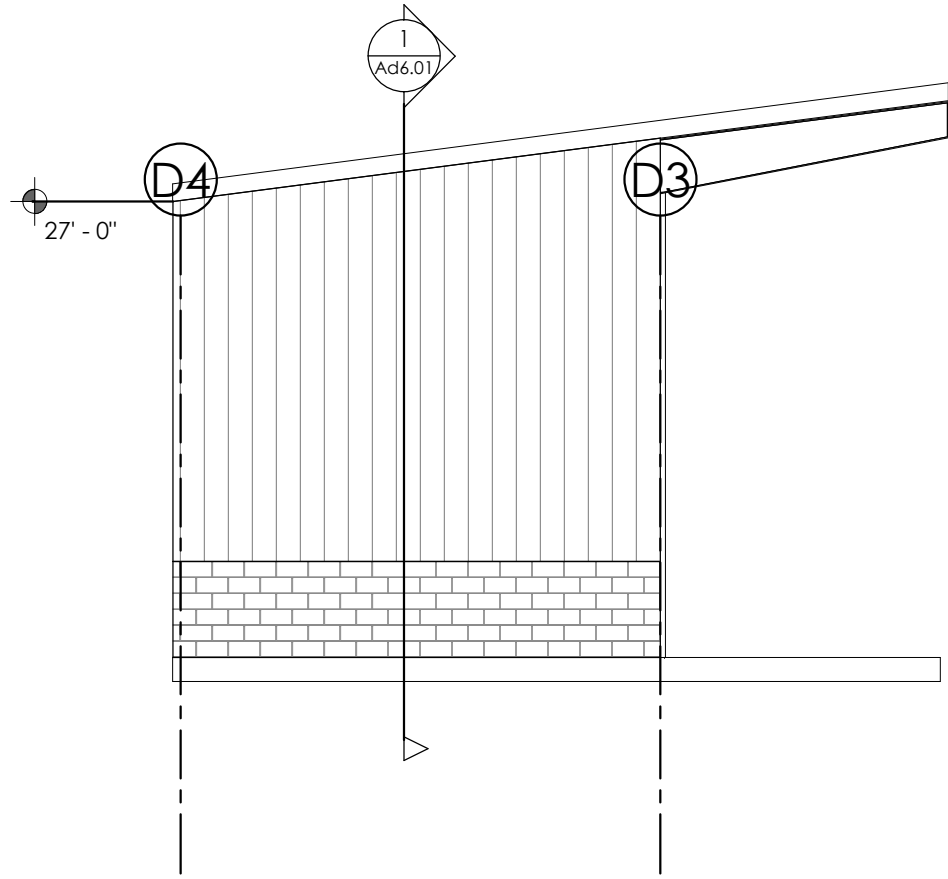
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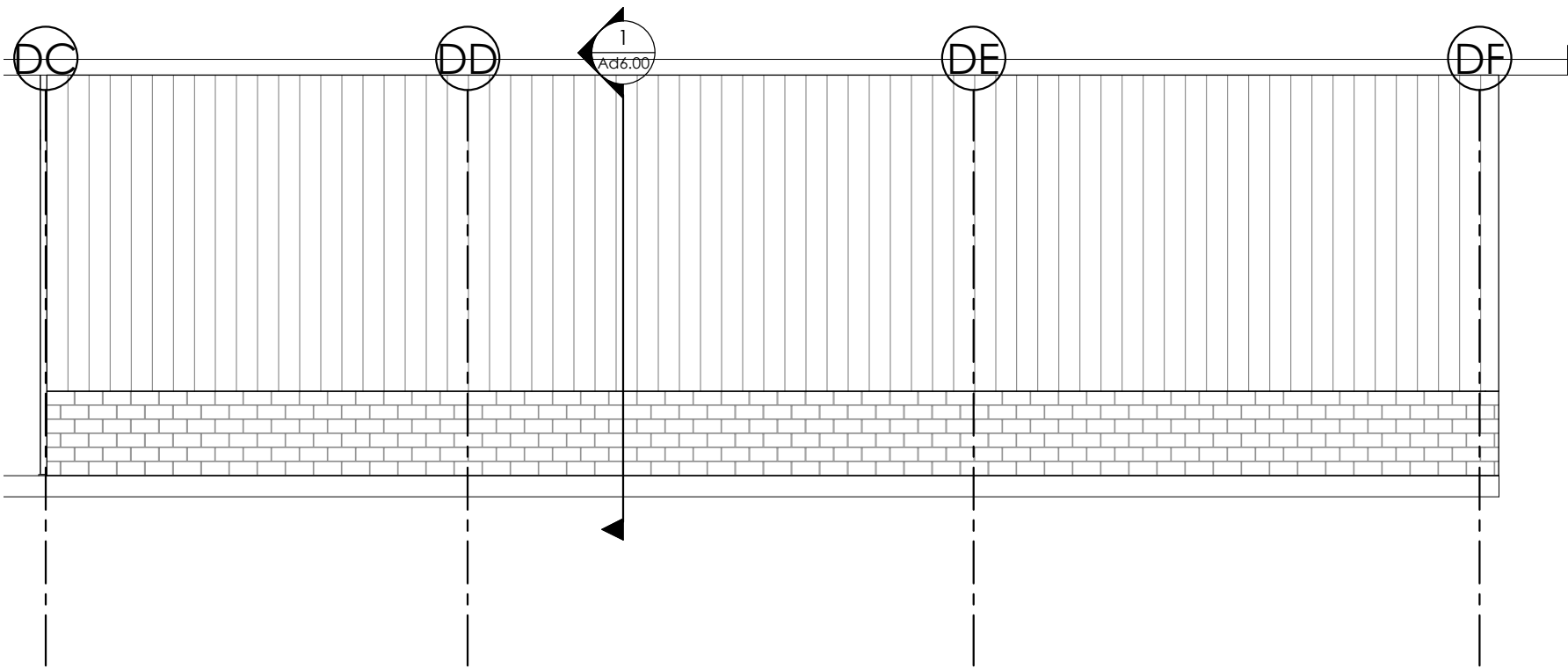
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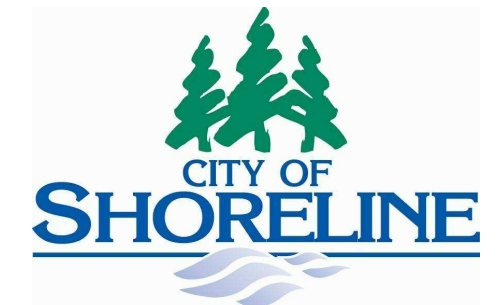
1 ELEVATION - EAST
1/8" = 1'-0"



2 ELEVATION - SOUTH
1/8" = 1'-0"



3 ELEVATION - WEST
1/8" = 1'-0"



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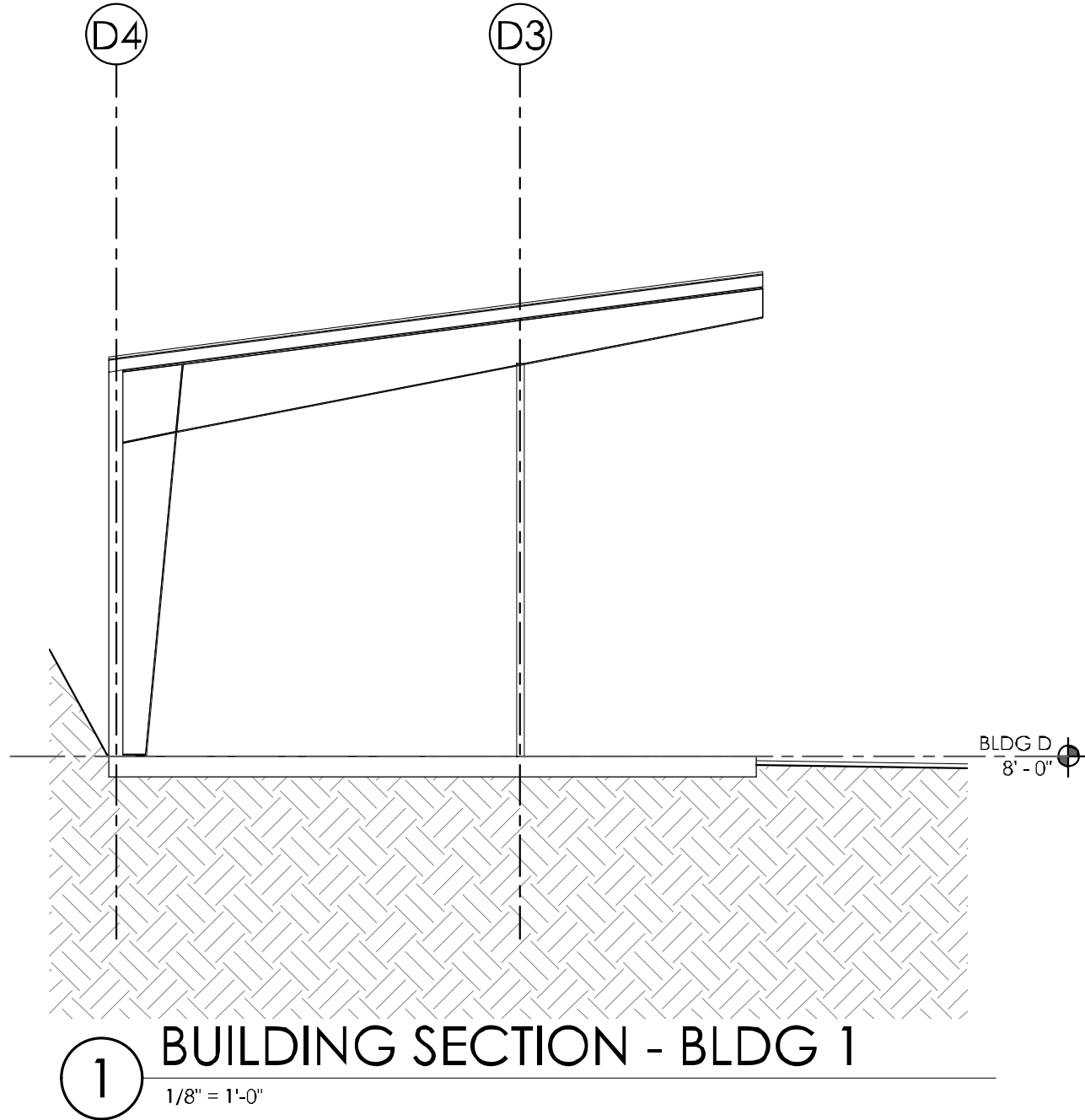
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BUILDING
SECTIONS

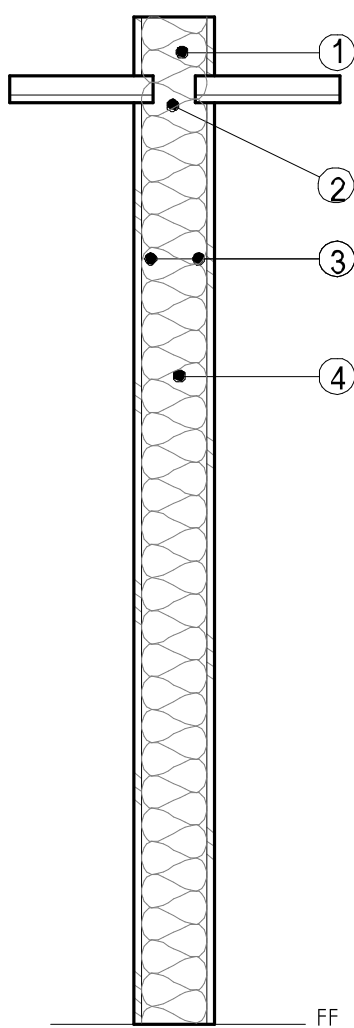
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SIZE

1. ACTUAL WALL STUD THICKNESS PER PLAN

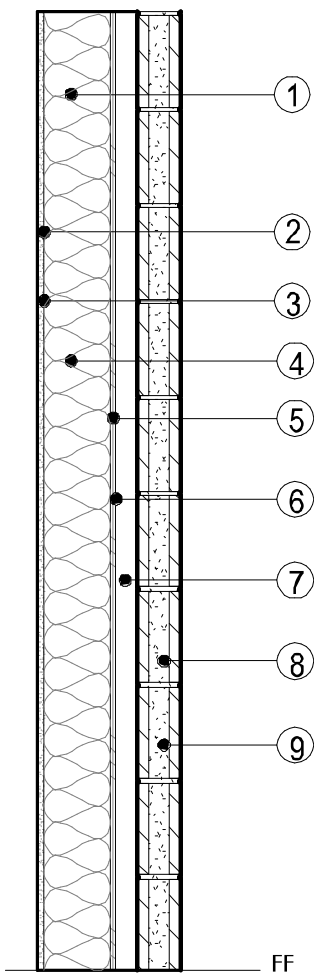
CONSTRUCTION

- 2x6 DOUG FIR #2 @ 16" OC OR HEM FIR #2 @ 12" OC
- BLOCKING AND OR BACKING AT CEILING LINE AND AS REQUIRED BY CODE
- 5/8" TYPE 'X' GWB, FINISH AS SCHEDULED (NOT SHOWN)
- SOUND BATT INSULATION FOR FULL HEIGHT OF WALL UNLESS 'X' MODIFIER IS INDICATED ON WALL TYPE, IN WHICH CASE INSULATION IS NOT REQUIRED. USE 3-1/2" BATTS AT 4" STUD WALLS AND 5-1/2" BATTS AT 6" WALLS.

HEIGHT

1. WALL IS CONTINUOUS FROM FLOOR, FOUNDATION OR HEADER/BEAM AS APPLICABLE, TO UNDERSIDE OF FLOOR OR ROOF STRUCTURE, UNO.

BUILDING A/C INTERIOR WALL TYPE



SIZE

1. ACTUAL WALL STUD THICKNESS PER PLAN

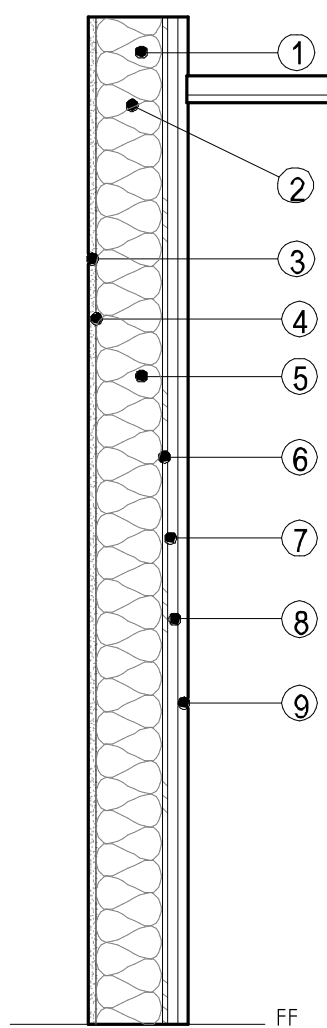
CONSTRUCTION

- 2x6 DOUG FIR #2 @ 16" OC OR HEM FIR #2 @ 16" OC ALSO SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION, FRAMING & BACKING/BLOCKING REQUIREMENTS.
- 5/8" TYPE 'X' GWB, FINISH AS SCHEDULED (NOT SHOWN)
- CLASS III VAPOR RETARDER
- FILL CAVITY WITH UNFACED BATT INSULATION, R-21 MIN
- 15/32" PLYWOOD SHEATHING
- WATER RESISTANT BARRIER (WRB), ALSO SERVES AS AIR BARRIER
- 2" AIR GAP
- CMU VENEER

HEIGHT

1. WALL IS CONTINUOUS FROM FLOOR, FOUNDATION OR HEADER/BEAM AS APPLICABLE, TO UNDERSIDE OF FLOOR OR ROOF STRUCTURE, UNO.

BUILDING A - CMU EXTERIOR WALL TYPE 0-4' AFF



SIZE

1. ACTUAL WALL STUD THICKNESS PER PLAN

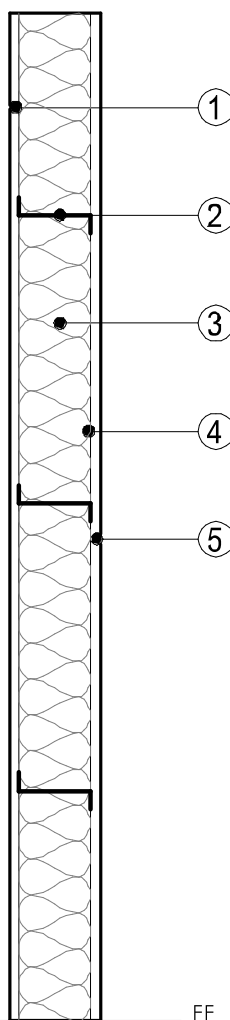
CONSTRUCTION

- 2x6 DOUG FIR #2 @ 16" OC OR HEM FIR #2 @ 16" OC ALSO SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION, FRAMING & BACKING/BLOCKING REQUIREMENTS.
- BLOCKING AND OR BACKING AT CEILING LINE AND AS REQUIRED BY CODE.
- 5/8" TYPE 'X' GWB, FINISH AS SCHEDULED (NOT SHOWN)
- CLASS III VAPOR RETARDER
- FILL CAVITY WITH UNFACED BATT INSULATION, R-21 MIN
- 15/32" PLYWOOD SHEATHING
- WATER RESISTANT BARRIER (WRB), ALSO SERVES AS AIR BARRIER
- 7/8" HAT CHANNEL
- METAL SIDING, SEE EXTERIOR ELEVATIONS

HEIGHT

1. WALL IS CONTINUOUS FROM FLOOR, FOUNDATION OR HEADER/BEAM AS APPLICABLE, TO UNDERSIDE OF FLOOR OR ROOF STRUCTURE, UNO.

BUILDING A/WASH&EQUIPMENT EXTERIOR WALL TYPE 4'+ AFF



SIZE

1. ACTUAL GIRT THICKNESS PER PLAN

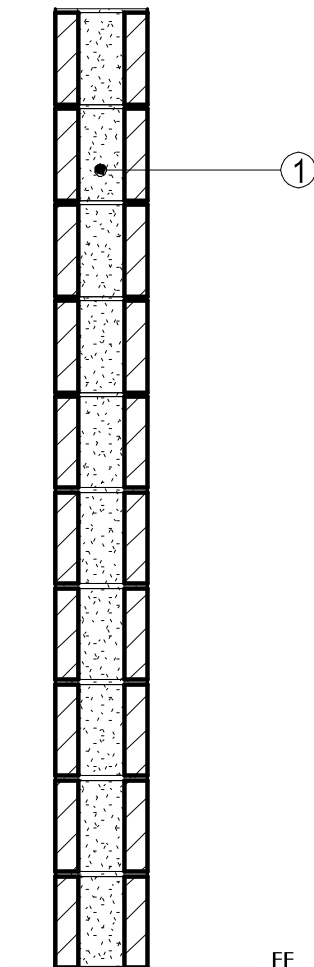
CONSTRUCTION

- METAL WALL PANELS, SEE EXTERIOR ELEVATIONS FOR LAYOUT AND PANEL TYPE.
- STEEL GIRTS @ 24" OC PER METAL BUILDING MANUFACTURER.
- BATT INSULATION FULL DEPTH OF WALL (R-21 MIN). (ONLY WHEN AT INTERIOR SPACE)
- BUILDING WRAP
- METAL WALL PANELS, SEE EXTERIOR ELEVATIONS FOR LAYOUT AND PANEL TYPE.

NOTES

1. SEE NOTES ON SHEET A30.00 FOR ADDITIONAL REQUIREMENTS.

BUILDING B/D METAL SIDING EXTERIOR WALL TYPE 4'+ AFF



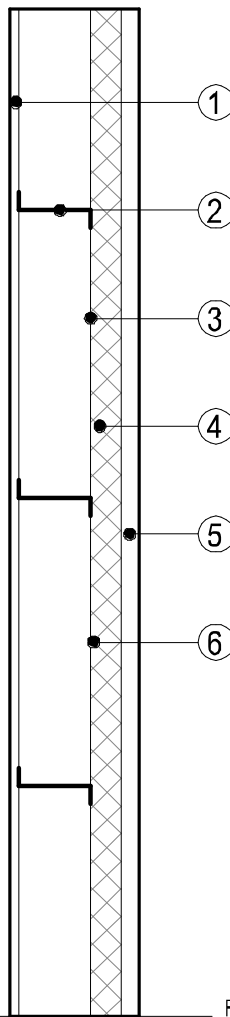
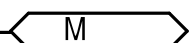
SIZE

1. NOMINAL MASONRY THICKNESS PER PLAN

CONSTRUCTION

1. CMU (SEE STRUCTURAL FOR REINFORCING AND GROUTING REQUIREMENTS)

BUILDING B/D MASONRY EXTERIOR WALL TYPE 0-4' AFF



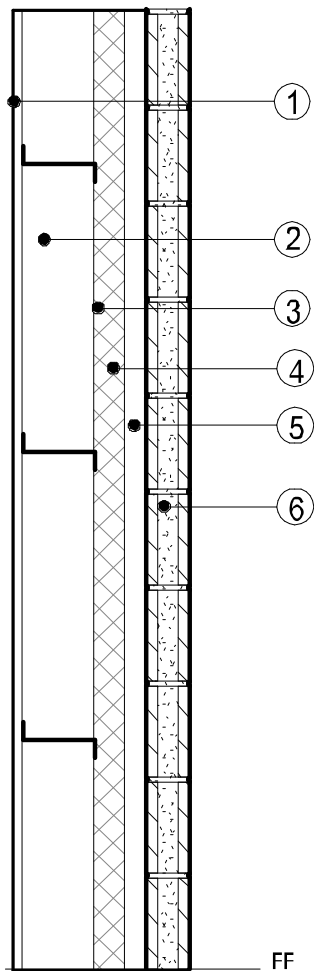
SIZE

1. ACTUAL GIRT THICKNESS PER PLAN

CONSTRUCTION

- MDO TO 10' AFF
- STEEL GIRTS @ 24" OC PER METAL BUILDING MANUFACTURER.
- BUILDING WRAP
- 2.5" AIR/VAPOR BARRIER RIGID INSULATION
- METAL WALL PANELS, SEE EXTERIOR ELEVATIONS FOR LAYOUT AND PANEL TYPE.
- VAPOR RETARDER (ONLY WHEN AT INTERIOR SPACE)

BUILDING C GIRT WALL TYPE 4'+ AFF



SIZE

1. ACTUAL WALL STUD THICKNESS PER PLAN

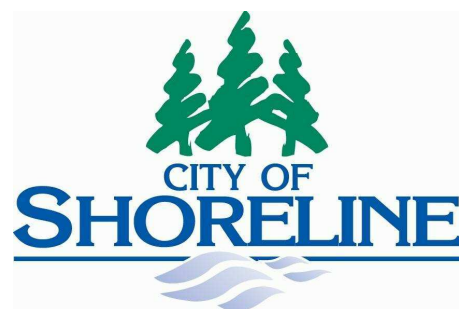
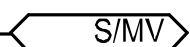
CONSTRUCTION

- MDO TO 10' AFF
- STEEL GIRTS @ 24" OC PER METAL BUILDING MANUFACTURER.
- BUILDING WRAP
- 2.5" AIR/VAPOR BARRIER RIGID INSULATION
- AIR SPACE
- CMU VENEER

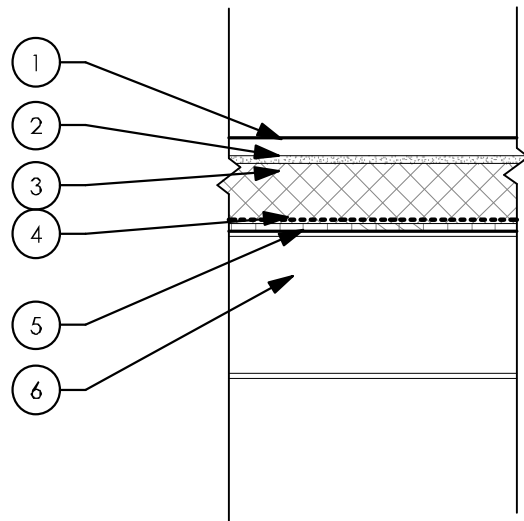
HEIGHT

1. WALL IS CONTINUOUS FROM FLOOR, FOUNDATION OR HEADER/BEAM AS APPLICABLE, TO UNDERSIDE OF FLOOR OR ROOF STRUCTURE, UNO.

BUILDING C - CMU EXTERIOR WALL TYPE 0-4' AFF



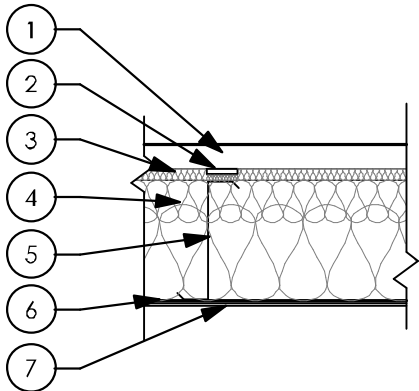
ROOF TYPE BUILDING A



ASSEMBLY

1. 1.5" STANDING SEAM METAL ROOFING
2. 5/8" COVERBOARD
3. RIGID INSULATION - 5" (R-30 MIN)
4. VAPOR RETARDER, INTERIM ROOFING
5. 19/32" PLYWOOD SHEATHING
6. STRUCTURE, SSD

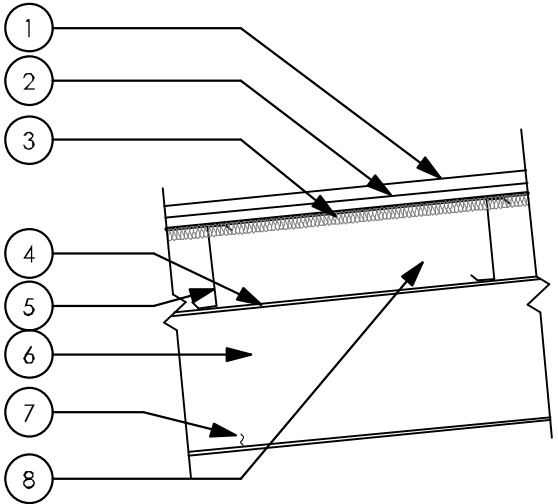
ROOF TYPE BUILDING C ENCLOSED



ASSEMBLY

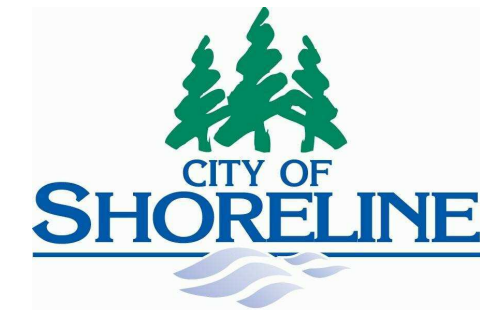
1. METAL ROOF PANEL SYSTEM BY METAL BUILDING MFR
2. 1.5" THERMAL BLOCKS (R-3.5 MIN) ON TOP OF ROOF PURLINS & INSULATION.
3. 3.5" BATT INSULATION COMPRESSED, LAP OVER ROOF PURLINS (R-11 MIN)
4. FILL ROOF PURLIN CAVITY WITH BATT INSULATION (1) 3.5" LAYER OF BATT INSULATION (R-11), ON TOP OF (1) 8" LAYER OF BATT INSULATION (R-25). TOTAL ASSEMBLY R-50.5. SEE ROOF TYPES FOR DETAILED CALLOUTS.
5. ROOF PURLINS BY METAL BUILDING MFR
6. CONTINUOUS MEMBRANE BANDED LINER SYSTEM, AT ENDS WRAP UP LINER TO CREATE A CLEAN FINISH. TO MEET ALL ENERGY CODE REQUIREMENTS AND ASTM E-84.
7. METAL LINER PANEL

ROOF TYPE BUILDINGS B, C, & D CANOPY & OVERHANG



ASSEMBLY

1. STANDING SEAM METAL ROOF PANEL SYSTEM
2. THERMAL BLOCKS ON TOP OF ROOF PURLINS & INSULATION.
3. 2" BATT INSULATION, LAP OVER ROOF PURLINS
4. POLYETHYLENE SUPPORT FABRIC & STRAPPING SYSTEM (METAL BUILDING SYSTEM INSULATION ENERGY SAVER SUPPORT FABRIC AND STRAPPING). FIRE RETARDANTS: FLAME SPREAD INDEX OF 25 OR LESS; SMOKE DENSITY INDEX OF 50 OR LESS, BASED ON ASTM E-84.
5. ROOF PURLINS BY METAL BUILDING MFR
6. STEEL FRAME BY METAL BUILDING MFR.
7. BIRD SPIKES ON BOTTOM FLANGE
8. FULL DEPTH INSULATION WHERE SHOWN



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Sheet Title
ROOF TYPES

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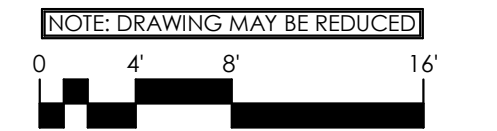


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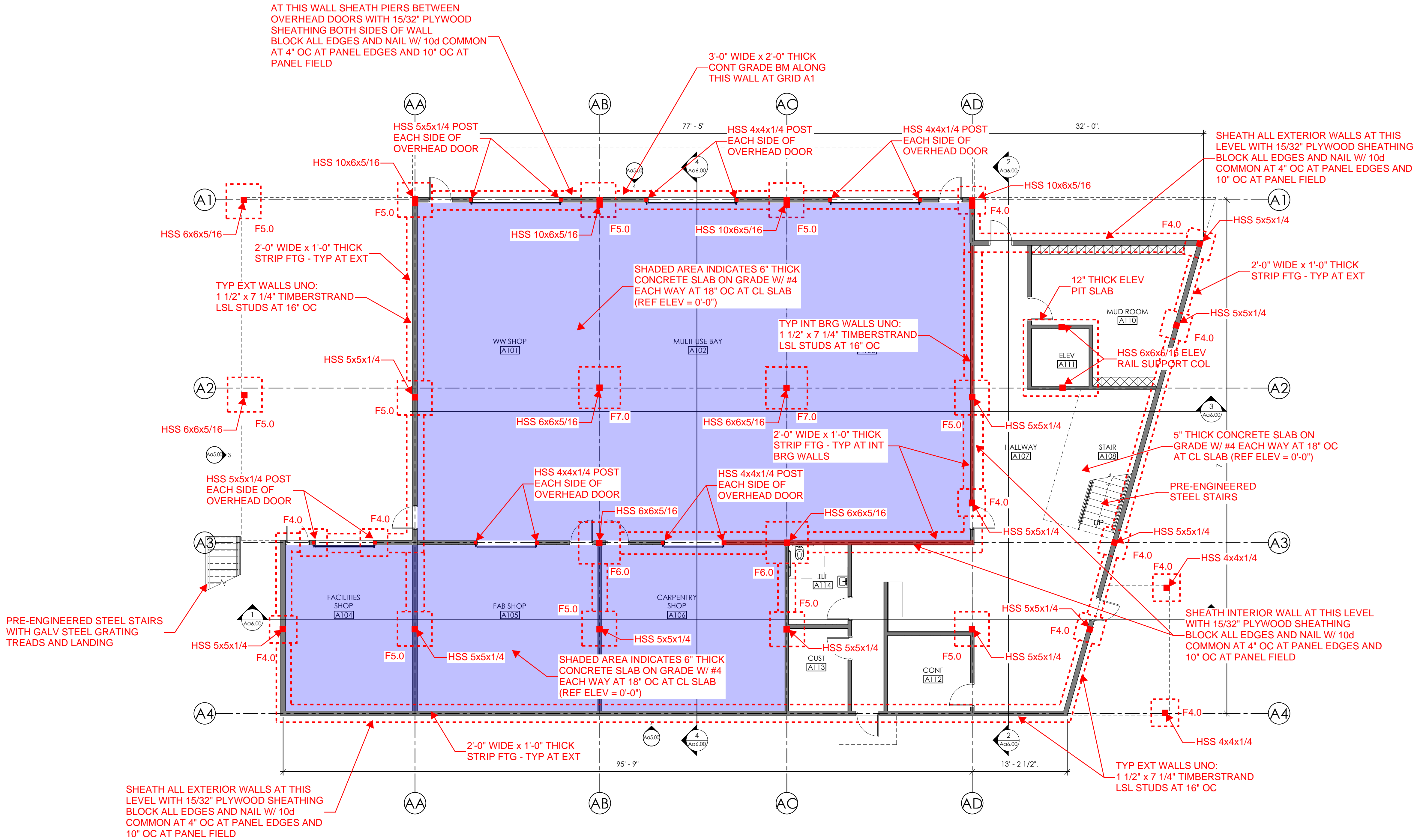
Sheet Title
**BUILDING A -
FOUNDATION
PLAN**

Drawn By Author Checked By Checker

Sheet Number

Sa1.01

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1 FOUNDATION PLAN - BLDG A
1/8" = 1'-0"

FOOTING SCHEDULE

MARK	SIZE	REINF
F4.0	4'-0" x 4'-0" x 1'-0"	(5) #5 x 3'-6" EACH WAY
F5.0	5'-0" x 5'-0" x 1'-4"	(6) #5 x 4'-6" EACH WAY
F7.0	7'-0" x 7'-0" x 1'-6"	(8) #6 x 5'-6" EACH WAY

- FOOTING SIZES BASED UPON 2500 PSF ALLOWABLE SOIL PRESSURE
- PER GEOTECH REPORT - OVEREXCAVATION TO A DEPTH OF 8'-0" IS REQUIRED AT THIS BUILDING
- IN LIEU OF OVEREXCAVATION - PROVIDE 24" DIAMETER GEOPIERS AT EACH SPREAD FOOTING, 12'-0" OC ALONG STRIP FOOTINGS, AND 12'-0" OC EACH WAY THROUGHOUT SLAB AREA



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Issue & Revision Dates

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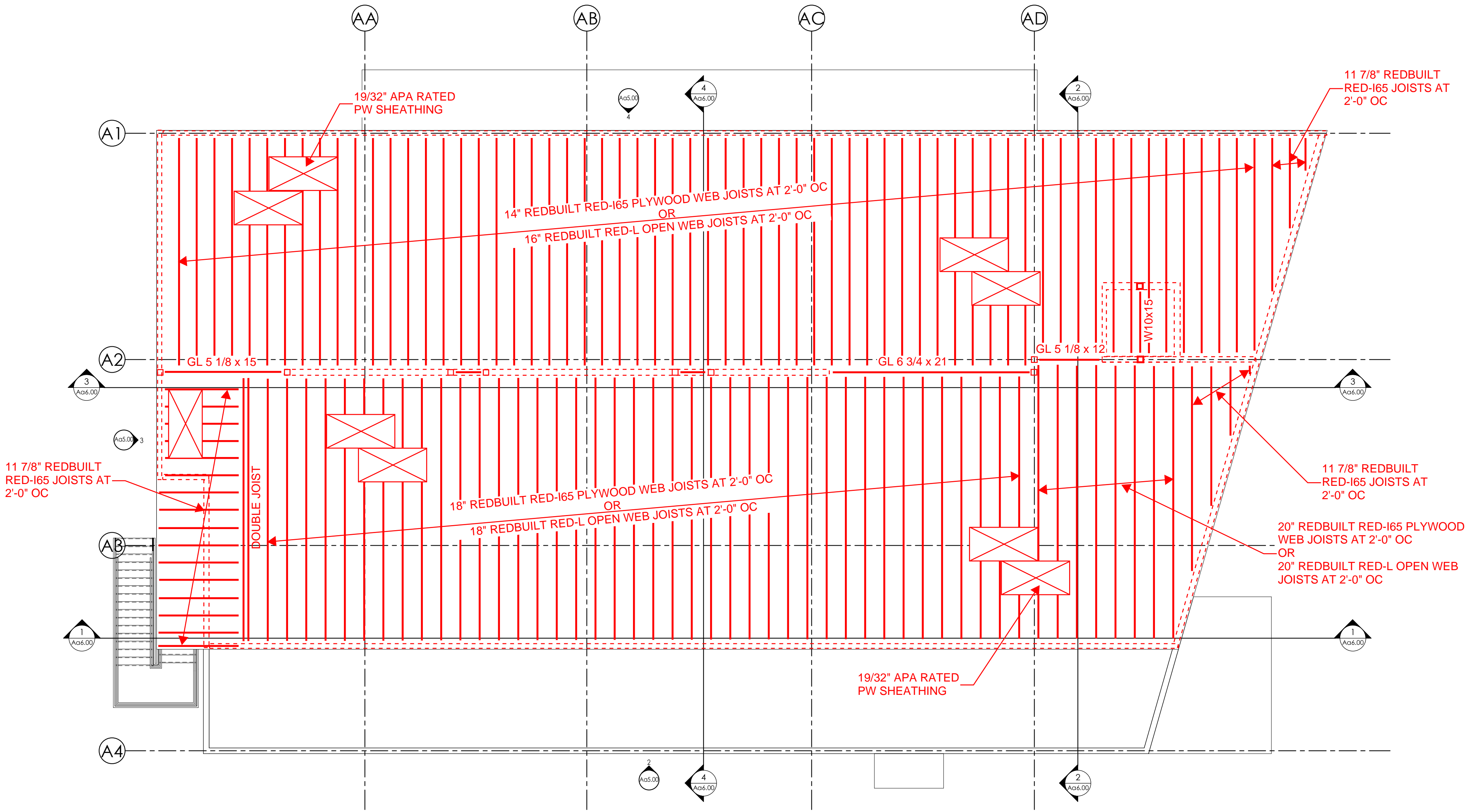
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BUILDING A -
ROOF PLAN

Drawn By
DV Checked By
MH

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Of
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1 ROOF PLAN - BLDG A
1/8" = 1'-0"

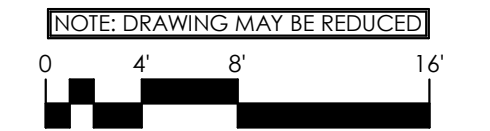


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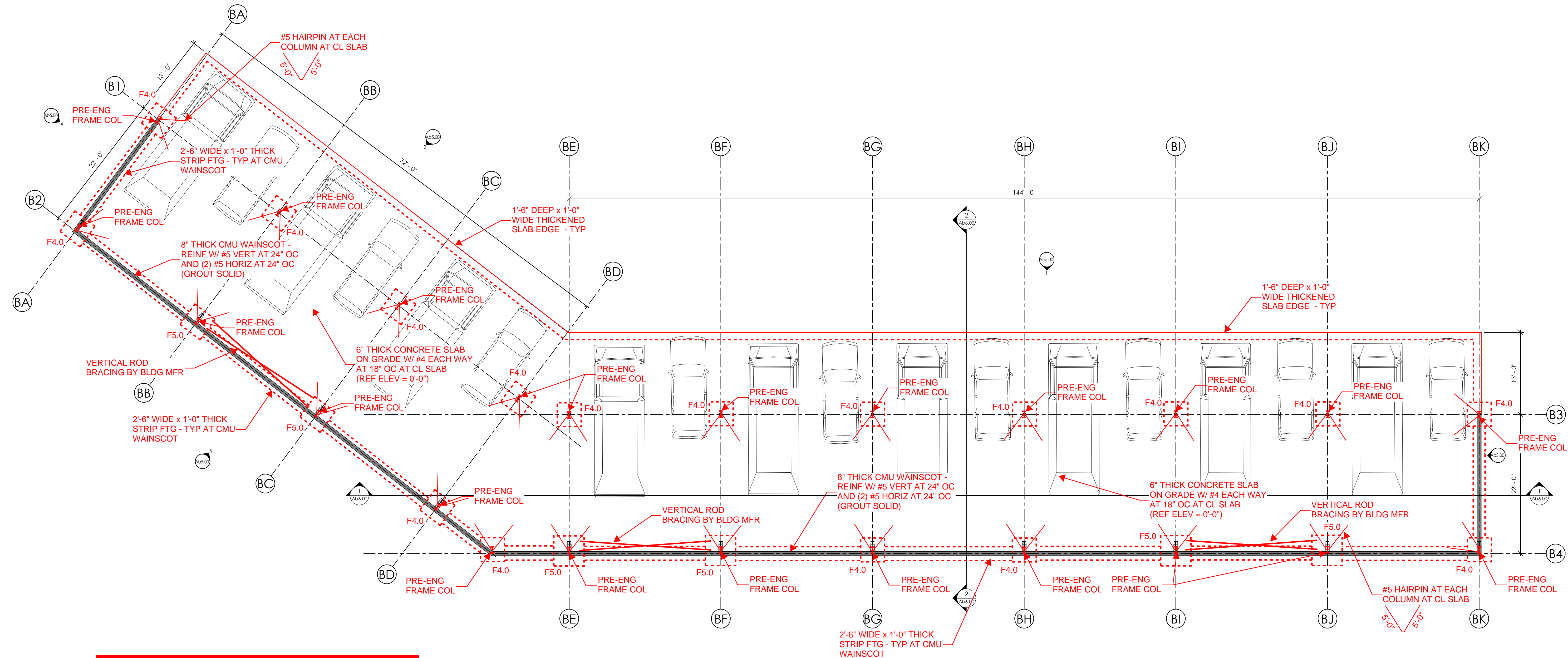


Sheet Title
**BUILDING B -
FOUNDATION
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FOOTING SCHEDULE		
MARK	SIZE	REINF
F4.0	4'-0" x 4'-0" x 1'-0"	(5) #5 x 3'-6" EACH WAY
F5.0	5'-0" x 5'-0" x 1'-4"	(6) #5 x 4'-6" EACH WAY

- FOOTING SIZES BASED UPON 2500 PSF ALLOWABLE SOIL PRESSURE
- PER GEOTECH REPORT - NO OVEREXCAVATION REQUIRED AT THIS BUILDING

1 FOUNDATION PLAN - BLDG B

1/8" = 1'-0"



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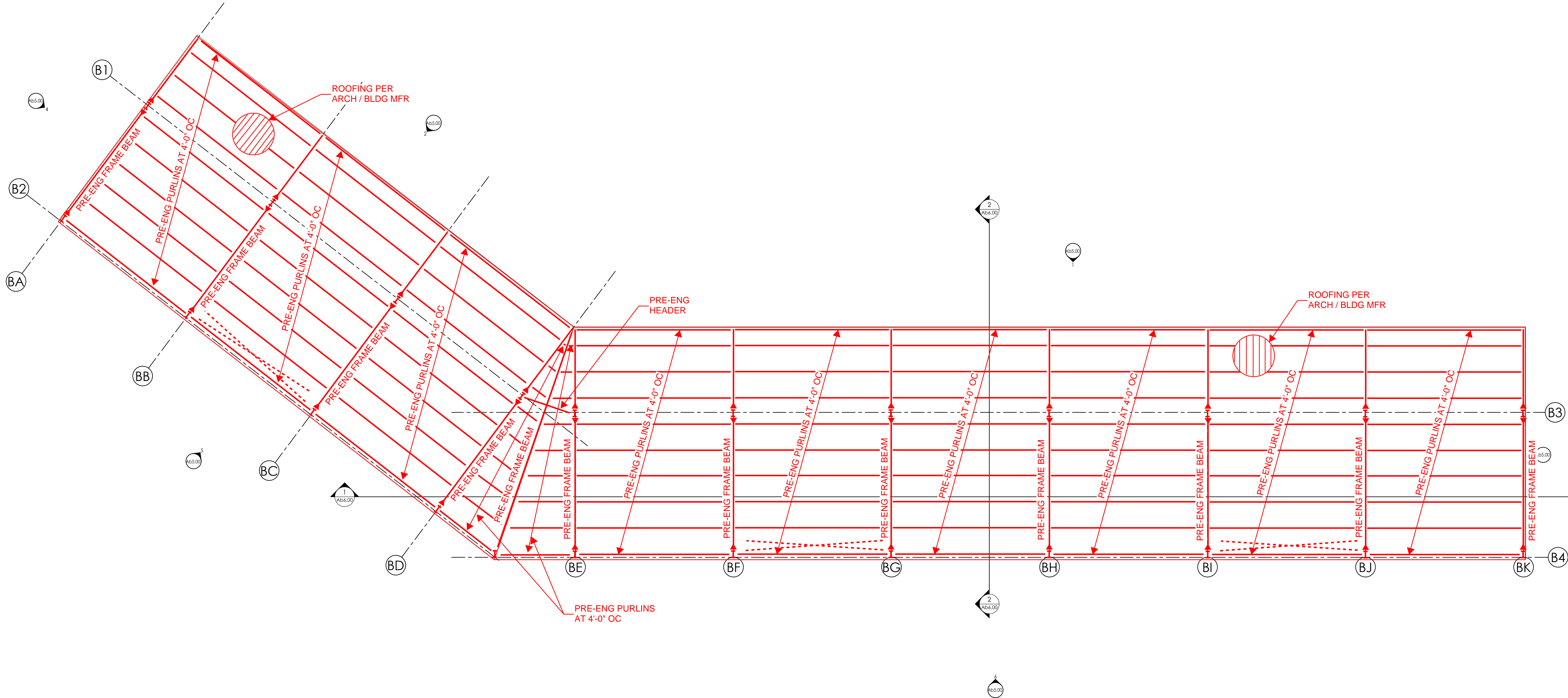
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**BUILDING B -
ROOF PLAN**

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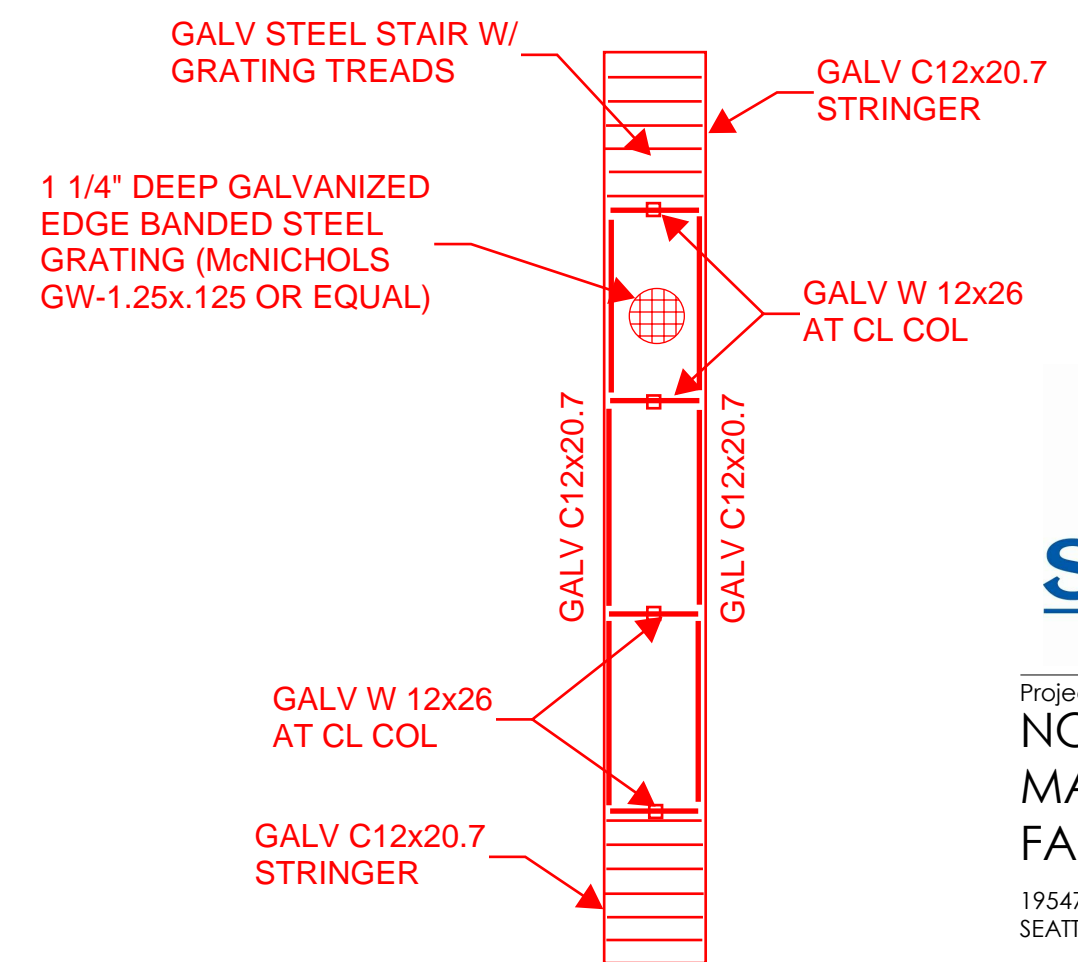
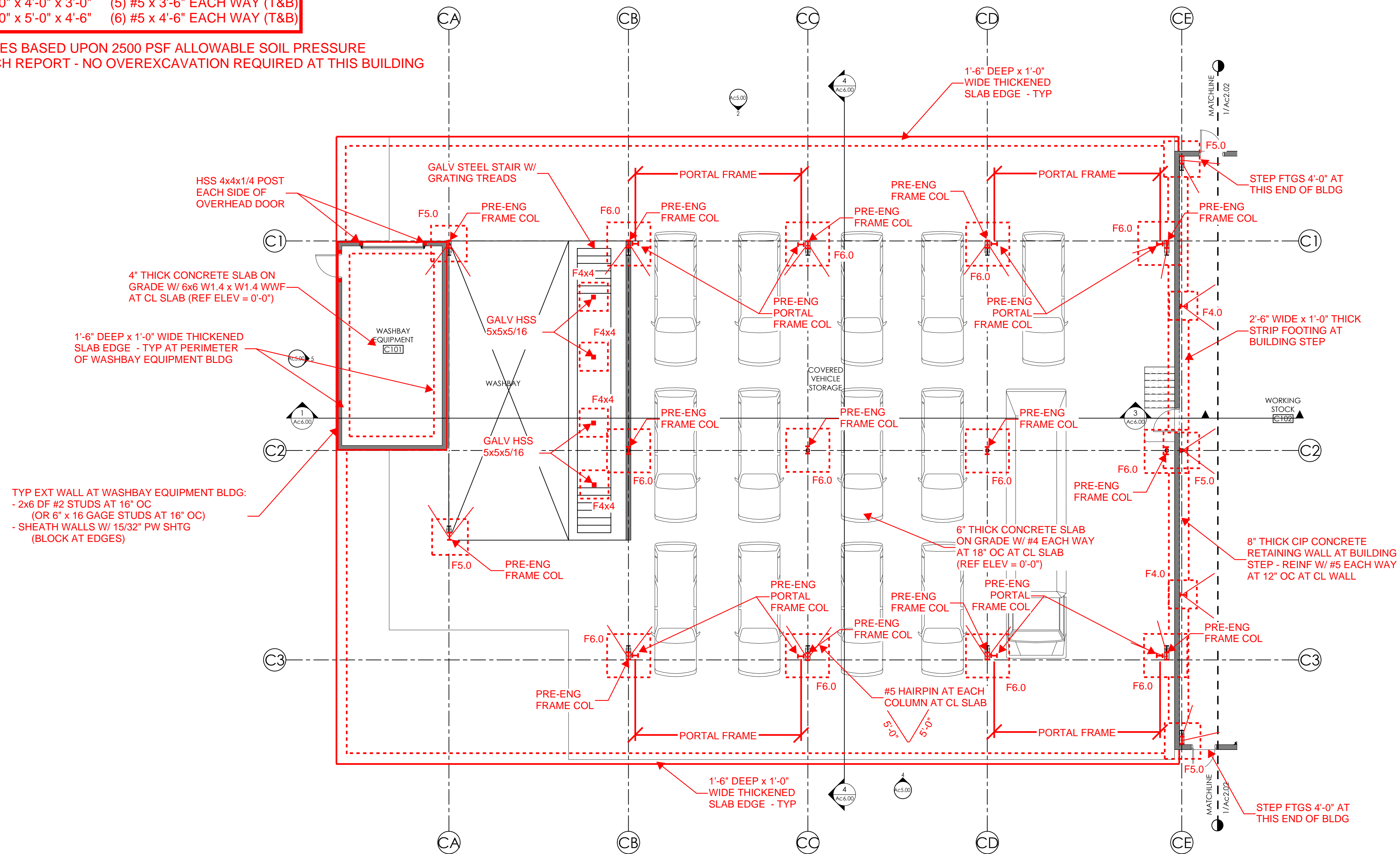


1 ROOF PLAN - BLDG B
1/8" = 1'-0"

FOOTING SCHEDULE		
MARK	SIZE	REINF
F4.0	4'-0" x 4'-0" x 1'-0"	(5) #5 x 3'-6" EACH WAY
F5.0	5'-0" x 5'-0" x 1'-4"	(6) #5 x 4'-6" EACH WAY
F6.0	6'-0" x 6'-0" x 1'-6"	(7) #6 x 5'-6" EACH WAY
F4x4	4'-0" x 4'-0" x 3'-0"	(5) #5 x 3'-6" EACH WAY (T&B)
F5x5	5'-0" x 5'-0" x 4'-6"	(6) #5 x 4'-6" EACH WAY (T&B)

MARK	SIZE	REINF
F4.0	4'-0" x 4'-0" x 1'-0"	(5) #5 x 3'-6" EACH WAY
F5.0	5'-0" x 5'-0" x 1'-4"	(6) #5 x 4'-6" EACH WAY
F6.0	6'-0" x 6'-0" x 1'-6"	(7) #6 x 5'-6" EACH WAY
F4x4	4'-0" x 4'-0" x 3'-0"	(5) #5 x 3'-6" EACH WAY (T&B)
F5x5	5'-0" x 5'-0" x 4'-6"	(6) #5 x 4'-6" EACH WAY (T&B)

- FOOTING SIZES BASED UPON 2500 PSF ALLOWABLE SOIL PRESSURE
- PER GEOTECH REPORT - NO OVEREXCAVATION REQUIRED AT THIS BUILDING



WASHBAY CATWALK PLAN



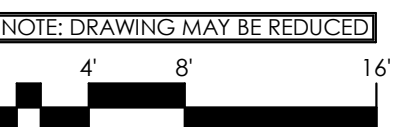
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Sheet Title
BUILDING C -
FOUNDATION
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Sheet Number

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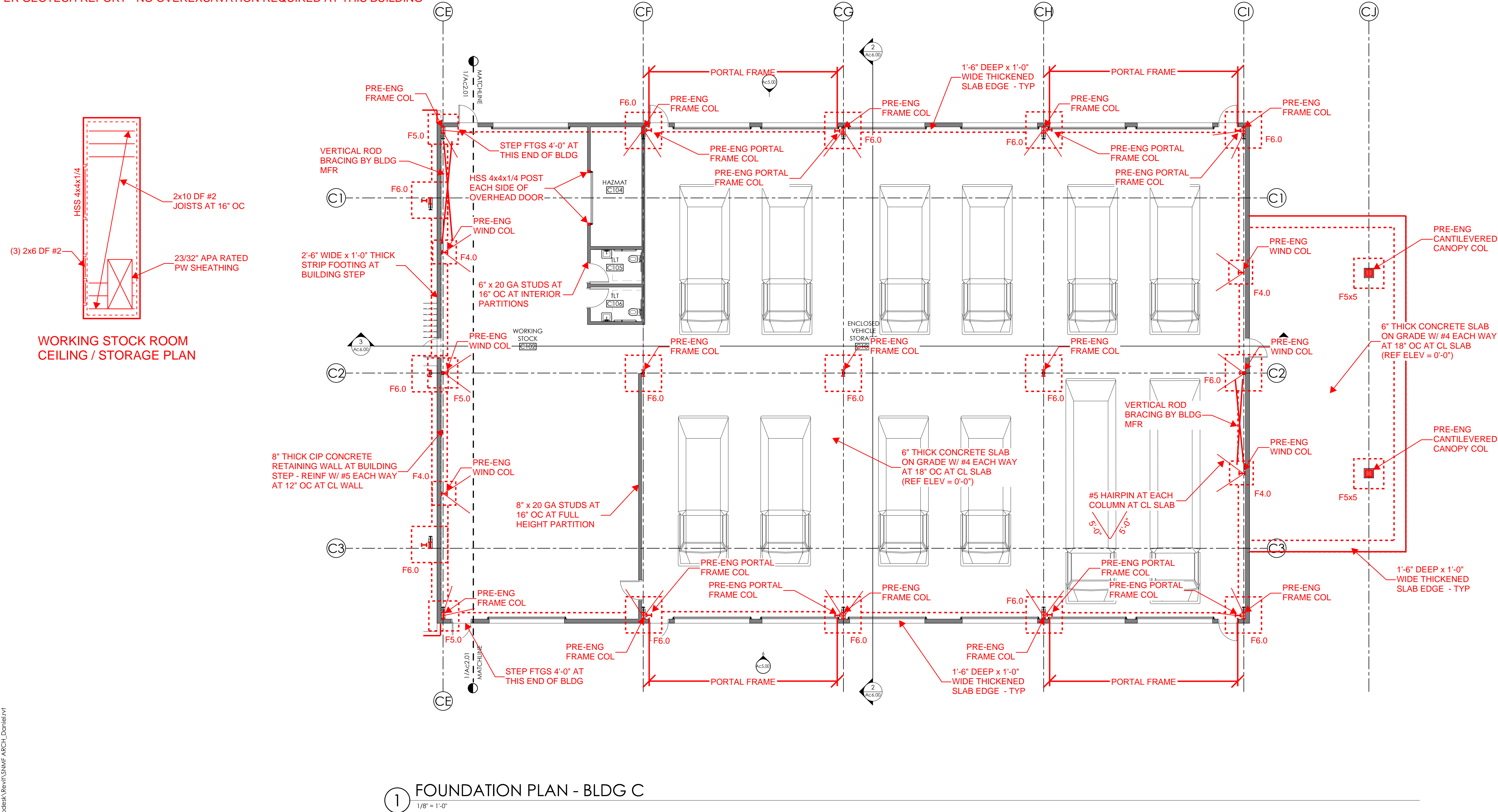
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FOOTING SCHEDULE

MARK	SIZE	REINF
F4.0	4'-0" x 4'-0" x 1'-0"	(5) #5 x 3'-6" EACH WAY
F5.0	5'-0" x 5'-0" x 1'-4"	(6) #5 x 4'-6" EACH WAY
F6.0	6'-0" x 6'-0" x 1'-6"	(7) #6 x 5'-6" EACH WAY
F4x4	4'-0" x 4'-0" x 3'-0"	(5) #5 x 3'-6" EACH WAY (T&B)
F5x5	5'-0" x 5'-0" x 4'-6"	(6) #5 x 4'-6" EACH WAY (T&B)

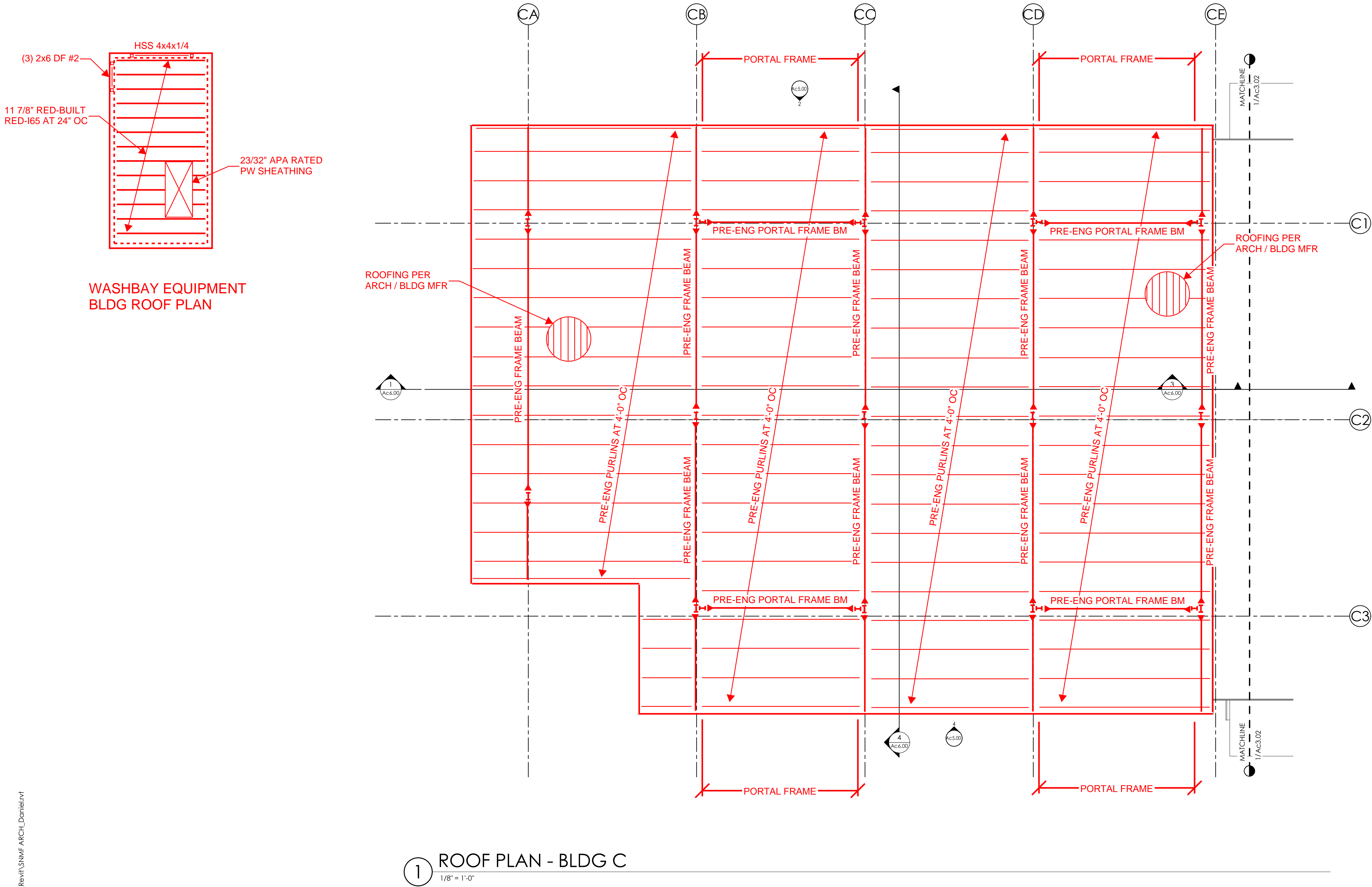
- FOOTING SIZES BASED UPON 2500 PSF ALLOWABLE SOIL PRESSURE
- PER GEOTECH REPORT - NO OVEREXCAVATION REQUIRED AT THIS BUILDING



1 FOUNDATION PLAN - BLDG C
1/8" = 1'-0"

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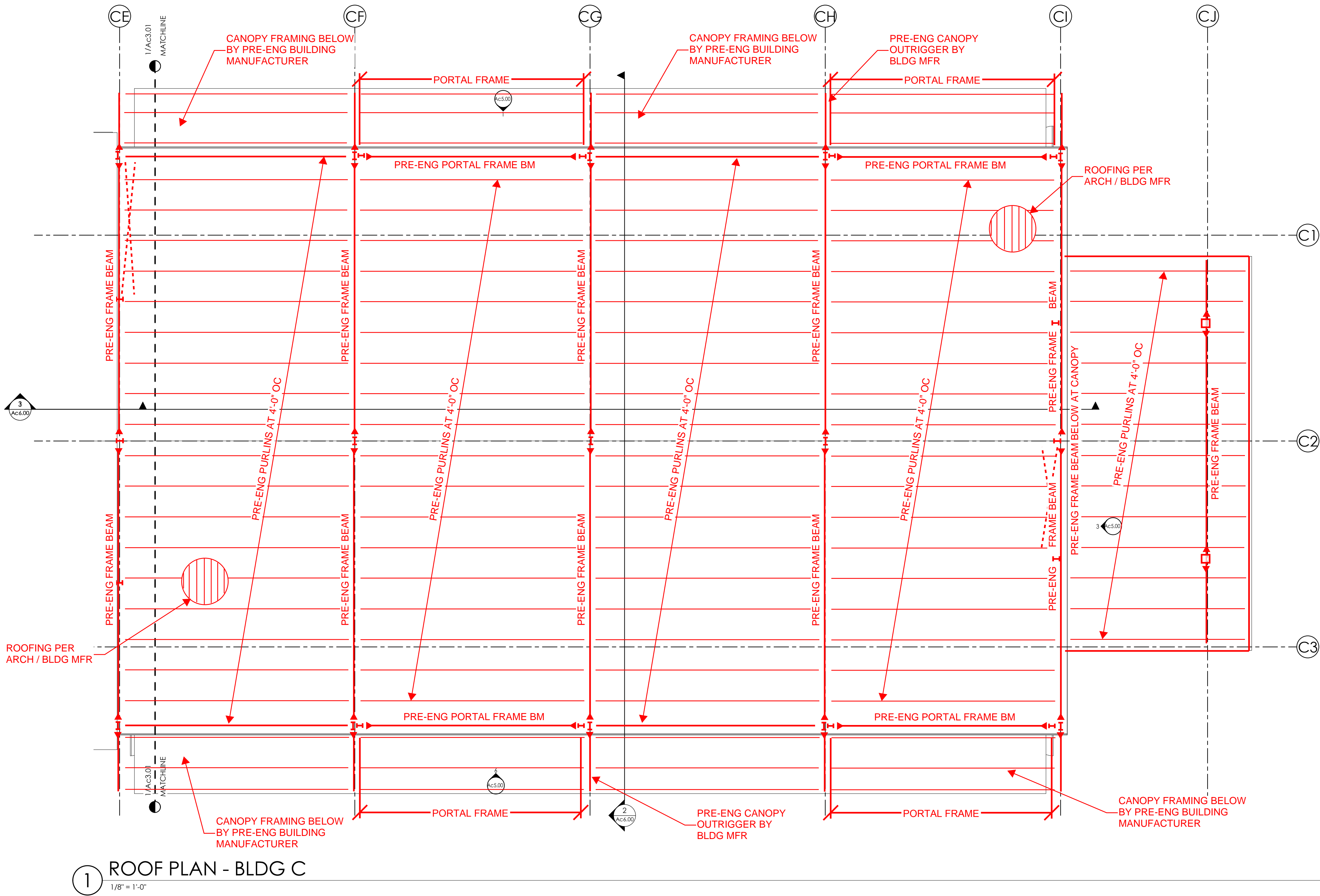
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**BUILDING C -
ROOF PLAN**

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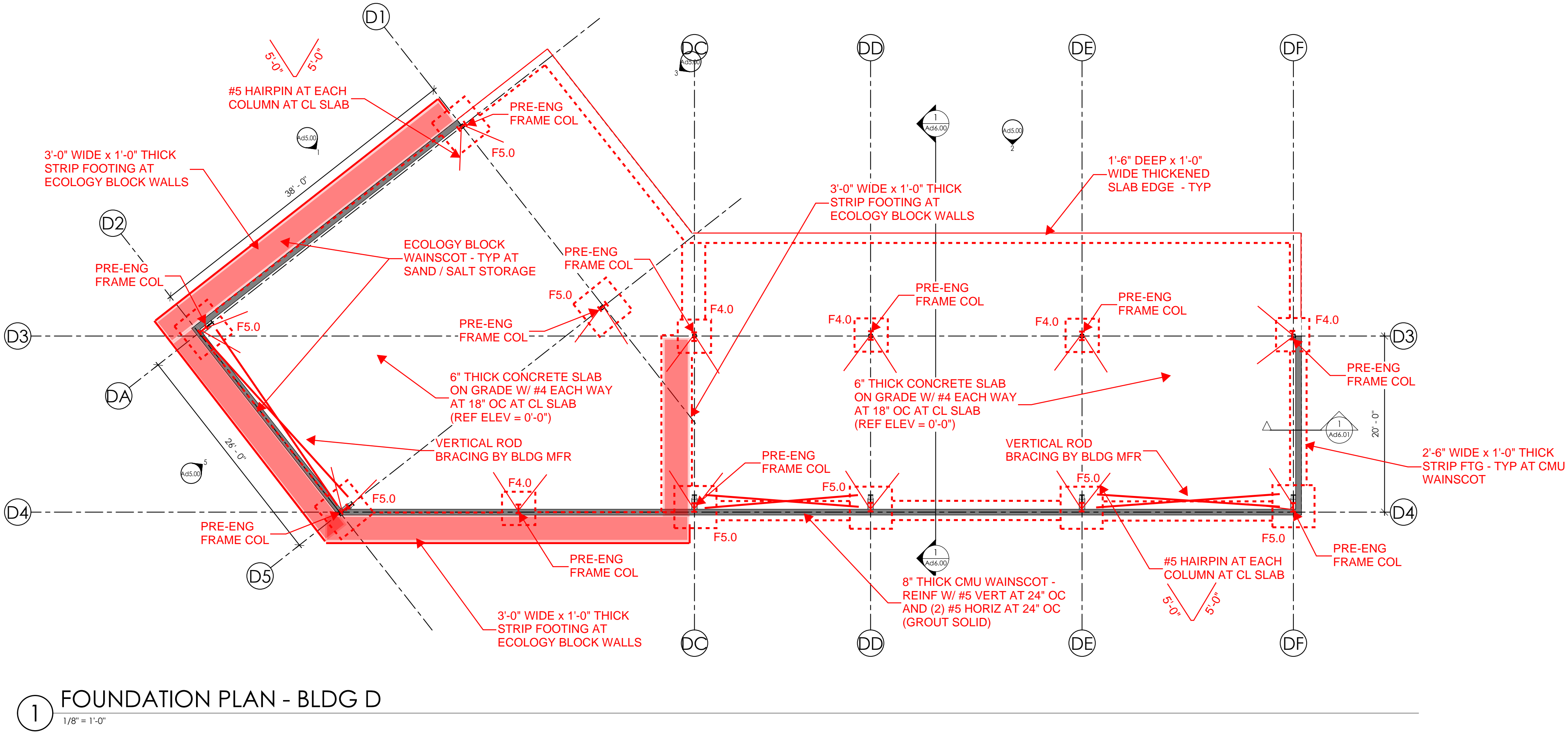


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FOOTING SCHEDULE		
MARK	SIZE	REINF
F4.0	4'-0" x 4'-0" x 1'-0"	(5) #5 x 3'-6" EACH WAY
F5.0	5'-0" x 5'-0" x 1'-4"	(6) #5 x 4'-6" EACH WAY

- FOOTING SIZES BASED UPON 2500 PSF ALLOWABLE SOIL PRESSURE
- PER GEOTECH REPORT - OVEREXCAVATION TO A DEPTH OF 10'-6" IS REQUIRED AT THIS BUILDING
- IN LIEU OF OVEREXCAVATION - PROVIDE 24" DIAMETER GEOPIERS AT 12'-0" OC AROUND BUILDING PERIMETER, AND 12'-0" OC EACH WAY THROUGHOUT SLAB AREA

COORDINATION NOTES / COMMENTS

- PROVIDE CONCRETE PLINTH AROUND COLUMNS BASES FOR INCREASED DURABILITY?
- ECOLOGY BLOCK WALLS SHOULD BE PLACED INSIDE OF BUILDING STRUCTURE FOR IMPROVED DURABILITY AT SALT STORAGE

NOTE: DRAWING MAY BE REDUCED
0 4' 8' 16'

Sheet Title
**BUILDING D -
FOUNDATION
PLAN**

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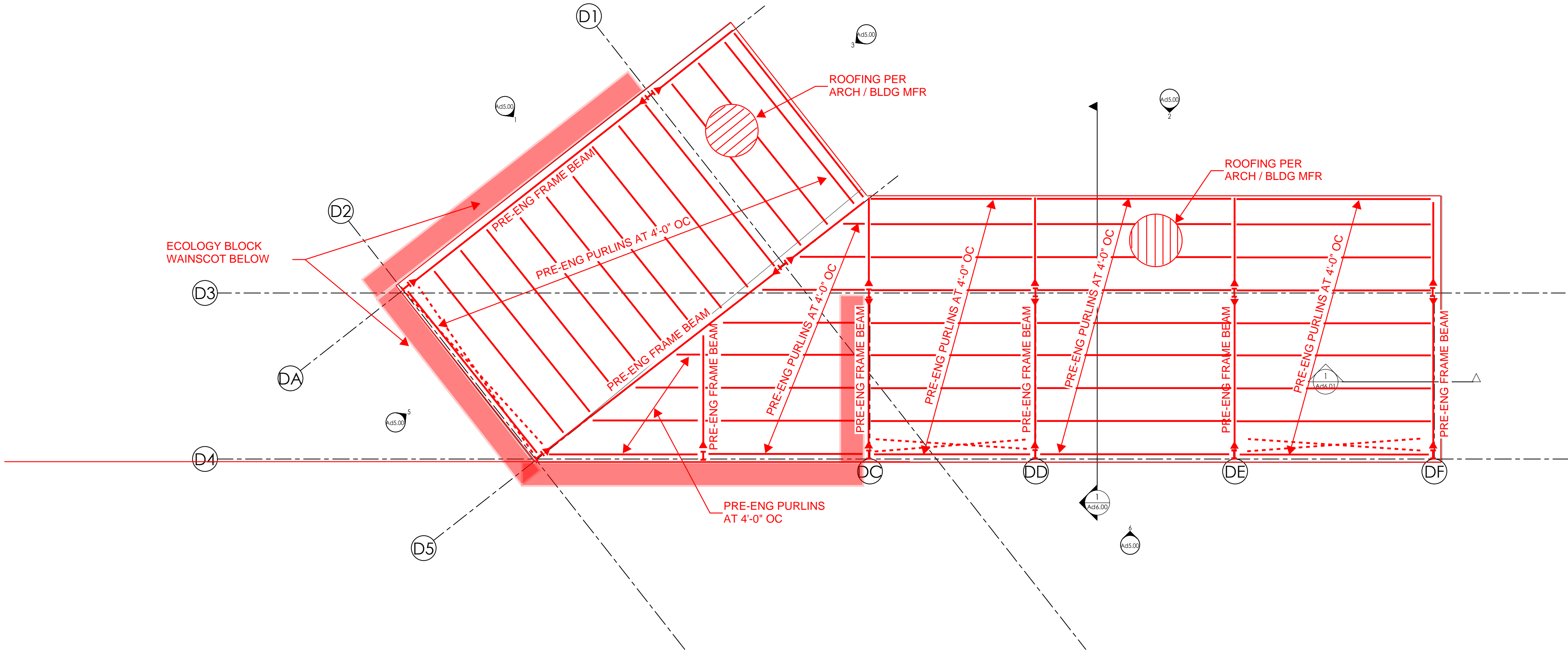
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BUILDING D -
ROOF PLAN

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MH

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Sd3.01

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1 ROOF PLAN - BLDG D
1/8" = 1'-0"



- ADMIN/CREW
- BUILDING CIRCULATION
- ENCLOSED/HEATED SHOPS & VEHICLE STORAGE
- CANOPY COVER
- EXISTING STRUCTURES ON ADJACENT PROPERTIES

SITE
127,530 SF

BUILDINGS

BUILDING A
7,000 SF - LEVEL 1 CREW/SHOPS
8,500 SF - LEVEL 2 ADMIN/CREW
15,500 SF - TOTAL

BUILDING B
5,180 SF - CANOPY TOTAL

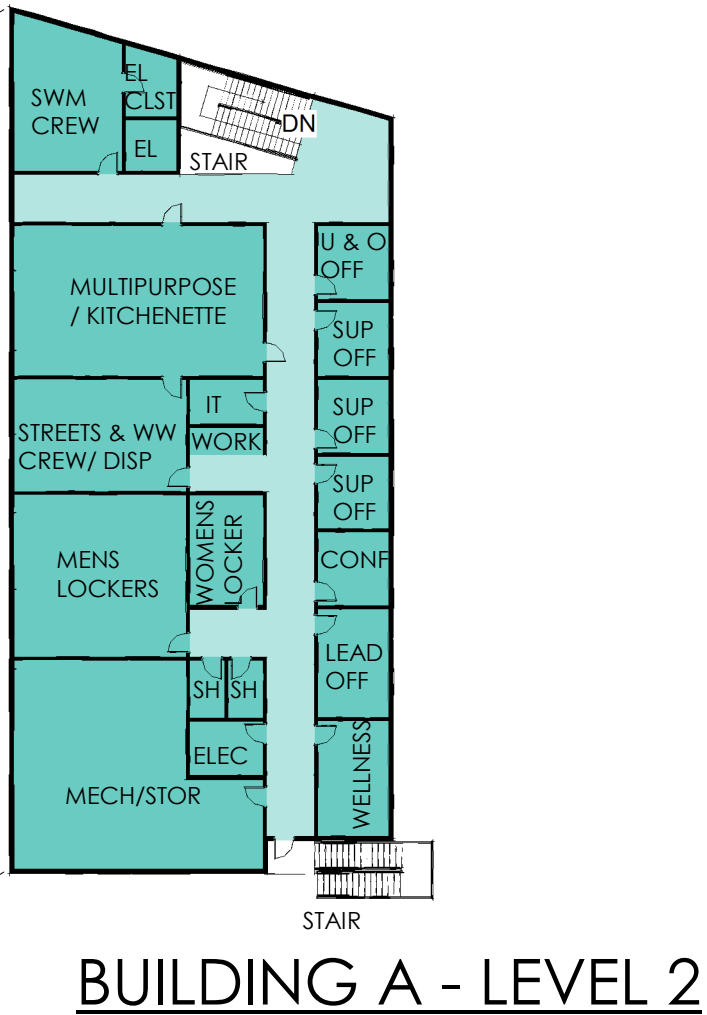
BUILDING C
10,660 SF - HEATED/ENCLOSED
5,000 SF - CANOPY STORAGE
1,000 SF - CANOPY WASH BAY
1,000 SF - CANOPY FUEL BAY
17,660 SF - TOTAL

BUILDING D
4,220 SF - CANOPY TOTAL

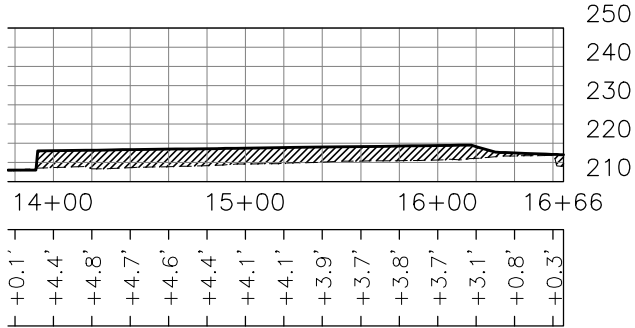
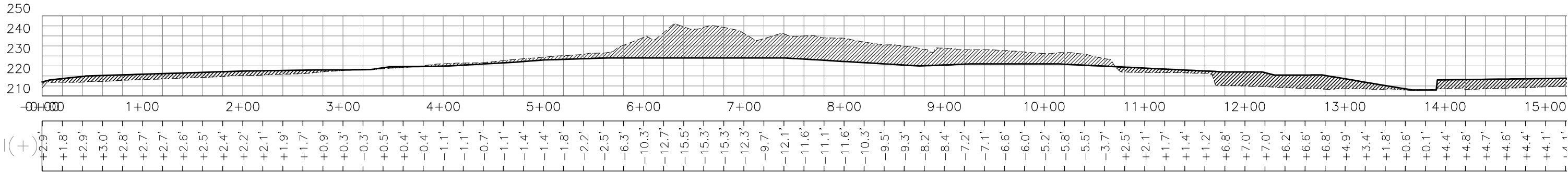
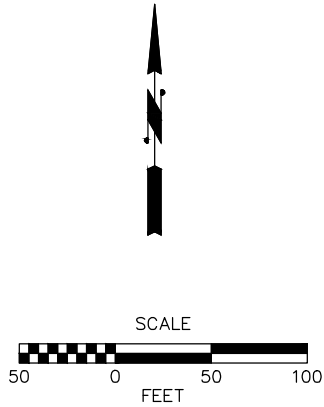
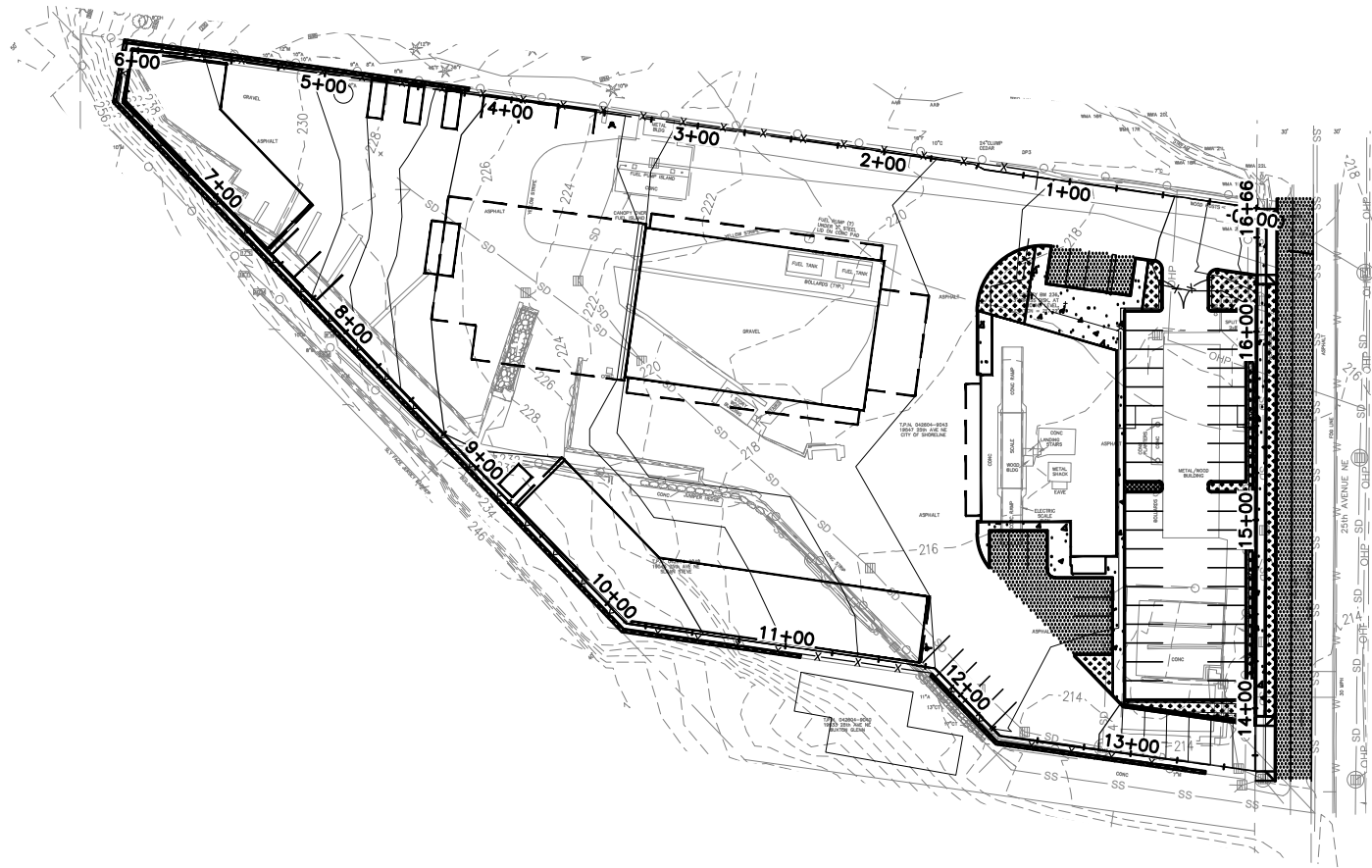
42,560 SF TOTAL PROGRAM AREA

- PARKING**
- 4 - VISITOR
 - 38 - PERSONNEL
- CITY-OWNED (SHADED)**
- LARGE 12' x 40' (3)
 - MEDIUM 10' x 30' (16)
 - SMALL 10' x 20' (26)
 - X-SMALL 8' x 12' (9)
 - XX-SMALL 8' x 8' (21)

- BULK MATERIALS**
- 18' x 20' 5/8" MINUS
 - 18' x 20' 1 1/4" MINUS
 - 12' x 20' CONCRETE WASTE
 - 12' x 20' ASPHALT WASTE
 - 12' x 20' BRUSH



Jul 11, 2016 - 1:27pm ddskkoek X:\Shoreline, City of Projects\20150180 - North Maintenance Facility\CADD\Exhibits\Shoreline MIF - Perimeter Wall Exhibit.dwg Layout Name: Layout1



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505 5th Avenue S, Suite 300
Seattle, Washington 98104



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PERIMETER WALL PROFILE

Drawing No. **ST**
Sheet No. **X** of **X**
of Total



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With/To _____
Address _____
Date 7/6/16

Project No. 2150459.20
Phone _____
Fax # _____
Faxed Pages _____
By ADM

- ☐ Page _____ of _____
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☐ Fax
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☐ Meeting Minutes
☐ Telephone Memo

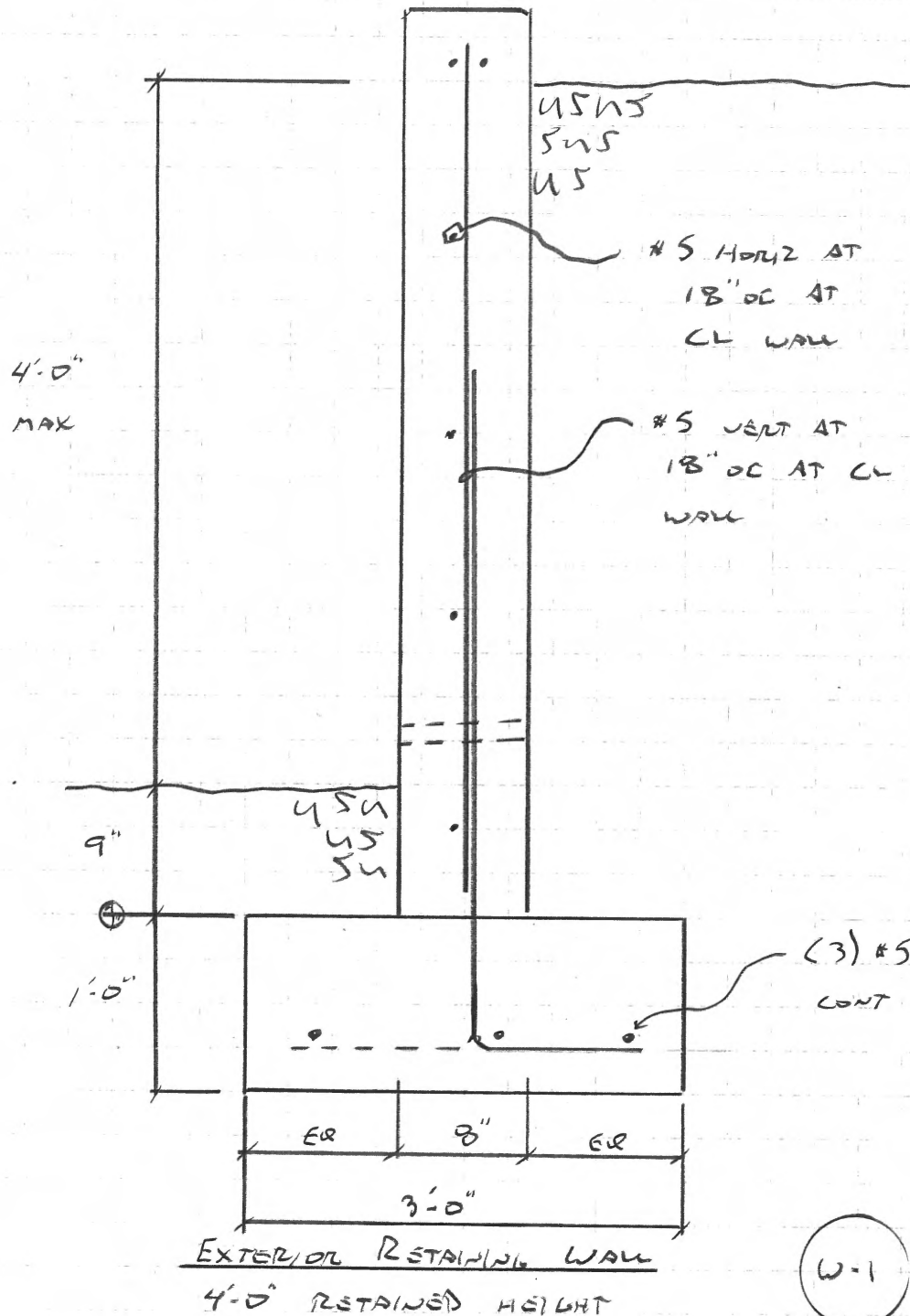
Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors





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Address _____
Date 7/6/16

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☐ Telephone Memo

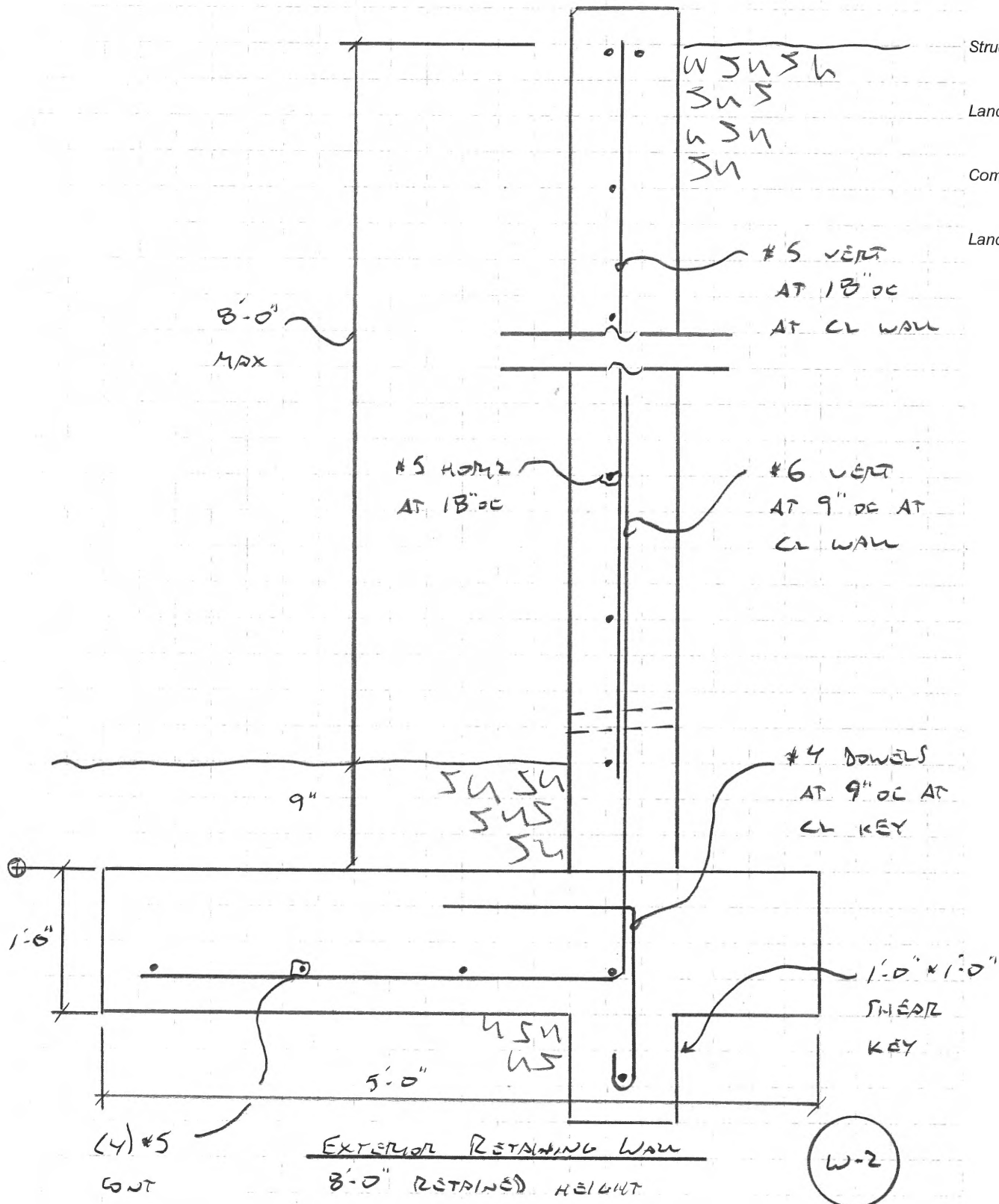
Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors



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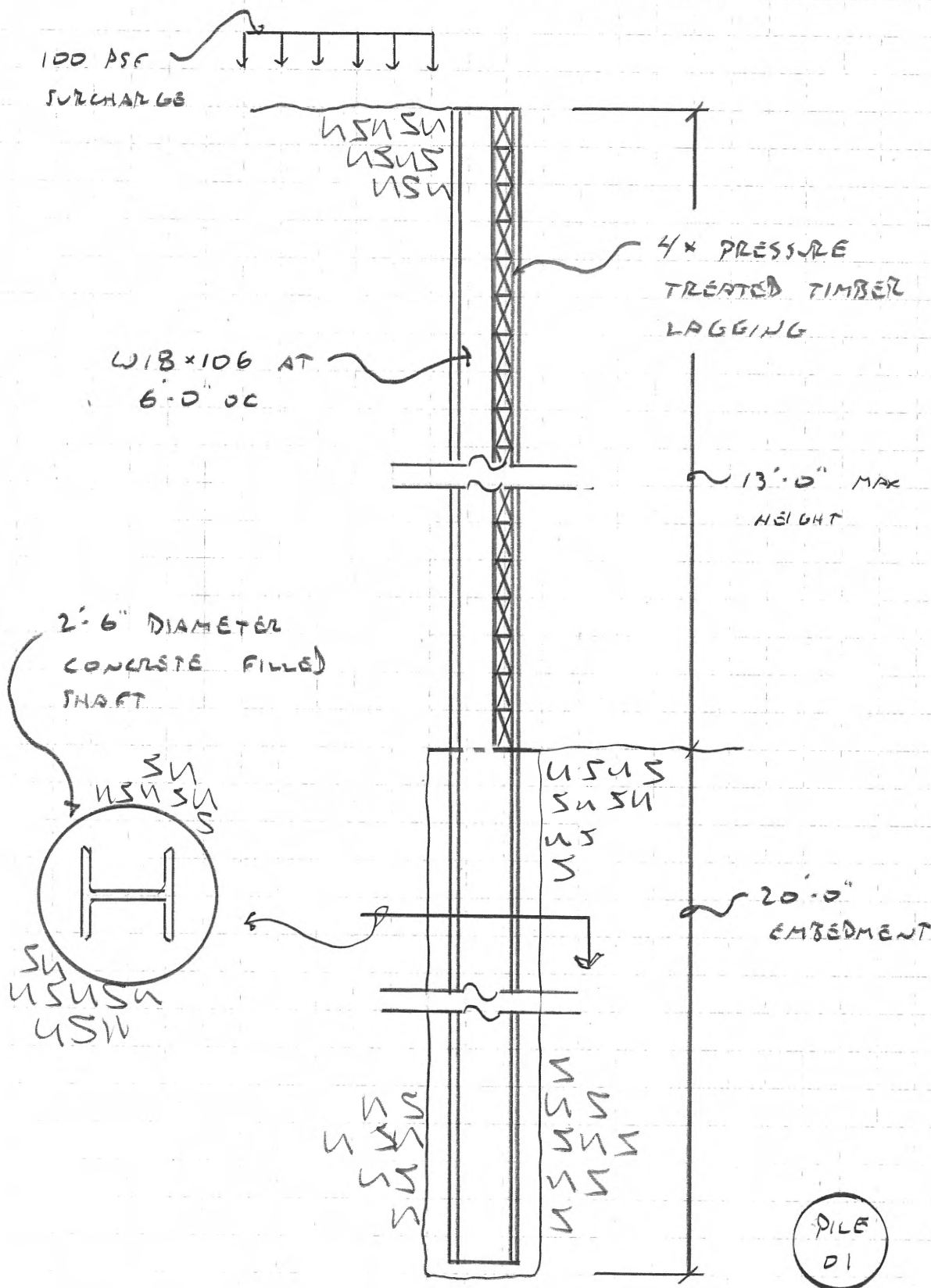
Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors



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Subject _____
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Date 2/8/16

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Phone _____
Fax # _____
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By ASD

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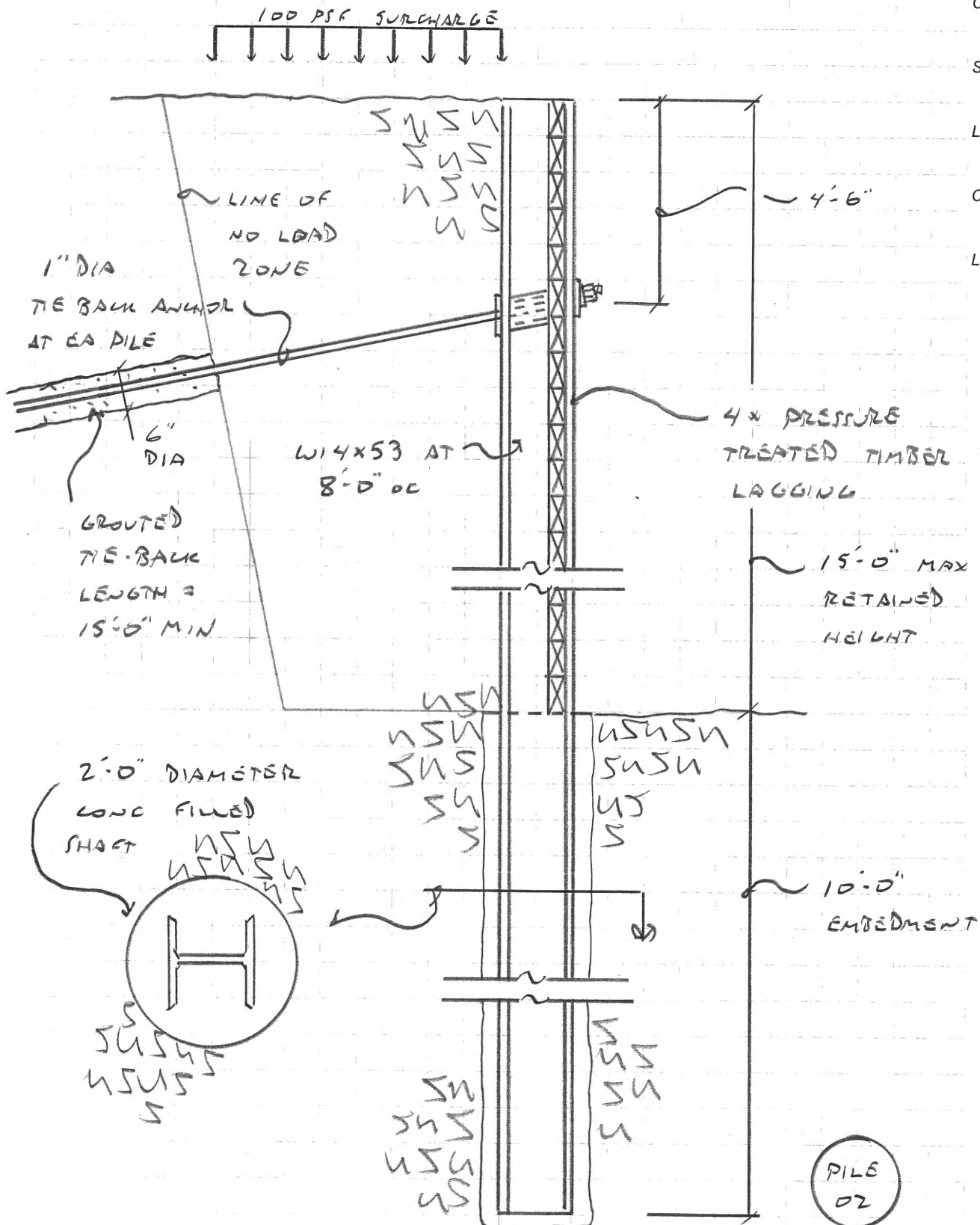
Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors



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Project SNMF
Subject _____
With/To _____
Address _____
Date 7/8/16

Project No. 2150459.20
Phone _____
Fax # _____
Faxed Pages _____
By ASD

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☒ Calculations
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☐ Memorandum
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☐ Telephone Memo

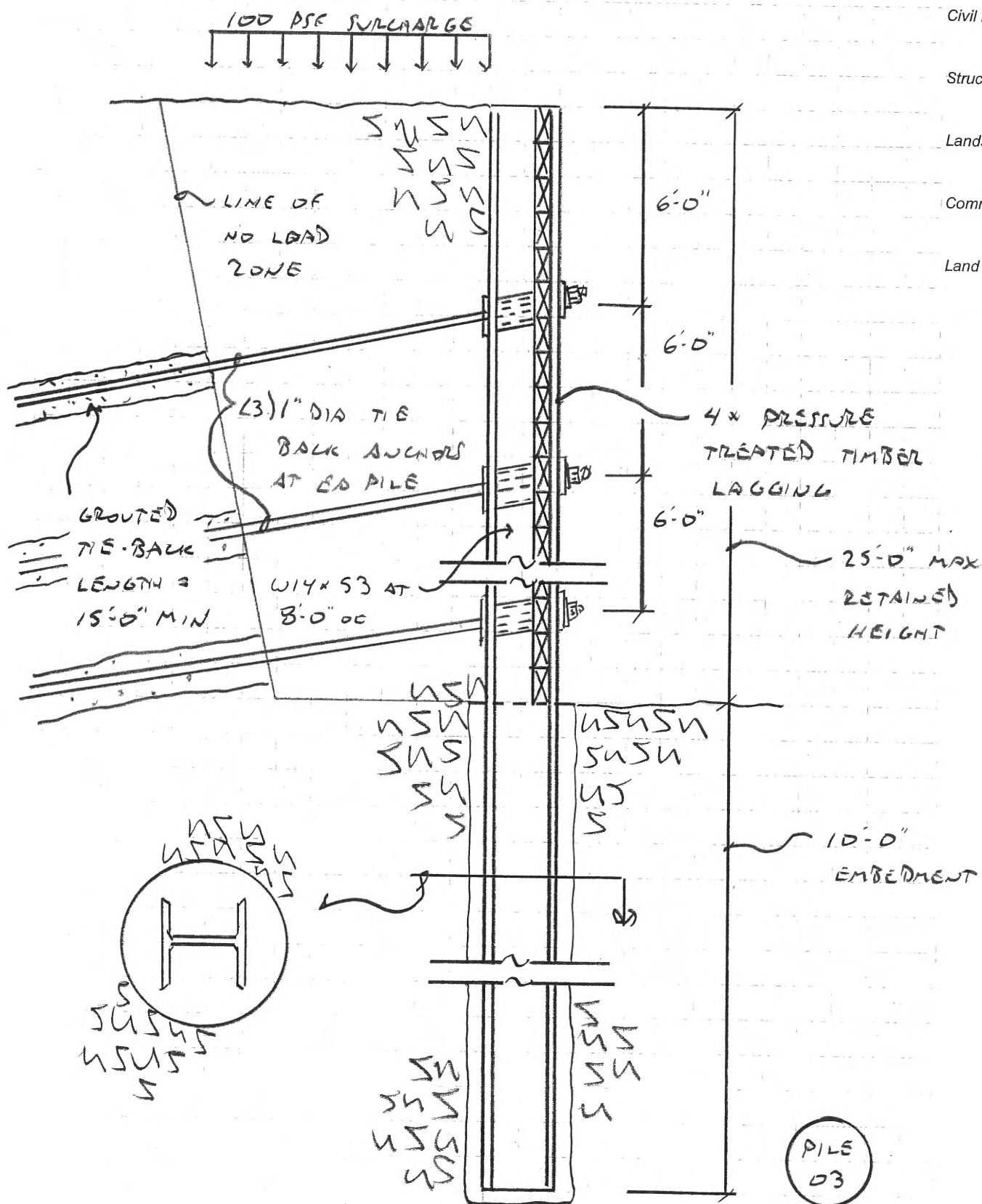
Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors



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2c – SUPPLEMENTAL GEOTECHNICAL MEMO

OVERVIEW

Included in this section is supplemental Geotechnical information discovered during this scope of work.

Memorandum

Date: August 16, 2016

To: Mark Hurley
TCF Architecture PLLC

From: Dennis Stettler
Tori Hesedahl

Subject: Summary of Findings and Recommendations
Shoreline North Maintenance Facility
Shoreline, WA

This memorandum is intended to summarize Terracon's recent email communications with the design team regarding additional explorations performed since issuing our pre-design report. Questions addressed in our communications included:

- Reuse of onsite soil for structural fill
- Ground improvement
- Pavement support
- Design of underground structures
- Retaining walls

Summary of observations from explorations

Eight test pit explorations were advanced. Near the truck scales, in test pits TP-4, TP-5, and TP-6, a thin (approximately 3" thick) layer of soil was that appeared oily and with a strong hydrocarbon odor was observed immediately below the pavement. Garbage and debris was encountered in test pits TP-2, TP-3, TP-6, TP-7, and TP-8. This material included plastic bags, wood, metal, asphalt, and bricks.

Samples from test pits TP-4 and TP-5 were sent for laboratory analysis and were found to have diesel- and oil-range total petroleum hydrocarbons (TPH) detections that exceed the Model Toxics Control Act (MTCA) Method A cleanup levels (2,000 mg/kg for diesel-range TPH and 2,000 mg/kg for oil-range TPH). These samples were collected from directly beneath the asphalt pavement, and may have been an oil treatment to the soil prior to paving, or perhaps a dust control application applied sometime before the site was paved with asphalt. Follow up test results for related contaminants, PAHs, metals, and PCBs specifically, indicated levels below MTCA cleanup levels.

A series of three borings was advanced along Ballinger Way to investigate soils behind the proposed retaining wall. Fill was observed over glacially-consolidated, fine-grained soil. Groundwater was not observed in any of the three borings.



Memorandum

Shoreline North Maintenance Facility ■ Shoreline, Washington
August 16, 2016 ■ Terracon Project No. 81155070

**Reuse of onsite soil**

Only very limited areas of the site contain cut soil that would be suitable for use as structural fill under most conditions. The cut soil often consists of existing fill of highly variable quality and consistency. Some areas of the existing fill contain construction debris or organic materials that would be clearly unsuitable for reuse as fill. The majority of the soil to be cut is silty sand. During wet weather construction it would not be practical to use this silty material because of its sensitivity to moisture. During dry weather, the silty sand could potentially be useable for use as structural fill on the site provided it is at the proper moisture content, can be effectively segregated from the unsuitable soil, and can be placed and properly compacted. Given the potential difficulty and uncertainty with the reusing the on-site soil for structural fill, we recommend assuming for preliminary cost estimates that the cut soil be removed from the site.

Ground Improvement

There are three basic approaches to providing a good subgrade for foundation and floor slab support in the building areas:

- 1) overexcavate and remove the existing fill and highly organic soil and replace the removed soil with compacted structural fill;
- 2) implement some type of ground improvement such as aggregate piers, geopiers, etc. that effectively improves the poor soil and helps transfer the building loads down to more competent soil layers at depth;
- 3) provide pile support for the building and slab.

Overexcavation and removal of the existing fill and replacement with compacted structural fill is commonly used to address relatively shallow depths of unsuitable soil. In some areas of this site where fill is more shallow this approach could be cost effective. However, for this site we often observed deeper fill and groundwater within the peat or organic soils that would need to be removed. Groundwater control would need to be a component of the overexcavation and backfill process. The groundwater will require groundwater control to accomplish the excavation and removal, and portions of the excavated soil would be quite wet and more difficult to handle. It should be assumed that backfill of the excavations would require imported granular material. Given the depth of overexcavation that is required in some areas, the presence of groundwater, and the need to remove most of the unsuitable soil from the site and replace it with imported structural fill, we expect that this alternative would be more expensive than ground improvement.

Installation of ground improvement such as aggregate piers, geopiers, or similar contractor-designed ground improvement techniques could be implemented within the building footprints for support of both the building and floor slabs. We expect that this alternative will be more economical than overexcavation and removal of the existing fill and backfilling with compacted structural fill given the depth involved and the presence of groundwater in the overexcavation. The selected ground improvement technique would need to be capable of installation through saturated soil and groundwater. Ground improvement is typically a design-build element that is

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designed by a professional engineer working for the specialty ground improvement contractor and constructed by the specialty contractor to achieve a specified performance criteria of allowable bearing pressure and maximum settlement.

Pile foundations are often used for foundation support in areas of deep unsuitable soils. In our opinion, pile foundation support at the relatively shallow depths at this site would likely be more expensive than the ground improvement alternative.

Given the above, we suggest assuming ground improvement beneath building areas for purposes of developing the preliminary cost estimate. Specific comments are provided below for each building:

Building A: Assume ground improvement as noted in the preliminary foundation plans.

Building B: This building is on the property parcel that is planned to be acquired. Terracon has not completed any explorations on this property to evaluate the expected foundation conditions. The note on the preliminary structural foundation plans states that no overexcavation is required per the soils report. Our preliminary geotechnical report dated 2/25/16 did not address a building on the new property. Explorations on the SNMF site just to the north of the new parcel property line disclosed unsuitable soil (including fill and organic soil) generally consistent with other portions of the SNMF property. The new parcel is topographically higher and may be better ground. However, it is clear to us that the entire area including the SNMF and surrounding areas have been subject to significant grading in the past, which brings considerable uncertainty as to the actual soil conditions on the property to be acquired. Because of the lack of information, we suggest assuming conservatively for purposes of the preliminary cost estimate that the soil conditions on the property to be acquired could be similar to the conditions disclosed on the SNMF property directly to the north. In that case, we suggest assuming at this time (until explorations can be advanced on the property to evaluate the actual soil conditions) that ground improvement could be required within Building B.

Building C: The note on the preliminary structural foundation plan states that no excavation is required at this building per the geotechnical report. That statement is not consistent with the findings of our site explorations or our geotechnical report. Soil disclosed in our explorations within and adjacent to Building C disclosed variable quality of fill (including significant quantities of debris in one of the recent test pits near the west side of the building) and buried peat near the east end of the proposed building. We recommend that it be assumed that ground improvement would be required for this entire building.

Building D: The note on the preliminary structural foundation plans identifies the need for overexcavation and replacement or geopiers. We concur based on the available information at that location.

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Preliminary structural design has assumed 2,500 psf bearing pressure. This is probably conservative and a higher bearing pressure could be used for design, although assuming the lower bearing pressure (and therefore wider footings) may be appropriate for purposes of the preliminary cost estimate.

Pavements

At a minimum, we suggest for planning purposes to including a minimum one foot thickness of compacted granular fill as subbase beneath the pavement section. In areas of fill this could be satisfied by placement and compaction of good quality fill. In cut areas, it may require cutting an additional foot of material in order to accommodate the suggested subbase layer. During construction it is also likely that there may be localized areas of poor subgrade that could require overexcavation and removal.

The existing material, particularly where the buried peat and organic soil is present, can be subject to settlement, especially when up to 7 feet of new fill is placed above it. Within the building areas we have recommended use of ground improvement such as geopiers and leaving the poor materials in place (or alternatively the poor materials could be overexcavated, removed, and replaced with compacted structural fill, although we expect that alternative is likely more expensive than ground improvement). In the car parking areas east of the building, we note that a stormwater vault covers most of this area. For other areas of pavement, these areas can be subject to settlement.

For a typical parking lot with asphalt pavement, the typical approach would be to leave the poor material in place, place well-compacted fill as needed to raise site grades, and accept that the area could be subject to settlement. The pavement settlement could be reduced by filling this area early in the construction project and then delaying paving to allow a significant portion of the settlement to occur prior to paving. Some long-term settlement could still be expected. For typical asphalt-paved areas with a significant thickness of new compacted fill, the differential settlement is likely to be gradual and the tendency of asphalt pavement to be somewhat flexible tends to readily accommodate some settlement without significant cracking or pavement damage. Given the cost of removing the poor soil and replacing it with compacted structural fill in paved areas, it is typically more common to leave the material in place and accept that some long-term settlement may occur. It is important that the owner participate in that decision, but most owners see this as a viable approach when considering the cost.

The plans to use more rigid PCC pavement at the SNMF changes the consideration of long term settlement somewhat. Differential settlement resulting from consolidation of the poor soil at depth that is not removed has the potential to be more noticeable in terms of cracking and distress of the rigid PCC pavement. This presents a cost / risk / performance issue that needs to be considered by the design team and the owner.

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Measures to mitigate effects of settlement should be considered. Post-construction differential settlement of paved areas can be reduced by delaying the time between fill placement and paving to allow a portion of the settlement to occur prior to paving. The integrity of a PCC pavement section can be improved by thickening the PCC section and adding additional reinforcement and placing a thicker section of base course material below the PCC. These steps do not reduce the settlement, but tend to make the PCC pavement better able to span over localized areas of poor, settlement prone soil and likely reduce (but not eliminate) the potential for damaging differential settlement.

If the owner or design team is concerned about the potential for damaging differential settlement of PCC paved areas, the existing fill and organic material could be removed and replaced with compacted structural fill or the entire site could be subjected to ground improvement similar to that planned for the building areas. Either of these alternatives would be expensive and may not be warranted, but would be viable alternatives to address the potential for differential settlement of the PCC pavement. This topic probably warrants more discussion with the design team and owner regarding the cost / risk / performance trade-offs.

Underground Structures

The need to over-excavate beneath underground stormwater vaults depends on planned subgrade elevation and elevation of each vault. In the area of both of the planned vaults there is unsuitable soil at variable depths. We would be most concerned about not constructing the concrete vaults above highly organic soils. For the planned western vault, organic soils were not observed in our exploration at that location, but other nearby explorations disclosed organic soil as deep as about Elevation 210.5 feet. At the location of the proposed eastern vault, some explorations did not encounter compressible soil while other explorations disclosed compressible organic soil as deep as about Elevation 207.5 feet. Another consideration for the stormwater vaults is the buoyant forces due to the high groundwater table. Groundwater elevations observed in our borings in the vicinity of the proposed stormwater vaults were as high as about Elevation 216 feet.

Retaining Walls

Fill walls could be ultrablock gravity walls or one of the many varieties of mechanically stabilized earth walls. We tend to see those wall types be more economical than concrete cast in place walls, although concrete cast in place walls could be used.

For cut walls of low height (about 8 feet or less) around the perimeter of the site (excluding the side of the site paralleling SR 104), typical ultrablock gravity walls, or cast in place concrete walls could be used.

Cut walls along the property line paralleling SR 104 are a different issue. The ground slopes relatively steeply up to SR 104 and along some portions of the slope a gabion wall is already present. Temporary cut slopes for construction of a wall along this portion of the site have the

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potential to undermine the existing gabion wall or trigger slope instability in the WSDOT right-of-way. We recommend significantly limiting the depth and extent of any temporary excavations for retaining wall construction at the toe of this existing steep slope in order to limit the potential for slope instability on the WSDOT right-of-way.

Based on the series of three borings along Ballinger Way, it is our opinion that the soil is not well suited for soil nails. We recommend a cantilever soldier pile wall for cuts up to a maximum height of about 10 feet or so, and a soldier pile wall with permanent tieback anchors for cuts greater than about 10 feet. Based on correspondence with WSDOT regarding permanent tieback anchors (email, July 6), WSDOT has allowed permanent tiebacks for these types of situations in the past and it should be possible to work through the easement and permit process with WSDOT during design.

This memorandum is intended to supplement our preliminary design recommendations, but is still considered preliminary and not intended for final design. Once the project configuration is finalized, it is intended that Terracon complete geotechnical engineering and environmental analyses and prepare a design phase geotechnical engineering report for the project. In the meantime, please contact us if you have any questions regarding this preliminary information.

2D - MEETING AGENDAS AND NOTES

OVERVIEW

Included in this section are meeting agendas and meeting notes that occurred during this phase of work.

**CITY OF SHORELINE
NORTH MAINTENANCE FACILITY (SNMF)**

BUILDING SYSTEMS AND CONCEPTUAL BUILDING DESIGN REVIEW

Thursday, July 7, 2016

TIME	SESSION AGENDA	ATTENDANCE
9:00am - 10:30pm City Hall conference room 222	<u>Review Building Systems</u> <ul style="list-style-type: none"> HVAC system discussion IT discussion Security discussion Other 	<u>Design Team:</u> Randy Cook – TCF Mark Hurley – TCF Chuck Heaton – BCE Chris Caffee - BCE <u>City of Shoreline:</u> PW, Street and Storm, Facilities, Core Team <u>RWD</u> Core Team
10:30am - 12:00pm City Hall conference room 222	<u>Review Conceptual Building Design</u> <ul style="list-style-type: none"> Conceptual building design discussion 	<u>Design Team:</u> Same <u>City of Shoreline:</u> PW, Street and Storm, Facilities, Core Team <u>RWD</u> Core Team
Notes:		

Building Systems Review Meeting

Date: July 7, 2016

Project Name: **City of Shoreline North Maintenance Facility**

TCF Architecture Project Number: 2015-016

Attendance:

Name	Representing	Role
Noel Hupprich	City of Shoreline	Project Manager
Dan Johnson	City of Shoreline	Central Services Manager
Katherine Moriarty	City of Shoreline	IT Manager
Mark Hurley	TCF Architecture	Project Architect
Chuck Heaton	BCE Engineers	Electrical Engineer
Jeff Hardwick	BCE Engineers	Mechanical Engineers

Minutes Distribution: All in attendance**Action Items:**

Item #	Topics/Discussions	Discussions/Action/Status/Follow-up	Responsibility/ Due Date
1. MEP, Security and Communications Systems			
1.1	Discussions	<ul style="list-style-type: none"> ▪ CCTV cameras at gates, fuel, hazmat bunker and equipment canopy. No interior cameras. ▪ Access control at all building exterior doors only. ▪ Generator at a minimum to serve fuel, com rooms, egress lighting, site lighting and crew lockers rooms. ▪ Data is 2 jacks standard with Cat 6 wiring. ▪ Intrusion alarms at all buildings, exterior doors, glass breakage and motion sensors. ▪ Vehicle maintenance does not include any fuel component tear down. ▪ Site conduit to existing fiber box. No copper backbone required. ▪ A PV array is desired, mainly for perception. It should be visible from the street, either rooftop or pole mounted. 20KW capacity would be preferred, but smaller PV and/or infrastructure to support future PV are also to be considered depending on budget. ▪ The Fab shop in building A should get both a welding hood (sized at 4'x4' or 6'x6') and a welding exhaust snorkel hood for flexibility. ▪ One hose reel of vehicle exhaust is to be provided between the multi-use bays in building A. ▪ The carpentry shop will have contractor furnished shop equipment and will require a sawdust collection system. There will likely be 3 connection points serving a chop saw, table saw and jointer. ▪ No lube reels are required for this project. ▪ Compressed air is to be provided to serve building A. One drop is to be provided at each vehicle bay and each shop 	

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		<p>in building A. Two compressed air connections are to be provided on the exterior of the building.</p> <ul style="list-style-type: none">▪ No paint booth is required for this project.▪ Rain water collection is desired for flushing toilets and filling trucks for miscellaneous use. A cistern is to be provided.▪ The kitchenette in building A is to be provided with a cooking range and range hood. The range hood should be equipped with an ANSUL fire protection system.▪ Non-proprietary controls with remote access capabilities are desired. VRF controls are acceptable.▪ UV air filters are desired, if applicable with the system design.	
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Minutes by Mark Hurley
TCF Architecture, PLLC

END OF MEETING MINUTES

If any information contained in these minutes does not meet with your understanding, please provide written comments stating any differences, or exceptions taken, to TCF Architecture PLLC prior to the next meeting. Revisions and clarifications to these notes will be formally made at the following meeting. In the event no exceptions are taken within one calendar week, TCF Architecture will assume that these minutes reflect a true and accurate record of the meeting.

(Note: Follow-up information or status updates, not specifically discussed at the meeting, may be included herein and identified as such.)



Memorandum

To: Noel Hupprich, Capital Project Manager, City of Shoreline

From: William Kidder, PWS, Lead Ecologist, Perteet, Inc.
Jason Walker, PLA, PWS, Environmental Planning Manager, Perteet, Inc.

Date: July 7, 2016

Re: City of Shoreline North Maintenance Facility – Third Party Critical Areas Documentation Review

PROJECT DESCRIPTION

The property is located at 19547 25th Ave NE, Shoreline, Washington on Parcel # 0426049043 approximately 350 feet north of the intersection with Ballinger Way NE. The City is proposing to develop the parcel and construct the North Maintenance Facility project (proposed project). Critical areas features present on the City-owned Brugger's Bog Park (city park; Parcel #0426049049) at 19553 25th Ave NE adjacent to and immediately north of the proposed project contain critical areas with buffers that extend onto the proposed project parcel. The City retained Perteet, Inc. to conduct a third party review of the project's wetland and stream delineation reports and to review the Shoreline Municipal Code Chapter 20.80 Critical Areas to more precisely clarify the presence and extent of critical areas features and buffers overlapping the proposed project as described in the delineation report prepared by the Watershed Company.

DOCUMENTS REVIEWED

The following resource information, websites, and documents were reviewed by Perteet:

- City of Shoreline Maintenance Facility Wetland and Stream Delineation Report; prepared by The Watershed Company, September 3, 2013.
- City of Shoreline Maintenance Facility, Wetland and Stream Delineation Report; prepared by The Watershed Company, September 3, 2013, revised April 18, 2016.
- Existing Conditions Land Survey, City of Shoreline Bruggers Bog Maintenance Facility; prepared by WH Pacific, plotted January 15, 2014.
- Shoreline City Council Agenda Item 8(d) – Authorizing the City Manager to Execute a Purchase/Sale Agreement with King County for the Brugger's Bog Maintenance Facility in the amount of \$2,898,622 and to Pursue the Required Financing for the Acquisition; City of Shoreline City Council, November 26, 2012.
- City of Shoreline Municipal Code Chapter 20.80 Critical Areas, Accessed June 21, 2016 at: <http://www.codepublishing.com/WA/Shoreline/#!/shoreline20/Shoreline2080.html#20.80.040>
- Washington Dept. of Fish and Wildlife Salmonscape, Accessed June 21, 2016 at <http://apps.wdfw.wa.gov/salmonscape/map.html>.
- Washington Department of Fish and Wildlife Priority Habitats and Species maps and data, Accessed June 21, 2016 at <http://wdfw.wa.gov/conservation/phs/>.
- Washington Dept. of Ecology 303(d) Water Quality Assessment Program, Accessed June 21, 2016 at <http://www.ecy.wa.gov/programs/wq/303d/currentassessmt.html>
- Washington Dept. of Ecology 303(d) Water Quality Improvement Projects, Accessed March 22, 2016 at <http://www.ecy.wa.gov/programs/wq/tmdl/TMDLsbyWria/tmdl-wria08.html%20City%20of%20Lake>
- Google Maps, Accessed June 20, 2016

BACKGROUND REVIEW AND SITE RECONNAISSANCE



Memorandum

The City contracted with The Watershed Company to conduct a critical areas survey of the proposed project and adjacent City park parcels to define the critical areas constraints on the proposed project. The Watershed Company completed a wetland and stream delineation in 2013 (Watershed Co. 2013). Updates to the City's critical areas ordinance since 2013 potentially affected the proposed project. In early 2016, the City requested The Watershed Company to update the 2013 report to comply with the current ordinance (Watershed Co. 2016). Those investigations found no critical areas present on the proposed project parcel, but identified one wetland and one stream on the adjacent city park parcel. The Watershed Company drew wetland and stream buffers that extend onto the proposed project parcel projecting from these off-site features. The City retained Perteet to review The Watershed Company's conclusions and review the Shoreline Municipal Code Chapter 20.80 Critical Areas to independently evaluate the presence and extent of buffers overlapping the proposed project parcel.

Perteet ecological staff completed a document review and site reconnaissance of the two parcels on June 20, 2016. A review of the municipal code and publicly available natural resources databases was completed on June 21, 2016. One wetland (Wetland A) and one stream (Ballinger Creek) were observed and confirmed on the city park parcel in the approximate extents mapped by The Watershed Company.

Ballinger Creek is the identified stream. It is a perennial stream tributary to Lyon Creek that eventually drains into McAleer Creek and Lake Washington. It is located in WRIA #8 Cedar-Sammamish. No stream ordinary high water mark (OHWM) flags could be relocated to confirm The Watershed Company's stream boundary lines. The stream reach documented in the critical areas report is a moderately well intact, fully shaded pool and riffle system with a fine sediment bed and bank stabilized by native and non-native vegetation on a shallow slope. Direct evidence of recent overbank flooding (matted down herbaceous vegetation) was observed along the stream reach. The stream's contributing basin is 90+% high density suburban residential and retail. WDFW's SalmonScape mapping tool illustrates the lowest reach of Ballinger Creek to contain documented presence of coho salmon (*Oncorhynchus kitsutch*). The salmonid containing reach is over 800 feet downstream of the project area below several partial and total fish passage barriers and culverts. The stream exits Wetland A as it flows under a dense Himalayan blackberry (*Rubus armeniacus*) thicket for about 100 feet before entering two 24-inch corrugated metal culverts near the southeast corner of the park parcel. The stream drains several hundred feet through culverts southeasterly beyond the project area and east of 25th Ave NE. The Perteet site reconnaissance was not tasked with determining fish presence or use in the stream or a detailed description of the stream and riparian corridor.

Wetland A is a forested wetland with a combination of riverine and palustrine Cowardin systems extending along both sides of Ballinger Creek within the study area and approximately corresponds to The Watershed Company critical areas report findings. Two wetland boundary flags were located on the south edge of Wetland A nearest the existing oil house on the project parcel. The forested wetland remains relatively intact with multiple vegetation strata containing native and non-native species. The riverine portion of Wetland A extends along both sides of Ballinger Creek and contains observed evidence of matted down herbaceous vegetation indicating recent overbank flooding. Overflow channels and small puddles from Ballinger Creek are present along Wetland A, indicating it is sustained by the creek. The palustrine portion of Wetland A comprises much of the southern-most section of Wetland A and is dominated by darker saturated soils and free water at the soil surface. Vegetation throughout the wetland is dominated by various willows (*Salix* sp.), red alder (*Alnus rubra*), and paper birch (*Betula papyrifera*) in the tree and shrub layers. Spiraea (*Spiraea douglasii*), red-osier dogwood (*Cornus alba*), Himalayan blackberry, salmonberry (*Rubus spectabilis*), black twinberry (*Lonicera involucreta*) dominate the lower shrub stratum. The herbaceous stratum is dominated by creeping buttercup (*Ranunculus repens*), field horsetail (*Equisetum arvense*), various sedges (*Carex* sp.), small fruited bulrush (*Scirpus microcarpus*), woolgrass (*S. cyperinus*), reed canarygrass (*Phalaris arundinacea*), mannagrass (*Glyceria* sp.), soft rush (*Juncus effusus*), and skunk cabbage (*Lysichiton americanus*).

Uplands around the stream and wetland are a mix of mowed park lawn and a fringe of native and non-native trees and shrubs to the north, northeast, south, and west. A dense thicket of Himalayan blackberry outcompetes most other vegetation southeast of Wetland A.



Memorandum

One unmaintained vegetated ditch documented in The Watershed Company critical areas report was identified along the boundary line between the proposed project and the park parcels. The ditch begins about 150 feet east of the mutual western corner of the two parcels and drains east to Ballinger Creek upstream of the dual culverts. The ditch is mostly filled in with organic debris and is overgrown with various wetland and upland native and non-native herbaceous, shrub, and tree species. Soils and organic debris were moist in a couple locations along the ditch.

Perteet reviewed the rating and buffer conclusions presented in The Watershed Company's critical areas report and compared them against the city's critical areas municipal code. The downstream presence of salmonids and other fish in Ballinger Creek does classify the upstream portions of Ballinger Creek, regardless of fish passage barriers, as a Type F (fish-bearing) stream that receives a 115 foot standard buffer width. Perteet independently rated Wetland A using Washington Department of Ecology's updated 2014 Western Washington Wetland Rating System and found Wetland A to receive a Category II rating with a standard buffer width of 105 feet based on a rating habitat score of 5. Our rating form is appended to this memo.

FINDINGS

1. The stream does extend a few feet onto the proposed project parcel at the parcel's very northeast corner according to the WH Pacific topographic land survey. Depending on the proposed project design, project related direct impacts to the stream or stream buffer may or may not occur at that location and should be verified by the design team.
2. The Wetland A delineation boundary generally appears to follow breaks in the topographic slope based on the few delineation boundary flags that could be relocated. Along the north boundary (left side of stream) and the northwest boundary (right side of stream) the delineation boundary line appears to be relatively accurate.
3. The stream buffer determination of 115 feet is correct. The mapped extents of the stream buffer in the critical areas report figures is not accurate as discussed in the Recommendations section below.
4. The Wetland A rating per Ecology's 2014 rating system is correct; however, the habitat score was observed to warrant a 5 point score by Perteet compared to 6 points given by The Watershed Company. The discrepancy appears to be the last habitat question related to Priority Habitats or Features present. Priority snags and logs of sufficient size to meet the criteria were not located. A single large log found in the stream meets the diameter but not the length requirement of the priority snags and logs category. The City of Shoreline buffer for this habitat score would decrease from 165 feet (Cat. II with habitat score of 6 or 7) documented in critical areas report to 105 feet (Cat. II with habitat score of 5).
5. The mapped extents of the Wetland A buffer in the critical areas report figures is not accurate as discussed in the Recommendations section below.

RECOMMENDATIONS

The Watershed Company Wetland and Stream Delineation Report minimally documents the existing critical areas present on the proposed project's adjacent city park parcel that contain critical area buffers that may extend onto and affect the proposed project parcel. The mapped boundaries of the critical areas appear to be approximately accurate.

The critical areas report figure also illustrates that critical areas buffers extend onto the proposed project parcel. The critical areas code Chapter 20.80.040 Subpart C "Allowed Activities" states the following:

1. **Modifications to Existing Structures within Critical Areas.** Structural modification of, addition to, maintenance, repair, or replacement of legally nonconforming structures consistent with SMC20.30.280, which do not meet the building setback or buffer requirements for wetlands, fish and wildlife habitat conservation areas, or geologic hazard areas if the modification, addition, replacement or related activity does not increase the **existing** building footprint of the structure or **area of hardscape** lying within the



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critical area or buffer. Within landslide hazard areas additions that add height to a nonconforming structure may only be allowed with review of a critical area report demonstrating that no increased risk of the hazard will occur. Where nonconforming structures are partially located within critical areas or their buffers, additions are allowed with a critical area report delineating the critical area(s) and required buffers showing that the addition is located entirely outside the critical area or buffer;

Pursuant to our interpretation of the City of Shoreline municipal code for critical areas and buffers allowed activities, the stream and wetland buffers may stop at the vegetated edge of the proposed project parcel's north boundary. From that revised projected buffer edge south, the proposed project parcel is nearly 100% paved hardscape and/or buildings and structures that meets to allowance of Chapter 20.80.040 Subpart C. This has been the existing site condition on the project parcel since at least as early as 1990 as illustrated by historical photography available on Google Earth. No ecological buffer presently exists or has existed in this location presumably since the site was developed and before critical areas regulations were in existence. Impacts to the narrow vegetated buffers between the paved edge and property line along the project parcel's north boundary line, if proposed, are assumed to require mitigation according to the City's critical areas buffer mitigation requirements.

The presence of the stream and culverts at the northeast corner of the project parcel may be impacted by the proposed project and may require impact quantification and mitigation by the City and other agencies depending on the project design at that location. The City is also investigating road corridor upgrades along 25th St NE that would include alterations to this culverted reach of Ballinger Creek along and under the street. Depending on proposed road related stream upgrades and timing of the two projects, any necessary mitigation for potential critical areas or buffer impacts could be tied together to provide a greater positive impact on Ballinger Creek and it's riparian corridor.

END OF MEMORANDUM

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 20-Jun-16

Rated by William Kidder Trained by Ecology? ☒ Yes ☐ No Date of training 2005

HGM Class used for rating Depressional & Flats Wetland has multiple HGM classes? ☒ Yes ☐ No

NOTE: Form is not complete with out the figures requested (figures can be combined).

Source of base aerial photo/map _____

OVERALL WETLAND CATEGORY _____ (based on functions ☐ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

_____ **Category I** - Total score = 23 - 27
 _____ **Category II** - Total score = 20 - 22
 _____ **Category III** - Total score = 16 - 19
 _____ **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	M	L	M	
Landscape Potential	H	H	L	
Value	H	H	M	
Score Based on Ratings	8	7	5	Total 20

**Score for each
function based
on three
ratings**
*(order of ratings
is not
important)*

9 = H, H, H
 8 = H, H, M
 7 = H, H, L
 7 = H, M, M
 6 = H, M, L
 6 = M, M, M
 5 = H, L, L
 5 = M, M, L
 4 = M, L, L
 3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Maps and Figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to another figure</i>)	S 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	

Wetland name or number

Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.
If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

- ☒ **NO** - go to 2 ☐ **YES** - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

- ☒ **NO - Saltwater Tidal Fringe (Estuarine)** ☐ **YES - Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands.*
*If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.
Groundwater and surface water runoff are NOT sources of water to the unit.

- ☒ **NO** - go to 3 ☐ **YES** - The wetland class is **Flats**
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?

- ☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ **NO** - go to 4 ☐ **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

- ☒ The wetland is on a slope (*slope can be very gradual*),
☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
☐ The water leaves the wetland **without being impounded**.

☒ **NO** - go to 5 ☐ **YES** - The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?

- ☒ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
☒ The overbank flooding occurs at least once every 2 years.

☐ **NO** - go to 6 ☒ **YES** - The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding.

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☒ NO - go to 7

☐ YES - The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☐ NO - go to 8

☒ YES - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT** (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

NOTES and FIELD OBSERVATIONS:

Wetland name or number

DEPRESSIONAL AND FLATS WETLANDS**Water Quality Functions** - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?

D 1.1. Characteristics of surface water outflows from the wetland:

Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet).

points = 3

Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet.

points = 2

☒ Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing

points = 1

☐ Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.

points = 1

1

D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).

Yes = 4 No = 0

0

D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):

Wetland has persistent, ungrazed, plants > 95% of area

points = 5

Wetland has persistent, ungrazed, plants > 1/2 of area

points = 3

Wetland has persistent, ungrazed plants > 1/10 of area

points = 1

Wetland has persistent, ungrazed plants < 1/10 of area

points = 0

5

D 1.4. Characteristics of seasonal ponding or inundation:*This is the area that is ponded for at least 2 months. See description in manual.*

Area seasonally ponded is > 1/2 total area of wetland

points = 4

Area seasonally ponded is > 1/4 total area of wetland

points = 2

Area seasonally ponded is < 1/4 total area of wetland

points = 0

2

Total for D 1

Add the points in the boxes above

8

Rating of Site Potential If score is: ☐ 12 - 16 = H ☒ 6 - 11 = M ☐ 0 - 5 = L Record the rating on the first page

D 2.0. Does the landscape have the potential to support the water quality function of the site?

D 2.1. Does the wetland unit receive stormwater discharges?

Yes = 1 No = 0

1

D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?

Yes = 1 No = 0

1

D 2.3. Are there septic systems within 250 ft of the wetland?

Yes = 1 No = 0

0

D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1 - D 2.3?

Source

Yes = 1 No = 0

1

Total for D 2

Add the points in the boxes above

3

Rating of Landscape Potential If score is: ☒ 3 or 4 = H ☐ 1 or 2 = M ☐ 0 = L Record the rating on the first page

D 3.0. Is the water quality improvement provided by the site valuable to society?

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?

Yes = 1 No = 0

1

D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?

Yes = 1 No = 0

1

D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)?

Yes = 2 No = 0

0

Total for D 3

Add the points in the boxes above

2

Rating of Value If score is: ☒ 2 - 4 = H ☐ 1 = M ☐ 0 = L

Record the rating on the first page

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland:

- | | | |
|---|------------|---|
| Wetland is a depression or flat depression with no surface water leaving it (no outlet) | points = 4 | |
| Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet | points = 2 | 1 |
| Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch | points = 1 | |
| Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing | points = 0 | |

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*

- | | | |
|---|------------|---|
| Marks of ponding are 3 ft or more above the surface or bottom of outlet | points = 7 | 1 |
| Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet | points = 5 | |
| <input type="checkbox"/> Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet | points = 3 | |
| <input type="checkbox"/> The wetland is a "headwater" wetland | points = 3 | |
| Wetland is flat but has small depressions on the surface that trap water | points = 1 | |
| Marks of ponding less than 0.5 ft (6 in) | points = 0 | |

D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*

- | | | |
|---|------------|---|
| <input type="checkbox"/> The area of the basin is less than 10 times the area of the unit | points = 5 | 0 |
| The area of the basin is 10 to 100 times the area of the unit | points = 3 | |
| The area of the basin is more than 100 times the area of the unit | points = 0 | |
| <input type="checkbox"/> Entire wetland is in the Flats class | points = 5 | |

Total for D 4 Add the points in the boxes above **2**

Rating of Site Potential If score is: ☐ 12 - 16 = H ☐ 6 - 11 = M ☒ 0 - 5 = L *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic function of the site?

D 5.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0 1

D 5.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0 1

D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0 1

Total for D 5 Add the points in the boxes above **3**

Rating of Landscape Potential If score is: ☒ 3 = H ☐ 1 or 2 = M ☐ 0 = L *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.

- | | |
|---|---|
| <p>The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 <input type="checkbox"/> Surface flooding problems are in a sub-basin farther down-gradient. points = 1 <input type="checkbox"/> Flooding from groundwater is an issue in the sub-basin. points = 1 <input type="checkbox"/> The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why points = 0 <input type="checkbox"/> There are no problems with flooding downstream of the wetland. points = 0 | 2 |
|---|---|

D 6.2. Has the site been identified as important for flood storage or flood n

Wetland name or number

conveyance in a regional flood control plan?	Yes = 2 No = 0	0
Total for D 6	Add the points in the boxes above	2

Rating of Value If score is: ☒ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

- | | | |
|--|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed | 4 structures or more: points = 4 | 1 |
| <input type="checkbox"/> Emergent | 3 structures: points = 2 | |
| <input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 | |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0 | |
| <i>If the unit has a Forested class, check if:</i> | | |
| <input checked="" type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon | | |

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (see text for descriptions of hydroperiods).

- | | | |
|---|-------------------------------------|---|
| <input type="checkbox"/> Permanently flooded or inundated | 4 or more types present: points = 3 | 3 |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated | 3 types present: points = 2 | |
| <input checked="" type="checkbox"/> Occasionally flooded or inundated | 2 types present: points = 1 | |
| <input checked="" type="checkbox"/> Saturated only | 1 types present: points = 0 | |
| <input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Lake Fringe wetland | 2 points | |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points | |

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft². *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

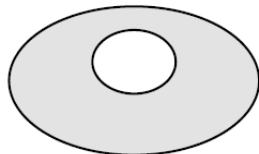
- | | | | |
|-----------------|----------------|------------|---|
| If you counted: | > 19 species | points = 2 | 2 |
| | 5 - 19 species | points = 1 | |
| | < 5 species | points = 0 | |

H 1.4. Interspersion of habitats

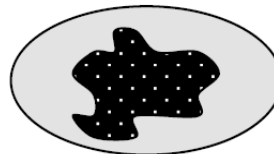
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



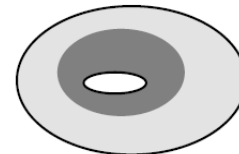
None = 0 points



Low = 1 point

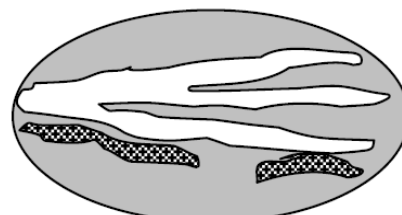
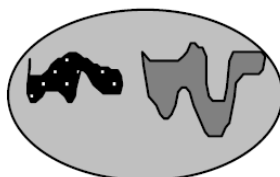


Moderate = 2 points



1

All three diagrams in this row are **HIGH** = 3 points



Wetland name or number

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H 1.5. Special habitat features: Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>		3
<input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long)		
<input checked="" type="checkbox"/> Standing snags (dbh > 4 in) within the wetland		
<input checked="" type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)		
<input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)		
<input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)		
<input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)		
Total for H 1		10

Rating of Site Potential If Score is: ☐ 15 - 18 = H ☒ 7 - 14 = M ☐ 0 - 6 = L Record the rating on the first page

H 2.0. Does the landscape have the potential to support the habitat function of the site?		
H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). <i>Calculate:</i> _____ % undisturbed habitat + (_____ % moderate & low intensity land uses / 2) = _____		
If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0		0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. <i>Calculate:</i> _____ % undisturbed habitat + (_____ % moderate & low intensity land uses / 2) = _____		
Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0		2
H 2.3 Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km Polygon is high intensity points = 0		
Total for H 2		0

Rating of Landscape Potential If Score is: ☐ 4 - 6 = H ☐ 1 - 3 = M ☒ < 1 = L Record the rating on the first page

H 3.0. Is the habitat provided by the site valuable to society?		
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose only the highest score that applies to the wetland being rated.		
Site meets ANY of the following criteria: points = 2 <ul style="list-style-type: none"> <input type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page) <input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW priority species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan 		1
Site has 1 or 2 priority habitats (listed on next page) with in 100m points = 1		

Wetland name or number

Site does not meet any of the criteria above	points = 0
--	------------

Rating of Value If Score is: ☒ **2 = H** ☒ **1 = M** ☐ **0 = L** *Record the rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** *This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☒ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Wetland name or number

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.	
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to SC 1.1 <input type="checkbox"/> No = Not an estuarine wetland </div>	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <div style="text-align: right;"> <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 1.2 </div>	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or ungrazed or un-mowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <div style="text-align: right;"> <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II </div>	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to SC 2.2 <input type="checkbox"/> No - Go to SC 2.3 </div> SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <div style="text-align: right;"> <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not WHCV </div> SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf <div style="text-align: right;"> <input type="checkbox"/> Yes - Contact WNHP/WDNR and to SC 2.4 <input type="checkbox"/> No = Not WHCV </div> SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? <div style="text-align: right;"> <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not WHCV </div>	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to SC 3.3 <input type="checkbox"/> No - Go to SC 3.2 </div> SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to SC 3.3 <input type="checkbox"/> No = Is not a bog </div> SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? <div style="text-align: right;"> <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No - Go to SC 3.4 </div> <p>NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog.</p> SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species)	

Wetland name or number

listed in Table 4 provide more than 30% of the cover under the canopy? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No = Is not a bog

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. <input type="checkbox"/> Mature forests (west of the Cascade Crest): Stands where the largest trees are 80-200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a forested wetland for this section</p>	
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> <input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks <input type="checkbox"/> The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>) <p style="text-align: right;"><input type="checkbox"/> Yes - Go to SC 5.1 <input type="checkbox"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <ul style="list-style-type: none"> <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or ungrazed or un-mowed grassland. <input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft²) <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103 <input type="checkbox"/> Grayland-Westport: Lands west of SR 105 <input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109 <p style="text-align: right;"><input type="checkbox"/> Yes - Go to SC 6.1 <input type="checkbox"/> No = Not an interdunal wetland for rating</p> <p>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category II <input type="checkbox"/> No - Go to SC 6.3</p> <p>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = Category III <input type="checkbox"/> No = Category IV</p>	
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	