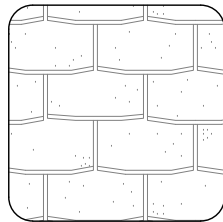
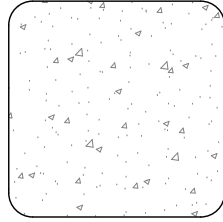
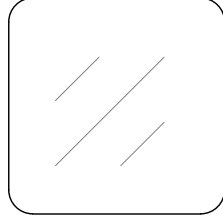


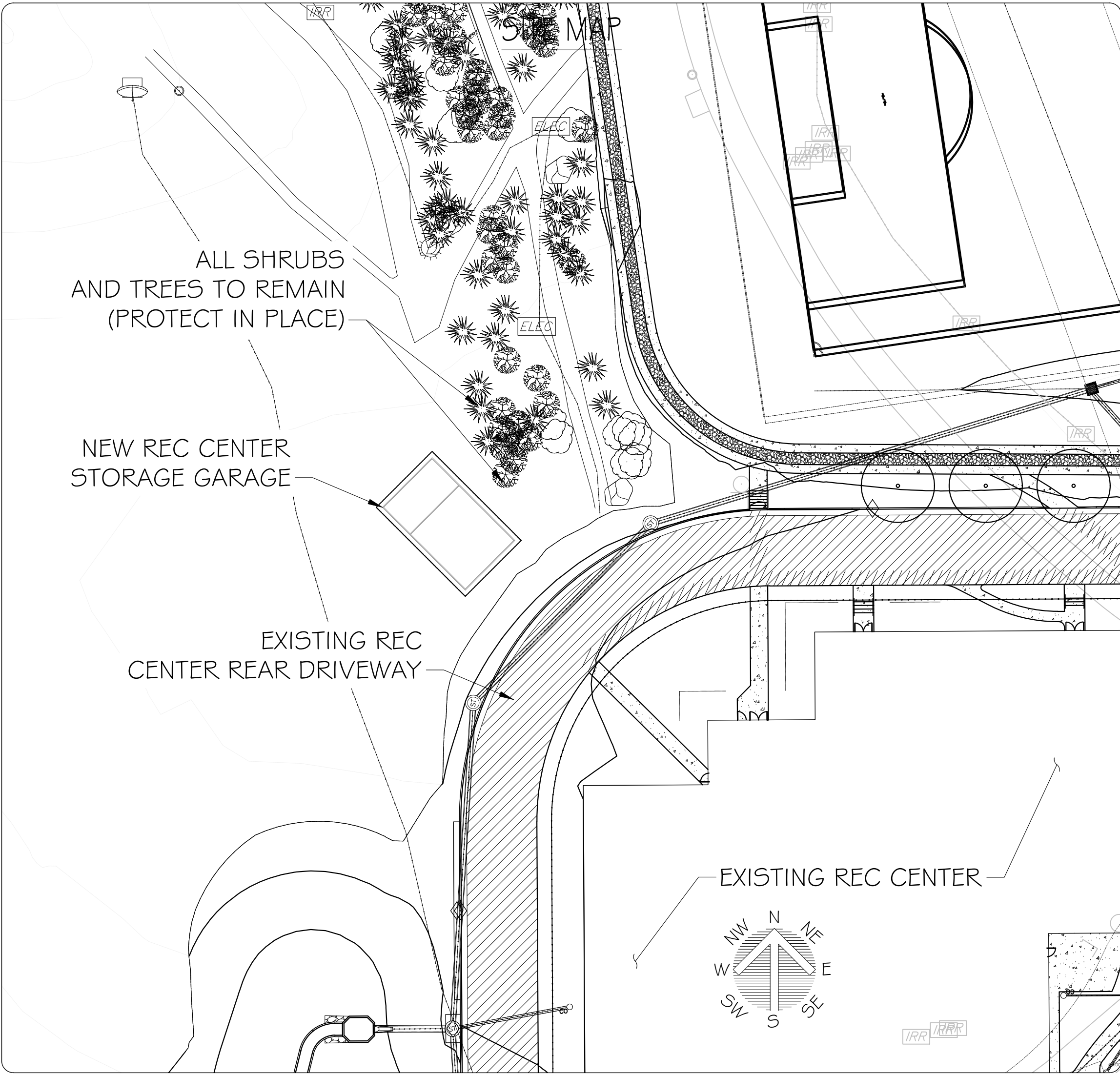


RECREATION CENTER STORAGE GARAGE

13300 WEST SIXTH AVENUE  
LAKEWOOD, COLORADO 80228

MATERIAL LEGEND

-  ASPHALT SHINGLE ROOFING
-  CONCRETE
-  GLASS



- DRAWING INDEX:
- CS - COVER SHEET
  - A1 - ARCHITECTURAL PLANS
  - A2 - ARCHITECTURAL ELEVATIONS
  - A3 - ARCHITECTURAL SECTIONS AND DETAILS
  - SS - STRUCTURAL SPECIFICATIONS
  - S1 - STRUCTURAL FOUNDATION PLAN
  - S2 - STRUCTURAL ROOF PLAN
  - SD - STRUCTURAL DETAILS 1
  - SD - STRUCTURAL DETAILS 2
  - E1 - ELECTRICAL LEGEND, INDEX, NOTES, DETAILS
  - E2 - ELECTRICAL ONE-LINE DIAGRAM, SCHEDULES
  - E3 - ELECTRICAL SITE PLAN AND SCHEDULES
  - E4 - ELECTRICAL PLANS
  - E5 - ELECTRICAL COMCHECK COMPLIANCE

AREA CALCULATIONS

COVERED SQUARE FOOTAGE:

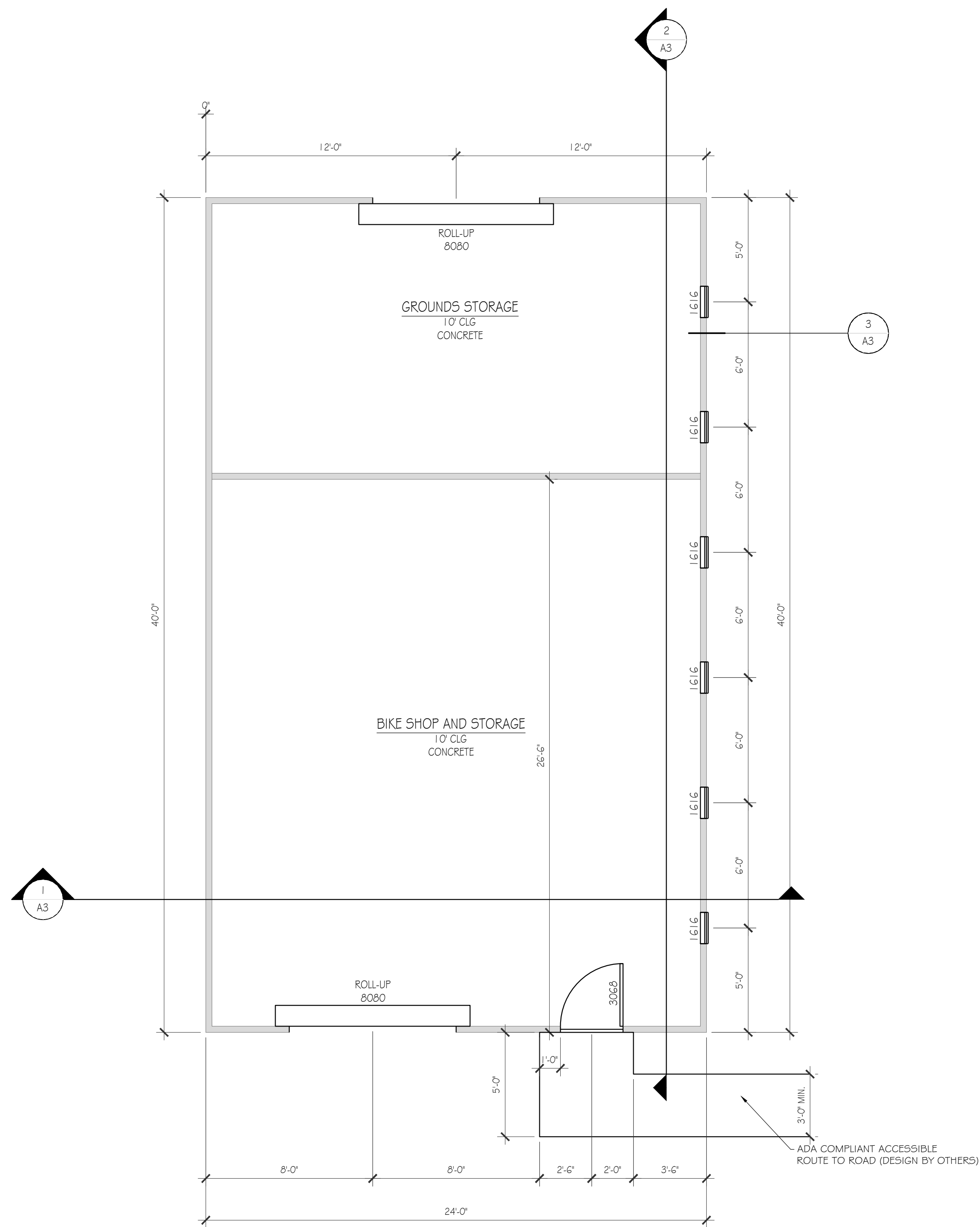
MAIN FLOOR 960 SFT

PROJECT NAME:	REC CENTER STORAGE GARAGE
OWNER:	RED ROCKS COMMUNITY COLLEGE
DESIGNER:	ENGenious LLC
PROJECT ADDRESS:	13300 WEST SIXTH AVENUE LAKEWOOD, COLORADO 80228

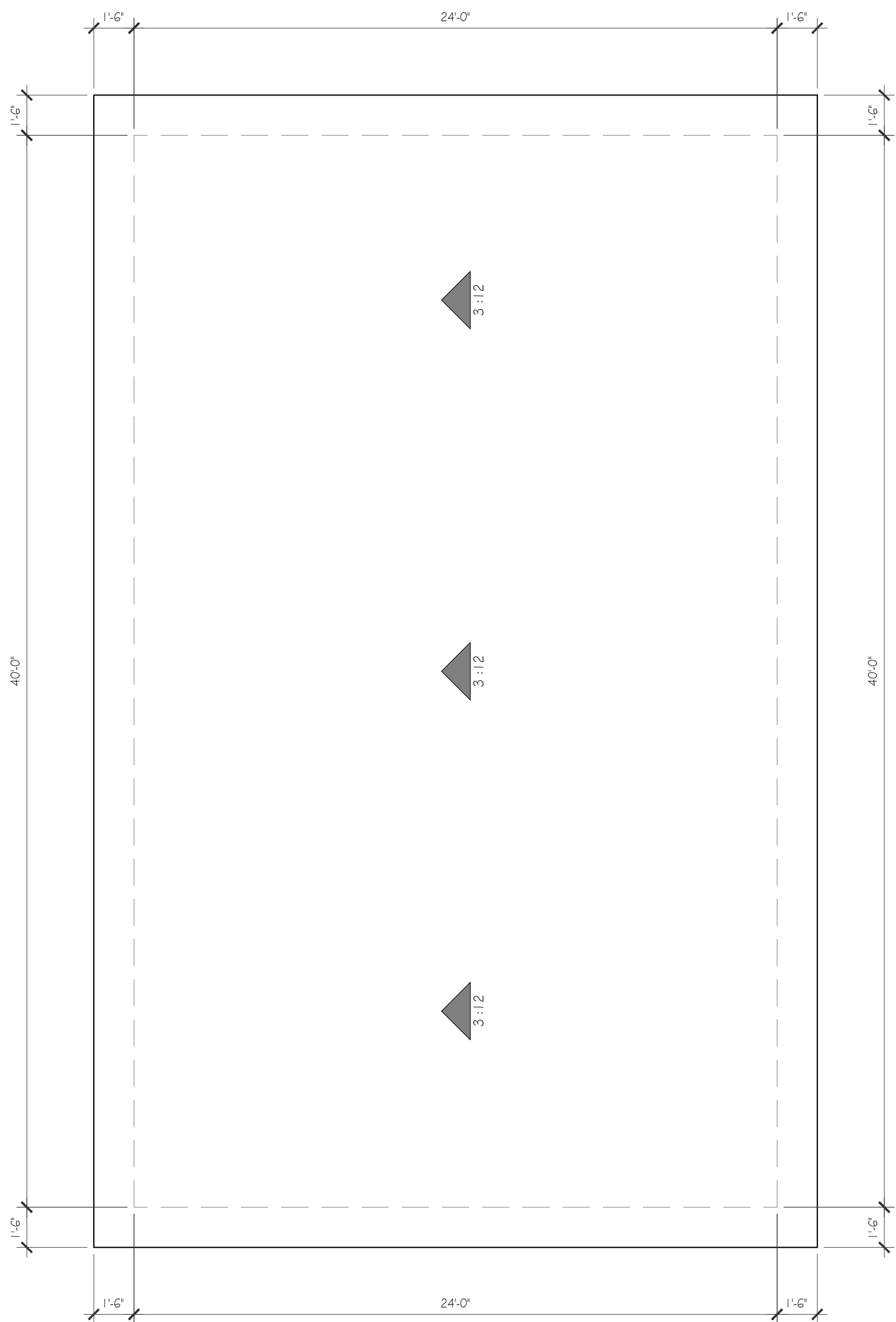


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ARCHITECTURAL MAIN FLOOR PLAN



ARCHITECTURAL ROOF PLAN

GENERAL NOTES

1. ALL WORK SHALL BE IN STRICT CONFORMANCE TO ALL APPLICABLE CODES, REGULATIONS AND LAWS.
2. ALL INTERIOR WALLS SHALL BE 3-1/2" UNLESS NOTED OTHERWISE.

SLAB INTERFACE NOTES

1. CONCRETE FOUNDATION - REFER TO CIVIL DRAWINGS FOR TOP OF SLAB, TOP OF WALL, BOTTOM OF WALL, STEP WALL LOCATIONS, MEET REQUIREMENTS OF STRUCTURAL PLANS FOR ALLOWABLE WALL HEIGHTS AND STEP DETAILS.
2. CONCRETE PORCH / PATIO / STOOP SLABS SHALL HAVE A MINIMUM SLOPE OF 1/4" PER FOOT AWAY FROM BUILDING.
3. REFER TO STRUCTURAL PLANS FOR FOUNDATION SIZE AND REINFORCEMENT REQUIREMENTS.
4. WHERE DISCREPANCIES BETWEEN THE SOILS REPORT AND THE STRUCTURAL DRAWINGS OCCUR, CONTACT STRUCTURAL ENGINEER PRIOR TO PERFORMING ANY WORK.

FLOOR PLAN GENERAL NOTES

1. ALL EXTERIOR DOORS SHALL BE FULLY WEATHER STRIPPED.
2. ALL GLAZING IN EXTERIOR DOORS AND WINDOWS IN HAZARDOUS LOCATIONS SHALL BE TEMPERED AS REQUIRED PER IBC.

ROOF PLAN GENERAL NOTES

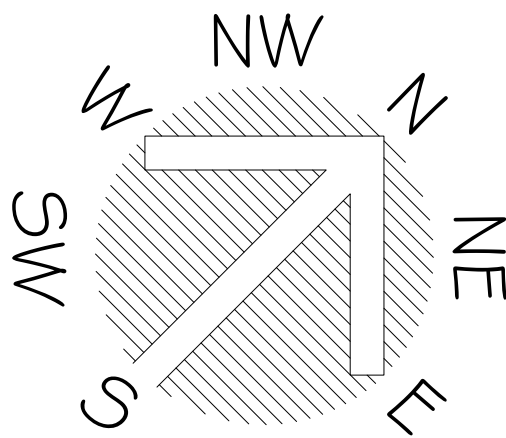
1. ROOF VENTILATION SHALL MEET THE REQUIREMENTS STATED IN SECTION R806 OF THE IRC.
2. UNVENTED ATTIC AND RAFTER ASSEMBLIES SHALL MEET THE REQUIREMENTS OF SECTION 1203 OF THE IBC.

2x4 WALL

ROOM NAME  
XX CLG / VAULTED  
FLOOR FINISH

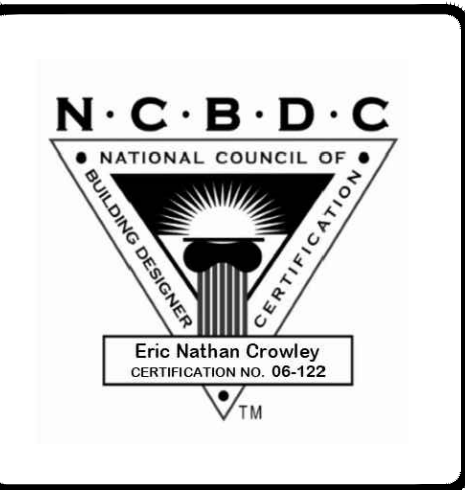
DOOR AND WINDOW  
WIDTH / HEIGHT  
FT / IN / FT / IN

# :12 DIRECTION OF ROOF SLOPE -  
PITCH / SLOPE INDICATED ON ROOF PLAN



SCALE  
1/4" = 1'-0"

PROJECT NAME:	REC CENTER STORAGE GARAGE
OWNER:	RED ROCKS COMMUNITY COLLEGE
DESIGNER:	ENGenious LLC
PROJECT ADDRESS:	13300 WEST SIXTH AVENUE LAKEWOOD, COLORADO 80228

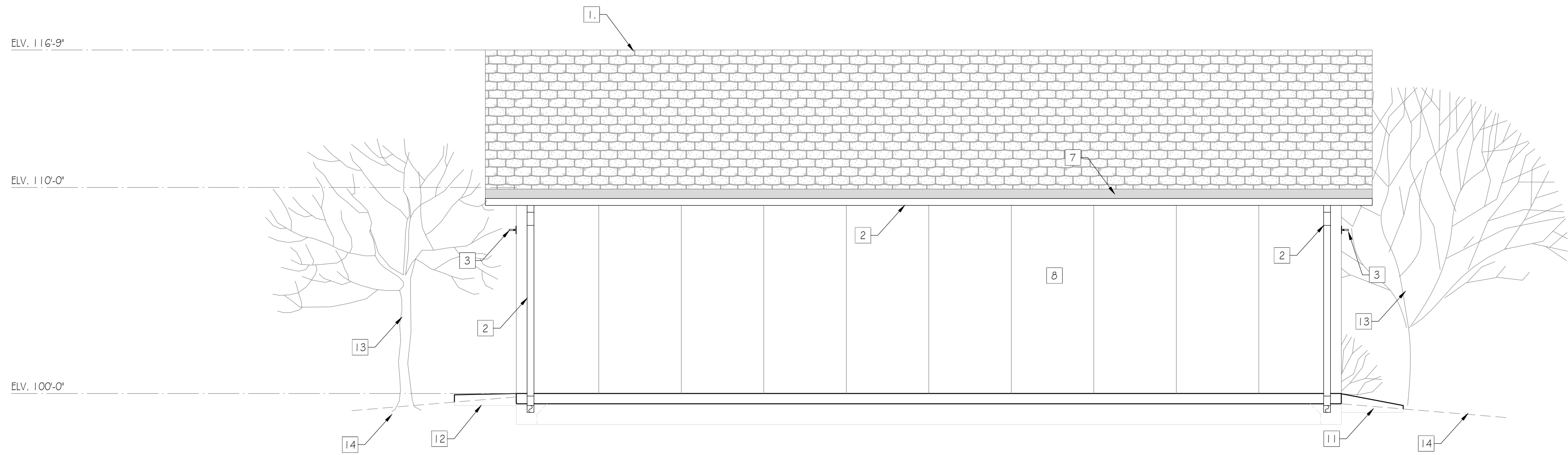


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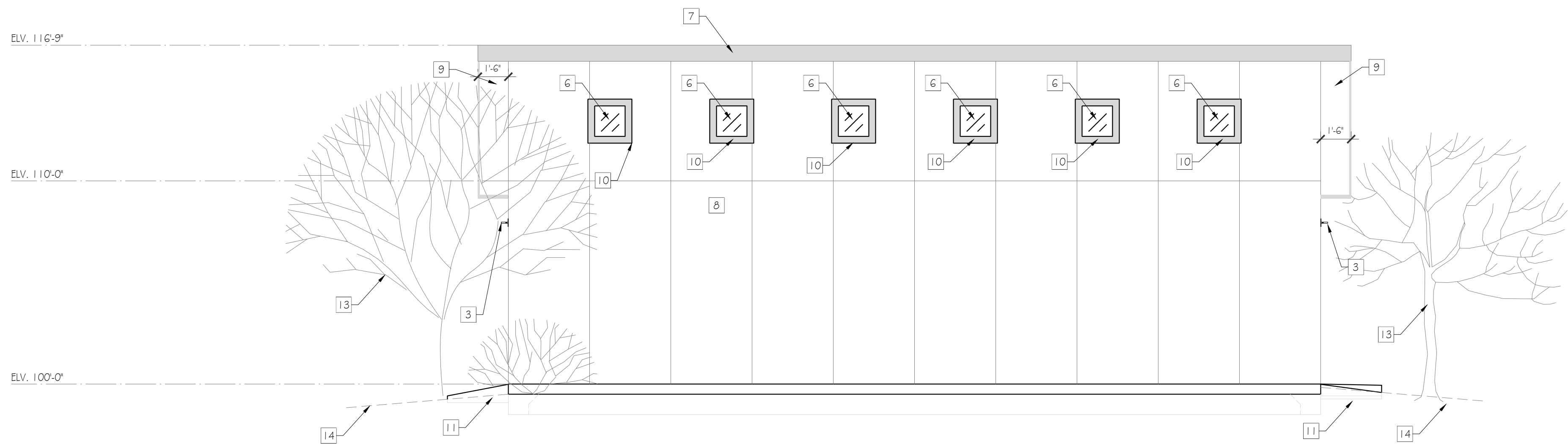
STATUS:  
CONSTRUCTION

SHEET NAME:	
ARCHITECTURAL PLANS	
PROJECT No:	DRAWN:
18030	ENC
DATE:	
September 12, 2019	
SHEET No:	REV No:
A1	

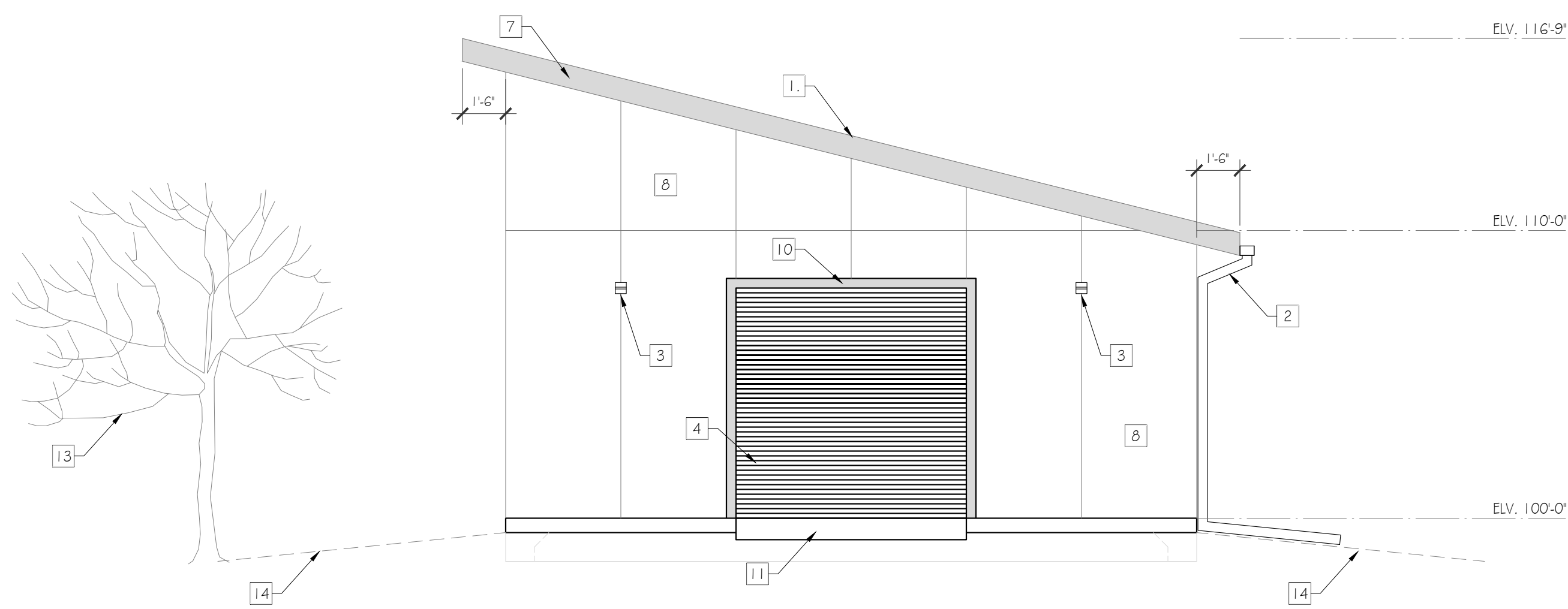




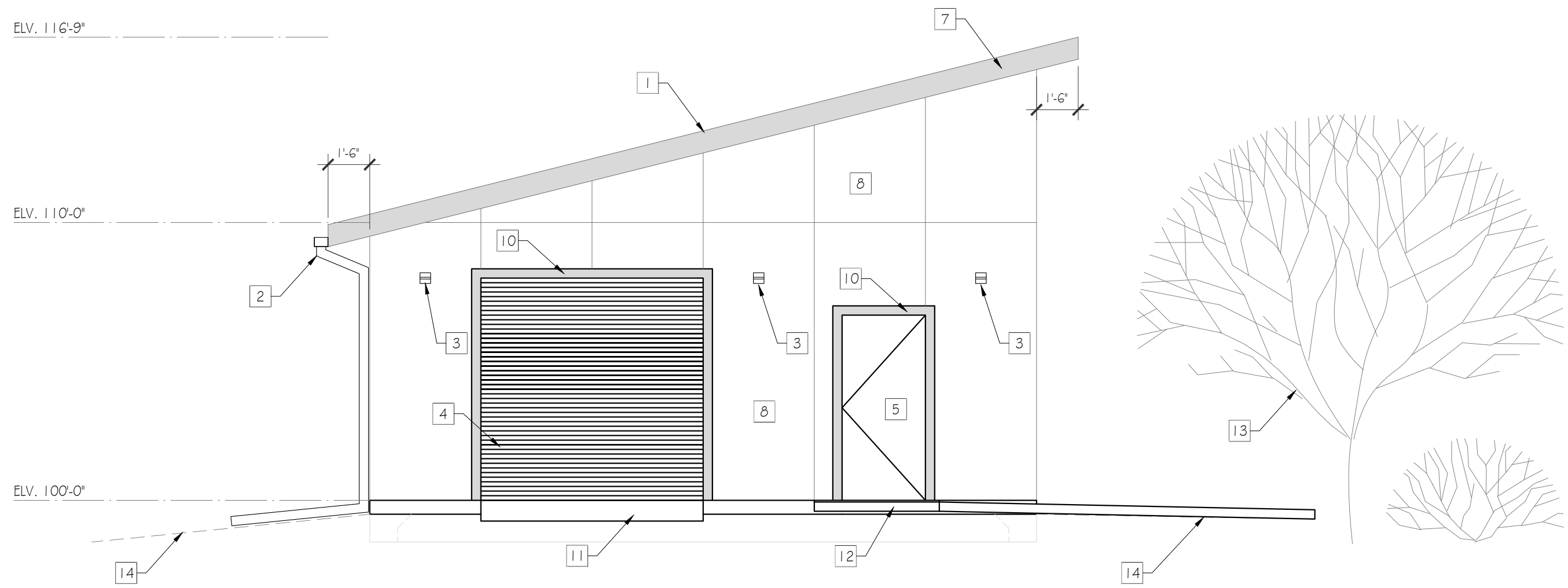
WESTWARD ELEVATION



EASTWARD ELEVATION



NORTHERN ELEVATION



SOUTHERN ELEVATION

GENERAL NOTES

1. ALL WORK SHALL BE IN STRICT CONFORMANCE TO ALL APPLICABLE CODES, REGULATIONS AND LAWS.
2. ALL INTERIOR WALLS SHALL BE 3-1/2" UNLESS NOTED OTHERWISE.

ELEVATION GENERAL NOTES

1. ALL VERTICAL DIMENSIONS SHOWN ARE FROM THE INTERIOR CONCRETE FLOOR SLAB AT THE FIRST FLOOR OR TOP OF SHEATHING AT THE UPPER FLOORS UNLESS NOTED OTHERWISE.
2. REFER TO IBC FOR MIN. WINDOW, DOOR AND WALL VENT MOISTURE BARRIER INSTALLATION REQUIREMENTS.
3. EXHAUST AND INTAKE OPENINGS TERMINATING OUTDOORS SHALL BE PROTECTED WITH CORROSION-RESISTANT SCREEN, LOUVERS, OR GRILLES WITH OPENINGS OF 1/4" - 1/2" IN ANY DIMENSION.

KEY NOTES

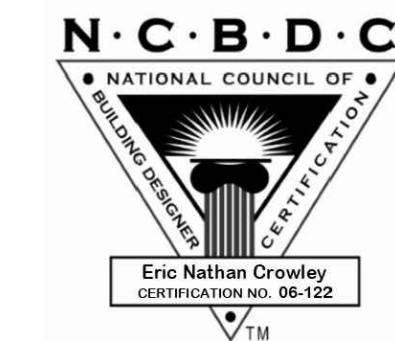
1. OWENS CORNING OAKRIDGE DRIFTWOOD ARCHITECTURAL ASPHALT SHINGLE. MEET REQUIREMENTS OF IBC SECTION 1507.2.  
ALTERNATIVE BID ITEM:  
METAL SALES CLASSIC RIB STEEL ROOF PANEL (CHARCOAL). MEET REQUIREMENTS OF IBC SECTION 1507.4
2. EUROPEAN BOX STYLE GUTTERS
3. LUMIERE EON LED 3030-W1-LEDB1 LIGHT
4. 8' x 8' ROLL-UP CHAIN ACTUATED DOOR
5. 3'-0" x 6'-8" METAL EXTERIOR GRADE DOOR TO MEET IBC SECTION 1010.1.9
6. 18"x18" FIXED PORT WINDOWS (VINYL WHITE)
7. JAMESHARDIE 9.25" WIDE TRIM 414 NT3 SMOOTH FACIA (COLOR - ARCTIC WHITE)
8. JAMESHARDIE 4' x 10' H25 PANEL SMOOTH (COLOR - MONTEREY TAUPE)
9. JAMESHARDIE HARDIESOFFIT PANELS VENTED SMOOTH (COLOR - ARCTIC WHITE)
10. JAMESHARDIE 3.5" WIDE TRIM 414 NT3 SMOOTH (COLOR - ARCTIC WHITE)
11. SLOPED CONCRETE RAMP AT ROLL-UP DOOR
12. ADA COMPLIANT LANDING PAD AT ENTRY DOOR, ELEVATION TO MATCH INTERIOR
13. EXISTING VEGETATION TO REMAIN (PROTECT IN PLACE)
14. PROVIDE POSITIVE DRAINAGE AWAY FROM FOUNDATION

REC CENTER STORAGE GARAGE

RED ROCKS COMMUNITY COLLEGE

ENGenious LLC

13300 WEST SIXTH AVENUE  
LAKEWOOD, COLORADO 80228



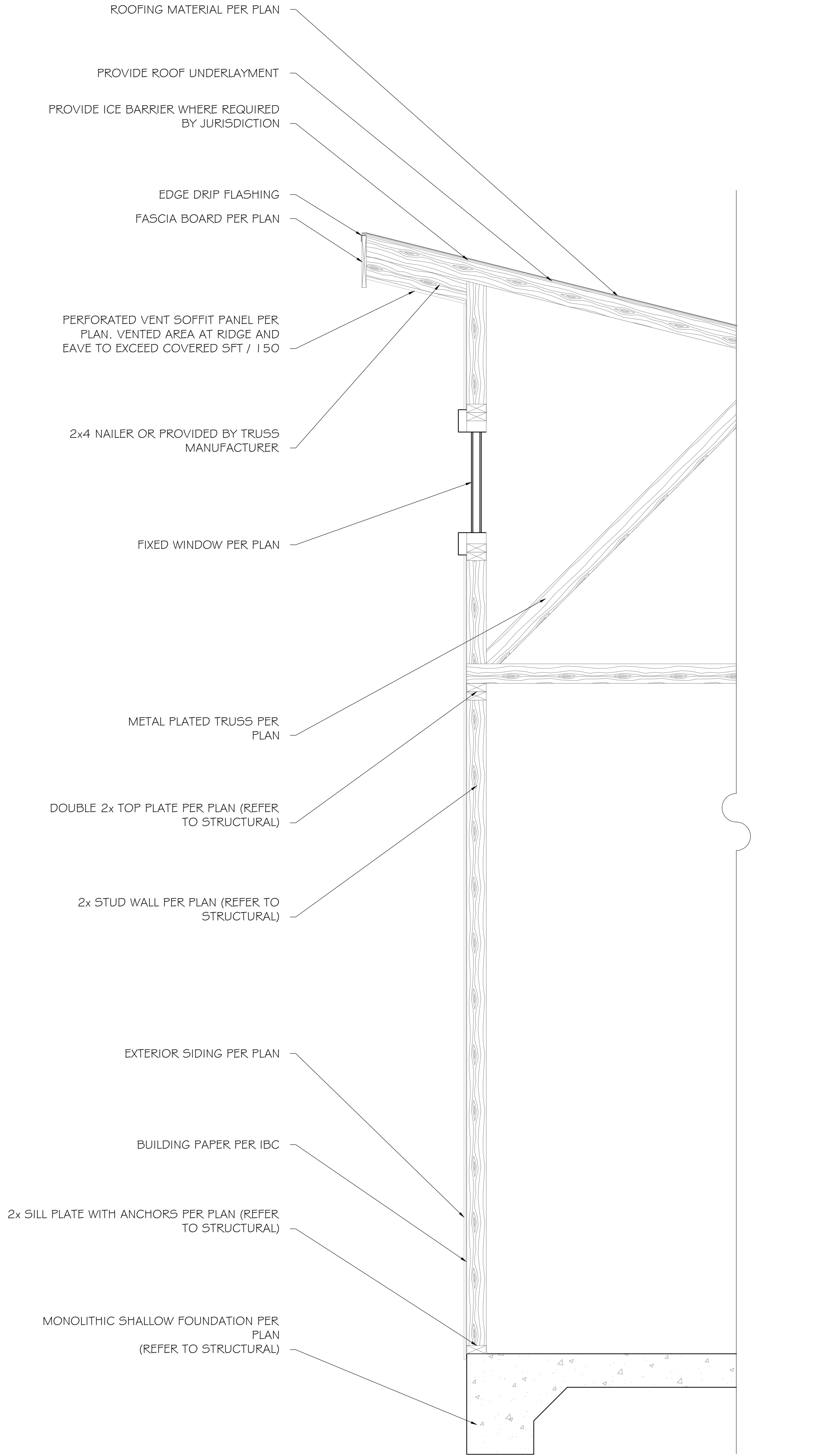
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STATUS:  
CONSTRUCTION

SHEET NAME: ARCHITECTURAL ELEVATIONS	
PROJECT No: 18030	DRAWN: ENC
DATE: September 12, 2019	
SHEET No:	REV No:

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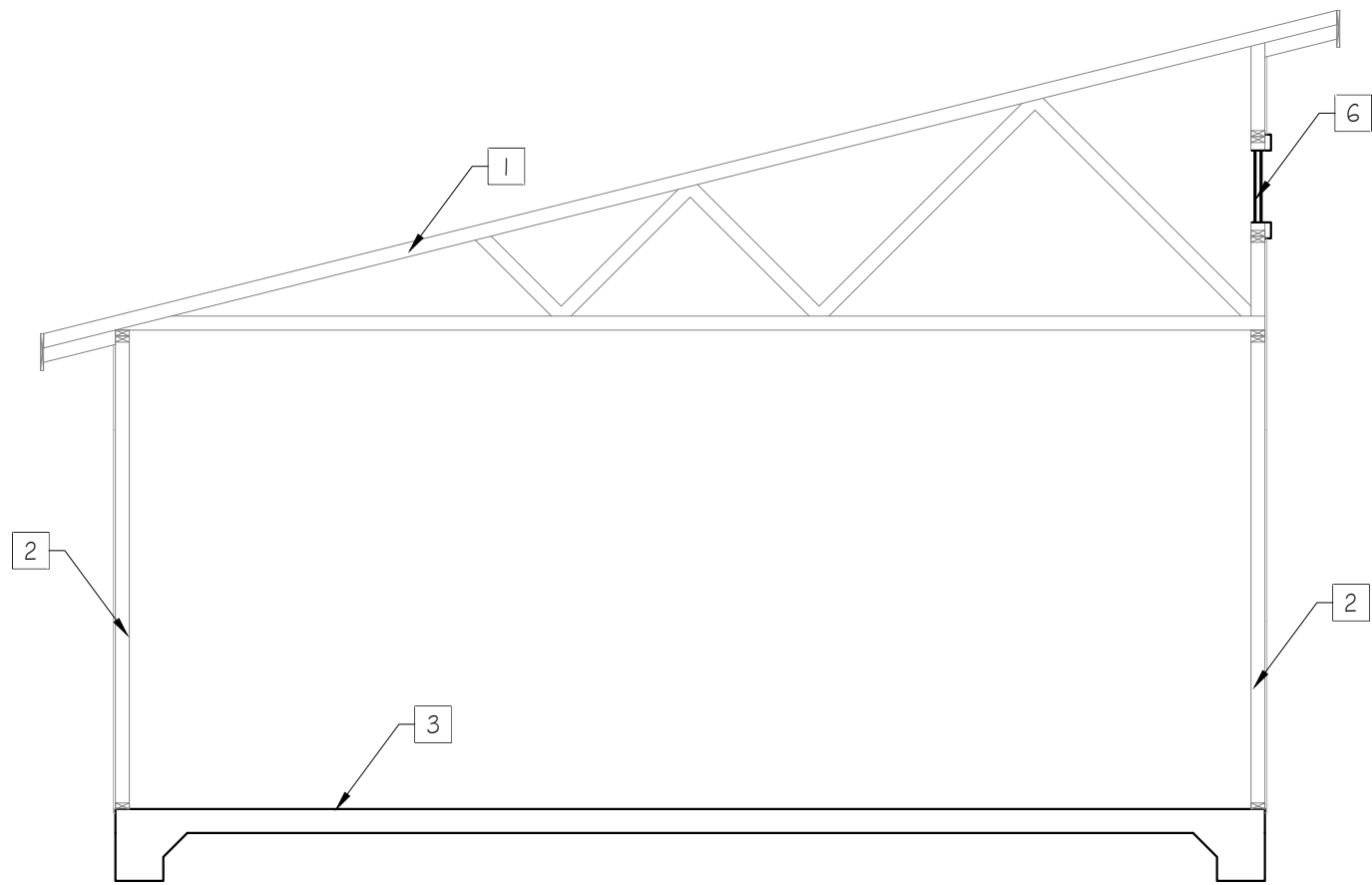




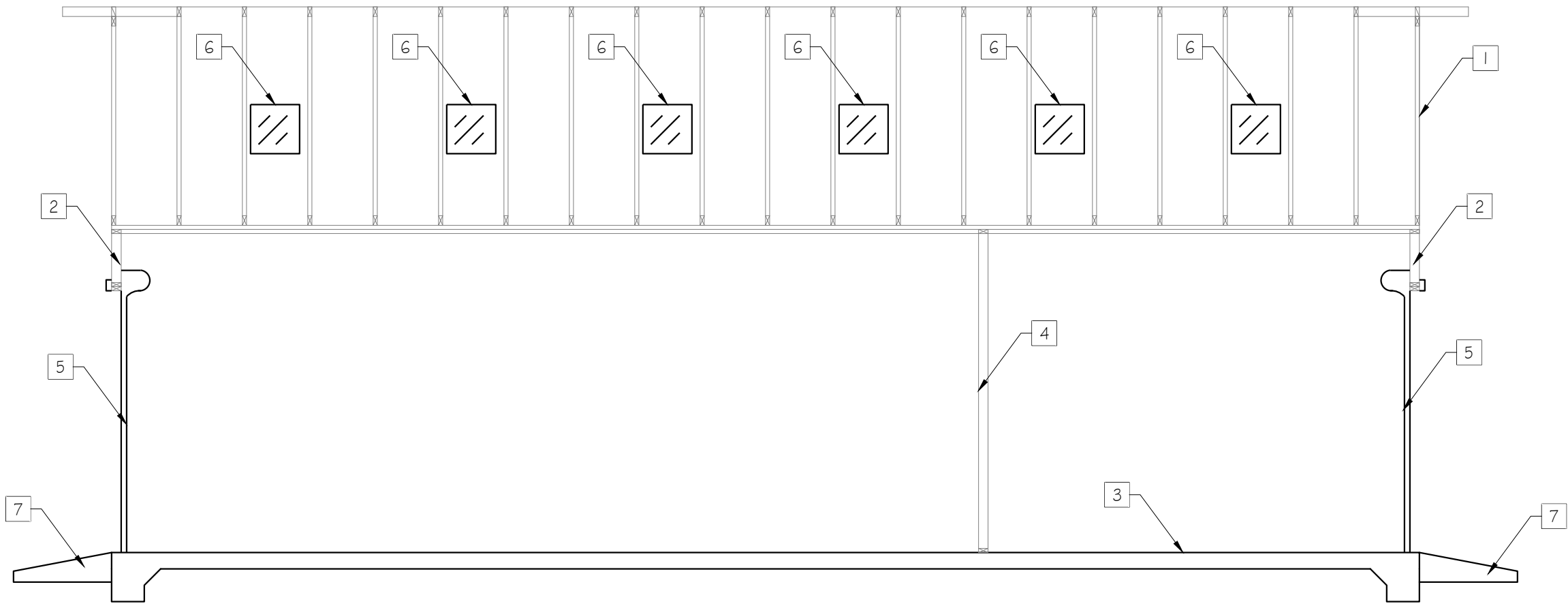
BUILDING SECTION  
GENERAL NOTES

SCALE:  
1/4" = 1'-0"

3



1 - SECTION



2 - SECTION

GENERAL NOTES

1. ALL WORK SHALL BE IN STRICT CONFORMANCE TO ALL APPLICABLE CODES, REGULATIONS AND LAWS.
2. ALL INTERIOR WALLS SHALL BE 3-1/2" UNLESS NOTED OTHERWISE.

SECTION GENERAL NOTES

1. ALL VERTICAL DIMENSIONS SHOWN ARE FROM THE INTERIOR CONCRETE FLOOR SLAB AT THE FIRST FLOOR OR TOP OF SHEATHING AT THE UPPER FLOORS UNLESS NOTED OTHERWISE.
2. REFER TO DETAILS FOR MIN. WINDOW, DOOR AND WALL VENT MOISTURE BARRIER INSTALLATION REQUIREMENTS.
3. EXHAUST AND INTAKE OPENINGS TERMINATING OUTDOORS SHALL BE PROTECTED WITH CORROSION-RESISTANT SCREEN, LOUVERS, OR GRILLES WITH OPENINGS OF 1/4" - 1/2" IN ANY DIMENSION.

KEY NOTES

1. PRE-FABRICATED METAL PLATED MONO TRUSSES AT 24" O.C.
2. 2x4 STUD WALL PER STRUCTURAL
3. MONO POUR SHALLOW CONCRETE FOUNDATION
4. SEPARATION WALL - FULLY SHEATH TO TOP PLATE
5. 8x8' ROLL-UP DOORS
6. 16 16 FORT WINDOWS AT ATTIC
7. SLOPE CONCRETE RAMP AT ROLL-UP DOORS

REC CENTER STORAGE GARAGE

RED ROCKS COMMUNITY COLLEGE

ENGenious LLC

13300 WEST SIXTH AVENUE  
LAKEWOOD, COLORADO 80228



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SECTIONS #	
DETAILS	
PROJECT No:	DRAWN:
18030	ENC
DATE:	
September 12, 2019	
SHEET No:	REV No:
A3	



Architect - The Firm or Individual responsible for the Architectural design of the project.  
Code - The most current adopted and amended code of the Jurisdiction having precedence over the project site. (Shown in Design Criteria on Plan sheets)  
Contract Documents - The Plans, Work Agreements, and Work Orders associated with the Project.  
Constructor - The Company or Individual or Owner or General Contractor responsible for the construction and/or sub contracting of the project.  
Engineer - The Firm or Individual responsible for the Structural design of the Project.  
Geotechnical Engineer - The Firm or Individual responsible for the Soils report and soils recommendations.  
Jurisdiction - The governing entity for which the project falls under and will be reviewed by during initial plan review and during the inspection period.  
Owner - The Individual, persons, and or Company that holds or will hold ownership of the Project.  
Plans - Are the drawings that include the plan sheets, details, notes, and specifications.  
Project - The specific location addressed in the Contract Documents.  
Truss Manufacturer / Truss Designer - The Company or Individual responsible for the roof truss and or floor truss design.

#	= Pounds	HF	= Hem Fir
AYC	= Alaskan Yellow Cedar	in	= inch
B	= Box Nail	LSL	= Timberstrand (Weyerhaeuser Laminated Strand Lumber)
B.N.	= Boundary Nailing	LVL	= Microlam (Weyerhaeuser Laminated Veneer Lumber)
B.O.W.	= Bottom of Wall	MAX	= Maximum
B.O.F.	= Bottom of Footing	MIN	= Minimum
Btm	= Bottom	O.C.	= On Center
Brg	= Bearing	OSB	= Oriented Strand Board
Cant.	= Cantilever	psf	= Pounds per Square Foot
C	= Common nail	psi	= Pounds per square inch
Cont	= Continuous	PSL	= Paralam (Weyerhaeuser Parallel Strand Lumber)
d	= Penny nail	S	= Sinker Nail
DFL	= Douglas-Fir-Larch	SPF	= Spruce Pine Fir
E.E.	= Each End	T.O.C.	= Top of Concrete
E.W.	= Each Way	T.O.W.	= Top of Wall
EQ	= Equal	Typ.	= Typical (all other similar adjacent)
ft	= feet, foot	U.N.O.	= Unless Noted Otherwise
G	= Gun Nail	W	= Wide Flange Steel I-Beam
GLB	= Glue Laminated Beam	w/	= with
GT	= Girder Truss	w/o	= without

1. The Constructor shall visit the building site and shall verify all conditions and dimensions prior to starting any work. Engineer shall be notified immediately of any discrepancies and for changes needed.
2. These Drawings, Details, Notes, and Specifications do not relieve the Constructor of meeting Code requirements.
3. Design requirements as indicated on both the Drawings, Details, Notes, and Specifications shall be followed entirely. It is the Constructor's responsibility to review and follow the Plans. Where two or more standards are presented with conflicting information, the Engineer shall be informed. If Constructor proceeds without verification from the Engineer, the more stringent of the standards shall be met.
4. Structural stability of the building relies on the finished construction with completed framing of all the walls, roofs, and floors. Temporary bracing and shoring shall be provided by the Constructor to insure stability of the Structure during construction.
5. It is agreed that the professional services of the engineer do not extend to or include the review or site observation on the foundation and framing work unless otherwise additionally contracted. It is further agreed that the Owner will defend, indemnify and hold harmless the Architect/Engineer from any claim or suit whatsoever, including but not limited to all payments, expenses or cost involved, arising from or alleged to have arisen from the Constructor's performance or the failure of the Constructor's work to conform to the design intent and the Contract Documents. The Architect/Engineer agrees to be responsible for his own or his employees negligent acts, errors or omissions.

1. The Constructor shall provide the following shop drawings for review and approval by ENGENIOS LLC:
  - a. Roof Truss (I-Joist) Drawings Deferred Submittal Required
2. The Constructor shall review shop drawings for conformance to the Plans prior to submission to ENGENIOS LLC. Any deviations from the Plans shall be clearly addressed prior to submission.
3. ENGENIOS LLC will provide written response to shop drawings indicating whether or not the shop drawing meets or exceeds the intent of the Plans.
4. Review and approval of shop drawings by ENGENIOS LLC does not relieve the Constructor from responsibility to meet full compliance of the Plans.

1. A Geotechnical Report has not been provided for this Project. In the absence of design criteria provided by a licensed Geotechnical Engineer or the Building Official to justify otherwise, ENGenious LLC has designed the foundation with the following presumptive assumptions:
  - a. The foundation design is based on stable soil conditions
  - b. Material Class 5 (IBC 2018 Table 1806.2) with a maximum soil bearing pressure of 1,500 psi
  - c. No consideration was made for the effects of questionable soils, expansive soils, collapsible soils, and or groundwater.
2. ENGenious LLC recommends a licensed Geotechnical Engineer be retained and directed to perform and geotechnical investigation and provide a soils and foundation report for the Project. Such report will be used to verify or revise the assumptions made concerning the soils conditions and design criteria for the project.
3. If a licensed Geotechnical Engineer is not retained to perform a soils investigation, the Constructor and or Owner accepts full responsibility for the adequacy of the presumptive design values listed above.
4. The soils for the building pad that support foundation elements shall meet or exceed the Code and or the Building Officials requirements. ENGenious LLC recommends that a licensed Geotechnical Engineer be retained to verify pad conformance.
5. All and any soils used for bearing of foundation elements shall be undisturbed native soil and or engineered fill material meeting the Code, Building Official requirements, and or design per a licensed Geotechnical Engineer. All fill shall be compacted to a min. of 95% proctor density.

### Special Inspections

1. ENGenious LLC does not provide any Special Inspection services. ENGenious LLC does provide Structural Observation services upon request.
2. Special inspections may be required by the governing jurisdiction and/or building official. If required, the Owner and/or Constructor shall retain the appropriate Special Inspectors to provide inspections during construction. Special Inspectors may be required to be approved by the Jurisdiction and/or Building Official.
3. When Material testing is required, Owner and/or Constructor shall retain independent testing agencies to conduct material testing as required.
4. Inspection of work by Special Inspectors and material tests conducted by the testing agencies does not relieve the Owner or Constructor of compliance with the Plans or applicable codes, standards, and/or requirements.
5. Special Inspections Required are as follows:
  - Foundation Reinforcement inspection

### Structural Observations

1. ENGenious LLC will perform Structural Observations when required and/or requested by the Owner, Constructor, Building Official, and/or governing jurisdiction.
2. Observations will follow the requirements of IBC (2018 IBC) Section 1704.6.
3. In no way are Observations to be seen, interpreted, and/or construed as Inspections and in no way do Observations waive the requirements of Inspections.

1. Shop fabricated metal plate connected trusses shall be supplied by a manufacturer that is approved by the governing jurisdiction.
2. Trusses shall be designed and manufactured in accordance with ANSI/TPI 1 national design standard for metal plate connected wood truss construction.
3. Trusses shall be designed to support their self weight and all Code and or Plan required basic loads such as dead loads, live loads, drag and collector forces, and shear wall loads. In addition to basic loads, trusses shall be designed for all mechanical loading, equipment loads, special use loading, and concentrated loads designated on the Plans.
4. Attics are to be designed without storage unless noted otherwise.
5. Trusses shall meet total and live load deflection limits per the Code.
6. Recommended limits are as follows:

a. Total Load Deflection	3/4" maximum
b. Live Load Deflection	3/4" maximum
c. Adjacent truss deflection difference	1/2" maximum
d. Camber	= to dead load deflection

Recommended deflection limits are provided to reduce building serviceability issues experienced in past circumstances. These recommendations are not required.

7. The truss manufacturer shall provide truss drawings sealed and signed by a registered design professional licensed in the State of the Project.
8. ENGenious LLC will review and approve provided sealed and signed truss drawings. Constructor shall not order or install trusses prior to approval by ENGenious LLC. The approved drawings may require approval by the Building Official prior to installation.
9. Cutting, notching, or altering the trusses in any way that is not depicted in the truss drawings is prohibited. Notching of the gable end truss top chord for lookouts shall be accounted for in the truss drawings. Truss repairs shall be provided by the truss designer of record.

1. Hardware designated on the plans shall be installed per manufacturers requirements.
2. Hardware exposed to weather or corrosion environments shall be made out of material capable to withstand such elements. Refer to manufacturer for material alternatives due to environmental conditions.
3. All holes shall be filled per manufacturers requirements. When hardware allows for multiple amounts of fasteners, the option with the high allowable loading shall be selected U.N.O. on the Plans or Details.
4. Concealed hangers may not be noted in all locations needed due corners or discontinuous supporting components. Use of concealed hangers is allowed as long as concealed hanger has higher allowable vertical, lateral, and uplift values per manufacturer.

## Codes and References:

- International Building Code (IBC)
- American Plywood Association (A.P.A.)
- American Society of Testing and Materials (ASTM)
- National Products Association (NPPA)
- Western Wood Products Association (WWPA)
- National Lumber Grades Authority (NLGA)

## Framing Material

1. Any change in lumber species or grade must be approved in writing by the Engineer.
2. Provide solid blocking and bridging as required by IBC or where noted on the Plans.
3. All framing lumber shall be kiln dried with a maximum moisture content not to exceed 19%. Each shall bear a grade mark of the grading association/authority and shall also be stamped "Dry".
4. Sole plates, Sill Plates, and Sleepers shall be treated wood.
5. All 2x6 or smaller material shall be NLGA graded lumber. All 2x8 or greater lumber shall be WWPA/WCLIB graded lumber.
6. Framing and studs shall meet the requirements specified below U.N.O. on the plans, details, or specifications:
 

Exterior Walls	2x4 DF or SPF or HF No. 1/2 grade studs at 16" O.C.
Interior Bearing Walls	2x4 DF or SPF or HF No. 1/2 grade studs at 16" O.C.
Interior Non-Bearing Walls	2x4 DF or SPF or HF stud grade studs at 24" O.C.
Top plates	2x (match wall) DF or SPF or HF No. 1/2 grade
Sole Plates	2x DF or SPF or HF stud grade
Sill Plates	2x DF or SPF or HF stud grade
Trimmers and king studs	shall match wall stud requirements
Outlookers	2x4 DF or SPF or HF No. 1/2 grade
Rafters	DF or SPF or HF No. 1/2 grade
7. Headers and beams shall meet the requirements specified below U.N.O. on the plans, details, or specifications:
 

Built-up 2x6 and smaller	Spruce-pine-fir No. 1/2
Built-up 2x8 and larger	Douglas-fir-larch No. 2
4x6 to 4x12	Douglas-fir-larch No. 2
4x14 & 4x14	Douglas-fir-larch No. 1
6x & larger	Douglas-fir-larch No. 1
Simple Span Glue Laminated	24F-1.8E / Symbol 24F-V4 DF/DF
Cont. Span Glue Laminated	24F-1.8E / Symbol 24F-V8 DF/DF
Cantilevered Glue Laminated	24F-1.8E / Symbol 24F-V8 DF/DF
Laminated Strand Lumber	1.3 E and 1.55E as shown per plan
Laminated Veneer Lumber	2.0E per plan
Parallel Strand Lumber	2.0E per plan
8. Wood Structural Panel Sheathing:

All sheathing shall meet or exceed A.P.A. rated sheathing with a bond classification of exposure 1 and meet the requirements specified below U.N.O. on the plans, details, or specifications:

Application	Span Rating	Thickness
Roof Sheathing	32/16	1 5/32" MIN.
Floor Sheathing	24"	23/32" MIN.
Walk Deck Sheathing	24"	23/32" MIN.
Alt. Floor or Walk Deck	48/24	3/4" MIN.
Wall Sheathing	24/0	3/8" MIN.

1. Locations requiring waterborne preservatives (preservative-treated or PT) or naturally durable wood are as follows:

- 1.1. Interior wood joists or floors that are closer than 18 inches to exposed ground in crawlspaces or unexcavated areas.
- 1.2. Interior wood girders that are closer than 12 inches to exposed ground in crawlspaces or unexcavated areas.
- 1.3. Wood framing members, including wood sheathing, that are in contact with the exterior foundation walls and are less than 8 inches from exposed earth.
- 1.4. Wood framing members and furring stripes in direct contact with the interior of exterior masonry or concrete walls below grade.
- 1.5. Any wood in contact with concrete foundations in direct contact with earth.
- 1.6. Wood framing exposed to weather and not fully protected from moisture by a roof, eave or similar covering.

2. Exterior grade lumber

Built-up 2x6 and smaller	Spruce-pine-fir No. $\frac{1}{2}$ (PT)
Built-up 2x8 and larger	Douglas-fir-larch No. 2 (PT)
4x6 to 4x12	Douglas-fir-larch No. 2 (PT)
4x14 & 4x14	Douglas-fir-larch No. 1 (PT)
6x & larger	Douglas-fir-larch No. 1 (PT)
Simple Span Glue Laminated	20F-1.5E / Symbol 20F-V12 AC/AC
Cont. Span Glue Laminated	20F-1.5E / Symbol 20F-V13 AC/AC
Cantilevered Glue Laminated	20F-1.5E / Symbol 20F-V13 AC/AC

All nails shall meet or exceed ASTM F 1667 and ICC ESR 1539. Nails labeled in the Details are as follows. Constructor shall verify that shank diameter and shank length meet the following due to manufacturer(s) penny weight descriptions frequently varying from Code description and requirements:

- 8d B = 8d box = 2-1/2" x 0.113"
- 8d Short = 1-1/2" x 0.131"
- 8d C = 8d common = 2-1/2" x 0.131"
- 8d G = 8d gun = 3" to 3-1/4" x 0.131"
- 10d B = 10d box = 3" x 0.128"
- 10d Short = 1-1/2" x 0.148"
- 10d C = 10d common = 3" x 0.148"
- 12d C = 12 d common = 3-1/4" x 0.148"
- 16d S = 16d sinker = 3-1/4" x 0.148"
- 16d Short = 2-1/2" x 0.162"
- 16d C = 16d common = 3-1/2" x 0.162"
- 20d C = 20d common = 4" x 0.192"

concrete

1. Concrete elements of this design are based on a compressive strength of 2,500 psi according to IBC requirements for Concrete without sampling. Yet the required compressive strength of concrete to be used for this project shall meet or exceed the specified strengths below U.N.O. on the Plans:

Concrete Use	Minimum Compressive Strength (28 days)
Basement walls, foundations, or other concrete not exposed to weather	2,500 psi
Basement slabs and interior slabs on grade, except garage floor slabs	2,500 psi
Basement walls, foundation walls, exterior walls and other vertical concrete exposed to weather	3,000 psi
Porches, carport slabs, and steps exposed to weather, and garage floor slabs	3,500 psi

2. All concrete shall meet or exceed ACI-318, ACI-301, and ACI-302.1R for residential construction.

3. This Project is located in a Severe weathering potential region. Therefore, concrete used for basement walls, garage floor slabs, exterior slabs, and foundation stem walls shall be air-entrained. Concrete used for interior floor slabs and footers shall be air-entrained if they are subject to freezing and thawing during construction. Total air content (percent by volume of concrete) shall not be less than 5% or more than 7%. Total air content for garage floor slabs with a steel trowel finish may be reduced to not less than 3% provided the compressive strength is increased to 4,000 psi.

4. High sulfate levels within the soil can cause excessive corrosion. Refer to geotechnical report for % sulfates or refer to governing jurisdiction for expected sulfate levels. Concrete exposed to soil containing sulfates shall conform to the following:

- For exposure of sulfate concentrations greater than or equal to 0.1% by weight but less than 0.2% by weight, concrete shall be made with ASTM C 150 Type II cement or an ASTM C 595 or CI 157 hydraulic cement meeting moderate sulfate resistant hydraulic cement (M5) designation. The minimum 28 day compressive strength of the concrete shall be as indicated above.
- For exposure of sulfate concentrations equal to or greater than 0.2 % by weight, concrete shall be made with ASTM C 150 Type V cement or an ASTM C 595 or C 1157 hydraulic cement meeting high sulfate resistant hydraulic cement (HS) designation. The minimum 28 day compressive strength shall be as indicated above 3,000 psi minimum.

**Reinforcing steel**

- Cover for reinforcing steel shall meet or exceed requirements of ACI-318.
- Hook and bends shall meet the requirements of ACI-318-14 Section 25.3
- #3 bar and smaller shall be of grade 40 (ASTM A615) steel with a Fv= 40,000 psi
- #4 bar and larger shall be grade 60 (ASTM A615) steel with a Fv= 60,000 psi.
- U.N.O. rebar lapping length shall be greater than 48 times the diameter of the largest bar.

**Structural Steel**









1. All shapes, plates, bars shall meet ASTM A 36 steel with  $F_v = 36,000$  psi
2. Pipe Columns shall meet ASTM A 53, Grade B, Type E or S.
3. Steel pipe and tubing shall meet ASTM A 501 with  $F_v = 46,000$  psi
4. Welded joints and connections shall be made with full penetration weld or maximum size fillet welds using E70XX electrodes. All welds shall be made in accordance with current standards to the American Welding Society (AWS) and performed by welders qualified by AWS standards. All field welding shall be continuously inspected by a special inspector.
5. All shop welding shall be performed by a shop fabricator approved by the Building Official and in accordance with IBC Chapter 17. All welding shall be in accordance with ANSI / AWS D 13.
6. Machined connection Bolts to be ASTM 307 unless noted otherwise. Holes for bolts shall be drilled or punched. Burning of holes shall not be permitted. Holes shall be  $\frac{1}{16}$  in larger than the bolt U.N.O. on the plans.

[illegible]

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 P.O. Box 386 Conifer, CO 80433

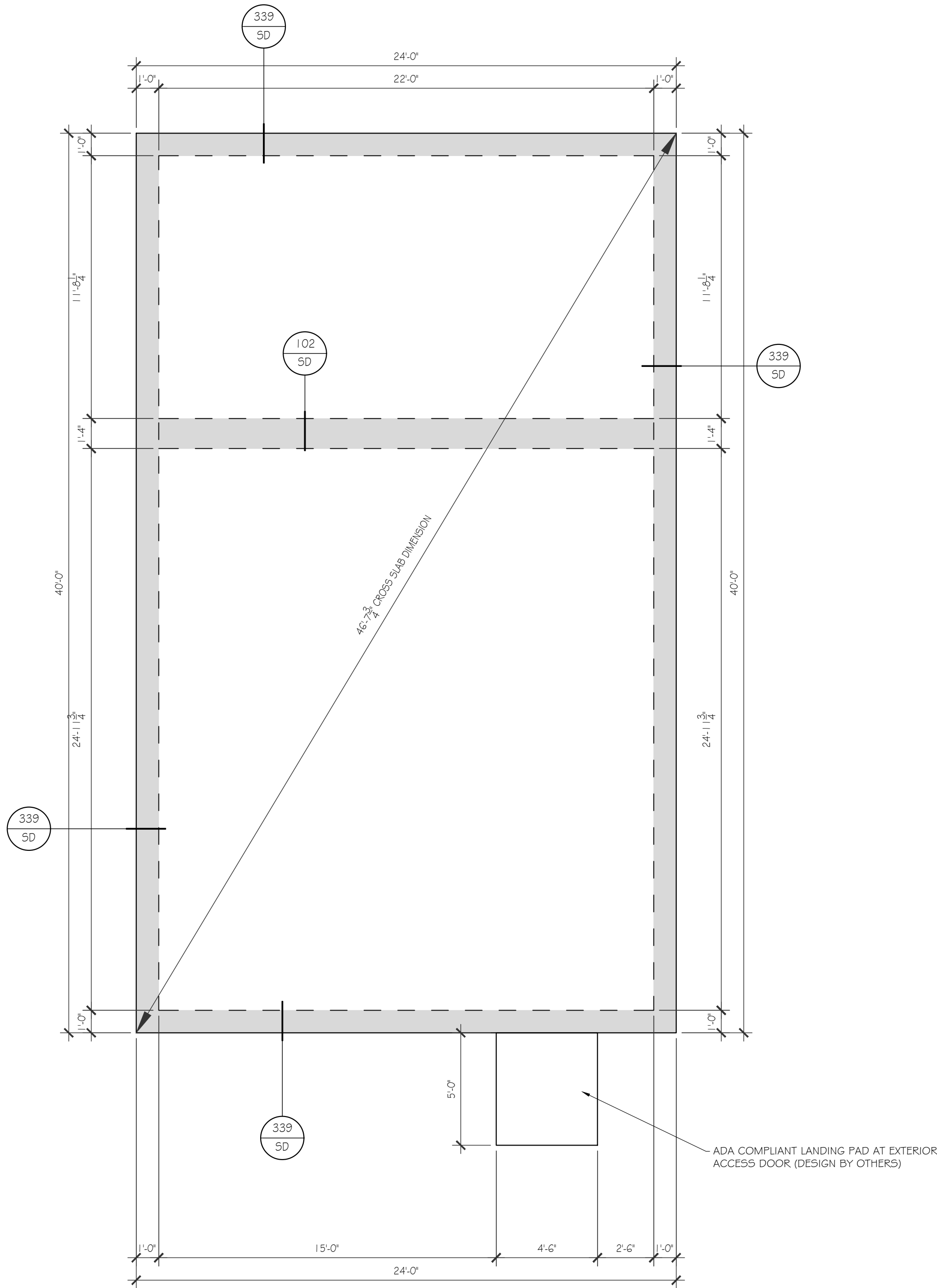
PROJECT NAME:	REC CENTER STORAGE GARAGE
OWNER:	RED ROCKS COMMUNITY COLLEGE
DESIGNER:	ENGenious LLC
PROJECT ADDRESS:	1300 WEST SIXTH AVENUE LAKEWOOD, COLORADO 80228

A circular professional engineer seal for the state of Colorado. The outer ring contains the text "COLORADO LICENSED" at the top and "PROFESSIONAL ENGINEER" at the bottom. Inside this ring, the name "ERIC CROWLEY" is written in a semi-circle at the top, and the license number "53470" is centered in the middle. The seal is blue and white.

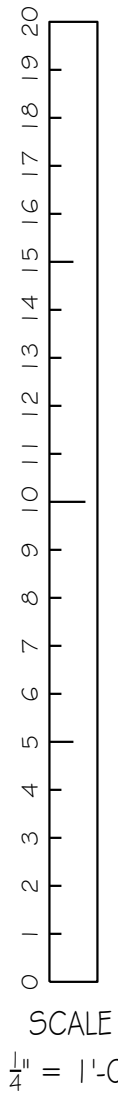
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STATUS: CONSTRUCTION		

SHEET NAME: <b>STRUCTURAL SPECIFICATIONS</b>	
PROJECT No: <b>18030</b>	DRAWN: <b>ENC</b>
DATE: <b>September 12, 2019</b>	
SHEET No: <b>SS</b>	REV No:





FOUNDATION PLAN



- DESIGN CRITERIA:
- These plans meet the requirements specified within the International Building Code (IBC) code year 2015.
  - The Contractor shall verify all field dimensions, existing conditions, and noted assumptions. Any deviations shall be coordinated with the acting engineer of note prior to proceeding with related work concerning the deviation.
  - It is agreed that the professional services of the Engineer do not extend to or include the review or site observation of the framing work. It is further agreed that the owner will defend, indemnify, and hold harmless the Engineer from any claim or suit whatsoever, including but not limited to all payments, expenses or cost involved, arising from or alleged to have risen from the Contractor's performance or the failure of the Contractor's work to conform to the design intent and the contract documents.
  - Project Design Criteria:
    - Vertical Loading:

Dead Loads:	
Roof Dead Load	15 psf
Floor Dead Load	12 psf
Wall Dead Load	15 psf
Live Loads:	
Roof Live Load (typical)	20 psf
Roof Live Load (snow load)	30 psf
Attic Live Load	10 psf non-concurrent
    - Wind Loading:  
Wind Speed - 126 mph (Vult); Exposure at M.W.F.R.S. - C; Importance Factor - 1.0; Risk Category - II
    - Seismic Loading:  
Seismic Design Category - B; Site Class - D; Importance Factor - 1.0; Risk Category - II
    - Frost Protection:  
Minimum 3'-0" depth of cover unless noted otherwise on the plans or where frost protection is allowed per ASCE 32.
    - Foundation presumptive design values (based on presumptive values from IBC Chapter 18 and IRC Chapter 4):  
Assumed Type 5 Site Class  
1,500 psf maximum allowable bearing pressure.  
100 psf/ft allowable lateral bearing pressure.  
The presumptive soils values used to design the project shall be verified by a licensed Geotechnical Engineer.
    - Climatic Values:

Air Freezing Index	532 (100 year)
Annual Mean Temperature	50.5° Fahrenheit

SHEARWALL AND PLATE ANCHORAGE SCHEDULE:

SHEAR WALL DESIGNATION ON PLANS:		#	MINIMUM SHEAR WALL LENGTH						
SHEAR WALL #		1	2	3	4	5	6	7	
SHEATHING	1/2" G.W.B.	1/2" G.W.B.	3/8" TO 1/2" A.P.A. RATED	3/8" TO 1/2" A.P.A. RATED	3/8" TO 1/2" A.P.A. RATED	3/8" TO 1/2" A.P.A. RATED	15/32" A.P.A. RATED		
NAILS	5d	6d	8d	8d	8d	8d	10d C		
EDGE SPACING	7" O.C.	4" O.C.	6" O.C.	4" O.C.	3" O.C.	2" O.C.	3" O.C.		
FIELD SPACING	12" O.C.	12" O.C.	12" O.C.	12" O.C.	12" O.C.	12" O.C.	12" O.C.		
TOP PLATE	(1)-2x	(1)-2x	(2)-2x	(2)-2x	(2)-2x	(2)-2x	(2)-2x		
PANEL JOINTS AND BLOCKING	None	None	2x	2x	2x	(2)-2x	(2)-2x		
BOTTOM PLATE	2x	2x	2x	2x	2x	2x	2x		
EXTERIOR ANCHOR TO CONCRETE SPACING		72" O.C.	64" O.C.	32" O.C.	24" O.C.	16" O.C.	12" O.C.	9" O.C.	
INTERIOR ANCHOR TO CONCRETE	SHOT PIN SPACING	12" O.C.	12" O.C.	6" O.C.	4" O.C.	N/A	N/A	N/A	
	ANCHOR SPACING	64" O.C.	48" O.C.	24" O.C.	16" O.C.	12" O.C.	9" O.C.	9" O.C.	
ANCHOR TO WOOD	NAILS	8d G	8d G	8d G	8d G	8d G	8d G	10d C	
	SPACING	12" O.C.	9" O.C.	6" O.C.	12" O.C.	4" O.C.	3" O.C.	2" O.C.	

- Notes:
- Anchors are either wet set 1/2" dia. x 10" long long bolts w/ min. 7" embedment or Simpson MASA anchors and must meet ACI 318.
  - Shot pins shall be a min. 0.145" dia. x 2.675" length. at plate ends place additional (1) pin at 6" from end and (1) pin 10" from end. spacing shall be per table above.
  - Screw anchors may be used in place of wet set or wedge anchors. use 1/2" dia. Simpson Titen HD screw anchors with 3-1/4" embedment. maintain min. 1-3/4" edge distance.
  - Special inspection is required for screw anchors per the IBC.
  - When double sided g.w.b shear walls are indicated on the plans, anchor spacing shall be reduced by half.
  - Use (2) rows of 8d nails staggered at 6" o.c. for build up of (2)-2x for panel joints and blocking.
  - Where shear wall is indicated on plans through perpendicular walls, shear walls shall be constructed prior to placement of adjacent framing.

FOUNDATION NOTES:

- Foundation dimensions have been extracted from Architectural drawings. Contractor and/or Sub-Contractor shall verify foundation dimensions with other drawings and/or field conditions. Discrepancies shall be brought to the attention of the Engineer prior to any work commencing.
- All hardware, depressions, steps, slopes, sloops, and other special cases shall be verified for inclusion and location prior to concrete placement.
- Refer to Geotechnical Report for all sub grade requirements. In the event a Geotechnical Report has not been conducted, refer to the IBC / IRC and local jurisdiction for all requirements pertaining to sub grade preparation.
- At exterior walls provide 1/2" anchor bolts at 6'-0" O.C. maximum. Every plate requires at least one bolt within 12" of each end. Where Shear Wall occurs, refer to Shear Wall schedule for anchor requirements. Simpson MASA anchor may be used in lieu of anchor bolts spaced at the same increment U.N.O.
- At interior walls provide 0.145" dia. x 2.675" shot pins at 36" O.C. Every plate requires at least one shot pin within 6" of each end.
- Foundation walls have been designed for fully drained soil conditions. Walls have not been designed for heavy machinery and or construction surcharge loading.

	Thickness	Slab Reinforcement	Edge Reinforcement
GARAGE SLAB	4" MIN.	Not Required	(3) #4 CONT. TOP & BTM

REC CENTER STORAGE GARAGE

PROJECT NAME:

RED ROCKS COMMUNITY COLLEGE

OWNER:

ENGenious LLC

DESIGNER:

13300 WEST SIXTH AVENUE  
LAKEWOOD, COLORADO 80228

PROJECT ADDRESS:

ENG

eniousLLC

720.693.0533 [encc@ENGeniousLLC.com](mailto:encc@ENGeniousLLC.com)  
P.O. Box 386 Conifer, CO 80433



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STATUS: CONSTRUCTION		

SHEET NAME: FOUNDATION PLAN

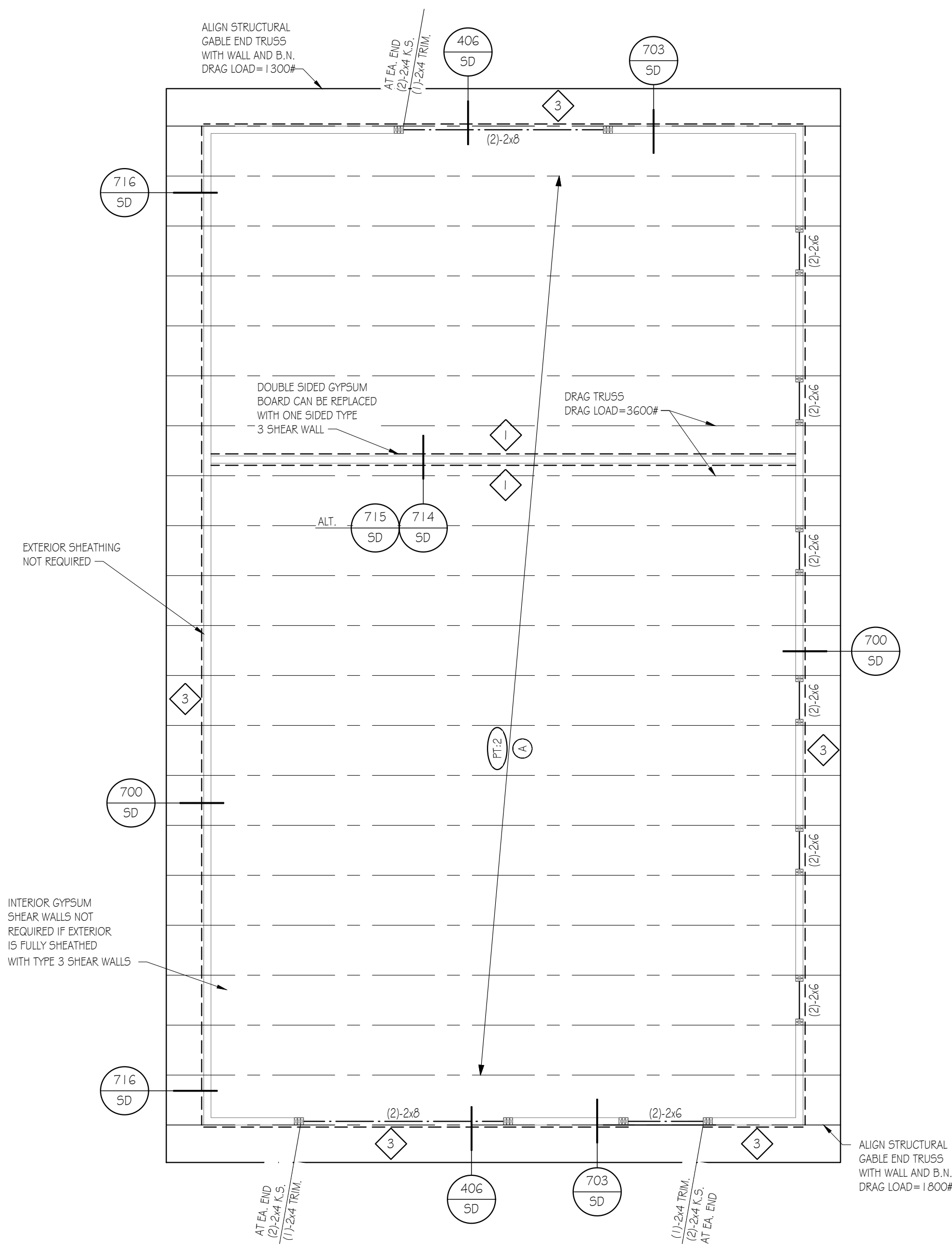
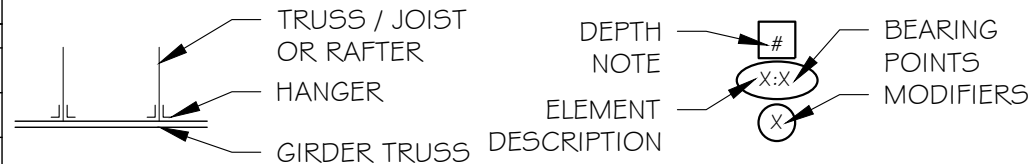
PROJECT No: 18030

DRAWN: ENC

DATE: September 12, 2019

SHEET No: 51

REV No:

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DESIGN CRITERIA:	
i.	These plans meet the requirements specified within the International Building Code (IBC) code year 2015.
ii.	The Contractor shall verify all field dimensions, existing conditions, and noted assumptions. Any deviations shall be coordinated with the acting engineer of note prior to proceeding with related work concerning the deviation.
iii.	It is agreed that the professional services of the Engineer do not extend to or include the review or site observation of the framing work. It is further agreed that the owner will defend, indemnify, and hold harmless the Contractor from any claim or suit whatsoever, including but not limited to all payments, expenses or cost involved, arising from or alleged to have risen from the Contractor's performance or the failure of the Contractor's work to conform to the design intent and the contract documents.
iv.	Project Design Criteria:
a.	Vertical Loading:
	Dead Loads:
	Roof Dead Load 15 psf
	Floor Dead Load 12 psf
	Wall Dead Load 15 psf
	Live Loads:
	Roof Live Load (typical) 20 psf
	Roof Live Load (snow load) 30 psf
	Attic Live Load 10 psf non-concurrent
b.	Wind Loading:
	Wind Speed = 126 mph (Vult); Exposure at M.W.F.R.S. - C; Importance Factor - I.0; Risk Category - II
c.	Seismic Loading:
	Seismic Design Category - B; Site Class - D; Importance Factor - I.0; Risk Category - II
d.	Frost Protection:
	Minimum 3'-0" depth of cover unless noted otherwise on the plans or where frost protection is allowed per ASCE 32.
e.	Foundation Presumptive design values (based on presumptive values from IBC Chapter 18 and RC Chapter 4):
	Assumed Type 5 Site Class
	1,500 psf maximum allowable bearing pressure.
	100 psf/lb allowable lateral bearing pressure.
	The presumptive soil values used to design the project shall be verified by a licensed Geotechnical Engineer.
f.	Climatic Values:
	Air Freezing Index 532 (100 year)
	Annual Mean Temperature 50.5° Fahrenheit

SHEAR WALL DESIGNATION ON PLANS:		MINIMUM SHEAR WALL LENGTH					
SHEAR WALL #	1	2	3	4	5	6	7
SHEATHING	1/2" G.W.B.	1/2" G.W.B.	3/8" TO 1/2" A.P.A. RATED	3/8" TO 1/2" A.P.A. RATED	3/8" TO 1/2" A.P.A. RATED	3/8" TO 1/2" A.P.A. RATED	15/32" A.P.A. RATED
NAILS	5d	6d	6d	8d	8d	8d	10d C
EDGE SPACING	7" O.C.	4" O.C.	6" O.C.	4" O.C.	3" O.C.	2" O.C.	3" O.C.
FIELD SPACING	12" O.C.	12" O.C.	12" O.C.	12" O.C.	12" O.C.	12" O.C.	12" O.C.
TOP PLATE	(1)-2x	(1)-2x	(2)-2x	(2)-2x	(2)-2x	(2)-2x	(2)-2x
PANEL JOINTS AND BLOCKING	None	None	2x	2x	2x	(2)-2x	(2)-2x
BOTTOM PLATE	2x	2x	2x	2x	2x	2x	2x
EXTERIOR OR ANCHOR TO CONCRETE SPACING	72" O.C.	64" O.C.	32" O.C.	24" O.C.	16" O.C.	12" O.C.	9" O.C.
INTERIOR ANCHOR TO CONCRETE	12" O.C.	12" O.C.	6" O.C.	4" O.C.	N/A	N/A	N/A
ANCHOR TO WOOD	64" O.C.	48" O.C.	24" O.C.	16" O.C.	12" O.C.	9" O.C.	
	NAILS	8d G	8d G	8d G	8d G	8d G	10d C
	SPACING	12" O.C.	9" O.C.	6" O.C.	12" O.C.	4" O.C.	3" O.C.

Notes:

1. Anchors are either wet set, 1/2" dia., x 10' long bolts w/ min. 7" embedment or Simpson MAGA anchors with min. meet ACI 3.0.8
2. Shot pins shall be a min. 0.145" dia., x 2.875" length, at plate ends place additional (1) pin at 6" from end and (1) pin (1) from end, spacing shall be per table above.
3. Use (2) rows of 8d nails staggered at 6" o.c. for build up of (2)-2x for panel joints and blocking.
4. When shear wall is indicated on plans through perpendicular walls, shear walls shall be constructed prior to placement of adjacent framing.

1. Roof sheathing shall meet minimum requirements of 1/32" A.P.A. roof sheathing with a span index of 32/16, exposure 1. Sheathing shall be installed with strong axes perpendicular to support bents. Details in this required unless specified on the plans or details.

Fasting options are as follows:








- *a* - Cast nails at 6" O.C. along all boundaries and edges and 12" O.C. in field
- *b* - Cast nails at 1/32" O.C. along all boundaries and edges and 12" O.C. in field
- *c* - Cast nails at 6" O.C. in field. Staple crown shall be parallel to supporting framing member.

2. Pre-manufactured trusses shall be designed to the Project Design Criteria stated on the plans. Pre-manufactured trusses shall be provided by an approved fabricator with drawings and calculations. Trusses shall be designed to meet the Project Design Criteria. Trusses shall design truss web members such that the requirements of attics without storage are met.



PROJECT NAME:	REC CENTER STORAGE GARAGE
OWNER:	RED ROCKS COMMUNITY COLLEGE
DESIGNER:	ENGenious LLC
PROJECT ADDRESS:	13300 WEST SIXTH AVENUE LAKEWOOD, COLORADO 80228



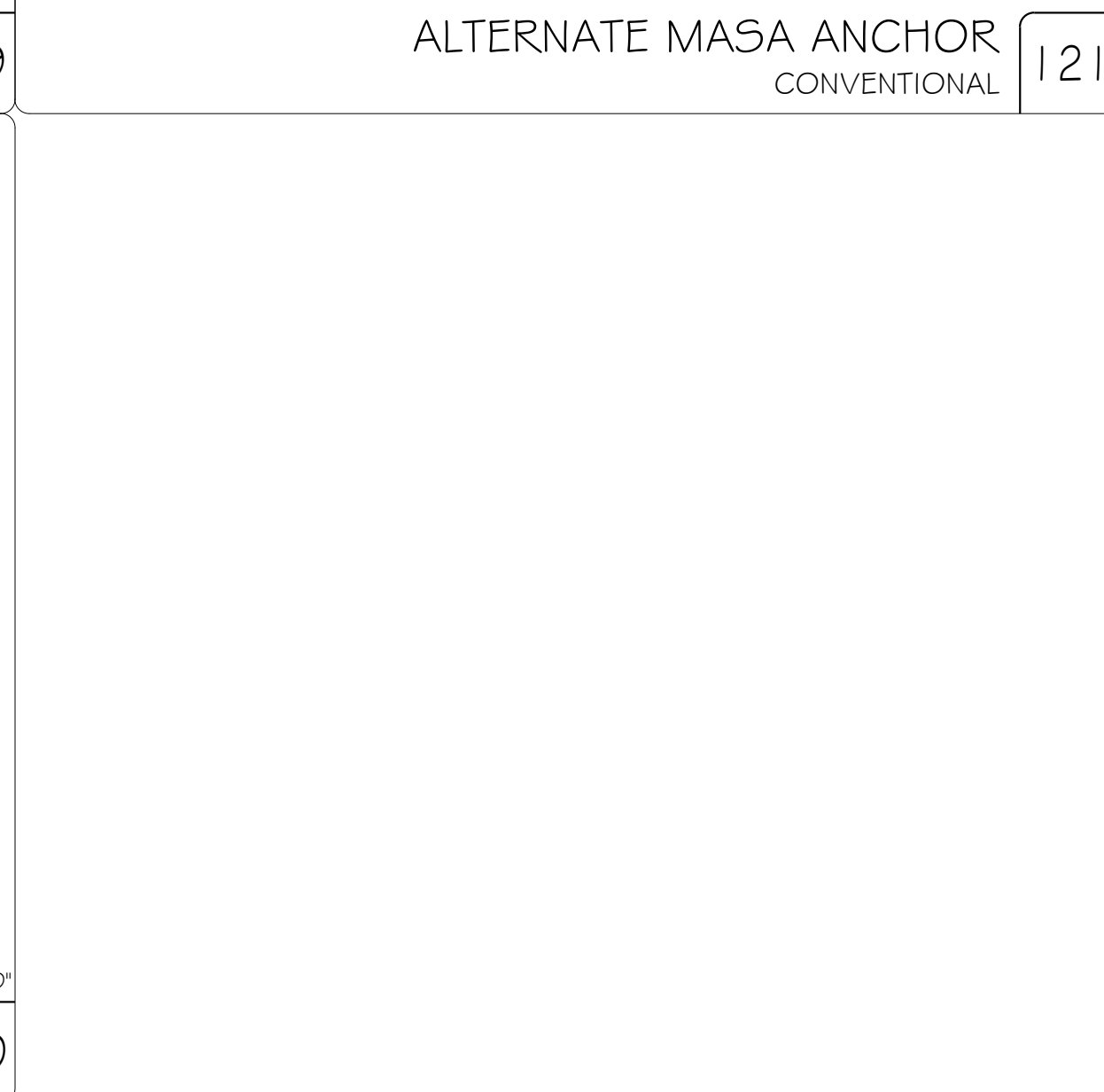
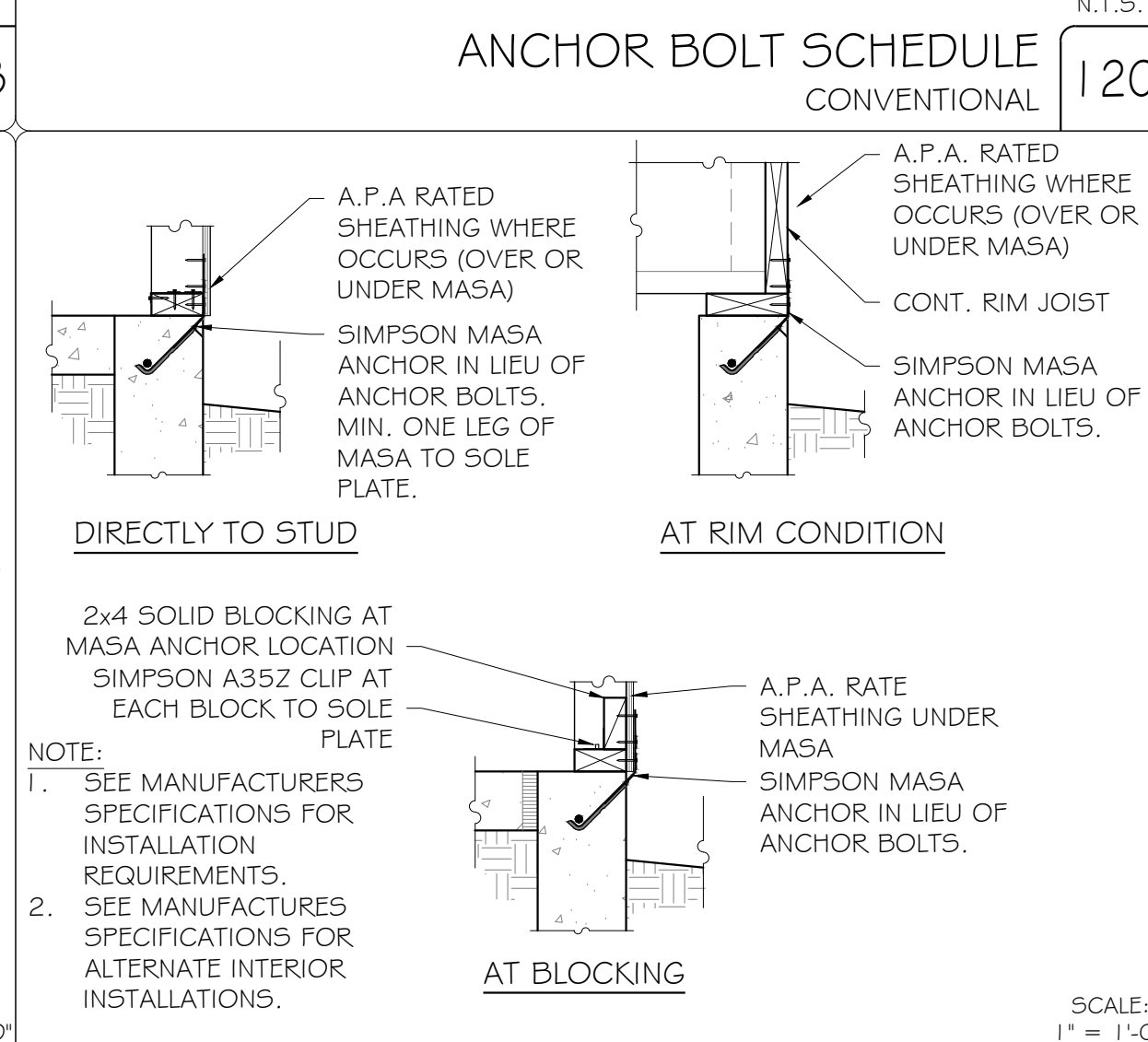
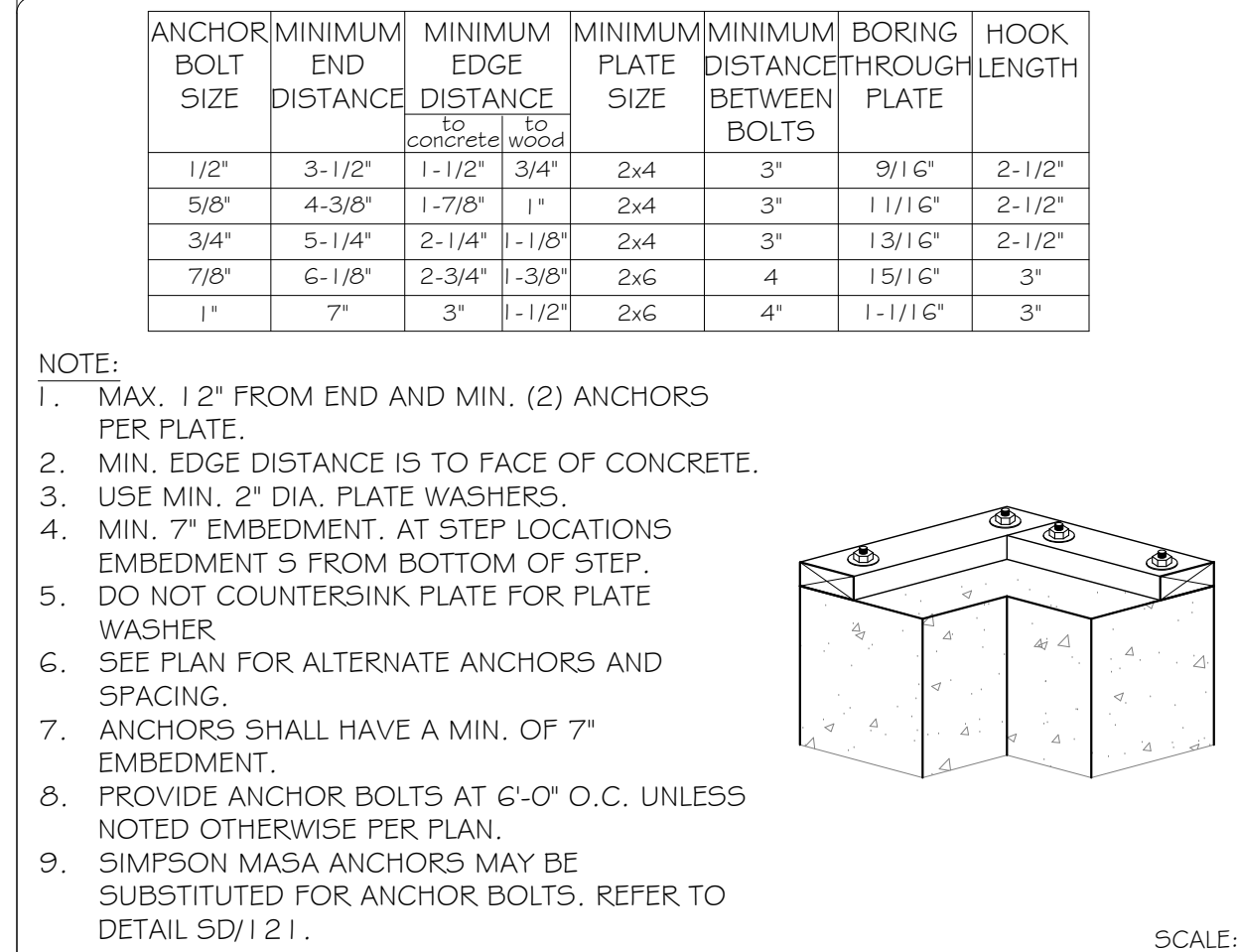
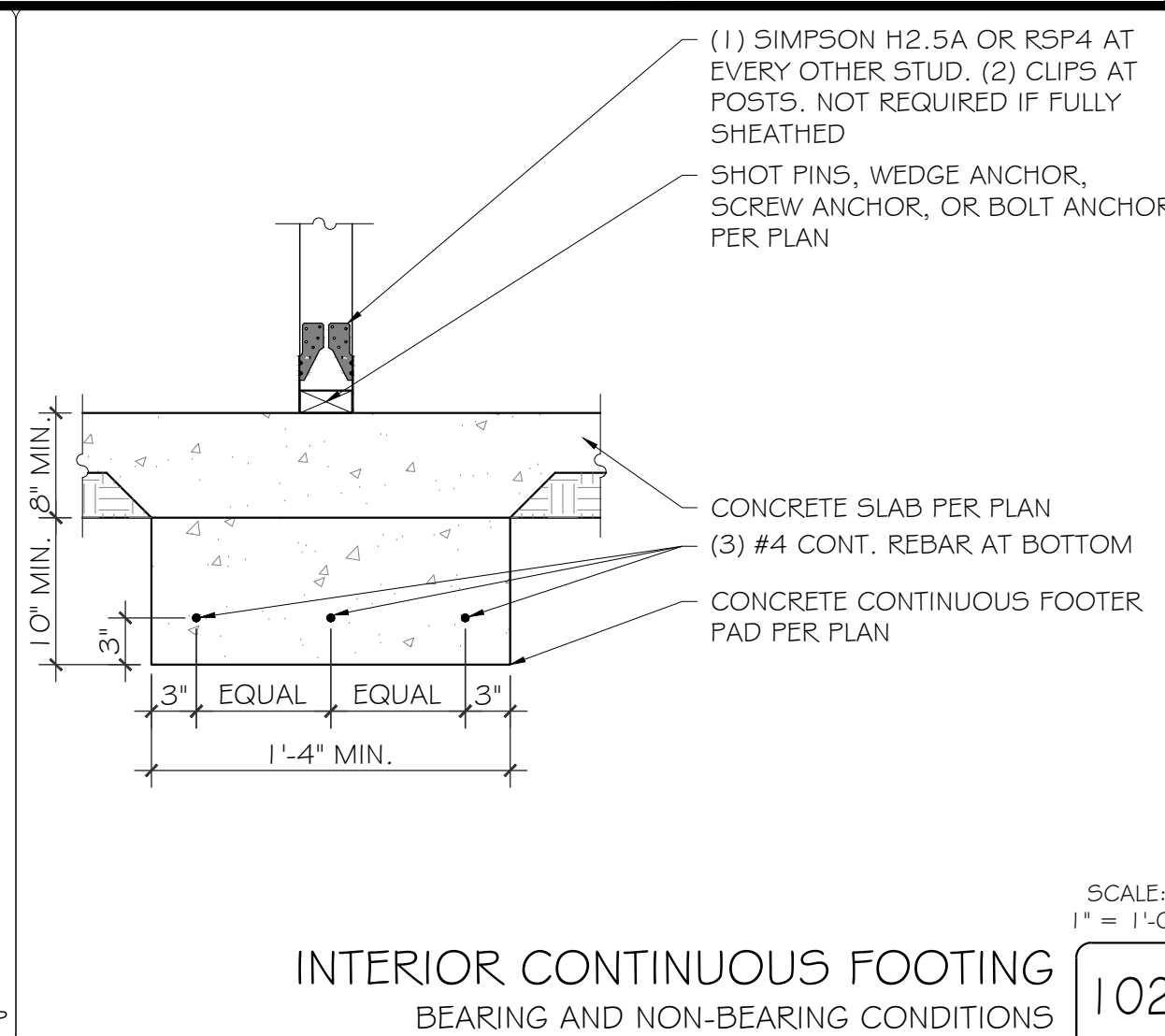
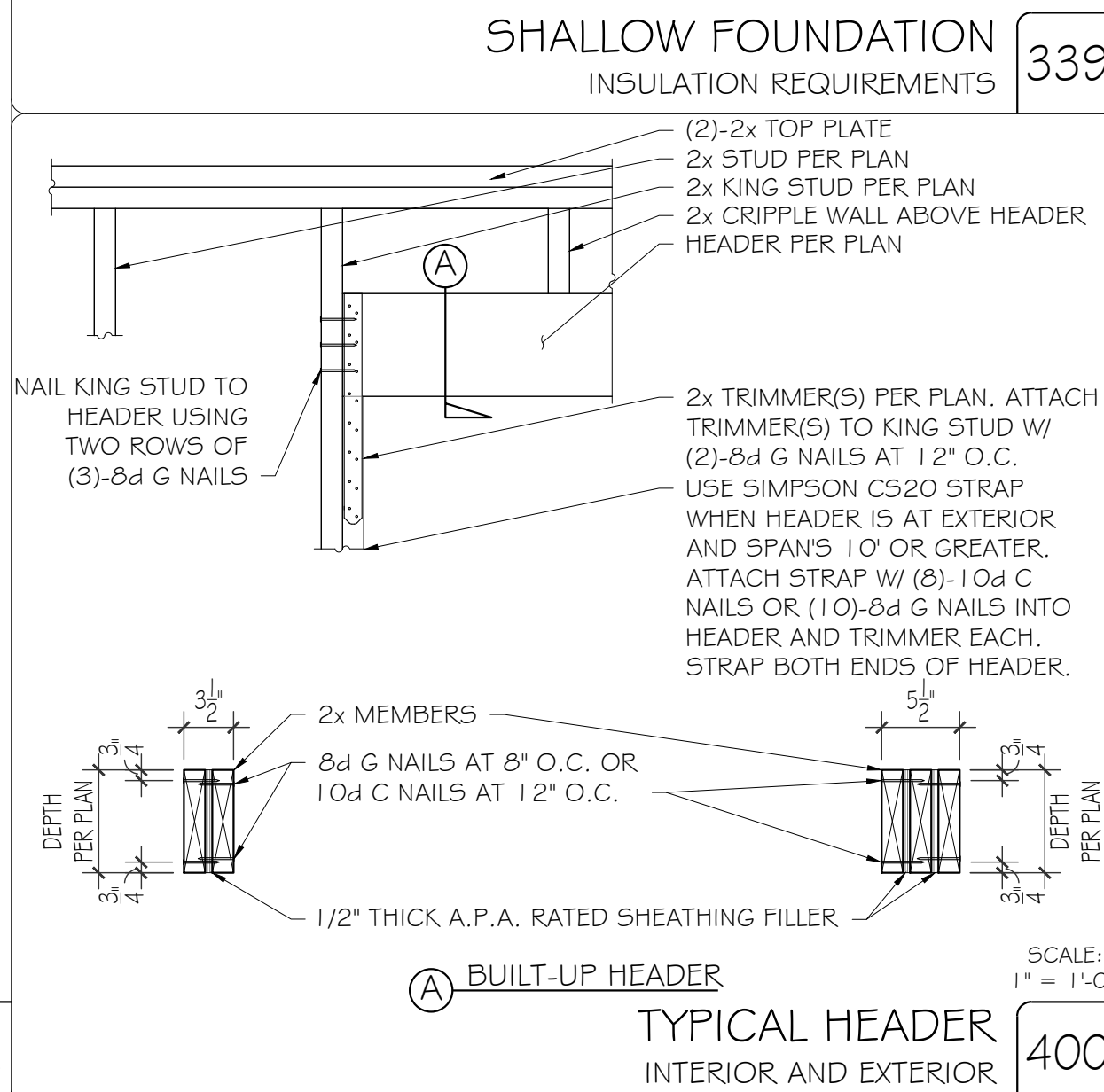
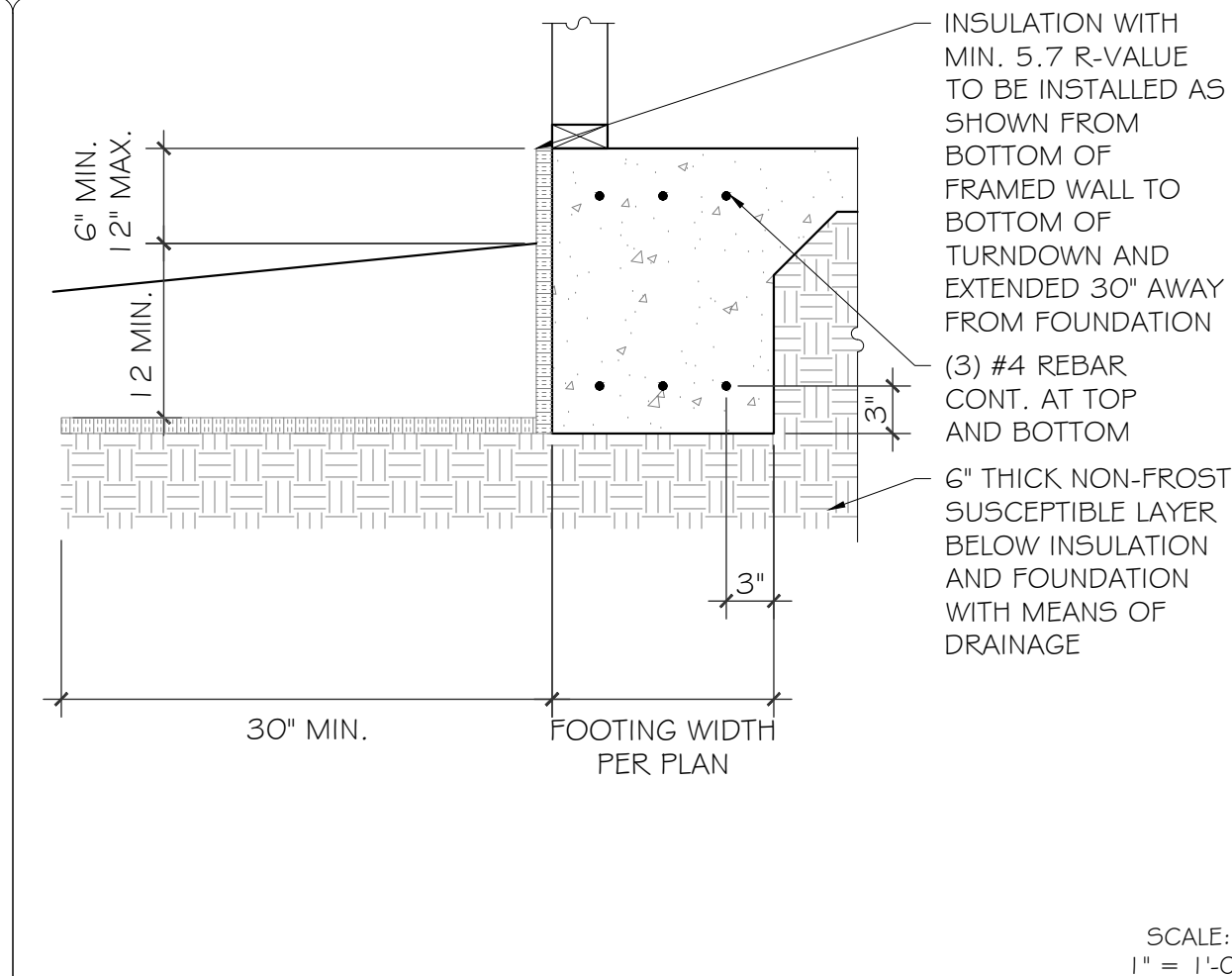
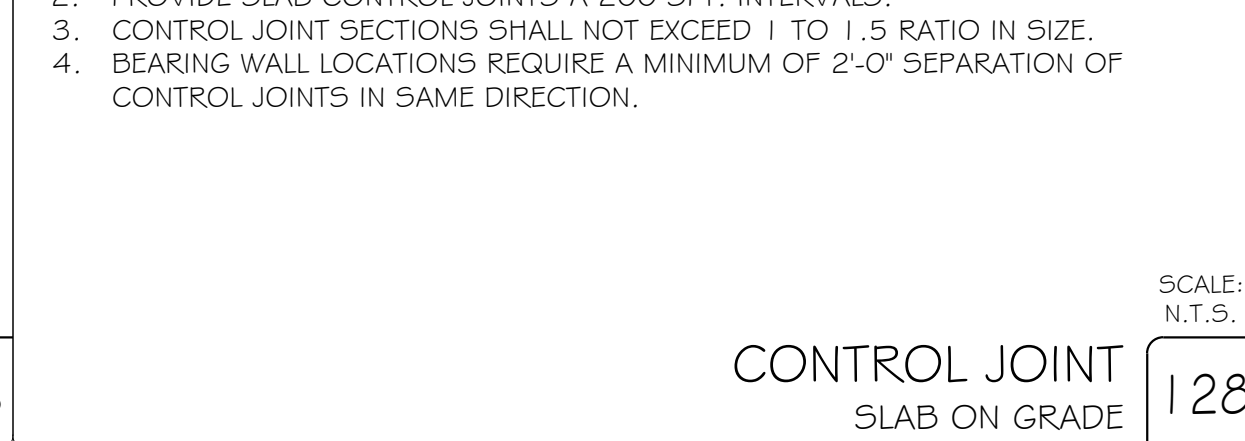
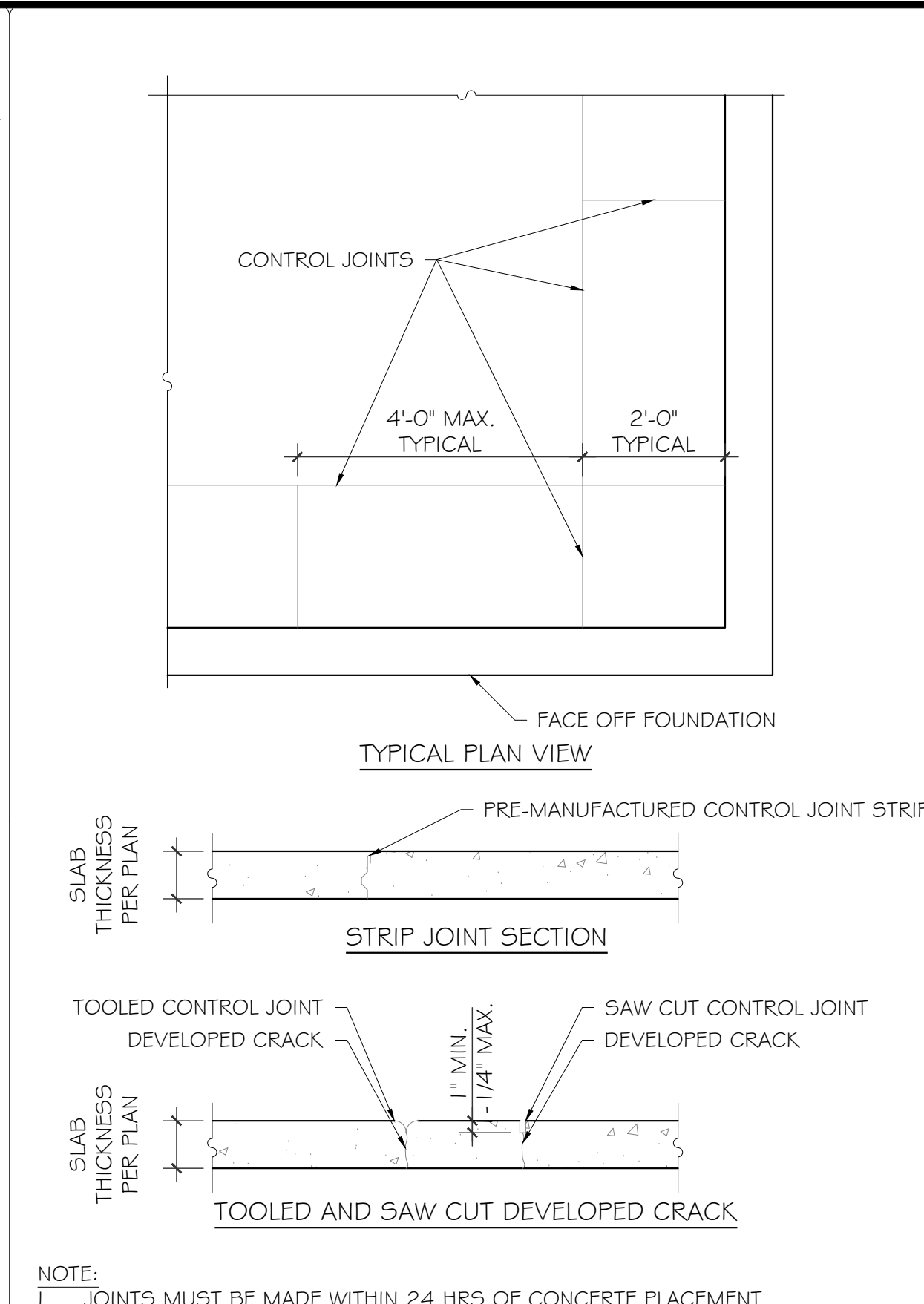
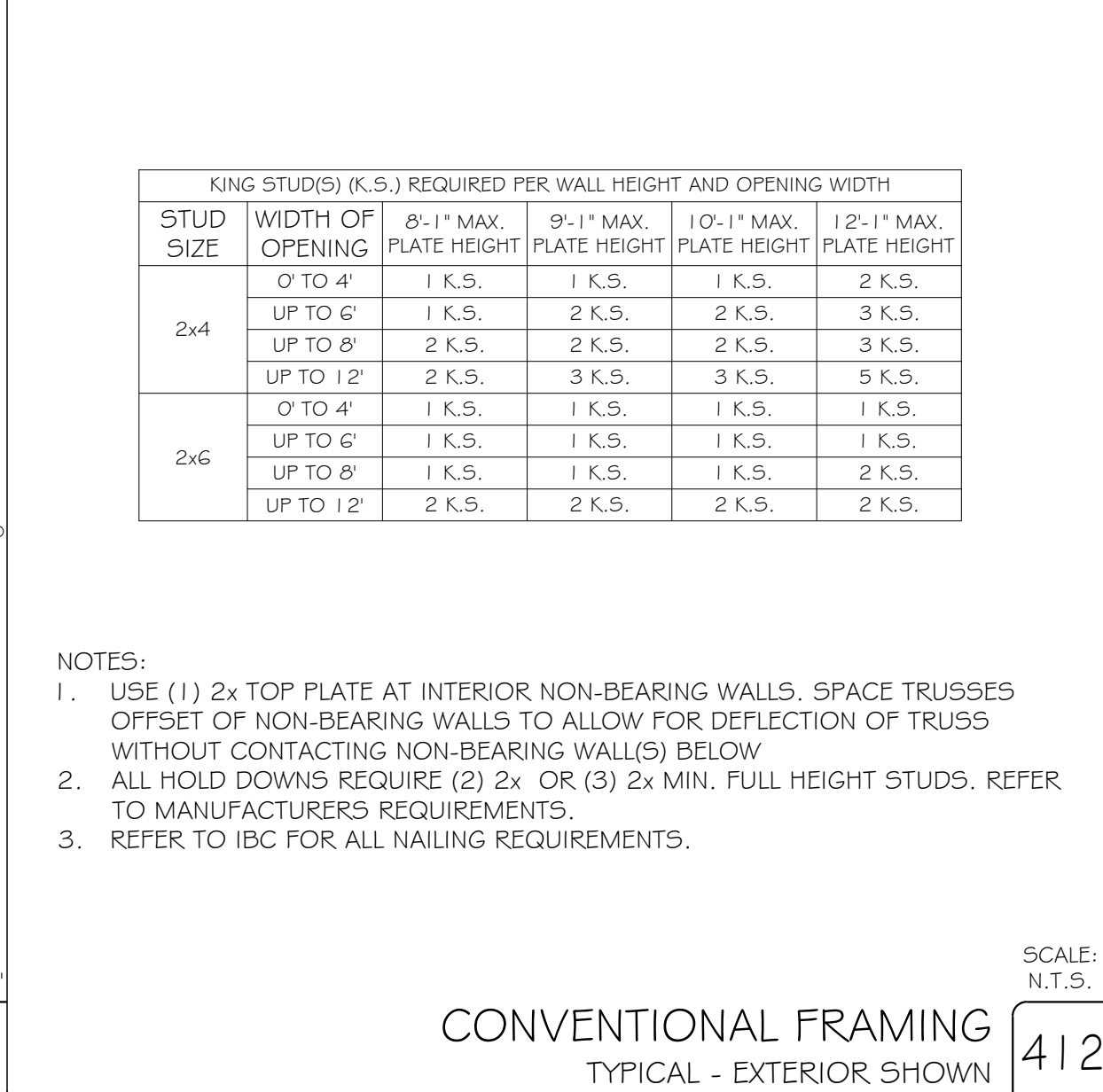
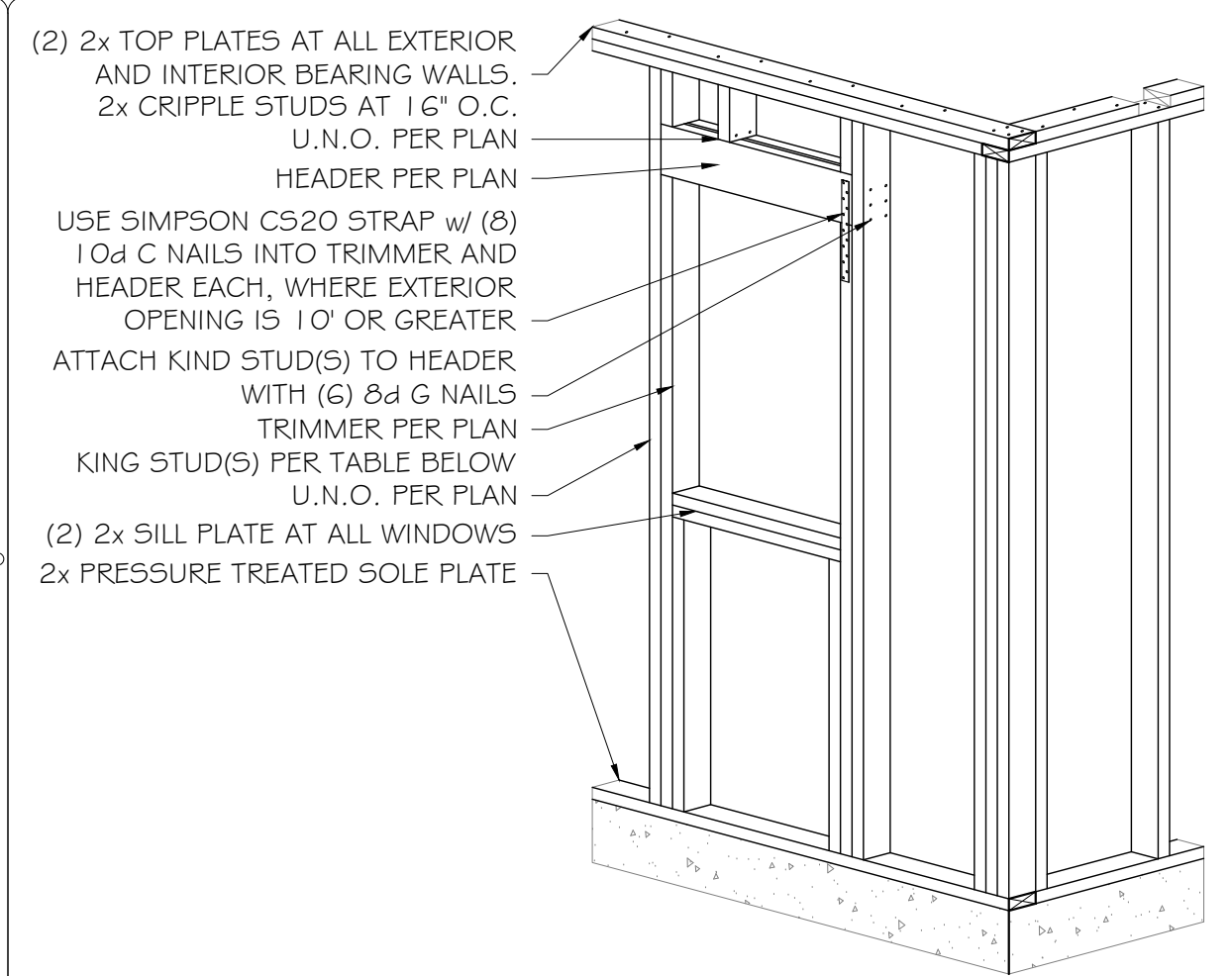
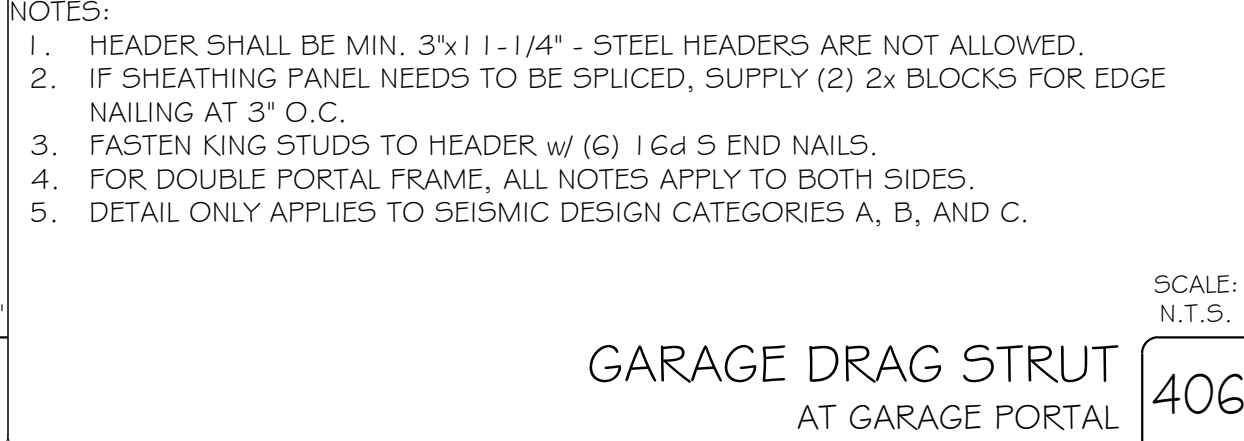
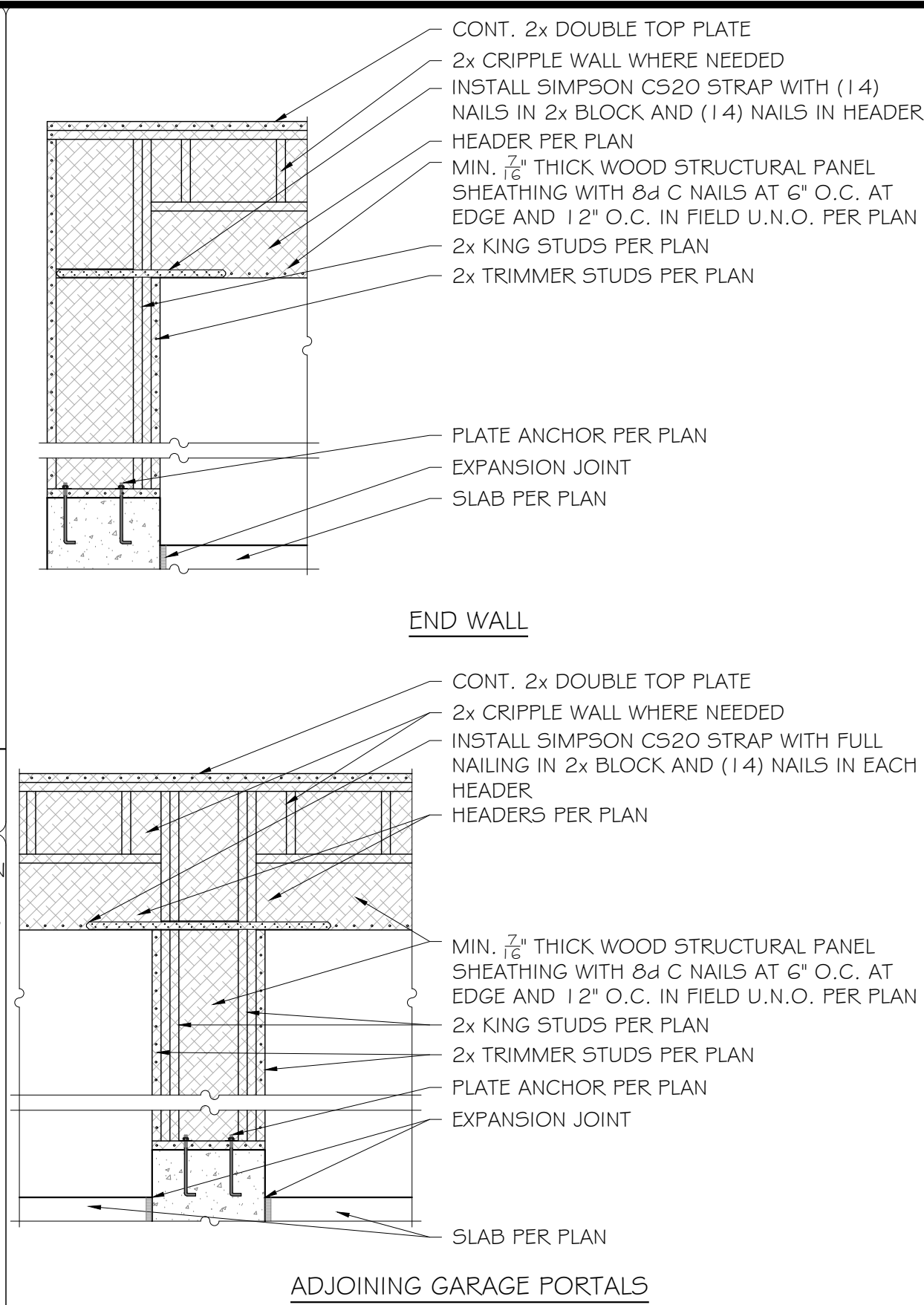
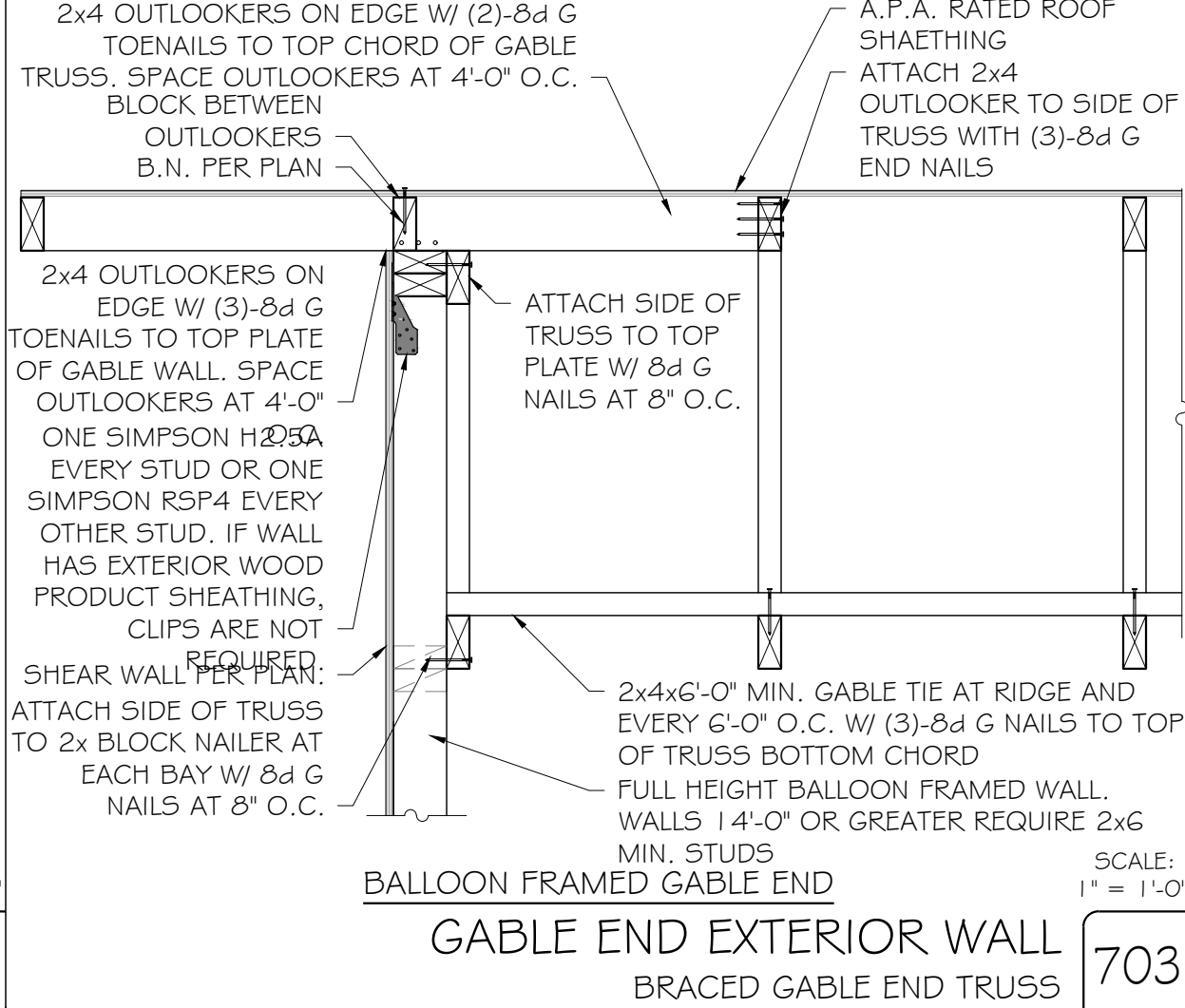
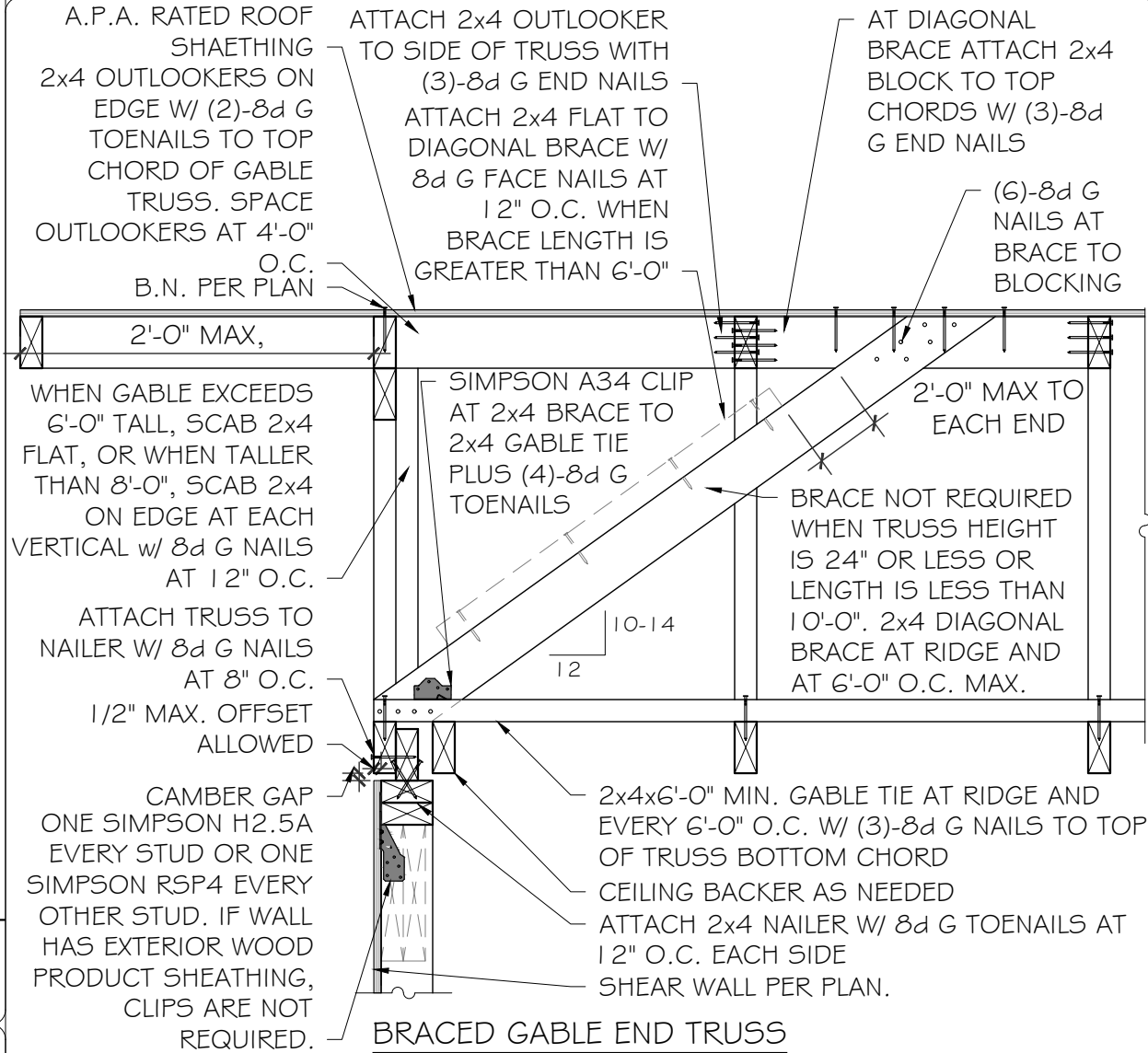
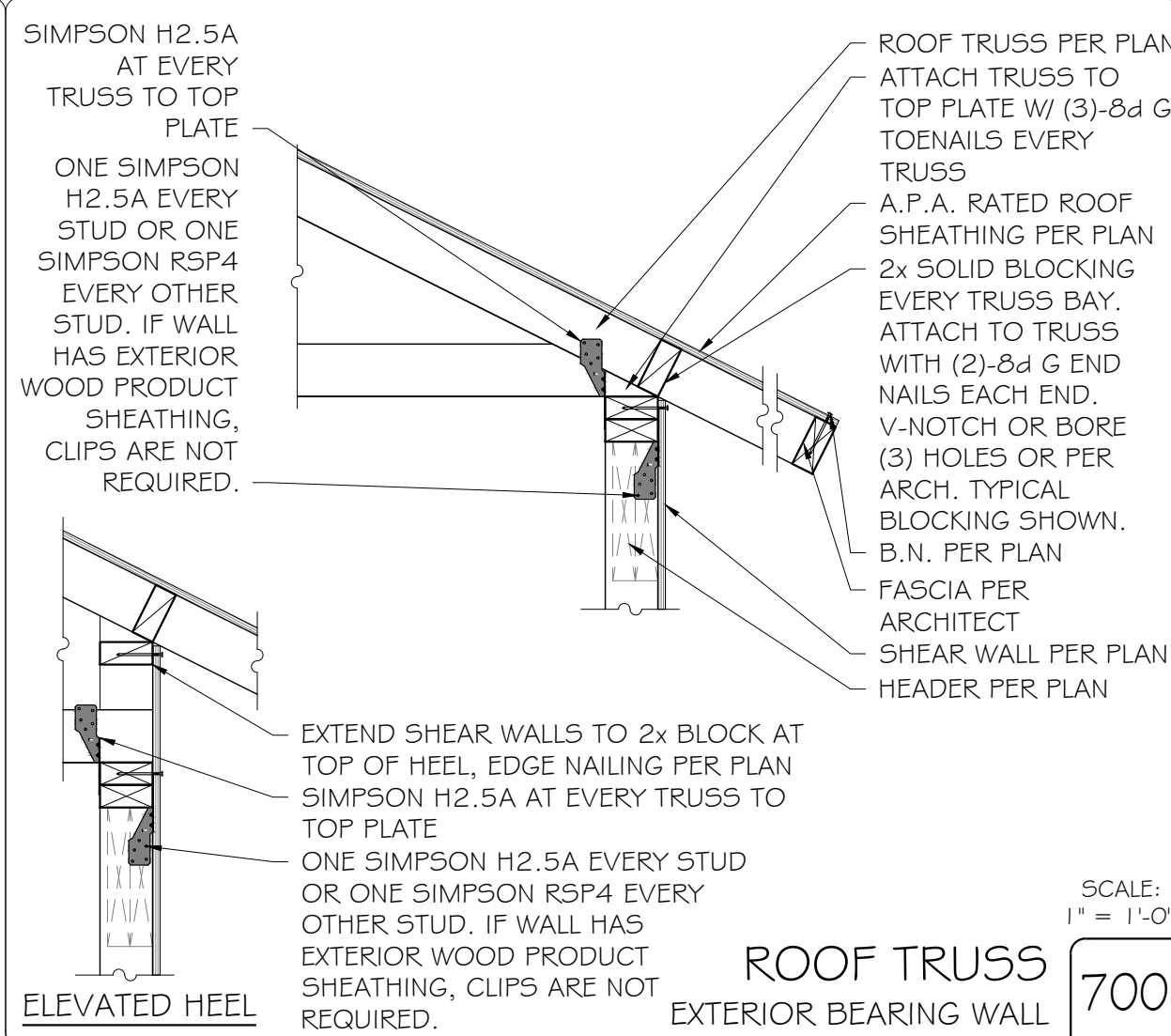
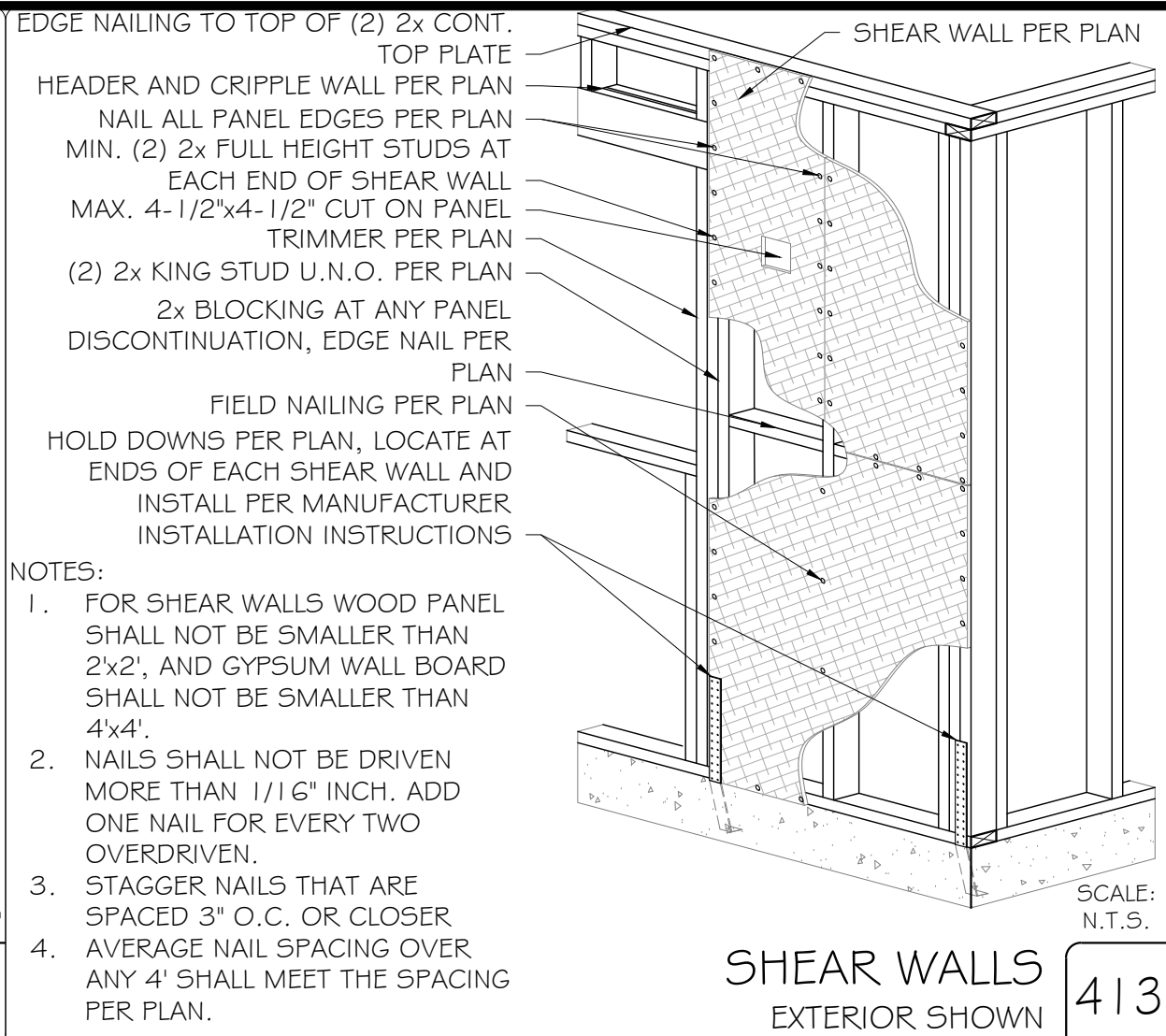
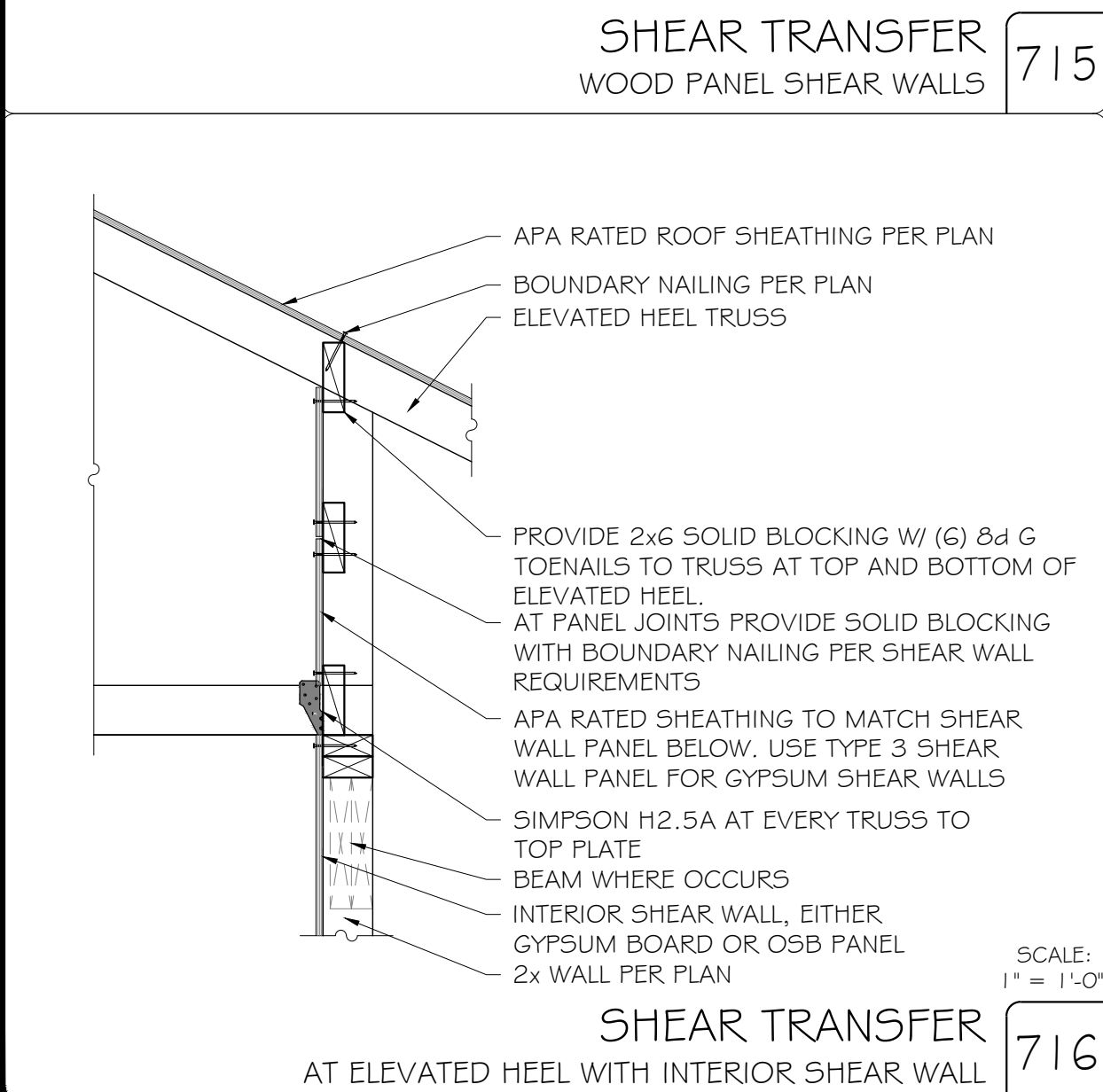
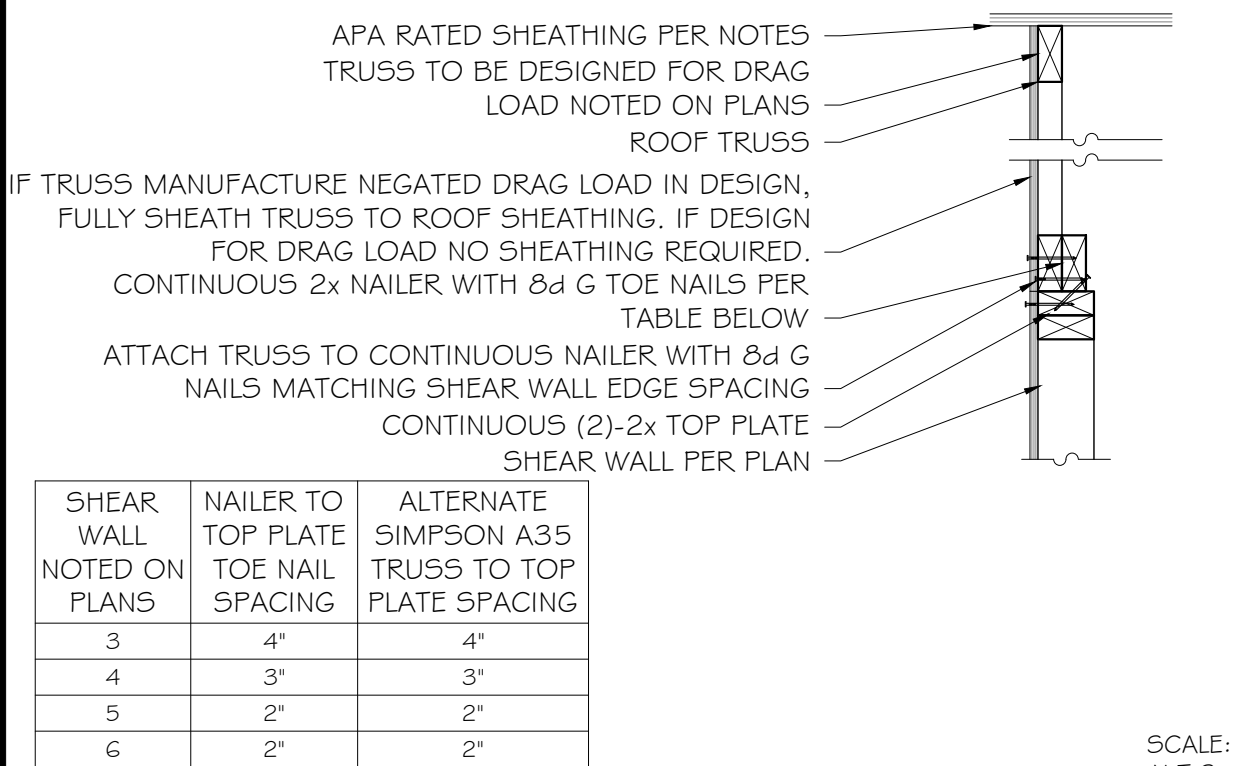
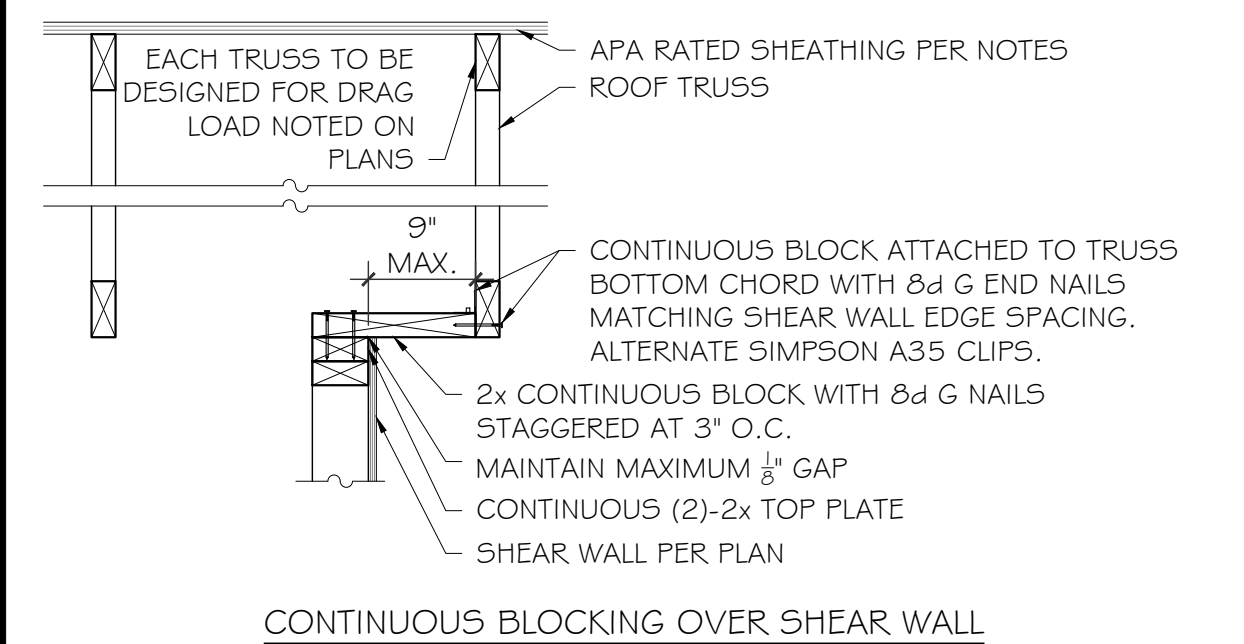
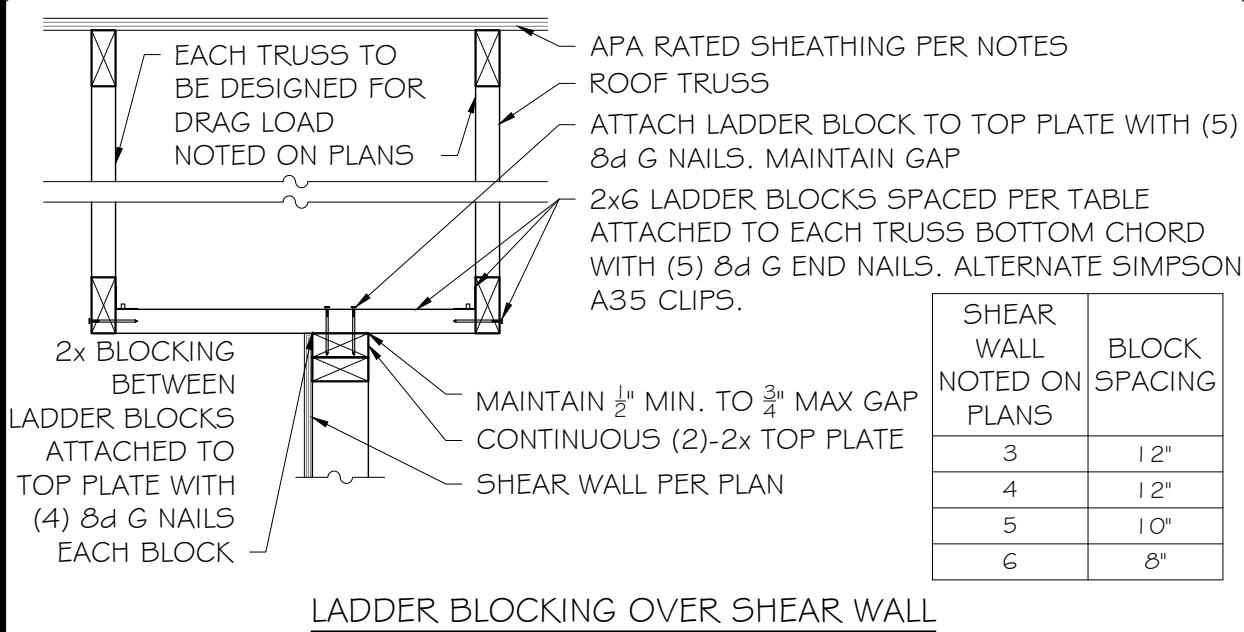
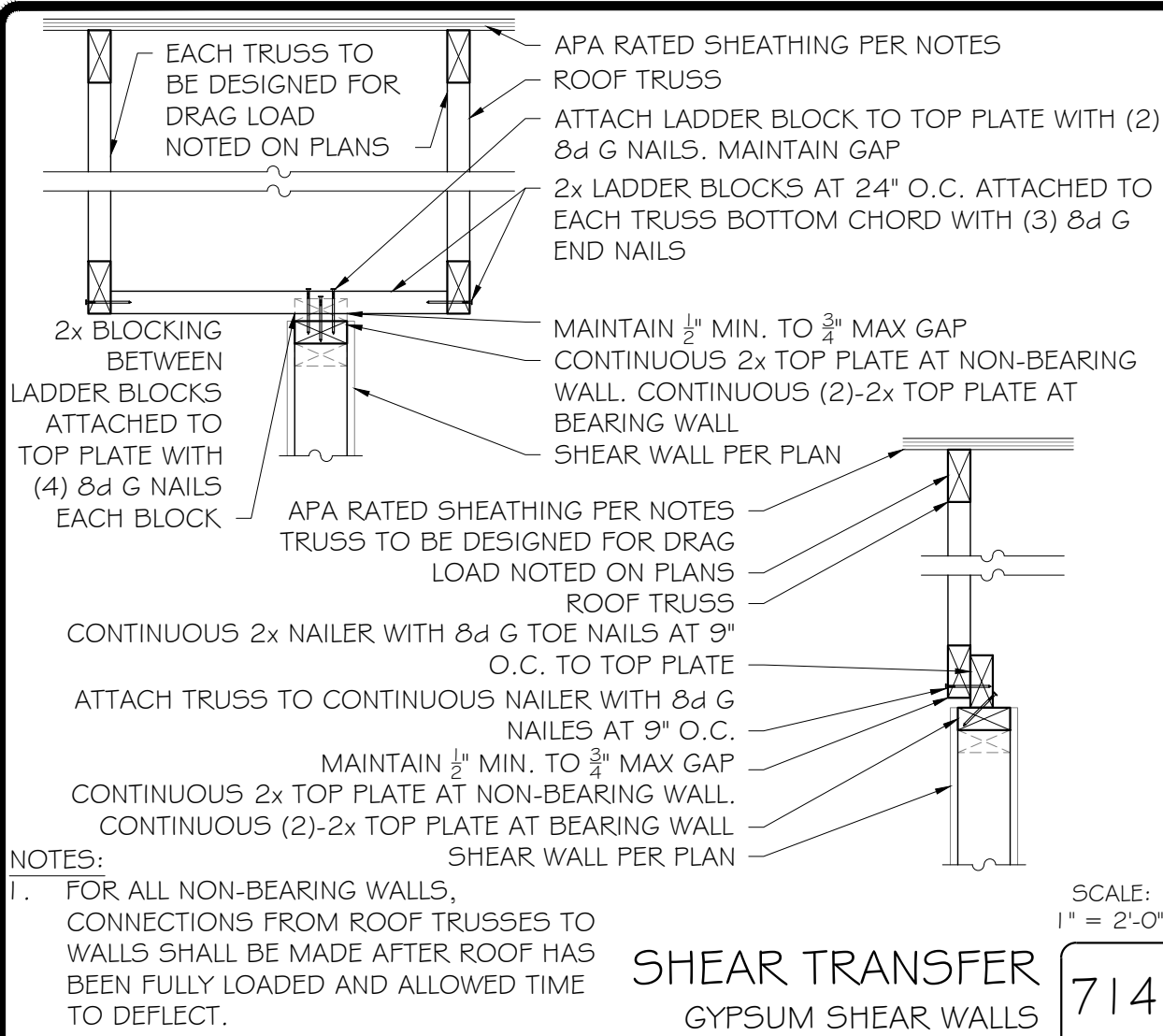
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STATUS: CONSTRUCTION

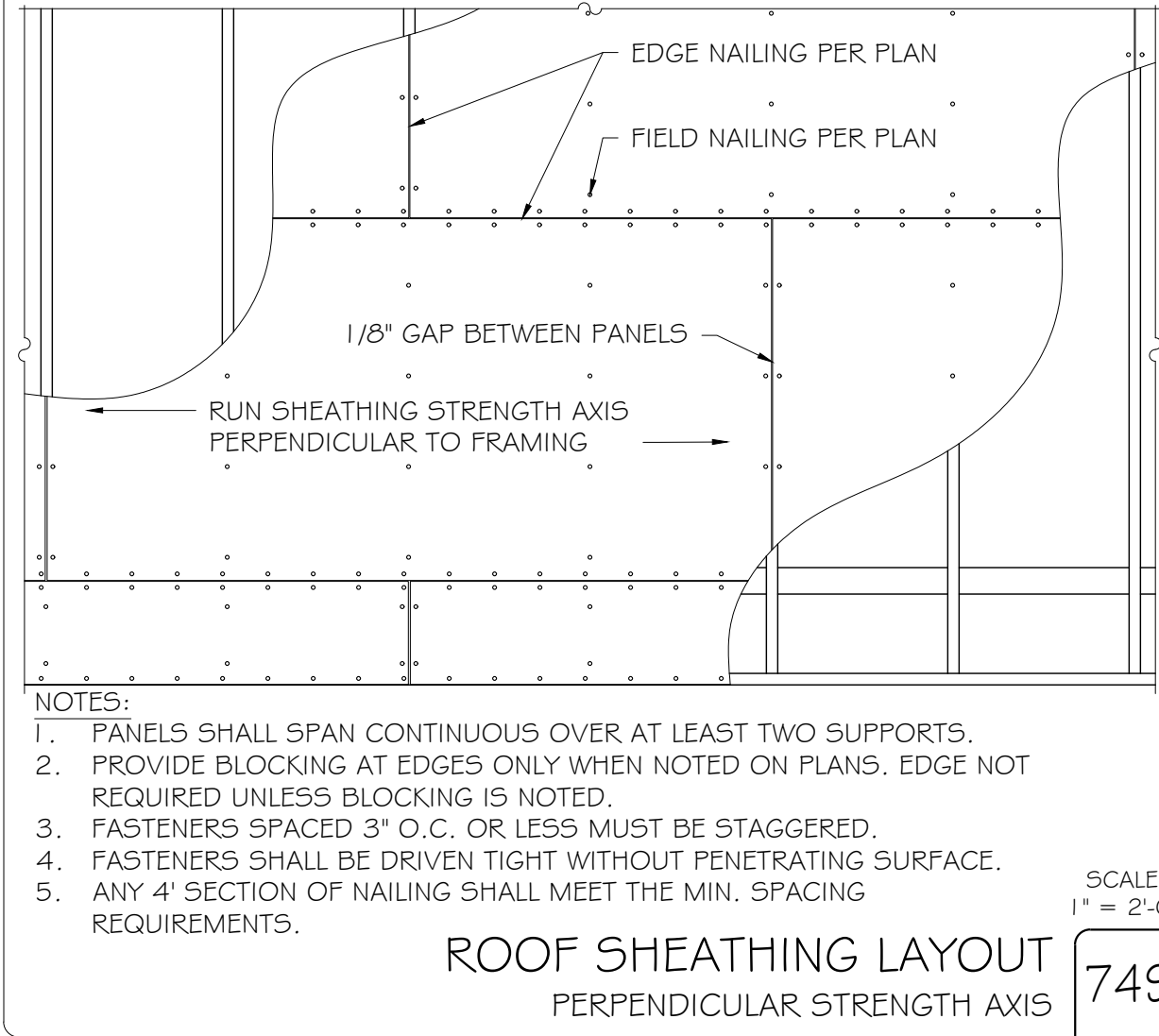
SHEET NAME: <b>ROOF FRAMING PLAN</b>	
PROJECT No: <b>18030</b>	DRAWN: <b>ENC</b>
DATE: <b>September 12, 2019</b>	
SHEET No:	REV No:

S2









PROJECT NAME:	REC CENTER STORAGE GARAGE
OWNER:	RED ROCKS COMMUNITY COLLEGE
DESIGNER:	ENGenious LLC
PROJECT ADDRESS:	13300 WEST SIXTH AVENUE LAKEWOOD, COLORADO 80228



No.	REVISIONS	DATE
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STATUS: CONSTRUCTION		

SHEET NAME: STRUCTURAL DETAILS	
PROJECT No: 18030	DRAWN: ENC
DATE: September 12, 2019	
SHEET No: SD	REV No:



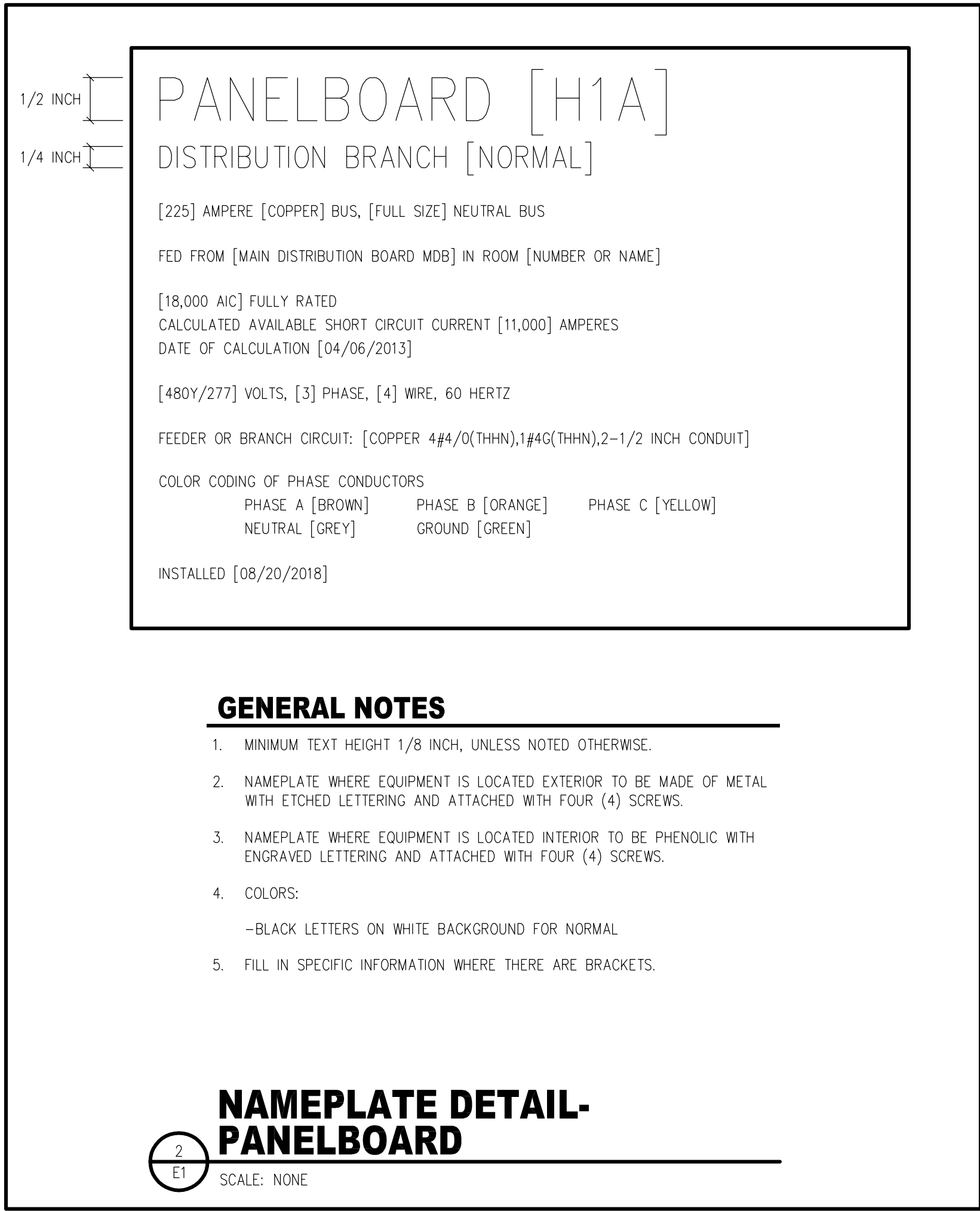
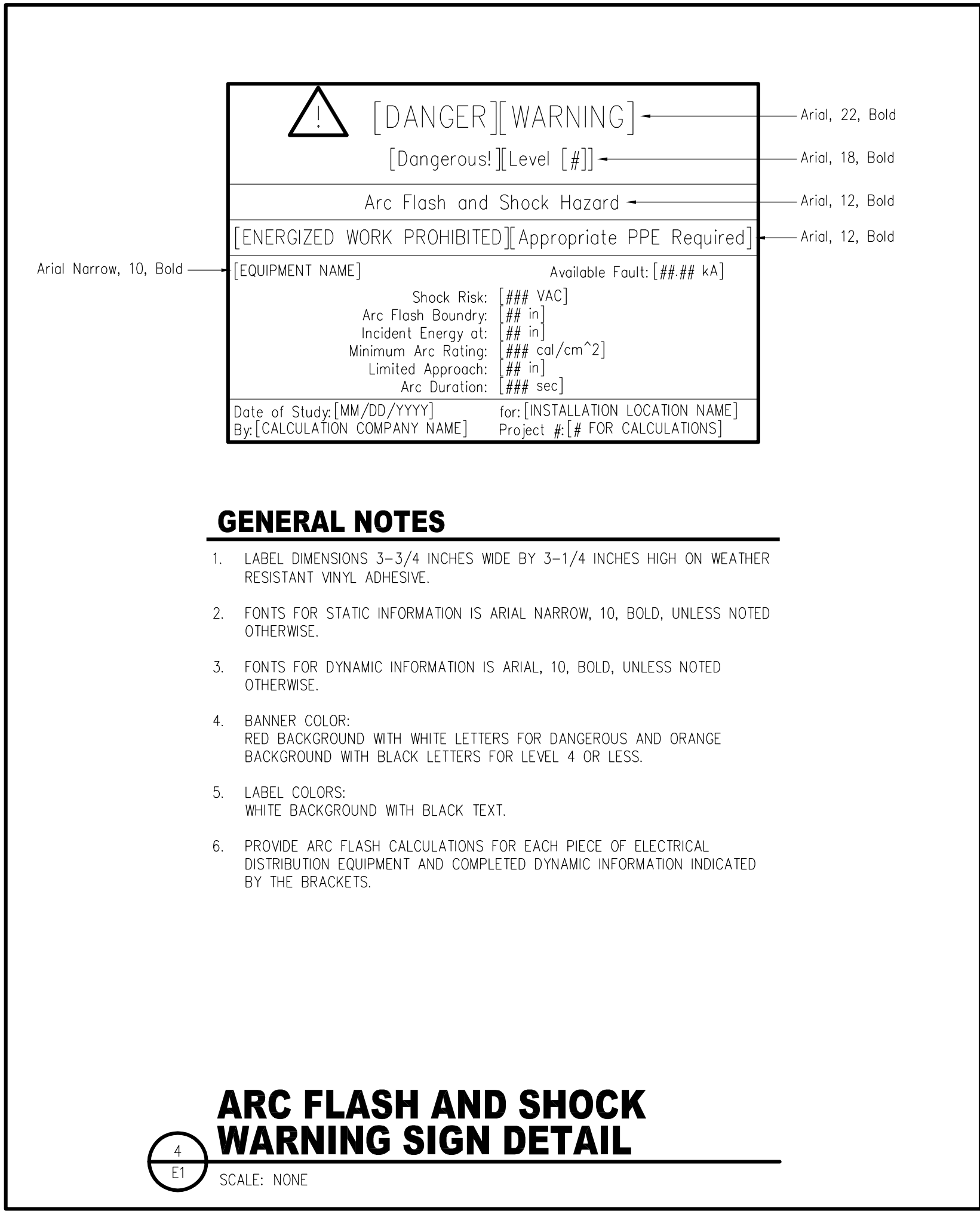
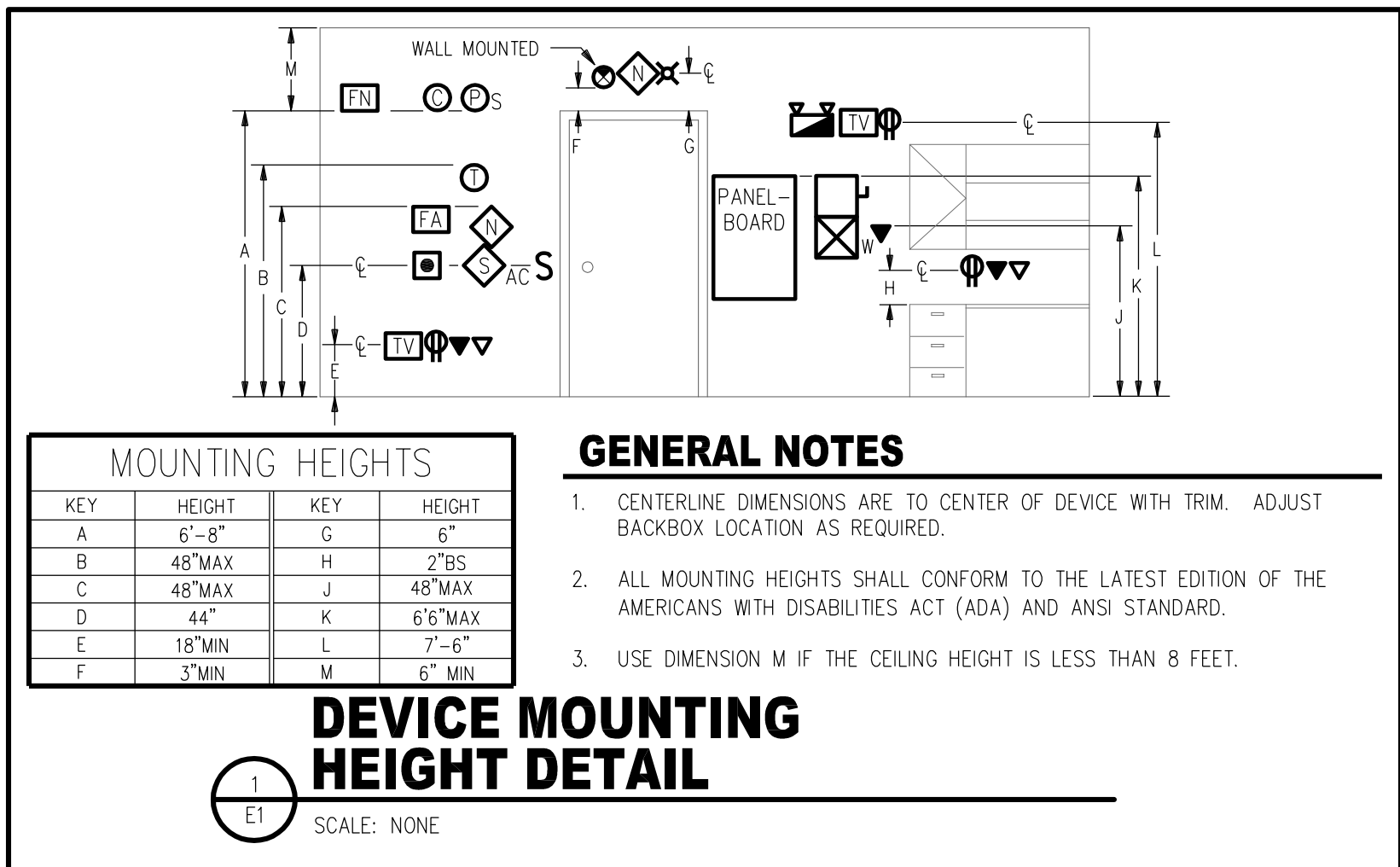
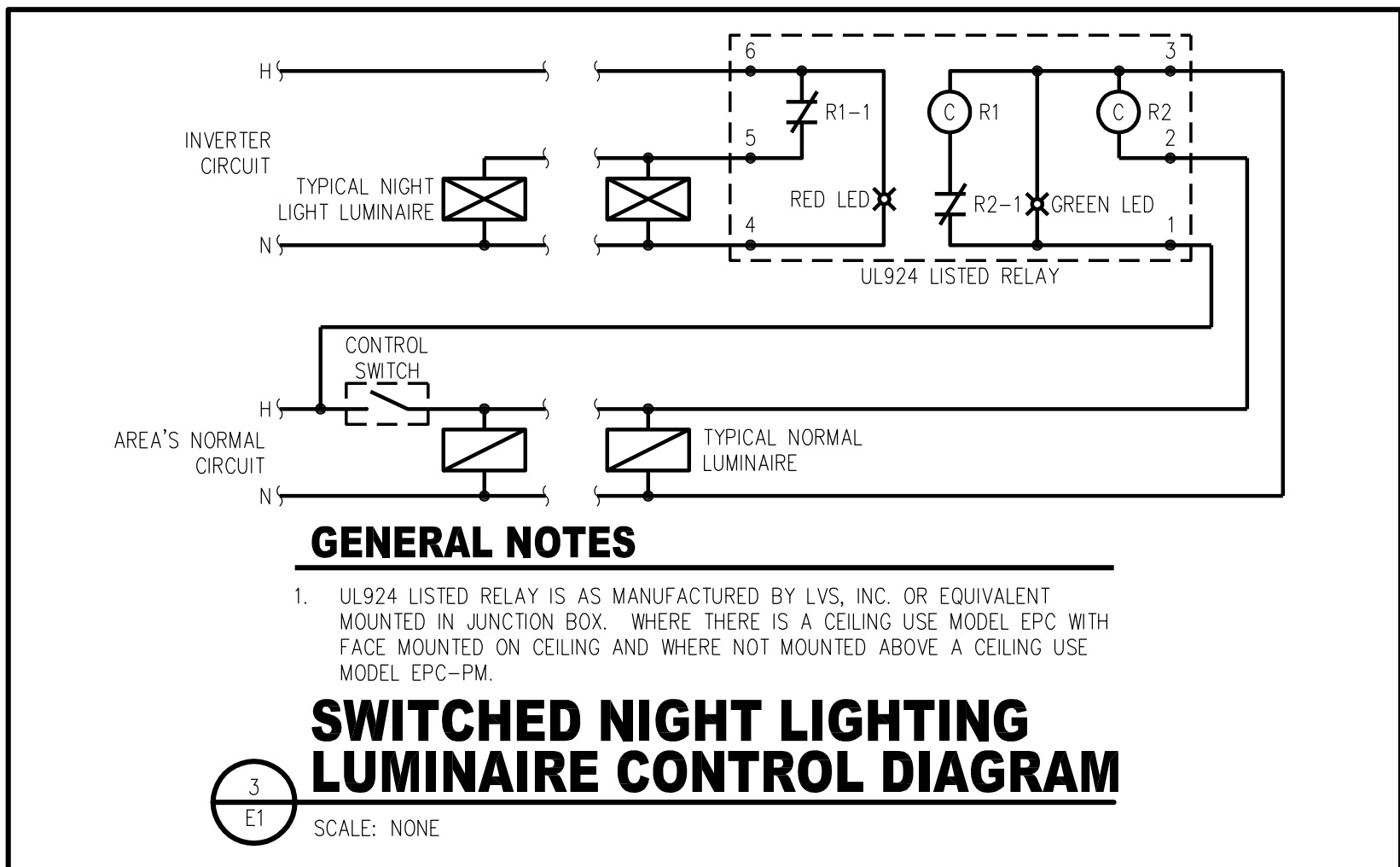
ENGenious LLC

720.893.0533 [enc@ENGeniousLLC.com](mailto:enc@ENGeniousLLC.com)  
P.O. Box 386 Conifer, CO 80433



DRAWING INDEX	
SHEET NUMBER	SHEET NAME
E1	LEGEND, INDEX, NOTES, DETAILS
E2	ONE-LINE DIAGRAM, SCHEDULES
E3	SITE PLAN AND SCHEDULES
E4	PLANS
E5	COMCHECK COMPLIANCE

LUMINAIRE SCHEDULE											
TYPE	DESCRIPTION	LAMPS		VOLTAGE	TOTAL VA	MANUFACTURER			MOUNTING		NOTES
		QTY.	TYPE			DESIGN BASIS		OTHERS	TYPE	DEPTH	
						NAME	CATALOG SERIES				
G	1 BY 4 FOOT INDUSTRIAL LED LUMINAIRE WITH WIRE GUARD, 5000 LUMEN, 3500K COLOR TEMPERATURE, 85+CRI	--	LED	MULTI	55	METALUX	LED LINEAR BAY LIGHTING SYSTEM		SURFACE STRUCTURE	--	1
AAX	EXTERIOR WALL MOUNTED RECTANGULAR LED LUMINAIRE, CITY SILVER HOUSING, 800 LUMEN, TYPE II LATERAL THROW, 3000K COLOR TEMPERATURE, 80 CRI	--	LED	MULTI	10	LUMIERE	303-W1-LEDB1 EON LED		WALL SURFACE, +9' FOOT ABOVE GRADE	--	2
GENERAL REQUIREMENTS: A VERIFY TRIM COMPATIBILITY WITH CEILING TYPE PRIOR TO SUBMITTAL. B FINAL FINISHES SHALL BE APPLIED AFTER FABRICATION.											
SPECIFIC NOTES: 1 CONTROLLED BY OCCUPANCY SENSOR AND MANUAL SWITCH PER SPACE. 2 CONTROLLED BY PHOTO ELECTRIC SWITCH MOUNTED ON THE NORTH SIDE OF BUILDING.											



# ELECTRICAL LEGEND

NOT ALL ITEMS LISTED BELOW ARE USED ON THIS SET OF ELECTRICAL DRAWINGS

ONE-LINE DIAGRAM AND SCHEMATIC		LIGHTING		FIRE ALARM		NURSE CALL		POWER DISTRIBUTION	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	OVERHEAD POWER SERVICE ENTRANCE		RECESSED LUMINAIRE		FAL FIRE ALARM ANNUNCIATOR		NURSE CALL CONTROL PANEL		OVERHEAD POWER SERVICE ENTRANCE
	CIRCUIT BREAKER		SURFACE OR PENDANT LUMINAIRE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	DISCONNECT SWITCH		STRIP LUMINAIRE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	DISTRIBUTION BOARD MOUNTED		MOLDED LINEAR RECESSED LUMINAIRE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	FUSION DISCONNECT		RECESSED DOWNLIGHT LUMINAIRE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	DISTRIBUTION BOARD MOUNTED		SURFACE OR PENDANT LUMINAIRE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	TRANSFORMER (SHADE INDICATES SHIELDS)		WALL BRACKET LUMINAIRE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	POTENTIAL TRANSFORMER		DIRECTIONAL LUMINAIRE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	FEEDER KEY		LIGHT TRACK AND NUMBER OF TRACK HEAD LUMINAIRES		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	GROUND		EXIT LUMINAIRE, DIRECTIONAL AND FACES		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	DRAINOUT DEVICE		LUMINAIRE CONNECTED TO LIGHT SAFETY BARRIER WITH BATTERY BACKUP		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	TRANSFER SWITCH (+TYPE)		LUMINAIRE CONNECTED TO CRITICAL BRANCH		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	AUTOMATIC TRANSFER SWITCH (+TYPE)		LUMINAIRE CONNECTED TO UNSWITCHED CIRCUIT (NIGHT LIGHT)		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	MANUAL TRANSFER SWITCH (+TYPE)		FLOODLIGHT TYPE LUMINAIRE WITH BATTERY BACKUP		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	GENERATOR		REMOTE FLOODLIGHT HEAD		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	METER		POWER MOUNTED LUMINAIRE AND NUMBER OF HEADS		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	OVERCURRENT DEVICE (+TYPE)		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	CONDUCTOR (+TYPE)		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	LINE FILTER		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	PROTECTIVE RELAY (+ANSI NUMBER)		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	SURGE ARRESTOR		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	SURGE PROTECTIVE DEVICE		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	ELECTRICAL EQUIPMENT ENCLOSURE		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	GROUND FAULT INTERRUPTER		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	MEDIUM VOLTAGE BLADE SWITCH		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	MEDIUM VOLTAGE FUSED SWITCH		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	MEDIUM VOLTAGE SWITCH WITH OPERATOR		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	MEDIUM VOLTAGE VACUUM SWITCH		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	VARIABLE SPEED DRIVE		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	LOCAL ACTUATOR		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	PUSHBUTTON		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	START STOP PUSHBUTTON		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	SELECTOR SWITCH (+TYPE)		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	HAND (ON)		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	HAND (OFF)		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	AUTOMATIC (AUTO)		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	JUNCTION BOX		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	TIE		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	PHOTO ELECTRIC SWITCH		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	CONTACTS		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	NORMALLY OPEN		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	NORMALLY CLOSED		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	COOL		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE
	TAP		UPSCALE LETTER INDICATES LUMINAIRE TYPE		FACP FIRE ALARM CONTROL PANEL		NURSE CALL ANNUNCIATOR		ELECTRICAL DISTRIBUTION ENTRANCE

## ABBREVIATIONS

A	AMPERE	OMS	COMBINATION MOTOR STARTER	FIR	FLOOR	MY	MEDIUM VOLTAGE	SEC	SECONDARY
AC	ALTERNATING CURRENT OR ABOVE	COMA	COMMUNICATION CABLE	FLO	FLOORING	NV	NEUTRAL	SPD	SURGE PROTECTIVE DEVICE
CB	CIRCUIT BREAKER	CT	CURRENT TRANSFORMER	FLC	FLOOR COVERING	NC	NORMAL CLOSURE	SPR	SPEAKER
CC	CABLE	CU	COPPER	FLD	FLOOR DRAIN	NO	NORMAL OPEN	STD	STANDARD
AF	ABOVE FINISHED FLOOR	CH	CHANCE	GFI	GROUND FAULT INTERRUPTER	NLS	NOT TO SCALE	STD	STANDARD
AMP	AMPERE	CL	CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
AP	APPROXIMATE	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
ALU	ALUMINUM	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
ALP	ALUMINUM PLATE	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
ATS	AUTOMATIC TRANSFER SWITCH	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
AUX	AUXILIARY	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
B	BUS	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
CB	CIRCUIT BREAKER	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
CC	CABLE	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
CD	CED	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD
CE	CEILING	CM	COMMUNICATION CABLE	GRD	GROUND	NTS	NOT TO SCALE	STD	STANDARD

**TQ ENGINEERING**









ELECTRICAL ENGINEER

11851 WEST COOPER AVENUE  
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(VOICE) 303-903-7341  
(EMAIL) [tomq@tqengineering.com](mailto:tomq@tqengineering.com)  
(WEB) [tqengineering.com](http://tqengineering.com)

PROJECT NAME:	REC CENTER STORAGE GARAGE
OWNER:	RED ROCKS COMMUNITY CENTER
DESIGNER:	ENGenious LLC
PROJECT ADDRESS:	13300 WEST SIXTH AVENUE LAKEWOOD, COLORADO 80228

A circular professional engineer seal for the State of Colorado. The outer ring contains the text "COLORADO LICENSED PROFESSIONAL ENGINEER". The inner circle contains the license number "31247" and the expiration date "9/12/19". The seal is stamped in blue ink on a white background. There are handwritten blue ink signatures and initials over the seal.

No.	REVISIONS	DATE
		
		
		
		
		
		
		
		
STATUS: CONSTRUCTION		

SHEET NAME:	
LEGEND, INDEX, NOTES, DETAILS	
PROJECT No: 1902005	DRAWN: TQB
DATE: September 12, 2019	
SHEET No: E1	REV No:

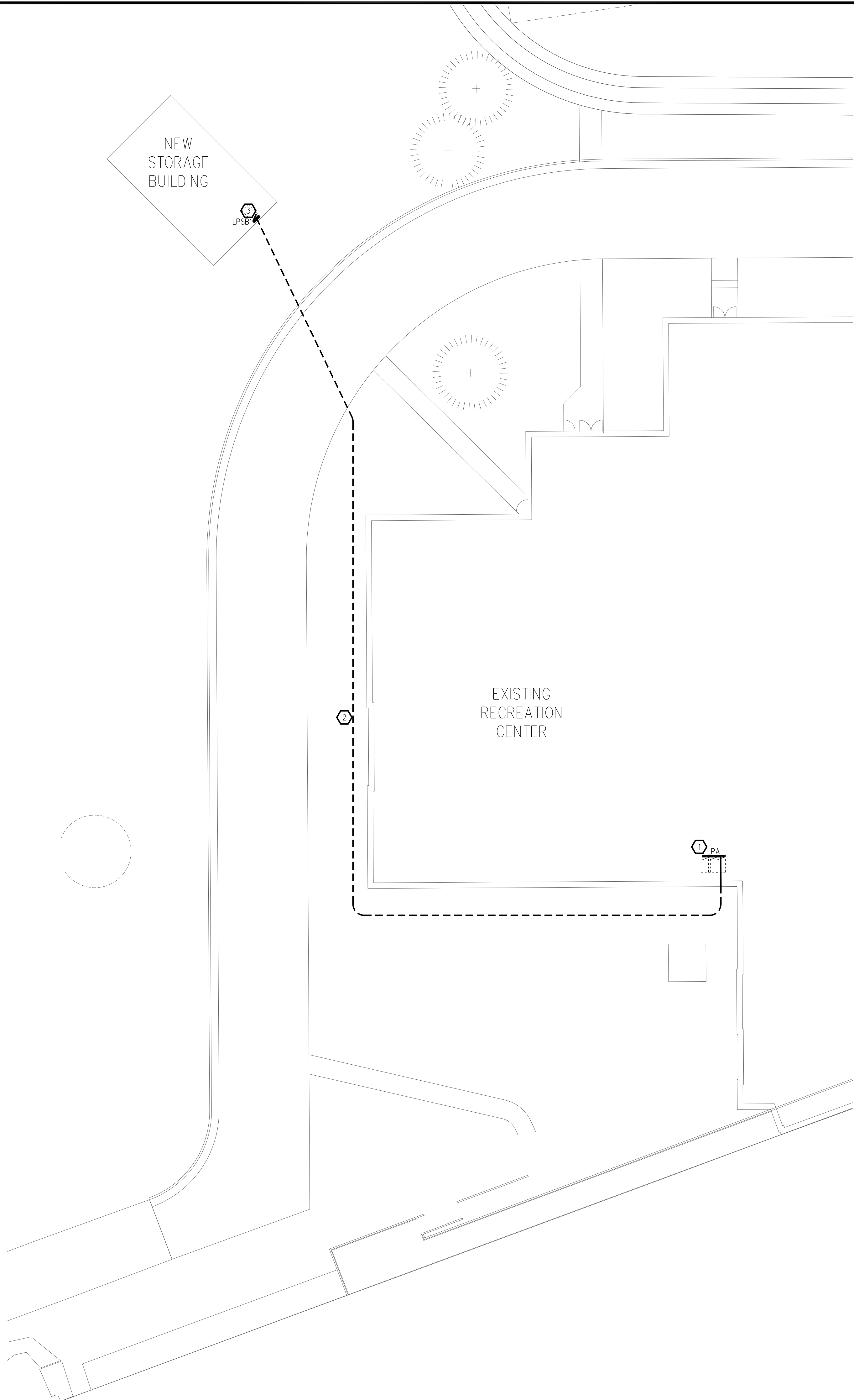






PANELBOARD: LPSPB														
MANUFACTURER AND TYPE: SQUARE D-NO										NEW PANELBOARD				
BUS RATING:		100 AMPERES		WITH FULL SIZE NEUTRAL					60 AMPERE MAIN CIRCUIT BREAKER					
AIC RATING:		10,000 AMPERES		WITH EQUIPMENT GROUND BUS					SURFACE MOUNTED					
VOLTAGE:		208 Y/120V, 3 PHASE, 4 WIRE												
NOTES	TOTAL (VA)	LOAD DESCRIPTION	P	CB	CCT	PH	CCT	CB	P	LOAD DESCRIPTION	TOTAL (VA)	NOTES		
	360	RCPT-BIKE SHOP AND STORAGE	1	20	1	A	2	20	1	SPARE				
	360	RCPT-BIKE SHOP AND STORAGE	1	20	3	B	4	20	1	SPARE				
	360	RCPT-BIKE SHOP AND STORAGE	1	20	5	C	6	20	1	LTC-BIKE SHOP/STORAGE, GROUNDS STORAGE	415			
	360	RCPT-BIKE SHOP AND STORAGE	1	20	7	A	8	20	1	LTC-NIGHT LIGHTS	130			
	360	RCPT-GROUNDS STORAGE	1	20	9	B	10	20	1	SPARE				
		SPARE	1	20	11	C	12	20	1	SPARE				
		SPARE	1	20	13	A	14	20	1	SPARE				
		SPARE	1	20	15	B	16	20	1	SPARE				
		SPARE	1	20	17	C	18	20	1	SPARE				
		SPARE	1	20	19	A	20	20	1	SPARE				
		SPARE	1	20	21	B	22	20	1	SPARE				
		SPARE	1	20	23	C	24	20	1	SPARE				
		SPACE			25	A	26			SPACE				
		SPACE			27	B	28			SPACE				
		SPACE			29	C	30			SPACE				
LOAD TYPE		CONNECTED LOAD (VA)		NEC DEMAND FACTOR		NEC LOAD (VA)								
EQUIPMENT		--		1.0		--								
HEATING		--		1.25		--								
KITCHEN EQUIPMENT		--		1.00		--								
LIGHTING		545		1.25		681								
LARGEST MOTOR		--		1.25		--								
REMAINING MOTOR		--		1.0		--								
RECEPTACLE (FIRST 10,000)		1,800		1.0		1,800								
RECEPTACLE (GREATER THAN 10,000)		--		0.5		--								
TOTAL		2,345				2,481								
CONNECTED		A=	850 VA	A-B: 85 %		NEC LOAD (AMPERES): 6.9								
PHASE LOADING		B=	720 VA	B-C: 93 %		SPARE CAPACITY (AMPERES): 53.1								
AND BALANCE		C=	775 VA	C-A: 91 %		TOTAL AVAILABLE (AMPERES): 60.0								
NOTES:														

LOAD SUMMARY: MDP										
LOAD	EQUIPMENT	HEATING	KITCHEN	LIGHTING	LARGEST MOTOR	REMAINING MOTOR(S)	FIRST 10K RCPT	REMAINING RCPT	EXISTING	REMOVED
	VA	VA	VA	VA	VA	VA	VA	VA	VA	VA
FROM EXISTING	28,700	4,400		27,000	217,000	127,000	10,000	22,800		
LPSB				545			1,800			
TOTAL	28,700	4,400		27,545	217,000	127,000	10,000	24,600		
NEC DEMAND FACTOR	1.00	1.25	1.00	1.25	1.25	1.00	FIRST 10K AT 100%	0.50	1.25	-1.00
NEC DEMAND LOAD	28,700	5,500			34,431	271,250	127,000	12,300		
NEC LOAD:	489 KVA		480 VOLTS		3	PHASE	588 AMPERES			
AVAILABLE CAPACITY:		800 AMPERES			REMAINING CAPACITY:		212 AMPERES		26.5%	
AVAILABLE CAPACITY:		665 KVA			REMAINING CAPACITY:		176 KVA		26.5%	










# GENERAL NOTES

1. LIGHT LINE WEIGHT INDICATES EXISTING ITEMS. HEAVIER LINE WEIGHT AND/OR (W) INDICATES NEW. (N) INDICATES NEW LOCATION, EXTEND BRANCH CIRCUITS OR FEEDER AS REQUIRED. MAKE MODIFICATIONS TO EXISTING BRANCH CIRCUITS AND FEEDERS TO RETAIN CONTINUITY, INCLUDING EQUIPMENT OUTSIDE THE AREA OF WORK.
2. EXISTING INFORMATION SHOWN HAS BEEN TAKEN FROM OWNER FURNISHED DRAWINGS AND/OR LIMITED FIELD SURVEY. TO ENGINEERING IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY INFORMATION OR THE ADEQUACY, SAFETY, AND/OR CONFORMANCE TO CURRENT PREVAILING CODES OR ANY WORK SHOWN AS EXISTING.
3. ALL EMPTY CONDUIT SHALL BE PROVIDED WITH MULE TAPE FOR FUTURE INSTALLATION OF CABLES AND CONDUCTORS.
4. UTILITY LOCATE REQUIRED PRIOR TO INSTALLATION.
5. ALL RACEWAYS ENTERING OR EXITING THE BUILDING PERIMETER SHALL BE ROUTED BELOW FOOTINGS.
6. INDICATE ROUTING OF ALL CONDUITS ON RECORD DRAWINGS.
7. MINIMUM BURIAL DEPTH OF UNDERGROUND CONDUITS 24 INCHES.
8. COORDINATE STORAGE BUILDING LOCATION WITH ARCHITECT.

## DRAWING NOTES

1. APPROXIMATE LOCATION OF EXISTING THREE (3) SECTION PANELBOARD LPA INSIDE ELECTRICAL ROOM 134.
2. APPROXIMATE ROUTING OF PANELBOARD LP5B FEEDER AND 1 INCH CONDUIT FOR SECURITY CAMERA. TERMINATE PANELBOARD FEEDER AT PANELBOARDS AND CONDUIT FOR SECURITY CAMERA AT SECURITY EQUIPMENT. PULL BOXES OR CONDUIT BODIES ARE REQUIRED TO LIMIT EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL) BETWEEN PULL POINTS PER THE RACEWAY SECTIONS OF THE NATIONAL ELECTRICAL CODE. CONDUIT IS SCHEDULE 80 PVC WITH PVC COATED RIGID METAL CONDUIT BENDS.
3. APPROXIMATE LOCATION OF NEW PANELBOARD LP5B.

No.	REVISIONS	DATE
		
		
		
		
		
		
		

STATUS:

## CONSTRUCTION

SHEET NAME:

## SITE PLAN AND SCHEDULES

PROJECT No: 1902005	DRAWN: TQB
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DATE: September 12, 2019

SHEET No:	REV No:
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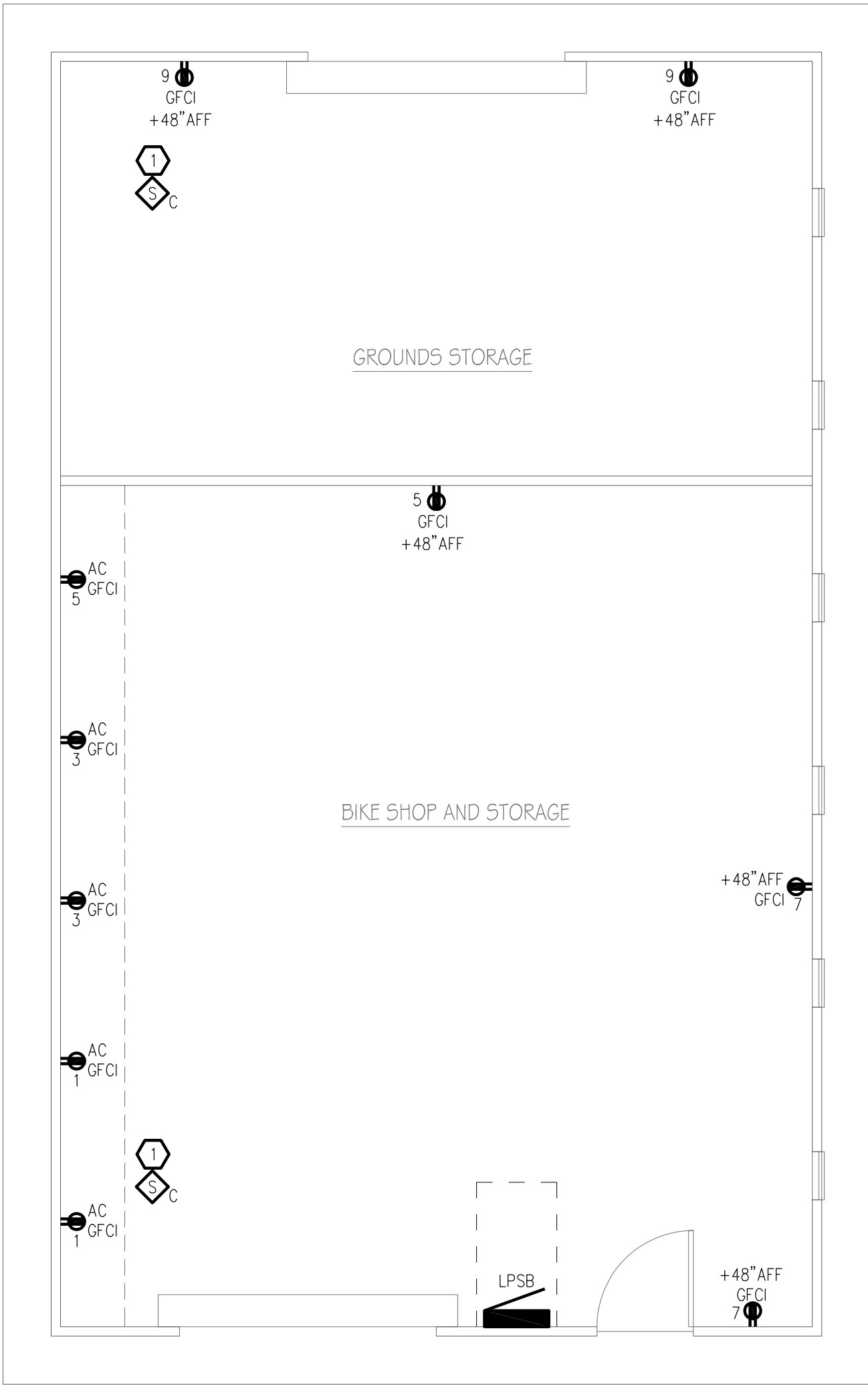
E3

## PARTIAL SITE PLAN

SCALE: 1/16" = 1'-0"







**1 POWER PLAN**  
SCALE: 1/4" = 1'-0"

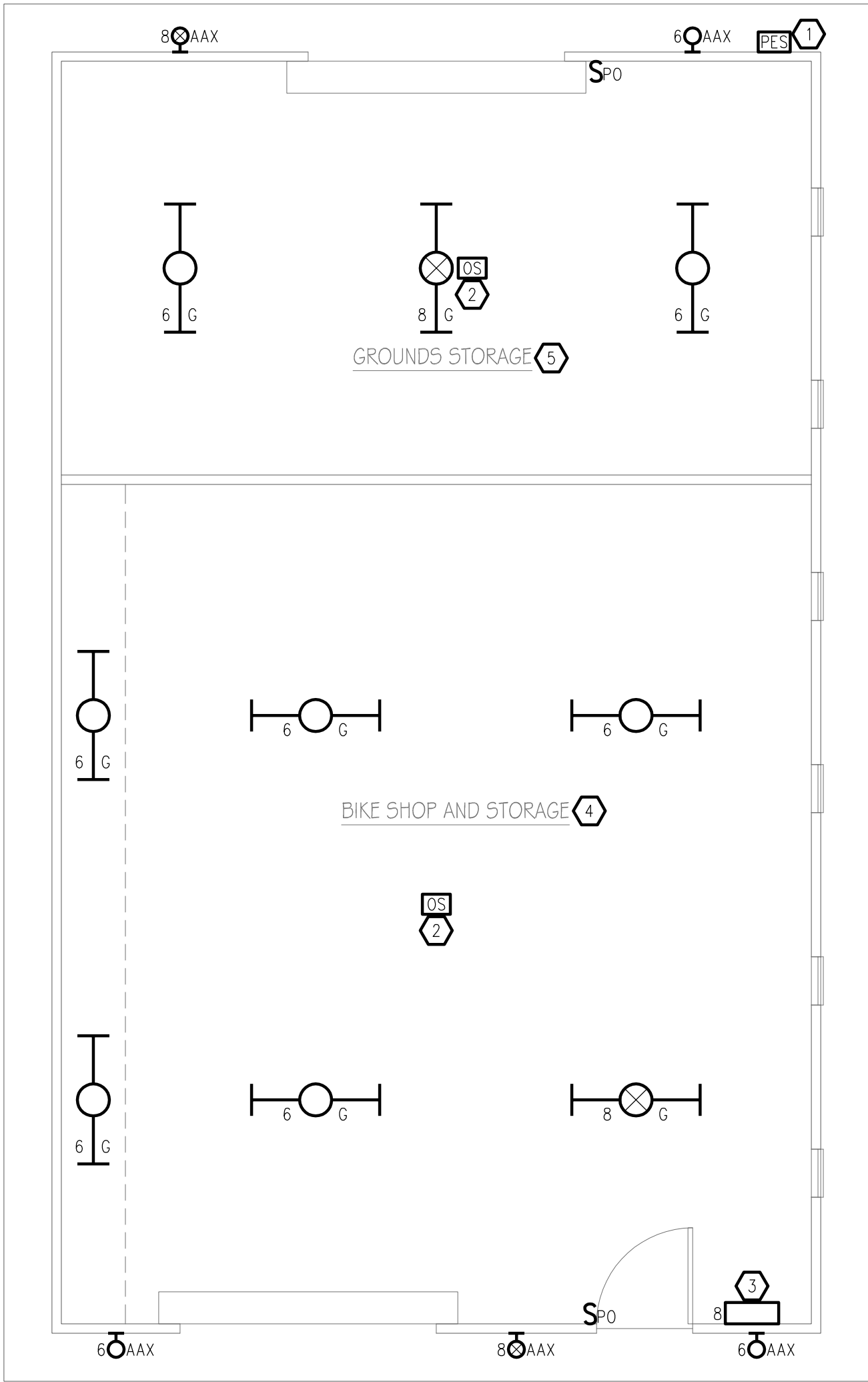


#### GENERAL NOTES-POWER

- ALL ITEMS ARE NEW.
- REFER TO OTHER TRADES FOR INFORMATION REQUIRED TO SUPPORT THE ASSOCIATED EQUIPMENT. COORDINATE ROUGH-IN LOCATIONS, LUG RATINGS, LUG QUANTITIES, AND IMPACTS TO ACCESS AND CLEARANCE OF ELECTRICAL COMPONENTS. MAKE FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT.
- ALL CONDUIT IN FINISHED AREAS SHALL BE CONCEALED WHERE POSSIBLE, UNLESS NOTED OTHERWISE.
- COORDINATE LOCATION OF DEVICES WITH OWNER.
- ITEMS CONNECTED TO PANELBOARD LPSB.
- FLAMMABLE LIQUIDS WILL BE STORED IN FLAMMABLE STORAGE CABINETS.

#### DRAWING NOTES-POWER

- CABLE TO AND UPGRADE RECREATION CENTER SURVEILLANCE SYSTEM AS REQUIRED TO SUPPORT. CABLING TO MATCH EXISTING SYSTEM. REFER TO SITE PLAN FOR ROUTING OF CONDUIT FROM RECREATION CENTER.



**2 LIGHTING PLAN**  
SCALE: 1/4" = 1'-0"



#### GENERAL NOTES-LIGHTING

- ALL ITEMS ARE NEW.
- ALL CONDUIT IN FINISHED AREAS SHALL BE CONCEALED WHERE POSSIBLE, UNLESS NOTED OTHERWISE.
- NIGHT LIGHT LUMINAIRES CONNECTED TO INVERTER SYSTEM VIA UL924 RELAY PER DETAIL ON SHEET E1 AND CONTROLLED WITH ADJACENT LUMINAIRES, UNLESS NOTED OTHERWISE.
- REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF LUMINAIRES.
- COORDINATE LOCATION OF LUMINAIRES WITH OTHER BUILDING COMPONENTS AND OTHER TRADES. ADJUST LOCATION AND MOUNTING WITH BICYCLE HANGING LOCATIONS.
- LOCATE AUTOMATIC LIGHTING CONTROL DEVICES PER MANUFACTURER'S RECOMMENDATIONS.
- ITEMS CONNECTED TO PANELBOARD LPSB.
- EXTERIOR LIGHTING 0.39 WATTS PER LINEAR FEET.

#### DRAWING NOTES-LIGHTING

- TORK MODEL 2107 OR EQUIVALENT. CONTROLS ALL TYPE AAX LUMINAIRES.
- WATTSTOPPER CB-100 OR EQUIVALENT. CONNECTED DOWNSTREAM OF WALL SWITCH.
- NIGHT LIGHT INVERTER MOUNTED ON THE WALL. DIGITAL SIGNAL POWER MANUFACTURER, INC. FT1-0.3-120/120-HTR-90 OR EQUIVALENT.
- 0.54 WATTS PER SQUARE FOOT LIGHTING.
- 0.55 WATTS PER SQUARE FOOT LIGHTING.

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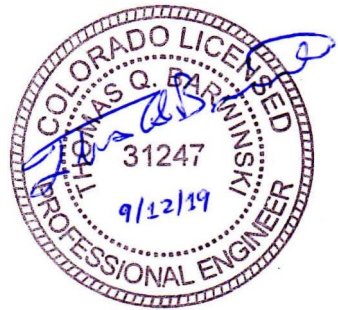
REC CENTER STORAGE GARAGE

RED ROCKS COMMUNITY CENTER

ENGenious LLC

13300 WEST SIXTH AVENUE

LAKEWOOD, COLORADO 80228



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STATUS:

CONSTRUCTION

SHEET NAME:

PLANS

PROJECT No: 1902005

DRAWN: TQB

DATE: September 12, 2019

SHEET No: REV No:

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## COMcheck Software Version 4.1.1.0 Interior Lighting Compliance Certificate

### Project Information

Energy Code: 2015 IECC  
Project Title: RRCC: Storage Building  
Project Type: New Construction

Construction Site:  
13300 West 6th Avenue  
Lakewood, CO 80228

Owner/Agent:  
Cathy Rock  
Red Rocks Community College  
13300 West 6th Avenue  
Lakewood, CO 80228  
303-914-6513  
Cathy.Rock@rrcc.edu

Designer/Contractor:  
TQ Engineering, LLC  
11851 West Cooper Avenue  
Littleton, CO 80127  
303-903-7341  
tomq@tqengineering.com

### Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

### Allowed Interior Lighting Power

A Area Category	B Floor Area (ft <sup>2</sup> )	C Allowed Watts / ft <sup>2</sup>	D Allowed Watts (B X C)
1-BIKE SHOP AND STORAGE (Common Space Types:Storage >=50 - <=1000 sq.ft.)	614	0.57	350
2-GROUNDS STORAGE (Common Space Types:Storage >=50 - <=1000 sq.ft.)	302	0.57	172
Total Allowed Watts = 522			

### Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-BIKE SHOP AND STORAGE (Common Space Types:Storage >=50 - <=1000 sq.ft.)				
G. Other:	1	6	55	330
2-GROUNDS STORAGE (Common Space Types:Storage >=50 - <=1000 sq.ft.)				
G. Other:	1	3	55	165
Total Proposed Watts = 495				

Interior Lighting PASSES: Design 5% better than code

### Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2015 IECC requirements in COMcheck Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Thomas Q. Barwinski - Principal

Signature

April 24, 2019

Name - Title

Project Title: RRCC: Storage Building  
Data filename: D:\TQ\Projects\2019\1902005 Red Rocks Community College Storage Building\Calculations\COMcheck\2019-04-23 RRCC Storage 1902005.cck  
Report date: 04/24/19  
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## COMcheck Software Version 4.1.1.0 Inspection Checklist

Energy Code: 2015 IECC

Requirements: 94.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 (PR4) <sup>1</sup>	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C103.2 (PR8) <sup>1</sup>	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C406 (PR9) <sup>1</sup>	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

### Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: RRCC: Storage Building  
Data filename: D:\TQ\Projects\2019\1902005 Red Rocks Community College Storage Building\Calculations\COMcheck\2019-04-23 RRCC Storage 1902005.cck  
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1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: RRCC: Storage Building  
Data filename: D:\TQ\Projects\2019\1902005 Red Rocks Community College Storage Building\Calculations\COMcheck\2019-04-23 RRCC Storage 1902005.cck  
Report date: 04/24/19  
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## COMcheck Software Version 4.1.1.0 Exterior Lighting Compliance Certificate

### Project Information

Energy Code: 2015 IECC  
Project Title: RRCC: Storage Building  
Project Type: New Construction  
Exterior Lighting Zone: 2 (Light industrial area with limited nighttime use)

Construction Site:  
13300 West 6th Avenue  
Lakewood, CO 80228

Owner/Agent:  
Cathy Rock  
Red Rocks Community College  
13300 West 6th Avenue  
Lakewood, CO 80228  
303-914-6513  
Cathy.Rock@rrcc.edu

Designer/Contractor:  
TQ Engineering, LLC  
11851 West Cooper Avenue  
Littleton, CO 80127  
303-903-7341  
tomq@tqengineering.com

### Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B X C)
BIKE SHOP AND STORAGE ENTRANCE (Other door (not main entry))	11 ft of door	20	Yes	220
GROUNDS STORAGE (Other door (not main entry))	8 ft of door	20	Yes	160
Total Tradable Watts (a) =				380
Total Allowed Watts =				380
Total Allowed Supplemental Watts (b) =				600

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.  
(b) A supplemental allowance equal to 600 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

### Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
BIKE SHOP AND STORAGE ENTRANCE (Other door (not main entry)) 11 ft of door width: Tradable Wattage				
AAK. Other:	1	3	10	30
GROUNDS STORAGE (Other door (not main entry)) 8 ft of door width: Tradable Wattage				
AAK. Other:	1	2	10	20
Total Tradable Proposed Watts = 50				

Exterior Lighting PASSES: Design 95% better than code

### Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2015 IECC requirements in COMcheck Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Thomas Q. Barwinski - Principal

Signature

April 24, 2019

Name - Title

Project Title: RRCC: Storage Building  
Data filename: D:\TQ\Projects\2019\1902005 Red Rocks Community College Storage Building\Calculations\COMcheck\2019-04-23 RRCC Storage 1902005.cck  
Report date: 04/24/19  
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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.1 (EL15) <sup>1</sup>	Lighting controls installed to uniformly reduce the lighting load by at least 50%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C405.2.1 (EL18) <sup>1</sup>	Occupancy sensors installed in required spaces.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C405.2.1, C405.2.2, 3 (EL23) <sup>1</sup>	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C405.2.2, 1 (EL22) <sup>1</sup>	Automatic controls to shut off all building lighting installed in all buildings.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C405.2.3 (EL16) <sup>1</sup>	Daylight zones provided with individual controls that control the lights independent of general area lighting.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Exception: Requirement does not apply.
C405.2.3, C405.2.3, 1, C405.2.3, 2 (EL20) <sup>1</sup>	Primary sidelighted areas are equipped with required lighting controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Exception: Requirement does not apply.
C405.2.3, C405.2.3, 1, C405.2.3, 3 (EL21) <sup>1</sup>	Enclosed spaces with daylight area under skylights and rooftop monitors are equipped with required lighting controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Exception: Requirement does not apply.
C405.2.4 (EL4) <sup>1</sup>	Separate lighting control devices for specific uses installed per approved lighting plans.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C405.2.4 (EL8) <sup>1</sup>	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C405.2.5 (EL25) <sup>1</sup>	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 30%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C405.3 (EL6) <sup>1</sup>	Exit signs do not exceed 5 watts per face.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Exception: Requirement does not apply.

### Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: RRCC: Storage Building  
Data filename: D:\TQ\Projects\2019\1902005 Red Rocks Community College Storage Building\Calculations\COMcheck\2019-04-23 RRCC Storage 1902005.cck  
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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5, 2 (F117) <sup>1</sup>	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C405.4.1 (F118) <sup>1</sup>	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Interior Lighting fixture schedule for values.
C405.5.1 (F119) <sup>1</sup>	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Exterior Lighting fixture schedule for values.
C408.2.5, 1 (F116) <sup>1</sup>	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C408.3 (F133) <sup>1</sup>	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

### Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: RRCC: Storage Building  
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Report date: 04/24/19  
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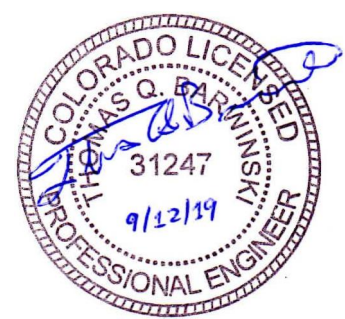
13300 WEST SIXTH AVENUE  
LAKEWOOD, COLORADO 80228

PROJECT NAME:

OWNER:

DESIGNER:

PROJECT ADDRESS:



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CONSTRUCTION

SHEET NAME:

COMCHECK  
COMPLIANCE

PROJECT No:

DRAWN:

1902005

TQB

DATE:

September 12, 2019

SHEET No:

REV No:

E5