STRUCTURAL GENERAL NOTES

A. GOVERNING CODES

1) INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION
2) MANUAL FOR TIMBER CONSTRUCTION, AITC 4TH EDITION.
3) BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 318-19.
4) MANUAL OF STEEL CONSTRUCTION, AISC 2016 15TH EDITION.
5) COLD-FORMED STEEL DESIGN MANUAL, AISI CFS D100-13.

B. DESIGN LOADS AND CRITERIA

1) UNIFORM GRAVITY LOADS (PSF):

LOCATION	DEAD LOAD	LIVE LOAD
ROOF	12	47 (+ UNBALANCED DRIFTING)

SNOW CRITERIA: GROUND SNOW LOAD = 56 PSF, Is= 1.1
EXPOSURE FACTOR Ce = 0.9, Ct = 1.1

2) WIND CRITERIA
3 SEC GUST WIND SPEED = 90 MPH
OCCUPANCY CATEGORY: II
Iw = 1.0 / EXPOSURE C
TOPOGRAPHIC ESCARPMENT Kzt= 1.28
INTERNAL PRESSURE COEFFICIENT: 0.18 ±
24 PSF MINIMUM FOR EXTERNAL WALL COMPONENTS & CLADDING
15 PSF MINIMUM NET UPLIFT FOR ROOF JOIST SPANS LESS THAN 13FT,
16 PSF MINIMUM NET UPLIFT FOR ALL OTHER ROOF JOISTS

3) SEISMIC CRITERIA:
SITE CLASS C
Ss = 0.15 / S1 = .04
I = 1.0 / USE GROUP I
DESIGN CATEGORY A
ANALYSIS PROCEDURE: SIMPLIFIED ANALYSIS
LATERAL FORCE RESISTING SYSTEM:
STEEL MOMENT FRAMES NOT DETAILED FOR SEISMIC RESISTANCE

4) SOIL BEARING PRESSURE: 1,500 PSF ON APPROVED SUBGRADE, SEE SECTION D.2

5) SOIL FRICTION COEFFICIENT: 0.35

6) LATERAL SOIL PRESSURE:
35 PCF ACTIVE EQUIVALENT FLUID PRESSURE
200 PCF PASSIVE EQUIVALENT FLUID PRESSURE
65 PCF AT-REST EQUIVALENT FLUID PRESSURE

8) FROST DEPTH: 48 INCHES

C. MATERIALS

1) CLASS A CONCRETE: (USE UNLESS NOTED OTHERWISE)	PORTLAND CEMENT ASTM C150 TYPE I/II FLY ASH ASTM C618, 10% - 25% BY WEIGHT WATER / CEMENT + FLY ASH = 0.45 MAXIMUM 28 DAY f'c = 4000 PSI AIR CONTENT 4.5% - 7.0% AIR CONTENT 3.0% MAX INTERIOR SLABS 3/4" MAX NORMAL WEIGHT AGGREGATE
2) REINFORCING BARS:	ASTM A615, GRADE 60, EXCEPT ASTM A706, GRADE 60, WHERE INDICATED TO BE WELDED.
3) ANCHOR RODS:	ASTM F1554 GRADE 36 OR 55 W/ ASTM A563 HEAVY HEX NUTS
4) GROUT:	ASTM C1107, NON-METALLIC NON-SHRINK, 3 DAY f'c = 4000 PSI
5) MORTAR:	ASTM C270, TYPE S
6) MASONRY GROUT:	ASTM C476 FINE, SLUMP XX"
7) STRUCTURAL STEEL:	
W SHAPES	ASTM A992, Fy = 50 KSI
OTHER ROLLED SHAPES	ASTM A36, Fy = 36 KSI
PLATES	ASTM A36, Fy = 36 KSI
8) HIGH STRENGTH BOLTS:	ASTM A325 TYPE 1 UNCOATED; STEEL TO STEEL CONNECTIONS
9) BOLTS:	ASTM A307; WOOD OR WOOD TO STEEL CONNECTIONS OR ERECTION ONLY
10) HEADED ANCHOR STUDS:	ASTM A108 GRADE 1010 - 1020, TYPE B, Fu = 60 KSI
11) WELD METAL:	F7X-EXXX OR E70XX OR AS APPROVED
12) ADHESIVE ANCHORS:	ASTM A 36 ALL-THREAD ROD W/ CHISEL POINT & INJECTABLE ADHESIVE SUCH AS HILTI HIT HY-150 FOR CONCRETE & SOLID MASONRY OR HIT HY-20 W/ SCREEN TUBES FOR HOLLOW MASONRY OR AS APPROVED.
13) SCREW ANCHORS:	ASTM B 633, CLASS SC1, TYPE III (SIMPSON TITEN HD'S OR EQUIV)
14) WOOD FRAMING:	2X4-2X10: HF #1 & BETTER, POSTS: DF/L SELECT STRUCTURAL
15) WOOD SHEATHING / PANELS:	AMERICAN PLYWOOD ASSOCIATION (APA) RATED "STRUCTURAL I" OR "SHEATHING" SUITED FOR SPAN & USE

D. FOUNDATIONS

1) FOUNDATIONS HAVE BEEN DESIGNED BASED ON INFORMATION PRESENTED IN THE IBC. FOLLOW RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE.
2) PLACE SLAB ON FIRM UNDISTURBED NATIVE MATERIAL, WITH THE TOP 6" SCARIFIED AND COMPACTED, OR ENGINEERED FILL PLACED OVER FIRM UNDISTURBED NATIVE MATERIAL. REMOVE EXISTING TOPSOIL AND ROOT MASS. ENGINEERED FILL MATERIAL SHALL BE MINUS 3" GRADED GRANULAR, APPROVED BY THE GEOTECHNICAL ENGINEER. PLACE ENGINEERED FILL IN UNIFORM LIFTS AND COMPACT TO 98% STANDARD PROCTOR ACCORDING TO ASTM D698. PLAN LIMITS OF ENGINEERED FILL MUST EXTEND AT LEAST 4'-0" BEYOND ALL FOOTING EDGES. IF ENCOUNTERED, EXISTING FILL SHALL BE REMOVED TO AN APPROVED DEPTH AND REPLACED WITH ENGINEERED FILL AS DESCRIBED ABOVE, PLACED AND COMPACTED AS DESCRIBED ABOVE.
3) DO NOT BACKFILL WALLS WITH UNBALANCED SOIL LEVELS UNLESS ADEQUATELY SHORED OR PERMANENT FLOOR PLATES ARE INSTALLED AND CONNECTIONS ARE COMPLETE - THIS DOES NOT INCLUDE RETAINING WALLS. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SHORING DESIGN AND INSTALLATION.
5) BACKFILL AND COMPACT BURIED WALLS OR GRADE BEAMS EVENLY ON EACH SIDE TO AVOID UNBALANCED LOADS. COMPACT LAYERS TO 95% STANDARD PROCTOR ACCORDING TO ASTM D698 EXCEPT 92% UNDER NON-PAVED AREAS.
6) ALWAYS PROVIDE POSITIVE SURFACE WATER DRAINAGE AWAY FROM THE STRUCTURE.

E. CONCRETE

1) PERFORM CONCRETE WORK IN ACCORDANCE WITH ACI 301-02 "STANDARD SPECIFICATION FOR STRUCTURAL CONCRETE" UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED.
2) MINIMUM REINFORCING BAR COVER:
3" AT UNFORMED SURFACES EXPOSED TO EARTH
2" AT FORMED SURFACES EXPOSED TO EARTH OR WEATHER FOR #6 AND LARGER
1 1/2" AT FORMED SURFACES EXPOSED TO EARTH OR WEATHER FOR #3-#5 AND, NOT EXPOSED TO EARTH OR WEATHER FOR REINFORCEMENT OF BEAMS OR COLUMNS
1½" AT SLABS AND WALLS NOT EXPOSED TO EARTH OR WEATHER
3) SPLICE REINFORCING BARS BY LAPPING ACCORDING TO THE SCHEDULE INDICATED. SPLICE WWF SHEETS BY LAPPING AT LEAST ONE PANEL WIDTH (TWO LONGITUDINAL BARS IN CONTACT) OR 10 INCHE MINIMUM. PLACE MECHANICAL CONNECTORS WHERE SHOWN.
4) ADD #5X6'-0" DIAGONAL EACH FACE AT ALL OPENING CORNERS AND #5X6'-0" DIAGONAL MID-DEPTH AT ALL RE-ENTRANT SLAB CORNERS UNLESS SHOWN OTHERWISE.
5) SECURE ALL REINFORCING, INCLUDING WWF, IN POSITION WITH CHAIRS BEFORE CONCRETE PLACEMENT. CONCRETE DOBIES MAY BE USED TO POSITION SLAB ON GRADE REINFORCEMENT.
6) TIE DOWELS IN PLACE BEFORE PLACING CONCRETE. DO NOT STAB OR "WET-SET" DOWELS.
7) INSTALL AND SECURE EMBEDMENTS SUCH AS ANCHOR RODS AND EMBEDMENT PLATES WITHIN SPECIFIED TOLERANCES BEFORE CONCRETE PLACEMENT.
8) MECHANICALLY VIBRATE ALL CONCRETE PLACEMENTS EXCEPT SLABS LESS THAN 5" THICK.
9) PROTECT AND CURE ALL CONCRETE SURFACES. BEGIN CURING WALLS IMMEDIATELY AFTER STRIPPING FORMS AND FLATWORK IMMEDIATELY AFTER FINISHING.
10) CONCRETE SURFACES TO RECEIVE GROUT UNDER COLUMN BASEPLATES MUST BE PREPARED BY LIGHT BUSH HAMMERING (1/4" AMPLITUDE) THE GROUTED AREA AND PRE-SOAKING.

F. WOOD FRAMING

1) TRUSSES SHALL BE DESIGNED BY THE MANUFACTURER TO SUPPORT ALL SUPERIMPOSED LOADS INDICATED IN SECTION "B" AND LOADS TRANSFERRED BY FRAMING MEMBERS (IE. OVERFRAMING, STRUCTURAL FASCIA,...) INDICATED ON ROOF FRAMING PLAN(S) AND ANY ADDITIONAL LOADS REQUIRED. TRUSS DESIGNS MUST BE STAMPED WITH A SOUTH DAKOTA ENGINEERS SEAL ON THE DRAWINGS.
2) ENGINEERED WOOD PRODUCTS (WOOD I-JOISTS & LAMINATED VENEER LUMBER) SHOWN ON THE DRAWINGS ARE THE PRODUCTS OF ROSEBURG FOREST PRODUCTS AND ARE INDICATED BY THE MANUFACTURER'S STANDARD PRODUCT NUMBERS. THE INTENT OF THE DESIGN IS FOR THESE ITEMS TO BE ATTACHED TO EACH OTHER AND TO THE SURROUNDING STRUCTURE TO BEHAVE AS A SYSTEM. WHETHER SHOWN OR NOT, PROVIDE ACCESSORY ITEMS (BLOCKING, CLIPS, STIFFENERS, STRAPS, ETC.) DESIGNED BY THE MANUFACTURER FOR A COMPLETE SYSTEM. FOLLOW ALL MANUFACTURERS RECOMMENDATIONS FOR INSTALLATION AND USE.
3) FRAMING CONNECTORS, ANCHORS, AND HANGERS SHOWN ON THE DRAWINGS ARE THE PRODUCTS OF SIMPSON STONG-TIE COMPANY, SAN LEANDRO, CALIFORNIA AND ARE DESIGNATED BY THE MANUFACTURERS STANDARD PRODUCT NUMBERS. FOLLOW ALL MANUFACTUER'S RECOMMENDATIONS FOR INSTALLATION AND USE. PRODUCTS WITH EQUIVALENT CAPACITY AND QUALITY MAY BE SUBSTITUTED AFTER A SUBSTITUTION SUBMITTAL HAS BEEN PROVIDEDED BY THE GENERAL CONTRACTOR AND FINALAPPROVAL BY THE STRUCTURAL ENGINEER.
4) FLOOR AND ROOF SHEATHING:
LAY PLYWOOD PANELS WITH FACE GRAIN PERPENDICULAR TO SUPPORTS. STAGGER ALL END JOINTS AND PLACE AS INDICATED IN "CASE 1" OF IBC TABLE 2306.3.1.

LOCATION	MATERIAL	NAILING
FLOOR	¾" T&G, 40/20 MIN. SPAN RATING	0.131" DIAMETER AT 6" AT ALL SUPPORTED PANEL EDGES, 0.131" DIAM AT 12" AT INTERMEDIATE SUPPORTS, GLUE AND NAIL TO SUPPORTING FRAMING
ROOF	½" 32/16 SPAN RATING	0.131" DIAMETER AT 6" AT ALL SUPPORTED PANEL EDGES, 0.131" DIAM AT 12" AT INTERMEDIATE SUPPORTS,

5) ALL LAG BOLTS SHALL HAVE LEAD HOLES DRILLED THE SMAE DIAMETER FOR THE SHANK AND 50% OF THE SHANK DIAMETER OF THE THREADED PORTION. LUBRICATE THREADS BEFORE INSTALLATION.
6) STAGGER ALL END JOINTS 32" MINIMUM. FASTEN PANELS TO SUPPORTING FRAMING AND BLOCKING AS INDICATED. (SEE SHEAR WALL SCHEDULE AND FRAMING PLANS FOR CRITICAL NAILING.)
7) NO PANELS LESS THAN 12 INCHES WIDE SHALL BE USED.
9) FASTENERS SHALL NOT BE LESS THAN ⅜" FROM PANEL EDGES.
8) NAIL HEADS SHALL NOT PENETRATE BEYOND A FLUSH CONDITION WITH FACE OF SHEATHING.
9) NAILING REQUIREMENTS NOT SPECIFIED ON THE CONSTRUCTION DOCUMENTS SHALL BE IN ACCORDANCE WITH THE FASTENING SCHEDULE IN TABLE 2304.9.1 IN THE IBC.
10) FASTEN BUILT UP OR 2 PLY + MEMBERS TOGETHER PER IBC TABLE OR MANUFACTURERS RECOMMENDATIONS.

G. STRUCTURAL STEEL

1) DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH THE LRFD, 3RD EDITION OF AISC "MANUAL OF STEEL CONSTRUCTION AND AISC CODE OF STANDARD PRACTICE."
2) ALL STEEL TO STEEL BOLTED CONNECTIONS SHALL CONFORM TO THE CURRENT RCSC "SPECIFICATIONS FOR STRUCTURAL JOINTS" USING ASTM A325 BOLTS AS ENDORSED BY AISC.
3) GENERALLY, BEAM CONNECTIONS HAVE BEEN DESIGNED AS BEARING TYPE AND BOLTS MAY BE INSTALLED TO A SNUG-TIGHT CONDITION UNLESS INDICATED TO BE PRE-TENSIONED. BRACE OR MOMETN FRAME AND DRAG / CHORD CONNECTIONS HAVE BEEN DESIGNED AS SLIP CRITICAL AND MUST PRE-TENSIONED. TENSION BOLTS INDICATED AS SUCH BY EMPLOYING ONE OF THE FOLLOWING METHODS:
TENSION CONTROLLED BOLTS (TWIST-OFF BOLTS) PREFERRED,
DIRECT TENSION INDICTOR (TENSION INDICATING WASHERS), OR
TURN-OF-THE-NUT WITH COLOR MATCH-MARKING.
COORDINATE BOLT TENSIONING WITH ENGINEER / INSPECTOR.
4) PERFORM SHOP AND FIELD WELDING IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY'S STRUCTURAL WELDING CODE. SHOP OR FIELD WELDS AT NON-BOLTED CONNECTIONS THAT ARE NOT SPECIFICALLY DETAILED SHALL BE 3/16" CONTINUOUS FILLETS AT EACH CONTACT EDGE OR SUFACE.
5) ALL WELDERS SHALL HAVE EVIDENCE OF PASSING THE AWS STANDARD QUALIFICATION TEST FOR THE TYPE OF WORK BEING PERFORMED.
6) HEADED ANCHOR STUD WELDING MUST CONFORM TO INSTALLATION SPECIFICATIONS PROVIDED BY THE STUD MANUFACTURER.
7) NON-DESTRUCTIVE WELD TESTS MAY BE PERFORMED. DEFICIENT WELDS WILL BE CORRECTED BY THE CONTRACTOR AND RE-TESTED AT THEIR EXPENSE.
8) DO NOT SHOP PAINT FAYING SURFACES OR PRE-TENSIONED BOLTED CONNECTIONS OR SURFACES SCHEDULED TO RECEIVE, SHOP OR FIELD INSTALLED, HEADED ANCHOR STUDS.
9) THE ERECTOR SHALL NOT EMPLOY FIT-UP MEANS BEYOND THE USE OF DRIFT PINS OR MINOR HOLE REAMING. CORRECTION OF FIT-UP ERRORS OR MODIFICATIONS, INCLUDING ANCHOR RODS, OF ANY DEGREE SHALL BE DISCUSSED WITH THE FABRICATOR AND ENGINEER AND METHODS APPROVED BY THEM BEFORE ACTIONS ARE TAKEN.
10) GROUT UNDER COLUMN BASEPLATES AFTER THE STRUCTURE IS ERECT AND PLUMB BUT BEFORE PLACMENT OF ELEVATED SLABS OR ROOFING.

H. SPECIAL INSPECTIONS

1) SPECIAL INSPECTIONS DESCRIBED BELOW WILL BE PERFORMED UNDER SEPARATE CONTRACT BY AGENCIES RETAINED BY THE PROJECT OWNER. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING THE ENGINEER APPRISED OF WORK PROGRESS AS IT PERTAINS TO SPECIAL INSPECTIONS AND ENSURING THAT NO WORK REQUIRING SPECIAL INSPECTIONS IS CONCEALED BEFORE SPECIAL INSPECTIONS OCCUR. SEE PROJECT SPECIFICATIONS FOR OTHER INSPECTIONS AND MATERIALS TESTING REQUIREMENTS.

REINFORCING STEEL:	INSPECT BEFORE CONCRETE OR GROUT PLACEMENT. (INCLUDES SLABS-ON-GRADE AND ELEVATED SLABS)
REINFORCED CONCRETE:	CONTINUOUS INSPECTION DURING CONCRETE PLACEMENT EXCEPT PERIODIC INSPECTION FOR SLABS-ON-GRADE AND ELEVATED SLABS. (INCLUDES VERIFICATION OF PROPER MIX DESIGN AND CURING METHODS)
ANCHOR RODS:	INSPECT ALL BEFORE CONCRETE PLACEMENT.
ADHESIVE ANCHORS:	PERIODIC INSPECTION DURING OR AFTER INSTALLATION.
EMBEDMENT PLATES:	INSPECT ALL BEFORE CONCRETE PLACEMENT.
STRUCTURAL STEEL:	PERIODIC INSPECTION DURING OR AFTER INSTALLATION.
WELDING:	PERIODIC INSPECTION OF ALL WELDS. (INCLUDES STRUCTURAL STEEL, STEEL JOIST AND DECK, HEADED ANCHOR STUDS, STAIRS & RAILING)

I. ABBREVIATIONS LIST - (SOME OF THE LISTED ABBREVIATIONS MAY NOT APPEAR ON THE DRAWINGS)

ANC	ANCHOR
ALT	ALTERNATE
BRG	BEARING
BTWN	BETWEEN
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONN	CONNECTION / CONNECTOR
CONT	CONTINUE / CONTINUOUS
HAS	HEADED ANCHOR STUD
PROJ	PROJECTION
REINF	REINFORCEMENT / REINFORCING
REQ	REQUIRED
SIM	SIMILAR
STIFF	STIFFENER
THK	THICK/THICKNESS
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL

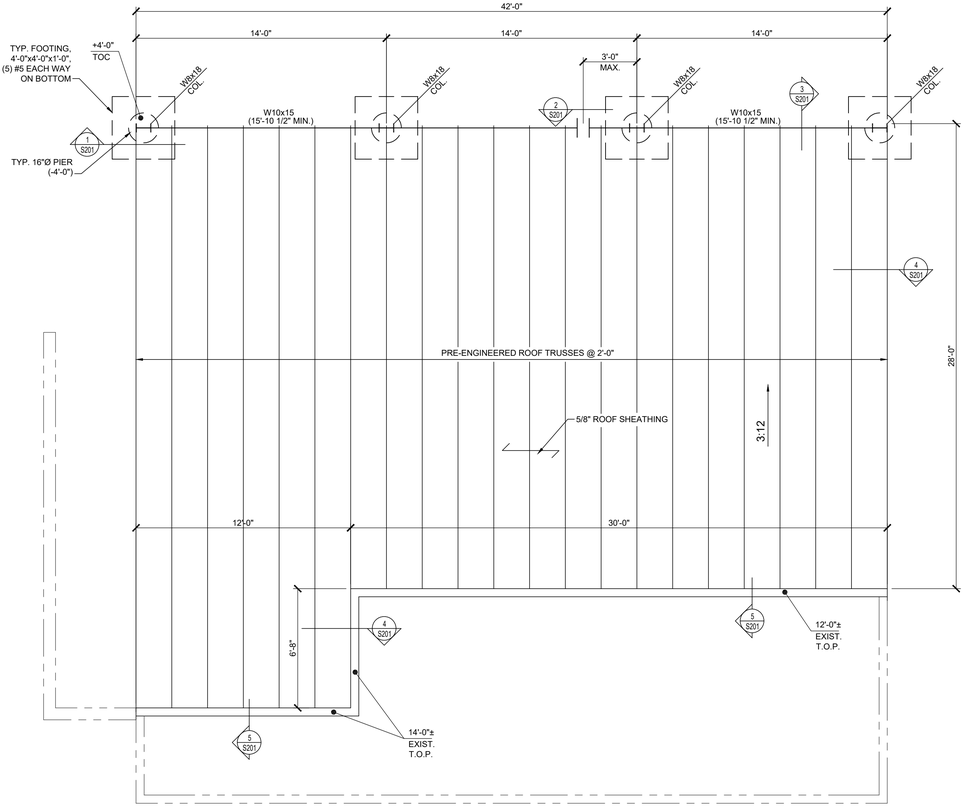
J. DEFERRED SUBMITTALS

DOCUMENTATION, SUCH AS DETAIL DRAWINGS AND CALCULATIONS, FOR DEFERRED ITEMS WILL BE REVIEWED BY THE ENGINEER WHEN AVAILABLE AND FORWARDED TO THE BUILDING OFFICIAL.

1) OPEN WEB TRUSS

K. MISCELLANEOUS

1) REFERENCE CIVIL DRAWINGS FOR BUILDING LOCATION AND ORIENTATION ON THE SITE. DRAWING ELEVATIONS REFERENCE CIVIL DATUM.
2) DETAIL MARKS ANNOTATED ON PLANS ARE INTENDED TO INDICATE SPECIFIC CONFIGURATION(S) AND INFORMATION - FOR PLAN CLARITY, EVERY LOCATION WHERE A SPECIFIC DETAIL MAY APPLY IS NOT ANNOTATED. CONTACT THE ENGINEER IF CLARIFICATION IS NEEDED.
3) COORDINATE OPENINGS AND EMBEDDED ITEMS IN CONCRETE AND MASONRY WORK WITH ALL TRADES.
4) NOTIFY ENGINEER OF ANY DISCREPANCIES DISCOVERED WITH OTHER TRADES.
5) CONSTRUCTION LOADS SHALL NOT BE GREATER THAN THE DESIGN LOADS INDICATED IN SECTION B.1 UNLESS REVIEWED AND APPROVED BY THE ENGINEER.
6) EQUIPMENT OPENINGS INDICATED ARE FOR REFERENCE ONLY. COORDINATE EXACT LOCATIONS, DIMENSIONS AND DETAILS WITH EQUIPMENT MANUFACTURERS AND TRADES.
7) TEMPORARILY BRACE THE STRUCTURE TO RESIST ALL LOADS OR COMBINATIONS OF LOADS UNTIL ALL PERMANENT ELEMENTS ARE IN PLACE AND ALL CONNECTIONS ARE COMPLETE AS SHOWN
8) COST ASSOCIATED WITH STRUCTURAL BRAWING CHANGES RESULTING FROM USE OF ALTERNATES OR SUBSTITUTIONS, INCLUDING MECHANICAL EQUIPMENT, ARE THE CONTRACTOR'S RESPONSIBILITY.



1 S101 FOUNDATION PLAN

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

REVISIONS

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8926
LANCE L. REDINGER
SOUTH DAKOTA

FIRST GOLD HOTEL
-
DEADWOOD, SOUTH DAKOTA

LANCE ENGINEERING

PRECISION DESIGN

LANCE ENGINEERING
605-642-3680
19751 ST. ONGE RD
ST. ONGE, SD 57779

Drawn By RJT
Checked By LLR
Date 4/16/21
LE # 20253
Cad File S101.DWG

SHEET TITLE:
FOUNDATION PLAN

SHEET#
S101