STRUCTURAL LEGEND AND ABBREVIATIONS

MATERIAL LEGEND

CONCRETE · EARTH, SOIL · EXISTING · GRAVEL · GROUT · STEEL

RIGID BOARD · ROCK · TILT-UP OR PRECAST · WOOD DECKING · WOOD

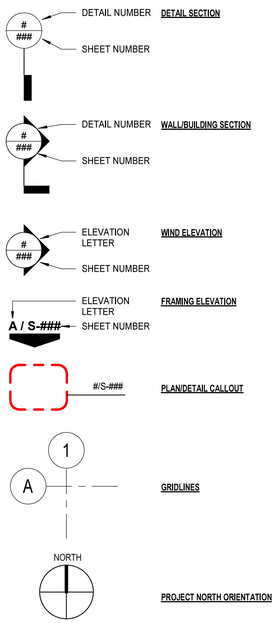
DEMO WALL · WALL TERMINATES AT THIS LEVEL · EXISTING WALLS · CMU WALLS

STEEL COLUMNS · CONCRETE COLUMNS · CONCRETE WALLS

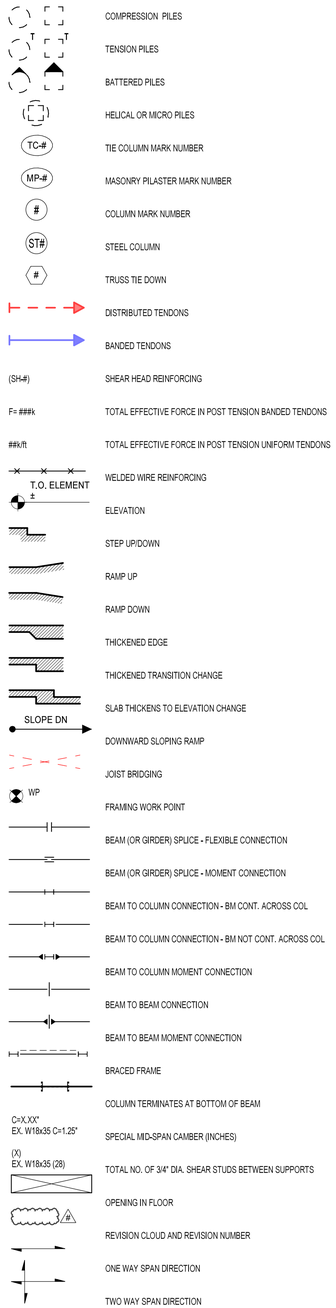
LINE SYMBOLS

- CENTERLINE / GRIDLINE
- JOIST
- JOIST GIRDER
- BEAM
- GIRDER
- PROPERTY LINE
- X'-X" DIMENSION LINE TICK
- X'-X" DIMENSION LINE ARROW
- BREAK LINE
- PIPE/TUBE BREAK LINE

SECTION SYMBOLS

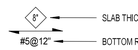


SYMBOLS LEGEND:

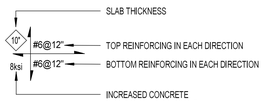


SLAB REINFORCING LEGEND:

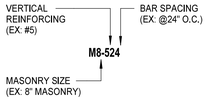
ONE WAY SLAB EXAMPLE



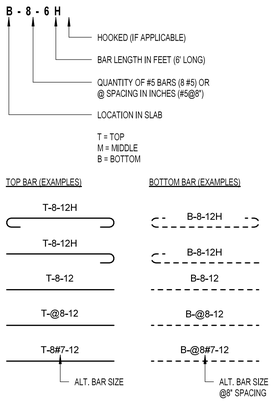
TWO WAY SLAB EXAMPLE



MASONRY REINFORCING LEGEND



SLAB BAR DESIGNATION LEGEND



TEXT SYMBOLS

@	AT (for spacing call-outs only)
℄	CENTERLINE
∅	DIAMETER
#	NUMBER, POUNDS (lbs)
d	NAIL (PENNY WEIGHT)
>	GREATER THAN
<	LESS THAN

STRUCTURAL ABBREVIATIONS

ACT	Actual
ADDL	Additional
ADH	Adhesive
ADJ	Adjacent
AFF	Above finished floor
AHJ	Authority Having Jurisdiction
AHU	Air handling unit
ALT	Alternate
ALUM	Aluminum
APPROX	Approximate (ly)
ARCH	Architect (ural)
ASD	Allowable Stress Design
B, BOT	Bottom
B-	Concrete beam mark
B.O.	Bottom of
B/B	Back to back
BLDG	Building
BLK	Block (not concrete block)
BM	Beam
BP	Base plate
BRDG	Bridging
BRG	Bearing
BSMT	Basement
BTWN	Between
C	Channel
C-	Column mark
C/C	Center to center
CANT	Cantilever
CFS	Cold Formed Steel
CG	Center of gravity
CIP	Cast in place
CJ	Control joint
CL	Center line, clear
CLR	Clear or clearance
CM	Construction manager
CMU	Concrete masonry unit
COL	Column
CONC	Concrete
CONN	Connection, connect
CONST	Construction
CONST JT	Construction joint
CONT	Continuous(ation)
CONTR	Contractor
COORD	Coordinate(tion)
CTR ('D)	Center(ed)
D	Depth
DBA	Deformed bar anchor
DBL	Double
DIA	Diameter
DIAG	Diagonal
DIM	Dimension
DL	Dead load
DN	Down
DS	Double stirrup
DT	Double ties
DTL	Detail
DWG (S)	Drawing(s)
DWL	Dowel
EA	Each
EB	Expansion bolt
EE	Each end
EF	Each face
EJ	Expansion joint
EL	Elevation
ELEV	Elevator
EMBED	Embedment
ENGR	Engineer
EOR	Engineer of Record
EQ	Equal
EQUIP	Equipment
ES	Each side
EW	Each way
EX	Example
EXIST	Existing
EXP	Expansion
EXT	Exterior
fc	Compressive strength of concrete
f'm	Compressive strength of masonry
F-	Footing mark
FC	Filled cell
FD	Floor drain
FDN	Foundation
FF	Finished floor
FLG	Flange
FLR	Floor
FOC	Face of concrete
FRMG	Framing
FS	Far side
FT	Foot, feet
FTG	Footing
FV	Field verify
fy	Yield strength of struct steel
GA	Gauge
GALV	Galvanized
GB-	Grade beam mark
GC	General contractor
GL	Glu lam
GND	Ground
GR	Grade
HC	Hollow core
HDG	Hot dipped galvanized
HJR	Horizontal joint reinf
HK	Hook
HORIZ	Horizontal
HP	High point
HSA	Headed stud anchor
HSS	Hollow structural section
HT	Height
ID	Inside diameter
IF	Inside face
IJ	Isolation joint
IN	Inch
INCL	Include, included, including
INFO	Information
INSUL	Insulate, insulated, insulation
INT	Interior
INTERM	Intermediate
ITB	Inverted tee beam
JG	Joist girder
JST	Joist
JT	Joint
k	KIP, Kilopound(s)
K/FT	Kips per foot
kg	Kilogram
kN	Kilonewton
KSF	Kips per square foot
KSI	Kips per square inch
L	Length, long
LB	Link beam
lb	Pound
LG	Long
LL	Live load
LLBB	Long leg back to back
LLH	Long leg horizontal
LLV	Long leg vertical
LONG	Longitudinal
LP	Low point
LRFD	Load and resistance factor design
LSL	Long slotted holes
LT WT	Lightweight
LVL	Laminated veneer lumber
LW	Long way
LWC	Lightweight concrete
LWIC	Lightweight insulating concrete
M	Mega 1000
m	Meter
MAS	Masonry
MAX	Maximum
MC	Miscellaneaous channel
MC-	Masonry column mark
MECH	Mechanical
MEP	Mechanical, Electrical, Plumbing
MEZZ	Mezzanine
MFR	Manufacturer(ed)
MID	Middle
MIN	Minimum
MISC	Miscellaneous
MJ	Masonry joint
mm	Millimeters
MO	Masonry opening
MP-#	Masonry Pilaster
MPa	Megapascal
MPH	Miles Per Hour
MTL	Metal
Mu	Factored moment
N	Newton
N/A	Not applicable
NA	Neutral axis
NAVD	North American Vertical Datum
NGVD	National Geodetic Vertical Datum
NIC	Not in contract
No.	Number
NOA	Notice of Acceptance
NOM	Nominal
NS	Near side
NTS	Not to scale
O/O	Out to out
OC	On center
OD	Outside diameter
OF	Outside face
OPNG	Opening
OPP	Opposite
OPP HD	Opposite hand
OVS	Oversize(d) holes
Pa	Pascal = N/Sq m
PAF	Powder actuated fastener
PC	Precast
PC-	Pile cap mark
PCJ	Precast concrete joist
PDT	Precast double tee
PL	Plate
PLF	Pounds per linear foot
PREFAB	Prefabricate(d)
PROJ	Projection
PS	Prestressed
PSF	Pounds per square foot
PSI	Pounds per square inch
PT	Post tensioned/pressure treated
PVC	Polyvinyl chloride
R	Remainder
R#'-#"	Radial dimension
RAD	Radius
RD	Round, roof drain
REF	Refer, reference
REG	Regular
REINF	Reinforce(d)(ment)(ing)
REQ	Require(d)(ment)
RET	Return
REV	Revision
RM	Room
RO	Rough opening
RP	Radius point
RT	Right
RTU	Roof top unit
RW	Retaining wall
#SB-	Soffit beam mark, level specific
S	Stirrup, short
SA	Sleeve anchor
SB-	Soffit beam mark
SC	Slip critical
SCHED	Schedule
SDL	Superimposed dead load
SECT	Section
SF	Square foot(feet), step footing
SHT	Sheet
SIM	Similar
SJ	Saw cut joint
SL	Slab, direction of floor or roof slope
SL BRG	Slide bearing
SLBB	Short leg back to back
SLV	Short leg vertical
SOG	Slab on grade
SP	Spacing(es)
SPEC(S)	Specification(s)
SQ	Square
SS	Stainless steel
SSL	Short slotted holes
STD	Standard
STIFF	Stiffeners
STL	Steel
STRUCT	Structural
SW	Short way
SW-#	Shear wall mark
SYM	Symmetrical
T	Top, tie(s)
t	Thickness
T&B	Top and bottom
T.O.	Top of
T.O.B	Top of beam
T.O.C	Top of concrete
T.O.D	Top of deck
T.O.F	Top of footing
T.O.GB	Top of grade beam
T.O.PC	Top of pilecap; Top of precast
T.O.SL	Top of slab
T.O.SS	Top of structural steel
T.O.W	Top of wall
TB-	Tie beam mark
TC-#	Tie Column Mark
TEMP	Temporary, temperature
TERM	Terminate
THK(N)	Thick, thicken(ed)
THRD	Threaded
TOL	Tolerance
TR	Tread
TRAN	Transverse
TT	Triple tie
Tu	Factored torsion
TW	Tunnel wall
TYP	Typical
U BAR	U shape bar
ULT	Ultimate
UNIF	Uniform
UON	Unless otherwise noted
UPT	Upturned
US	Underside
VERT	Vertical
Vu	Factored shear
W	Width / Wide flange beam
w/	With
w/o	Without
WA	Wedge anchor
WB	Wind brace
WD	Wood
WF-	Wall footing mark
WL	Wind load
WP	Work point, waterproofing
WS	Waterstop
WT	Weight
WWR	Welded wire reinforcing
XS	Extra Strong
XXS	Double Extra Strong

STRUCTURAL CODE STANDARDS

ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASTM	American Society of Testing & Materials
AWS	American Welding Society
CRSI	Concrete Reinforcing Steel Institute
FBC	Florida Building Code
FEMA	Federal Emergency Management Agency
IBC	International Building Code
ICC-ES	Internation Code Council-Evaluation Service
NDS	National Design Specification for Wood Construction
NFPA	National Forest Products Association
OSHA	Occupational Safety and Health Administration
PCI	Precast/Prestressed Concrete Institute
PTI	Post Tensioning Institute
SJI	Steel Joist Institute
TAS	Testing Application Standard
TMS	The Masonry Society
UL	Underwriter's Laboratory

REFERENCE SHEETS

Carbon design + architecture
FLORIDA LIC No: AR95989

CLIENT DATA

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PROJECT DATA

Project No: 24020
Project Na: OCALA SUNTRAN RESTROOMS & KIOSK

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To the best of the Structural Engineer's knowledge, the Plans and Specifications comply with the applicable minimum building codes.

ISSUE + REVISION DATA

No:	Description:	Date:

ARCHITECTURE SEAL

05.28.2024

DRAWN BY S.C

CHECKED BY L.A

S-100

ABBREVIATIONS & SYMBOLS

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STRUCTURAL NOTES

SS-5 GR A325 bolts shall comply with "Specification for Structural Joints Using High Strength Bolts", including Commentary.

A. Typical bolts used in structural connections for this Project are 3/4" diameter GR A325N.

B. Tighten bearing-type bolts (GR A325N and GR A325X) to the snug tight condition as follows:

1. Bolts shall be placed in all holes, with washers positioned as required and nuts threaded to complete the assembly.
2. Compacting the joint to the snug-tight condition shall progress systematically from the most rigid part of the joint.
3. The snug-tightened condition is the tightness that is attained with a few impacts of an impact wrench or the full effort of an ironworker using an ordinary spud wrench.
4. More than one cycle through the bolt pattern may be required to achieve the snug-tightened joint.

C. Provide hardened washers conforming to ASTM F436 and place under the part being turned.

D. Do not reuse or retighten bolts which have been fully tightened. Use only non-galvanized nuts and bolts that are clean, rust-free, and well lubricated. Hex head bolts and nuts shall be wax dipped by the bolt supplier or lubricated with Castrol Industrial Stick Wax. Cleaning and lubrication of ASTM F3125, Grade F1852 and F2280 twist-off tension-control bolts is not permitted.

E. Store fastener components in sealed containers until ready for use. Reseal open containers to prevent contamination by moisture or other deleterious substances. Store closed containers from dirt and moisture in a protective shelter. Take from protective storage only as many fastener components as are anticipated to be installed during the work shift. Fastener components that are not incorporated into the work shall be returned to protective storage at the end of the work shift. Fasteners from open containers and fasteners that accumulate rust or dirt shall not be used and shall be immediately and permanently removed from the project site.

SS-6 Use A-307 bolts for all erection bolts and bolts less than 3/4" diameter, u.o.n.

SS-7 Anchor rods shall be ASTM F1554 Grade 55 with supplementary requirement S1.

SS-8 Setting base and bearing plates: clean concrete and masonry bearing surface of bond-reducing materials and clean bottom of base and bearing plate.

A. Set base or bearing plate on wedges or other adjusting devices.
B. Tighten anchor rods after structural steel frame has been plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.
C. Pack or pour non-shrink grout solidly between bearing surface and base or bearing plate. Ensure that no voids remain. Finish exposed surfaces, protect grout and allow to cure.
D. For proprietary grout materials, comply with manufacturer's instructions.
E. Base plates must be grouted a minimum of 72 hours prior to placing concrete slabs on supporting steel structure.

SS-9 Cut, drill, or punch holes perpendicular to metal surfaces. Ream holes that must be enlarged to admit bolts as permitted by Architect. Do not enlarge unfair holes by burning or using drift pins.

SS-10 Space filler beams equally between supports, U.O.N.

SS-11 Do not splice structural steel members except where indicated on the drawings.

SS-12 See Ar-chitectural and Mechanical Drawings for miscellaneous steel not shown on the Structural Drawings.

SS-13 Refer to Architectural Drawings and/or Project Specifications for painting and fireproofing of structural steel. Do not paint steel surfaces in contact with concrete or fireproofing.

PRE-ENGINEERED WOOD TRUSSES

WT-1 Design and fabricate all metal connected trusses to comply with Plan Specifications or Specification Sections 061753, and Florida Building Code, 8th Edition (2023), and NDS "National Design Specification", and TPI 1 "National Design Standard for Metal Plate Connected Wood Truss Construction".

WT-2 Truss System: In accordance with Rule 61G15-31.003 of the Florida Administrative Code, the Truss System Engineer, a Delegated Engineer, shall design the Truss System. The Truss System Engineer shall submit shop drawings and calculations for review to Architect/Engineer for the assemblage of prefabricated, engineered wood trusses and truss girders, together with all bracing, connections and other structural elements and all spacing and location criteria (truss placement plan), that, in combination, function to support the dead, live and wind loads applicable to the roof Truss System. The Truss System does not include walls, or any other structural support systems. These shop drawings and calculations shall be signed and sealed by the Truss System Engineer. Truss Placement Plan that do not deviate from the permit drawings is not required to be signed and sealed.

WT-3 Truss Design Engineer: In accordance with Rule 61G15-31.003 of the Florida Administrative Code, the Truss Design Engineer, a Delegated Engineer, shall design the individual trusses of the Truss System, but does not design the Truss System. The Truss Design Engineer shall submit shop (piece) drawings and calculations for all different trusses and their connections to each other, of the Truss System such that each truss will function to support the dead, live and wind loads applicable to each truss and truss girder that together comprise the Truss System. These shop drawings and calculations shall be signed and sealed by the Truss Design Engineer.

WT-4 The Truss System Engineer and the Truss Design Engineer shall each be responsible for their own work. However, they may be the same individual providing two separate services.

WT-5 The loads, layouts and connections provided on the structural construction documents are the minimums to be followed by the Truss System Engineer and the Truss Design Engineer.

WT-6 Pre-fabricated wood trusses shall be fabricated from Southern Pine, kiln dried, #2 or better for chords and #3 grade or better for webs. Use stress-rated timber for all wood structural members. Moisture content of all lumber used in wood truss fabrication shall not exceed 19%.

WT-7 No wane, skips or other defects shall occur in the plate contact area or scarfed area of web members. Plates shall be connected with one required each side of truss.

WT-8 Minimum design loads for trusses:

A. Sloped top chord roof trusses, 6:12
Top Chord: Dead Load = 15 psf Live Load = 20 psf
Bottom Chord: Dead Load = 10 psf

B. Flat top chord roof trusses
Top Chord: Dead Load = 20 psf Live Load = 30 psf
Bottom Chord: Dead Load = 10 psf

C. Mechanical Units - See plans for location and loads.

D. Fabricator to design trusses and supply additional bridging as required to resist the wind uplift force shown on these drawings.

Bottom chord live loads do not act concurrently with top chord live loads.

WT-9 Roof sheathing shall be 19/32" thick Exposure 1, Structural 1 plywood roof sheathing. Connect to the prefabricated wood trusses as shown in the drawings. Place face grain perpendicular to supports. Place sheathing with staggered joints and continuous over 2 or more spans with grade stamp exposed for inspection. Provide 1/16" space at end joints and 1/8" at edge joints. Provide plyclips along edge joints between supports.

WT-10 Handling, erection and bracing of wood trusses shall be in accordance with "Handling and Erecting Wood Trusses Commentary and Recommendations (HET-80)" by the Truss Plate Institute, latest editions.

WT-11 For trusses spanning 60 feet or greater, the contractor shall contract a qualified registered engineer for the design of the temporary installation bracing and permanent bracing of the trusses.

WT-12 Permanent truss bracing or bridging members shall be 2" x 4" minimum Southern Pine with minimum locations as noted on plans. Additional bracing required to strengthen truss components should be noted on the erection drawings in accordance with truss manufacturer's recommendations. Minimum permanent bridging criteria for pre-engineered trusses:

A. Provide 2" x 4" continuous horizontal bridging at top and bottom chords at ridge and 10'-0" O.C. maximum. Add diagonal cross bracing (12:12 slope) at each bridging line on 20' O.C. max or twice the horizontal run of the diagonal.

B. In the plane of the bottom chord: Place 2" x 4" between continuous lateral bracing at 45 degree angle at each end of building, and at 20' O.C.

C. Provide continuous 2" x 4" @ 48" O.C. perpendicular to trusses at top chord where roof plywood is not rigidly attached to top chord of truss.

D. Provide continuous 2" x 4" @ 48" O.C. at bottom chord where a rigid ceiling is not firmly attached directly to the bottom chord.

WOOD

WD-1 All wood construction and connections shall conform to AITC "American Institute of Timber Construction" manual, and to NDS "National Design Specifications" for wood construction, and to the Florida Building Code, 8th Edition (2023), Chapter 23, and Plan Specifications or Specification Section 061100.

WD-2 All member sizes are to be as shown on drawings and provide the following minimum properties:

Member	Species	Fb (psi)	Fv (psi)	Fc_{Perp} (psi)	$Fc_{Parallel}$ (psi)	E (psi)	E_{min} (psi)
A. 2"-4" Wide	S.P.#1	1500	175	565	1650	1,600,000	580,000
B. 2"-4" Wide	S.P.#2	1100	175	565	1450	1,400,000	510,000
C. 2"-4" Wide	S.P.#3	650	175	565	850	1,300,000	470,000
D. 5"-6" Wide	S.P.#1	1350	175	565	1550	1,600,000	580,000
E. 5"-6" Wide	S.P.#2	1000	175	565	1400	1,400,000	510,000
F. 8" Wide	S.P.#1	1250	175	565	1500	1,600,000	580,000
G. 8" Wide	S.P.#2	925	175	565	1350	1,400,000	510,000

WD-3 All wood in contact with concrete or masonry shall be pressure treated.

WD-4 All bolts for bolted connections shall conform to ASTM A307, U.O.N. Use washers between wood and all bolt heads and nuts.

WD-5 All metal wood connectors shall be galvanized or stainless steel type 316.

WD-6 Do not splice structural members between supports unless otherwise indicated.

WD-7 Where beams or columns are formed of two or more members, they shall be full length and fastened together per table on these drawings.

WD-8 Stud walls shall be of stud size and spacing as specified in the schedule on the drawings. Provide horizontal blocking in stud walls per schedule.

WD-9 Do not notch in middle third of joists; limit notches to one-sixth depth of joist. Holes may be bored in the middle third of the depth of the joist, and not larger than one-sixth depth of joist; do not locate closer than 2 inches from top or bottom. Space between holes shall not be less than depth of Joist.

WD-10 Frame floor openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches or supporting more than one joist.

WD-11 Exterior non-shear walls shall have 19/32" plywood, rated Exposure 1 sheathing with studs spaced not more than 16" O.C. Plywood shall be nailed to support with 10d galvanized box nails @ 6" O.C. maximum at all panel edges and intermediate framing, and at 4" o.c. at corner studs. Block all panel edges. For interior and exterior shear walls, see drawings for sheathing type, thickness, and attachment.

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Carbon design + architecture
FLORIDA LIC No: AR95989

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Client:
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PROJECT DATA
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Project Na: OCALA SUNTRAN
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ISSUE + REVISION DATA

No:	Description:	Date:

ARCHITECTURE SEAL

05.28.2024
DRAWN BY S.C
CHECKED BY L.A

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STRUCTURAL NOTES

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STRUCTURAL PLAN SPECIFICATIONS

GENERAL NOTES

SGN-1 These Plan Specifications are intended to be used for projects without Project Specification Books. If they are accidentally issued along with a Project Specification Books, the Project Specification Books shall supersede the Plan Specifications.

SGN-2 The roof members are designed for a vertical deflection of L/240 at roofs. It is advised that all interior partitions and exterior precast or curtain wall system be attached to the structure by the Delegated engineer, with a connection that would allow for vertical movement.

SHOP DRAWINGS AND SUBMITTALS

SSD-1 Material substitution shall not be submitted in the shop drawings without a substitution request being made to the Architect in advance and in writing, along with detailed substitution cost savings to be credited to the Owner. Upon approval by the Architect, the material substitution can be included in the submitted shop drawings.

SSD-2 All signed and sealed Shop Drawings prepared by a Delegated Engineer shall be accompanied by signed and sealed calculations. Shop Drawing submittals without calculations will be returned without review.

SSD-3 All structural Shop Drawings shall be submitted in PDF format to BNI for review and approval. Submittals shall be reviewed and electronically stamped by the Contractor as having "No Exception Taken".

SSD-4 Manufacturer Literature and Product Data shall be submitted in PDF format. The submittals will be stamped as "Received, for record only" by BNI and returned accordingly.

SSD-5 All structural Shop Drawings and calculations prepared by a Delegated Engineer shall be submitted in PDF format and electronically signed and sealed by the Delegated Engineer. Once the submittal is approved by BNI, then a signed and sealed hard copy shall be submitted to BNI to receive an "Approved" stamp so the submittal can be submitted to the building department.

REINFORCED CONCRETE

SRC-1 Prepare and submit formwork shop drawings in compliance with ACI 301 and ACI 347R. Formwork design for safety, structural adequacy, and efficiency is the Contractor's responsibility.

SRC-2 Prepare and submit shoring and reshoring shop drawings prepared by a Florida Licensed Engineer. Drawings shall contain the location, size, and type of all shoring, reshoring, mud sills, blocking, temporary lateral bracing and other accessories necessary to safely support and brace the structure during construction. Use a factor of safety of 2.0 for metal shores and 3.0 for wood shores. Shoring and reshoring design and construction is the sole responsibility of the Contractor and his Engineer.

SRC-3 Provide form-facing panels that will provide continuous, true, and smooth concrete surfaces.

SRC-4 Formwork for the sides of beams, walls, columns and similar elements, that does not support the weight of concrete may be removed after curing at not less than 50 degrees for 24 hours after placing concrete if concrete is hard enough to not be damaged by form removal.

SRC-5 Prepare and submit reinforcing steel shop drawings prepared according to ACI 315 and ACI SP-66. Include bar sizes, length, material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement location of splices, length of splices, tie spacing, hoop spacing and supports of reinforcement.

SRC-6 Fabricate and install steel reinforcement according to CRSI's "Manual of Standard Practice."

SRC-7 Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

SRC-8 Repair cut and damaged zinc coatings with zinc repair material according to ASTM A780.

SRC-9 Submit design mixes for each concrete mix for the following concrete grades:

Element	Strength	Air Yes/No	Max. Aggregate Size	W/C or W/(C&P)*	Exposure Class*
Slab on Grade	3000	N	1"	0.64	F0
Columns	4000	Y	1"	0.54	F0
Elevated Slabs and Beams	4000	N	1"	0.54	F0
Tie Beams & Tie Columns	4000	Y	3/8"	0.52	F0

* Letter in Exposure Category denotes Exposure Class:
F: Freezing and thawing.

SRC-10 The minimum portland cement content of any concrete mix with slag cement is 280 lbs/CY, for all other concrete mixes, the minimum portland cement content is 423 lbs/CY. Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

A. Concrete mixes containing fly ash: 15%-20%.

SRC-11 Concrete mixes containing slag cement: 40%-50%.

SRC-12 Concrete mixes containing fly ash and slag cement: 50% with fly ash or slag not exceeding 25%.

SRC-13 Provide concrete having entrained air content of 3%-5% except 1%-3% for concrete to receive a hard trowel finish (floor slabs).

SRC-14 Place concrete within 90 minutes of adding water to the mix. The Contractor may request additional time from the special inspector who can authorize an additional 30 minutes.

SRC-15 The amount of water added to the mix at the site is limited to the amount identified on the batch ticket as that being withheld at the batch plant. Water shall be added prior to initial discharge of concrete. No water can be added at the site if the batch ticket does not clearly identify the amount withheld at the plant. No water may be added once concrete placement has started.

SRC-16 Provide batch ticket for each ready-mixed batch discharged and used in the Work, indicating Project identification name and number, date, mix type and number, batch time, mix time, quantity, and amount of water added, and amount withheld at the plant. Record approximate location of final deposit in structure.

SRC-17 Concrete columns shall be cast at least 24 hours before horizontal members they support are cast. Exception: Tie columns and grout in masonry cells shall be cast at least 4 hours before beams are slabs are cast on top of masonry.

SRC-18 Deposit concrete continuously in one layer or in horizontal layers so that no new concrete will be placed on concrete that has hardened. Avoid inclined construction joints. Consolidate concrete with mechanical vibrating equipment. Do not use vibrators to transport concrete inside forms.

SRC-19 Cure concrete according to ACI 308.1 and as follows:

A. Curing Compound: Apply to all concrete surfaces that are not permanently exposed. Provide a second coat applied at 90 degrees to initial application within three hours of initial application.
B. Curing and Sealing Compound: Apply to permanently exposed concrete surfaces. Repeat process after 24 hours.
C. Contractor shall confirm that curing compounds are compatible with flooring finishes and will not adversely affect the performance or warranty of the flooring.

SRC-20 Sample all concrete after water and admixtures have been added. Obtain at least one composite sample for each 100 CY or fraction thereof of each concrete mix placed daily. For slabs 6 inches or thinner, increase frequency to each 50 CY or fraction thereof of each concrete mix placed daily.

SRC-21 Cast and laboratory cure one set of four standard cylinder specimens for each composite sample. Take sample at point of placement for pumped concrete.

SRC-22 Test one specimen at 7-days and three at 28-days. If one of the first two 28-day test falls below specified strength, test the remaining specimen at 56-days.

SRC-23 Strength of each concrete mix will be satisfactory if the average of two cylinders at 28-days equals or exceeds the specified concrete strength, if not, then the average of any three consecutive strength tests (two at 28-days and one at 56-day) equals or exceeds specified compressive strength and no compressive strength test falls below specified compressive strength by 10% or 500 psi, whichever is less.

SRC-24 Provide test results to Architect, Engineer, and Concrete Company.

SRC-25 Contractor shall notify Architect and BNI of any concrete that fails to meet the design strength. Additional testing including destructive testing may be required to validate the in-place concrete strength. Testing with a Swiss Hammer is not an acceptable method of establishing in-place concrete strength.

CONCRETE MASONRY

SCM-1 Provide structural unit masonry that develops indicated net-area compressive strengths at 28-days. Mortar for unit masonry shall comply with ASTM C270. Contractor shall meet ASTM C270 requirements based on the Property or Performance Specification. Contractor shall determine the net-area compressive strength of masonry based on paragraph 1 or 2.

A. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in TMS 602.

1. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

a. Concrete Masonry Unit Test (Property and Proportion Specification): For each type of unit required, according to ASTM C140 for compressive strength.
b. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.
c. Mortar Test (Property Specification): For each mix required, according to ASTM C109 for compressive strength.
d. Mortar Test (Property Specification): For each mix required, according to ASTM C780 for compressive strength.
e. Grout Test (Compressive Strength) (Property and Performance Specification): For each mix required, according to ASTM C1019.

B. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C1314.

1. Prism Test: For each type of construction required, according to ASTM C1314.

SCM-2 Prepare and submit reinforcing steel shop drawings prepared according to ACI 315. Include bar sizes, length, material, grade, bar schedules, bent bar diagrams, arrangement location of splices, length of splices, tie spacing, hoop spacing and supports of reinforcement.

SCM-3 Submit grout mix designs complying with material and compressive strength requirements of ASTM C476.

SCM-4 During construction, cover tops of walls, projections, and sills with waterproof sheeting at the end of each workday. Cover partially completed masonry when construction is not in progress.

SCM-5 Allow wet masonry units to dry prior to placement.

SCM-6 Comply with tolerances in TMS 602, and as follow:

A. In Elevation: +/- 1/4" in story height, +/- 3/4" Max
B. Plumbness: +/- 1/4" in 10 feet, +/- 3/8" in 20 feet, +/- 1/2" Max
C. Location in Plan: +/- 1/2" in 20 feet, +/- 3/4" Max

SCM-7 Stop work by racking back units in each course from those in the course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

SCM-8 Design, provide and install bracing that will assure stability of masonry during construction. Include provisions to protect against wind or other natural or construction forces that might collapse or otherwise damage a partially or completely built masonry wall in a partially completed structure.

SCM-9 Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to grout.

SCM-10 Lay masonry units to top of grout pour prior to placing grout. Maximum grout pour height is 12 feet or top of bond beam, whichever is lower.

SCM-11 Provide cleanouts when grout pour exceeds 5 feet, to tie vertical bars to prevent displacement, and to remove dust, dirt, and mortar droppings.

SCM-12 Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure. Place grout within 90 minutes of introducing water to the mix. Terminate grout 1 1/2 inches below bond beam course or where cell above is to be grouted.

SCM-13 Consolidate pours exceeding 12" in height and each lift by mechanical vibration and reconsolidate after initial water loss and settlement has occurred.

STRUCTURAL STEEL

SSS-1 The Engineer of Record is responsible for the design of the steel framing and the connections that are fully detailed as presented in the Contract Documents.

SSS-2 The Fabricator is responsible for the preparation of Shop and Erection Drawings pursuant to the requirements of the Contract Documents. All connections that are not completely detailed on the drawings shall be designed by the Fabricator's Delegated Engineer. Submit signed and sealed connection detail and calculations to the EOR for approval prior to submitting shop drawings. Once approved, the connection detail may be incorporated in the shop drawings. The shop drawings are not required to be signed and sealed.

SSS-3 Shop Drawings: Submit complete erection and piece drawings for each sequence prepared by or under the direct supervision and control of a Florida Licensed Engineer. Drawings shall include complete details, dimensions, schedules, and procedures for the fabrication, assembly, and sequence of construction.

A. Substitutions: No changes to the completed connections shown on the drawings will be considered without complying with the applicable requirements for substitutions. The fabricator is responsible for the design and detailing of all substitutions, which shall be signed and sealed by a Delegated Engineer as defined in the Contract Documents.

B. All connections that are designed by the Fabricator's Delegated Engineer for the forces shown on the Drawings shall be designed and detailed under the following criteria:

1. Design all connections for the factored forces indicated on the drawings in accordance with all applicable codes and specifications.
2. Set connection work point at the intersection of member centerlines for all connection design and detailing.
3. The conceptual connections on the drawings show design intent and shall be completed for the member designated forces. Adapt those details to accommodate the atypical conditions. The conceptual connection does not show the complexity of the final connection designed for the required forces.
4. Design, detail, and install stiffeners, continuity plates, doubler plates as required to resist the indicated design forces. The member size is based on member behavior away from the connection.
5. All forces shown on the drawings act concurrently unless noted otherwise.
6. During bidding, if no moment is shown on the drawings, provide full moment capacity of the member of .9 Fy Z; and if no shear is shown, provide full shear capacity of .6 Fy d tw. For missing tension forces, assume 95% of the tension member capacity.
7. Use the same bolt sizes shown on the drawings. All bolts with the same diameter shall be of the same grade. Skip one diameter size for bolts with different grades. Do not use oversized or slotted holes unless approved by EOR.
8. Shop drawings incorporating the design of the Delegated Engineer shall be reviewed and stamped approved by the Delegated Engineer prior to submittal to the EOR.

C. Acceptance of the Shop and Erection Drawings by the Architect/Engineer does not relieve the Fabricator of the responsibility for accuracy of detail dimensions on the shop drawings and the general fit-up of parts to be assembled in the field

SSS-4 The fabricator is responsible for the coordination of all surveyed field conditions and field measurements necessary for the detailing, fabrication and erection of their work. All field measurements shall be provided on the shop drawings prior to submittal.

SSS-5 The Engineer of Record is responsible for the structural adequacy of the structure in the completed project. The Erector is responsible for the means, methods and safety of the erection, including all temporary bracing, guys, beams, falsework, cribbing or other elements required for the erection operation. If the Erector is unsure of these requirements, he shall retain a Florida Licensed Engineer to determine and design all temporary requirements.

SSS-6 Qualified fabricator with a minimum five years of documented successful experience on equivalent projects. Submit résumé demonstrating equivalent project experience.

SSS-7 Qualified installer with a minimum five years of documented successful experience on equivalent projects. Submit résumé demonstrating equivalent project experience.

SSS-8 Shop-Painting Applicators shall be qualified according to AISC's Sophisticated Paint Endorsement P2 or to SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators." Submit copy of SSPC Certification.

SSS-9 Shop prime steel surfaces except members or portions of members that will be embedded in concrete, surfaces that will receive spray applied fireproofing, members that will be hot dip galvanized, surfaces within 2 inches of welds, faying surfaces of slip-critical bolted connections. Mask off and do not prime a strip 2 inches wide on any surface to receive a row of headed studs or puddle welds.

SSS-10 Steel members which cannot be readily painted after fabrication, such as back-to-back angles and tees, shall be primed and finish coated, or receive two coats of primer, prior to fabrication.

SSS-11 Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration. Do not store materials in a manner that may cause distortion, damage, or overload to members or supporting structures.

SSS-12 Apply zinc coating by the hot-dip process to structural steel members permanently exposed to the elements indicated on the drawings.

SSS-13 Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

SSS-14 On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces.

SSS-15 Shop Inspections by Fabricator: The Fabricator shall provide a system of quality control, including shop welding inspections and testing, to ensure that the minimum standards specified herein are attained. Submit to Owner, Architect, Engineer and Owner's Testing and Inspection Agency complete details of the quality control program to be used and all testing and inspection reports. Visually inspect 100% of shop welds. Also, as a minimum, perform non-destructive tests of welds in conformance with AWS D1.1 as follows:

A. Splices: 100%.
B. Full penetration welds: 100%.
C. Partial penetration welds: 50%.
D. Fillet welds: 5%.

SSS-16 Shop Inspections by Owner: Owner's Testing Agency may perform visual inspection of all shop welds for compliance with Contract Documents. Perform random non-destructive tests of welds in conformance with Section 6 of AWS D1.1 as may be required by Architect as follows:

A. Full penetration welds: 25%.
B. Partial penetration welds: 15%.
C. Fillet Welds: 5%.

Deficient welds shall be repaired and reexamined.

SSS-17 Field Inspections: Owner's Inspector shall perform visual inspection of all field welds for compliance with Contract Documents. Owner's Testing Agency shall perform non-destructive tests of welds in conformance with Section 6 of AWS D1.1 as may be required by Architect, but not less than:

A. Splices: 100%.
B. Full Penetration Welds: 100%.
C. Partial Penetration Welds: 50%.
D. Fillet Welds: All welds that do not pass the visual inspection.

Deficient welds shall be repaired and reexamined.

SSS-18 Repair damaged or missing galvanizing with Zinc-Clad Cold Galvanizing by Sherwin-Williams or Cold Galvanizing Compound by ZRC with a minimum dry film thickness of 3 mils.

SSS-19 Clean slag from welds, clean bolted connections, and abraded areas of shop paint immediately after erection. Apply paint to exposed areas where primer is damaged or missing with the same material as used for shop painting to comply with SSPC-PA 1. Clean and prepare surfaces by SSPC-SP 2 or SSPC-SP 3.

PREFABRICATED WOOD TRUSSES

SWT-1 Submit fabrication and installation details for trusses.

A. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
B. Indicate sizes, stress grades, and species of lumber.
C. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
D. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
E. Show splice details and bearing details.
F. Indicate truss-to-truss connection manufacturer, type, location, and fasteners.
G. Indicate joining requirements for multiple ply trusses or girders.
H. Contact BNI prior to submittal of shop drawings if truss placement drawings deviate from the structural drawings. Truss placements that deviate from the structural drawings may be rejected.

SWT-2 Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

SWT-3 Fabricator Qualifications: Shop that participates in a recognized quality-assurance program, complies with quality-control procedures in TPI 1.

SWT-4 Handle and store trusses to comply with recommendations in SBCA BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

A. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
B. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
C. Provide for air circulation around stacks and under coverings.

SWT-5 Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

SWT-6 Maximum Deflection under Design Loads:
A. Roof Trusses: Vertical deflection of 1/240 of span.

SWT-7 Fabricate wood trusses within manufacturing tolerances in TPI 1
A. Length: ½" up to 30 feet long, thereafter, ¾".
B. Height: ¼" up to 60 inches high, thereafter, ½"

SWT-8 Steel Sheet Protection:

A. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653, G60 coating designation for interior locations.
B. Hot-Dip Heavy-Galvanized-Steel Sheet: ASTM A653; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick. Use for wood-preservative-treated lumber.
C. Stainless Steel Sheet: ASTM A240 or ASTM A666, Type 316, for exterior locations and for exposed applications in coastal environments.

SWT-9 Installation:

A. Install wood trusses only after supporting construction is in place and is braced and secured.
B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
D. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
E. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.

SWT-10 Install wood trusses within installation tolerances in TPI 1.

A. Out-of-plumb tolerance: The lesser of D/50 or 2 inches maximum.
B. Out-of-plane tolerances or bow is limited to the lesser of L/200 or 2 inches maximum.
C. Location variances of 1/4 inch
D. Top-chord bearing gap of 1/2 inch for parallel-chord trusses are permitted.

SWT-11 Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.

SWT-12 Replace wood trusses that are damaged or do not comply with requirements.

A. Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

SWT-13 Roof Sheathing: DOC PS 1, Exposure 1, Structural I sheathing. Span Rating: Not less than 32/16. Nominal Thickness: Not less than 5/8 inch.

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To the best of the Structural Engineer's knowledge, the Plans and Specifications comply with the applicable minimum building codes.

Carbon design + architecture
FLORIDA LIC No: AR95989

CLIENT DATA

Client:
CITY OF OCALA
501 NE 1st Ave.
Ocala, FL 34470

PROJECT DATA

Project No: 24020
Project Na: OCALA SUNTRAN RESTROOMS & KIOSK

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ISSUE + REVISION DATA

No:	Description:	Date:

ARCHITECTURE SEAL

05.28.2024
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CHECKED BY L.A

S-103
STRUCTURAL PLAN SPECIFICATIONS

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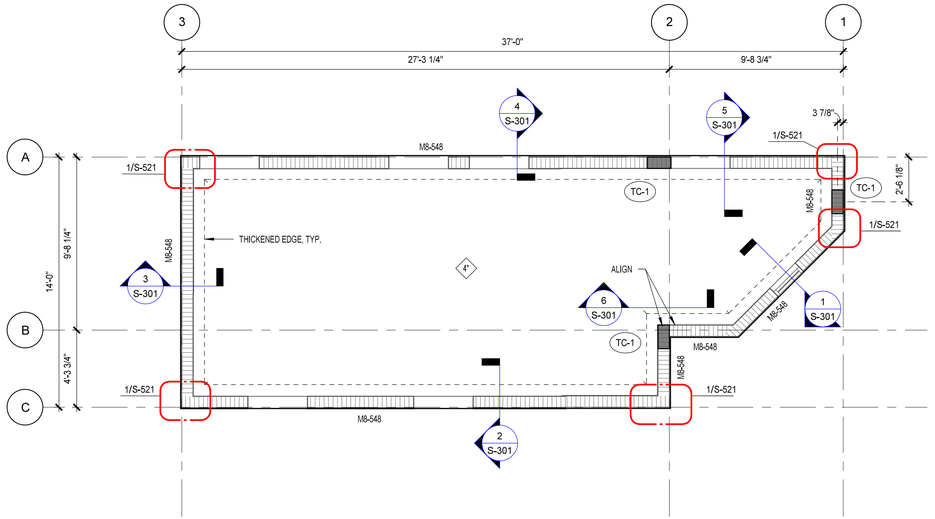
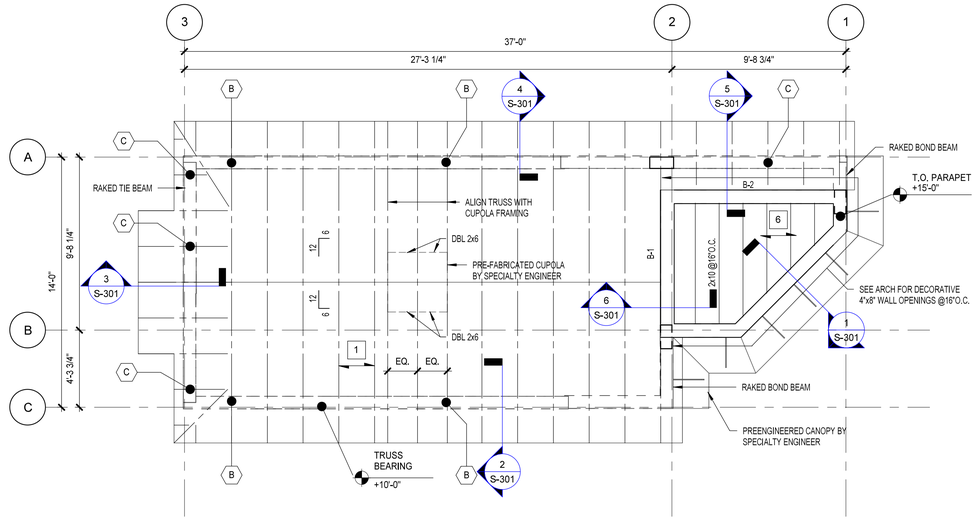


NORTH

GROUND FLOOR PLAN

1/4" = 1'-0"

NORTH



NORTH

ROOF FRAMING PLAN

1/4" = 1'-0"

PLAN NOTES:

1. ROOFING (SEE ARCH.) OVER 5/8" STRUCTURAL 1 PLYWOOD ROOF SHEATHING OVER PREFABRICATED WOOD TRUSSES BY DELEGATED ENGINEER @24" MAX. SEE STRUCTURAL NOTES FOR FASTENING REQUIREMENTS
2. REFER TO STRUCTURAL NOTES FOR TRUSS BRIDGING REQUIREMENTS
3. (#) INDICATES SIMPSON TIE DOWN STRAP TO BE USED, SEE SCHEDULE ON 7 / S-721
4. COORDINATE FINAL TRUSS LOCATION WITH CUPOLA MANUFACTURER. CUPOLA TO BEAR ON TRUSS ON EITHER SIDE
5. ALL BOND BEAM REINFORCEMENT TO EXTEND THROUGH TIE COLUMN REINFORCEMENT
6. ROOFING (SEE ARCH.) OVER 5/8" STRUCTURAL 1 PLYWOOD ROOF SHEATHING OVER WOOD JOISTS. SEE STRUCTURAL NOTES FOR FASTENING REQUIREMENTS

REFERENCE SHEETS

Carbon design + architecture
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Project No: 24020
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To the best of the Structural Engineer's knowledge, the Plans and Specifications comply with the applicable minimum building codes.

05.28.2024
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CHECKED BY L.A

S-200

GROUND FLOOR AND ROOF FRAMING PLAN

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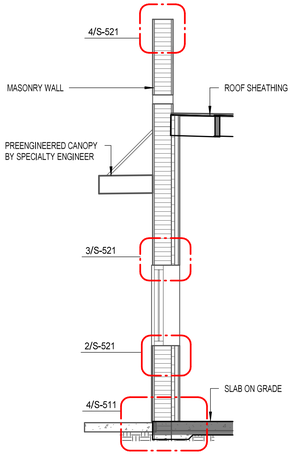
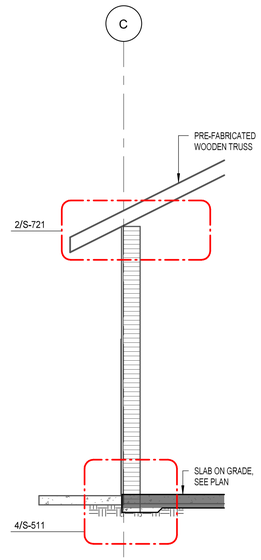


1 WALL SECTION
3/8" = 1'-0"



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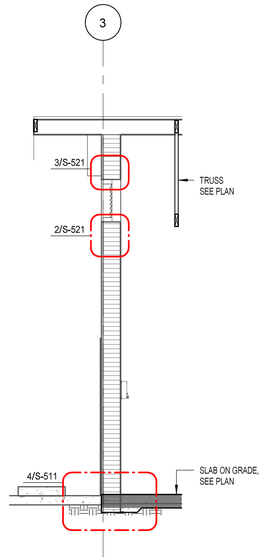

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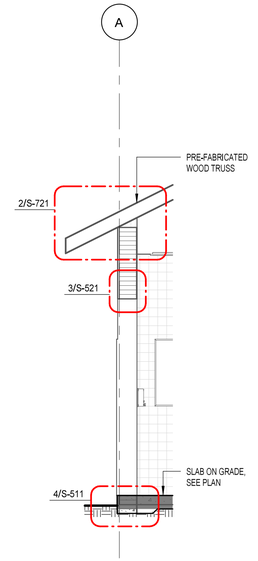

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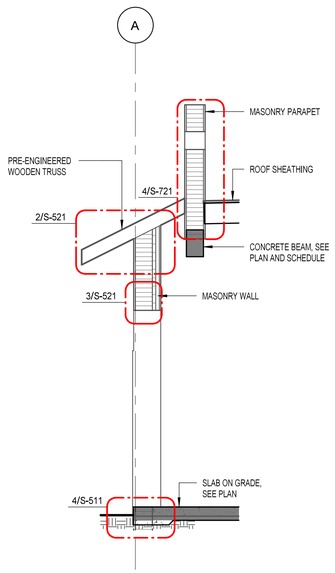

5 WALL SECTION
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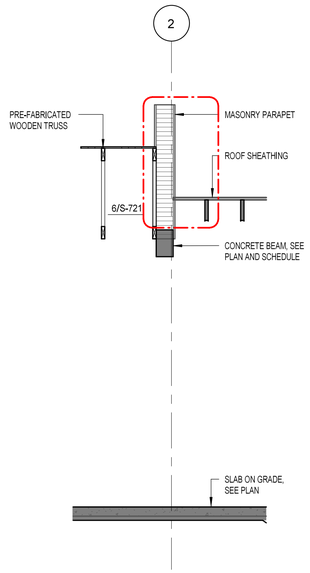

6 WALL SECTION
3/8" = 1'-0"

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ISSUE + REVISION DATA

No:	Description:	Date:

ARCHITECTURE SEAL

05.28.2024
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S-301
WALL SECTIONS

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MINIMUM LAP SPLICE LENGTH SCHEDULE

BAR SIZE	f'c = 3000 psi		f'c = 4000 psi		f'c = 5000 psi		f'c = 6000 psi		f'c = 7000 psi		f'c = 8000 psi		f'c = 10,000 psi		48db
	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	
#3	22"	28"	19"	25"	17"	22"	16"	20"	16"	19"	16"	18"	16"	16"	18"
#4	29"	38"	25"	33"	23"	29"	21"	27"	19"	25"	18"	23"	16"	21"	24"
#5	36"	47"	31"	41"	28"	36"	26"	33"	24"	31"	22"	29"	20"	26"	30"
#6	43"	56"	37"	49"	34"	44"	31"	40"	28"	37"	27"	35"	24"	31"	36"
#7	63"	81"	54"	71"	49"	63"	45"	58"	41"	54"	39"	50"	35"	45"	42"
#8	72"	93"	62"	81"	56"	72"	51"	66"	47"	61"	44"	57"	39"	51"	48"
#9	81"	105"	70"	91"	63"	81"	57"	74"	53"	69"	50"	64"	44"	58"	54"
#10	91"	118"	79"	102"	71"	92"	64"	84"	60"	77"	56"	72"	50"	65"	61"
#11	101"	131"	87"	114"	78"	102"	71"	93"	66"	86"	62"	80"	55"	72"	68"

1. LISTED LAP LENGTHS ARE BASED ON CLASS "B" SPLICE.
2. "TOP BAR" IS DEFINED WHEN MORE THAN 12" OF FRESH CONCRETE IS PLACED BELOW HORIZONTAL REINFORCEMENT. ALL OTHER REINFORCEMENT IS REFERRED TO AS "OTHER BARS".
3. FOR TOP REINFORCEMENT IN SLABS AND BEAMS THAT ARE 12" THICK OR LESS, TABULATED SPLICE LENGTHS FOR "OTHER BARS" SHALL BE USED.
4. LISTED LAP LENGTHS ARE BASED ON NORMAL WEIGHT CONCRETE. MULTIPLY TABULATED LENGTHS x1.33 FOR LIGHT WEIGHT CONCRETE.
5. LISTED LAP LENGTHS ARE BASED ON UNCOATED AND GALVANIZED REINFORCEMENT. MULTIPLY ABOVE LENGTHS x1.2 FOR EPOXY COATED REINFORCEMENT.
6. FOR CONCRETE STRENGTHS IN BETWEEN THOSE TABULATED HERE, USE LAP SPLICE LENGTHS OF LOWER CONCRETE STRENGTH.
7. FOR TRANSFER SLAB WHERE REINF COVERS IS LESS THAN db, MULTIPLY SPLICE LENGTHS x1.5.

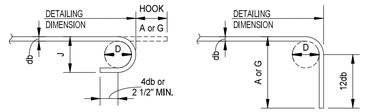
MIN LAP SPLICE LENGTH SCHEDULE – REINFORCING GRADE 80 KSI

BAR SIZE	f'c = 4000 psi		f'c = 5000 psi		f'c = 6000 psi		f'c = 7000 psi		f'c = 8000 psi		f'c = 10,000 psi	
	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS
#8	95"	123"	85"	110"	78"	101"	72"	93"	67"	87"	60"	78"
#9	107"	139"	96"	125"	88"	114"	81"	105"	76"	99"	68"	88"
#10	121"	157"	108"	140"	99"	128"	91"	119"	85"	111"	76"	99"
#11	134"	174"	120"	156"	109"	142"	101"	132"	95"	123"	85"	110"

MINIMUM LAP SPLICE LENGTH SCHEDULE - REINFORCING GRADE 100 KSI

BAR SIZE	f'c = 4000 psi		f'c = 5000 psi		f'c = 6000 psi		f'c = 7000 psi		f'c = 8000 psi		f'c = 10,000 psi	
	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS
#8	134"	174"	120"	156"	110"	142"	101"	132"	95"	123"	85"	110"
#9	151"	196"	135"	176"	124"	160"	114"	149"	107"	139"	96"	124"
#10	170"	221"	152"	198"	139"	181"	129"	167"	120"	156"	108"	140"
#11	189"	245"	169"	220"	154"	200"	143"	186"	134"	174"	120"	155"

1. LISTED LAP LENGTHS ARE BASED ON CLASS "B" SPLICE.
2. "TOP BAR" IS DEFINED WHEN MORE THAN 12" OF FRESH CONCRETE IS PLACED BELOW HORIZONTAL REINFORCEMENT. ALL OTHER REINFORCEMENT IS REFERRED TO AS "OTHER BARS".
3. FOR TOP REINFORCEMENT IN SLABS AND BEAMS THAT ARE 12" THICK OR LESS, TABULATED SPLICE LENGTHS FOR "OTHER BARS" SHALL BE USED.
4. LISTED LAP LENGTHS ARE BASED ON NORMAL WEIGHT CONCRETE. MULTIPLY TABULATED LENGTHS x1.33 FOR LIGHT WEIGHT CONCRETE.
5. LISTED LAP LENGTHS ARE BASED ON UNCOATED AND GALVANIZED REINFORCEMENT. MULTIPLY ABOVE LENGTHS x1.2 FOR EPOXY COATED REINFORCEMENT.
6. FOR CONCRETE STRENGTHS IN BETWEEN THOSE TABULATED HERE, USE LAP SPLICE LENGTHS OF LOWER CONCRETE STRENGTH.
7. FOR TRANSFER SLAB WHERE REINF COVERS IS LESS THAN db, MULTIPLY SPLICE LENGTHS x1.5.



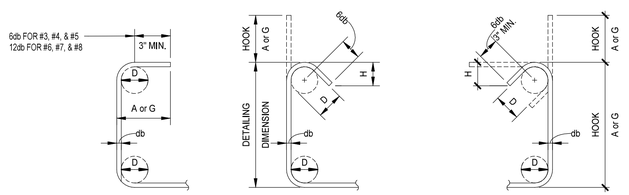
180° HOOK **90° HOOK**

D = FINISHED BEND DIAMETER

END HOOKS DIMENSION (ALL GRADES)

BAR SIZE	D	180° HOOKS		90° HOOK A or G
		A or G	J	
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"

1 MINIMUM LAP SCHEDULE
FOR REINFORCING GRADE OF 60 KSI — 3/4" = 1'-0"



90° **135°** **135° SEISMIC**

D = FINISHED BEND DIAMETER

STIRRUPS & TIES HOOKS DIMENSION

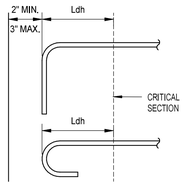
BAR SIZE	D	90° A or G	135°		SEISMIC STIRRUP/TIE 135° SEISMIC HOOK			
			A or G	APPROX H	SIZE	D	A or G	APPROX H
#3	1 1/2"	4"	4"	2 1/2"	#3	1 1/2"	4 1/4"	3"
#4	2"	4 1/2"	4 1/2"	3"	#4	2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"	#5	2 1/2"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"	#6	4 1/2"	8"	4 1/2"
#7	5 1/4"	14"	9"	5 1/4"	#7	5 1/4"	9"	5 1/4"
#8	6"	16"	10 1/2"	6"	#8	6"	10 1/2"	6"

2 MINIMUM LAP SCHEDULE
FOR REINFORCING GRADE OF 80 & 100 KSI — 3/4" = 1'-0"

MIN LAP SPLICE LENGTH SCHEDULE FOR MASONRY

MASONRY FILLED CELL	BAR SIZE								
	#3	#4	#5	#6	#7	#8	#9	#10	#11
8" MASONRY, f'm=2000, FBC	-	20"	25"	34"	48"	-	-	-	-
8" MASONRY, f'm=2500, FBC	-	20"	25"	30"	42"	-	-	-	-
8" MASONRY, f'm=2000, IBC	-	14"	22"	42"	60"	-	-	-	-
8" MASONRY, f'm=2500, IBC	-	12"	20"	38"	53"	-	-	-	-
12" MASONRY, f'm=2000, FBC	-	20"	25"	30"	35"	44"	57"	-	-
12" MASONRY, f'm=2500, FBC	-	20"	25"	30"	35"	40"	51"	-	-
12" MASONRY, f'm=2000, IBC	-	12"	14"	26"	36"	55"	72"	-	-
12" MASONRY, f'm=2500, IBC	-	12"	12"	23"	32"	49"	64"	-	-
12" MASONRY, f'm=2000, DOUBLE REINF, FBC	-	20"	26"	39"	55"	-	-	-	-
12" MASONRY, f'm=2500, DOUBLE REINF, FBC	-	20"	25"	35"	49"	-	-	-	-

3 STANDARD HOOK DETAIL
3/4" = 1'-0"

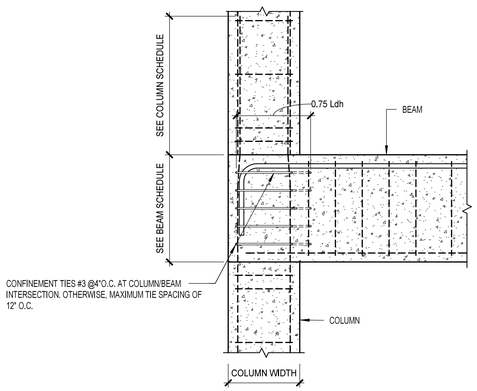


1. LISTED DEVELOPMENT LENGTHS ARE BASED ON BAR SPACING AND SIDE COVER OF 6xdb, OR AS CONFINED IN DETAILS
2. LISTED DEVELOPMENT LENGTHS ARE BASED ON NORMAL WEIGHT CONCRETE. MULTIPLY TABULATED LENGTHS x1.33 FOR LIGHT WEIGHT CONCRETE.
3. LISTED DEVELOPMENT LENGTHS ARE BASED ON UNCOATED AND GALVANIZED REINFORCEMENT. MULTIPLY TABULATED LENGTHS x1.2 FOR EPOXY COATED REINFORCEMENT.
4. LISTED VALUES ARE FOR 60KSI REBAR

LDH DEVELOPMENT OF STD HOOKS IN TENSION

BAR SIZE	f'c (psi)							6xdb
	3000	4000	5000	6000	7000	8000	10,000	
#3	6"	6"	6"	6"	6"	6"	6"	2 1/4"
#4	6"	6"	6"	6"	6"	6"	6"	3"
#5	8"	8"	8"	7"	7"	7"	6"	3 3/4"
#6	11"	10"	10"	10"	9"	8"	8"	4 1/2"
#7	14"	13"	12"	12"	11"	10"	9"	5 1/4"
#8	16"	15"	15"	15"	14"	13"	11"	6"
#9	20"	18"	18"	17"	16"	15"	14"	6 3/4"
#10	23"	22"	21"	21"	19"	18"	16"	7 3/4"
#11	27"	26"	25"	24"	22"	21"	19"	8 1/2"

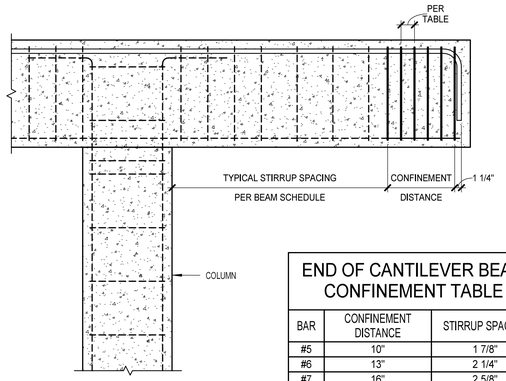
4 STIRRUPS & TIES STANDARD HOOK DETAIL
3/4" = 1'-0"



COL/BEAM CONFINEMENT TABLE

BAR SIZE	MIN COL WIDTH WITHOUT CONFINEMENT	0.75Ldh	MIN COL WIDTH TO MEET 0.75 ldh
#5	15"	6"	9"
#6	19"	8"	11"
#7	23"	10"	13"
#8	27"	12"	15"
#9	32"	14"	17"
#10	38"	17"	20"
#11	44"	20"	23"

5 MINIMUM LAP SCHEDULE FOR MASONRY
3/4" = 1'-0"



END OF CANTILEVER BEAM CONFINEMENT TABLE

BAR	CONFINEMENT DISTANCE	STIRRUP SPACING
#5	10"	1 7/8"
#6	13"	2 1/4"
#7	16"	2 5/8"
#8	19"	3"
#9	23"	3 3/8"
#10	27"	3 3/4"
#11	32"	4 1/4"

6 DEVELOPMENT OF STD HOOKS SCHEDULE
FOR REINFORCING GRADE OF 60 KSI
NORMAL WEIGHT CONCRETE
3/4" = 1'-0"

MINIMUM LAP SPLICE LENGTH SCHEDULE FOR COLUMNS – COMPRESSION

BAR SIZE	fy (psi)			48 BAR SPLICE
	60,000	80,000	100,000	
#3	-	-	-	18"
#4	-	-	-	24"
#5	19"	-	-	30"
#6	23"	-	-	36"
#7	27"	-	-	42"
#8	30"	48"	66"	48"
#9	34"	55"	75"	54"
#10	39"	61"	84"	61"
#11	43"	68"	94"	68"

1. LISTED LAP LENGTHS ARE BASED ON COMPRESSION SPLICE.
2. LISTED LAP LENGTHS ARE BASED ON NORMAL WEIGHT CONCRETE. MULTIPLY TABULATED LENGTHS x1.33 FOR LIGHT WEIGHT CONCRETE.
3. HOOKS SHALL NOT BE USED TO DEVELOP BARS IN COMPRESSION.

7 HOOKED REINF CONFINEMENT
AT COLUMNS — 3/4" = 1'-0"

8 END OF CANTILEVERED BEAM CONFINEMENT
3/4" = 1'-0"

9 MINIMUM COLUMN LAP SCHEDULE
IN COMPRESSION — 3/4" = 1'-0"

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Lazaro Alfonso, P.E. FL Reg. No. 69782

To the best of the Structural Engineer's knowledge, the Plans and Specifications comply with the applicable minimum building codes.

Carbon design + architecture
FLORIDA LIC No: AR95989

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Client:
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Ocala, FL 34470

PROJECT DATA
Project No: 24020
Project Na: OCALA SUNTRAN RESTROOMS & KIOSK

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ENGINEER DATA

ISSUE + REVISION DATA

No:	Description:	Date:

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05.28.2024
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CHECKED BY Checker

S-401
ALL SCHEDULES

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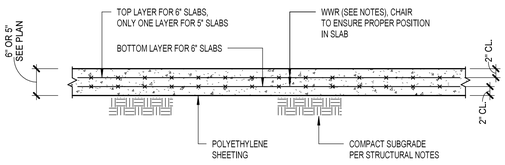
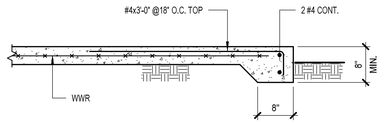


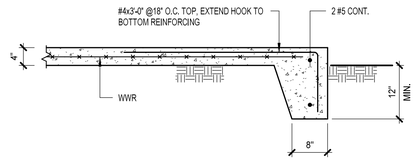
1 TYPICAL SLAB ON GRADE DETAIL
WITH W.W.R.

3/4" = 1'-0"



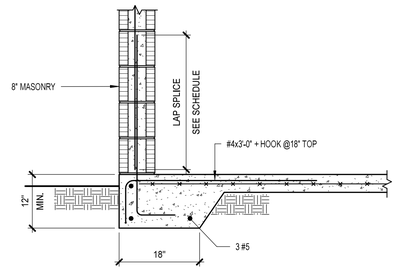
2 SLAB EDGE DETAIL

3/4" = 1'-0"



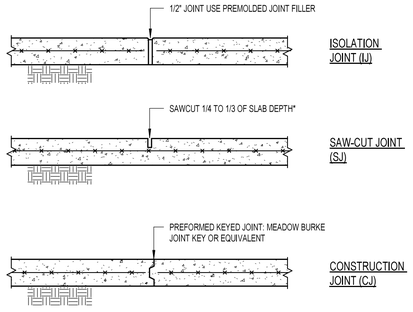
3 SLAB EDGE DETAIL

3/4" = 1'-0"



4 MASONRY WALL
ON THICKENED SLAB

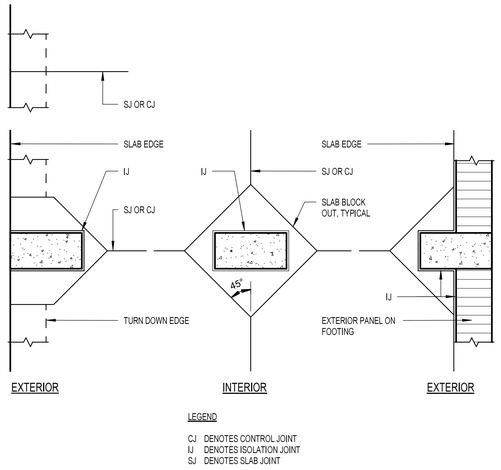
3/4" = 1'-0"



*PROVIDE SEALANT WHERE REQUIRED BY ARCHITECT SAWCUT AS SOON AS POSSIBLE AFTER CONCRETE HARDENS. SAW CUTTING MUST BE COMPLETE WITHIN 8 HRS. AFTER POURING.

5 SLAB ON GRADE CONTROL JOINTS

3/4" = 1'-0"

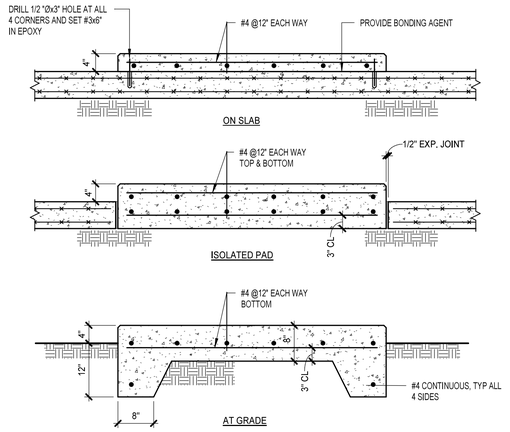


LEGEND

CJ DENOTES CONTROL JOINT
IJ DENOTES ISOLATION JOINT
SJ DENOTES SLAB JOINT

6 CONTROL JOINTS AT COLUMNS
PLAN VIEW

3/4" = 1'-0"



NOTE:
SEE MEP DRAWINGS FOR SIZE AND LOCATION OF HOUSEKEEPING PADS.

7 HOUSEKEEPING PADS ON GRADE

3/4" = 1'-0"

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ISSUE + REVISION DATA

No:	Description:	Date:

ARCHITECTURE SEAL

05.28.2024

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CHECKED BY L.A

S-511
SLAB ON GRADE DETAILS

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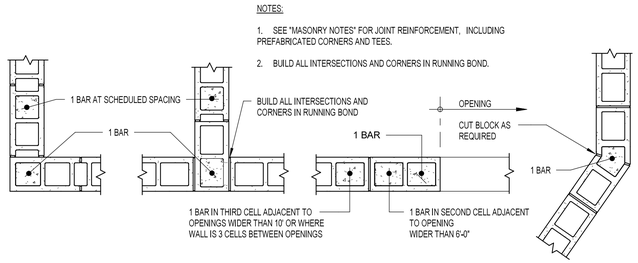
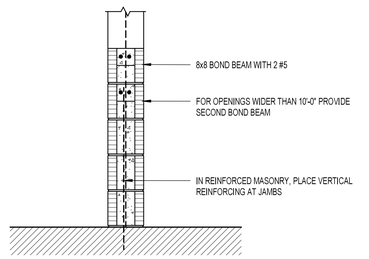
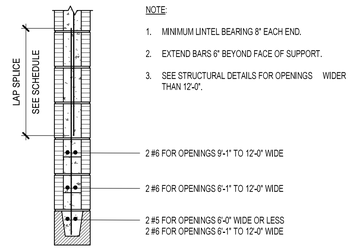


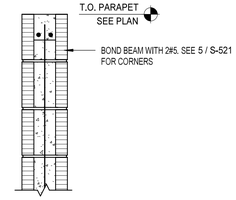
1 8" MASONRY WALL REINFORCING
NOT REQUIRED IN REINFORCED WALLS 3/4" = 1'-0"



2 TYPICAL MASONRY SILL DETAIL
3/4" = 1'-0"

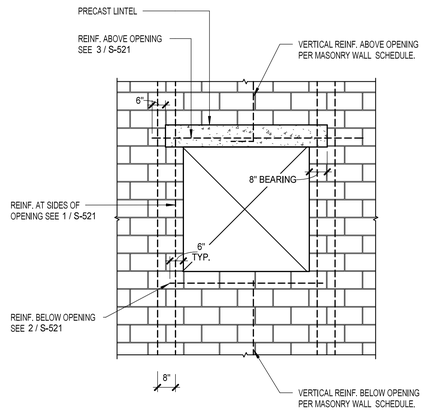


3 TYPICAL LINTEL DETAIL
SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS 3/4" = 1'-0"

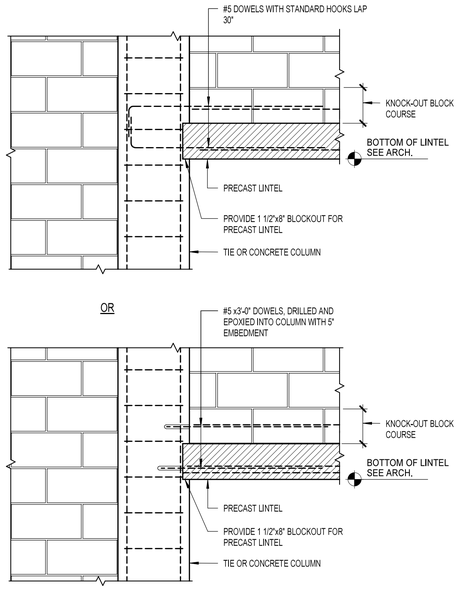


4 BOND BEAM AT TOP OF PARAPET
1" = 1'-0"

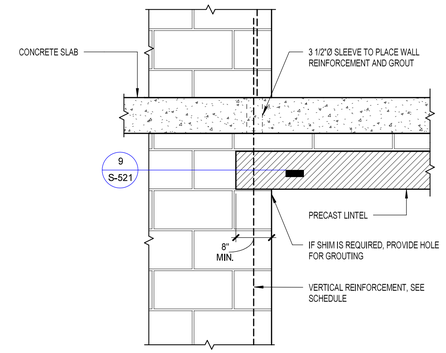
5 BOND BEAM REINFORCING
PLAN VIEWS 3/4" = 1'-0"



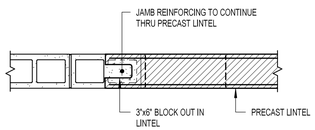
6 TYPICAL WALL OPENING ELEVATION
3/8" = 1'-0"



7 PRECAST LINTEL AT COLUMN
ELEVATION 3/4" = 1'-0"



8 PRECAST LINTEL SUPPORT
ELEVATION 3/4" = 1'-0"



9 PRECAST LINTEL SUPPORT
PLAN VIEW 3/4" = 1'-0"

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S-521
MASONRY DETAILS

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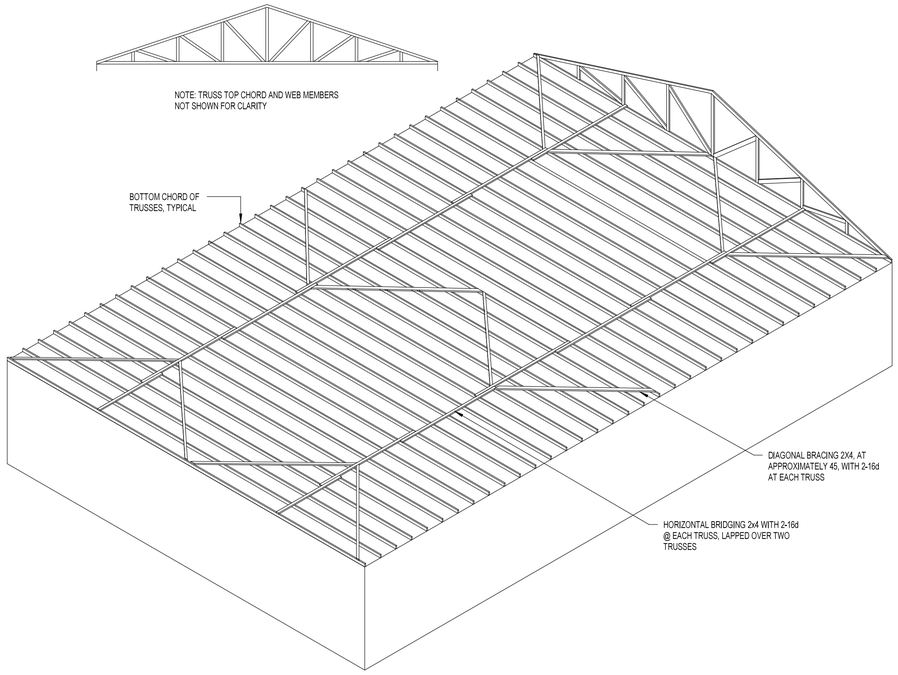
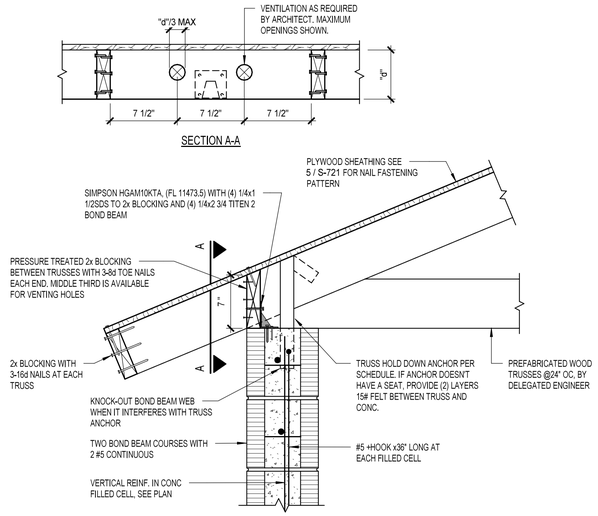


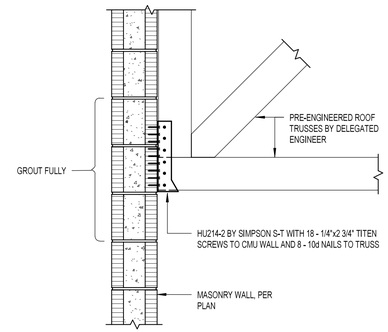
1 TRUSS BOTTOM CHORD PERMANENT BRACING

1/8" = 1'-0"



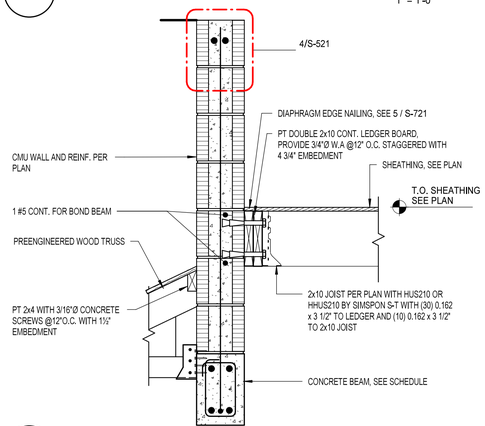
2 OVERHANG DETAIL

1 1/2" = 1'-0"



3 WOOD TRUSS TO WALL

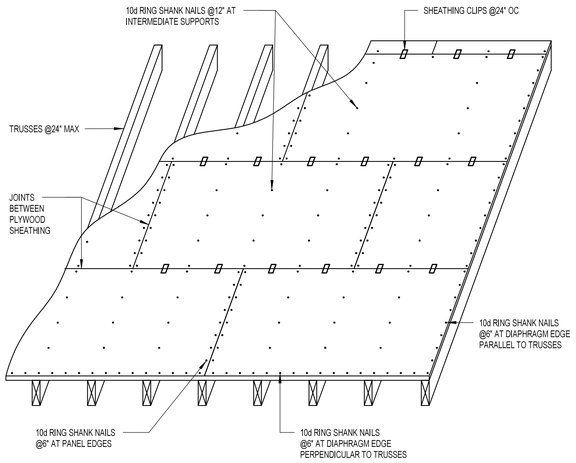
1" = 1'-0"



4 EXTERIOR CMU WALL

PERPENDICULAR TO JOISTS

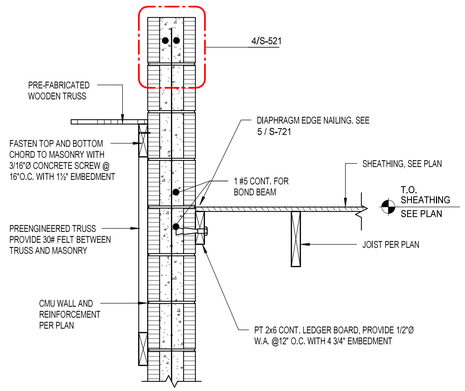
1" = 1'-0"



5 TYPICAL ROOF SHEATHING NAIL PATTERN

UNBLOCKED DIAPHRAGM

3/8" = 1'-0"



6 EXTERIOR CMU WALL

PARALLEL TO JOISTS

1" = 1'-0"

TRUSS ANCHOR SCHEDULE (1) (2) (3)

ANCHOR TYPE	SIMPSON CONNECTOR	FASTENER		FLORIDA STATE PRODUCT APPROVAL	REQUIRED LOADS (LBS)			ANCHOR CAPACITY (LBS)		
		TO TRUSS(4)	TO CONCRETE		UPLIFT	LATERAL // TO TRUSS	LATERAL PERP. TO TRUSS	UPLIFT	LATERAL // TO TRUSS	LATERAL PERP. TO TRUSS
A	HETAL16	(14) 0.148x1 1/2"	-	FL 11473	-	-	-	1810#	1040#	390#
B	DETAL20	(18) 0.148x1 1/2"	-	FL 11473	1200#	950#	-	2480#	1370#	2000#
C	HETA12	(7) 0.148x1 1/2"	-	FL 11473	670#	200#	-	1455#	770#	340#
D	HUS210	-	-	FL 10531	-	-	-	2635#	-	-

TRUSS ANCHOR SCHEDULE NOTES:

1. INSTALL TIE DOWNS PER MANUFACTURE'S INSTRUCTIONS.
2. CONTRACTOR TO VERIFY ANCHOR LOCATION WITH APPROVED TRUSS PLACEMENT SHOP DRAWINGS.
3. TRUSS ANCHORS ARE SUBJECT TO CHANGE BASED ON LOADS PROVIDED BY TRUSS MANUFACTURER.
4. FOR MISLOCATED TRUSS ANCHORS WHICH ARE GREATER THAN 1/8" BUT LESS THAN 1 1/2" FROM FACE OF THE TRUSS, A SHIM MUST BE PROVIDED. WHEN THE GAP IS GREATER THAN 1 1/2", NEW ANCHOR SHOULD BE INSTALLED.
5. FIVE NAILS MUST BE INSTALLED INTO THE TRUSS SEAT OF THE HETAL.
6. CONNECTIONS BETWEEN TRUSSES BY DELEGATED ENGINEER.

⬡ - DENOTES TRUSS ANCHOR TYPE

7 TRUSS ANCHOR SCHEDULE

12" = 1'-0"

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West Palm Beach, Florida 33409
Tel. (561) 623-7081
Lazaro Alfonso, P.E. FL Reg. No. 69782
To the best of the Structural Engineer's knowledge, the Plans and Specifications comply with the applicable minimum building codes.

Carbon design + architecture
FLORIDA LIC No: AR95989

CLIENT DATA
Client:
CITY OF OCALA
501 NE 1st Ave.
Ocala, FL 34470

PROJECT DATA
Project No: 24020
Project Na: OCALA SUNTRAN RESTROOMS & KIOSK

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ENGINEER DATA

ISSUE + REVISION DATA

No:	Description:	Date:

ARCHITECTURE SEAL

05.28.2024

DRAWN BY S.C

CHECKED BY L.A

S-721

WOOD ROOF DETAILS

100% CD's Set

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