DESIGN CRITERIA

 CODES: INTERNATIONAL BUILDING CODE (IBC) 2015 WITH WISCONSIN BUILDING CODE REVISIONS AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14) AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530-13) AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS ALLOWABLE STRENGTH DESIGN (ASD)(AISC 360-10) FOURTEENTH EDITION, 2010 AMERICAN WELDING SOCIETY D1.1 NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL ANSI/AWC NATIONAL DESIGN SPECIFICATION (NDS) FOR WOOD CONSTRUCTION AND SUPPLEMENT (NDS-15)

DESIGN LOADS:

RISK CATEGORY **CLASSROOM ADDITION** GREENHOUSE ADDITION:

EQUIVALENT FLUID PRESSURE 70 PCF

SOIL CLASSIFICATION SPECTRAL RESPONSE ACCELERATION, Ss SPECTRAL RESPONSE ACCELERATION, S1 0.04 g SHORT PERIOD DESIGN ACCELERATION, Sds 0.12 g LONG PERIOD DESIGN ACCELERATION, Sd1 IMPORTANCE FACTOR

SEISMIC DESIGN CATEGORY SEISMIC FORCE RESISTING SYSTEM MASONRY SHEAR WALLS AND STEEL MOMENT FRAMES NOT DETAILED FOR ANALYSIS PROCEDURE ASCE 7-10 SECTION 1.4 0.01 x W

DESIGN BASE SHEAR, V WIND - PARAMETERS BASIC WIND SPEED

CLASSROOM ADDITION: 120 MPH **GREENHOUSE ADDITION:** 115 MPH EXPOSURE CLASS WIND - MAIN WIND FORCE RESISTING SYSTEM PRESSURES

DESIGN PRESSURE CLASSROOM ADDITION: DETERMINED BY GREEN HOUSE SUPPLIER **GREENHOUSE ADDITION:** ROOF UPLIFT PRESSURE **CLASSROOM ADDITION:** 20 PSF (GROSS) [LC:1.0WL] **GREENHOUSE ADDITION** DETERMINED BY GREEN HOUSE SUPPLIER ROOF UPLIFT PRESSURE CLASSROOM ADDITION: 3 PSF (NET) [LC: 0.9DL + 1.0WL]

WIND - ELEMENTS AND COMPONENTS PER APPLICABLE BUILDING CODE

GREEN HOUSE:

LIVE LOADS

TYPICAL FLOORS 100 PSF UNREDUCIBLE MECHANICAL 125 PSF UNREDUCIBLE SNOW LOADS

GROUND SNOW LOAD SNOW EXPOSURE FACTOR 1.0 THERMAL FACTOR 1.0 IMPORTANCE FACTOR 1.1 FLAT-ROOF SNOW LOAD 23 PSF DESIGN LOAD

REFER TO PLAN 6S/104 FOR ROOF LOAD PLAN DRIFTING LOAD

DETERMINED BY GREEN HOUSE SUPPLIER

3. MINIMUM FROST PROTECTION DEPTH FROM ADJACENT GRADE: EXTERIOR FOOTING ADJACENT TO HEATED AREA EXTERIOR FOOTINGS IN UNHEATED AREA

4. SPECIFIED 28-DAY CONCRETE COMPRESSIVE STRENGTHS (fc) FOOTINGS FOUNDATION WALLS 4000 PSI STRUCTURAL SLABS 4000 PSI TYPICAL - UNLESS NOTED OTHERWISE 4000 PSI

5. CONCRETE REINFORCING STEEL SHALL BE HIGH STRENGTH NEW BILLET STEEL CONFORMING TO THE FOLLOWING STANDARDS: DEFORMED BARS ASTM A615, GRADE 60 Fv = 60 KSIWELDED WIRE REINFORCING ASTM A185 $F_V = 65 \text{ KSI}$

PRESTRESSING STRAND, 1/2"Ø 7-WIRE ASTM A416, GRADE 270 Fy = 270 KSI LOW-RELAXATION 6. MATERIALS FOR CONCRETE UNIT MASONRY SHALL CONFORM TO THE FOLLOWING STANDARDS: CONCRETE MASONRY UNITS ASTM C90

MORTAR MATERIALS ASTM C270, TYPE S **GROUT FOR MASONRY** ASTM C476 REINFORCING STEEL FOR MASONRY ASTM A615, GRADE 60 (UNO) PLATE AND BENT BAR ANCHORS ASTM A36 SHEET METAL ANCHORS AND TIES **ASTM A1008** WIRE MESH TIES ASTM A185 WIRE TIES AND ANCHORS ASTM A951 ANCHOR BOLTS FOR MASONRY ASTM A307, GRADE A

MINIMUM 28 DAY COMPRESSIVE STRENGTHS FOR MASONRY (f'm): DESIGN ASSEMBLY STRENGTH, f'm INDIVIDUAL CONCRETE MASONRY UNITS 2800 PSI MORTAR FOR MASONRY (TYPE S REQUIRED) 1800 PSI GROUT FOR MASONRY 2000 PSI

8. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS: Fy = 50 KSIWIDE FLANGE SECTIONS ASTM A992 OTHER ROLLED SECTIONS ASTM A36 Fy = 36 KSI ASTM A500, GR B $F_V = 46 \text{ KSI}$ SQUARE AND RECTANGULAR HSS ASTM A500, GR B Fy = 42 KSIROUND HSS SQUARE, RECTANGULAR, ROUND HSS **ASTM A1085** $F_V = 50 \text{ KSI}$ CAP AND BASE PLATES ASTM A36 Fy = 36 KSI**CONNECTION MATERIAL** ASTM A36 Fy = 36 KSISTIFFENER PLATES ASTM A36 Fy = 36 KSI ANCHOR RODS ASTM F1554, GR 36 Fy = 36 KSI HIGH STRENGTH BOLTS ASTM F3125, GRADE A325 120 KSI **HEAVY HEX NUTS** ASTM A563 ASTM F436 WASHERS

ELECTRODES FOR ARC WELDING AWS 5.1, E70XX 9. COLD-FORMED STRUCTURAL STUDS SHALL CONFORM TO THE FOLLOWING STANDARDS: ROLLED SECTIONS, CONNECTION MATERIAL, STIFFENER PLATES

ASTM A108, TYPE B

ASTM A653, GR 33

Fy = 33 KSI

18 GAUGE AND THINNER ASTM A653. GR 33 Fv = 33 KSI 16 GAUGE AND THICKER ASTM A653, GR 50 $F_V = 50 \text{ KSI}$ CONNECTION MATERIAL (>3/16" THICK) Fy = 36 KSI ASTM A36 ASTM F1554, GR 36 ANCHOR RODS $F_V = 36 \text{ KSI}$ BOLTS ASTM A307 Fv = 10 KSI**COATING - HOT DIPPED** ASTM A924, G60 **ELECTRO - PLATE** ASTM A591 ALUMINUM - ZINC ASTM A792, GR 40 ASTM C955 AND ASTM C1007

ELECTRODES FOR ARC WELDING AWS 5.1, E60XX 10. STEEL DECK AND ALL ACCESSORIES SHALL BE FORMED FROM STEEL SHEETS CONFORMING TO THE FOLLOWING STANDARDS: GALVANIZED COMPOSITE FLOOR DECK ASTM A653. GR 33 Fv = 33 KSIGALVANIZED STEEL ROOF DECK

11. GLULAM BEAMS:

HEADED WELDED STEEL STUDS

DOUGLAS FIR LARCH (BASIS OF DESIGN) Fb = 2400 PSI

INSTALLATION

Fc⊥ = 650 PSI

E = 1,800,000 PSI 12. STRUCTURAL THERMAL BREAK MATERIAL, BUSHINGS AND WASHERS SHALL CONFORM TO THE MINIMUM

STANDARDS: COMPRESSIVE STRENGTH 291.194 PSI FOR 1/2" COMPRESSIVE MODULUS ASTM D695 673,400 PSI ASTM D732 SHEAR STRENGTH 15.000 PSI ASTM C518 1.8 BTU IN/HR SF °F THERMAL CONDUCTIVITY COEFFICIENT OF THERMAL EXPANSION ASTM E831 2.2 x 10E-6 IN/IN/°F ASTM C518 THERMAL RESISTANCE (R VALUE) 0.95 HR SF °F/BTU ACCEPTABLE MANUFACTURERS FABREEKA OR OTHER PRE-APPROVED MANUFACTURER

GENERAL NOTES

1. NEITHER THE PROFESSIONAL ACTIVITIES OF THE ENGINEER, NOR THE PRESENCE OF THE ENGINEER OR HIS OR HER EMPLOYEES AND SUBCONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE THE CONTRACTOR AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES, AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES, OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING, OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE ENGINEER AND HIS OR HER PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR OTHER ENTITY OR THEIR EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PRECAUTIONS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE JOBSITE SAFETY. THE ENGINEER AND THE ENGINEER'S CONSULTANTS SHALL BE MADE ADDITIONAL INSUREDS UNDER THE CONTRACTOR'S GENERAL LIABILITY INSURANCE POLICY.

2. STRUCTURAL DRAWINGS INCLUDE DESIGN REQUIREMENTS AND DIMENSIONS FOR STRUCTURAL INTEGRITY BUT DO NOT SHOW ALL DETAIL DIMENSIONS TO FIT INTRICATE ARCHITECTURAL AND MECHANICAL DETAILS. CONTRACTOR SHALL SO CONSTRUCT THE WORK SO THAT IT WILL CONFORM TO THE CLEARANCES REQUIRED BY ARCHITECTURAL, MECHANICAL AND ELECTRICAL DESIGN.

3. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE UNLESS NOTED OTHERWISE, THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION.

4. DETAILS AND NOTES ON THE STRUCTURAL DRAWINGS ARE INTENDED TO BE TYPICAL FOR SIMILAR SITUATIONS ELSEWHERE.

5. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR MECHANICAL, ELECTRICAL, AND PLUMBING WITH APPROPRIATE TRADE CONTRACTORS. OPENING SIZES AND LOCATIONS SHOWN FOR DUCTS, PIPES, INSERTS AND OTHER PENETRATIONS WHEN SHOWN ARE FOR GENERAL INFORMATION ONLY AND SHALL BE VERIFIED PRIOR TO FORMING.

6. DIMENSIONS, NOTES, AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.

7. WHERE NEW CONSTRUCTION INTERFACES WITH EXISTING CONDITIONS, FIELD VERIFY EXISTING DIMENSIONS, MEMBER SIZES AND ELEVATIONS SHOWN ON THE DRAWINGS PRIOR TO STARTING CONSTRUCTION. ALL DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE

8. REFER TO ARCHITECTURAL DRAWINGS FOR THE FOLLOWING: A. SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS, UNLESS NOTED OTHERWISE.

B. SIZE AND LOCATIONS OF ALL INTERIOR AND EXTERIOR MASONRY WALLS. C. SIZE AND LOCATION OF ALL CONCRETE CURBS, FLOOR DRAINS, SLOPES, DEPRESSED AREAS, CHANGES

IN LEVEL, CHAMFERS, GROOVES, INSERTS, ETC. D. $\,$ SIZE AND LOCATION OF ALL FLOOR AND ROOF OPENINGS UNLESS NOTED OTHERWISE. E. FLOOR, WALL AND ROOF FINISHES.

F. STAIR FRAMING AND DETAILS. ALSO REFER TO STAIR MANUFACTURER'S APPROVED SHOP DRAWINGS. G. DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS. H. FIRE PROTECTION REQUIREMENTS.

9. REFER TO MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR THE FOLLOWING: A. PIPE RUNS, SLEEVES, HANGERS, TRENCHES, WALL AND SLAB OPENINGS, ETC., EXCEPT AS SHOWN. B. ELECTRICAL CONDUIT RUNS, BOXES, OUTLETS IN WALLS AND SLABS CONCRETE INSERTS FOR ELECTRICAL, MECHANICAL OR PLUMBING FIXTURES D. SIZE AND LOCATION OF MACHINE OR EQUIPMENT BASES OR CURBS AND ANCHOR BOLTS FOR MOTOR

10. BEFORE SUBMITTING A PROPOSAL FOR THIS WORK, EACH BIDDER SHALL VISIT THE PREMISES AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS, TEMPORARY CONSTRUCTION REQUIRED, QUANTITIES AND TYPES OF EQUIPMENT, ETC. THE BID SHALL INCLUDE ALL SUMS REQUIRED TO DO THE WORK WITHIN THE EXISTING CONDITIONS. DISRUPTION OF NORMAL ACTIVITIES IN THE WORK AREA SHALL BE KEPT TO A MINIMUM.

11. SHOP DRAWINGS PREPARED BY SUPPLIERS, SUBCONTRACTORS, AND OTHERS SHALL BE REVIEWED AND COORDINATED PRIOR TO SUBMITTING TO THE ARCHITECT. EACH SHOP DRAWING SUBMITTED SHALL BE STAMPED, INITIALED AND DATED INDICATING REVIEW BY THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR.

12. SHOP DRAWINGS PREPARED BY THE SUBCONTRACTORS, SUPPLIERS, AND OTHERS SHALL BE REVIEWED BY THE ARCHITECT ONLY FOR GENERAL CONFORMANCE WITH DESIGN CONCEPT ONLY. REVIEW BY THE ARCHITECT SHALL NOT BEGIN WITHOUT THE PRIOR COORDINATION AND REVIEW BY THE GENERAL CONTRACTOR. WORK SHALL NOT BEGIN WITHOUT REVIEW BY THE ARCHITECT. NOTATIONS MADE BY THE ARCHITECT ON THE SHOP DRAWINGS DO NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.

13. OPTIONS ARE FOR THE CONTRACTOR'S CONVENIENCE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY CHANGES RESULTING FROM CHOOSING AN OPTION AND SHALL COORDINATE ALL DETAILS. THE COST OF ADDITIONAL DESIGN WORK NECESSITATED BY SELECTION OF AN OPTION SHALL BE BORNE

14. THE COST OF ADDITIONAL DESIGN WORK DUE TO ERRORS OR OMISSIONS BY THE CONTRACTOR IN CONSTRUCTION SHALL BE BORNE BY THE CONTRACTOR.

15. ANY ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW OR RECORD SHALL BEAR THE STAMP AND SIGNATURE OF A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE STATE OF

16. ELEVATIONS ARE BASED ON THE FIRST FLOOR ELEVATION OF (+ 100' - 0") WHICH IS EQUAL TO CIVIL ELEVATION OF (853.83').

FOUNDATIONS/SLAB-ON-GRADE

1. CROSS REFERENCE ARCHITECTURAL AND STRUCTURAL DRAWINGS TO ASSURE PROPER DIMENSIONS AND PLACEMENT OF ALL ANCHOR BOLTS, INSERTS, NOTCHES, EDGES IN GRADE BEAMS, FOUNDATION WALLS AND

2. FOUNDATION DESIGN BASED ON GEOTECHNICAL ENGINEERING REPORT DATED OCTOBER 4, 2017 BY CGC, INC. REPORT IS ON FILE WITH THE ARCHITECT.

3. ALL EXCAVATIONS SHALL BE PROPERLY AND SAFELY BACKFILLED. DO NOT PLACE BACKFILL BEHIND RETAINING WALLS BEFORE CONCRETE HAS ATTAINED SPECIFIED COMPRESSIVE STRENGTH. CONTRACTOR SHALL BRACE OR PROTECT ALL WALLS BELOW GRADE FROM LATERAL LOADS UNTIL SUPPORTING FLOOR IS COMPLETELY IN PLACE AND HAS ATTAINED FULL STRENGTH. CONTRACTOR SHALL PROVIDE FOR DESIGN, PERMITS, AND INSTALLATION OF SHORING AND/OR SHEETING. BACKFILLING IS NOT PERMITTED FOR FOUNDATION WALLS UNTIL SUPPORTED SLAB ABOVE IS IN PLACE OR THE WALL IS ADEQUATELY BRACED TO

4. UNLESS NOTED OTHERWISE, ALL PILE CAPS SHALL BE CENTERED UNDER WALLS, PIERS OR COLUMNS

5. PROVIDE SAW CUT CONTROL JOINTS IN ALL SLABS-ON-GRADE. LOCATE JOINTS ALONG COLUMN LINES WITH INTERMEDIATE JOINTS SPACED PER THE TABLE BELOW, UNLESS NOTED OTHERWISE. CONTROL JOINTS SHALL BE CONTINUOUS, NOT STAGGERED OR OFFSET. SLAB PANELS SHALL HAVE A MAXIMUM LENGTH TO WIDTH RATIO OF 1.5 TO 1. PROVIDE ADDITIONAL CONTROL JOINTS AT ALL RE-ENTRANT CORNERS FORMED IN SLAB ON GRADE.

SLAB ON GRADE THICKNESS	MAX JOINT SPACING
5"	15'-0"

UNDERPINNING NOTES

1. UNDERPIN EXISTING WALLS AND FOOTINGS AND PLACE NEW FOOTINGS AS SHOWN ON THE FOUNDATION

2. NO EXCAVATION CAN BE DONE WITHIN 6'-0" OF THE EXISTING BUILDING UNTIL UNDERPINNING IS COMPLETE.

3. POURED CONCRETE WALL UNDERPINNING PROCEDURE SHALL BE AS FOLLOWS:

A. WHERE NOTED ON THE PLANS AND DETAILS, UNDERPINNING SHALL BE PERFORMED IN SEPARATE OPERATIONS NOT TO EXCEED 6'-0" IN LENGTH. B. PLACE HORIZONTAL REINFORCING BARS WITH 90-DEGREE BENDS SO THAT THEY MAY BE STRAIGHTENED TO LAP WITH BARS OF ADJACENT UNDERPINNING SECTIONS. C. $\,$ PLACE CONCRETE OF NEW WALL TO WITHIN 3"-4" OF THE UNDERSIDE OF EXISTING FOOTING WHERE APPLICABLE. AFTER 2 DAYS PACK FINAL 3"-4" WITH DRY GROUT. USE SAME GROUT SPECIFIED UNDER STEEL BASE PLATES GIVEN IN SPECIFICATION SECTION 05 12 23. GROUT IS TO SET AT LEAST 7 DAYS

COMPLETED PROMPTLY AND PRIOR TO STARTING ANOTHER SECTION IN THE IMMEDIATE AREA. 4. DURING UNDERPINNING OPERATION, CONTRACTOR SHALL BRACE AND SHORE WITH JACKS EXISTING FOOTING OR WALL AS REQUIRED TO PREVENT MOVEMENT OF EXISTING BUILDING. THE SHORING SHALL BE SELECTED TO WITHSTAND THE DESIGN FORCES INDICATED ON THE DRAWINGS. THE SHORING JACKS ARE TO BE LEFT IN PLACE AND CAST INTO THE CONCRETE UNDERPINNING POUR.

BEFORE ADJACENT SECTION IS EXCAVATED. SHORE AND BRACE EACH SECTION AS SOON AS FORMS

ARE REMOVED. WHEN EXCAVATION IS STARTED IN ANY SECTION, ALL WORK IN THAT SECTION MUST BE

5. CONTRACTOR SHALL SUBMIT A SCHEDULE OF UNDERPINNING OPERATIONS FOR REVIEW OF THE ARCHITECT AND ENGINEER.

6. CONTRACTOR SHALL SURVEY EXISTING FOOTING AND WALL ELEVATIONS PRIOR TO, DURING, AND AFTER UNDERPINNING OPERATIONS TO MONITOR POTENTIAL MOVEMENTS. SURVEY RESULTS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER.

PRESTRESSED /PRECAST CONCRETE

1. PRECAST MEMBERS SHALL BE DESIGNED FOR ALL LOADING CONDITIONS REQUIRED BY THE GOVERNING BUILDING CODES IN ADDITION TO ANY SPECIFIC LOADINGS SHOWN ON THE DRAWINGS.

2. ALL TOPPING SLABS TO BE NON-COMPOSITE WITH HOLLOW CORE SLABS, UNLESS NOTED OTHERWISE.

REINFORCING STEEL

1 1/2 INCHES

1. FOR CAST-IN-PLACE CONCRETE THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT UNLESS NOTED OTHERWISE:

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3 INCHES CONCRETE EXPOSED TO EARTH OR WEATHER NO. 6 BARS OR LARGER 2 INCHES NO. 5 BARS OR SMALLER 1 1/2 INCHES

TO WEATHER OR IN CONTACT WITH EARTH NO. 14 AND NO. 18 BARS 1 1/2 INCHES NO. 11 BARS OR SMALLER 3/4 INCHES BEAMS AND COLUMNS NOT EXPOSED TO

SLABS, WALLS, JOISTS NOT EXPOSED

WEATHER OR IN CONTACT WITH EARTH

2. DIMENSIONS OF CONCRETE COVER FOR REINFORCEMENT INDICATED ON DRAWINGS ARE TO OUTERMOST REINFORCING BARS. FOR BEAMS OR COLUMNS WITH STIRRUPS OR TIES, CLEAR COVER INDICATED IS TO STIRRUPS OR TIES.

3. BAR SPLICES: SPLICE REINFORCING WHERE INDICATED ON THE DRAWINGS. ALL SPLICES SHALL BE CLASS 'B' AS DEFINED IN ACI 318. IF SPLICE LENGTH IS NOT GIVEN ON THE DRAWINGS, PROVIDE LAP LENGTHS (IN INCHES) AS FOLLOWS:

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	3000 PSI CONCRETE		4000 PSI C	ONCRETE
BAR SIZE	OTHER	TOP	OTHER	TOP
#3	22	28	19	25
#4	29	38	25	33
#5	36	47	31	41
#6	43	56	37	49
#7	63	81	54	71
#8	72	93	62	81
#9	81	105	70	91
#10	91	118	79	102
#11	101	131	87	114

LAP LENGTHS ASSUME CLEAR SPACING BETWEEN BARS OF 2 BAR DIAMETERS, AND A MINIMUM COVER OF 1 BAR DIAMETER. FOR DEVELOPMENT LENGTHS, DIVIDE BY 1.3. TOP BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 1'-0" OF FRESH CONCRETE BELOW.

MASONRY (CONCRETE MASONRY UNITS)

1. MORTAR SHALL CONFORM TO AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) DESIGNATION CITED UNDER DESIGN CRITERIA, AND PROJECT SPECIFICATIONS. REFER TO DESIGN CRITERIA FOR MINIMUM COMPRESSIVE STRENGTH OF MORTAR.

2. REFER TO ARCHITECTURAL DRAWINGS FOR SURFACE AND HEIGHT OF UNITS, LAYING PATTERN AND JOINT TYPE. ALL BLOCK SHALL BE RUNNING BOND UNLESS NOTED OTHERWISE.

3. THE LOAD BEARING CONCRETE MASONRY WALLS FOR THIS PROJECT WERE DESIGNED TO SPAN VERTICALLY AND BE BRACED BY THE ROOF AND FLOOR FRAMING ELEMENTS OF THE STRUCTURE. DURING CONSTRUCTION THE MASONRY CONTRACTOR SHALL PROVIDE LATERAL BRACING UNTIL THE ROOF STRUCTURE IS INSTALLED AS RECOMMENDED BY ACI 530 AND THE LATEST REVISION OF "STANDARD PRACTICE FOR BRACING MASONRY WALLS UNDER CONSTRUCTION", PREPARED BY THE COUNCIL FOR MASONRY WALL BRACING. THIS BRACING IS TO PREVENT UNNECESSARY STRESS OR DAMAGE TO THE MASONRY WALLS FROM WIND LOADS, WHICH CAN OCCUR WHILE THE WALLS ARE NOT PROPERLY BRACED BY THE ROOF AND FLOOR STRUCTURE.

4. BAR SPLICES: SPLICE REINFORCING WHERE INDICATED ON THE DRAWINGS. IF SPLICE LENGTH IS NOT GIVEN ON THE DRAWINGS PROVIDE LAP LENGTHS (IN INCHES) AS FOLLOWS. BARS LARGER THAN #9 ARE TO BE MECHANICALLY SPLICED.

MINIMUM LAP SPLICE LENGTI			
BAR SIZE	LAP LENGTH		
#3	27		
#4	36		
#5	45		
#6	54		
#7	63		
#8	72		
#9	82		

POST INSTALLED ANCHORS

POST INSTALLED EXPANSION ANCHORS SERVING AS THE BASIS OF DESIGN ARE SHOWN ON THE DRAWINGS. ACCEPTABLE ALTERNATE ANCHORS MAY BE SUPPLIED PROVIDED THAT THE QUANTITY AND CONFIGURATION MATCHES THE CAPACITY OF THE DESIGN ANCHOR QUANTITY AND CONFIGURATION. ANY ACCEPTABLE ALTERNATES ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW. INSTALL IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. THE FOLLOWING TABLE SUMMARIZES THE EXPANSION ANCHORS USED ON THE PROJECT:

ANCHORED INTO:	BASIS OF DESIGN	ACCEPTABLE ALTERNATES AT CONTRACTOR'S OPTION
GROUTED MASONRY	HILTI KWIK BOLT 3	DEWALT/POWERS POWER STUD+ SD1 SIMPSON WEDGE-ALL
CONCRETE	HILTI KWIK BOLT TZ	DEWALT/POWERS POWER STUD+ SD2 ITW/RED HEAD TRUBOLT+ SIMPSON STRONG BOLT 2

POST INSTALLED THREADED ANCHORS SERVING AS THE BASIS OF DESIGN ARE SHOWN ON THE DRAWINGS. ACCEPTABLE ALTERNATE ANCHORS MAY BE SUPPLIED PROVIDED THAT THE QUANTITY AND CONFIGURATION MATCHES THE CAPACITY OF THE DESIGN ANCHOR QUANTITY AND CONFIGURATION. ANY ACCEPTABLE ALTERNATES ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW. INSTALL IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. THE FOLLOWING TABLE SUMMARIZES THE THREADED ANCHORS USED ON THE PROJECT:

ANCHORED INTO:	BASIS OF DESIGN	ACCEPTABLE ALTERNATES AT CONTRACTOR'S OPTION
GROUTED MASONRY	HILTI KWIK HUS	DEWALT/POWERS SCREW-BOLT+ SIMPSON TITEN HD
UNCRACKED CONCRETE	HILTI KWIK HUS	DEWALT/POWERS SCREW-BOLT+ SIMPSON TITEN HD
CRACKED CONCRETE	HILTI KWIK HUS	DEWALT/POWERS SCREW-BOLT+ SIMPSON TITEN HD

ADHESIVE ANCHOR SYSTEMS FOR ATTACHMENT INTO CONCRETE SHALL CONSIST OF DEFORMED REINFORCING BARS OR ASTM A193 GRADE B7 RODS, HEAVY DUTY NUTS AND WASHERS, AND A TWO COMPONENT STRUCTURAL ADHESIVE. ADHESIVE ANCHORING SYSTEMS SERVING AS THE BASIS OF DESIGN ARE SHOWN ON THE DRAWINGS. ACCEPTABLE ALTERNATE ANCHORS MAY BE SUPPLIED PROVIDED THAT THE QUANTITY AND CONFIGURATION MATCHES THE CAPACITY OF THE DESIGN ANCHOR QUANTITY AND CONFIGURATION. ANY ACCEPTABLE ALTERNATES ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW. INSTALL IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. ANCHORING SYSTEMS INTO HOLLOW MASONRY SHALL INCLUDE A SCREEN TUBE. THE FOLLOWING TABLE SUMMARIZES THE ADHESIVE ANCHORS USED ON THE PROJECT:

ANCHORED INTO:	BASIS OF DESIGN	ACCEPTABLE ALTERNATES AT CONTRACTOR'S OPTION
HOLLOW MASONRY	HILTI HIT-HY 270	DEWALT/POWERS AC 100+ GOLD ITW A7 ACRYLIC
GROUTED MASONRY	HILTI HIT-HY 270	DEWALT/POWERS AC 100+ GOLD ITW A7 ACRYLIC SIMPSON SET
CONCRETE	HILTI HIT-HY 200	DEWALT/POWERS AC 200+ SIMPSON SET XP
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GREEN HOUSE BUILDING CRITERIA

1. FOUNDATION DESIGN IS BASED ON PRELIMINARY DESIGN REACTIONS RECEIVED FROM ROUGH BROTHERS, INC. GREENHOUSE MANUFACTURER. FINAL DESIGN REACTIONS SUPPLIED BY THE SELECTED. GREENHOUSE MANUFACTURER MAY DIFFER FROM PRELIMINARY REACTIONS. BASED ON FINAL REACTIONS SUPPLIED, MODIFICATIONS TO THE FOUNDATION PLAN MAY BE REQUIRED. GENERAL CONTRACTOR SHALL INCLUDE IN THEIR BID AN ADD AND DEDUCT PRICE PER CUBIC YARD OF CONCRETE WORK INSTALLED IN CASE SUCH CHANGES ARE REQUIRED.

GREENHOUSE MANUFACTURER SHALL ENGAGE A PROFESSIONAL ENGINEER LICENSED TO PRACTICE STRUCTURAL ENGINEERING IN THE STATE OF WISCONSIN TO DESIGN THE GREENHOUSE AND TO SUBMIT STAMPED AND SEALED DRAWINGS AND STRUCTURAL CALCULATIONS FOR THE GREENHOUSE.

3. FOUNDATION DESIGN IS BASED ON THE GREENHOUSE COLUMNS HAVING PINNED BASES AND TRANSFERRING NO MOMENTS TO THE FOUNDATIONS

4. ALL EXTERNAL LATERAL LOAD RESISTANCE AND STABILITY OF THE GREENHOUSE IN THE COMPLETED STRUCTURE IS PROVIDED BY MOMENT FRAMES AND TENSION ONLY ROD BRACING. THE VERTICAL LATERAL MEMBERS CARRY THE APPLIED LATERAL LOADS TO THE BUILDING FOUNDATION. THE TENSION ONLY ROD BRACING AT THE ROOF SERVES AS THE HORIZONTAL DIAPHRAGM THAT DISTRIBUTES THE LATERAL WIND AND SEISMIC FORCES HORIZONTALLY TO THE VERTICAL LATERAL MEMBERS. ALL LATERAL RESISTING MEMBERS ARE BY THE GREENHOUSE MANUFACTURER.

5. GREENHOUSE MANUFACTURER IS SOLELY RESPONSIBLE FOR THE DESIGN AND MANUFACTURER OF THE GREENHOUSE. THE BUILDING MUST BE DESIGNED TO MEET THE LOADING INDICATED IN THE DRAWINGS AND THE DESIGN CRITERIA INDICATED ABOVE.

6. GREENHOUSE MANUFACTURER IS TO COORDINATE WITH ARCHITECTURAL DRAWINGS FOR WINDOW AND DOOR OPENINGS WHEN DESIGNING THE LATERAL SYSTEM.

STRUCTURAL STEEL

1. REFER TO DRAWINGS FOR DETAIL OF DECK OPENINGS. REFER TO ARCHITECTURAL MECHANICAL ELECTRICAL DRAWINGS, ETC., FOR EXACT SIZE, LOCATION, AND COUNT OF REQUIRED OPENINGS.

2. UNLESS NOTED OTHERWISE ALL WELDS SHALL BE CONTINUOUS 1/4" FILLET WELDS.

3. HIGH STRENGTH BOLTS SHALL BE INSTALLED IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS." REFER TO DETAILS FOR BOLT SIZE AND MATERIAL

4. BOLTS IN SLOTTED HOLES SHALL BE LOCATED IN THE CENTER OF THE HOLE AFTER FIELD ASSEMBLY IS COMPLETE, UNLESS DETAILED OTHERWISE.

5. USE BACKING FOR ALL FULL PENETRATION WELDS. ALL FULL AND/OR PARTIAL PENETRATION WELDS SHALL BE FULLY DETAILED ON THE SHOP DRAWINGS.

6. ALL LATERAL LOAD RESISTANCE AND STABILITY OF THE BUILDING IN THE COMPLETED STRUCTURE IS PROVIDED BY A COMBINATION OF REINFORCED MASONRY SHEAR WALLS AND STEEL MOMENT FRAMES (SEE PLAN SHEETS FOR LOCATIONS). THE COMPOSITE STEEL DECK AND CONCRETE FLOORS SERVE AS HORIZONTAL DIAPHRAGMS THAT DISTRIBUTE THE LATERAL WIND AND SEISMIC FORCES HORIZONTALLY TO THE VERTICAL LATERAL ELEMENTS. THE VERTICAL LATERAL ELEMENTS CARRY THE APPLIED LATERAL LOADS TO THE BUILDING FOUNDATION.

STEEL DECK

1. DECK SIZE AND GAGE INDICATED IN THE DRAWINGS ARE BASED ON THE FOLLOWING: A. VULCRAFT 2008 [2003] CATALOG FOR GRAVITY DESIGN LOADS AND UNSHORED CONSTRUCTION SPANS. B. STEEL DECK INSTITUTE (SDI) DIAPHRAGM DESIGN MANUAL 3RD EDITION FOR DIAPHRAGM LOADS.

2. STEEL ROOF DECK GALVANIZING SHALL CONFORM TO ASTM A653 WITH A MINIMUM COATING OF G60.

3. COMPOSITE STEEL FLOOR DECK GALVANIZING SHALL CONFORM TO ASTM A653 WITH A MINIMUM COATING OF

4. CORRUGATED STEEL FORM DECK GALVANIZING SHALL CONFORM TO ASTM A653 WITH A MINIMUM COATING

5. UNLESS NOTED OTHERWISE, DECK SHALL BE FASTENED WITH 5/8" DIAMETER PUDDLE WELDS AT 12" OC AT ALL SUPPORTS AND EDGES. SIDE LAPS SHALL BE FASTENED WITH #10 TEK SCREWS, MINIMUM ONE AT EACH MIDSPAN, OPENING EDGES SHALL RECEIVE THE SAME WELDING AS REQUIRED AT DECK ENDS. ALL WELDING

6. PROVIDE 16 GAGE WELD WASHERS AT PUDDLE WELD CONNECTIONS TO 24 GAGE AND LIGHTER STEEL

SHALL BE PERFORMED BY CERTIFIED WELDERS EXPERIENCED IN COLD-FORMED STEEL DECK WORK.

7. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO STEEL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON STEEL DECK). THIS 25 LBS LOAD AND 2'-0" SPACING INCLUDES ADJACENT MECHANICAL, ELECTRICAL, AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING SUPPORTED OFF STEEL FRAMING WILL NEED TO BE ADDED. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING LOCATION AND WEIGHT OF ALL THE ELEMENTS BEING HUNG.

8. USE SUMP PANS AT ALL ROOF DRAINS. MINIMUM THICKNESS FOR SUMP PANS SHALL BE 14 GAGE.

LINTELS

1. PROVIDE LINTELS OVER ALL OPENINGS AND RECESSES IN MASONRY CONSTRUCTION.

2. PENETRATIONS NOT IDENTIFIED ON THE DOCUMENTS ARE TO BE TREATED IN A MANNER SIMILAR TO THE IDENTIFIED LOCATIONS, LINTELS IN NON-BEARING MASONRY WALL OPENINGS CAN BE SIZED IN ACCORDANCE WITH THE NOTE BELOW. LINTELS THAT OCCUR IN EXISTING BEARING WALLS ARE TO BE SIZED ACCORDING TO SIMILAR CONDITIONS AND SPANS IN THE NEW CONSTRUCTION AND LINTEL SCHEDULE. BOTTOM PLATE SIZE SHALL BE A MINIMUM OF 3/8" THICK. THE WIDTH OF THE PLATE SHALL BE 3/4" LESS THAN THE FIELD VERIFIED WALL THICKNESS. THE PLATE SHALL BE THE FULL LENGTH OF THE LINTEL MEMBER. LINTELS ARE NOT REQUIRED OVER OPENINGS THAT ARE 12" WIDE OR LESS AND AT LEAST 1 COURSE BELOW THE TOP OF THE

3. ALL LINTELS SHALL HAVE A MINIMUM OF 8" END BEARING.

4. ALL LINTELS IN EXTERIOR WALL CONSTRUCTION SHALL BE HOT-DIP GALVANIZED, UNO.

5. FOR ALL OPENINGS NOT OTHERWISE DETAILED OR SCHEDULED, MINIMUM LINTELS SHALL BE

SPAN	STEEL OPTION (FOR	MASONRY OPTION	
SPAN	EACH 4-INCH OF MASONRY WIDTH)	8" CMU	
0 TO 2'-0"	5/16" PLATE (3/4" LESS THAN WALL WIDTH)	8" DEEP BOND BEAM WITH (1) #4	
2'-0" TO 4'-0"	L3 1/2x3 1/2x1/4	8" DEEP BOND BEAM WITH (1) #4	
4'-0" TO 6'-0"	L4x3 1/2x5/16 (LLV)	12" DEEP BOND BEAM WITH (1) #5	
6'-0" TO 8'-0"	L5x3 1/2x5/16 (LLV)	12" DEEP BOND BEAM WITH (2) #5	
8'-0" TO 10'-0"	L6x3 1/2x3/8 (LLV)	16" DEEP BOND BEAM WITH (2) #5	

ALL ANGLES THAT ARE BACK TO BACK SHALL BE WELDED TOP AND BOTTOM 3" AT 12" MINIMUM

BEARING PLATES NOT REQUIRED FOR LINTELS UNLESS NOTED OTHERWISE.

STRUCTURAL COLD-FORMED STEEL FRAMING (CFSF)

STEEL FRAMING - GENERAL PROVISIONS" OF THE AMERICAN IRON AND STEEL INSTITUTE CURRENT EDITION. 2. STRUCTURAL COLD FORM STEEL FRAMING IS DEFINED AS THE FOLLOWING:

A. ANY COLD FORMED FRAMING THICKER THAN 20 GA (33 MIL)

B. ANY EXTERIOR COLD FORMED FRAMING C. ALL OTHER STEEL STUD FRAMING IS NON-STRUCTURAL AND NOT A PART OF THE STRUCTURAL PACKAGE. 3. STRUCTURAL CFSF IS PERFORMANCE SPECIFIED. DESIGN INFORMATION INCLUDED IN THESE DOCUMENTS ARE TO BE CONSIDERED GUIDELINES FOR BIDDING PURPOSES ONLY. STUD DEPTH IS REQUIRED TO MEET THOSE INDICATED IN THE PLANS. CONNECTION DETAILS ARE ONLY AN INDICATION OF SUGGESTED SUPPORT AND SLIP JOINT ORIENTATION. GAUGE, SECTION, MATERIAL, BRACING, CONNECTIONS, STIFFENERS, AND

1. MATERIAL, DESIGN AND MANUFACTURE SHALL BE IN ACCORDANCE WITH THE "STANDARD FOR COLD-FORMED

4. CONSTRUCTION SHALL NOT BEGIN UNTIL SHOP DRAWINGS AND CALCULATIONS HAVE BEEN REVIEWED BY THE STRUCTURAL ENGINEER OF RECORD AND THE ARCHITECT.

SIMILAR DETAILS ARE THE RESPONSIBILITY OF THE MANUFACTURER BASED ON LOADS GIVEN ON THE PLANS

GLUED-LAMINATED TIMBER

1. COMPLY WITH AMERICAN FOREST & PAPER ASSOCIATION (AF&PA) NATIONAL DESIGN SPECIFICATION (NDS) FOR WOOD CONSTRUCTION.

2. DO NOT NOTCH OR DRILL BEAMS WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER THROUGH THE

3. GLULAM SIZE, TYPE, DETAILS AND CONNECTIONS ARE CONCEPTUAL AND ARE TO BE DESIGNED BY A LICENCED PROFESSIONAL ENGINEER. REFER TO SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS AND LOADING INFORMATION.

4. GLUED-LAMINATED WOOD SPECIES TO BE DOUGLAS FIR LARCH.

AND SPECIFICATIONS.

EXISTING STRUCTURAL INFORMATION

1. EXISTING STRUCTURAL INFORMATION SHOWN WAS OBTAINED FROM EXISTING DRAWINGS DATED A. 1976 BY STUART WILLIAM GALLAGER, ARCHITECT, INC B. 2002 BY STUART WILLIAM GALLAGER, ARCHITECT, INC C. 2012 BY DESTREE ARCHITECTURAL & DESIGN

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Architecture 612 375 0336 tel Interiors and 612 342 2216 fax Urban Design www.msrdesign.com

Civil Engineer Vierbicher Associates, Inc.

999 Fourier Drive, Suite 201 Madison, WI 53717

608.826.0532 tel

608.251.3600 tel

Landscape Architect Ken Saiki Design, Inc.

303 South Paterson Street, Suite 1 Madison, WI 53703

Structural Engineer, Technology and A/V

1800 Deming Way, Suite 200 Middleton, WI 53562

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608.223.9600 tel

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860 Blue Gentian Road, Suite 175 Eagan, MN 55121

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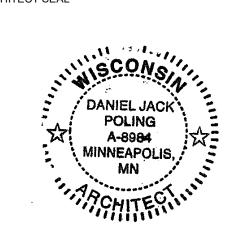
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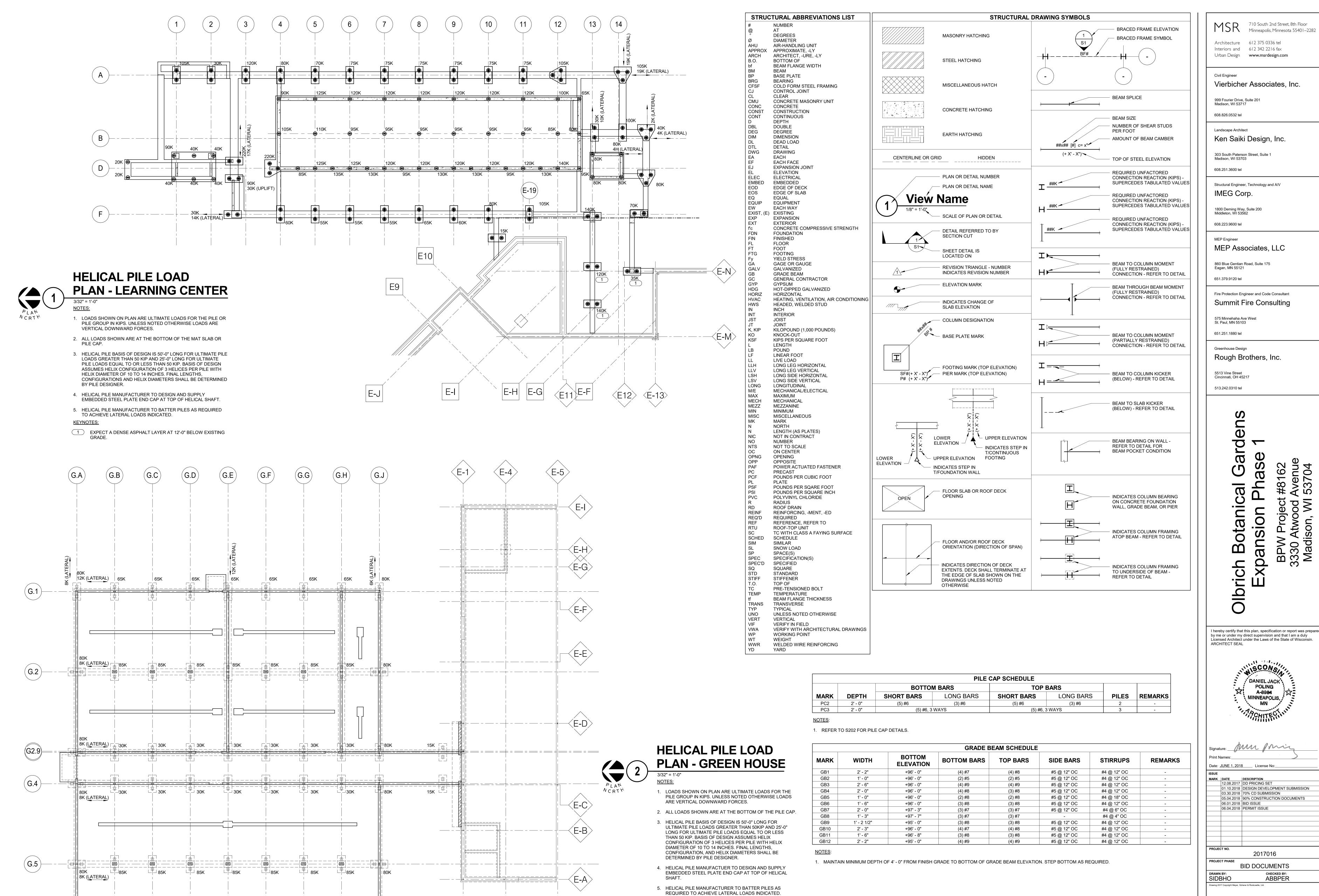
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PROJECT NO.

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GENERAL NOTES



6. EXPECT AN 8" GRAVEL LAYER ABOUT 18" BELOW EXISTING GRADE THROUGHOUT THE GREENHOUSE FOOTPRINT.

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Architecture 612 375 0336 tel

Interiors and 612 342 2216 fax

Madison, WI 53717

Madison, WI 53703

Structural Engineer, Technology and A/V

1800 Deming Way, Suite 200

575 Minnehaha Ave West

St. Paul, MN 55103

Cincinnati, OH 45217

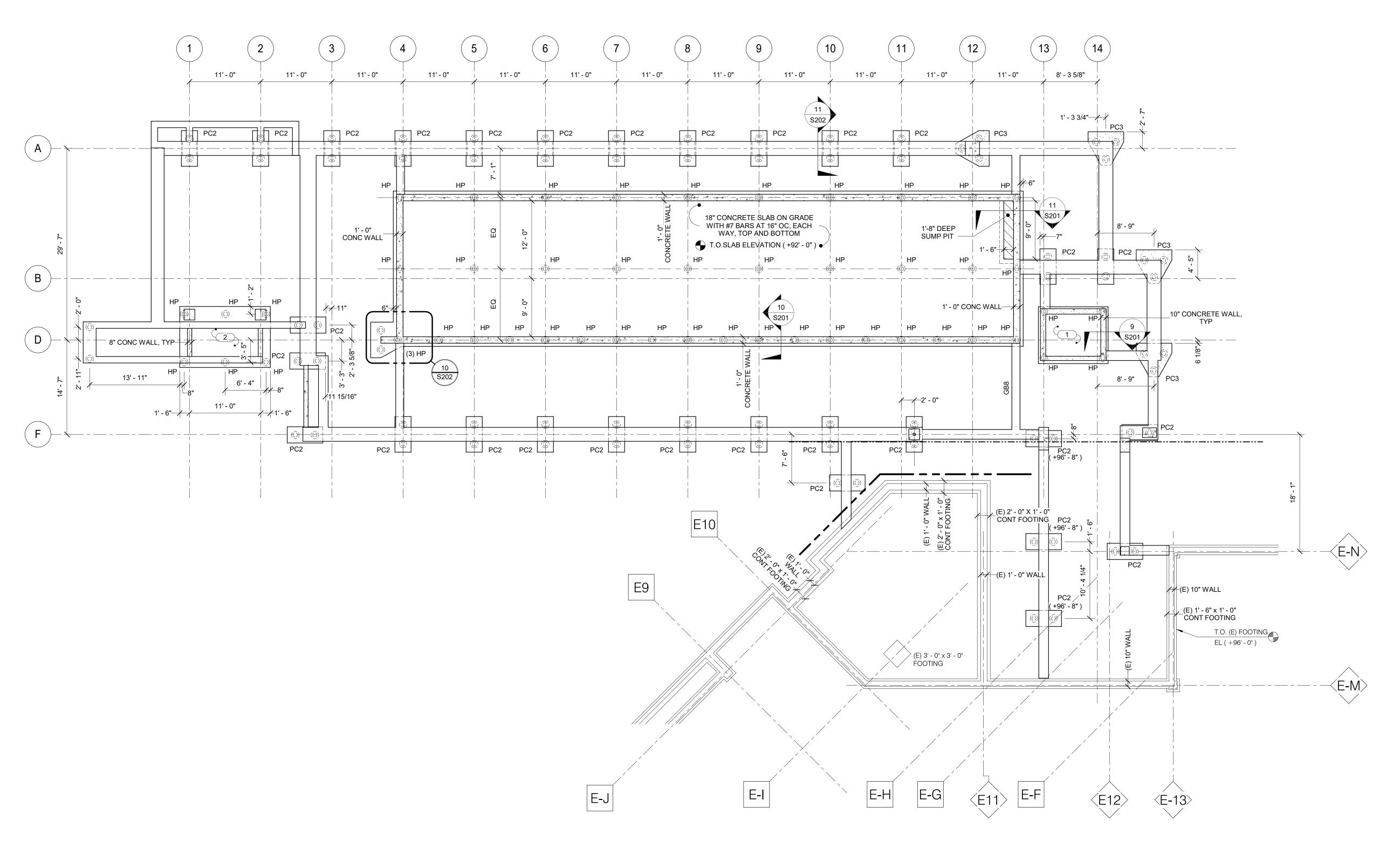
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SYMBOLS AND **ABBREVIATIONS**





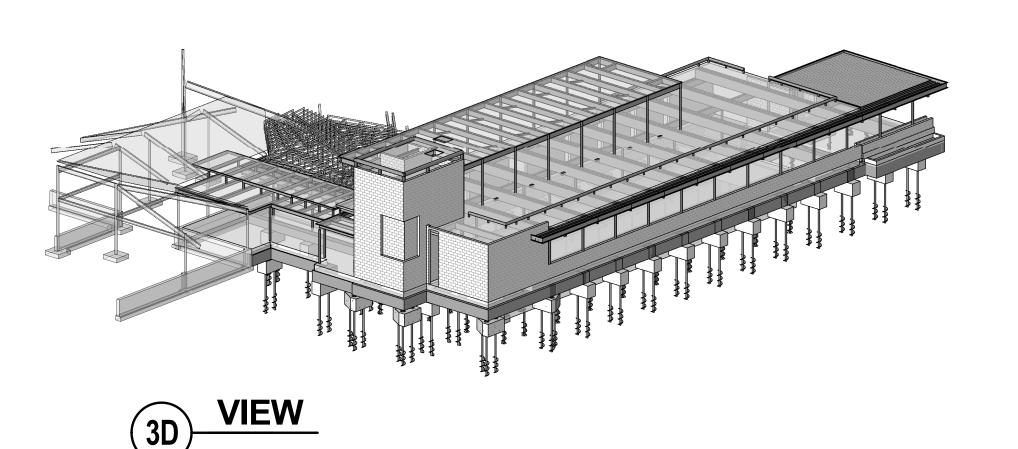
LEARNING CENTER HELICAL PILE PLAN

1. PC# INDICATES PILE CAP. REFER TO S002 FOR SCHEDULE AND LOADS. REFER TO S202 FOR DETAILS.

- 2. SLEEVE UTILITIES THROUGH FOUNDATION PER 12/S201. COORDINATE SIZE AND LOCATION WITH MECHANICAL AND PLUMBING CONTRACTORS.
- 3. ——— INDICATES APPROXIMATE LOCATION OF EARTH RETENTION SYSTEM: REQUIRED DURING
- CONSTRUCTION OF TANK SLABS AND WALLS. CONTRACTOR TO PROVIDE DESIGN FOR INSTALLATION AND NOT DISTURB THE EXISTING FOUNDATIONS. GEOTECHNICAL REPORT WILL BE PROVIDED. COORDINATE DRAIN TILE INSTALLATION WITH LOCATION OF EARTH RETENTION SYSTEM. CONTRACTOR OPTION TO USE EARTH RETENTION SYSTEM AS
- 4. HP INDICATES HELICAL PILE UNDER MAT SLAB. REFER TO S002 FOR LOADS.

TOP OF PILE CAP ELEVATION (+96' - 0"), UNO.

- 5. CISTERN MAT SLAB AND CISTERN WALLS TO HAVE XYPEX ADDITIVE IN CONCRETE.
- KEYNOTES:
- 1 ELEVATOR PIT SLAB: 18" CONCRETE MAT SLAB WITH #7 @ 16" OC BOTH DIRECTIONS, TOP AND BOTTOM. TOP OF SLAB ELEVATION (+95' - 0"). COORDINATE PIT DEPTH WITH SELECTED ELEVATOR.
- 2 18" CONCRETE MAT SLAB WITH #7 @ 16" OC BOTH DIRECTIONS, TOP AND BOTTOM. TOP OF SLAB ELEVATION (+96' - 0").



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Vierbicher Associates, Inc.

Ken Saiki Design, Inc.

Structural Engineer, Technology and A/V

MEP Associates, LLC

Fire Protection Engineer and Code Consultant Summit Fire Consulting

Rough Brothers, Inc.

860 Blue Gentian Road, Suite 175 Eagan, MN 55121

303 South Paterson Street, Suite 1 Madison, WI 53703

Civil Engineer

608.826.0532 tel

608.251.3600 tel

IMEG Corp.

608.223.9600 tel

MEP Engineer

651.379.9120 tel

575 Minnehaha Ave West St. Paul, MN 55103

651.251.1880 tel

Greenhouse Design

5513 Vine Street Cincinnati, OH 45217

513.242.0310 tel

1800 Deming Way, Suite 200 Middleton, WI 53562

Landscape Architect

999 Fourier Drive, Suite 201 Madison, WI 53717

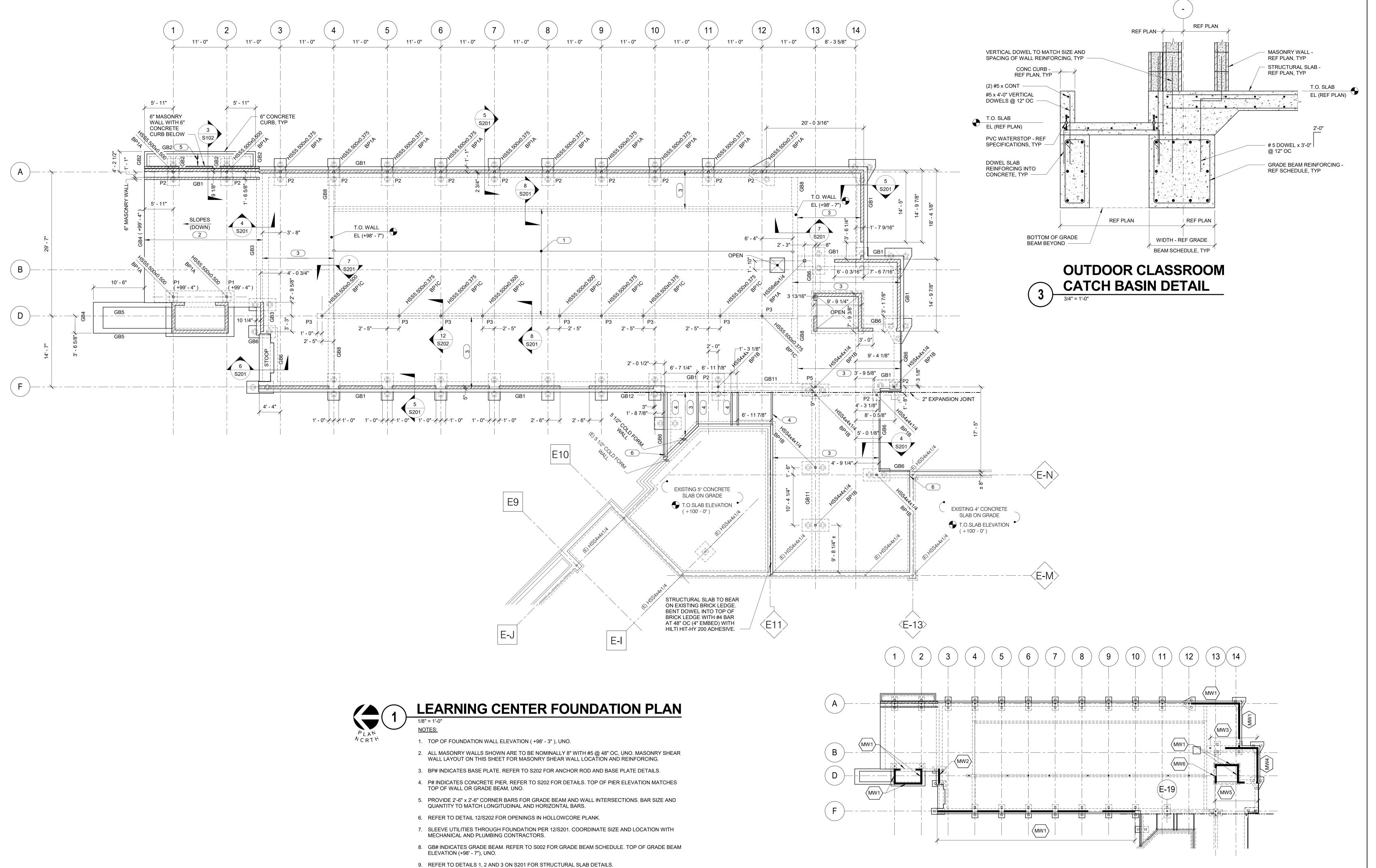
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LEARNING CENTER HELICAL PILE PLAN

SIDBHO

CHECKED BY: ABBPER



KEYNOTES:

1 SLAB ON INSULATION ON PRECAST PLANK WITH TOPPING:

3 SLAB ON INSULATION ON STRUCTURAL SLAB:

TO BE PROVIDED AT EACH WALL LOCATION.

4" ASTM D6847 EPS 12 BY GEOFOAM OR EQUIVALENT

4" ASTM D6847 EPS 12 BY GEOFOAM OR EQUIVALENT

2" COMPOSITE CONCRETE TOPPING SLAB WITH 6x6 - W1.4xW1.4 WWR

AGAINST WATER MOISTURE EXPOSURE AT BOTTOM OF THE PLANK.

DRAWINGS. THICKNESS OF SLAB IS TO BE CONSTANT THROUGHOUT

5 5" STRUCTURAL SLAB WITH #4 @ 12" OC EACH WAY. TOP OF SLAB = (+99' - 0").

5" CONCRETE TOPPING SLAB WITH 6x6 - W2.1xW2.1 WWR. TOP OF SLAB = (+100' - 0")

SUPERIMPOSED DEAD LOAD (EXCLUDES 2" COMPOSITE TOPPING) AND 100 PSF SUPERIMPOSED LIVE LOAD. HOLLOWCORE TO BE DESIGNED WITH APPROPRIATE CLEAR COVER TO PROTECT

10" HOLLOWCORE SLAB. THE HOLLOWCORE SLAB IS TO BE DESIGNED FOR 65 PSF

8" STRUCTURAL SLAB WITH #6 @ 10" OC TOP AND BOTTOM AND #4 @ 12" OC TEMPERATURE REINFORCING. TOP OF SLAB = (+100' - 0"). SLAB IS TO BE SLOPED PER ARCHITECTURAL

5" CONCRETE TOPPING SLAB WITH 6x6 - W2.1xW2.1 WWR. TOP OF SLAB = (+100' - 0")

4 COLD FORM BEARING WALL. WALL TO BE DESIGNED FOR 150LB DEAD LOAD AND 650LB SNOW

6 DOWEL REINFORCING OF GRADE BEAM INTO EXISTING PIER AND ANCHOR WITH HILTI HIT-HY 270

8" STRUCTURAL SLAB WITH #6 @ 12" OC TOP AND BOTTOM AND #4@12" OC TEMPERATURE

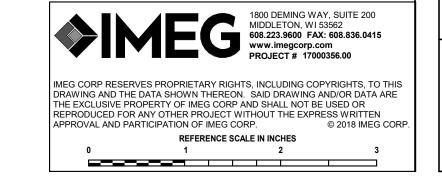
LOAD. CONCRETE CURB BETWEEN TOP OF STRUCTURAL SLAB AND BOTTOM OF TOPPING SLAB

MASONRY SHEAR WALL LAYOUT

MASONRY WALL REINFORCING SCHEDULE				
MARK	VERTICAL	HORIZONTAL	END ZONES	NOTES
(MW1)	#5 @ 48" OC	-	(1) CELL WITH (1) #5	-
MW2	#5 @ 24" OC - (2) CELLS WITH (1) #5 EACH CELL			-
(MW3)	REFER TO 4/S104			-
MW4	REFER TO 3/S104		-	
MW5	REFER TO 2/S104			-
MW6	REFER TO 5/S104 -			

NOTES:

- TYPICAL HORIZONTAL REINFORCING IS AS PER SPECIFICATIONS. IT IS INTENDED TO BE 'DUROWAL LADDER TYPE' OR EQUIVALENT.
- 2. REINFORCED CORES ARE ALWAYS GROUTED.
- 3. REFER TO 8/S301 FOR TYPICAL MASONRY OPENING AND END ZONE DETAIL.
- 4. END ZONE REINFORCEMENT CONTROL OVER TYPICAL VERTICAL REINFORCEMENT. TYPICAL VERTICAL REINFORCEMENT APPLIES BETWEEN END ZONES.
- 5. PROVIDE BOND BEAM WITH (2) #5 AT EACH LEVEL, UNLESS NOTED OTHERWISE IN DETAILS



Olbrich Botanical Gardens Expansion Phase 1

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Architecture 612 375 0336 tel
Interiors and 612 342 2216 fax
Urban Design www.msrdesign.com

Vierbicher Associates, Inc.

999 Fourier Drive, Suite 201

608.826.0532 tel

608.251.3600 tel

IMEG Corp.

608.223.9600 tel

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575 Minnehaha Ave West St. Paul, MN 55103

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/ DANIEL JACK

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LEARNING CENTER FOUNDATION PLAN

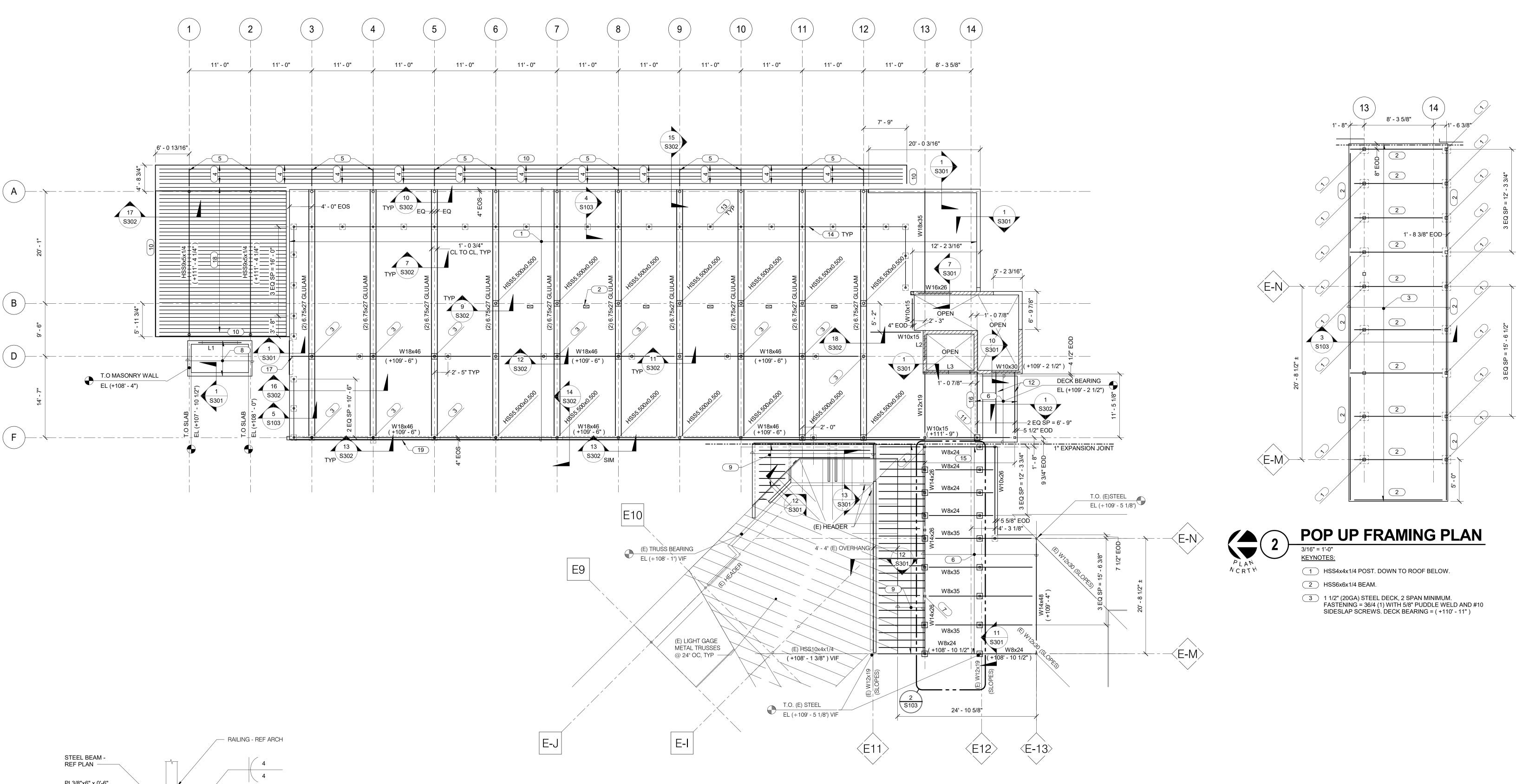
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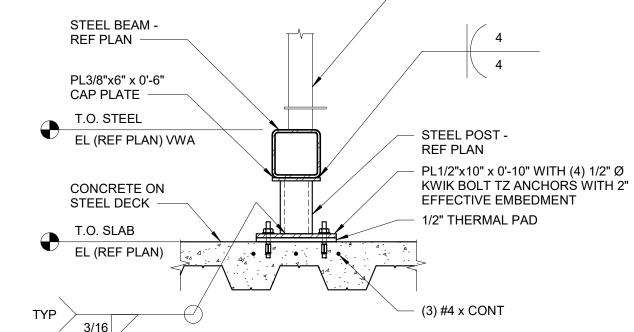
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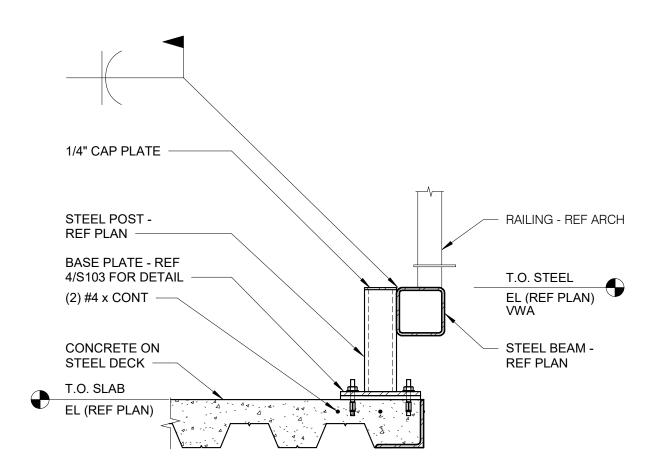
EXHIBIT G

S102





(4) RAILING SUPPORT DETAIL 1" = 1'-0"



5 RAILING SUPPORT DETAIL

LEARNING CENTER LEVEL 2 FRAMING PLAN

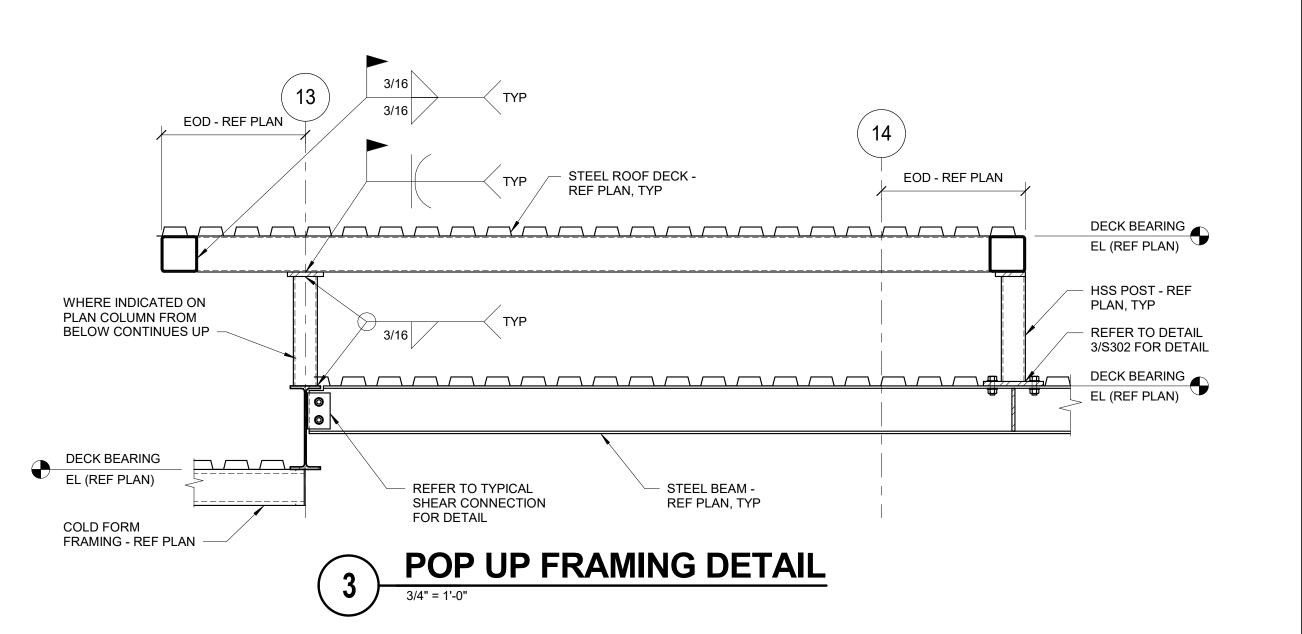
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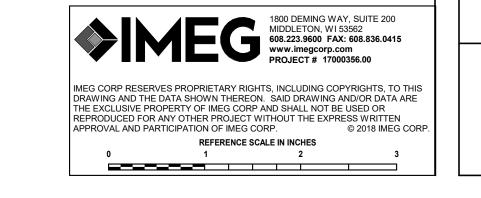
1. REFER TO 6/S302 FOR TYPICAL SHEAR CONNECTION.

- 2. L# INDICATES LINTEL IN STRUCTURAL MASONRY WALL REFER TO 9/S301 FOR SCHEDULE.
- 3. FOR LINTELS IN NON-STRUCTURAL WALLS, REFER TO GENERAL NOTES FOR SCHEDULE.
- KEYNOTES:

VCRT ₩

- 3" NORMAL WEIGHT CONCRETE ON 3" (18 GA) COMPOSITE STEEL DECK, 2 SPAN MINIMUM, WITH 6x6 W2.1xW2.1 WWR. TOTAL THICKNESS = 6". TOP OF SLAB ELEVATION (+112' 3"). FASTENING = 36/4 (3) @ STEEL FRAMING USE 5/8" PUDDLE WELDS AND WELDED SIDELAPS @ GLULAM FRAMING, USE #10 TRUGRIP LAG SCREWS FOR SUPPORT FASTENERS (1 1/4") MIN EMBED AND WELDED
- 2 FLOOR PENETRATION REFER TO 9/S301 FOR DETAIL.
- 3 HSS5.500x0.375 POST FROM TOP OF STEEL BEAM TO BOTTOM OF DECK. REFER TO DETAIL 12/S302.
- 2x8 @ 8" OC MAX. TOP OF BEAM = (+112' 1"). REFER TO ARCHITECTURAL DRAWINGS FOR EXACT SPACING.
- 5 HSS5x5x3/8 OUTRIGGER (GALV). TOP OF STEEL ELEVATION = (+111' 4 1/4").
- 6 1 1/2" (20 GA) STEEL DECK, 2 SPAN MINIMUM. FASTENING = 36/4 (1) WITH 5/8" PUDDLE WELDS AND #10 SIDELAP SCREWS. DECK BEARING = (+108' 10 1/2"), UNO.
- 7 COLUMN EXTENDS TO POP UP ROOF ABOVE.
- 8 3" NORMAL WEIGHT CONCRETE ON 2" (20 GA) CONFORM DECK, 1 SPAN, WITH 6x6 W1.4xW1.4 WWR. TOTAL THICKNESS = 5".
- 9 1 1/2" (22GA) TYPE B ROOF DECK SUPPORTED BY 6" COLD FORM JOISTS AT 16" OC. REFER TO LOADS ON 6/S104. DECK BEARING = (+107' 9").
- 10 C15x33.9 x CONT (+112' 8 1/2").
- 11 HSS3x3x1/4 POST FROM (+108' 10") TO (+110' 9"). REFER TO DETAILS 3 AND 4/S302.
- 12 W8x15. TOP OF STEEL ELEVATION = (+109' 2 1/2").
- 13 HSS4x0.313 POST (GALV). POSTS TO BE CENTERED UNDER VERTICAL POSTS OF GUARD RAIL AT 5' 6" OC MAX. REFER TO ARCHITECTURAL DRAWING FOR EXACT LOCATION OF GUARD RAIL POSTS.
- 14 HSS6x6x5/8 (GALV) x CONTINUOUS RAILING SUPPORT. TOP OF STEEL ELEVATION = (+113' 5").
- (15) W10x26 (+109' 2 1/2") TRANSFER BEAM
- 16 W12x19 (+111' 9") EOS = 1'-0" W8x15 (+109' - 2 1/2") - EOD = 4 1/2" REFER TO DETAIL 17/S301.
- 17 REFER TO 5/S301 SIM FOR BEAM BEARING ON MASONRY DETAIL.
- 2x TONGUE AND GROOVE WOOD DECK WITH CONTROLLED RANDOM LAY-UP OVER 2x8 ACCOYA @ 8" OC MAX. TOP OF BEAM = (+112' 1"). REFER TO ARCHITECTURAL DRAWINGS FOR EXACT SPACING.
- 19 C15x33.9 x CONT (+109' 6"). VERIFY EXTENTS WITH ARCHITECT.





Architecture 612 375 0336 tel
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Civil Engineer

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MSR 710 South 2nd Street, 8th Floor Minneapolis, Minnesota 55401–2282

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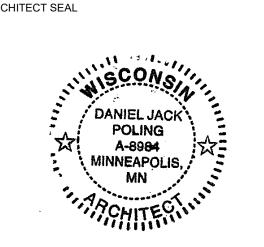
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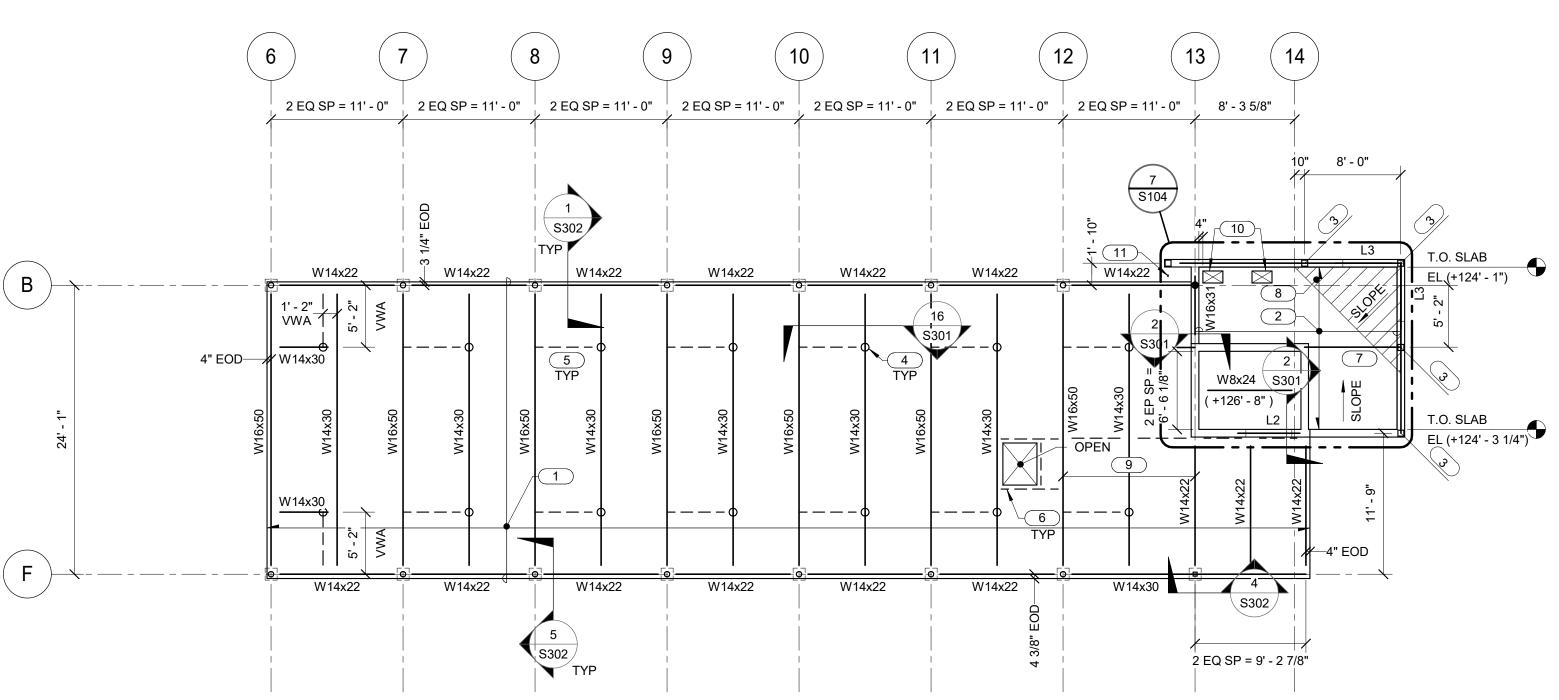
LEARNING CENTER

LEVEL 2 FRAMING

BID DOCUMENTS

PLAN EXHIBIT G

S103





LEARNING CENTER ROOF FRAMING PLAN

1. REFER TO 6/S302 FOR TYPICAL SHEAR CONNECTION

- 2. INDICATES ASTM F1852 BOLT WITH A CLASS A FAYING SURFACE IS TO BE PROVIDED IN SHEAR CONNECTION
- 3. L# INDICATES LINTEL IN STRUCTURAL MASONRY WALL REFER TO 9/S301 FOR SCHEDULE.

4. FOR LINTELS IN NON-STRUCTURAL WALLS, REFER TO GENERAL NOTES FOR SCHEDULE.

- 1 1/2" (20 GA) STEEL DECK, 2 SPAN MINIMUM. FASTENING = 36/4 (1) WITH 5/8" PUDDLE WELDS AND #10 SIDELAP SCREWS. DECK BEARING ELEVATION (+123' - 3 1/2"), UNO.
- 2 3" NORMAL WEIGHT CONCRETE ON 2" (20 GA) CONFORM DECK, 1 SPAN, WITH 6x6 W1.4xW1.4 WWR. TOTAL THICKNESS = 5". SEE PLAN FOR ELEVATIONS.

3 HSS6x6x5/16 POSTS.

- 4 FALL ARREST POST BY OTHERS. HOLES FOR ANCHORING OF POSTS TO BE PROVIDED. STEEL FABRICATOR TO COORDINATE WITH FALL ARREST SYSTEM PROVIDED.
- 6 PROVIDE ANGLE FRAMING AROUND OPENINGS IN ROOF DECK PER 15/S301.
- 7 L6x6x3/8. MINIMUM 4" BEARING ON GROUTED MASONRY BLOCK EACH END.
- 8 PROVIDE CONCRETE BUILD UP TO FORM SLOPE. REFER TO ARCHITECTURAL DRAWINGS FOR SLOPE REQUIREMENTS. MAXIMUM BUILD UP EQUAL TO 2".
- 9 CONTINUE DECK EDGE ANGLE PAST END OF MASONRY WALL. AFTER MASONRY WALL ENDS PROVIDE PLATE ON BACK SIDE OF ANGLE. REFER TO DETAIL 18/301.
- 10 FLOOR PENETRATION REFER TO 9/S301 FOR DETAIL.

BOND BEAM WITH (2) #5 x CONT

EL (REF PLAN)

T.O. STEEL

T.O. WALL

EL (+126' - 0")

DECK BEARING

EL (REF PLAN)

T.O. SLAB

EL (REF PLAN)

BOND BEAM -

STEEL LINTEL -

REF PLAN

T.O. SLAB

EL (REF PLAN)

REF DETAIL

HSS BEAM - REF PLAN

STEEL POST - REF PLAN

11 L6x4x3/8 (LLV). PROVIDE 4" BEARING OF HORIZONTAL LEG EACH END AND WELD TO BEARING.

BOND BEAM -

BOND BEAM

WITH (2) #5 x

MASONRY

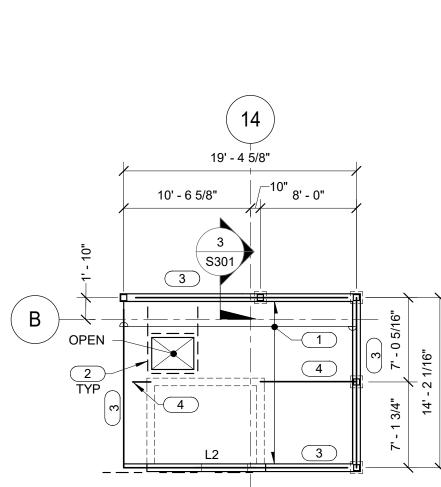
LINTEL - REF

CONTINUOUS

REF 2/S104 -

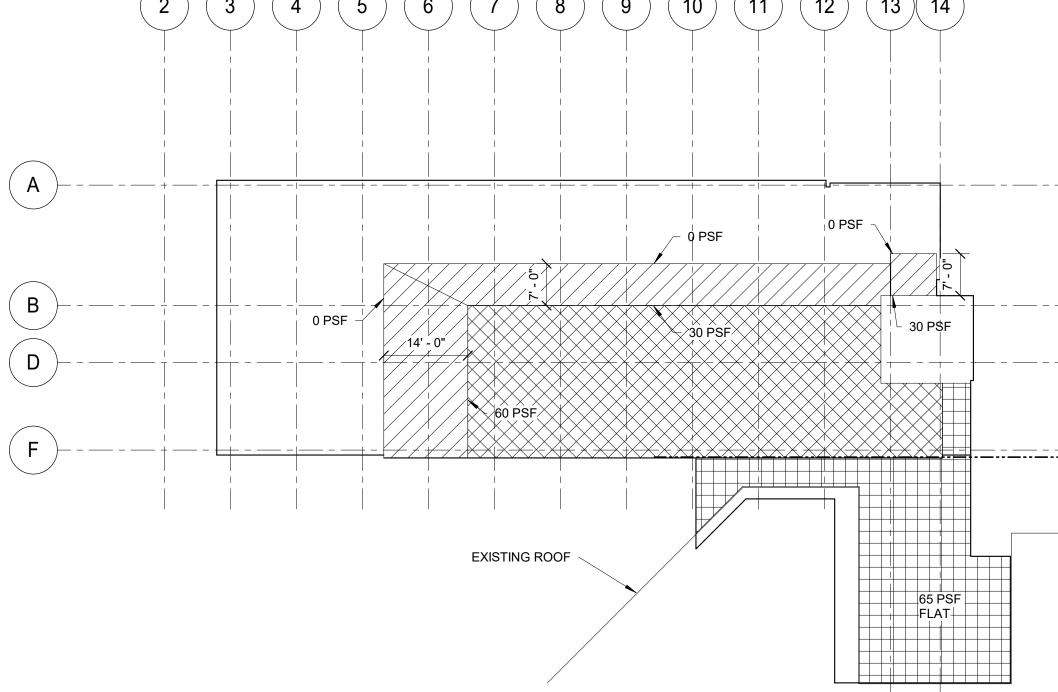
(2) CELLS WITH (2) #5 EACH CELL

REF DETAIL



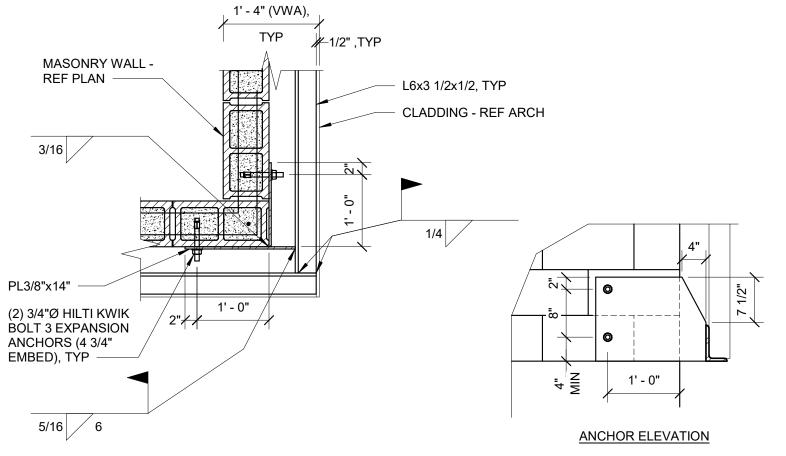
PLENIUM ROOF

- 1 1/2" (20 GA) STEEL DECK. FASTENING = 36/4 (1) WITH 5/8" PÙDDLE WELDS AND #10 SIDELAP SCREWS. DECK BEARING ELEVATION (+127' - 3 1/2"), UNO.
- 2 PROVIDE ANGLE FRAMING AROUND OPENINGS PER
- 3 HSS8x8x1/4 (+127' 11 1/2").
- 4 L6x6x3/8 (+127' 3 1/2"). MINIMUM 4" BEARING ON GROUTED BLOCK EACH END.



LEARNING CENTER ROOF LOAD PLAN

- 1. ALL INDICATED LOADS ARE IN ADDITION TO THE FOLLOWING DESIGN LOADS ROOF DEAD LOAD = 25 PSF SNOW LOAD = SEE S001
- 2. INDICATES TAPERED SNOW DRIFT LOAD.
- 3. IIII INDICATES FLAT SNOW DRIFT LOAD
- 4. INDICATES ROOF SUPPORTING SOLAR PANELS. DESIGN DEAD LOAD = 10 PSF.



LINTEL SUPPORT

8" BOND

OPEN

CONT

(1) #5

HSS BEAM - REF PLAN

T.O. STEEL

T.O. WALL

EL (+126' - 0")

EL (REF PLAN)

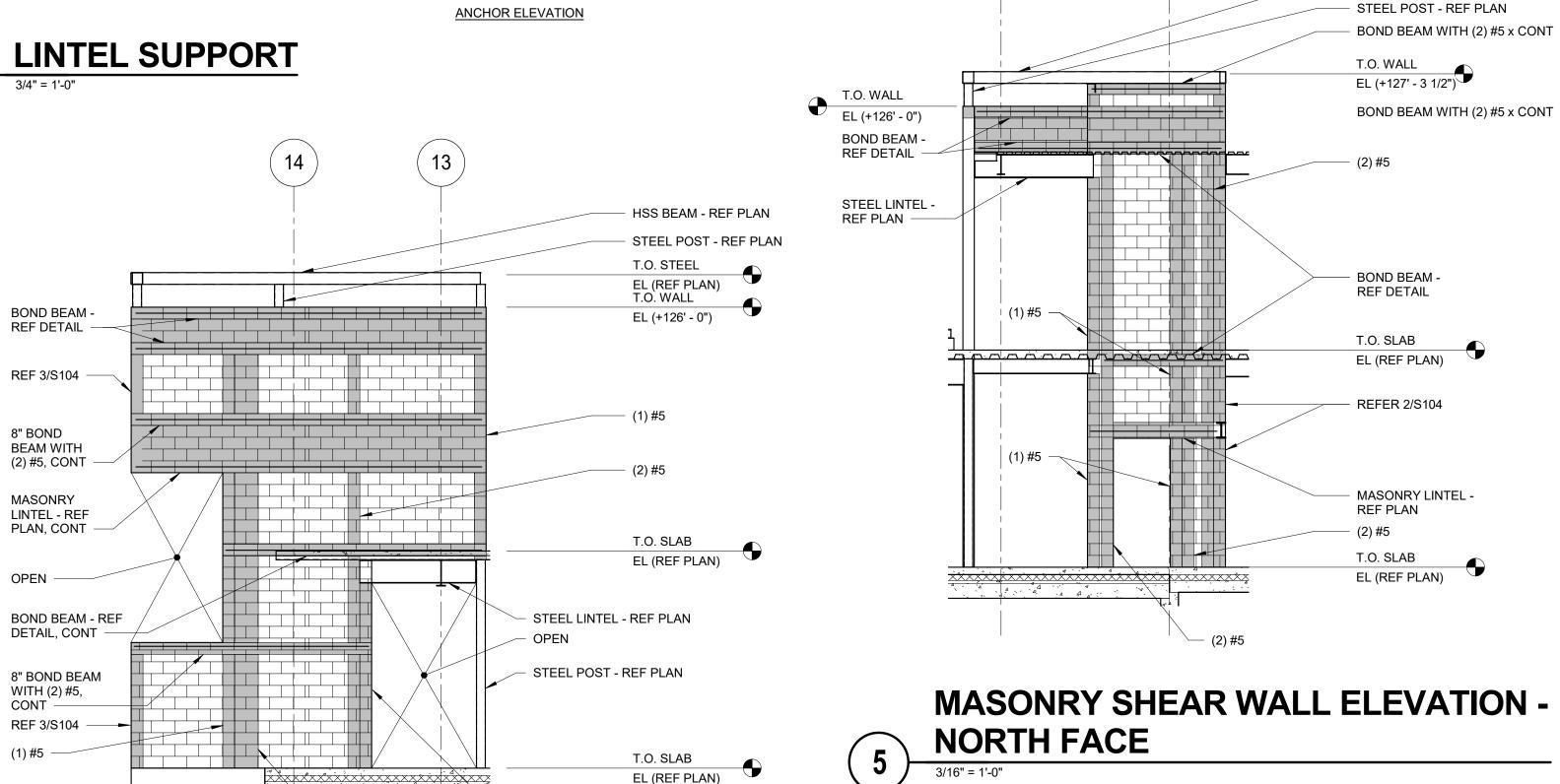
8" BOND BEAM WITH

(2) #5. CONTINOUS

T.O. SLAB

EL (REF PLAN)

STEEL POST - REF PLAN



MASONRY SHEAR WALL ELEVATION -WEST FACE

13

BOND BEAM -

REF DETAIL

T.O. WALL

EL (+127' - 3 1/2")

BOND BEAM -

REF DETAIL

LINTEL - REF

CONTINUOUS

BOND BEAM -

STEEL BEAM -

REF PLAN -

REF PLAN, TYP

MASONRY LINTEL

REF DETAIL,

(1) #5 MAOSNRY

(2) #5 -

TYP -

- 1. ELEVATION SHOWN IS LOOKING EAST. 2. REFER TO DETAILS 4, 5, AND 6/S301 FOR TYPICAL BEAM BEARING AT THE END OF STEEL LINTELS.

3. REFER TO 8/S301 FOR CONDITIONS NOT COVERED BY ELEVATION.

MASONRY SHEAR WALL ELEVATION -SOUTH FACE

- 1. ELEVATION SHOWN IS LOOKING NORTH.
- 2. REFER TO DETAILS 4, 5, AND 6/S301 FOR TYPICAL BEAM BEARING AT THE END OF STEEL LINTELS.
- 3. REFER TO 8/S301 FOR CONDITIONS NOT COVERED BY ELEVATION.

MASONRY SHEAR WALL ELEVATION -EAST FACE

(2) CELLS WITH (2) #5 EACH CELL

- 1. ELEVATION SHOWN IS LOOKING WEST.
- 2. REFER TO DETAILS 4, 5, AND 6/S301 FOR TYPICAL BEAM BEARING AT THE END OF STEEL LINTELS.
- 3. REFER TO 8/S301 FOR CONDITIONS NOT COVERED BY ELEVATION.

MASONRY SHEAR WALL ELEVATION -1. ELEVATION SHOWN IS LOOKING SOUTH.

AT THE END OF STEEL LINTELS. 3. REFER TO 8/S301 FOR CONDITIONS NOT COVERED BY ELEVATION

2. REFER TO DETAILS 4, 5, AND 6/S301 FOR TYPICAL BEAM BEARING

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HSS BEAM - REF PLAN

hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the Laws of the State of Wisconsin. ARCHITECT SEAL / DANIEL JACK POLING A-8984 MINNEAPOLIS, Signature: Print Names: Date: <u>JUNE 1, 2018</u> License No:_ DATEDESCRIPTION12.08.2017DD PRICING SET MARK DATE 01.10.2018 DESIGN DEVELOPMENT SUBMISSION 03.30.2018 70% CD SUBMISSION 05.04.2018 90% CONSTRUCTION DOCUMENTS 06.01.2018 BID ISSUE 06.04.2018 PERMIT ISSUE 2017016

710 South 2nd Street, 8th Floor Minneapolis, Minnesota 55401–2282

Architecture 612 375 0336 tel Interiors and 612 342 2216 fax Urban Design www.msrdesign.com

Vierbicher Associates, Inc.

Ken Saiki Design, Inc.

Structural Engineer, Technology and A/V

MEP Associates, LLC

Fire Protection Engineer and Code Consultant

Summit Fire Consulting

Rough Brothers, Inc.

860 Blue Gentian Road, Suite 175 Eagan, MN 55121

303 South Paterson Street, Suite 1 Madison, WI 53703

Civil Engineer

999 Fourier Drive, Suite 201

Madison, WI 53717

Landscape Architect

608.826.0532 tel

608.251.3600 tel

IMEG Corp.

608.223.9600 tel

MEP Engineer

651.379.9120 tel

575 Minnehaha Ave West St. Paul, MN 55103

651.251.1880 tel

Greenhouse Design

Cincinnati, OH 45217

513.242.0310 tel

1800 Deming Way, Suite 200 Middleton, WI 53562

EXHIBIT G S104

BID DOCUMENTS

LEARNING CENTER

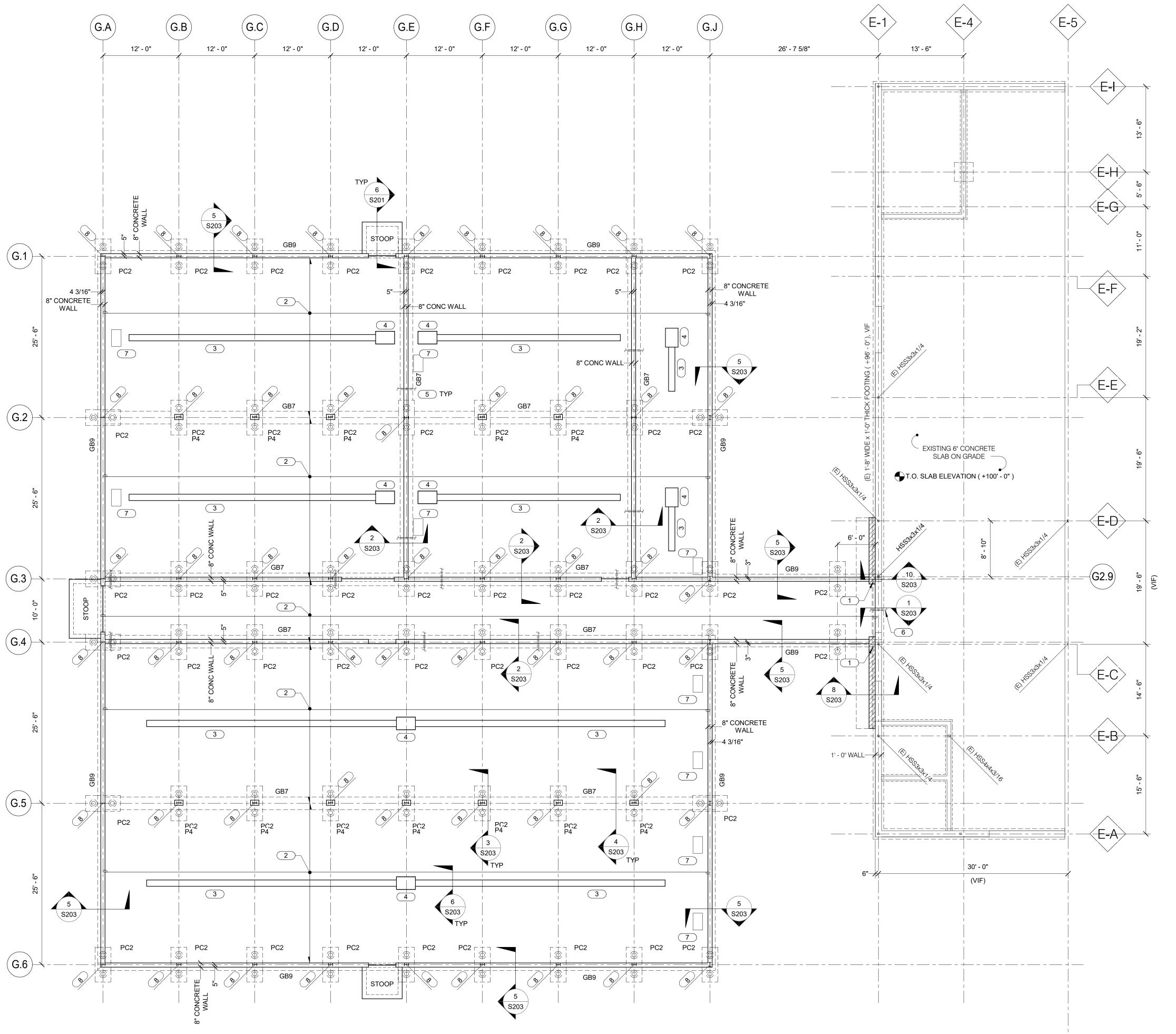
ROOF FRAMING

PLAN

ABBPER

PROJECT PHASE

SIDBHO





GREENHOUSE FOUNDATION PLAN

NOTES:

1. PC# INDICATES PILE CAP. REFER TO S002 FOR SCHEDULE AND LOADS. REFER TO S202 FOR DETAILS. TOP OF PILE CAP ELEVATION EXTERIOR (+95' - 0"), INTERIOR (+99 - 3"),

- 2. TOP OF FOUNDATION WALL ELEVATION (+102' 6"), UNO.
- 3. P# INDICATES CONCRETE PIER. REFER TO S202 FOR DETAILS. TOP OF PIER ELEVATION
- 4. GB# INDICATES GRADE BEAM. REFER TO S002 FOR GRADE BEAM SCHEDULE.
- 5. REFER TO S201 FOR TYPICAL STRUCTURAL SLAB CONSTRUCTION DETAILS.
- 6. PROVIDE 2'-6" x 2'-6" CORNER BARS FOR GRADE BEAM AND WALL INTERSECTIONS. BAR SIZE AND QUANTITY TO MATCH LONGITUDINAL AND HORIZONTAL BARS.
- 7. REFER TO DETAILS 1, 2 AND 3 ON S201 FOR STRUCTURAL SLAB DETAILS.

KEYNOTES:

(+100' - 8"), UNO.

1 DOWEL HORIZONTAL WALL AND GRADE BEAM REINFORCING INTO EXISTING CONCRETE 6" WITH ADHESIVE PER S001.

- 2 SLAB ON INSULATION ON STRUCTURAL SLAB:
 5" CONCRETE TOPPING SLAB WITH 6x6 W2.1xW2.1 WWR. TOP OF SLAB = (+100'-0")
 4" ASTM D6847 EPS 12 BY GEOFOAM OR EQUIVALENT
 8" STRUCTURAL SLAB WITH #6 @ 12" OC TOP AND BOTTOM AND #4 @ 12" OC TEMPERATURE REINFORCING.
- 3 TRENCH DRAIN: REFER TO 6/203. COORDINATE SIZE AND LOCATION WITH TRADE CONTRACTOR. PROVIDE (2) #5 DIAGONAL BARS IN SLAB AT RE-ENTRANT CORNERS.
- 4 CATCH BASIN: PROVIDE 2'-0"x3'-0" OPENING IN STRUCTURAL SLAB REFER TO 7/S203. COORDINATE SIZE AND LOCATION WITH TRADE CONTRACTOR.
- 5 SLEEVE UTILITIES THROUGH GRADE BEAM PER 12/S201. THICKEN BOTTOM OF GRADE BEAM TO PROVIDE MINIMUM OF 4" OF CONCRETE AROUND SLEEVE WHERE PIPE INVERT IS NEAR THE BOTTOM.
- 6 CORE DRILL EXISTING FOUNDATION WALL FOR NEW UTILITY CONNECTION.
- 7 MANIFOLD BOX: REFER TO 6/S203 SIM. COORDINATE SIZE AND LOCATION WITH TRADE CONTRACTOR.
- 8 COLUMN AND ANCHORS BY GREENHOUSE SUPPLIER.

MSR 710 South 2nd Street, 8th Floor Minneapolis, Minnesota 55401–2282

Architecture 612 375 0336 tel
Interiors and 612 342 2216 fax
Urban Design www.msrdesign.com

Civil Engineer

Vierbicher Associates, Inc.

999 Fourier Drive, Suite 201

Madison, WI 53717

608.826.0532 tel

608.251.3600 tel

IMEG Corp.

Landscape Architect

Ken Saiki Design, Inc.

303 South Paterson Street, Suite 1 Madison, WI 53703

Structural Engineer, Technology and A/V

....

1800 Deming Way, Suite 200 Middleton, WI 53562

MEP Engineer

608.223.9600 tel

MEP Associates, LLC

860 Blue Gentian Road, Suite 175 Eagan, MN 55121

Eagan, MN 55121 651.379.9120 tel

Fire Protection Engineer and Code Consultant
Summit Fire Consulting

575 Minnehaha Ave West St. Paul, MN 55103

651.251.1880 tel

Greenhouse Design
Rough Brothers, Inc.

5513 Vine Street

Cincinnati, OH 45217

513.242.0310 tel

rich Botanical Garden Expansion Phase 1

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the Laws of the State of Wisconsin.



PROJECT PHASE
BID DOCUMENTS
DRAWN BY: CHECKED BY:

DRAWN BY: CHECKED BY:
SIDBHO ABBPEI

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GREENHOUSE FOUNDATION PLAN

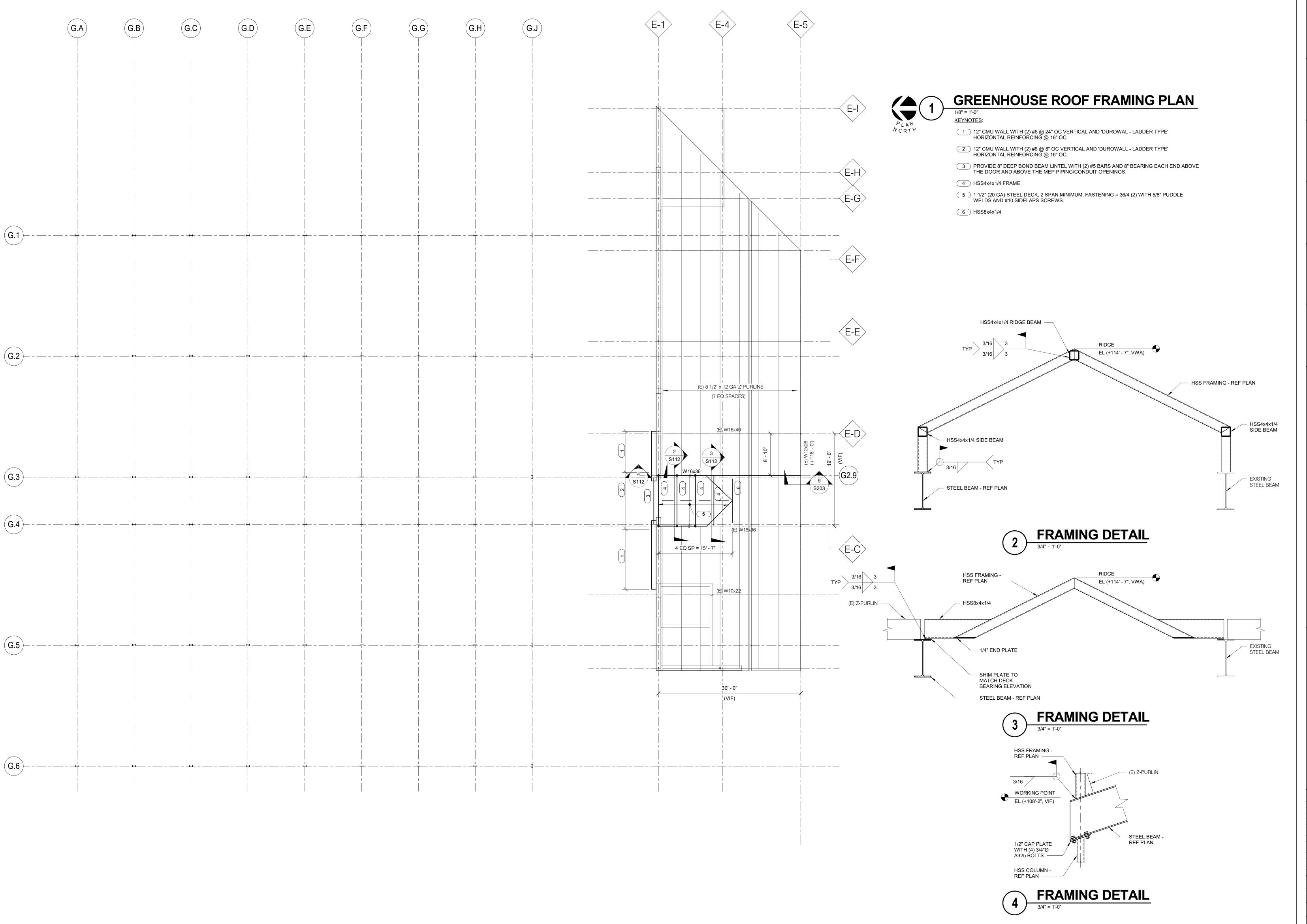
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5513 Vine Street Cincinnati, OH 45217

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ARCHITECT SEAL POLING A-8984 MINNEAPOLIS,

Signature: // // // // Signature: Print Names:__ Date: <u>JUNE 1, 2018</u> License No:_
 MARK
 DATE
 DESCRIPTION

 12.08.2017
 DD PRICING SET

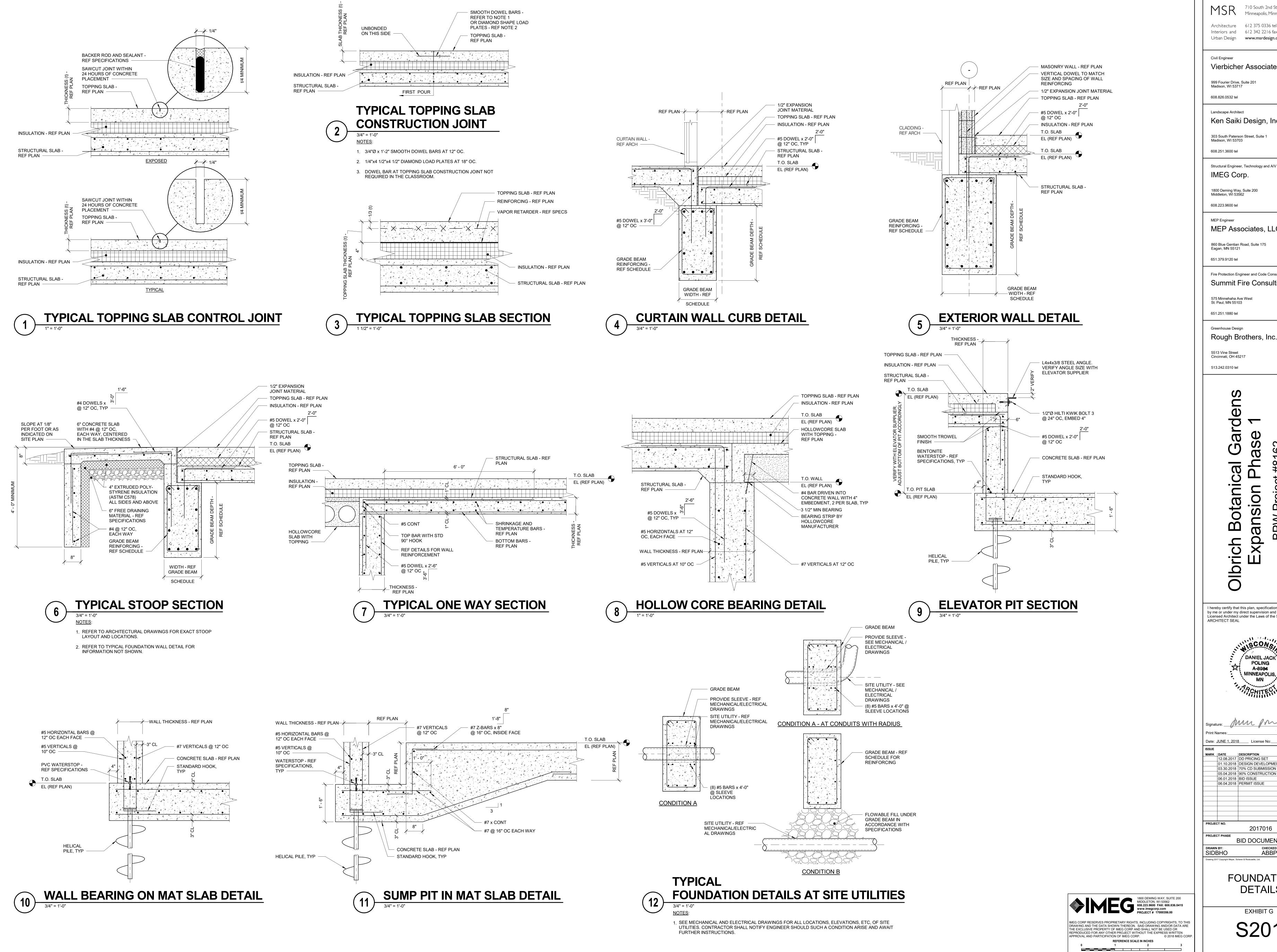
 01.10.2018
 DESIGN DEVELOPMENT SUBMISSION

 03.30.2018
 70% CD SUBMISSION
 05.04.2018 90% CONSTRUCTION DOCUMENTS 06.01.2018 BID ISSUE 06.04.2018 PERMIT ISSUE

PROJECT NO. 2017016 BID DOCUMENTS

PROJECT PHASE CHECKED BY: ABBPER SIDBHO

> GREENHOUSE **ROOF FRAMING** PLAN



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<u>qo</u>

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the Laws of the State of Wisconsin. ARCHITECT SEAL SCONS, DANIEL JACK POLING A-8984 MINNEAPOLIS, MN

Print Names: Date: <u>JUNE 1, 2018</u> License No:_

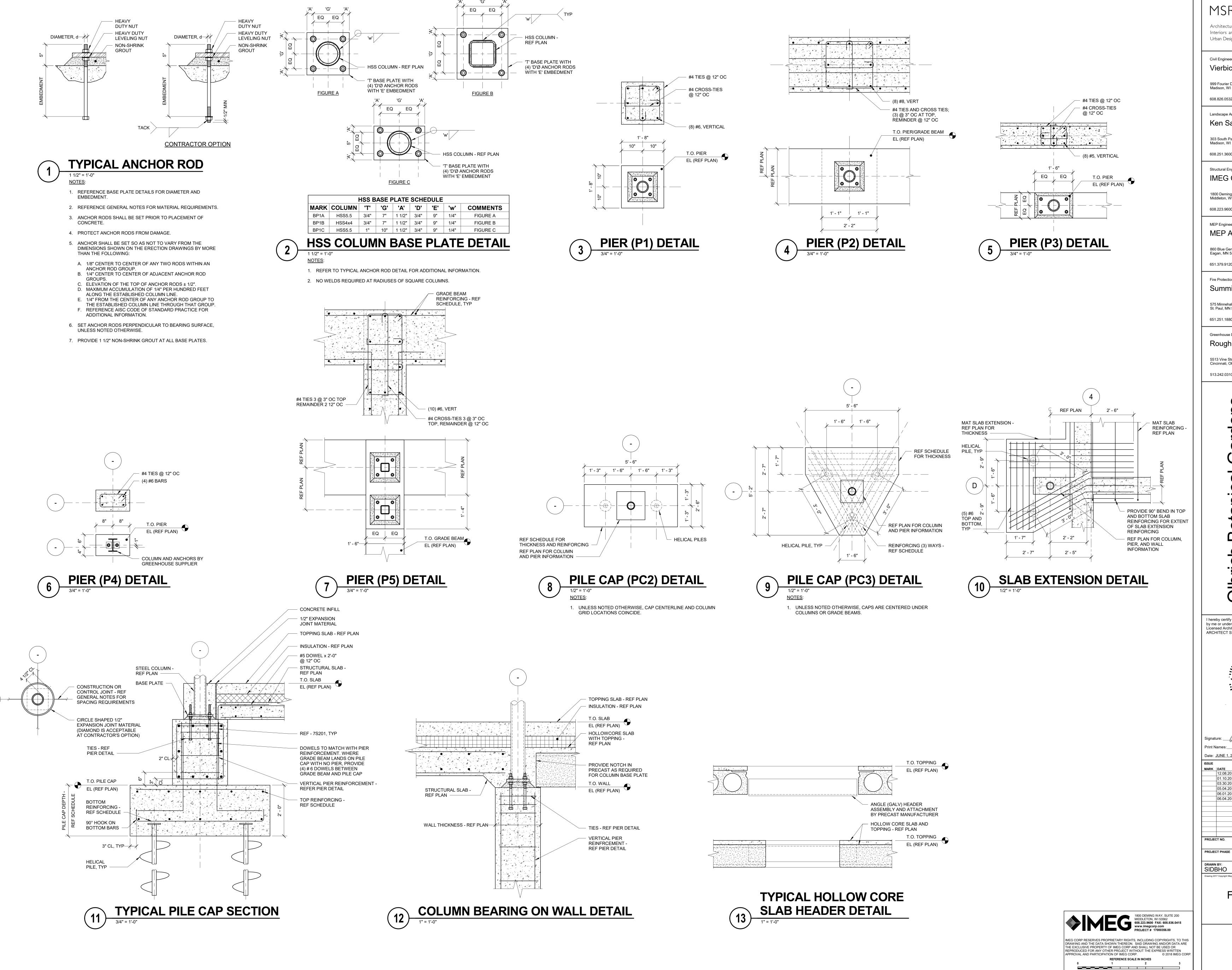
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2017016 PROJECT PHASE **BID DOCUMENTS**

FOUNDATION

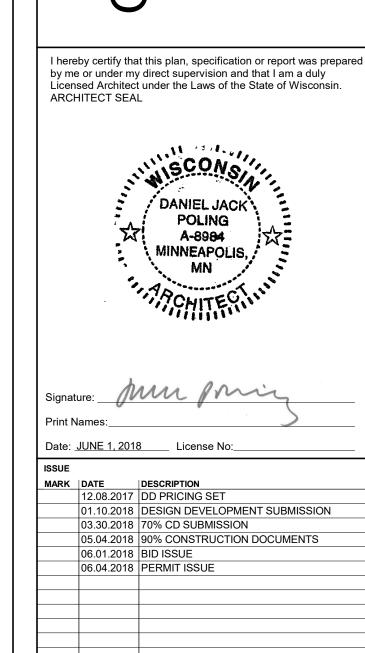
DETAILS

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Olbrich Botanical Garden Expansion Phase 1



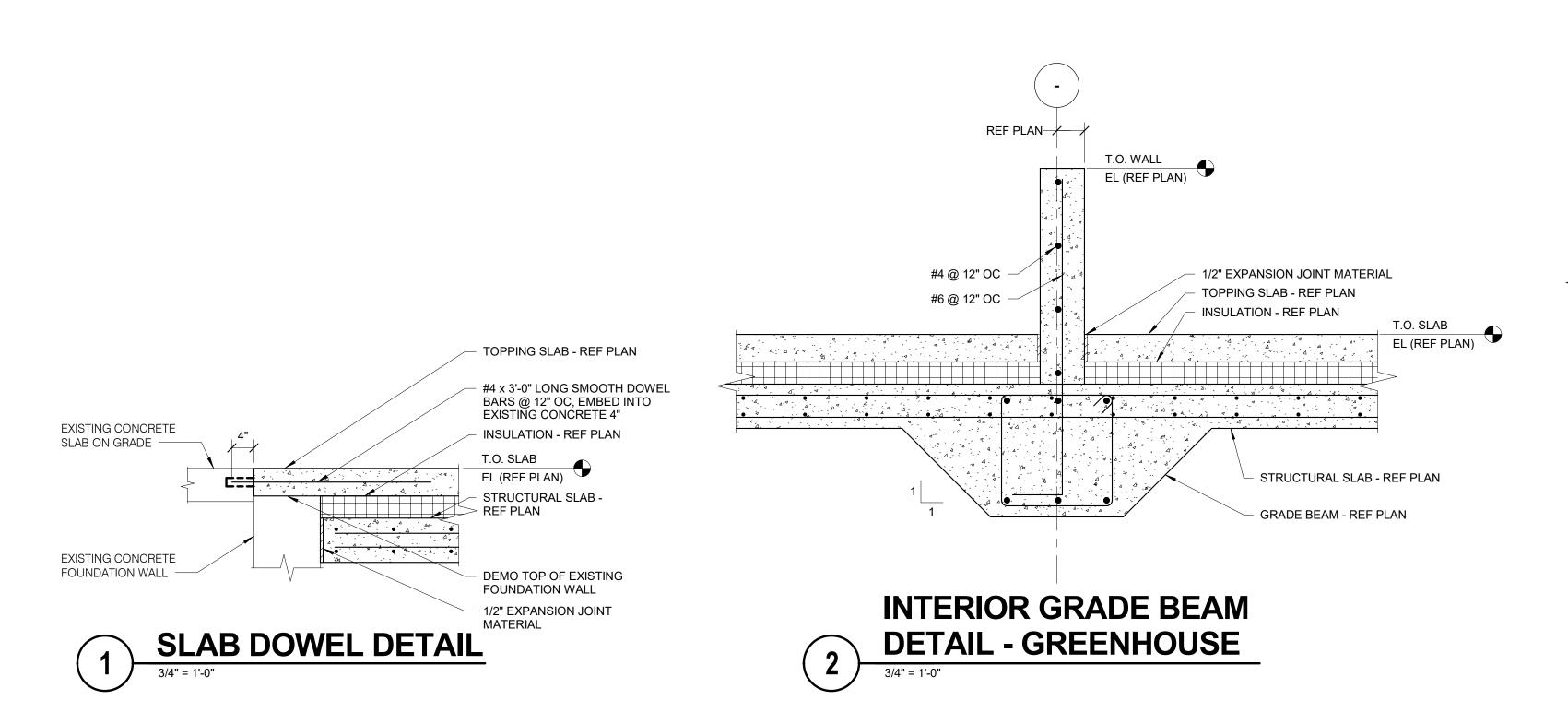
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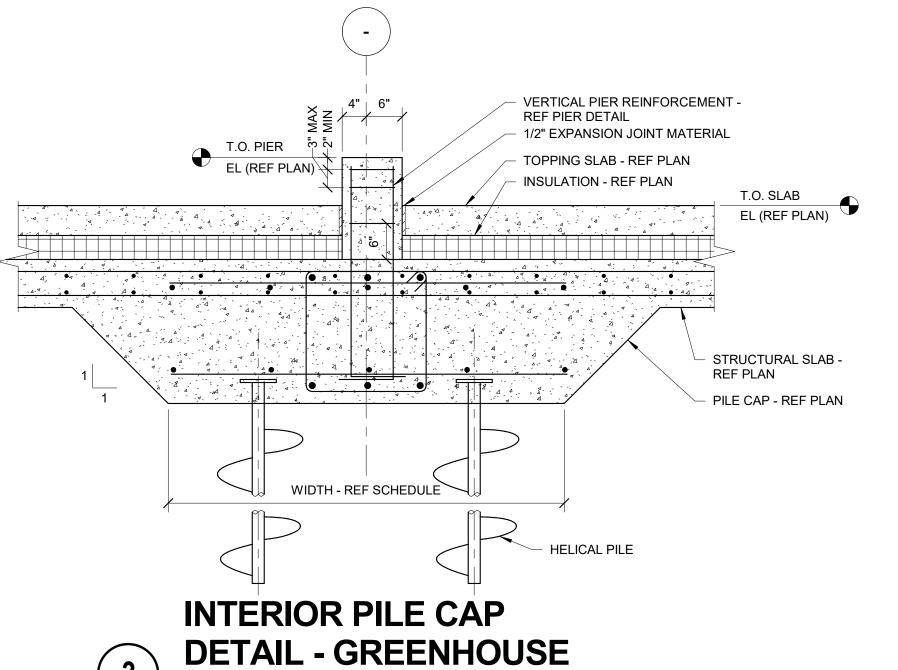
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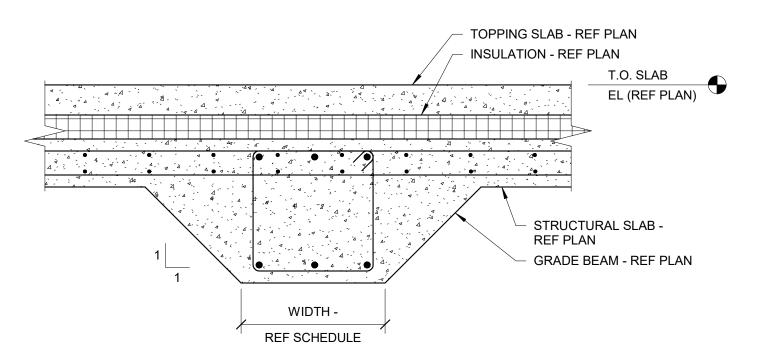
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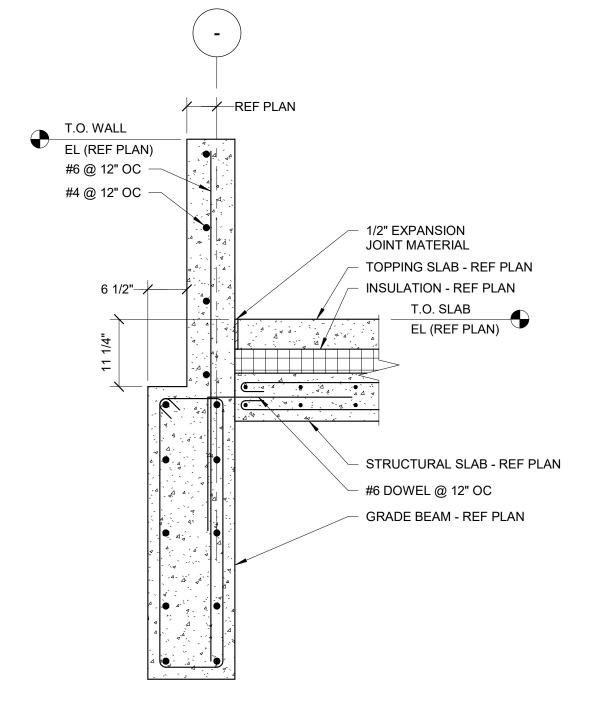
S202





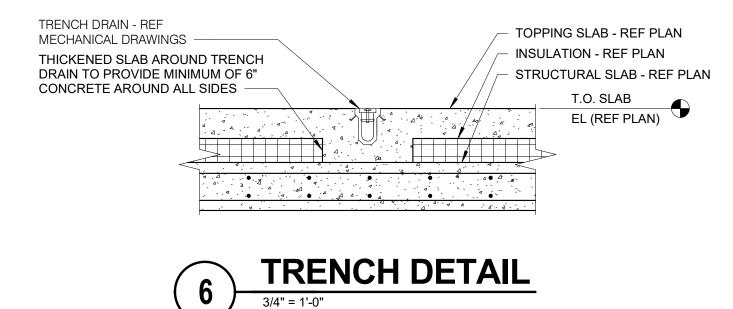


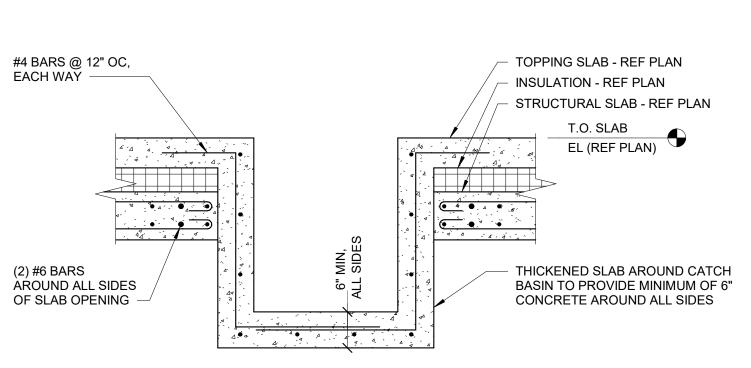




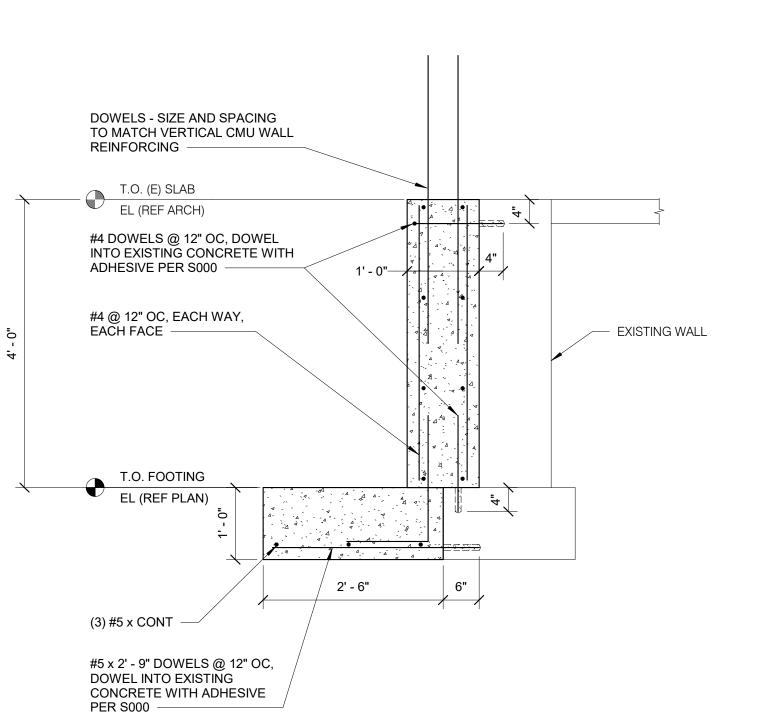
EXTERIOR GRADE BEAM

DETAIL - GREENHOUSE

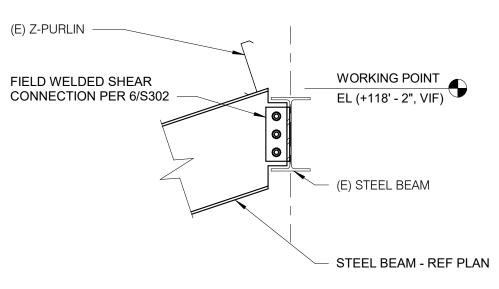




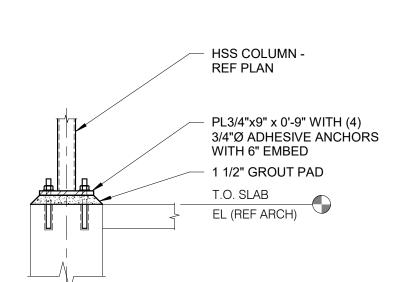












FOUNDATION DETAIL

3/4" = 1'-0"



MSR 710 South 2nd Street, 8th Floor Minneapolis, Minnesota 55401–228

Architecture 612 375 0336 tel Interiors and 612 342 2216 fax Urban Design www.msrdesign.com

Vierbicher Associates, Inc.

Civil Engineer

608.826.0532 tel

608.251.3600 tel

IMEG Corp.

608.223.9600 tel

MEP Engineer

651.379.9120 tel

575 Minnehaha Ave West St. Paul, MN 55103

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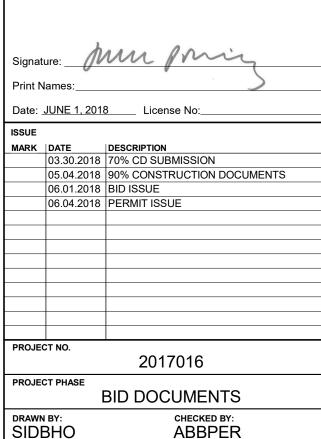
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303 South Paterson Street, Suite 1 Madison, WI 53703

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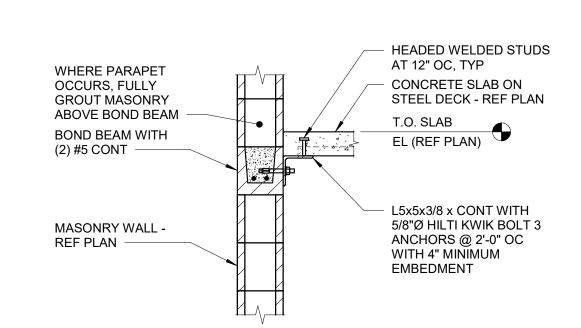
Minneapolis, Minnesota 55401–2282



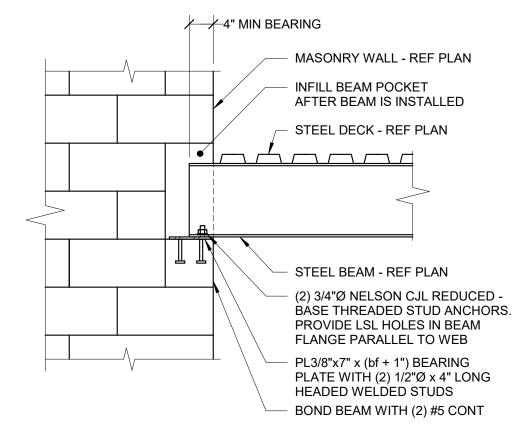
FOUNDATION DETAILS

EXHIBIT G

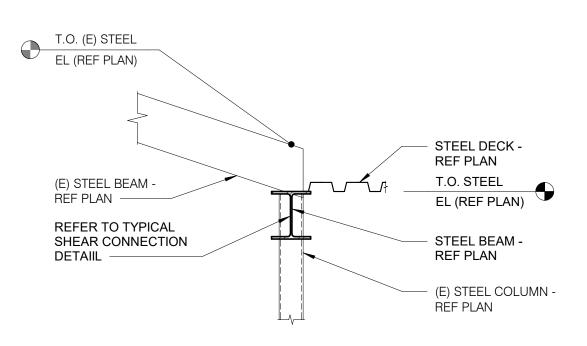
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TYPICAL DECK **SUPPORT AT MASONRY**

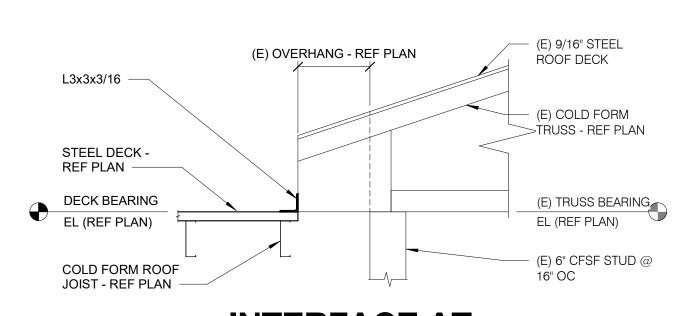


TYPICAL BEAM BEARING ON MASONRY

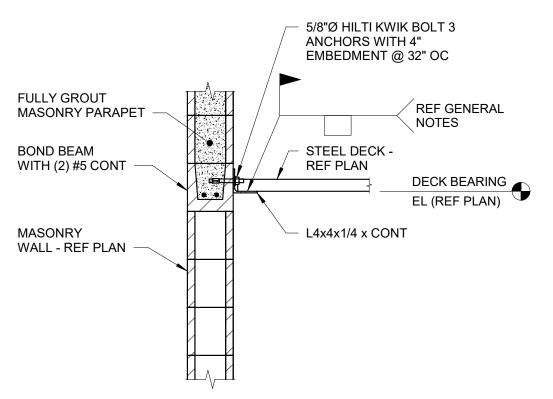


INTERFACE AT EXISTING DETAIL

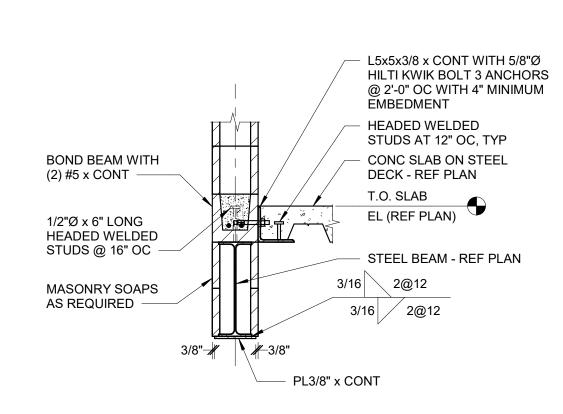
EXISTING OVERHANG DEMOLISHED.



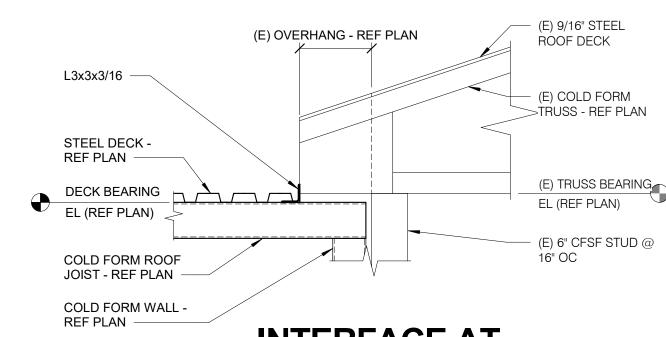
INTERFACE AT EXISTING DETAIL



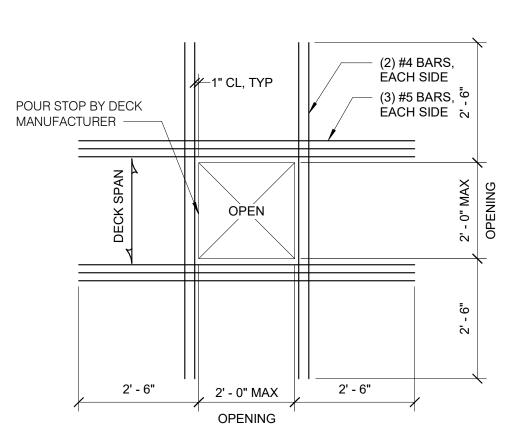
ROOF DECK SUPPORT AT MASONRY



BEAM SUPPORTING CMU WALL DETAIL

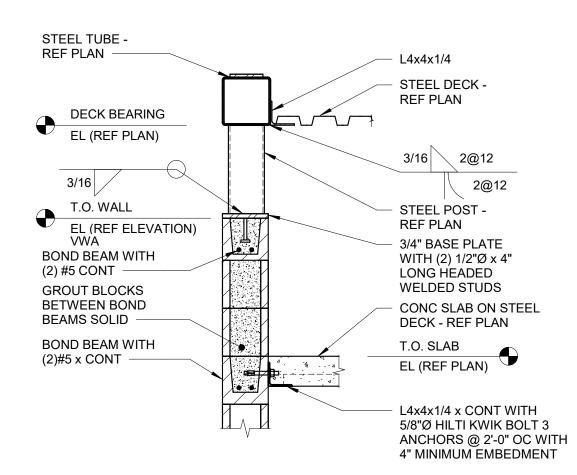


INTERFACE AT EXISTING DETAIL

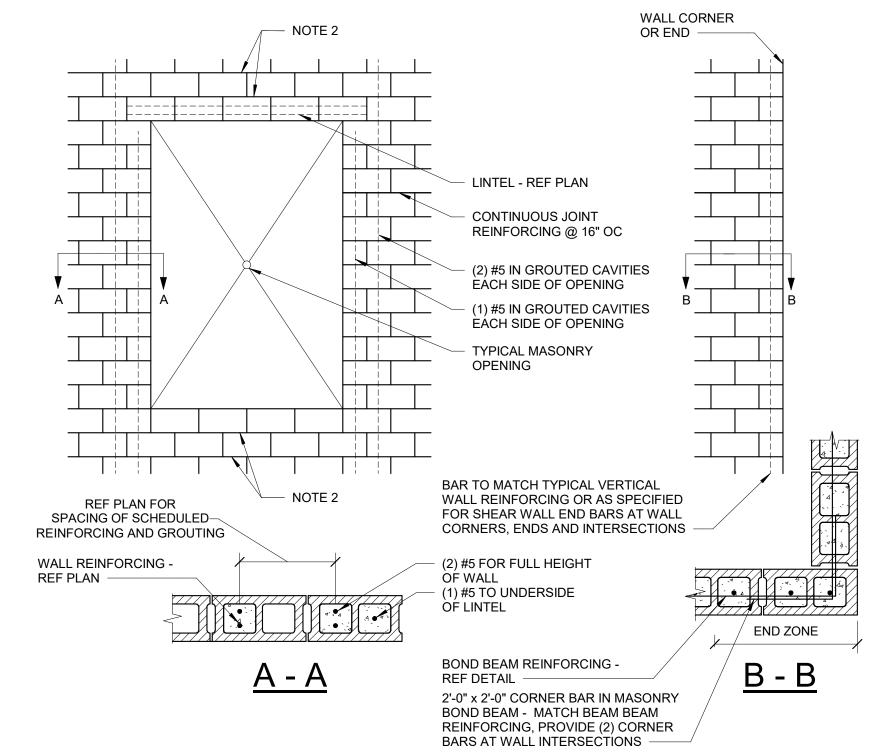


TYPICAL FLOOR PENETRATION

- 1. USE ABOVE FRAMING AT ALL OPENINGS EXCEEDING 1'-0" UNO.
- 2. REFERENCE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS.
- 3. ROOF OPENING FRAMING NOT REQUIRED AT SIDE DISCHARGE ROOF DRAINS. COORDINATE WITH MECHANICAL CONTRACTOR.



LOUVER FRAMING DETAIL

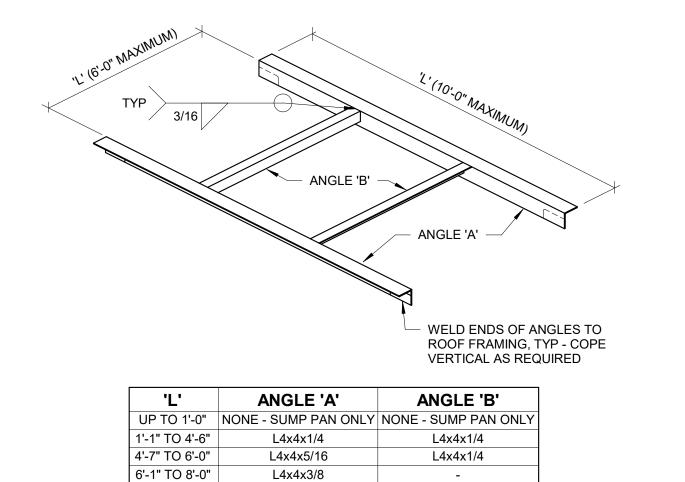


TYPICAL MASONRY WALL DETAIL

NO SCALE

1. REFER TO ARCHITECTURAL ELEVATIONS FOR MASONRY CONTROL JOINT LOCATIONS.

2. TWO COURSES OF JOINT REINFORCING ARE REQUIRED ABOVE THE LINTEL AND BELOW THE SILL AND SHALL EXTEND A MINIMUM OF 24 INCHES PAST THE OPENING.

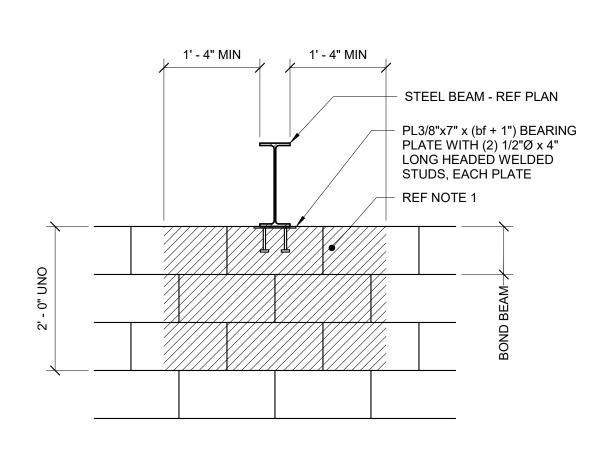


DECK OPENING FRAMING DETAIL

1. USE ABOVE FRAMING AT ALL OPENINGS EXCEEDING 1'-0" UNO.

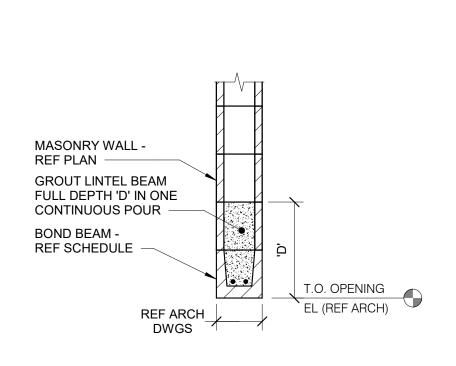
8'-1" TO 10'-0" L6x4x3/8 (LLV)

- 2. REFERENCE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS.
- 3. ROOF OPENING FRAMING NOT REQUIRED AT SIDE DISCHARGE ROOF DRAINS. COORDINATE WITH MECHANICAL CONTRACTOR.



TYPICAL BEAM BEARING ON MASONRY

1. IN SHADED AREA, FILL ALL CORES IN WALL WITH GROUT MINIMUM AT CORNER CONDITION: 1'-4", EACH WAY.



LINTEL DETAIL

5000 LBS ULTIMATE LOAD 1000 LBS WORKING LOAD

1. DECK NOT SHOWN FOR CLARITY.

FALL ARREST SYSTEM PROVIDED.

FALL ARREST SYSTEM

BY OTHERS - REF PLAN

3/8" STIFFENER PLATE

EACH SIDE, TYP

3 SIDES,

1. SHORE MASONRY UNTIL GROUT FOR LINTEL

HAS REACHED ITS SPECIFIED STRENGTH.					
2. BOND BEAM SHOULD EXTEND 8" PAST OPENING.					
TYPE DEPTH REINFORCING					
L1	24"	(2) #5			
L2	16"	(2) #5			
L3	32"	(2) #5			

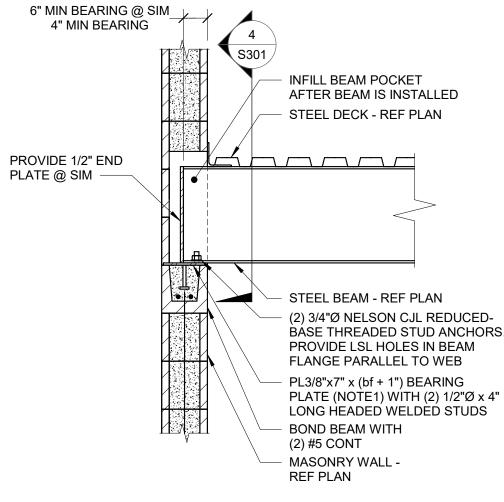
DECK BEARING

STEEL BEAM -

FALL ARREST SUPPORT DETAIL

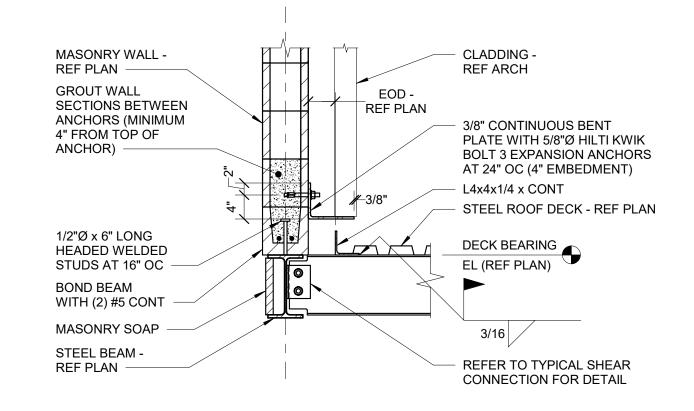
2. STEEL FABRICATOR TO COORDINATE LOCATION OF ANCHORS WITH

KICKER - REF PLAN

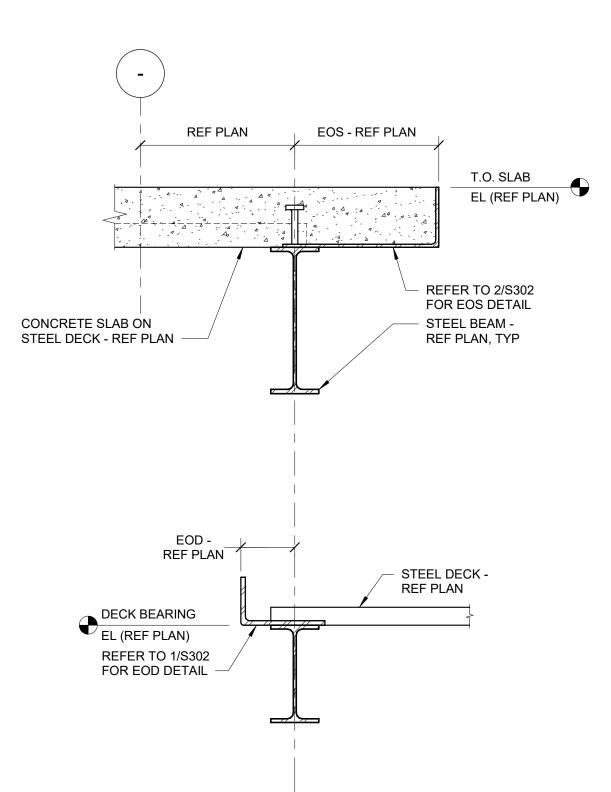


TYPICAL BEAM **BEARING ON MASONRY**

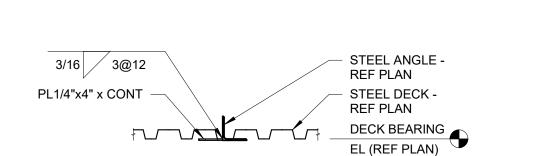
1. AT SIM, PROVIDE 3/8"x7" x 0'-9" BEARING PLATE.



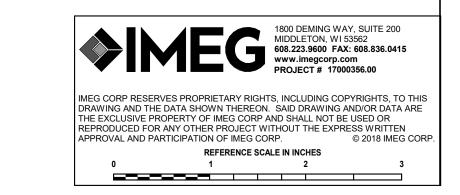
CONNECTION DETAIL



FRAMING DETAIL



1. FASTEN DECK TO ANGLE AND PLATE. REFER TO PLAN FOR DECK FASTENING.



608.251.3600 tel Structural Engineer, Technology and A/V IMEG Corp. 1800 Deming Way, Suite 200 Middleton, WI 53562 608.223.9600 tel MEP Engineer

Ken Saiki Design, Inc.

303 South Paterson Street, Suite 1

710 South 2nd Street, 8th Floor Minneapolis, Minnesota 55401–2282

Architecture 612 375 0336 tel Interiors and 612 342 2216 fax

Urban Design www.msrdesign.com

Vierbicher Associates, Inc.

Civil Engineer

999 Fourier Drive, Suite 201

Madison, WI 53717

608.826.0532 tel

Landscape Architect

Madison, WI 53703

MEP Associates, LLC 860 Blue Gentian Road, Suite 175 Eagan, MN 55121

651.379.9120 tel

Fire Protection Engineer and Code Consultant Summit Fire Consulting

651.251.1880 tel

575 Minnehaha Ave West

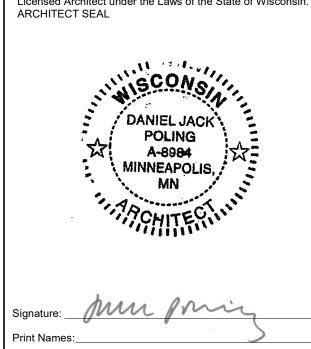
St. Paul, MN 55103

Greenhouse Design Rough Brothers, Inc.

5513 Vine Street Cincinnati, OH 45217 513.242.0310 tel

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the Laws of the State of Wisconsin.

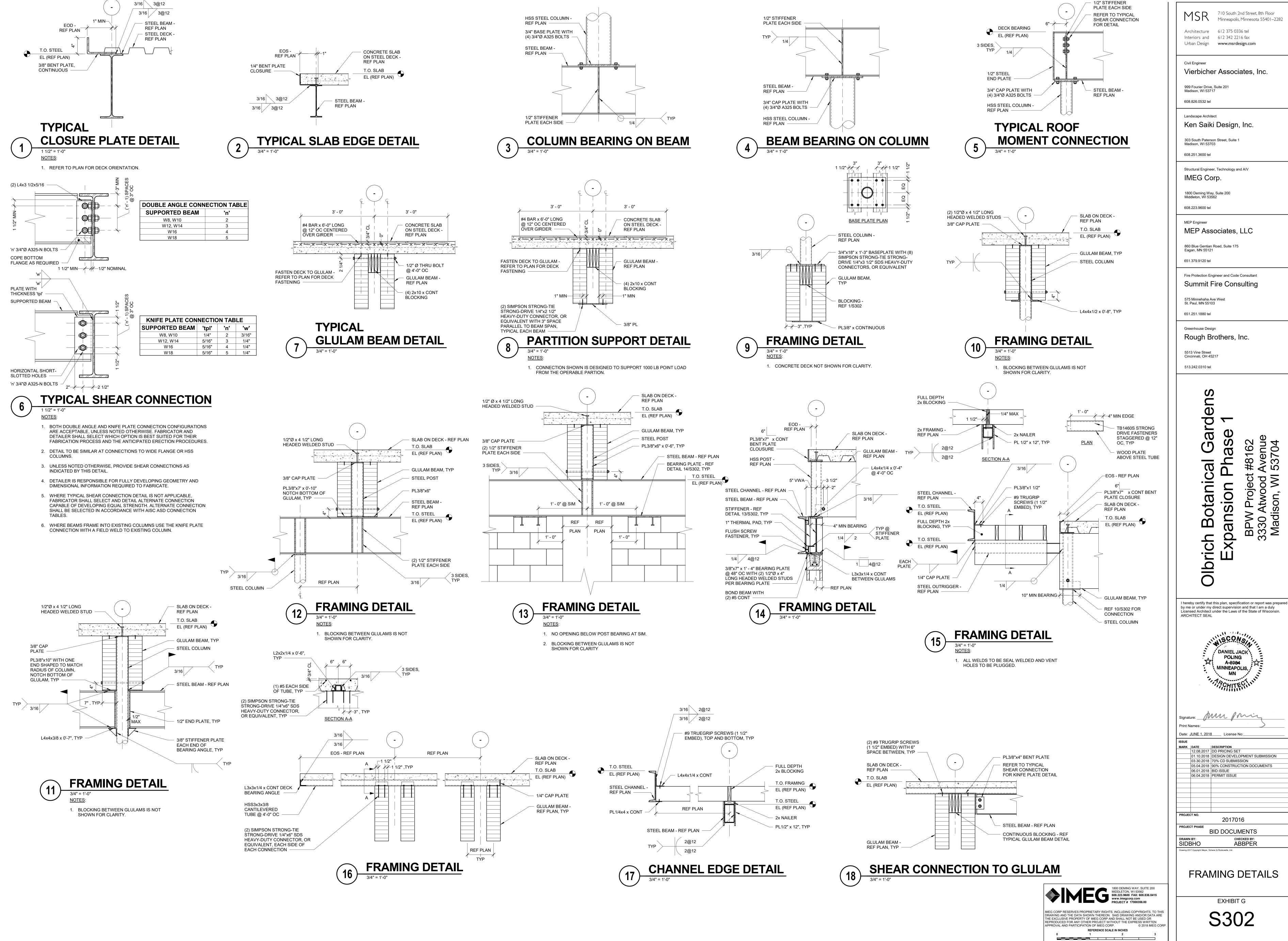
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Date: JUNE 1, 2018 License No: | DATE | DESCRIPTION | 12.08.2017 | DD PRICING SET 01.10.2018 DESIGN DEVELOPMENT SUBMISSION 03.30.2018 70% CD SUBMISSION 05.04.2018 90% CONSTRUCTION DOCUMENTS 06.01.2018 BID ISSUE 06.04.2018 PERMIT ISSUE PROJECT NO.

2017016 PROJECT PHASE **BID DOCUMENTS** SIDBHO **ABBPER**

FRAMING DETAILS



710 South 2nd Street, 8th Floor Minneapolis, Minnesota 55401–2282