

**GENERAL**

All dimensions on structural drawings to be checked against architectural, mechanical and electrical drawings by the contractors.

Unless otherwise noted, all details, sections, and notes on the drawing are intended to be typical for similar situations elsewhere.

The general contractor shall be responsible for coordinating the location and replacement of all inserts, hangers, sleeves, ductwork, pads, and anchor bolts that are required by the mechanical equipment.

Structural drawings are not to be used for shop detailing or for construction unless specifically issued for these purposes.

Structural engineers review of drawings prepared by the contractors, suppliers, etc. are only for conformance with design concept.

Shop drawings of structural steel, bar joists, and metal deck shall be submitted for review, construction shall not start without said review by structural engineer.

Sub-contractors to assume full responsibility, unrelieved by review of shop drawings and by supervisor or periodic observation of construction, for compliance with the contract documents, for dimensions to be confirmed and correlated on the job site and between individual drawings or sets of drawings for fabrication processes and construction techniques (including excavation shoring, scaffolding, bracing, erection, form work, etc.) for coordinating of various trades, for safe conditions on the job site.

Variations in field conditions relative to the contract documents shall be reported to the Structural Engineer. Work shall not progress until permission from the Structural Engineer is obtained.

If any changes are made to sub-contractors during the course of building, General Contractor shall be responsible for notifying the Village Building Department.

**GENERAL**

The Structural Drawings are to be used in conjunction with the Architectural, Mechanical and Electrical Drawings. Reference must be made to all bid documents as well as the project specifications. Discrepancies to be resolved before proceeding with construction. Contractor to coordinate the work of all trades and make necessary investigations and field measurements.

**EXCAVATION**

Strip topsoil, fill, & existing paving over entire building area. Excavate as required for continuous footings to be on undisturbed soil of 2000 PSF minimum bearing capacity. Compact disturbed soils in bottom of footing excavation as recommended in soil borings. Remove unsuitable material as required. Contractor to have soil testing engineer verify soil bearing capacity prior to pouring footings.

Maintain all excavations free of water continuously. Backfill behind walls with compacted granular fill placed in 8" loose lifts compacted to 95% of maximum density. Backfill on inside of building with compacted granular fill placed in 8" loose lifts compacted to 95% of maximum density. Soils engineer to verify and test soil during excavation and construction.

**CONCRETE**

All reinforced footing & foundation concrete work to be 3000 psi per building code requirements for reinforced concrete (ACI 318 edition). All concrete for interior & exterior slabs to be 4000 psi at 28 days. All weather-exposed concrete air-entrained 4 to 7 percent. All concrete with water reducing admixture.

All slab-on-grade construction joints to be keyed; reinforcing not to pass through; 24 hours minimum between adjacent pours. Locate joints as shown; where not shown, single pour area not to exceed 400 square feet. All reinforcing steel (bars) ASTM A615, Grade 40 (Fy=40 KSI). All welded wire fabric (mesh) ASTM A185. All bar splices 48 x bar diameters, but not less than 18 inches. All welded fabric lapped one grid minimum. Hook ends of bars interrupted by openings. Hook top bars at all edges. At all wall and slab openings, provide 2-#5 bar x opening width plus 4 feet long each face, unless shown otherwise. Provide metal rebar positioners for correct bar alignment, typical.

Concrete containing calcium chloride or admixtures containing calcium chloride shall not be permitted in any concrete.

Concrete shall be adequately consolidated during placement. Neither overconsolidating nor transporting concrete with vibrators shall be permitted.

Prepare and test concrete cylinders as outlined in chapter 16 of ACI-301 or in accordance with architectural specifications.

Cold weather concrete shall be in accordance with ACI-306. Hot weather concrete shall be in accordance with ACI-305.

Vapor barrier shall be a minimum of 6 Mil. vapor barrier shall be installed in maximum sheet size and a minimum of joints. Joints shall be lapped a minimum of 6" and taped. Locations of vapor barrier below slab shall be based on owners use and selected architectural finish treatments contractor shall refer to the latest edition of ACI 302 for recommended location, contractor shall also consult project geotechnical report for additional information. Care shall be taken to prevent rupture of vapor barrier.

General Contractor shall coordinate and check with trade contractors, architectural, mechanical, plumbing and electrical drawings for openings, sleeves, anchors, hangers, inserts, slab depressions and other items related to concrete work and shall assume full responsibility for their accuracy before permitting concrete placement. concrete shall be pitched as shown or required.

**MASONRY**

The owner shall receive affidavits from an approved testing laboratory certifying all masonry units conform to their respective ASTM requirements prior to their delivery to the job site.

Calcium chloride and/or admixtures containing calcium chloride shall not be used in mortar or grout mixes. no anti-freeze chemicals shall be used to lower the freezing point of either mortar or grout.

Masonry shall not be laid in hot weather or cold weather unless the recommendations in ACI 530.1 are strictly adhered to.

Masonry walls below grade shall be set with type 'm' mortar. The units shall be solid or be grouted solid.

Quality assurance and inspection of work as defined in the codes and standards above, the architectural specifications and local authorities shall be strictly adhered to.

All concrete masonry units normal weight 2 cell per ASTM C90.

All mortar Type "S" 1800 PSI per ASTM C270.

All grout per ASTM A476 with 28 day ultimate compressive strength of 2,500 PSI for lintels and bond beams and Grade N-1 matching mortar strength for filled masonry and collar joints.

Provide continuous galvanized, horizontal ladder type masonry reinforcing w/ 9ga. side wires & 9ga. cross wire @ 16" on center (alternate CMJ courses) minimum, per ASTM A-82, unless otherwise noted. Provide 20 mil sheet polyvinyl chloride water barrier flashing with galvanized steel tubes wick filled weep holes at 32" o.c. Provide polyvinylchloride control joints (Blok-Tite by AA Wire Products or equal) and closed cell polyethylene joint filler rods (green rod by Nomafoam or equal). Masonry tolerances and installation to be in accordance with the National Concrete Masonry Association (NCMA) standard specifications. Clean masonry work with a non-acidic cleaning solutions.

Harvard Brick to be 3 5/8"x7 5/8"D & 9 5/8"Dx15 5/8" L (11 5/8"D. @ piers) (7 5/8"H. @ bond beams). Color to be 'Coppertone' w/ smooth face finish, Harvard Brick as manufactured by Northfield Block Company. Provide integrated coursing at bond beam. Installation & cleaning of brick to be per manufacturer's standards & details. Shall meet ASTM E54 & ASTM C-90. Provide color samples to owner and verify color selection with owner.

SPLITFACE BLOCK: Block to be 7 5/8"x7 5/8"D. and 9 5/8"x15 5/8" L (11 5/8"D. @ piers) Color to be 'Walnut' field color and 'Oak' accent color as manufactured by Northfield Block Company. Installation & cleaning of block to be per manufacturer's standards & details. Shall meet ASTM E54 & ASTM C-90. provide samples and verify color with owner.

CAST STONE: Bullnose to be 3 5/8"x5 5/8"Dx23 5/8" L. Color to be 'Fawn Tan' w/ smooth face finish as manufactured by Custom Stone Works Inc. Installation & cleaning of stone to be per manufacturer's standards & details.

MASONRY GROUT: Intergal color by Amerimix by Bonsai American, Inc. to be '22X SYN' or equal. Verify with owner.

Provide dry-block admixture by W.R. Grace for concrete block & mortar mix. Provide 2 coats of Sure Klean clear masonry sealer as manufactured by Prosocco (785-865-4200). Apply sealer over concrete block, brick and cast stone. Follow manufacturer's recommendations and specification and surface preparation.

Grout for the vertical reinforcing within the masonry walls shall be placed in lifts not to exceed 4'-0".

Vertical and horizontal reinforcing to be grouted into masonry walls is shown on Architectural and Structural drawings. The contractor must refer to both drawings in order to complete their work.

Use metal or plastic bar spacers to maintain alignment of verticle and horizontal rebar. Lap splice 48 bar diameters.

All rebar in masonry bond beams shall continue a minimum of 3'-0" around corner of intersecting walls.

Install CMU cell flashing pans with built in adjoining bridge made from recycled polypropylene with chemical stabilizers that prevent UV degradation. Flashing pans have a sloped design to direct moisture to the integrated weep spout. Designed to be built into mortar bed joints to expel moisture (unimpeded by mortar droppings) to the exterior of CMU walls. Drainage Mats and Bug Guards included. Product: Subject to compliance with requirements, provide BlockFlash as manufactured by Mortar Net Solutions.

**DIVISION 5 - METALS**

All structural steel work to conform to the AISC "Specifications for the design, fabrication and erection of structural steel for buildings", latest edition. All structural steel ASTM A572 (Fy=50 KSI). All structural pipes ASTM A53 Grade B (Fy=35KSI). All welding to conform to American Welding Society "Structural Welding Code". AWS D1.1. All weld electrodes shall be E70XX and all welding to be performed by certified welders. All welding to be clean bare steel. All bolting with 3/4" diameter A325 (bearing type) high strength bolts snug tight unless noted otherwise.

Provide full size 1/4" setting plates on 10,000 PSI non-shrink grout for all columns and 4-3/4" diameter ASTM A307 anchor bolts, unless noted. Provide sub-framing for equipment supported on or suspended from the structure.

All steel to be shop coated with prime paint as specified. Mask all surfaces to be welded and at bolt holes in faying surfaces in friction connections.

METAL ROOF DECK: Metal roof deck manufacturer shall be listed by the S.D.I. or submit certification that the metal deck to be furnished conforms to the Steel Deck Institute specifications.

All metal deck shall be 22 GA., 1 1/2" deep, type B galvanized as manufactured by 'Vulcraft' or equal, and shall continuous over three or more supports, except where the steel layout does not permit. Spacing of sidelap fasteners shall not exceed 20".

Sidelap fasteners @ each support and @ 20' max spacing between supports.

Structural diaphragm action shall be provided by the metal roof deck. The deck and its welded attachment to the structure shall resist a horizontal diaphragm shear as stated on drawings S1 (Roof Notes) with a safety factor of 2:35. Support fasteners 5/8"dia. puddle weld, sidelap fasteners #10 TEX screws.

Metal roof deck shall be detailed, fabricated, and erected in accordance with S.D.I. specifications.

STEEL JOIST: Steel joists to be designed and fabricated in accordance with joist institute specifications, latest edition.

Joist manufacturer shall be listed by the SJI or submit certification that the joist to be furnished conform to the standard SJI test, specifications, and load tables.

A heavy coating of asphaltic paint shall be applied to portions of structural steel exposed to the earth.

SLEEVES, ANCHORAGES, OPENINGS, ETC: In general, structural drawings do not show equipment pads, drains, holes, anchorages, inserts and sleeves for items passing through or attached to concrete or framing. Refer to Architectural, Mechanical, Electrical drawings and Project Specifications.

Adjust equipment pads and subframing to fit equipment furnished.

Provide subframing for equipment supported on or suspended from the structure.

**STRUCTURAL STABILITY AND CONSTRUCTION**

Individual structural components are designed to support loads in their finally erected position as part of the total complete structure. Provide temporary guying and bracing as required until all construction affecting lateral stability is completed. Masonry walls shall be braced to withstand the code specified horizontal loads during their erection, and until their design supports are in place. Contractor shall be solely responsible for stability of structure. Its parts and job site safety by use of guying, bracing, shoring, barricades, safety railings and devices during entire period of construction.

SHOP DRAWINGS AND TEST REPORTS  
General Contractor shall check all shop drawings before submittal to Architect for review. Review by Architect will be for conformance to general layout and design intent only. Contractor shall be solely responsible for accuracy of dimensions, fabrication, fit up of parts and bills of materials. Contractor shall coordinate work of various trades and make necessary field measurements. Concrete test reports and design mixes shall be prepared and submitted in accordance with ACI requirements. Concrete test shall be submitted to the Village & to the architect.

**DESIGN AND LOADING**

Allowable unit stresses and loading in accordance with International Building Code per Village of Bolingbrook. Roof live load used in design is 30 PSF plus 20 PSF dead load, floor live load is 25 PSF plus 25 PSF dead load, wind is 20 PSF (90 MPH), & snow load based on 30 PSF (GROUND SNOW) Frost depth at 42".

Seismic Loads:  
Importance Factor - 1.0  
Occupancy Category - II  
Ss = 0.5  
SI = 0.04  
Seismic Category - B  
Spectral response Sds = 0.10  
Resisting System reinf. masonry shearwalls  
Seismic response modification coefficient - R=2  
Design base shear = 24,000 lb

**SPECIAL INSPECTIONS**

All tests and inspections shall be performed by an independent testing and inspection agency. The special Inspector from this testing agency shall observe the work for the conformance to the design drawings and specifications.

The special inspector shall furnish inspection reports to the building official, the engineer or the architect of record, and all other designated individuals. All discrepancies shall be brought to the attention of the contractor for correction. Then, if not corrected, to the proper design authority and to the building official.

The special inspector shall submit a final signed report stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved design drawings, specifications, soils report, and applicable workmanship provisions of the International Building Code.

The following items below require special inspections: (refer to IBC 2006 Chapter 17 for additional information)

NOTE:  
CONTRACTOR TO FOLLOW SOILS EXPLORATION & FOOTING CONSTRUCTION RECOMMENDATIONS AS PREPARED BY:  
Applied GeoScience, Inc.  
Address:  
2385 HAMMOND DR., SUITE 6  
SCHALMBURG, ILLINOIS 60173  
Dated: JUNE 9, 2014  
Project No. 14-25

		VERIFICATION AND INSPECTION		YES	
		CONTINUOUS	PERIODIC		
1	STEEL CONSTRUCTION (IBC 2006 - 1704.3)				
A	MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS			X	
B	INSPECTION OF HIGH STRENGTH BOLTING				
	BEARING TYPE			X	
	SLIP CRITICAL TYPE				
C	INSPECTION OF WELDING				
	COMPLETE AND PARTIAL PAN WELDS			X	
	MULTI PASS FILLET WELDS			X	
	SINGLE PASS FILLET WELDS > 5/16"			X	
	SINGLE PASS FILLET WELDS < 5/16"				X
	FLOOR AND ROOF DECK				X
D	INSPECTION OF STEEL FRAME DETAILS			X	
CONCRETE CONSTRUCTION (IBC 2006 - 1704.4)					
A	INSPECTION OF REINFORCING STEEL				X
B	INSPECTION OF BOLTS INSTALLED IN CONCRETE			X	
2	VERIFY USE OF REQUIRED MIX DESIGN				X
D	SAMPLING FRESH CONCRETE AND PERFORMING SLUMP, AIR CONTENT, AND DETERMINING THE TEMPERATURE OF FRESH CONCRETE AT TIME OF MAKING SPECIMENS FOR STRENGTH TESTS.			X	
E	INSPECTION OF CONCRETE PLACEMENT			X	
F	INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TECHNIQUES				X
MASONRY CONSTRUCTION (IBC 2006 - 1704.5.1)					
A	COMPLIANCE WITH REQUIRED INSPECTION PROVISIONS OF CONSTRUCTION DOCUMENTS AND THE APPROVED SUBMITTALS SHALL BE VERIFIED				X
3	AS MASONRY CONSTRUCTION BEGINS, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE:				
	a PROPORTIONS OF SITE-PREPARED MORTAR.				X
	b CONSTRUCTION OF MORTAR JOINTS.				X
	c LOCATION OF REINFORCEMENT				X
C	THE INSPECTION PROGRAM SHALL VERIFY:				
	a SIZE AND LOCATION OF STRUCTURAL ELEMENTS				X
	b TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION.				X
	c SPECIFIED SIZE, GRADE AND TYPE OF REINFORCEMENT				X
	d WELDING OF REINFORCING BARS.			X	
	e PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40F) OR HOT WEATHER (TEMPERATURE ABOVE 90F)				X
D	PRIOR TO GROUTING, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE:				
	a CLEANLINESS OF GROUT SPACE.				X
	b PLACEMENT OF REINFORCEMENT AND CONNECTORS.				X
	c PROPORTIONS OF SITE-PREPARED GROUT.				X
	d CONSTRUCTION OF MORTAR JOINTS.				X
E	PREPARATION OF ANY REQUIRED GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS SHALL BE OBSERVED.			X	
F	GROUT PLACEMENT SHALL BE VERIFIED TO ENSURE COMPLIANCE WITH CODE AND CONSTRUCTION DOCUMENT PROVISIONS.				X

DATE  
OCTOBER 7, 2014

REVISIONS  
JANUARY 6, 2015 (ISSUED FOR BID/CONSTRUCTION)

PROPOSED DEVELOPMENT FOR:  
**BOLINGBROOK SEMU, LLC.**  
LOCATION  
123 N. WEBER ROAD  
BOLINGBROOK, ILLINOIS

**J. WATSON**  
ENGINEERING COMPANY, INC.  
16575 West 93rd Avenue, St. John, Indiana 46373  
PH. 219-365-4897 - FAX 219-365-4852

THE U. TO CERTIFY THAT THESE PLANS WERE PREPARED UNDER MY PERSONAL SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF THEY COMPLY WITH ALL CITY AND STATE REQUIREMENTS FOR THE VILLAGE OF BOLINGBROOK, ILLINOIS.

SHEET NAME  
STRUCTURAL  
SPEC'S.

SHEET  
**S4**  
OF 4

PROJECT NO.  
1414