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ELIZABETH TOWNSHIP

Addition / Renovations
to an Existing Building

423 Southview Drive
Littitz PA 17543

STRUCTURAL NOTES

REVISIONS:

#	DATE	DESCRIPTION
1	10/12/23	REVIEW REVISION

ISSUED: 06/08/2023

S101

GENERAL STRUCTURAL NOTES

A. BUILDING CODES AND STANDARDS

- THE FOLLOWING CODES AND STANDARDS, INCLUDING ALL SPECIFICATIONS REFERENCED WITHIN, SHALL APPLY TO THE DESIGN, CONSTRUCTION AND QUALITY CONTROL OF ALL WORK PERFORMED ON THE PROJECT.
 - "INTERNATIONAL BUILDING CODE - 2018" INTERNATIONAL CODE COUNCIL, INC.
 - "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES"; (ANSI/ASCE 7) AMERICAN SOCIETY OF CIVIL ENGINEERS.
- ADDITIONAL DESIGN STANDARDS FOR MATERIALS SHALL BE FOUND IN THE APPROPRIATE SECTIONS THAT FOLLOW. SEE THOSE SECTIONS FOR THE APPLICABLE CODES.

B. DESIGN LOADS

- GRAVITY - SUPERIMPOSED DEAD LOADS
 - ROOF (WOOD FRAMED)
 - TOP CHORD 10 PSF
 - BOTTOM CHORD 10 PSF
 - TOTAL 20 PSF
- GRAVITY - FLOOR LIVE LOADS
 - SLAB ON GRADE 150 PSF
- GRAVITY - ROOF LIVE LOADS
 - LIVE LOAD 20 PSF
 - SNOW LOAD (PLUS DRIFTING WHERE APPLICABLE)
 - GROUND SNOW LOAD (Pg) 30 PSF
 - 2) SNOW EXPOSURE FACTOR (Ce) 1.0
 - 3) SNOW LOAD IMPORTANCE FACTOR (Is) 1.0
 - 4) THERMAL FACTOR (Ct) 1.1
 - 5) FLAT ROOF SNOW LOAD (Pi) 30 PSF
- LATERAL LOADS - WIND
 - BASIC WIND SPEED (3 SECOND GUST) 110 MPH
 - MAIN WIND-FORCE RESISTING SYSTEM EXPOSURE C
 - INTERNAL PRESSURE COEFFICIENT ±0.18
 - COMPONENTS AND CLADDING EXPOSURE C
 - DESIGN IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF ASCE 7 SECTION 6 AND IBC SECTION 1609
- NET WIND UPLIFT
 - 1) MAIN ROOF 12 PSF
 - 2) CANOPIES AND MISCELLANEOUS 20 PSF
- LATERAL LOADS - SEISMIC
 - SEISMIC IMPORTANCE FACTOR (Ie) 1.0
 - OCCUPANCY CATEGORY II
 - SPECTRAL RESPONSE ACCELERATION FOR SHORT PERIOD (Ss) 0.177
 - SPECTRAL RESPONSE ACCELERATION FOR 1-SECOND PERIOD (S1) 0.047
 - SPECTRAL RESPONSE COEFFICIENT (SDS) 0.189
 - SPECTRAL RESPONSE COEFFICIENT (SD1) 0.75
 - SITE CLASS D
 - SEISMIC DESIGN CATEGORY B
 - BASIC SEISMIC FORCE RESISTING SYSTEM(S) LIGHT FRAMED WOOD SHEAR WALLS
 - SEISMIC RESPONSE COEFFICIENT(S) (Cs) 0.029
 - RESPONSE MODIFICATION FACTOR(S) (R) 6.5
 - ANALYSIS PROCEDURE EQUIVALENT LATERAL FORCE PROCEDURE
 - BASE SHEAR 1.2 KIPS
- LATERAL LOADS - EARTH PRESSURE
 - LATERAL EQUIVALENT FLUID PRESSURE
 - 1) AT REST CONDITION (BRACED WALLS) 60 PSF/FT OF DEPTH
 - 2) ACTIVE CONDITION (CANTILEVERED WALLS) 45 PSF/FT OF DEPTH
- THE STRUCTURE HAS BEEN DESIGNED FOR THE DEAD, LIVE AND LATERAL LOADS INDICATED ABOVE. ANY INCREASE OF LOADS DUE TO CHANGE IN USAGE OR CONSTRUCTION MATERIALS, ETC. SHALL HAVE THE WRITTEN APPROVAL OF THE ENGINEER. THE CONTRACTOR IS CAUTIONED AS TO NOT STORE ANY CONSTRUCTION MATERIALS OR UNDERTAKE ANY CONSTRUCTION OPERATIONS WHICH WILL EXCEED THE DESIGN LIVE LOAD CAPACITIES NOTED.
- WEIGHT OF EQUIPMENT SHOWN ON THE STRUCTURAL DRAWINGS HAS BEEN CONSIDERED IN THE FRAMING DESIGN. ANY ADDITIONAL EQUIPMENT NOT SHOWN ON THE STRUCTURAL DRAWINGS AND EXCEEDING 300 POUNDS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION FOR APPROVAL PRIOR TO INSTALLATION. COORDINATE ALL WORK WITH ARCHITECTURAL AND MEP DRAWINGS.

C. CONSTRUCTION

- GENERAL
 - THESE DRAWINGS REPRESENT THE COMPLETED PROJECT WHICH HAS BEEN DESIGNED FOR THE STRUCTURE DEAD LOADS AND FOR THE SUPERIMPOSED LIVE LOADS INDICATED IN THE DESIGN LOADS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, TEMPORARY BRACING, SHEETING AND SHORING, ETC.
 - THE STABILITY OF THE STRUCTURE IS DEPENDENT UPON THE DIAPHRAGM ACTION OF THE ROOF AND FLOORS. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR THE METHODS OF CONSTRUCTION AND SHALL PROVIDE ALL GUYS, BRACING AND SHORING REQUIRED TO ACCOMMODATE ALL INTERIM LOADING CONDITIONS THROUGHOUT THE CONSTRUCTION PHASE.
 - IMPLEMENTING JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
 - IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES, SPECIFICATIONS AND DRAWINGS, THE MOST RIGID REQUIREMENT SHALL GOVERN.
 - THE ARCHITECTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS FOR DIMENSIONS, ELEVATIONS, SECTIONS AND DETAILS AS REQUIRED. REPORT DISCREPANCIES IMMEDIATELY TO THE ARCHITECT.
 - THE CONTRACTOR SHALL CHECK AND VERIFY DIMENSIONS FOR ALL WORK BEFORE PROCEEDING WITH THE CONSTRUCTION. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE START OF ANY WORK.
 - CONSULT ARCHITECTURAL AND MEP DRAWINGS FOR VERIFICATION OF LOCATION AND SIZE OF ALL OPENINGS, SLEEVES, REVEALS, DEPRESSIONS, INSERTS, CONCRETE HOUSEKEEPING PADS, HANDRAILS, GUARDRAILS, PARTITION SUPPORTS, LINTELS, ETC. REQUIRED FOR THE PROJECT. VERIFY REQUIREMENTS OF TRADES AFFECTING THE WORK AND NOTIFY THE ARCHITECT OF ANY CONFLICTS.
 - SEE ARCHITECTURAL DRAWINGS FOR DEMOLITION REQUIREMENTS (IF ANY).
 - WORK NOT INCLUDED ON THE DRAWINGS BUT IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES ELSEWHERE ON THE DRAWINGS SHALL BE REPEATED.
 - EXISTING BUILDING INFORMATION SHOWN IS BASED ON EXISTING BUILDING DRAWINGS, FIELD OBSERVATIONS, AND/OR ARCHITECTURAL DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL EXISTING BUILDING INFORMATION SHOWN (DIMENSIONS, ELEVATIONS, FRAMING, ETC.) AND NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF ANY DISCREPANCIES. NEW SLABS ARE TO BE AT THE SAME ELEVATIONS AS ADJACENT EXISTING SLABS, UNLESS INDICATED OTHERWISE. FOUNDATION ELEVATIONS OR COLUMN LENGTHS SHALL BE ADJUSTED WITH THE APPROVAL OF THE STRUCTURAL ENGINEER TO ACHIEVE MATCHING SLAB ELEVATIONS.
 - ALL COSTS OF INVESTIGATION AND/OR REDESIGN, DUE TO THE CONTRACTOR'S MISLOCATION OF STRUCTURAL ELEMENTS OR OTHER LACK OF CONFORMANCE WITH THE PROJECT DOCUMENTS, SHALL BE AT THE CONTRACTOR'S EXPENSE.
 - SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR DETAILED INFORMATION REGARDING FINISHES, DAMPROOFING, WATERPROOFING, UL ASSEMBLY DESIGNATIONS AND FIREPROOFING REQUIREMENTS, ETC.
 - SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF MASONRY AND DRYWALL. NON-LOAD-BEARING PARTITIONS, PROVIDE SLIP CONNECTIONS THAT ALLOW VERTICAL MOVEMENT AT THE HEADS OF ALL SUCH PARTITIONS. UNLESS SHOWN ON THE DRAWINGS, THE CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE TOP OF THE WALLS Laterally FOR THE CODE REQUIRED LATERAL LOAD. PROVIDE COMPRESSIBLE FRESIASING AT THE TOP OF THE WALL AS REQUIRED BY THE ARCHITECTURAL DRAWINGS.
 - ALL EXPANSION BOLTS AND ADHESIVE ANCHORS SHALL BE SET IN FULLY CURED CONCRETE OR 100% GROUT FILLED MASONRY.
 - WHEN INSTALLING EXPANSION BOLTS OR ADHESIVE ANCHORS, THE CONTRACTOR SHALL TAKE MEASURES TO AVOID DRILLING OR CUTTING OF ANY EXISTING REINFORCING AND DESTRUCTION OF CONCRETE. HOLES SHALL BE BLOWN CLEAN PRIOR TO PLACING BOLTS OR ADHESIVE ANCHORS.
 - STRUCTURAL COMPONENTS ARE NOT DESIGNED FOR VIBRATORY EQUIPMENT. PLACE VIBRATORY EQUIPMENT ON VIBRATION ISOLATORS APPROPRIATE FOR EQUIPMENT AND USE OF SPACE. VIBRATION ISOLATION HAS NOT BEEN PROVIDED BY THE ENGINEER.
- SHOP DRAWINGS
 - SHOP DRAWINGS FOR ALL STRUCTURAL ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS, INCLUDING ALL CONCRETE AND GROUT MIX DESIGNS AND ADMIXTURES, MUST BE SUBMITTED BY THE GENERAL CONTRACTOR AND REVIEWED BY THE ENGINEER. SHOP DRAWINGS SHALL BEAR THE CONTRACTOR'S APPROVAL STAMP CERTIFYING HE HAS VERIFIED ALL CONSTRUCTION CRITERIA INCLUDING FIELD MEASUREMENTS, MATERIAL AND SIMILAR DATA AND HAS CHECKED THE SUBMITTAL FOR COMPLETENESS, COORDINATION AND COMPLIANCE WITH THE CONTRACT DOCUMENTS. CONTRACTOR TO SUBMIT UP TO FIVE (5) COPIES FOR EACH SUBMITTAL. NO MORE THAN FOUR (4) COPIES WILL BE REVIEWED AND RETURNED FOR COMMENTS.
 - UNAUTHORIZED REPRODUCTION OF ANY PORTION OF THE STRUCTURAL DRAWINGS FOR RESUBMITTAL AS SHOP DRAWINGS IS PROHIBITED. SHOP DRAWINGS PRODUCED IN SUCH A MANNER WILL BE REJECTED AND RETURNED.
 - IF THE CONTRACTOR OR OWNER FAILS TO OBTAIN THE ENGINEER'S REVIEW OF THE SHOP DRAWINGS, THE ENGINEER WILL NOT BE RESPONSIBLE FOR THE STRUCTURAL CERTIFICATION AND DESIGN OF THE PROJECT. SHOP DRAWINGS ARE REVIEWED BY THE ENGINEER AS A CONVENIENCE TO THE GENERAL CONTRACTOR AND ARE NOT A CONTRACT DOCUMENT.
 - CONTRACTOR SHALL FURNISH DIMENSIONED SHOP DRAWINGS AT ALL LEVELS LOCATING FLOOR AND ROOF EDGES AND LOCATING ALL SLEEVES AND OPENINGS REQUIRED BY ALL TRADES FOR REVIEW BY THE ARCHITECT AND STRUCTURAL ENGINEER.
 - AT THE TIME OF SHOP DRAWING SUBMISSION, THE GENERAL CONTRACTOR SHALL INFORM THE ENGINEER, IN WRITING, OF ANY DEVIATIONS OR OMISSIONS FROM THE CONTRACT DOCUMENTS.
 - THE CONTRACTOR SHALL SUBMIT, FOR REVIEW, DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A STRUCTURAL ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION FOR THE FOLLOWING ASSEMBLIES. THIS REVIEW SHALL BE FOR GENERAL CONFORMANCE WITH THE PROJECT PARAMETERS AS INDICATED ON THE DRAWINGS AND IN THE GENERAL NOTES. THE DESIGN OF THESE ASSEMBLIES IS THE RESPONSIBILITY OF THE ENGINEER WHO HAS SIGNED AND SEALED THESE DRAWINGS AND CALCULATIONS.
 - WOOD ROOF TRUSSES: DESIGN SHALL TAKE INTO ACCOUNT ALL VERTICAL AND LATERAL LOADS INCLUDING THE WEIGHT OF ANY SUPPORTED EQUIPMENT AND ALL LOAD COMBINATIONS REQUIRED BY APPLICABLE BUILDING CODES. CONNECTION TO THE MAIN BUILDING SHALL BE BY THE TRUSS DESIGNER AND SHALL BE AT LOCATIONS DESIGNATED BY THE STRUCTURAL ENGINEER OR RECORD TO SUPPORT THE TRUSSES. SUBMIT CALCULATIONS SHOWING A RATIONAL, COMPLETE LOAD PATH, INCLUDING EFFECTS ON SUPPORTING MEMBERS. CALCULATIONS SHALL CLEARLY INDICATE ALL LOADS IMPOSED UPON THE SUPPORTING STRUCTURAL SYSTEM. REVIEW OF THE CALCULATIONS BY THE STRUCTURAL ENGINEER SHALL BE SOLELY FOR THE PURPOSE OF EVALUATING THE IMPACT OF THESE LOADS ON THE SUPPORTING STRUCTURAL SYSTEM.

D. FOUNDATION

- DESIGN DATA
 - ALL FOUNDATIONS HAVE BEEN DESIGNED FOR AN ASSUMED ALLOWABLE NET BEARING PRESSURE OF 2500 PSF. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SECURE AND PAY FOR THE SERVICES OF A GEOTECHNICAL ENGINEER FOR FIELD VERIFICATION OF THE ASSUMED SOIL BEARING PRESSURES. BEARING CAPACITY OF THE SOIL SHALL BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER IMMEDIATELY PRIOR TO CONCRETE PLACEMENT. SHOULD THE SOIL BEARING PRESSURE BE FOUND TO BE LESS THAN 2500 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER.
 - ALL EXTERIOR FOUNDATIONS SHALL BEAR A MINIMUM OF 3'-0" BELOW FINISHED GRADE. IN CASE OF CONFLICT, NOTIFY THE STRUCTURAL ENGINEER IN ADVANCE OF ANY CONSTRUCTION TO ALLOW FOR ADJUSTMENT. FOOTINGS SHALL BEAR ON APPROVED UNDISTURBED MATERIAL OR STRUCTURAL FILL.
 - NEW FOOTING BEARING ELEVATIONS ARE TO MATCH ADJACENT EXISTING FOOTING BEARING ELEVATIONS WHERE APPLICABLE UNLESS NOTED OTHERWISE ON PLANS.
- GENERAL
 - ALL EXCAVATION, BACKFILLING AND STRUCTURAL FILL PLACEMENT OPERATIONS BENEATH THE BUILDING SLAB AND FOUNDATIONS, AND ALL COMPACTION TESTS AND INSPECTIONS SHALL BE DONE UNDER THE DIRECTION AND SUPERVISION OF A REGISTERED PROFESSIONAL SOILS ENGINEER. ALL FILL MATERIAL, COMPACTION EQUIPMENT AND PROCEDURES SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PERFORMING ANY EARTHWORK OPERATIONS.
 - CONCRETE FOR FOUNDATIONS SHALL BE PLACED ON THE SAME DAY SUBGRADE APPROVAL IS GIVEN BY THE GEOTECHNICAL ENGINEER. SHOULD THE SOIL BEARING PRESSURE BE FOUND TO BE LESS THAN THE ALLOWABLE BEARING PRESSURES LISTED ABOVE, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE STRUCTURAL ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
 - THE CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS THAT MAY AFFECT THE INSTALLATION OF THE FOUNDATION SYSTEM AS SHOWN PRIOR TO STARTING WORK.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES. EXISTING STRUCTURES, ETC., WHETHER INDICATED OR NOT, WHICH MAY BE AFFECTED BY THE CONSTRUCTION PROCESS, SHOULD ANY DAMAGE TO SUCH UTILITIES OCCUR, THE CONTRACTOR SHALL BE REQUIRED TO REPAIR SUCH DAMAGE AT HIS OWN EXPENSE AND TO THE SATISFACTION OF THE OWNER.
 - UTILITY LINES SHALL NOT BE PLACED THROUGH OR BELOW FOUNDATIONS WITHOUT THE STRUCTURAL ENGINEER'S APPROVAL. STEP FOUNDATIONS AS REQUIRED WHERE UTILITIES ENTER OR EXIT THE BUILDING.
 - THE SLOPE BETWEEN THE LOWER EDGES OF ADJACENT FOUNDATIONS SHALL NOT EXCEED 45 DEGREES WITH THE HORIZONTAL, UNLESS INDICATED OTHERWISE ON THE PLANS. MAINTAIN A 1:1 SLOPE FROM BOTTOM EDGE OF ANY EXCAVATION.
 - FOLLOWING REQUIRED STRIPPING OPERATIONS, ANY PROOF ROLLING SHALL BE AS DIRECTED BY A QUALIFIED GEOTECHNICAL ENGINEER. THE PURPOSE FOR PROOF ROLLING WILL BE TO LOCATE ANY ISOLATED AREAS OF SOFT OR LOOSE SOILS REQUIRING IMPROVEMENT OR REPLACEMENT. SOFT AREAS SHALL BE UNDERCUT AND REPLACED BY PROPERLY COMPACTED MATERIALS AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
 - ALL SHORING, SHEETING AND DEWATERING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL ENGAGE AN ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION TO DESIGN ALL SHEETING AND SHORING.
 - SEE PLUMBING AND CIVIL DRAWINGS FOR UNDER SLAB AND PERIMETER DRAINAGE SYSTEMS (IF ANY).
- BACKFILL
 - ALL BACKFILL OPERATIONS SHALL BE PERFORMED IN HORIZONTAL LIFTS USING STRUCTURAL FILL MATERIAL APPROVED BY THE GEOTECHNICAL ENGINEER. AT THE OPTIMUM MOISTURE CONTENT OF THE MATERIAL, AND PROVIDING THE MINIMUM COMPACTION LEVEL STIPULATED IN THE GEOTECHNICAL ENGINEERING REPORT.
 - WHERE THE FINAL GRADE ELEVATIONS ARE APPROXIMATELY EQUAL ON BOTH SIDE OF A WALL, BACKFILL IN LIFTS TO MAINTAIN LEVEL ELEVATIONS WITHIN 12" ON BOTH SIDES OF THE WALL AT ANY TIME.

H. MASONRY

- DESIGN CODES AND STANDARDS
 - "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES, ACI 530/ASCE 5" AND "SPECIFICATIONS FOR MASONRY STRUCTURES, ACI 530.1/ASCE 6".
- MATERIALS
 - LOAD-BEARING CONCRETE
 - HOLLOW AND SOLID CMU ASTM C90, GRADE N
 - MORTAR ASTM C270 - TYPE S (HOLLOW AND SOLID CMU, CONCRETE BRICK)
 - GROUT ASTM C476, MINIMUM COMP. STRENGTH Fc AT 28 DAYS =2,300 PSI
 - DEFORMED REINFORCING BARS ASTM A615, GRADE 60
 - HORIZONTAL JOINT REINFORCING ASTM A82
 - ANCHORS AND TIES ASTM A36, ASTM A82, ASTM A366, ASTM A1008
 - HOT-DIP GALVANIZED COATINGS
 - JOINT REINFORCING, WIRE TIES, AND ANCHORS, ASTM A153 (1.5 OZ/FT2)
 - SHEET METAL, TIES AND ANCHORS, ASTM A153, CLASS B
 - PRISM STRENGTH (UNIT STRENGTH METHOD) Fm = 1,500 PSI (HOLLOW AND SOLID CMU)
- GENERAL
 - PROVIDE STANDARD (9 GAGE) LADDER TYPE GALVANIZED HORIZONTAL JOINT REINFORCEMENT IN WALLS AND PARTITIONS AT 16" O.C. UNLESS OTHERWISE SHOWN OR NOTED. PROVIDE ONE PIECE PREFABRICATED UNITS AT 8" O.C. AT ALL WALL CORNERS AND INTERSECTIONS. PROVIDE ADDITIONAL JOINT REINFORCING ABOVE AND BELOW ALL OPENINGS. EXTEND A MINIMUM OF 24" BEYOND EDGE OF OPENING.
 - IN GROUTED AND/OR REINFORCED MASONRY WALLS, USE MASONRY UNITS WITH CORES THAT ALIGN VERTICALLY TO PROVIDE CONTINUOUS UNOBSTRUCTED CELLS FOR GROUTING AND REINFORCING STEEL PLACEMENT.
 - MAXIMUM GROUT LIFT SHALL BE 5'-0", UNLESS HIGH LIFT GROUTING PROCEDURES IN ACCORDANCE WITH ACI 530 ARE FOLLOWED.
 - LAP SPLICES FOR DEFORMED REINFORCING BARS USED IN MASONRY CONSTRUCTION SHALL BE 42 BAR DIAMETERS FOR #5 BARS AND SMALLER (24" MIN.) AND 54 BAR DIAMETERS FOR #6 AND #7 BARS.
 - ALL WALL SECTIONS AND/OR PIERS LESS THAN 2 SQUARE FEET IN CROSS-SECTIONAL AREA SHALL BE FULLY GROUTED OR CONSTRUCTED WITH 100% SOLID MASONRY UNITS.
 - ALL BLOCK CELLS BELOW SLAB-ON-GRADE, AT BEAM, LINTEL AND JOIST BEARING, AT BOND BEAMS, AT CHANGES IN WALL THICKNESS AND AT VERTICAL REINFORCING SHALL BE FILLED SOLID WITH GROUT.
 - CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SUPPORT FOR ALL MASONRY WORK UNTIL PERMANENT CONSTRUCTION IS IN PLACE.
- INSPECTION AND TESTING
 - THE CONTRACTOR/OWNER WILL ENGAGE A TESTING AND INSPECTION AGENCY TO PROVIDE SERVICES AS INDICATED BELOW AND SUBMIT REPORTS TO THE ARCHITECT AND STRUCTURAL ENGINEER.
 - ALL MASONRY MUST BE INSPECTED AND TESTED IN ACCORDANCE WITH LEVEL 1 QUALITY ASSURANCE CRITERIA PROVIDED IN TABLE 1704.5.1 OF THE IBC CODE BY THE APPROVED AGENCY REFERENCED ABOVE. THE FREQUENCY OF INSPECTION SHALL BE IN ACCORDANCE WITH ACI 530/ASCE 5, TABLE 1.15.2 LEVEL B QUALITY ASSURANCE.
 - THE AGENCY SHALL MONITOR THE PROPORTIONING, MIXING AND CONSISTENCY OF THE MORTAR AND GROUT; THE PLACEMENT OF MORTAR, GROUT AND MASONRY UNITS; AND THE PLACEMENT OF REINFORCING STEEL FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS.

E. CAST-IN-PLACE CONCRETE

- ALL CONCRETE WORK SHALL CONFORM TO ALL PROVISIONS OF THE FOLLOWING PUBLICATIONS:
 - "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", ACI 301.
 - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318.
 - "RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING", ACI 305.
 - "RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING", ACI 306.
 - "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK", ACI 347.
- MATERIALS
 - CONCRETE SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

APPLICATION	Fc AT 28 DAYS	DRY UNIT WEIGHT PCF	MAXIMUM WATER/CEMENT RATIO
SLABS-ON-GRADE (INTERIOR)	3,500	145	0.50
FOUNDATIONS	3,000	145	N/A
SLABS-ON-GRADE (EXTERIOR)	4,000	145	0.45
 - CEMENT ASTM C150, TYPE I OR II OR V
 - CEMENT SUBSTITUTES ASTM C595, ASTM C589, ASTM C618 (CLASS C OR F) MAXIMUM PERCENT OF TOTAL IN ACCORDANCE WITH ACI 318 TABLE 4.2.3
 - COARSE AGGREGATES MAXIMUM COARSE AGGREGATE SIZE SHALL BE 1" ASTM C33 (NORMAL WEIGHT)
 - AIR: ALL CONCRETE EXPOSED TO WEATHER, EXCEPT CONCRETE TO RECEIVE A STEEL TROWEL FINISH, SHALL BE AIR-ENTRAINED 6% ± 1 1/2% BY VOLUME. ENTRAINING ADMIXTURES TO COMPLY WITH C260.
 - REINFORCEMENT:
 - DEFORMED REINFORCING BARS ASTM A615, GRADE 60
 - WELDED WIRE FABRIC (WVF) ASTM A185, GRADE 65
 - SYNTHETIC FIBER REINFORCEMENT ASTM C1116
 - 1) SYNTHETIC FIBER REINFORCEMENT SHALL BE GRACE MICRO FIBER (OR EQUIV. - SUBMIT DATA SHEETS) AND ADDED TO CONCRETE. INDICATED ON DRAWINGS AT A RATE OF 1.0 LBS/CU YD. ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
 - ADMIXTURES: NO ADMIXTURE CONTAINING CALCIUM CHLORIDE OR OTHER CHLORIDE CONTAINING AGENTS SHALL BE PERMITTED.
 - ANCHORING SYSTEM:
 - ADHESIVE ANCHORS HLTI HIT HY150 SYSTEM, POWERS AC100 PLUS, OR APPROVED EQUAL
 - EXPANSION BOLTS HLTI KWIK BOLT 3, POWERS WEDGE-BOLT, OR APPROVED EQUAL
 - SUBMIT ICC-ES REPORTS FOR ANY PROPOSED EQUAL
- GENERAL
 - REINFORCING STEEL CLEAR COVER SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON THE DRAWINGS: CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3" CONCRETE EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
 - #6 BARS AND LARGER 2"
 - #5 BARS AND SMALLER 1 1/2"CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS, WALLS AND JOISTS:
 - #11 BARS AND SMALLER 1"
 - UNLESS DETAILED OTHERWISE, SPLICES SHALL BE MADE BY CONTACT TENSION LAP SPLICES. MINIMUM LAP TO BE 44 BAR DIAMETERS FOR #6 BARS AND SMALLER, 70 BAR DIAMETERS FOR #7 AND #8 BARS, OR 24 INCHES WHICHEVER IS GREATER. SEE DRAWINGS FOR LAP SPLICE REQUIREMENTS FOR #9 BARS AND LARGER. LAP BARS CONTINUOUS AROUND CORNERS. DOWEL INTERSECTING WALLS INTO CROSS WALLS.
 - WELDED WIRE FABRIC REINFORCEMENT SHALL BE SUPPLIED IN FLAT SHEETS AND SUPPORTED ON CHAIRS. LAP WELDED WIRE FABRIC TWO FULL MESH LENGTHS (8" MINIMUM) AT SPLICES.
 - NO WELDING OF REINFORCING SHALL BE PERMITTED UNLESS SPECIFICALLY CALLED FOR OR APPROVED BY THE STRUCTURAL ENGINEER. WHERE WELDING OF REINFORCING STEEL IS REQUIRED, PROVIDE BARS CONFORMING TO ASTM A706. ALL WELDING PROCEDURES SHALL CONFORM WITH THE REQUIREMENTS OF AWS D14.
 - PROVIDE PLASTIC TIPPED BOLSTERS AND CHAIRS AT ALL LOCATIONS WHERE THE CONCRETE SURFACE IS EXPOSED.
 - ALL CONCRETE SURFACES SHALL BE MOIST-CURED OR PROTECTED USING A LIQUID MEMBRANE CURING AGENT MEETING THE REQUIREMENTS OF ASTM C309 APPLIED AS SOON AS FORMS ARE REMOVED OR FINISHING IS COMPLETED TO PREVENT EARLY DRYING OF THE CONCRETE AND TO PROVIDE ADEQUATE CURING FOR A MINIMUM OF 7 DAYS.
 - CONCRETE SLABS SHALL BE FINISHED FLAT AND LEVEL WITHIN TOLERANCES SET FORTH IN ACI 117 AND ASTM E 1155 AND TO THE ELEVATIONS INDICATED ON THE DRAWINGS. SLABS ON GRADE SHALL HAVE A SPECIFIED OVERALL FLOOR FLATNESS OF F-35/F-25 AND MINIMUM LOCAL FLOOR FLATNESS OF F-25/F-20. SLOPED SURFACES SHALL HAVE A MINIMUM FLOOR FLATNESS OF F-25.
 - CONSTRUCTION JOINTS AND CONTROL JOINTS IN SLABS-ON-GRADE SHALL BE ARRANGED TO LIMIT MAXIMUM LENGTH BETWEEN JOINTS TO 12'-0" IN ANY DIRECTION, UNLESS SHOWN OTHERWISE ON THE DRAWINGS. ADDITIONALLY, JOINTS SHALL BE PROVIDED TO FORM PANELS THAT ARE APPROXIMATELY "SQUARE". ALLOW A MINIMUM OF 48 HOURS BETWEEN PLACEMENT OF ADJACENT SECTIONS. SEE PLANS AND DETAILS FOR SPECIFIC REQUIREMENTS.
 - ALL FORMWORK, SHORING, AND RESHORING, SHALL BE DESIGNED BY THE CONTRACTOR'S ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION.
 - NO SLEEVES SHALL BE PLACED THROUGH ANY CONCRETE ELEMENT UNLESS SHOWN ON THE STRUCTURAL DRAWINGS, APPROVED SLEEVE SHOP DRAWINGS OR SPECIFICALLY AUTHORIZING IN WRITING BY THE STRUCTURAL ENGINEER.
 - CORE DRILLING OF FOUNDATIONS, BEAMS, JOISTS, SLABS OR COLUMNS SHALL NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE STRUCTURAL ENGINEER.
 - WHEN INSTALLING EXPANSION BOLTS OR ADHESIVE ANCHORS, THE CONTRACTOR SHALL TAKE MEASURES TO AVOID DRILLING OR CUTTING OF ANY EXISTING REINFORCING AND DESTRUCTION OF CONCRETE. HOLES SHALL BE BLOWN CLEAN PRIOR TO PLACING BOLTS OR ADHESIVE ANCHORS.
 - CHAMFER ALL EXPOSED CONCRETE CORNERS, 3/4"x3/4" MINIMUM, UNLESS NOTED OR DETAILED ON THE ARCHITECTURAL DRAWINGS.
- INSPECTION AND TESTING
 - THE CONTRACTOR/OWNER WILL ENGAGE A TESTING AND INSPECTION AGENCY TO PROVIDE SERVICES AS INDICATED BELOW AND SUBMIT REPORTS TO THE ARCHITECT AND STRUCTURAL ENGINEER.
 - CAST-IN-PLACE CONCRETE
 - THE AGENCY SHALL INSPECT THE FORMWORK AND REINFORCING STEEL PLACEMENT FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND SHOP DRAWINGS. THE AGENCY SHALL MONITOR ALL STRUCTURAL CONCRETE PLACEMENT FOR CONFORMANCE WITH APPLICABLE ACI REQUIREMENTS.
 - SAMPLE FRESH CONCRETE IN ACCORDANCE WITH ASTM C172. MOLD TEST CYLINDERS IN ACCORDANCE WITH ASTM C31.
 - A MINIMUM OF FOUR TEST CYLINDERS SHALL BE CAST FOR EACH DAY'S POUR OR EACH 50 CUBIC YARDS, WHICHEVER RESULTS IN MORE TEST CYLINDERS.
 - THE AGENCY WILL MAKE ADDITIONAL TESTS OF IN-PLACE CONCRETE AT THE CONTRACTOR'S EXPENSE WHEN THE TEST RESULTS INDICATE SPECIFIED CONCRETE STRENGTHS HAVE NOT BEEN ATTAINED, AS DIRECTED BY THE STRUCTURAL ENGINEER.

P. WOOD

- DESIGN STANDARDS
 - "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION", ANSI/AF&PA NDS (INCLUDING SUPPLEMENT "DESIGN VALUES FOR WOOD CONSTRUCTION").
 - "NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION", ANSI/TP1, TRUSS PLATE INSTITUTE (TP1).
- MATERIALS
 - DIMENSION LUMBER
 - DIMENSION LUMBER SHALL BE VISUALLY GRADED DIMENSION LUMBER, KILN-DRIED WITH A 19% MAXIMUM MOISTURE CONTENT. LUMBER SHALL BE SPRUCE-PINE-FIR WITH THE FOLLOWING MINIMUM DESIGN VALUES (WITHOUT THE APPLICABLE SIZE FACTOR C):

JOISTS/RAFTERS/HEADERS/BEAMS/STUOS:	NUMBER 2 OR BETTER	
Fb = 875 PSI	Fc = 1,150 PSI	Fv = 135 PSI
Ft = 450 PSI	Fc (PERP) = 425 PSI	E = 1,400,000 PSI
 - NON-LOAD BEARING STUOS:

Fb = 675 PSI	Fc = 725 PSI	STUD
Ft = 350 PSI	Fc (PERP) = 425 PSI	Fv = 135 PSI
		E = 1,200,000 PSI
 - STRUCTURAL COMPOSITE LUMBER
 - LAMINATED VENEER LUMBER (LVL) FRAMING MEMBERS SHALL BE "MICROLLAM" AS MANUFACTURED BY TRUSJOIST, "GANGLAM" AS MANUFACTURED BY LOUISIANA PACIFIC, OR APPROVED EQUAL WITH THE FOLLOWING DESIGN PROPERTIES AND MINIMUM STRENGTH VALUES:

Fb = 2,600 PSI	Fc = 2,500 PSI	Fv = 285 PSI
Ft = 450 PSI	Fc (PERP) = 750 PSI	E = 1,900,000 PSI
 - WOOD STRUCTURAL PANELS (PLYWOOD OR OSB)
 - ROOF SHEATHING 19/32" THICK APA RATED SHEATHING 40/20, EXPOSURE 1
 - WALL SHEATHING 7/16" THICK, APA RATED SHEATHING 32/16, EXPOSURE 1
 - FLOOR SHEATHING 23/32" THICK, APA RATED STURD-FLOOR, 24" O.C., EXPOSURE 1, TONGUE AND GROOVE
- DIMENSION LUMBER/STRUCTURAL COMPOSITE LUMBER
 - MEMBERS SHALL BE SET WITH CROWN SIDE UP AND HAVE A MINIMUM OF 2" BEARING.
 - ALL JOISTS AND RAFTERS SHALL HAVE FULL DEPTH BLOCKING OR BRIDGING AT INTERVALS NOT EXCEEDING 8'-0".
 - ALL HEADERS TO BE A MINIMUM OF (2)x10 OR (3)x8, UNLESS SHOWN OTHERWISE ON PLAN.
 - PROVIDE ONE JAMB STUD PLUS STANDARD STUD FOR HEADER SPANS 4' 8" OR LESS AND TWO JAMB STUDS PLUS STANDARD STUD FOR SPANS OVER 4'-8", UNLESS NOTED OTHERWISE.
 - USE (2) (2) ROWS OF 10d NAILS AT 12" O.C. TO JOIN MULTIPLE 2x BEAMS OR GIRDERS UNLESS SPECIFICALLY DETAILED OTHERWISE ON THE DRAWINGS.
 - ALL WOOD SILL PLATES SHALL BE ANCHORED TO GROUT-FILLED CMU OR CONCRETE FOUNDATIONS WITH 1/2"Ø ANCHORS AT 4' 0" O.C. MAXIMUM (MINIMUM 2 ANCHORS PER MEMBER) AND WITHIN 12" OF CORNERS AND SPLICES. ANCHOR BOLTS SHALL BE EMBEDDED A MINIMUM OF 15" INTO GROUTED CMU OR 8" INTO CAST-IN-PLACE CONCRETE FOUNDATIONS.
 - ALL BOLTS AND LAG BOLTS SHALL BE FITTED WITH GALVANIZED, MALLEABLE IRON OR STEEL PLATE WASHERS.
 - ALL FASTENERS, INCLUDING BUT NOT LIMITED TO BOLTS, NAILS, SCREWS, LAG SCREWS, ETC., USED IN CONJUNCTION WITH PRESERVATIVE TREATED OR FIRE RETARDANT TREATED LUMBER SHALL BE HOT DIPPED ZINC-COATED GALVANIZED STEEL OR STAINLESS STEEL.
 - CONNECTIONS FOR WOOD MEMBERS SHALL BE PROVIDED AS SHOWN ON THE DRAWINGS OR, IF NO DETAIL IS SHOWN, PROVIDE THE NUMBER AND SIZE OF FASTENERS SET FORTH IN TABLE 2304.9.1 OF THE CODE.
 - CONNECTION DETAILS SHOW ARRANGEMENT OF STRUCTURAL MEMBERS ONLY. FIT-UP OF MEMBERS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE TEMPORARY BRACING OF ALL BUILDING ELEMENTS. TEMPORARY BRACING SHALL NOT BE REMOVED UNTIL PERMANENT BRACING IS INSTALLED, ATTACHED, AND CAPABLE OF SUPPORTING LOADS.
 - ALL LUMBER IN CONTACT WITH MASONRY OR CONCRETE SHALL BE PRESSURE TREATED.
- STRUCTURAL SHEATHING
 - FACTORY-MARK EACH CONSTRUCTION PANEL WITH APA TRADEMARK EVIDENCING COMPLIANCE WITH VOLUNTARY PRODUCT STANDARD PS1, PS2, OR APA PRP-108.
 - INSTALL PANELS WITH PANEL LONG DIMENSION PERPENDICULAR TO THE SUPPORTING MEMBERS, UNLESS SHOWN OTHERWISE.
 - UNLESS NOTED OTHERWISE ON THE DRAWINGS, ATTACH WALL AND ROOF SHEATHING TO FRAMING WITH 8d COMMON NAILS @ 8" O.C. ALONG EDGES AND 12" O.C. AT INTERMEDIATE SUPPORT LOCATIONS. PROVIDE FULL BLOCKING AT ALL HORIZONTAL WALL PANEL EDGES AND PROVIDE PANEL CLIPS AT ALL UNSUPPORTED ROOF SHEATHING EDGES.
- WOOD PRESERVATIVE TREATMENT
 - WHERE LUMBER OR PLYWOOD IS INDICATED AS "TREATED" OR "PT", COMPLY WITH APPLICABLE REQUIREMENTS OF AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) STANDARDS C2 (LUMBER) AND C3 (PLYWOOD) AND WITH AWPA STANDARDS LISTED BELOW. MARK EACH TREATED ITEM WITH THE AWPA QUALITY MARK REQUIREMENTS.
 - PRESSURE TREAT ABOVE-GROUND ITEMS WITH WATERBORNE PRESERVATIVES TO COMPLY WITH AMERICAN WOOD PRESERVERS BUREAU (AWPB) LP-2 AFTER TREATMENT. KILN-DRY LUMBER AND PLYWOOD TO A MAXIMUM MOISTURE CONTENT, RESPECTIVELY OF 10% AND 15%.
- WOOD TRUSSES
 - DESIGN
 - DESIGN OF TRUSSES, TRUSS BRACING AND DETAILING OF TRUSS CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL BE BY THE FABRICATOR'S ENGINEER LICENSED IN THE PROJECT'S JURISDICTION. CALCULATIONS AND SHOP DRAWINGS CONSISTING OF TRUSS LAYOUT PLANS AND TRUSS DETAILS SHALL BE SUBMITTED BEARING THE SPECIALTY ENGINEER'S SEAL AND SIGNATURE.
 - TRUSS LAYOUT AND TRUSS ELEVATIONS REPRESENT LAYOUT, PROFILE, CHORD GEOMETRY AND BEARING LOCATIONS SCHEMATICALLY. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS, OVERHANGS, ETC. FINAL TRUSS LAYOUT AND ACTUAL SIZES AND LOCATIONS OF THE TRUSS CHORDS AND WEBS IS THE RESPONSIBILITY OF THE TRUSS MANUFACTURER. TRUSS MANUFACTURER SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EQUIPMENT SIZES, WEIGHTS AND LOCATIONS AND DUCT RUNS.
 - TEMPORARY AND PERMANENT BRACING SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.
 - TRUSS DESIGN SHALL INCLUDE CALCULATIONS FOR WIND UPLIFT AND IDENTIFY THE NET UPLIFT AT ALL TRUSS BEARING LOCATIONS.
 - LOADING
 - SEE GENERAL NOTES FOR LOADING REQUIREMENTS.
 - ACCOUNT FOR SPECIAL CONDITIONS SHOWN ON THE ARCHITECTURAL AND STRUCTURAL PLANS SUCH AS DORMERS, VALLEY TRUSSES, MECHANICAL EQUIPMENT, MECHANICAL PIPING RUNS, SPRINKLER MAINS, ETC.
 - EACH MEMBER OF THE TRUSS SHALL BE DESIGNED TO RESIST THE LARGEST ANTICIPATED LOAD FROM THE APPLICABLE LOAD CASES SPECIFIED IN SECTION 1605 OF THE IBC.
 - DESIGN TRUSSES FOR DRIFTED SNOW WHERE REQUIRED. SEE GENERAL NOTES FOR SNOW LOAD CRITERIA.
 - TRUSS BEARING LENGTHS SHALL LIMIT THE BEARING STRESS ON SUPPORTING WOOD PLATES TO NOT GREATER THAN 425 PSI. PROVIDE MULTI-PLY TRUSSES AND/OR BEARING BLOCKS WHERE REQUIRED TO REDUCE STRESS. TRUSS BEARING LENGTHS SHALL BE PROVIDED ON THE SHOP DRAWINGS.
 - CONSTRUCTION
 - CONTRACTOR SHALL PROVIDE HOLD-DOWN ANCHORS AT ALL CONNECTIONS AS SPECIFIED IN THE CONTRACT DOCUMENTS.
 - SECURELY BRACE TRUSSES DURING ERECTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE TRUSS PLATE INSTITUTE "BRACING WOOD TRUSSES: COMMENTARY AND RECOMMENDATIONS". ERECTION BRACING SHALL HOLD TRUSSES STRAIGHT AND PLUMB UNTIL DECKING AND PERMANENT BRACING ARE INSTALLED. INSTALL PERMANENT BRACING AS SHOWN ON THE DRAWINGS AND AS REQUIRED BY TRUSS DESIGN. INSTALL ALL PERMANENT BRACING PRIOR TO APPLICATION OF LOAD. TOP CHORDS SHALL BE FULLY SHEATHED INCLUDING AREAS BELOW INTERSECTING ROOFS.
 - SECURE TRUSSES TO THE SUPPORTING STRUCTURE WITH GALVANIZED FRAMING ANCHORS AS SHOWN ON THE DRAWINGS AND SUFFICIENT TO TRANSFER REACTIONS SHOWN ON TRUSS SHOP DRAWINGS.