

GENERAL NOTES

DESIGN CRITERIA:

- CODES AND STANDARDS: 2015 IBC
- DESIGN GRAVITY LOADS: DEAD LOADS: FLOOR: DEAD LOAD: 20 PSF ROOF: DEAD LOAD: 20 PSF LIVE LOADS: FLOOR: LIVE LOAD: 50 PSF (MEZZANINE) ROOF: MINIMUM LIVE LOAD: 20 P.S.F. PLUS ALLOWANCE FOR DRIFTED SNOW GROUND SNOW LOAD: P_g = 20 P.S.F. SNOW EXPOSURE FACTOR: C_e = 0.9 SNOW LOAD IMPORTANCE FACTOR: I_s = 1.0 SNOW THERMAL FACTOR: C_t = 1.0
- WIND LOAD (MAIN BUILDING): BASIC WIND SPEED: 115 M.P.H. WIND LOAD IMPORTANCE FACTOR: I = 1.0 WIND LOAD IMPORTANCE FACTOR FOR WALLS WIND EXPOSURE: C BUILDING CATEGORY: ENCLOSED WIND EXPOSURES: COMPONENTS AND CLADDING WIND PRESSURES (PSF): ZONE 1: +10, -13.3 ZONE 2: +10, -23.2 ZONE 3: +10, -34.3 ZONE 4: +14.5, -15.8 ZONE 5: +14.5, -19.5 INTERNAL PRESSURE COEFFICIENT: ± 0.18 WIND LOAD (HARDENED INTERNAL STRUCTURE): BASIC WIND SPEED: 250 M.P.H. WIND LOAD IMPORTANCE FACTOR: I = 1.0 WIND LOAD IMPORTANCE FACTOR FOR WALLS WIND EXPOSURE: C BUILDING CATEGORY: ENCLOSED WIND EXPOSURES: COMPONENTS AND CLADDING WIND PRESSURES (PSF): A < 50 SF ZONE 1: +125, -230 ZONE 2: +160, -350 ZONE 3: +160, -350 ZONE 4: +215, -230 ZONE 5: +215, -230 INTERNAL PRESSURE COEFFICIENT: ± 0.55 IMPACT LOAD: 15lb 2x4 LUMBER @ 100 MPH
- SEISMIC LOAD: SPECTRAL ACCELERATIONS: S_s = 0.195 SPECTRAL ACCELERATIONS: S₁ = 0.103 DESIGN SPECTRAL RESPONSE ACCELERATION: S_{ds} = 0.208 DESIGN SPECTRAL RESPONSE ACCELERATION: S_{d1} = 0.164 OCCUPANCY CATEGORY: II SEISMIC DESIGN CATEGORY: C SITE CLASS: D SITE COEFFICIENTS: F_a = 1.60 F_v = 2.38 IMPORTANCE FACTOR: I_e = 1.0
- COMPONENT IMPORTANCE FACTOR: I_p = 1.5
- BASIC STRUCTURAL SYSTEMS: A.) FRAME SYSTEM.
- SEISMIC - RESISTING SYSTEM: A.) ORDINARY STEEL MOMENT FRAMES FOR FORCES PARALLEL TO MOMENT FRAMES. R = 4 Cd = 4 B.) FOR BUILDINGS BRACED BY CONCRETE SHEAR WALLS, MASONRY SHEAR WALLS OR BRACED FRAMES (FORCES PERPENDICULAR TO MOMENT FRAMES) R = 4 Cd = 4 1.) ORDINARY REINFORCED CONCRETE SHEAR WALLS R = 5 Cd = 4 1/2 2.) INTERMEDIATE REINFORCED MASONRY SHEAR WALLS R = 4 Cd = 2 1/2 3.) ORDINARY STEEL CONCENTRICALLY BRACED FRAME R = 5 Cd = 4 1/2 4.) ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE

FOUNDATIONS:

- DESIGN:**
- THE FOUNDATION HAS BEEN DESIGNED IN ACCORDANCE WITH THE RECOMMENDATIONS MADE ON THE GEOTECHNICAL EXPLORATION REPORT BY: GREDELL ENGINEERING RESOURCES INC. DATED JULY, 2018.
 - BACKFILLING: A. DO NOT BACKFILL PIT WALLS UNTIL ADEQUATE TEMPORARY BRACING IS INSTALLED. B. BACKFILL UNDER FOUNDATION WITH CONCRETE OR AS APPROVED BY SOLS ENGINEER.
 - SOIL MODULUS OF SUBGRADE REACTION (K_s) = 125 POUNDS PER CUBIC INCH. THE SUBGRADE MUST BE IMPROVED PER ONE OF THE OPTIONS OUTLINED IN THE GEOTECHNICAL REPORT.
 - SOIL CONTAINS LOCAL AREAS OF HIGH PLASTIC CLAY & ROCK THAT REQUIRES EXCAVATION. REFER TO GEOTECHNICAL REPORT & SPECIFICATIONS FOR BID QUANTITIES.
- SPREAD FOOTINGS:**
- FOOTINGS SHALL BEAR ON SOIL CAPABLE OF SUSTAINING A NET BEARING PRESSURE UNDER FULL SERVICE LIVE AND DEAD LOAD AS FOLLOWS: 2500 PSF FOR CONTINUOUS STRIP FOOTINGS 2500 PSF FOR COLUMN SPREAD FOOTINGS ALLOWABLE BEARING STRESSES MAY BE INCREASED BY 1/3 WHEN DESIGN LOADS INCLUDE SEISMIC OR WIND LOADINGS.
 - TOP OF FOOTING (TOP) ELEVATIONS ARE SHOWN ON THE PLANS.
 - FOOTING MAY BE EARTH FORMED.
 - ALL BEARING MATERIAL SHALL BE INSPECTED BY A QUALIFIED TECHNICIAN PRIOR TO CONCRETE PLACEMENT. A QUALIFIED TECHNICIAN SHALL BE THE SOLE JUDGE AS TO THE SUITABILITY OF THE BEARING MATERIAL. FOOTING ELEVATIONS SHALL BE ADJUSTED AS REQUIRED.
 - BOTTOM OF EXTERIOR FOOTINGS SHALL BEAR A MINIMUM OF 2'-6" BELOW FINAL GRADE.
 - FROST DEPTH = 2'-6"
 - SLIDING RESISTANCE (VALUES INCLUDE A 1.50 SAFETY FACTOR)
 - PASSIVE EQUIVALENT FLUID PRESSURE = 175 PCF.
 - COEFFICIENT OF FRICTION = 0.25
 - "MANUAL OF STANDARD PRACTICE". DO NOT STICK DOWELS INTO WET CONCRETE. TIE IN PLACE PRIOR TO START OF CONCRETE PLACEMENT.

CONCRETE:

- CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH AND DENSITY, IN ACCORDANCE WITH THE FOLLOWING TABLE:
- | | STRENGTH P.S.I. | DENSITY P.C.F. | WATER/CEMENT RATIO |
|----------------------|-----------------|----------------|--------------------|
| FOUNDATIONS: | 3000 | 145 | 0.48 |
| SLABS ON METAL DECK: | 3500 | 145 | 0.42 |
| SLABS ON GRADE: | 4000 | 145 | 0.42 |
- SLAB ON GRADE TO 3/4" MAXIMUM AGGREGATE SIZE FOR 6" AND 1 1/2" MAXIMUM AGGREGATE SIZE FOR SLABS THICKER THAN 6" PER MANUFACTURER SPECIFICATION TO BE APPROVED BY ENGINEER.
 - REINFORCING SHALL CONFORM TO A.S.T.M. A615, GR. 60, INCLUDING TIES AND STIRRUPS.
 - WELDED WIRE REINFORCEMENT SHALL CONFORM TO A.S.T.M. A185.
 - ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED, IN ACCORDANCE WITH LATEST A.C.I. DETAILING MANUAL (SP-66).
 - ALL REINFORCING SHALL BE SUPPORTED IN FORMS, SPACED WITH NECESSARY ACCESSORIES AND SHALL BE SECURELY WIRED TOGETHER, IN ACCORDANCE WITH LATEST C.R.S.I. "MANUAL OF STANDARD PRACTICE". DO NOT STICK DOWELS INTO WET CONCRETE. TIE IN PLACE PRIOR TO START OF CONCRETE PLACEMENT.
 - MINIMUM CONCRETE COVER, UNLESS NOTED OTHERWISE:
 - UNFORMED SURFACE IN CONTACT WITH THE GROUND: 3 IN.
 - FORMED SURFACES EXPOSED TO EARTH OR WEATHER: 1 1/2 IN. FOR #5 BAR OR SMALLER 2 IN FOR #6 BAR OR LARGER
 - FORMED SURFACES NOT EXPOSED TO EARTH OR WEATHER:
 - WALLS, SLABS: 3/4 IN.
 - BEAMS, GIRDERS AND COLUMNS (TO TIES OR STIRRUPS): 1 1/2 IN.
 - ALL CONSTRUCTION JOINTS SHOWN ON DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE, UNLESS THEIR ELIMINATION IS APPROVED BY THE ENGINEER. ADDITIONAL CONSTRUCTION JOINTS, REQUIRED TO FACILITATE CONSTRUCTION, SHALL BE LOCATED AT POINTS OF MINIMUM SHEAR AND SHALL BE DETAILED ON SHOP DRAWINGS. REINFORCEMENT SHALL PASS CONTINUOUSLY THROUGH THE JOINT. ALL CONSTRUCTION JOINTS SHALL BE ROUGHENED TO A DEPTH OF 1/4" FOR VERTICAL CONSTRUCTION JOINTS IN BEAMS, SLABS, WALLS, ETC. IT IS ACCEPTABLE TO USE "STAYFOAM".
 - ALL ABUTTING CONCRETE MEMBERS SHALL BE DOWELED TOGETHER, UNLESS POURED MONOLITHICALLY. DOWELS SHALL BE EQUAL IN SIZE AND SPACING TO THE REINFORCING IN THE ADJACENT MEMBER.
 - PROVIDE CONTINUOUS REINFORCEMENT AROUND CORNERS AND AT INTERSECTIONS AND THROUGH CONSTRUCTION JOINTS, CONTROL JOINTS, CONTRACTION JOINTS, AND JOINTS BETWEEN ALL ABUTTING MEMBERS.
 - UNLESS OTHERWISE SHOWN IN THE ARCHITECTURAL DRAWINGS, PROVIDE 3/4" CHAMFERS AT ALL EDGES THAT ARE EXPOSED TO VIEW IN THE FINISHED STRUCTURE.
 - SEE ARCHITECTURAL DRAWINGS FOR DOOR AND WINDOW OPENINGS, DRIP SLOTS, REGLES, MASONRY ANCHORS, PRECAST BEARING LEDGES, BRICK LEDGE ELEVATIONS AND FOR MISCELLANEOUS EMBEDDED PLATES, BOLTS, ANCHORS, ANGLES, ETC.
 - REFER TO ARCHITECTURAL DRAWINGS FOR CONCRETE FINISHES. WHERE FINISH IS NOT SPECIFIED, CONFORM TO REQUIREMENTS OF A.C.I. 301.
 - MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS SHALL BE REFERRED TO FOR DRAINS, SLEEVES, OUTLET BOXES, CONDUIT, ANCHORS, ETC. THE VARIOUS TRADES ARE RESPONSIBLE FOR PLACING THEIR ITEMS. ALL CONDUITS TO HAVE TOP OF CONDUIT INCHES BELOW BOTTOM OF SLAB ON GRADE.
 - REFER TO PLUMBING DRAWINGS FOR UNDER FLOOR AND PERIMETER FOUNDATION DRAIN.
 - LAP SPLICES SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE, UNLESS NOTED OTHERWISE. WHERE CLASSES ARE NOT CALLED OUT ON DRAWINGS, USE CLASS "B" SPLICES. SPLICES f_c = 4000 P.S.I., f_y = 60,000 P.S.I.

BAR SIZE	CLASS CATEGORY	f _c = 3,000 P.S.I.		f _c = 4,000 P.S.I.		f _c = 5,000 P.S.I.	
		A	B	A	B	A	B
#3	-	16	21	14	18	13	16
#4	-	22	28	19	24	17	22
#5	-	27	35	23	30	21	27
#6	-	32	42	28	36	25	33
#7	-	39	50	33	42	30	39
#8	-	47	60	40	50	37	47
#9	-	55	70	47	58	44	55
#10	-	63	81	55	67	52	63
#11	-	71	93	63	77	61	71

TOP BARS ARE DEFINED AS ANY BAR WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BAR.

BAR SIZE	CLASS CATEGORY	f _c = 3,000 P.S.I.		f _c = 4,000 P.S.I.		f _c = 5,000 P.S.I.	
		A	B	A	B	A	B
#3	-	13	16	12	16	12	16
#4	-	17	22	15	19	13	17
#5	-	21	27	18	23	16	21
#6	-	25	32	22	28	19	25
#7	-	30	39	26	33	23	30
#8	-	36	47	31	40	28	36
#9	-	43	55	37	47	34	43
#10	-	51	65	44	56	41	51
#11	-	60	77	52	66	49	60

BAR SIZE	30 db
#3	12
#4	15
#5	19
#6	23
#7	26
#8	30
#9	34
#10	38
#11	42

NOTES:

- TABLES ARE BASED ON C.R.S.I. CATEGORIES 4 AND 6. WHERE MIN. SPACING IS 6 BAR DIAMETERS CENTER TO CENTER AND WHERE MIN. CONCRETE COVER IS ONE BAR DIAMETER USE CATEGORY 6 FOR LONGITUDINAL BARS IN BEAM, COLUMNS AND INNER LAYER OF WALL OR SLABS; USE CATEGORY 4 FOR ALL OTHER BARS.
- ALL SPLICES TO BE CLASS "B" TENSION SPLICE UNLESS OTHERWISE NOTED.
- SPLICE PLAIN WELDED WIRE FABRIC BY LAPPING ONE FULL MESH SPACE PLUS 2 INCHES.
- FOR LIGHT WEIGHT CONCRETE, MULTIPLY LENGTHS IN TABLE BY 1.3.
- FOR EPOXY COATED REINFORCEMENT, MULTIPLY LENGTHS IN TABLE BY 1.5.

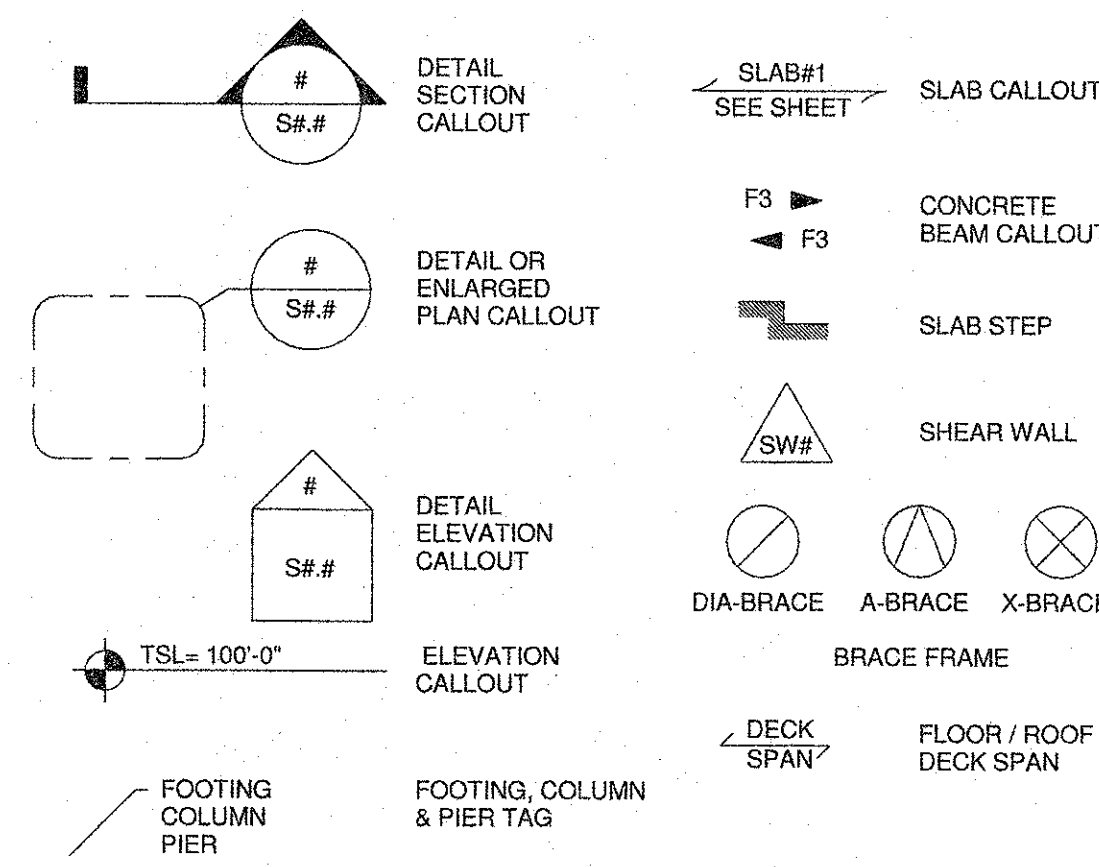
COMPRESSION DOWEL EMBEDMENT: 22 BAR DIAMETERS

- REFER TO MECHANICAL DRAWINGS FOR HOUSEKEEPING PADS AND INERTIA BASES AT MECHANICAL EQUIPMENT.
- REFER TO MECHANICAL DRAWINGS FOR UNDERFLOOR AND PERIMETER FOUNDATION DRAIN.
- BASE PLATES, ANCHOR BOLTS, SUPPORT ANGLES, ETC., BELOW GRADE SHALL BE COVERED WITH A MINIMUM OF 3" CONCRETE.
- PROVIDE CONTINUOUS WATERSTOP AT HORIZONTAL AND VERTICAL JOINTS AT ELEVATOR PIT
- WHERE REINFORCING IS NOT INDICATED OR DEFINED, INCLUDE FOR BID PURPOSES ONLY.
 - WALLS: #5 EACH WAY EACH FACE. SPACING IN INCHES = 140/(WALL THICKNESS IN INCHES BUT NOT OVER 18"o.c.
 - BEAMS: 1-#9 CONTINUOUS TOP AND BOTTOM FOR EACH 100 SQUARE INCHES OF BEAM CROSS SECTIONAL AREA AND #4 STIRRUPS SPACED AT 1/2 OF BEAM DEPTH, FULL LENGTH OF BEAM.
 - COLUMNS: 1-#9 VERTICAL PER 50 SQUARE INCHES OF CROSS SECTIONAL AREA AND #3 TIES @ 9"O.C. W/TOP (3)-TIES @ 3"O.C.
 - SLABS: #5 EACH WAY TOP AND BOTTOM. SPACING IN INCHES = 100/(SLAB THICKNESS IN INCHES) BUT NOT OVER 18"o.c.
- ON SHOP DRAWINGS, INDICATE ABOVE REINFORCING AS "PER GENERAL NOTES". SUCH REINFORCING MAY BE REVISED OR RELOCATED BY STRUCTURAL ENGINEER DURING SHOP DRAWING REVIEW.
- PROVIDE CONCRETE EQUIPMENT PADS, INERTIA BASES AND CURBS AS NOTED ELSEWHERE IN CONTRACT DOCUMENTS. UNLESS NOTED, DOWEL PADS WITH #4 X 0'-6" PROJECTING 3" FROM CONCRETE BELOW AT 18"O.C. EACH WAY. REINFORCE PADS WITH #4@18 EACH WAY TOP AND BOTTOM.
- MASONRY DOWELS: PROVIDE, PLACE, AND SPACE TO MATCH MASONRY REINFORCING.
- PROVIDE STANDARD HOOKS ON BARS TERMINATING AT A CONCRETE FACE UNLESS NOTED (E.G.: EDGES OF OPENINGS, SLAB EDGES, EXPANSION JOINTS, ENDS OF BEAMS, AND AT: TOP, BOTTOM AND ENDS OF WALLS, ETC.).
- PROVIDE (2)-#5 (MIN.) @ EACH SIDE OF OPENING. EXTEND 2'-0" BEYOND OPENINGS.
- SEE MISC. NOTES FOR EPOXY / ADHESIVE ANCHORS.
- ALL CONCRETE COLUMNS, PROTRUDING PLASTERS, NON-PROTRUDING PLASTERS AND PIERS SHALL HAVE (3)-#3 TIES @ 3"O.C. FROM TOP OF CONCRETE.
- REFERENCE SPECIFICATIONS FOR SPECIAL SOY BASED FINISH APPLICATIONS.

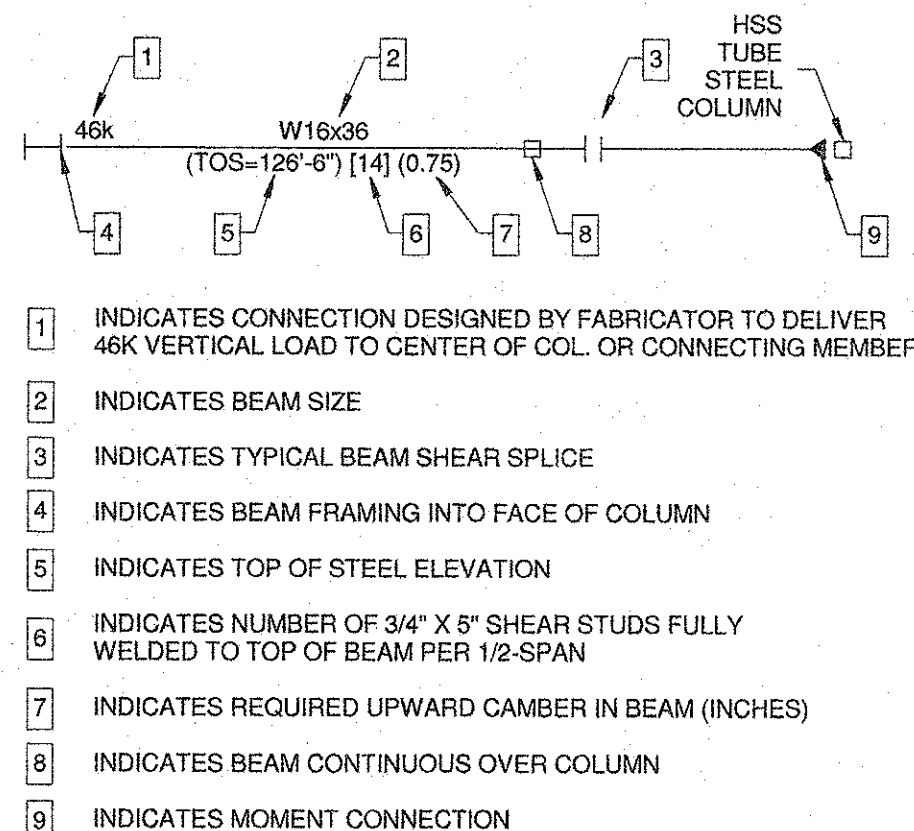
STRUCTURAL ABBREVIATIONS:

ADDITIONAL ALUMINUM ANCHOR BOLT AND ANGLE ARCHITECTURAL AT	ADDL. ALUM. ANCHOR BOLT & ANGLE ARCH. @	KIP = 1000 lbs. KNOCKOUT POUND LIGHT WEIGHT LIVE LOAD LONG ARCHITECTURAL LONGITUDINAL LONG LEG HORIZONTAL LONG LEG VERTICAL LONG WAY LOW POINT	K KO LB. LT. WT. L.L. L.G. LONG. L.L.H. L.L.V. L.W. L.P.
BASEMENT BASE PLATE BEAM BETWEEN BLOCK BOARD BOTTOM BOTTOM FACE BOTTOM OF METAL DECK BOTTOM OF FOOTING BOTTOM OF WALL BRICK BRICK SHELF BRIDGING BUILDING	BSMT. B.P. BM. BRG. BTWN. BLK. BD. BOT. B/FACE BOF BOF BOT. BRK. BS BRDG. BLDG.	MANUFACTURER MARK MASONRY MASONRY OPENING MATERIAL MAXIMUM MECHANICAL METAL MINIMUM MISCELLANEOUS MOMENT CONNECTION NEAR FACE NOMINAL NOT IN CONTRACT NOT TO SCALE ON CENTER OPENING OPPOSITE HAND OUTSIDE FACE	MFG. MK. MAS. M.O. MAT'L MAX. MECH. MTL. MIN. MISC. M.C.
CANTILEVER CAST IN PLACE CEILING CEMENT CENTER LINE CENTER TO CENTER CENTERED CLEAR CONCRETE COLUMN CONNECTION CONSTRUCTION CONSTRUCTION JOINT CONTINUOUS CONTRACTOR	CANTL. C.I.P. CLG. CEM. CL. CL. CTRD. CL. or CLR. CONC. COL. CONN. CONST. C.J. CONT. CONTR.	PANEL PENTHOUSE PLATE PLUMBING PRECAST CONCRETE PRE-ENGINEERED METAL BUILDING POCKET POST TENSION	N.F. NOM. N.I.C. N.T.S. O.G. OPNG. OPP.H. O.F. PNL. P.H. PL. PLBG. P.C.
DEAD LOAD DECK DIAGONAL DIAMETER DIMENSION DOWELS DOWN DRAWINGS	D.L. DIA. DIA. DIM. DWLS. DN. DWGS.	POCKET POST TENSION RADIUS RECTANGULAR REFERENCE REFER TO REINFORCING REQUIRED REVISION ROOM	PEMB. PCKT. P.T. RAD. RECT. REF. REIN. REINFD. REV. RF. RM
EACH EACH FACE EACH WAY ELECTRICAL ELEVATION ELEVATOR EMBEDDED EQUAL EQUIPMENT EXISTING EXPANSION EXPANSION JOINT EXTERIOR	EA. E.F. E.W. ELECT. EL. ELEV. EMBED. EQ. EQUIP. EXIST. EXP. E.J. EXT.	SCHEDULE SECTION SHORT WAY SIMILAR SLAB SLAB ON GRADE SPACE, SPACING, SPACES SPECIFICATIONS SQUARE STANDARD STEEL STRUCTURE OR STRUCTURAL SUPPORT SYMMETRICAL THICKNESS TOP FACE TOP OF BRICK LEDGE TOP OF FOOTING TOP OF CONCRETE TOP OF PIER TOP OF JOIST TOP OF SLAB TOP OF STRUCTURAL STEEL TOP OF WALL TRUSS BEARING TYPICAL	SCHD. SECT. S.W. SIM. SL. S.O.G. SPA. SPECS. SQ. STD. STL. STRUC. SUPPT. SYMM. THK. T.FACE T/B.L. TOF. TOC. TOP. T/UST. TSL. TOS. TOW. T/B.R.G. TYP.
FAR FACE FINISH FINISH FLOOR FLOOR FOOTING FOUNDATION FRAMING GALVANIZED GAUGE GENERAL CONTRACTOR GIRDER GRADE GYPSPUM	F.F. FIN. FIN. FLR. FL. FTG. FND. FRMG. GALV. GA. GEN. CONTR. GIR. GR. GYP.	INSIDE FACE INTERIOR JOINT JOIST	U.N.O. VERT. VIF. W.B. W.W.F. W/

TYPICAL CALLOUTS AND SYMBOL LEGEND

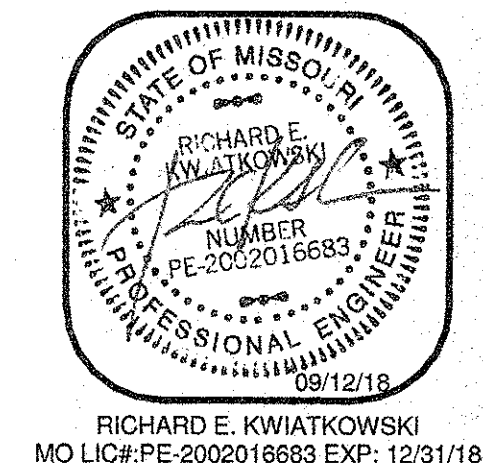


TYPICAL BEAM NOMENCLATURE



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The Architects Alliance inc.
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STRUCTURAL GENERAL NOTES

**MISSOURI SOYBEAN INNOVATION CENTER
 NEW OFFICE BUILDING**
 734 S. COUNTRY CLUB DRIVE
 JEFFERSON CITY, MISSOURI

PROJECT NO. 1613
 DATE: SEPT. 12, 2018
S0.1

2017349 - BID/PERMIT SET - 09-12-18

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