DESIGN DATA

APPLICABLE CODES/STANDARDS:
.....INTERNATIONAL BUILDING CODE - 2018
.....ASCE 7-16 MIN DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI

STRUCTURAL DESIGN STANDARDS (DESIGN SHALL CONFORM TO THE CURRENT EDITION UNDER THE APPLICABLE CODE)
.....ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY
.....ACI 530/530.1 BLDG CODE REQUIREMENTS AND SPECS FOR MASONRY STRUCTURES (AND RELATED COMMENTARIES)
.....ANSI/AISC 360-16 SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS
.....AWS D1.1/D1.1M STRUCTURAL WELDING CODE-STEEL

BUILDING DESIGN LOADS/CRITERIA

DESIGN LIVE LOADS:

.....FLOOR FRAMING (RETAIL, OFFICE, RESTAURANT, RECREATIONAL)	100 psf
.....FLOOR FRAMING (RESIDENTIAL AREAS)	40 psf
.....STAIRWAYS, EXITS	100 psf
.....BALCONIES	40 psf
.....PRIVATE GARAGES (PASSENGER VEHICLES ONLY)	40 psf
.....INTERIOR PARTITION WALLS (UNIFORMLY DISTRIBUTED WEIGHT)	15 psf
.....CORRIDORS FIRST FLOOR	100 psf
.....CORRIDORS 2nd 3rdFLOORS	40 psf
.....CORNICES	60 psf

SNOW LOADS & DESIGN DATA:

.....DESIGN SNOW LOAD	42 psf (BALANCED SNOW LOAD)
.....FLAT ROOF SNOW LOAD (Pf) = (0.7*Ce*Ct*Is*Pg)	42 psf
.....SNOW EXPOSURE FACTOR (Ce)	1.0
.....SNOW LOAD IMPORTANCE FACTOR (Is)	1.0
.....ROOF THERMAL FACTOR (Ct)	1.0
.....GROUND SNOW (Pg)	60 psf
.....SLOPED ROOF FACTOR (Cs)	1.0

WIND DESIGN DATA:

.....WIND IMPORTANCE FACTOR (Iw)	1.0
.....RISK CATEGORY II	
.....BASIC WIND SPEED (3-SECOND GUST, ULTIMATE)	115 MPH
.....BASIC WIND SPEED (3-SECOND GUST, NOMINAL)	90 MPH
.....MEAN ROOF HEIGHT	33 FT
.....WIND EXPOSURE CATEGORY	B
.....WIND EXPOSURE CLASSIFICATION	ENCLOSED
.....VELOCITY EXPOSURE COEFFICIENT Kz	0.720
.....TOPOGRAPHIC FACTOR (Kzt)	1.0
.....DESIGN PROCEDURE	METHOD 1 (SIMPLIFIED PROCEDURE)

NET PRESSURE COEFFICIENTS C_{net}		
AREA	C_{net} +INTERNAL PRESSURE	C_{net} -INTERNAL PRESURE
WINDWARD WALL	0.43	0.73
LEEWARD WALL	-0.51	-0.21
SIDEWALL	-0.66	-0.35
PARAPET WINDWARD WALL	1.28	
PARAPET LEEWARD WALL	-0.85	
FLAT ROOF	-1.09	-0.79

DESIGN WIND PRESSURES P_{net}		
AREA	P_{net} +INTERNAL PRESSURE	P_{net} -INTERNAL PRESURE
WINDWARD WALL	10.5 psf	17.8 psf
LEEWARD WALL	-12.4 psf	-5.1 psf
SIDEWALL	-16.1 psf	-8.5 psf
PARAPET WINDWARD WALL	31.2 psf	
PARAPET LEEWARD WALL	-20.7 psf	
FLAT ROOF	-26.6 psf	-19.3 psf

EARTHQUAKE DESIGN DATA:

.....OCCUPANCY CATEGORY	II
.....SEISMIC IMPORTANCE FACTOR (Ie)	1
.....MAPPED SPECTRAL ACCELERATIONS AT SHORT PERIODS (Ss)	0.045 g
.....MAPPED SPECTRAL ACCELERATIONS AT (1) SECOND PERIODS (S1)	0.038 g
.....SITE CLASSIFICATIONS	B
.....SITE COEFFICIENT (Fa)	1.0
.....SITE COEFFICIENT (Fv)	1.0
.....DESIGN SPECTRAL RESPONSE COEFFICIENT AT SHORT PERIODS (Sds)	0.030 g
.....DESIGN SPECTRAL RESPONSE COEFFICIENT AT (1) SECOND PERIODS (Sd1)	0.025 g
.....SEISMIC DESIGN CATEGORY	A
.....BASIC SEISMIC-FORCE-RESISTING SYSTEM	LIGHT FRAME WOOD WALLS WITH STRUCTURAL WOOD SHEAR PANELS
.....ANALYSIS PROCEDURE FOR SEISMIC DESIGN	EQUIVALENT LATERAL FORCE ANALYSIS

SOIL DESIGN VALUES:

.....SOIL UNIT WEIGHT	125 PCF (ASSUMED)
.....LATERAL EARTH PRESSURE	
.....AT-REST (BASEMENT WALLS)	62.5 PSF/FT OF DEPTH (ASSUMED)
.....PASSIVE	340 PSF (ASSUMED)
.....COEFFICIENT OF SLIDING FRICTION	0.30 (ASSUMED)
.....SUBGRADE MODULUS	260 PCI (ASSUMED)
.....ALLOWABLE SOIL BEARING PRESSURE	3000 PSF

REFER TO SOILS REPORT NO. 31-20210 DATED 7/1/2019 PREPARED BY AMERICAN ENGINEERING TESTING INC. FOR DESCRIPTION OF SOIL CONDITIONS, GEOTECHNICAL RECOMMENDATIONS, AND DESIGN VALUES

DEFLECTION LIMITS			
MEMBERS	LIVE	SNOW or WIND	DEAD + LIVE or SNOW
ROOF MEMBERS			
SUPPORTING GYPSUM BOARD CEILINGS	L/360	L/360	L/240
SUPPORTING FLEXIBLE CEILINGS	L/360	L/360	L/240
NOT SUPPORTING CEILING	L/240	L/240	L/180
SUPPORTING RIGID MATERIALS (BRICK, MASONRY, ETC.)	L/600	L/600	L/600
FLOOR MEMBERS			
SUPPORTING RIGID MATERIALS (BRICK, MASONRY, ETC.)	L/600	L/600	L/600
SUPPORTING GYPSUM BOARD CEILINGS	L/540	N/A	L/360
SUPPORTING FLEXIBLE MATERIALS	L/540	N/A	L/360
LINTEL/HEADER/BEAM MEMBERS			
SUPPORTING RIGID MATERIALS (BRICK, MASONRY, ETC.)	L/600	L/600	L/600
SUPPORTING FLEXIBLE MATERIALS (EIFS, SIDING, ETC.)	L/360	L/360	L/240
EXTERIOR WALLS			
WITH RIGID FINISHES (BRICK, MASONRY, ETC.)	N/A	L/600	N/A
WITH FLEXIBLE FINISHES (EIFS, SIDING, ETC.)	N/A	L/360	N/A

MATERIAL STRENGTHS

CAST-IN-PLACE CONCRETE:

FOOTINGS
.....MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS fc = 3,000 PSI
.....MAXIMUM WATER-CEMENTITIOUS RATIO 0.59
.....MAXIMUM AGGREGATE SIZE 1 1/2"
.....SLUMP LIMIT 5" +/-1"
.....AIR CONTENT NO
EXTERIOR PIERS, WALLS, AND COLUMNS
.....MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS fc = 4,000 PSI
.....MAXIMUM WATER-CEMENTITIOUS RATIO 0.48
.....MAXIMUM AGGREGATE SIZE 3/4"
.....SLUMP LIMIT 4" +/-1"
.....AIR CONTENT YES 4% to 6%
INTERIOR SLABS ON GRADE
.....MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS fc = 4,000 PSI
.....MAXIMUM WATER-CEMENTITIOUS RATIO 0.48
.....MAXIMUM AGGREGATE SIZE 3/4"
.....SLUMP LIMIT 4" +/-1"
.....AIR CONTENT NO
CONCRETE TOPPING
.....MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS fc = 4,000 PSI
.....MAXIMUM WATER-CEMENTITIOUS RATIO 0.48
.....MAXIMUM AGGREGATE SIZE 3/4"
.....SLUMP LIMIT 4" +/-1"
.....AIR CONTENT NO
STAIR LANDINGS AND TREADS
.....MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS fc = 4,000 PSI
.....MAXIMUM WATER-CEMENTITIOUS RATIO 0.48
.....MAXIMUM AGGREGATE SIZE 3/4"
.....SLUMP LIMIT 4" +/-1"
.....AIR CONTENT NO
EXTERIOR SLABS ON GRADE
.....MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS fc = 4,000 PSI
.....MAXIMUM WATER-CEMENTITIOUS RATIO 0.48
.....MAXIMUM AGGREGATE SIZE 3/4"
.....SLUMP LIMIT 4" +/-1"
.....AIR CONTENT YES 4% to 6%
SLURRY
.....MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS fc = 1,000 PSI
.....MAXIMUM WATER-CEMENTITIOUS RATIO 0.55
.....MAXIMUM AGGREGATE SIZE 1 1/2"
.....SLUMP LIMIT 6" +/-1"
.....AIR CONTENT NO

STEEL/METAL:

REINFORCING STEEL:
.....ALL ASTM A615, GRADE 60, DEFORMED Fy = 60,000 PSI
.....STEEL WELDED WIRE REINFORCEMENT, FLAT SHEETS Fy = 60,000 PSI

STRUCTURAL STEEL:
.....ROLLED WIDE FLANGE SHAPES, ASTM A992 GRADE 50 Fy = 50,000 PSI
.....CHANNELS, ANGLES, AND S SHAPES, ASTM A36 Fy = 36,000 PSI
.....PLATE AND BAR, ASTM A36 Fy = 36,000 PSI
.....TUBE SHAPES, ASTM A500 GRADE B Fy = 46,000 PSI
.....PIPE ASTM A53, TYPE E or S, GRADE B Fy = 46,000 PSI
.....ALL OTHER ROLLED SHAPES, ASTM A36 Fy = 36,000 PSI

STRUCTURAL BOLTS:
.....HIGH STRENGTH BOLTS, NUTS, & WASHERS ASTM A325
.....ZINC-COATED HIGH STRENGTH BOLTS, NUTS, & WASHERS ASTM A325
.....STAINLESS STEEL BOLTS, NUTS, & WASHERS ASTM F593
.....SHEAR CONNECTORS (GRADES 1015 THRU 1020) ASTM A108
.....THREADED RODS ASTM A36
.....CLEVIS & TURNBUCKLES (GRADE 1035) ASTM A108
.....EYE BOLTS & NUTS (GRADE 1030) ASTM A108
.....ANCHOR BOLTS (GRADE 36) ASTM F1554

WELDED CONNECTIONS:
.....WELDING ELECTRODES E70XX
E80XX FOR WELDING REINF

MASONRY: fm = 2,000 PSI

MASONRY MORTAR:
.....TYPE "M" MORTAR BELOW GRADE
.....TYPE "M" or "S" ABOVE GRADE

GROUT BELOW BASE PLATES & BEARING PLATES:
.....NONMETALLIC, SHRINKAGE-RESISTANT ASTM C1107

FOUNDATION AND EARTHWORK:

1. ALL EXTERIOR FOOTINGS MUST BEAR BELOW LOCAL FROST LINE RELATIVE TO ADJACENT FINISH EXTERIOR GRADE.
2. DO NOT PLACE ANY FOOTINGS ON FROZEN SUBGRADE.
3. BACK FILLING SHALL BE DONE SIMULTANEOUSLY ON BOTH SIDES OF FOUNDATION WALLS.
4. DO NOT PLACE BACK FILL AGAINST BASEMENT WALLS UNTIL THE TOP AND BOTTOM OF THE WALL ARE ADEQUATELY BRACED BY THE SLAB ON GRADE AND THE FLOOR FRAMING AT THE TOP OF THE WALL.
5. REMOVE ANY EXISTING CONCRETE 2'-0" BELOW NEW CONCRETE FOOTINGS AND SLABS ON GRADE, UNLESS NOTED OTHERWISE.
6. SHORING/OR UNDERPINNING SHALL BE DESIGNED TO LIMIT HORIZONTAL AND VERTICAL MOVEMENT OF EXISTING CONSTRUCTION TO 1/4" MAXIMUM IN ANY DIRECTION.
7. CENTER PIER AND COLUMN FOOTINGS ON COLUMN CENTERLINES AND WALL FOOTINGS ON WALL CENTERLINES UNLESS SPECIFICALLY NOTED OTHERWISE.
8. ALL BACK FILL WITHIN 3'-0" OF RETAINING WALLS AND BASEMENT WALLS SHALL BE FREE DRAINING GRANULAR MATERIAL APPROVED BY A SOILS ENGINEER AND COMPACTED TO 90% STANDARD PROCTOR.
9. TOP OF FOOTING ELEVATIONS SHOWN ON THESE CONSTRUCTION DOCUMENTS REPRESENT MINIMUM FOOTING DEPTHS FOR FROST PROTECTION AND BEST JUDGMENT OF A SUITABLE BEARING STRATUM. ACTUAL GRADE CONDITIONS AND SUITABLE BEARING STRATUM MUST BE VERIFIED BY THE CONTRACTOR AND A SOILS ENGINEER AT THE TIME OF EXCAVATION.
10. FOOTING EXCAVATIONS MUST EXTEND TO COMPETENT BEARING MATERIAL. CONTRACTOR SHALL HIRE A SOILS ENGINEER TO FIELD VERIFY NET ALLOWABLE SOIL BEARING CAPACITY STATED ON THESE CONSTRUCTION DOCUMENTS AND IN GEOTECHNICAL REPORT FOR THIS PROJECT. IF SUITABLE BEARING STRATUM DOES NOT EXIST AT FOOTING ELEVATIONS STATED ON CONSTRUCTION DOCUMENTS, EXCAVATIONS SHALL BE EXTENDED UNTIL SOIL WITH STATED BEARING CAPACITY IS REACHED. PLACE COMPACTED FILL BELOW FOOTINGS OR EXTEND FOOTINGS DOWN TO SUITABLE BEARING STRATUM. ENGINEERED FILL BELOW SLABS ON GRADE AND FOOTINGS SHALL BE FREE DRAINING GRANULAR MATERIAL COMPACTED TO 95% MODIFIED PROCTOR AND PLACED PER THE SOIL ENGINEERS RECOMMENDATIONS. ALL FIELD CONDITIONS THAT WILL AFFECT DESIGN AS PRESENTED MUST BE COORDINATED WITH STRUCTURAL ENGINEER.
11. REFER TO DESIGN DATA FOR DESCRIPTION OF SOIL CONDITIONS, GEOTECHNICAL RECOMMENDATIONS, AND DESIGN VALUES.

CONTINUITY:

ALL REINFORCING SHALL BE CONTINUOUS UNLESS NOTED OTHERWISE. CONTINUITY AT CORNERS AND INTERSECTIONS SHALL BE ACHIEVED USING CORNER BARS AND CONTACT LAP SPLICES, SEE TYPICAL DETAIL. CONTINUITY AT OTHER LOCATIONS MAY BE ACHIEVED USING CONTACT LAP SPLICES SHOWN ON APPROVED SHOP DRAWINGS. LOCATION OF LAP SPLICES SHALL BE SHOWN ON THE SHOP DRAWINGS. UNLESS NOTED OTHERWISE, THE FOLLOWING LAP SPLICES SHALL BE USED: (ALL LAP SPLICES ARE CLASS B SPLICES)

LOCATION	#3	#4	#5	#6	#7	#8	#9	#10	#11
3,000 & 3,500 PSI CONCRETE:									
- TOP BARS (*):	21"	19"	25"	38"	71"	93"	118"	149"	184"
- OTHER BARS:	16"	22"(**)	27"	35"	55"	71"	91"	115"	142"
4,000 & 4,500 PSI CONCRETE:									
- TOP BARS (*):	18"	19"	25"	38"	61"	80"	102"	129"	159"
- OTHER BARS:	16"	16" (**)	19"	28"	47"	62"	78"	99"	123"

(*) TOP BARS ARE HORIZONTAL REINFORCING WHERE MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCING.

(**) FOR #4 EPOXY COATED REBAR, USE 27" SPLICE LENGTH AT 3,000 AND 3,500 PSI CONC. AND 19" AT 4,000 AND 4,500 PSI.

MECHANICAL CONNECTIONS MAY BE USED IN LIEU OF LAP SPLICES PROVIDED APPROVAL IS OBTAINED FROM THE ARCHITECT/ENGINEER. CONNECTIONS SHALL DEVELOP IN TENSION 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE BAR. ALL MECHANICAL CONNECTIONS SHALL BE SHOWN ON THE SHOP DRAWINGS AND BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND THE PRODUCT'S ICC-ES REPORT. SUBMIT THE PRODUCT'S ICC-ES REPORT FOR MECHANICAL SPLICE PRODUCTS WITH SHOP DRAWINGS.

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Date	Description

STRUCTURAL NOTES

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