



Structural Plan Review Commercial Checklist

DevelopmentATX.com | Phone: 311 (or 512-974-2000 outside Austin)
For submittal and fee information, see austintexas.gov/digitaldevelopment

This checklist is provided as a reference tool and is not intended to be exhaustive of all possible structural requirements. It may also include more items than a specific set of structural plans may encompass.

Referenced Codes and Regulations:

- 2021 International Building Code (IBC)
 - ASCE 7-16
 - ACI 318-19
 - TMS 402-2018/TMS 602-2018
 - AISC 360-16
 - ANSI/AWC NDS 2018
 - The Texas Engineering Practice Act (TBPELS)
- *Code section references are IBC unless noted otherwise*

	Code Requirements	Code Section
A. Documentation		
1.	Complete City of Austin Statement of Special Inspections form (https://www.austintexas.gov/sites/default/files/files/Development_Services/INSP_StatementOfSpecialInspections.pdf)	1704.3 1705
2.	Geotechnical report (Exception: presumptive load-bearing values, from IBC Table 1806.2, may be substituted for applicable projects and must be clearly identified in drawings)	1803.6
3.	Complete City of Austin Deferred Submittal form (https://www.austintexas.gov/sites/default/files/files/Development_Services/COM_DeferredSubmittalRequestForm.pdf)	107.3.4.1
4.	Engineer licensed in the State of Texas shall prepare the plans when required by State law or when requested by the City Building Official.	107.3.4
B. General		
5.	The design loads and other information pertinent to the structural design required by section 1603 shall be indicated on the construction documents. Please include the following items in the structural general notes: <ul style="list-style-type: none"> a. Risk category b. Dead loads with partition load assumptions c. Floor live loads, including live load reductions d. Roof live load e. Roof snow load, P_g f. Wind design data per Section 1609 <ul style="list-style-type: none"> i. Wind speed, V_{ult} ii. Exposure category iii. Internal pressure coefficient iv. Design wind pressures for exterior component and cladding materials g. Seismic design data per Section 1613 <ul style="list-style-type: none"> i. Seismic importance factor, I_e ii. Mapped spectral response acceleration parameters, S_s and S_1 	1603

	Code Requirements	Code Section
	<ul style="list-style-type: none"> iii. Site class iv. Design spectral response acceleration parameters, S_{DS} and S_{D1} v. Seismic design category vi. Basic seismic-force resisting system(s) vii. Design base shear(s) viii. Seismic response coefficient(s), C_s ix. Response modification coefficient(s), R x. Analysis procedure used h. Geotechnical Information <ul style="list-style-type: none"> i. Design load bearing value of soils ii. Design assumptions at below grade walls i. Flood design data per Section 1612 j. Special loads per Section 1603.1.8 	1603
6.	Structural drawings must be sealed by a structural or civil engineer registered in the State of Texas.	TBPELS §137.33
7.	Provide construction documents as required by Section 107.1.	107
8.	List material, design codes, and referenced standards used in the construction documents	Chapter 35
9.	Plans and details for elements of the structure designed by others shall be reviewed and approved by the Engineer or Architect of record prior to submitting to the City for review and approval. Include list of deferred submittal items.	107.3.4.1
10.	Provide compacted fill specifications	1803.5.8
11.	The minimum uniformly distributed live loads and concentrated live loads shall be consistent with Table 1607.1.	1607.3
12.	The concentrated load given in Table 1607.1 shall be assumed to be uniformly distributed over an area 2.5 square feet on floor and other similar surfaces and shall be located to produce the maximum load effects in the structural members.	1607.4
13.	Design Dead Loads with partition load assumptions	1606
14.	Partition load not less than 15 psf (pounds per square foot) shall be included as live load in office buildings and in other buildings where partition locations are subjected to change whether or not partitions are shown on the construction documents, unless the specified live load is 80 psf or greater.	1607.5
15.	Provide roof plans with mechanical units shown and included in design.	1607.14
16.	Design and detail roof parapets.	N/A
17.	Verify that ponding has been accounted for and included in design.	ASCE 7 Section 8.4
18.	Handrail assemblies and guards shall be designed to resist a uniform load of 50 psf applied in any direction at the top and to transfer this load through the supports to the structure. Handrail assemblies and guards shall be able to resist a single concentrated load of 200 pounds applied in any direction at any point along the top and have attachment devices and supporting structure to transfer this loading to appropriate structural elements of the building. The concentrated load need not be assumed to act concurrently with the uniform load.	1607.9
19.	Interior walls and partitions that exceed 6 feet in height, including their finish materials, shall have adequate strength to resist the loads to which they are subjected, but not less than a horizontal load of 5 psf.	1607.16
20.	The deflections of structural members shall not exceed the more restrictive of the limitations of the material chapters and Table 1604.3.	1604.3.1
21.	Indicate requirement for structural observation on the drawings when required in Section 1704.6.1. Complete City of Austin Structural Observation Report (https://www.austintexas.gov/sites/default/files/files/Development_Services/COM_StructuralObservationReport.pdf)	1704.6
22.	Provide shrinkage specifications for wood framing that supports more than two floors and a roof.	2304.3.3

	Code Requirements	Code Section
23.	Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads. Wind loads shall be determined in accordance with chapter 26 to 31 ASCE 7 or provisions in Section 1609.	1609.1
24.	Every structure and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motion in accordance with ASCE 7 and provisions in Section 1613.	1613.1
25.	Indicate type of shear walls and their minimum length on plans.	N/A
26.	Indicate the type/size and locations of hold-down on plans.	N/A
27.	When using alternative basic load combinations in allowable stress design that includes wind or seismic loads, allowable stresses are permitted to be increased or load combinations reduced where permitted by the material chapter of this code or the referenced standards.	1605.2
28.	Provide material specifications, such as fire cover, FRTW, etc.	N/A
29.	Specify on the plans the special inspections required for this project.	1704.2 1704.3.1 1705.1
C. Foundation		
30.	The design and construction of structural concrete elements shall meet the minimum requirements of ACI 318 for Structural Concrete as per Section 1808	1808
31.	Specify on the drawings the required sizes for all concrete structural elements, including, but not limited to, spread footings, continuous strip footings, thickened slab footings, walls, grade beams, pilasters, pedestals, deep foundations (caissons, piles and pile caps), elevated slabs, beams and columns.	1603.1 1807 1808 1809 1810 1901.2 1901.3 1905 1906 ACI 318 Chapter 13
32.	Indicate the required type, size, spacing and location of all reinforcement in concrete structural elements.	1901.2 1901.5 1908.1
33.	Specify on the structural drawings the 28-day design compressive strength (f_c) of concrete for all structural elements.	1808.8.1 1901.5 1904
34.	Indicate on the structural drawings the required material specifications for all steel reinforcement to be placed in concrete construction, including ASTM designation, and material grade or yield strength (KSI) for compliance.	1901.5 ACI 318 sections 20.2, 20.3, 20.4, 20.5, 20.6, 25.4, 25.5, 26.4, 26.5, 26.6
35.	Specify that the bottom of all shallow foundations shall extend a minimum of twelve (12) inches below the top of finished grade.	1809.4
36.	Specify on the drawings the minimum width of twelve (12) inches for all footings that resist loads.	1809.4
37.	Specify placement of a 6 mil (minimum) polyethylene moisture barrier (with joints lapped not less than 6 inches) directly beneath all interior concrete slabs on grade. Alternatively, the designer of record shall state on drawings that omission of the moisture barrier beneath the concrete slab on grade will not be detrimental to the intended use of the building.	1907.1
38.	Specify on the drawings the minimum required concrete cover for reinforcement for all concrete structural elements, including, but not limited to, foundations, slabs, walls, beams and columns.	1901.5

	Code Requirements	Code Section
39.	Specify on the drawings the minimum required lap splice length for each type and size of steel reinforcement in compression and tension for all concrete structural elements, including, but not limited to, foundations, slabs, walls, beams and columns.	1901.5
40.	Specify on the drawings the minimum required lap splice length for each type and size of steel reinforcement in compression and tension for all concrete structural elements. Indicate on structural drawings that the design of concrete structural elements -- including walls, formed slabs, beams, and columns -- is in accordance with ACI 318. Elements include, but are not limited to, foundations, slabs, walls, beams and columns.	1901.5
41.	Specified thickness of structural concrete element (including, but not limited to, footing, slab, wall and beam) does not provide the minimum required embedment depth for the proposed reinforcement beyond either construction joint or free edge of element to ensure full tensile development, in accordance with ACI 318 for adequate transfer of design forces.	1901.2
42.	For post-tensioned slabs on grade, please provide the following information for the post-tensioned slabs: <ul style="list-style-type: none"> a. Slab/beam geometry: length, width, thickness, thickened sections, dimensions of turndowns. b. Slab type per PTI c. Minimum concrete strength at 28 days and minimum concrete strength at jacking d. Em, Ym e. Strand specifications; strand grade and diameter, clearances, drape f. Post tensioning tendons jacking force, assumed losses, anchor set, edge distance to first strand, strand locations and dimensioned spacing requirements. g. Mild reinforcing associated with stress concentrations h. Plans shall reference the correct vital soil report information for design, including the company and its report number, allowable soil bearing capacities, depth, and any compacted fill requirements i. Strand elongation 	1901.5
D. Concrete		
43.	The design and construction of structural concrete elements shall meet the minimum requirements of ACI 318 for Structural Concrete as per the IBC.	1901
44.	Specify on the drawings the required sizes for all concrete structural elements, including, but not limited to, spread footings, continuous strip footings, thickened slab footings, walls, grade beams, pilasters, pedestals, deep foundations (caissons, piles and pile caps), elevated slabs, beams and columns.	1603.1 1807 1808 1809 1810 1901.2 1901.3 1905 1906 ACI 318
45.	Indicate the required type, size, spacing and location of all reinforcements in concrete structural elements.	1901.2 1901.5 1908.1
46.	Specify on the structural drawings the 28-day design compressive strength (fc) of concrete for all structural elements.	1808.8.1 1901.5 1904
47.	Specify on the drawings the minimum required concrete cover for reinforcement for all concrete structural elements, including, but not limited to, foundations, slabs, walls, beams and columns.	1901.5
48.	Specify on the drawings the minimum required lap splice length for each type and size of steel reinforcement in compression and tension for all concrete structural elements including, but not limited to, foundations, slabs, walls, beams and columns.	1901.5

	Code Requirements	Code Section
49.	Specify on the drawings the minimum required lap splice length for each type and size of steel reinforcement in compression and tension for all concrete structural elements. Indicate on structural drawings that the design of concrete structural elements including walls, formed slabs, beams, and columns is in accordance with ACI 318. Elements include, but are not limited to, foundations, slabs, walls, beams and columns.	1901.5
50.	Walls more than 10 inches thick, except basement walls, shall have reinforcement in each direction placed in 2 layers parallel with faces of wall.	ACI 318 Section 11.7.2.3
51.	Indicate on structural drawings that the design of concrete structural elements -- including walls, formed slabs, beams and columns -- is in accordance with ACI 318 (Building Code Requirements for Structural Concrete).	1901.2
52.	Specified thickness of structural concrete element -- including but not limited to footing, slab, wall and beam -- does not provide the minimum required embedment depth for the proposed reinforcement, beyond either construction joint or free edge of element, to ensure full tensile development in accordance with ACI 318, Sections 25.4 and 25.6, for adequate transfer of design forces.	1901.2 1901.5
53.	Specify on the structural drawings the type, size and spacing of anchors required for connection of steel framing components to concrete structural elements, including, but not limited to, headed bolts, headed studs, hooked (J- and L-) bolts, and expansion-type bolts.	1901.3 1901.5
54.	Specify on structural drawings the minimum required embedment depth into concrete for all anchors required for connection of steel framing components to concrete structural elements.	1901.3 1901.5
55.	For each anchor (connecting steel framing components to concrete structural elements) that is installed at a distance less than the specified anchor embedment depth from the edge, specify on structural drawings the minimum required clear distance from the edge of the concrete structural element.	1901.3 1901.5 ACI 318 Sections 17.7, 26.7
56.	Indicate on the structural foundation drawings the relative elevations at the top of footings and at top of slab on grade.	1901.5
57.	For pre-engineered structural building systems, indicate on the foundation plan the design reactions (gravity, uplift, lateral thrust, etc.) that have been determined by the pre-engineered building structural engineer and utilized in the design of footings/column anchorage.	1604.9
58.	Specified footing size(s) shall provide for sufficient weight to adequately resist the applicable design uplift and overturning forces indicated on the foundation plan for each pre-engineered building structure.	1604.8.1
59.	State on the drawings that results for all concrete compressive strength tests shall be available on the job site for review by the inspector.	ACI 318 Section 26.13
60.	For post-tensioned elevated slab, please provide the following information for the post-tensioned slabs: <ul style="list-style-type: none"> a. Structural framing plans clearly showing the load-carrying cables b. Each post tensioned tendons capacity c. Numbers of tendons per beams and girders d. Jacking and stressing sequence of the tendons e. Tendons ending condition details of the post tensioned beams and girders typical and or each specific if it differs f. Percentage of the elongation tolerance and the allowable elongation percentages 	1901.5 107.3.4.1
E. Masonry		
61.	Specify on the structural drawings the required type(s) of mortars per Articles 2.1 and 2.6A of TMS 602	2103.2.1
62.	Specify on structural drawings conformance of masonry grout with Article 2.2 of TMS 602	2103.3
63.	Specify on the structural drawings the required net area compressive strength (f'_m) of masonry.	2103.1

	Code Requirements	Code Section
64.	Specify on the structural drawings the required material specifications for all steel reinforcement to be placed in masonry construction, including ASTM designation, and material grade or yield strength (KSI).	2103
65.	Indicate on the structural drawings the structural construction requirements for lintels that support masonry above openings and supplement with details that indicate the applicable reinforcement and end bearing conditions.	2109.2.4.9
66.	Provide details that indicate the required anchorage of masonry walls to roof and floor structure to transfer the applicable horizontal design forces acting perpendicular and parallel to the wall.	1604.8.2 2106.1
67.	Specify on the structural drawings the required type, size, and spacing of all horizontal and vertical reinforcement in masonry walls to adequately resist the applicable gravity, wind and seismic design forces.	1603.1
68.	Specify the minimum required lap splice length for reinforcement in masonry.	2107.2 TMS 402 Section 6.1.6.1.1
69.	Provide details for the construction of each firewall, ensuring that the wall is structurally independent of all other construction so that new and/or existing construction on either side of the firewall can collapse under fire conditions without affecting the structural integrity of the wall. Each firewall shall be nonloadbearing and shall be designed to adequately resist the applicable lateral design forces, including 5 psf for interior walls, seismic for all walls, and wind for exterior walls. Specify sufficient clearance between face of firewall and adjacent steel framing on each side to accommodate thermal expansion of the steel structure without causing damage to the wall.	706
F. Steel		
70.	Specify and detail on the structural drawings the required types, sizes and locations for structural framing components, including, but not limited to, beams, columns, joists, joist girders, purlins, girths and braces.	1603.1 2205.1 2207.2
71.	Specify on the drawings the required material specifications for all steel framing components and connectors, including ASTM designation, yield strength (KSI), and material grade (as applicable).	2203.1 2205.1 2210.1 2211.1
72.	Specify on the structural drawings that the design of special connections between steel framing components by other than the project structural engineer of record shall be performed by a professional engineer registered in the state of Texas, including, but not limited to, brace-end connections, moment-resisting connections, modified beam seat connections, and member splice connections. Design forces and reactions for each applicable connection shall be indicated on the structural drawings.	1603.1 1604.2 1604.4 1604.10 2204 2205
73.	Specify on the drawings the required type, size and gauge of metal deck applicable to floor, roof and wall construction.	1603.1 2210.1.1
74.	Specify on the drawings the required type, size and spacing of fasteners for attachment of metal floor and roof deck to supports (including side laps). Note: Attachments shall provide adequate shear capacity and stiffness to resist the applicable lateral wind and seismic design forces.	1603.1 1604.4 2210.1.1
75.	Specify on the drawings the required type, size and spacing of fasteners for attachment of metal wall panels to supports (including side laps) to adequately resist the applicable design wind pressures, acting normally, to the face of wall.	1603.1 1609.1 2210.1.1
76.	Provide details that indicate that the bottom surfaces of bearing plates and column base plates shall be grouted to ensure full bearing contact on supports, except for plates two (2) inches or less in thickness, which bear on surfaces (such as concrete floors) constructed to specific levelness tolerances.	1603.1 2205.1
77.	Structural details shall locate the edge of each joist and joist girder-bearing plate at a distance of ½ inch or less from the inside face of masonry or concrete support, except for the condition in which the top of plate is level with the support-bearing surface.	1603.1 2207.1 2207.2

	Code Requirements	Code Section
78.	Provide a design load diagram for each open web steel joist, which supports concentrated load (in addition to the applicable uniform gravity design loads) for design input by the joist manufacturer. Diagrams shall clearly specify the magnitude and location of all design loads, including, but not limited to, uniform and concentrated loads. Alternatively, specify joists (such as KCS series), which have been designed by the manufacturer for constant moment and shear capacity along the entire span.	1603.1 1604.2 1606.2 1607.4 2207.1 2207.2
79.	Provide details for stiffening the top and/or bottom chord of the open web steel joists at all locations where the concentrated loads from the proposed mechanical equipment do not align with joist panel points.	1603.1 1604.2 1606.2 1607.4 2207.2
80.	Specify on the drawings the required size, gauge, spacing and height of light gauge steel studs for construction of exterior walls to ensure compliance with the applicable lateral deflection limits of IBC table 1604.3 under design wind conditions.	1603.1 1604.3 2211
81.	Specify on the drawings the required type, size, quantity and spacing of fasteners for connections between all light gauge steel framing components (studs, joists, rafters, runner track, framing clips, strap bracing, joist web stiffeners and horizontal bracing for loadbearing studs), including attachment to primary support structure and foundation.	1603.1 1604.3 2211
82.	Provide detail(s) to indicate the required connection of full-height light-gauge steel wall framing to floor structure to accommodate the vertical deflection due to the applicable gravity design loads. Alternatively, submit engineering calculations that document the structural adequacy of the light-gauge steel wall framing to support the applicable floor gravity design loads.	1604.4 2211
83.	Provide detail(s) to indicate the required connection at top of full-height light-gauge steel wall framing to roof structure (excluding direct interface with roof deck only) to adequately accommodate the vertical deflection due to the applicable gravity design loads. Alternatively, submit engineering calculations that document the structural adequacy of the light-gauge steel wall framing to support the applicable roof gravity design loads.	1604.4 2210
84.	Identify on the structural plans all light-gauge cold-formed steel frame shear walls that have been designed to resist the applicable lateral wind and seismic forces as specified by IBC sections 1609 thru 1613. Specify on the plans the shear wall construction requirements, including the size, gauge and spacing of wall studs, the proposed wall sheathing material (wood structural panel, gypsum board panel, sheet steel), and the required attachment pattern for compliance with the requirements of AISI S400 for the appropriate shear wall type.	1603.1 1604.4 1604.9 1604.10 2211 2505.2
85.	Specify on the drawings that the steel material for studs and track for shear wall construction (in which steel or wood sheathing provides lateral resistance).	1603.1 2211.1 2211.5 2505.2
86.	Specify required type, size, and spacing of screws for attachment of shear wall sheathing (wood structural panel, gypsum board panel, sheet steel) to light-gauge steel wall framing. Attachment shall be in accordance with AISI S400.	1603.1 2211.1 2211.5 2505.2
87.	Specify on the drawings the required blocking, along all unsupported edges of shear wall sheathing panels (wood structural panel, gypsum board panel, sheet steel) attached to light gauge steel studs.	1603.1 2211.1 2211.5 2505.2
88.	Specify on the drawings the hold-down anchorage hardware at the ends of each shear wall for conditions in which the overturning moment, due to either design wind pressures or seismic design forces, exceeds the dead load stabilizing moment.	1604.4, 1604.9 2211.1 2211.5

	Code Requirements	Code Section
89.	Provide details that indicate the required connection of each exterior awning or canopy to the supporting structure to adequately resist the applicable design live and wind loads.	1603.1 1604.2 1607 3105.3
G. Wood		
90.	The design of structural elements or systems, constructed partially or wholly of wood-based products, shall be in accordance with one of the methods detailed in Section 2302.1	2302
91.	Specify on the drawings that wood which is either embedded in earth or concrete, placed on concrete in direct contact with earth, or directly exposed to the weather shall be preservative-treated. This includes, but is not limited to, posts, beams, columns, joists, sleepers, sills and sole plates.	2304.12.1.4 2304.12.2.2 2304.12.2.3 2304.12.3
92.	Specify on the structural drawings that pre-engineered trusses shall be designed by a professional engineer registered in the State of Texas.	2302.1 2303.4.1
93.	Specify on the structural drawings the applicable design load criteria for both top and bottom chords of pre-engineered floor and roof trusses, including, but not limited to, dead, live and wind loads.	1603.1.1 1603.1.2 1603.1.8 1604.2 1606, 1607 1609, 2303.4.1
94.	State on the structural drawings that “all pre-engineered truss shop drawings shall be available on the job site during the times of inspection and shall bear clear indication that they have been reviewed and approved by the project structural engineer-of-record.”	1603.1
95.	Provide wall framing information and details.	107 2304
96.	Provide floor framing layout and sizes.	N/A
97.	Provide wall sheathing schedules.	N/A
98.	Provide roof framing layout and sizes.	N/A
99.	Provide and detail drag elements at re-entrant corners and flexible diaphragms designed.	N/A
100.	Provide shear load transfer details (truss blocking, drag trusses, etc.).	N/A
101.	Indicate on structural drawings for wood buildings the required material specifications for all framing components, including, but not limited to, design stress values for glued laminated timber in accordance with AITC 117-10 (Standard Specifications for Structural Glued Laminated Timber of Softwood Species).	2301.2 2303.1 2306.1 2307.1
102.	Provide details demonstrating how the floor assembly meets the fire-resistance rating requirements of Section 711.2.4.3.	711.2.4
103.	Provide wood shrinkage specifications for wood framing that supports more than two floors and a roof in accordance with 2015 IBC Section 2304.3.3.	2304.3.3
104.	Type III construction: Provide details showing how the continuity of 2-hour wall rating for exterior load bearing walls is maintained.	602.3 Table 601