

## Structural Special Inspection, Testing and Observation Program

### PART I - GENERAL

- 1.01 The Owner or its designee shall employ the Special Inspector or Inspection Agency to perform inspections specified in this section.
- 1.02 The Owner or its designee shall employ the material testing laboratory to perform tests specified in this section.
- 1.03 Accreditation to ASTM E-329 standard specifications for agencies engaged in the inspection and the testing of materials used in construction is required.
- 1.04 The Owner or its designee shall employ the Design Professional Responsible for the Structural Design or another Engineer or Architect designated by the DPR to perform Structural Observation.
- 1.05 Special Inspector:

- A. **Qualifications:** The Special Inspector shall be an independent, qualified person or agency who shall demonstrate competence to the satisfaction of the building official, for inspection of the particular type of construction or operations requiring special inspection.
1. The Special Inspector may assign qualified full-time employees to the project as authorized representatives, however those persons shall be qualified for special inspection by training and experience, shall be acceptable to local building officials, and shall exhibit knowledge in the material systems used in the project.
- B. **Responsibilities:** The Special Inspector, or duly authorized representative, shall be responsible for a thorough understanding of the contract documents, including all amendments thereto, knowledge of appropriate portions of governing building codes, and the exercise of common sense and good engineering judgment.

1. The Special Inspector, or his duly authorized representative, shall be responsible for timely and thorough inspection of all structural components as required by this inspection report.
- C. **Limitations:** The duties and responsibilities of the Special Inspector or duly authorized representative are limited to inspection and reporting on construction or inspected components only. Reports are limited to acknowledgment that inspected components have been constructed in substantial conformance with requirements of contract documents or, if not in conformance, the location and description of deviations.

1. The Special Inspector is limited to providing inspection services for all items included in this inspection plan. Special inspection does not include inspection, reporting, or responsibility for safety provisions required by OSHA or other local safety requirements.
2. The presence of the Special Inspector does not alter or relieve the Contractor from his contractual or statutory obligation to comply with all requirements of the official contract documents and local building and safety codes. Deviations and unauthorized changes from the official contract documents remain the sole responsibility of the Contractor.

- D. **Reports:** Reports shall be in a legible written form and shall be completed at the end of the inspection or the period covered. Reports shall be maintained at all times on the jobsite in the form of a chronological log. The following reports are considered as minimal:
1. Report of each inspection, including daily report on construction activities.
2. Special Records, including, but not limited to, mill tests, concrete test reports, dates of concrete placement and form stripping, and a record of all quality assurance testing required by the project specifications.

3. Report on each as-built deviation or change from the requirements of the contract documents and/or approved shop drawings, including a report on corrective work required or performed.
4. Photographs as required for information and clarification.
5. Reports are intended to notify the Owner, Building Official, Contractor, and Architect/Engineer of Record of the following events or circumstances:

1. Inspected work that conforms to requirements of contract documents.
2. Work, which is not being performed according to contract documents.
3. Use of materials, equipment or workmanship which does not conform to requirements of contract documents or which may result in improper and unacceptable work.
4. Work performed and completed without inspection, which is not capable of being inspected or tested.
6. Final Report signed by the Special Inspector attesting as follows:

1. To the best of my knowledge and belief all work inspected according to this special inspection plan complies with the requirements of the contract documents.
2. Final project report shall be prepared, signed by the Special Inspector and shall be submitted to the Building Official prior to the issuance of a certificate of occupancy.

- 1.06 **Owner Responsibilities:** Owner will be responsible for furnishing all necessary construction documents and records to the Special Inspector or his duly authorized representative. Such documents and records shall include, but not be limited to concrete design mixes, material test reports, approved shop drawings, mill records, etc.

### 1.07 Definitions

- A. **Continuous Inspection:** Inspection by the Special Inspector continuously observing all work requiring special inspection.
- B. **Periodic Special Inspection:** Intermittent inspection performed as outlined in the project plans and specifications, and approved by the building official.

### PART TWO - INSPECTION REQUIREMENT

#### 2.01 Typical Special Inspection and Testing

- A. **Geotechnical Engineer** shall inspect the following:

1. Subgrade preparation operations.
2. Final subgrades below footings and slab on grade.

- B. **Special inspection and testing is required and is included in "Quality Assurance" in the following structural specifications.**

1. Final sub grade below footings and slabs on grade
2. Cast in place concrete - Division 3
3. Structural steel - Division 5
4. Composite metal deck - Division 5
5. Steel Bar Joists - Division 5
6. Steel Roof Deck - Division 5
7. Cold Formed Metal Framing - Division 5

### REQUIRED VERIFICATION AND INSPECTION OF SOILS

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC
1. Verify materials below footings are adequate to achieve the design bearing capacity.	---	X
2. Verify excavations are extended to proper depth and have reached proper material.	---	X
3. Perform classification and testing of controlled fill materials.	---	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of controlled fill.	X	---
5. Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly.	---	X

TABLE REPRODUCED FROM IBC TABLE 1704.7.

### REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
1. Inspection of reinforcing steel and placement.	---	X	ACI 318: 3.5, 7.1-7.7	1913.4
2. Inspection of reinforcing steel welding in accordance with (IBC) Table 1704.3, Item 5b.	---	---	AWS D1.4 ACI 318: 3.5.2	---
3. Inspect bolts to be installed in concrete prior to and during placement of concrete where allowable loads have been increased.	X	---	---	1911.5
4. Verifying use of required design mix.	---	X	ACI 318: Ch. 4, 5.2-5.4	1904.2.2, 1913.2, 1913.3
5. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	---	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	1913.10
6. Inspection of concrete and shotcrete placement for proper application techniques.	X	---	ACI 318: 5.9, 5.10	1913.6, 1913.7, 1913.8
7. Inspection for maintenance of specified curing temperature and techniques.	---	X	ACI 318: 5.11-5.13	1913.9
8. Erection of precast concrete members.	---	X	ACI 318: Ch. 16	---
10. Verification of in-situ concrete strength, and prior to removal of shores and forms from beams and structural slabs.	---	X	ACI 318: 6.2	---
11. Inspect formwork for shape, location and dimensions of the concrete member being formed.	---	X	ACI 318: 6.1.1	---

TABLE REPRODUCED FROM IBC TABLE 1704.4.

### REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
1. Material verification of high-strength bolts, nuts and washers:				
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	---	X	Applicable ASTM material specifications; AISC 360, Section A3.3	---
b. Manufacturer's certificate of compliance required.	---	X	---	---
2. Inspection of high-strength bolting:				
a. Bearing-type connections.	---	X	AISC 360, Section M2.5	1704.3.3
b. Slip-critical connections.	X	X		
3. Material verification of structural steel:				
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	---	---	ASTM A 6 or ASTM A 568	1708.4
b. Manufacturer's certified mill test reports.	---	---	ASTM A 6 or ASTM A 568	
4. Material verification of weld filler materials:				
a. Identification markings to conform to AWS specification in the approved construction documents.	---	---	AISC 360, Section A3.5	---
b. Manufacturer's certificate of compliance required.	---	---	---	---
5. Inspection of welding:				
a. Structural steel:				
1) Complete and partial penetration groove welds.	X	---		
2) Multi-pass fillet welds.	X	---		
3) Single-pass fillet welds > 3/8"	X	---		
4) Single-pass fillet welds < 3/8"	---	X		
6. Inspection of steel frame joint details for compliance with approved construction documents:				
a. Details such as bracing and stiffening.	---	X		
b. Member locations.	---	X		
c. Application of joint details of each connection.	---	X		

TABLE REPRODUCED FROM IBC TABLE 1704.3.

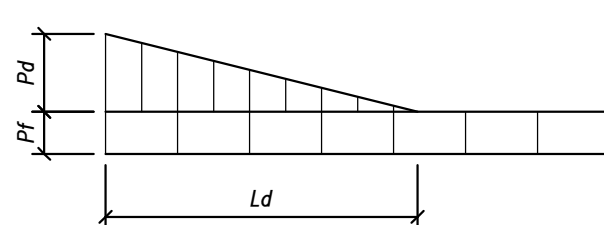
### LOAD KEY LEGEND

LOAD AREA	LOAD	FLOOR AREA (sq ft)	DEAD WEIGHT (psf)	LIVE WEIGHT (psf)	SUPERIMPOSED DEAD WEIGHT (psf)	LIVE LOAD REDUCTION	DESCRIPTION OF LOAD	NOTES
1	78	81	20	100	---	NO	PUBLIC AREA	6 1/2" COMPOSITE SLAB
2	78	81	20	80	---	YES	TYPICAL OFFICE	6 1/2" COMPOSITE SLAB
3	78	81	350	100	40	NO	PUBLIC DECK	6 1/2" COMPOSITE SLAB
4	78	81	20	125	---	NO	STORAGE AREA	6 1/2" COMPOSITE SLAB
5	78	81	50	100	40	NO	PUBLIC DECK	6 1/2" SLAB
6	12	15	20	20	40	NO	ROOF	METAL DECK ON BAR JOISTS
7	54	57	80	20	40	NO	ROOF MECHANICAL AREA	4" COMPOSITE SLAB
8	78	81	120	100	40+ DRIFT	NO	PUBLIC DECK	PD = 113psf W = 21'-0"
9	78	81	50	100	40 + DRIFT	NO	BALCONY	PD = 113psf W = 15'-0"
10	12	15	20	20	40 + DRIFT	NO	ROOF	PD = 34psf W = 4'-6"
11	12	15	20	20	40 + DRIFT	NO	ROOF	PD = 49psf W = 15'-4"
12	78	81	350	20	40 + DRIFT	NO	DECK PLANTER	PD = 113psf W = 21'-0"
13	12	15	20	20	40 + DRIFT	NO	ENTRY ROOF	PD = 34 W = 7'-0"

#### NOTES:

1. DRIFTING SNOW LOADS AT WALLS AND PARAPETS ARE DEFINED BY DIAGRAM TO THE RIGHT, WHERE PD IS THE DRIFT SURCHARGE IN PSF.
2. ROOF LIVE AND SNOW LOADS DO NOT ACT CONCURRENTLY.

#### DRIFTING SNOW LOAD DIAGRAM



THE STRUCTURAL ENGINEER'S SEAL ON THIS DRAWING INDICATES THAT THE INFORMATION SHOWN AND THE CALCULATIONS PERTAINING TO THAT INFORMATION HAVE BEEN PREPARED BY QUALIFIED PEOPLE UNDER THE DIRECTION OF THE ENGINEER OF RECORD. THE SEAL DOES NOT IMPLY RESPONSIBILITY FOR INFORMATION PREPARED BY OTHERS NOR FOR ANY INFORMATION NOT SHOWN ON THIS DRAWING AND SUCH RESPONSIBILITY IS SPECIFICALLY DISCLAIMED. ON PHASED PROJECTS, DRAWINGS THAT ARE ISSUED BUT NOT SEALED SHALL BE CONSIDERED TO BE PRELIMINARY IN NATURE AND ARE ISSUED FOR INFORMATION ONLY.

THESE DRAWINGS ARE TO BE USED IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS ON THE PROJECT TO CLEARLY DEFINE ALL OF THE REQUIREMENTS FOR THE CONSTRUCTION. WHERE CONFLICTS OCCUR CONTACT ARCHITECT FOR CLARIFICATION.