

# STATEMENT OF SPECIAL INSPECTIONS

PROJECT: Maine Medical Center - Emergency Department Expansion and Renovations  
LOCATION: Portland, Maine  
PERMIT APPLICANT: Henry Dunn (Project Manager), Maine Medical Center  
APPLICANT'S ADDRESS: 22 Bramhall Street  
Portland, Maine 04102  
PROJECT ARCHITECT: TRO-Jung|Brannen (TRO-JB)  
PROJECT STRUCTURAL ENGINEER: Simpson Gumpertz & Heger Inc. (SGH)  
REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE: Joseph J. Zona (SGH)

This statement of special inspections is submitted as a condition for permit issuance in accordance with Section 1704 of the 2003 International Building Code. It includes a *Schedule of Special Inspection Services* applicable to the above referenced project as well as the identity of the individuals, agencies, or firms intended to be retained for conducting these inspections.

The Special Inspector(s) shall keep records of all inspections and shall furnish interim inspection reports to the building official and to the registered design professional in responsible charge at a frequency agreed upon by the permit applicant and building official prior to the start of work. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and the registered design professional in responsible charge prior to completion of that phase of work. A *Final Report of Special Inspections* documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted at the conclusion of the project.

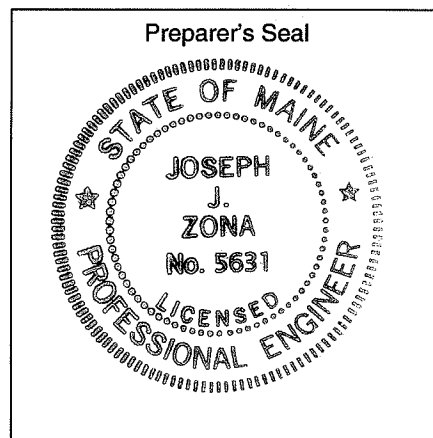
Frequency of interim report submittals to Registered Design Professional in Responsible Charge:  
 Monthly       Bi-Monthly       Upon Completion       Per attached schedule

The Special Inspection program does not relieve the Contractor of the responsibility to comply with the Contract Documents. Jobsite safety and means and methods of construction are solely the responsibility of the Contractor.

Prepared By:

Joseph J. Zona, P.E.  
Type or print name

Joseph J. Zona      4/7/2008  
Signature      Date



To be filled out by Building Department and returned to applicant:

Building Official's Acceptance:

\_\_\_\_\_  
Signature      Date      Permit No.

Frequency of interim report submittals to building official:  
 Monthly       Bi-Monthly       Upon Completion       Per attached schedule

## Program of Structural Tests and Inspections

For compliance with the 2003 International Building Code

**Project:** **Maine Medical Center – Emergency Department Fit-Out**

**Location:** **Maine Medical Center  
22 Bramhall Street  
Portland, Maine, 04102**

**Owner:** **Henry Dunn (Project Manager)  
Maine Medical Center  
22 Bramhall Street  
Portland, Maine, 0102**

**Architect of Record:** **TRO-Jung|Brannen  
22 Boston Wharf Road  
Boston, Massachusetts 02210  
Phone: 617-502-3400**

**Structural Engineer  
of Record (SER):** **Simpson Gumpertz & Heger Inc.  
41 Seyon St., Building 1, Suite 500  
Waltham, MA 02453  
Phone: 781-907-9000**

This program of structural tests and inspections is submitted as a condition for issuance of the building permit in accordance with the 2003 International Building Code.

The following firms, agencies, or individuals (hereinafter referred to collectively as *agents*) will perform the tests and inspections under the direction of the SER:

<b>Abbreviation</b>	<b>Agent</b>
SER	Structural Engineer of Record listed above
GE	Project Geotechnical Engineer – S.W. Cole Engineering, Inc.
TL1	Testing Lab #1 – TBD
TL2	N.A.

The abbreviations will be used on the attached pages to identify which agent is performing the particular tests or inspections.

The following categories of structural tests and inspections, if checked, are included in the program for structural tests and inspections for this project. The specific tests and inspections required for each checked category are listed on the page noted opposite the category.

<u>Category</u>	<u>Page</u>	<u>Category</u>	<u>Page</u>
<input checked="" type="checkbox"/> In-situ bearing strata for footings	8	<input type="checkbox"/> Precast concrete construction	7
<input checked="" type="checkbox"/> Controlled structural fill (prepared fill)	8	<input checked="" type="checkbox"/> Steel construction	3
<input type="checkbox"/> Pile foundations	8	<input type="checkbox"/> Masonry construction	7
<input type="checkbox"/> Pier foundations	8	<input type="checkbox"/> Wood construction	7
<input checked="" type="checkbox"/> Cast-in-place concrete construction	5	<input type="checkbox"/> Curtain walls (wall panels and veneers)	8
		<input type="checkbox"/> Light gage metal framing	9
		<input type="checkbox"/> Special cases	NA

The following items of construction, if checked, are specified in the contract documents on a performance basis. Their structural design will be reviewed by the SER and their construction is included in the program for tests and inspections on the attached sheets:

- |  |   |
|--|---|
| <input type="checkbox"/> Curtain walls                           | <input type="checkbox"/> Metal buildings          |
| <input type="checkbox"/> Precast concrete components             | <input type="checkbox"/> Light gage metal framing |
| <input type="checkbox"/> Post-tensioning steel                   | <input type="checkbox"/> _____                    |
| <input checked="" type="checkbox"/> Structural steel connections | <input type="checkbox"/> _____                    |

The following items are excluded from this program of structural tests and inspections, since they are designed by other structural engineers not under the aegis of the SER, and the SER was not retained to provide performance specifications for their design. These other structural engineers may be assigned by the owner, architect, or construction contractor, as applicable, to be special SER's for their respective designs and to provide a program of structural tests and inspections for their respective designs.

Curtain walls, Light gage metal framing

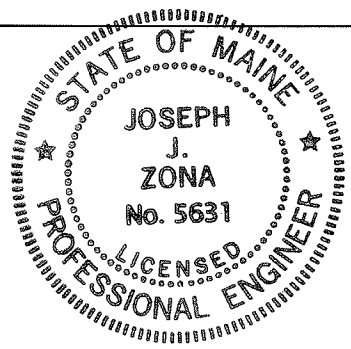
Prepared by the Structural Engineer of Record:

Name: Joseph J. Zona

Signature: *Joseph J. Zona*

Firm: Simpson Gumpertz & Heger Inc.

Date: 4/7/2008



Registration Seal

### Steel Construction – IBC Section 1704.3

Item	Agent	Criteria/Scope
1. Fabricator Certification/ Quality Control Procedures (IBC 1704.2.1)	TL1	<ul style="list-style-type: none"> <li>• Review plant quality control procedures.</li> <li>• Inspect plant storage and handling procedures.</li> <li>• Confirm that approved submittals are in the plant and are being used for fabrication.</li> <li>• Review welders' certifications.</li> <li>• File welder certifications and any other quality assurance documentation as required by building department.</li> </ul>
2. Fabricator Inspection (IBC 1704.2.1)	TL1	<p>Inspect fabrication and fabricated steel per items 3, 4, and 5 below at five separate plant visits scheduled at the following times:</p> <ul style="list-style-type: none"> <li>• At beginning of fabrication</li> <li>• At approx. 20% complete,</li> <li>• At approx. 40% complete,</li> <li>• At approx. 60% complete,</li> <li>• At approx. 80% complete, and</li> <li>• As directed by the SER.</li> </ul>
3. Material Certification	TL1	<ul style="list-style-type: none"> <li>• Review mill reports, certificates, and identification markings of all structural steel, bolts, nuts, and washers for compliance with the ASTM Specifications required by the Contract Documents and by AISC LRFD Specification Section A3.</li> <li>• Inspect certificates of weld filler material and shear stud connectors for compliance with the AWS Specifications required by the Contract Documents and by AISC LRFD Specification Section A3.</li> <li>• Inspect surface finish of steel members for conformance with SSPC standards, approved shop drawings, and Contract Documents.</li> </ul>
4. Bolting	TL1	<ul style="list-style-type: none"> <li>• Inspect shop and field bolting procedures per RCSC Specification and for compliance with the Contract Documents. Inspect 100% of bolts in slip critical connections. Inspect 25% of bolts in all other connections.</li> <li>• Verify size and grade of fasteners for compliance with Contract Documents.</li> <li>• Verify bolt strength by testing one nut and bolt from each keg prior to its release to the field. Sign-off each keg to be released to the field.</li> <li>• Inspect daily wrench calibration procedures.</li> <li>• Field test bolts at discretion of inspector or SER by testing selected bolts to failure with tension calibrator.</li> </ul>

5. Welding	TL1	<ul style="list-style-type: none"> <li>• Perform weld inspections and tests per Chapter 6 of AWS D1.1. Weld inspectors shall be certified per AWS D1.1.</li> <li>• Perform visual inspections of all welds for conformance with shop drawings with the applicable visual inspection requirements of AWS D1.1. Review with SER scope of visual inspection as work progresses.</li> <li>• Frequency of testing by ultrasonic or magnetic particle testing methods of other welds as follows: <ol style="list-style-type: none"> <li>1. 5% of partial penetration groove welds</li> <li>2. 100% of welds subject to tension (hangers, etc.)</li> <li>3. 10% of all other welds</li> <li>4. 100% of all remade welds</li> <li>5. additional inspection as determined by inspector and/or SER defects are revealed</li> </ol> </li> </ul>
6. Shear Connectors	TL1	<ul style="list-style-type: none"> <li>• Perform inspection of stud installation to verify location, number, installation of studs, and ferrule removal is in accordance with the Contract Documents and that the installation is in compliance with AWS D1.1 Chapter 7.</li> <li>• Daily preproduction testing: per AWS D1.1 Section 7.7 except that five studs are to be tested and that the studs are to be capable of bending 45 degrees from vertical without weld failure.</li> <li>• Visual inspection of production stud installation per AWS D1.1 Section 7.8.</li> <li>• Continuous testing during installation (in addition to the testing required by studs that do not pass the visual inspection): A minimum of two hammer stud bend tests on each structural member at 1/3 points on the span. If a failure occurs, every stud on the structural member is to be tested. Retest all studs that are replaced.</li> </ul>
7. Structural Framing, Details and Assemblies	SER, TL1	<ul style="list-style-type: none"> <li>• Inspect member sizes, milled surfaces, beam camber (at shop), and installation and connection details for compliance with approved shop drawings and with Contract Documents.</li> </ul>
8. Open Web Steel Joists	N/A	Not Applicable

9. Metal Decking	SER, TL1	<ul style="list-style-type: none"> <li>• Review mill reports for all deck material delivered to the site.</li> <li>• Verify gauge, width and type of deck for conformance with approved shop drawings and with Contract Documents</li> <li>• Verify welder certifications.</li> <li>• Inspect placement for proper installation of approved screws, puddle welds, other mechanical fasteners (if any), and accessories for compliance with SDI, AWS D1.3 and the Contract Documents.</li> <li>• Inspect placement of deck reinforcement at openings and other discontinuities for compliance with approved shop drawings and with Contract Documents.</li> <li>• Inspect repair of damaged galvanized finish for compliance with Contract Documents.</li> </ul>
10. Expansion Anchors.	SER, TL1	<ul style="list-style-type: none"> <li>• Inspect installation. Verify that existing reinforcing steel is not cut when drilling holes for anchors. Verify embedment and torque of anchors.</li> </ul>

#### Cast-in-Place Concrete Construction – IBC Section 1704.4

Item	Agent	Criteria/Scope
1. Formwork Geometry	TL1	<ul style="list-style-type: none"> <li>• Inspect formwork for conformance with ACI 301 Section 2 and ACI 318 Sections 6.1, 6.3, and 6.4.</li> <li>• Inspect all formwork size, geometry, and finishes for conformance with Contract Documents.</li> </ul>
2. Reinforcement Installation	SER, TL1	<ul style="list-style-type: none"> <li>• Inspect location, size, condition and placement of all reinforcement (including prestressing tendons if applicable), reinforcement supports, inserts, and accessories for conformance with approved shop drawings and with Contract Documents.</li> <li>• Inspect placement of all reinforcement for compliance with ACI 318 Sections 7.3, 7.4, 7.5, 7.6, and 7.7 and ACI 301 Section 3.3.</li> </ul>
3. Reinforcing steel welding	TL1	<ul style="list-style-type: none"> <li>• Verify weldability of reinforcing steel other than ASTM A706 per IBC 1704.3</li> <li>• Inspect reinforcing steel resisting flexural and axial forces in intermediate and special moment frames and boundary elements of special reinforced concrete shear walls and shear reinforcement.</li> </ul>
4. Bolts and Embedded Items in Concrete Exposed to Tension and shear	TL1	<ul style="list-style-type: none"> <li>• Inspect embedded items for conformance with Contract Documents</li> </ul>

5. Mix Design	SER	<ul style="list-style-type: none"> <li>Review mix design for conformance with contract documents. Review ready mix plant tickets for conformance of mix with project specifications.</li> <li>Review that plant procedures for establishing mix design strength comply with ACI 301 Sections 4.1 and 4.2 and with ACI 318 Sections 5.1, 5.2, 5.3, 5.4, and 5.8.</li> </ul>
6. Materials Certification	TL1 and SER	<ul style="list-style-type: none"> <li>Review in plant all materials, manufacturer's certifications, mill reports, etc. for conformance with contract documents.</li> </ul>
7. Materials Certification Records	TL1	<ul style="list-style-type: none"> <li>Maintain records of all material certificates, mill reports of all concrete mix constituent materials, and steel reinforcement.</li> </ul>
8. Batching Plant	TL1	<ul style="list-style-type: none"> <li>Review plant quality control procedures for material storage and handling comply with ACI 301 Sections 4.1.3, 7.1 and 7.2.</li> <li>Inspect plant to ensure compliance of mix constituents with the requirements of ACI 318 Chapter 3 and ACI 301 Sections 4.2 and 7.2.</li> <li>Inspect that mixing and ready mix equipment and vehicles comply with ACI 318 Section 5.7 and 5.8 and with ASTM C 94.</li> <li>Maintain records of all ready mix truck contents and dispatch times.</li> </ul>
9. Sampling of Fresh Concrete and Evaluation of Concrete Strength	TL1	<ul style="list-style-type: none"> <li>Collect and test concrete samples per ACI 318 Section 5.6 (min, of four cylinders for each 150 cy of concrete or 5,000 sf of slab or wall area) but not less than four cylinders for each day's pour. As a minimum, perform compression tests on two cylinders at 28 days.</li> <li>Measure slump (ASTM C 143), temperature (ASTM C 1064), weight, (ASTM C 138 for normal weight and C 567 for lightweight), and air content (ASTM C 173 for normal weight and C 231 for lightweight) for all concrete sampled for strength. For pumped concrete, measure at point of deposit.</li> </ul>
10. Concrete Placement	SER, TL1	<ul style="list-style-type: none"> <li>Maintain a record correlating concrete batching information with location of placement in the finished work.</li> <li>Inspect all concrete placements for compliance with ACI 318 Section 5.9 and 5.10; and ACI 301 Sections 5 and 7.3.</li> <li>Inspect for conformance with all approved hot and cold weather concrete placement procedures.</li> </ul>
11. Curing and Protection	TL1	<ul style="list-style-type: none"> <li>Inspect all placements for conformance with Contract Documents, ACI 318 Sections 5.11, 5.12, and 5.13, and with procedures approved by SER.</li> </ul>
12. In-Situ Concrete Strength	TL1	<ul style="list-style-type: none"> <li>Verify in-situ concrete strength prior to stressing of prestressing tendons (where applicable) and prior to removal of shores and forms from beams and structural slabs in accordance with ACI 318 Section 6.2</li> </ul>

13. Evaluation of Concrete Strength	TL1	<ul style="list-style-type: none"> <li>Test for conformance to specifications in accordance with ACI 318 Section 5.6 and IBC Section 1905.6</li> </ul>
14. Post-Tensioning Operations	N/A	Not Applicable
15. Other	TL1	<ul style="list-style-type: none"> <li>Test column base plate non-shrink grout cubes restrained from all sides per ASTM C 109, and for shrinkage/expansion properties per ASTM C 1090. Test 3 cubes per day.</li> <li>Inspect installation of subgrade vapor retarder for compliance with manufacturer's approved installation procedures and with Contract Documents.</li> </ul>

**Precast Concrete Construction – IBC Section 1704.4 (not applicable)**

**Masonry Construction – IBC Section 1704.5 (NOT APPLICABLE)**

Item	Agent	Criteria/Scope
1. Material Certification	SER, TL1	<ul style="list-style-type: none"> <li>Review certificates of all masonry material, reinforcement, and accessories for compliance with ACI-530.1 Sections 2.1, 2.2, 2.3, 2.4, and 2.5 and with the Contract Documents.</li> </ul>
2. Mixing of Mortar and Grout	TL1	<ul style="list-style-type: none"> <li>Periodically inspect all mortar grout mixes and mixing operations for compliance with ACI 530.1 Section 2.6 and with the Contract Documents.</li> </ul>
3. Installation of Masonry	TL1	<ul style="list-style-type: none"> <li>Inspect installation of masonry units for compliance with ACI 530.1 Section 3.2 and 3.3, and with the Contract Documents.</li> </ul>
4. Reinforcement Installation	TL1	<ul style="list-style-type: none"> <li>Inspect installation of reinforcement for compliance with ACI 530 Chapter 8, ACI 530.1 Section 3.4, and with the Contract Documents.</li> </ul>
5. Grouting Operations	TL1	<ul style="list-style-type: none"> <li>Verify that grout space is clean prior to grouting</li> <li>Inspect grouting operations for compliance with ACI 530.1 Section 3.5 and with the Contract Documents.</li> </ul>
6. Weather Protection	TL1	<ul style="list-style-type: none"> <li>Inspect that protection procedures comply with ACI 530.1 Section 1.8 and with the Contract Documents.</li> </ul>
7. Evaluation of Masonry Strength	TL1	<ul style="list-style-type: none"> <li>Determine compressive strength of masonry per ACI 530.1 Section 1.4 and 1.6.</li> <li>For exterior walls, test three prism samples for <math>f_m</math> (ASTM E 1314) prior to construction and one sample for every 5,000-sq. ft. thereafter for each type of unit used.</li> </ul>



(N/A)

<del>8. Anchors and Ties</del>	<del>TL1</del>	<del>• Inspect all anchorage to masonry (including masonry veneers) for compliance with ACI 530 Sections 4.2 and 5.14 and with Contract Documents.</del>
9. Expansion Anchors	TL1	• Inspect installation. Verify that existing reinforcement is not cut when drilling holes for anchors. Verify embedment and torque of anchors.

**Wood Construction – IBC Section 1704.6 (not applicable)**

**In-Situ Bearing Strata for Footings – IBC Section 1704.7.1**

Item	Agent	Criteria/Scope
1. Bearing strata for footings	GE	Inspect strata for conformance to the structural drawings, specifications, and/or the approved geotechnical report.
2. Bearing surfaces of footings	GE	Inspect bearing surfaces for conformance to the requirements of the structural drawings, specifications, and/or the approved geotechnical report.

**Controlled Structural Fill (Prepared Fill) – IBC Sections 1704.7.2 and 1704.7.3**

Item	Agent	Criteria/Scope
1. Fill Material	GE	Test material for conformance to specifications or geotechnical report. Perform laboratory compaction tests in accordance with the specifications to determine optimum water content and maximum dry density.
2. Installation of controlled structural fill (IBC 1704.7.2)	GE	Provide full-time inspection of the installation, in accordance with the specifications and IBC 1704.7.2.
3. Density of fill (IBC 1704.7.3)	GE	Perform field density tests of the in-place fill for every other lift in accordance with the specifications and IBC 1704.7.3.

4. Other	GE	Verify the adequacy of dewatering systems (if required) by confirming that the area to be dewatered is dry.
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**File Foundations – IBC Section 1704.8 (not applicable)**

**Pier Foundations – IBC Section 1704.9 (not applicable)**

**Curtain Walls (Wall Panels and Veneers) – IBC Section 1704.10 (N/A)**

Item	Agent	Criteria/Scope
1. Light Gage Metal Framing for Panels	TL1	Perform structural tests and inspections as listed under category <i>Light Gage Metal Framing</i> .
2. Proprietary Light Weight Curtain Walls Systems	TL1	Review manufacturer's fabrication methods and quality control procedures. Review material certification, and inspect fabrication of structural framing, details, connections, and fasteners for conformance to approved submittals and the contract documents.
3. Masonry Veneers	TL1	Perform structural tests and inspections as listed under category <i>Masonry Construction</i> . Verify that relieving angles, ties to the backup structure, and other structural supports are installed in conformance with the contract documents and SER approved submittals.
4. Aluminum Welding	TL1	Review welding procedures and welding qualifications in accordance with AWS D1.2. Observe performance testing of welds required by AWS D1.2.

**Light Gage Metal Framing (N/A)**

Item	Agent	Criteria/Scope
1. Fabricator's Quality Control Procedures		Not applicable
2. Member Sizes	TL1	<ul style="list-style-type: none"> <li>Verify that member profiles, lengths, and surface finishes are in conformance with approved shop drawings.</li> <li>Review research/evaluation reports for evidence of compliance IBC 2003.</li> </ul>

(N/A)

3. Material Thickness	TL1	<ul style="list-style-type: none"><li>Review mill certificates from sheet steel producer for conformance with AISI and construction documents requirements for uncoated steel thickness.</li><li>Verify that material thicknesses conform to the gauges specified in the approved shop drawings.</li></ul>
4. Material Properties	TL1	<ul style="list-style-type: none"><li>Review mill reports from sheet steel manufacturer for conformance with yield strength, tensile strength, total elongation, chemical requirements, ductility, and galvanized coating thickness.</li><li>Review manufacturer's data and/or lab test results for conformance with construction documents, approved shop drawings, and approved submittals for the following: expansion anchors, powder actuated fasteners, mechanical fasteners, vertical deflection clips, miscellaneous clips and accessories</li></ul>
5. Mechanical Connections	TL1	<ul style="list-style-type: none"><li>Inspect fastener installation procedures.</li><li>Verify that type, number, and location of fasteners comply with construction documents and with approved shop drawings.</li><li>Verify that member splices comply with approved shop drawings for type and location of connection.</li><li>Verify that fasteners are installed tight.</li></ul>
6. Welding	TL1	<ul style="list-style-type: none"><li>Check welder certifications.</li><li>Verify that weld location, size and details conform to approved shop drawings.</li><li>Verify that welding procedures conform with AWS D1.3 and to construction documents.</li><li>Visually inspect welds.</li></ul>
7. Framing Details	TL1	<ul style="list-style-type: none"><li>Verify installation and clearances of deflection tracks.</li><li>Verify that framing details, installation, and tolerances conform to ASTM C 1007, construction documents, and approved shop drawings.</li><li>Verify that repair and touch-up of galvanizing is done in conformance with construction documents using approved products.</li></ul>

## References

1. ACI 301-96, *Standard Specifications for Structural Concrete*.
2. ACI 318-02, *Building Code Requirements for Structural Concrete*.
3. ACI 530.1 / ASCE 6 / TMS 602 – 02, *Specifications for Masonry Structures*.
4. AISC LRFD, Third Edition, *Load and Resistance Factor Design Specification for Structural Steel Buildings*.
5. ASTM A 6– 95c, *Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use*.
6. ASTM A 568– 95, *Specification for Steel Sheet, Carbon and High-Strength, Low-Alloy, Hot-Rolled and Cold Rolled, General Requirements For*.
7. ASTM C 31–91, *Practice for Making and Curing Concrete Test Specimens in the Field*.
8. ASTM C 94–94, *Specification for Ready-Mixed Concrete*.
9. ASTM C 109–98, *Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50 mm Cube Specimens)*.
10. ASTM C 138–92, *Test Method for Unit Weight, Yield and Air Content (Gravimetric) of Concrete*.
11. ASTM C 143–97, *Test Method for Slump of Hydraulic Cement Concrete*.
12. ASTM C 172–90, *Practice for Sampling Freshly Mixed Concrete*.
13. ASTM C 173–94, *Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method*.
14. ASTM C 231–97, *Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method*.
15. ASTM C 567–91, *Test Method for Unit Weight of Structural Lightweight Concrete*
16. ASTM C 1007-83, *Specification for Installation of Load Bearing (transverse and Axial) Steel Studs and Related Accessories*.
17. ASTM C 1064–86, *Test Method for Temperature of Freshly Mixed Portland Cement Concrete*.
18. ASTM C 1090–96, *Test Method for Measuring Changes in Height of Cylindrical Specimens from Hydraulic Cement Grout*.
19. ASTM C 1314–97, *Test Method for Constructing and Testing Masonry Prisms Used to Determine Compliance with Specified Compressive Strength of Masonry*.
20. ASTM D 3963–97, *Specification for Epoxy-Coated Reinforcing Steel*.
21. AWS D1.1– 96, *Structural Welding Code – Steel*.
22. *International Building Code*, 2003
23. PCI MNL–116-85, *Manual for Quality Control for Plants and Prestressed Concrete Products*.
24. RCSC– 2000, *Specification for Structural Joints Using A325 or A490 Bolts*.
25. SDI, *Steel Deck Institute Specifications and Commentaries for Composite Steel Floor Deck and Specifications and commentaries for Roof Deck*.
26. SSPC, *Steel Structures Painting Council – Steel Structures Painting Manual Vol. 2, Systems and Specifications*.
27. CFSD-ASD-86, *Specification for Design of Cold-Formed Steel Structural Members, with 1989 Addendum*.
28. CCFSS, *AISI Specification Provisions for Screw Connections*.