Form # P 04

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING INSPECTION

PERMIT

Please Read Application And Notes, If Any, Attached

Permit Number: 070044

PERMIT ISSUED

JAN 15 2007

CITY OF PORTLAND

This is to certify that MERCY HOSPITAL /Gilba[illegible] Michael Poulin

has permission to STEEL ONLY PERMIT Co[illegible]cted #0[illegible]

AT 50 ST JOHN ST [illegible] 073 A001001

provided that the person or persons [illegible]rm or [illegible]tion a[illegible]epting this permit shall comply with all of the provisions of the Statutes of [illegible]aine and of the O[illegible]nances of the City of Portland regulating the construction, maintenance and [illegible]e of buildings and [illegible]uctures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

[illegible]ificatio[illegible]f inspe[illegible]on mus[illegible]e [illegible]en and w[illegible]en perm[illegible]on proc[illegible]d [illegible]ore this [illegible]ilding o[illegible]rt there[illegible]s [illegible]ed or [illegible]herwi[illegible]losed-in[illegible]4 [illegible]UR NO[illegible]REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

OTHER REQUIRED APPROVALS

Fire Dept. _____

Health Dept. _____

Appeal Board _____

Other _____

Department Name

1/16/07

Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

PERMIT ISSUED
JAN 15 2007
CITY OF PORTLAND

Permit No:	Issue Date:	CBL:
07-0044		073 A001001

Location of Construction:	Owner Name:	Owner Address:	Phone:
50 ST JOHN ST	MERCY HOSPITAL	144 STATE ST	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Gilbane / Michael Poulin	900 Elm St Manchester	6036990076
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	**Zone:**
		Steel Only-Commercial	C-2b

Past Use:	Proposed Use:	Permit Fee:	Cost of Work:	CEO District:
Vacant Land	Short Stay Surgical Unit - for Mercy Hospital- STEEL ONLY PERMIT Connected #061801		$0.00	3

FIRE DEPT: ☐ Approved ☐ Denied

Signature:

INSPECTION:
Use Group: Type:
STEEL ONLY
1/16/07

Signature:

Proposed Project Description:
STEEL ONLY PERMIT Connected #061801

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)

Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied

Signature: Date:

Permit Taken By:	Date Applied For:
ldobson	01/12/2007

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building permits do not include plumbing, septic or electrical work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
☐ Shoreland	☐ Variance	☑ Not in District or Landmark
☐ Wetland	☐ Miscellaneous	☐ Does Not Require Review
☐ Flood Zone	☐ Conditional Use	☐ Requires Review
☐ Subdivision	☐ Interpretation	☐ Approved
☐ Site Plan	☐ Approved	☐ Approved w/Conditions
Maj ☐ Minor ☐ MM ☐	☐ Denied	☐ Denied
Date: Ok - original Conditions Still in force 1/12/07	Date:	Date:

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT | ADDRESS | DATE | PHONE

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE | DATE | PHONE

From: Jean Fraser
To: Nugent, Mike
Date: 1/12/2007 12:45:23 PM
Subject: RE: The Mercy at Fore River Permits

Mike,

My understanding is that the URGENT permit that they need is for STEEL ERECTION for the hospital building- they need it TODAY.

I confirm that issuing the Steel Erection permit for the hospital building **is OK** from the Planning point of view.

Tony Lampasona is only involved with the Medical Office Building - which is being built by a different developer and contractor from the hospital. From a Planning viewpoint, it **is OK** to issue a foundation -only permit for the Medical Office Building (note that Penny must also sign off on this re legal issues).

While I have received sets of final revised plans (hopefully reflecting changes to address the conditions of approval) from Steve Bushey I have not reviewed them nor stamped them (am doing that over next few days- a lot of detail to check). My aim is to sign off for the Full permits (from a planning viewpoint) as soon as I have checked and stamped off those plans.

OK?
thanks
Jean

>>> Mike Nugent 1/11/2007 9:44:29 PM >>>
Thank you, Anthony.

Lannie, can you prepare a "Steel Only" permit? I'll want to issue this over the weekend if we wrap up planning oks and any outstanding questions.

>>> "Anthony Lampasona" <alampasona@lhf.biz> 01/10/07 8:24 PM >>>
I have forwarded the comments to the architect and I will have a response shortly.

Thanks.

-----Original Message-----
From: Mike Nugent [mailto:mjn@portlandmaine.gov]
Sent: Wednesday, January 10, 2007 7:14 PM
To: Anthony Lampasona
Cc: Jeanie Bourke
Subject: The Mercy at Fore River Steel Only Permit

I have commenced the review of the submission for the above permit and have the following questions/comments:

1) Please provide a fully executed statement of Special Inspections and Seismic Quality assurance plan.
2) The Steel Standards referenced on Page SG0001 of the plans and in Section 5120 of the spec book are slightly different, and neither seem to match the referenced standards in Sections 2205 of the 2003 IBC. Can you provide a comparison that demonstrates that the referenced standard in the construction documents meets or exceeds the code.

From: Jean Fraser
To: Bourke, Jeanie
Date: 1/9/2007 3:25:00 PM
Subject: Steel Erection Permit for Mercy Hospital

Jeanie,

I am not sure who is the lead on issuing this permit, but I understnad that Mercy needs it early next week.

From the Planning viewpoint I expect to approve a final revised set of plans by the end of this week with a view to signing off on the Steel Erection Permit early the following week.

Therefore, if you have reviews that need to be done for that then I think you could work to that timetable (we have just met with Mercy and all outstanding issues have been agreed so I just need the final plan set- the relevant conditions have been met with a few lose ends that can be resolved prior to the full building permit)

Let me know if any questions re this.

Jean

(I willwrite separately re the MOB)

CC: Nugent, Mike; Schmuckal, Marge

From: Jean Fraser
To: Schmuckal, Marge
Date: 1/4/2007 4:55:12 PM
Subject: Mercy Permits- Construction Phasing

Marge,

You will recall that Penny asked the Medical Office Building Permit to be held pending further discussions on related legal issues and pending the submission of phasing information within an acceptable Constuction Program Plan (required by a condition and was supposed to be submitted prior to construction).

As you were the only Inspections person at that meeting I am letting you know that they have submitted something that looks like a Construction Program/Phasing Plan but is fairly minimal and Penny is looking at it.

I sent a copy for information to Jeanie Bourke as I think *Inspections* needs to be aware of it. However it is not yet approved and Penny has not yet commented...

So current status from PLANNING viewpoint only:

MOB: we are considering whether a foundation permit could be given for the MOB from a Planning viewpoint; revised site plans have now been agreed and I understand will be formally submitted in a few days and all the conditions have been addressed though not completely tied up. I will confirm on this in a day or so. [Penny needs to separately give her agreement in terms of the other legal issues which are not related to the existing site plan approval]

Hospital: At the moment neither the steel erection permit nor the full building permit is issuable in light of the planning issues outstanding. I can give a clearer view of the timetable/issues in the middle of next week. These do not relate to the Construction Program Plan but to possible amendments to the design of the hospital.

Jean

CC: Alex Jaegerman ; Barhydt, Barbara; Bourke, Jeanie; Nugent, Mike

January 14, 2007

Mike Nugent
City of Portland
389 Congress Street, Portland, ME 04101

Subject: Mercy Hospital at Fore River - Answer to your e-mail, dated 01/10/07, item #2.

Dear Mike,

In an attempt to meet the IBC2003 referenced standards and, at the same time, trying to incorporate current structural steel design standards our specifications and steel notes have references to two sets of specifications - which let to some confusion.

Our review has verified that all aspects of the building steel frame and connection design meet or exceed the requirements stated in the standards referenced in IBC 2003.

I hope that my explanation below will clarify this situation and answer your questions.

The specification Section 05120-1.6-D lists titles of the steel specifications which are included in AISC Manual-LRFD, 3rd Edition or AISC Manual-ASD, 9th Edition. (There is one exception, item D.2 lists 2005 Seismic Provisions - please see below for the justification.) See attached file "STEEL-Spec-Ref" showing specification title references for AISC-LRFD, 3rd Ed. Please note that IBC 2003 references the same specifications.

On Drawing SG001, under Structural Steel Note #1, we referenced specification which is a part of AISC Steel Construction Manual, 13th Edition. The reference to the AISC 13th edition was done because it clarifies certain aspects of the design that were not as clear in the previous editions. The AISC 13th edition is the current standard of the steel design which combines and supersedes the two previous steel specifications: LRFD, 3rd Ed. and ASD, 9th Ed. Please see attached file "AISC-13th" for this publication overview. In my professional opinion, this new specification meets or exceeds the previous standards - see example of the comparable connection calculations below.

Since the AISCM-13th Ed. references the 2005 AISC Seismic Provisions for Structural Steel Buildings (341-05) we felt obligated to comply with this publication. In my professional opinion, 341-05 meets or exceeds the requirements of 341-02 referenced in IBC 2003 in reference to the Special Steel Concentrically Braced Frames, which is the system used in this project.

The building steel framing was designed based on AISC Manual of Steel Construction - LRFD, 3rd Edition. This meets the IBC 2003 standard.

The steel member connections are being designed based on notes shown on Drawing SG001:

- Bracing connections design is based on AISC-LFRD, 3rd Edition (see Steel Connection Note #8)- this meets IBC 2003 standard.
- All other steel connections are designed based on AISC 13th, LRFD method, with some of non-typical connections being designed according to ASD, 9th edition. I included the example calculations (see attached file "STEEL-Connections"), for the two most widely used types of the connections on this project, to show that the use of LFRD method based on AISCM-13th edition does meet the LRFD 3rd Edition (1999),which is referenced by IBC 2003.

If you need more information or have other questions please e-mail or call me directly.

Sincerely,

Janusz Wszola, PE
Structural Engineer
Tel.: 772-3846 ext.842

Quality Assurance Plan for Seismic Resistance
Mercy Fore River Short Stay Hospital
Portland, Maine

Systems Description

- Roof diaphragm - Steel roof deck.
- Roof load transfer mechanism – Puddle welds to framing.
- Primary lateral force resisting elements – Special steel concentrically braced frames.
- Floor diaphragms – Composite steel deck and concrete slab.
- Floor load transfer mechanism – Shear connectors.
- Foundation lad transfer mechanism – Column uplift loads are resisted by headed anchor rods through column base plates at braced bays. Horizontal loads are transferred to foundation through shear lugs welded to the column base plates at braced bays.
- Foundations –The walls and footings are capable of transferring lateral loads to surrounding soils which are resisted by friction and passive earth pressure. Uplift loads are transferred to the foundation walls and footings, which provide adequate dead load to retain stability. Downward vertical loads are supported by conventional spread footings without exceeding the allowable soil bearing pressure.

Inspection and Testing

Inspection and testing requirements are incorporated into the "Schedule of Special Inspections." They include inspection of deck welds, and shear connector welds, inspection of member sizes and connection details at diagonally braced column bays, inspection of field and shop welds, inspection of anchor bolt installation, verification of material certifications, and measuring of concrete strength.

Inspection and testing reports shall be distributed immediately after each day's activities. Copies shall be provided to SMRT, the general contractor, the Owner, and the Building Code Official.

MATERIAL/ACTIVITY	ITEM	SERVICE	APPLICABLE TO THIS PROJECT		
			EXTENT (All, Sample, Other, None)	COMMENTS	AGENT #
SECTION 1 - STEEL CONSTRUCTION (IBC 2003)					
STRUCTURAL STEEL - Fabrication	1.1a	Review Fabricator QA/QC procedures manual.	One shop inspection required.		WAIVER
	1.1b	Review Fabricator QA/QC procedures implementation and conformance.	One shop inspection required. Visual inspection of shop conformance.		WAIVER
NOTE: SER may waive Fabricator shop inspection if Fabricator is currently certified through the AISC Quality Certification Program.	1.1c	Review material certificates of compliance (bolts, nuts, washers, structural steel and weld filler material).	Verify that certificates of compliance have been approved.		WAIVER
If shop inspection is waived, the Fabricator shall submit a letter certifying that the fabricated steel complies with the contract documents.	1.1d	Review welder certification.	Obtain certification numbers for all welders and all steel. Verify welder qualification in accordance with AWS D1.1.		WAIVER
	1.1e	Review shop drawings.	Verify approval.		WAIVER
	1.1f	Inspect welded connections	Verify correct weld filler processes and weld rod storage. Provide continuous inspection of complete and partial penetration groove welds and for fillet welds greater than 5/16". Periodically inspect fillet welds equal to or less than 5/16". Visually inspect all welds.	Inspector shall be qualified according to AWS D1.1.	WAIVER

MATERIAL/ACTIVITY	ITEM	SERVICE	APPLICABLE TO THIS PROJECT		
			EXTENT (All, Sample, Other, None)	COMMENTS	AGENT #
STRUCTURAL STEEL - Fabrication (cont)	1.1g	Inspect bolted connections.	During installation, verify bolts, nuts, washers, paint, bolted parts and installation and tightening procedures are in compliance with referenced standards. Periodically inspect the installation of snug-tightened connections. Verify that all plies of all snug-tightened connections are drawn together. At pretensioned bolted connections, observe the pre-installation testing and calibration procedures when such procedures are required for the installation method. Provide continuous monitoring for pretensioned connections utilizing calibrated wrench method or turn of the nut method without matchmarking. Provide periodic monitoring of pretensioned bolted connections utilizing the turn of the nut method with matchmarking techniques, the direct tension indicator method, or the twist-off bolt method.		WAIVER
	1.1h	Review structural steel and fabrication for conformance to approved shop drawings.	Verify member sizes, piece marks and connection details match approved shop drawings. Visually inspect bolts and welds.		WAIVER
	1.1i	Review Certificate of Compliance.	Verify submission of certificate of compliance that fabricated material complies with contract documents.		WAIVER

MATERIAL/ACTIVITY	ITEM	SERVICE	APPLICABLE TO THIS PROJECT		
			EXTENT (All, Sample, Other, None)	COMMENTS	AGENT #
STRUCTURAL STEEL - Erections	1.2a	Review welder certification.	Obtain certification numbers for all welders and all steel. Verify welder qualification in accordance with AWS D1.1		1 & 4
	1.2b	Review materials certificates of compliance (bolts, nuts, washers, and weld filler material).	Verify that certificates of compliance have been approved.		1 & 4
	1.2c	Review structural steel and erection for conformance to approved shop drawings	Verify all member sizes, piece marks and connection details.		4
	1.2d	Inspect welded connections.	Verify correct weld filler processes and weld rod storage. Provide continuous inspection of complete and partial penetration groove welds and for fillet welds greater than 5/16". Periodically inspect fillet welds equal to or less than 5/16". Visually inspect all welds.	Inspector shall be qualified according to AWS D1.1.	4
	1.2e	Inspect field bolting installation in accordance with Section 9 of RCSC *Specification for Structural Joints Using ASTM A325 or A490 Bolts.*	Visually inspect all bolts. During installation, verify bolts, nuts, washers, paint, bolted parts and installation and tightening procedures are in compliance with referenced standards. Periodically inspect the installation of snug-tightened connections. Verify that all plies of all snug-tightened connections are drawn together. At pretensioned bolted connections, observe the pre-installation testing and calibration procedures when such procedures are required for the installation method. Provide continuous monitoring for pretensioned connections utilizing calibrated wrench method or turn of the nut method without matchmarking. Provide periodic monitoring of pretensioned bolted connections utilizing the turn of the nut method, or the twist-off bolt method.		4
	1.2f	Review Bracing connections.	Visually inspect all.		4
	1.2g	Review Column splices.	Visually inspect all.		4
	1.2h	Review shear connections	Visually inspect all.		4

MATERIAL/ACTIVITY	ITEM	SERVICE	APPLICABLE TO THIS PROJECT		
			EXTENT (All, Sample, Other, None)	COMMENTS	AGENT #
STEEL STAIRS AND GUARDRAILS - Fabrication NOTE: special inspector may waive Fabricator shop inspection if the fabricator is currently certified through the AISC Quality Certification program.	1.5a	Review Fabricator QA/QC Procedures manual.	Special Inspector to review.		WAIVER
	1.5b	Review Fabricator QA/QC procedures implementation and conformance.	One shop inspection required. Visual inspection of shop conformance.		WAIVER
	1.5c	Review welder certifications.	Verify welder qualification in accordance with AWS D1.1. Obtain certification numbers for all welders.		WAIVER
	1.5d	Review shop drawings.	Verify approval		WAIVER
	1.5e	Inspect welded connections.	Perform continuous inspection of complete and partial penetration groove welds and fillet welds larger than 5/16". Perform periodic inspection of fillet welds 5/16" and smaller. Visually inspect all welds after completion.		WAIVER
	1.5f	Inspect bolted connections utilizing high-strength bolts.	Periodically inspect installation of high-strength bolts. Verify that all plies of all connections are drawn together.		WAIVER
STEEL STAIRS AND GUARDRAILS - Erection	1.6a	Review welder certification.	Verify welder qualification in accordance with AWS D1.1. Obtain certification numbers for all welders.		1 & 4
	1.6b	Inspect welded connections.	Perform continuous inspection of complete and partial penetration groove welds and fillet welds larger than 5/16". Perform periodic inspection of installation of fillet welds 5/16" and smaller. Visually inspect all welds after completion.		4
	1.6c	Inspect bolted connections utilizing high-strength bolts.	Periodically inspect installation of high strength bolts. Verify that all plies are drawn together.		4
	1.6d	Inspect installation.	Perform periodic inspection in progress and complete inspection at completion verifying all members and connections conform with the contract documents and approved shop drawings.		4

MATERIAL/ACTIVITY	*ITEM*	*SERVICE*	*APPLICABLE TO THIS PROJECT*		
			EXTENT (All, Sample, Other, None)	*COMMENTS*	*AGENT #*
SECONDARY / MISC STRUCTURAL STEEL	1.7a	Review girts connections.	Visually inspect all.		4
	1.7b	Review welder certification.	Obtain certification numbers for all welders.		1 & 4
	1.7c	Review brick relieving angle connections/installation.	Visually inspect all. Verify member size and connections to structure.		4
	1.7d	Review details of steel frames.	Visually inspect all.		4
	1.7e	Inspect bolted connections utilizing high-strength bolts.	Periodically inspect installation of high-strength bolts. Verify that all plies of all connections are drawn together.		4
	1.7f	Review fabrication for conformance with approved shop drawings.	Verify member sizes, piece marks, and connection details match approved shop drawings.		4
Steel Deck Erection	1.8a	Review steel deck shop drawings.	Verify approval.		1
	1.8b	Review welder certification.	Verify welder qualification in accordance with AWSD1.1. Obtain certification numbers of all welders.		1 & 4
	1.8c	Verify number, type, and location of steel deck connection to framing and side lap fasteners.	Visually inspect all. Verify welds comply with AWS D1.3 requirements.		4
	1.8d	Inspect installation of shear connectors.	Prior to starting, verify materials and weld processes are in compliance with AWS requirements and construction documents. Periodically inspect shear connector installation. Inspect soundness of all welds. Verify number and location of all. Random test 20% of all connectors in accordance with AWS Chapter 5.		4

MATERIAL/ACTIVITY	ITEM	SERVICE	APPLICABLE TO THIS PROJECT		
			EXTENT (All, Sample, Other, None)	COMMENTS	AGENT #
SECTION 2 - CONCRETE CONSTRUCTION (IBC 2003 - 1704.4)					
CONCRETE MATERIALS	2.1a	Review mix design.	Verify approval of all mixes intended for use.		1
	2.1b	Review reinforcement grade.	Inspect identifying marks on reinforcing steel.		3
	2.1c	Review submittals.	Verify acceptance of propriety products and reinforcing steel shop drawings. Review requirements of reinforcing steel on placement drawings.		1
REINFORCING AND PRESTRESSING STEEL	2.2a	Inspect condition and placement of reinforcing steel.	All reinforcing steel at walls, spread footings, columns and beams and column piers. Check prior to each concrete placement.		3
ANCHOR BOLTS	2.2b	Inspect bolt types; verify bolts embedment for compliance with contract documents.	Visually inspect at all steel column locations.		3
FORMWORK	2.3a	Verify acceptability of substrate.	Prior to each concrete placement.		2
	2.3b	Verify dimensions and materials acceptability.	Prior to each concrete placement.		3
EMBEDMENTS	2.4a	Inspect installation of anchor bolts, masonry dowels and other embedded items.	Inspect for each concrete placement.		3
CONCRETE OPERATIONS	2.5a	Field testing of concrete slump, temperature, and air content.	All concrete placements.		3
	2.5b	Take concrete cylinder samples and perform compressive strength test.	All concrete placements.		3
	2.5c	Observe concrete placement.	Inspect placement procedures at all concrete placements.		3
	2.5d	Observe concrete curing technique and temperature.	Once daily when air temperature is above 32°F. Twice daily when temperature is below 32°F.		3
ELEVATED CONCRETE	2.9a	Inspect placement of elevated concrete for compliance with contract documents.	Visually inspect all placement and curing.		3

MATERIAL/ACTIVITY	ITEM	SERVICE	APPLICABLE TO THIS PROJECT		
			EXTENT (All, Sample, Other, None)	COMMENTS	AGENT #
SECTION 3 - MASONRY CONSTRUCTION (IBC 2003 - 1704.5)					
REINFORCED MASONRY AND MASONRY VENEER	3.1a	Review submittals.	Verify approval of mortar mixes, mortar ingredients, reinforcing, steel shop drawings, veneer anchor assemblies, and other items requiring SER approval per the Construction Documents.		1
	3.1b	Inspect mixing of site-prepared mortar.	Periodically verify mix proportions for compliance with approved		3
	3.1c	Inspect mortar placement.	Periodically inspect.		3
	3.1d	Inspect installation of veneer anchors.	Periodically inspect material, location, and attachment of veneer anchors.		3
	3.1e	Inspect deformed bar reinforcement.	Periodically inspect reinforcement grade size, location of placement, method of securing in place, and lap splices during installation and prior to grout placement.		3
	3.1f	Inspect joint reinforcement.	Verify product installed complies with approved submittal. Periodically check spacing and additional requirements at openings.		3
	3.1g	Inspect size and location of structural elements.	Verify member sizes and layout of all structural members.		3
	3.1h	Inspect cold weather and hot weather installation.	Inspect procedures daily when air temperature is below 40 degrees F or above 90 degrees F at any time in the day.		3
	3.1i	Inspect grout placement.	Periodically inspect grout spaces prior to grout placement. Periodically inspect grout mixing and placement.		3
	3.1j	Field testing of mortar, grout, and prisms.	Perform construction testing in accordance with the Contract Documents.		3

MATERIAL/ACTIVITY	ITEM	SERVICE	APPLICABLE TO THIS PROJECT		
			EXTENT (All, Sample, Other, None)	COMMENTS	AGENT #
SECTION 5 - SOILS (IBC 2003 - 1704.7)					
SOILS	5.1a	Inspect site preparation and soil conditions prior to placement of fill for conformance with contract documents and soils report.	All under building footprint.		2
	5.1b	Inspect testing and placement of fill material for conformance with contract documents and soils report.	Required for all fill more than 12" deep.		2
	5.1c	Review soils compaction testing for compliance with contract documents and soils report.	See contract documents for testing frequency.		2
SECTION 7 - SPRAYED FIRE-RESISTANT MATERIALS (IBC 2003 - 1704.11)					
SPRAYED-ON FIREPROOFING	7.1a	Inspect surface of structural members to be sprayed for conformance with contract documents.	Visually inspect all.		5
	7.1b	Observed application conditions for conformance with the approved manufacturer's written instructions.	At each fireproofing application.		5
	7.1c	Observe field-testing of thickness, density, and bond strength of the sprayed fire resistive material for compliance with contract documents.	As specified in IBC 2003, Section 1704.11.3 and 4.		5
SECTION 8 - EIFS (IBC 2003 - 1704.12)					
EIFS Special inspections are not required for EIFS applications installed over a water-resistive barrier with a means of draining moisture to the exterior.	8.1a	Inspect EIFS installation	Visually inspect all.		5 5

MATERIAL/ACTIVITY	ITEM	SERVICE	APPLICABLE TO THIS PROJECT		
			EXTENT (All, Sample, Other, None)	COMMENTS	AGENT #
SECTION 9 - SPECIAL CASES (IBC 2003 1704.13)					
	9.1a				
	9.1b				
SECTION 10 - SMOKE CONTROL (IBC 2003 - 1704.14)					
SMOKE CONTROL	10.1a	Test scope shall be as follows: 1. During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location. 2. Prior to occupancy and after sufficient completion for the purposes of pressure difference testing, flow measurements and detection and control verification.	To be coordinated by the project mechanical engineer.	Special inspection agencies for smoke control shall have expertise in fire protection engineering, mechanical engineering and certification as air balancers.	6
SECTION 11 - QUALITY ASSURANCE OF SEISMIC RESISTANCE (IBC 2003 - 1705)					
MEP	11.a	Quality assurance plan for seismic requirements shall be provided in accordance with Sections 1705, 1707.7 and 1708.5.	To be coordinated by the project MEP engineers.		6

SPECIAL INSPECTIONS - LIST OF AGENTS

PROJECT: Mercy Hospital Fore River Campus – "Mercy at the Fore"

LOCATION: Commercial Street, Portland, Maine

STRUCTURAL
ENGINEER OF RECORD: Janusz S. Wszola — SMRT
Name — Firm
144 Fore Street, PO Box 618, Portland, ME 04014
Address

ARCHITECT
OF RECORD: Neil P. Hoffman — FCFH
Name — Firm
2120 Arch Street, Philadelphia, PA 19103
Address

Following is the list of Agents selected for performance of Special Inspections for this project.

	Type	Name	Firm
1.	Special Inspector - Overall	Steve Grant	SRG
2.	Soils	Wayne Chadbourne, PE	Haley & Aldrich
3.	Concrete & Masonry	Roger Domingo	S.W. Cole
4.	Steel	Roger Domingo	S.W. Cole
5.	Spray-Applied Fireproofing, EIFS	Roger Domingo	S.W. Cole
6.	Smoke Control, MEP	Aran McCarthy Kurt Scheeren	FCFH BR+A
7.			
8.			
9.			
10.			

STATEMENT OF SPECIAL INSPECTIONS

PROJECT:	Mercy Hospital Fore River Campus "Mercy at the Fore"
LOCATION:	Commercial Street Portland, Maine
PERMIT APPLICANT:	SMRT, Inc. on behalf of SMRT, Inc. and FCFH
APPLICANT'S ADDRESS:	144 Fore Street, PO Box 618, Portland, ME 04104

Structural Engineer of Record:

Janusz S. Wszola	**SMRT**
Name	Firm

Architect of Record:

Neil P. Hoffman	**FCFH**
Name	Firm

This Statement of Special Inspections is submitted in accordance with Section 1704 of the 2003 International Building Code. It includes a "Schedule of Special Inspections" and a "Special Inspections List of Agents" specific to this project. The Special Inspector is identified in the "List of Agents."

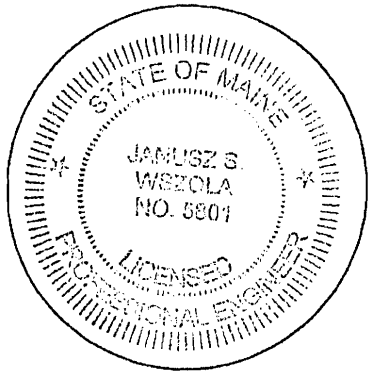
The Special Inspector shall keep records of all inspections listed herein, and shall furnish inspection reports to the Code Official and to the Structural Engineer of Record. All discrepancies will be brought to the immediate attention of the Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the Structural Engineer of Record and Code Official. Interim reports shall be submitted to the Structural Engineer of Record and the Code Official.

Job site safety is solely the responsibility of the Contractor. Materials and activities to be inspected are not to include the Contractor's equipment and methods used to erect and install the materials listed.

Prepared by: *(Structural Engineer of Record)*

Janusz S. Wszola, PE
(Name)

(Signature) 01/12/07 (Date)



Structural Engineer of Record's P.E. Seal

STEEL CONSTRUCTION

MANUAL

AMERICAN INSTITUTE
OF
STEEL CONSTRUCTION
INC.

THIRTEENTH EDITION

PREFACE

(This Preface is not part of ANSI/AISC 360-05, *Specification for Structural Steel Buildings*, but is included for informational purposes only.)

This Specification has been based upon past successful usage, advances in the state of knowledge, and changes in design practice. The 2005 American Institute of Steel Construction's *Specification for Structural Steel Buildings* for the first time provides an integrated treatment of Allowable Stress Design (ASD) and Load and Resistance Factor Design (LRFD), and thus combines and replaces earlier Specifications that treated the two design methods separately. As indicated in Chapter B of the Specification, designs can be made according to either ASD or LRFD provisions.

This Specification has been developed as a consensus document to provide a uniform practice in the design of steel-framed buildings and other structures. The intention is to provide design criteria for routine use and not to provide specific criteria for infrequently encountered problems, which occur in the full range of structural design.

This Specification is the result of the consensus deliberations of a committee of structural engineers with wide experience and high professional standing, representing a wide geographical distribution throughout the United States. The committee includes approximately equal numbers of engineers in private practice and code agencies, engineers involved in research and teaching, and engineers employed by steel fabricating and producing companies. The contributions and assistance of more than 50 additional professional volunteers working in ten task committees are also hereby acknowledged.

The Symbols, Glossary and Appendices to this Specification are an integral part of the Specification. A non-mandatory Commentary has been prepared to provide background for the Specification provisions and the user is encouraged to consult it. Additionally, non-mandatory User Notes are interspersed throughout the Specification to provide concise and practical guidance in the application of the provisions.

The reader is cautioned that professional judgment must be exercised when data or recommendations in the Specification are applied, as described more fully in the disclaimer notice preceding this Preface.

13th ED.

ANSI/AISC 360-05
An American National Standard

Specification for Structural Steel Buildings

March 9, 2005

Supersedes the *Load and Resistance Factor Design Specification for Structural Steel Buildings* dated December 27, 1999, the *Specification for Structural Steel Buildings—Allowable Stress Design and Plastic Design* dated June 1, 1989, including Supplement No 1, the *Specification for Allowable Stress Design of Single-Angle Members* dated June 1, 1989, the *Load and Resistance Factor Design Specification for Single-Angle Members* dated November 10, 2000, and the *Load and Resistance Factor Design Specification for the Design of Steel Hollow Structural Sections* dated November 10, 2000, and all previous versions of these specifications.

Approved by the AISC Committee on Specifications and issued by the AISC Board of Directors

AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.
One East Wacker Drive, Suite 700
Chicago, Illinois 60601-1802

ON, INC.

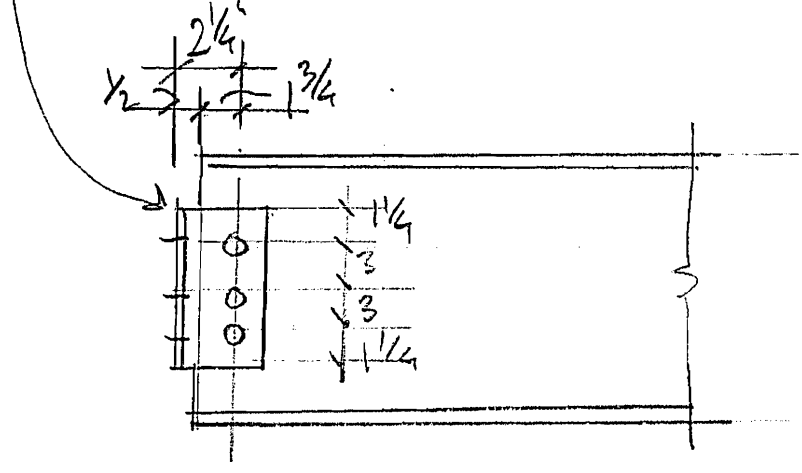
AISC Manual - 13th Ed.

SMRT	Project:	MERCY HOSPITAL	Date: 01/13/07
	Designed by:	JSW	Page: 1

STD SHIPPED DBL ANGLE BOLTED CONN.

- Based on typ. beam W16×31 (t_w = 0.275)
  STL grade 50ksi

$\llcorner$L4×3½×5/16×0'-8½" w/ 3-¾"ϕ bolts in each leg.
(Fy = 36ksi) (A325-N) → IN SHORT SLOTTED HOLES (SSH)



CONCLUSION (see p. 2 & 3)

AISC Ref.	BEAM / ANGLE CAPACITY
LFRD, 3rd Ed. 1999	92.3 k
LFRD - 13th Ed. 2005	92.3 k ← NO CHANGES

Project:	MERCY	Date:	01/13/09
Designed by:	JSW	Page:	2

Connection check based on AISC-LRFD, 3rd Ed. (1999)

from Table 10-1 (p. 2a):

$\phi R_n = 95,4$ k. ← DBL L

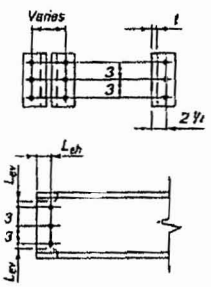
-Beam web:

$\phi R_n = (263\ k/in) \times 0,275 = 72,3$ k ← governs

Table 10-1 (cont.).
All-Bolted Double-Angle Connections
$\phi = 0.75$

Angle F_y = 36 ksi, F_u = 58 ksi	Beam F_y = 50 ksi, F_u = 65 ksi

3/4-in. Bolts, 3 Rows, W18, 16, 14, 12, 10*	Bolt and Angle Design Strength, kips					
	ASTM Desig.	Thread Cond.	Hole Type	Angle Thickness 1/4	5/16	3/8	1/2
*Limited to W10×12, 15, 17, 19, 22, 26, 30	A325/F1852	N	–	76.7	95.4	95.4	95.4
		X	–	76.7	95.8	115	119
		SC Class A	STD	62.6	62.6	62.6	62.6
			OVS	53.3	53.3	53.3	53.3
			SSLT	53.3	53.3	53.3	53.3
		SC Class B	STD	76.7	94.9	94.9	94.9
			OVS	71.8	80.7	80.7	80.7
			SSLT	76.7	80.7	80.7	80.7
	A490	N	–	76.7	95.8	115	119
		X	–	76.7	95.8	115	149
		SC Class A	STD	76.7	78.3	78.3	78.3
			OVS	66.6	66.6	66.6	66.6
			SSLT	66.6	66.6	66.6	66.6
		SC Class B	STD	76.7	95.8	115	119
			OVS	71.8	89.7	101	101
			SSLT	76.7	95.8	101	101



Beam Web Design Strength per Inch Thickness, kips/in.

Hole Type	L_{eh},* in.	Uncoped	Coped at Top Flange Only, L_{ev}, in. 1 1/4	1 3/8	1 1/2	1 5/8	2	3	Coped at Both Flanges, L_{ev}, in. 1 1/4	1 3/8	1 1/2	1 5/8	2	3
STD	1 1/2	263	188	191	195	199	210	239	172	179	186	194	210	239
	1 3/4	263	200	204	207	211	222	251	172	179	186	194	216	251
OVS	1 1/2	263	176	179	183	186	197	227	161	168	176	183	197	227
	1 3/4	263	188	191	195	199	210	239	161	168	176	183	205	239
SSLT	1 1/2	263	183	187	190	194	205	234	172	179	186	194	205	234
	1 3/4	263	195	199	203	206	217	246	172	179	186	194	216	246

Support Design Strength per Inch Thickness, kips/in.

525

Notes:
STD = Standard holes
OVS = Oversized holes
SSLT = Short-slotted holes oriented transverse to direction of load
N = Threads included
X = Threads excluded
SC = Slip critical

*Tabulated values include 1/4-in. reduction in end distance L_{eh} to account for possible underrun in beam length.

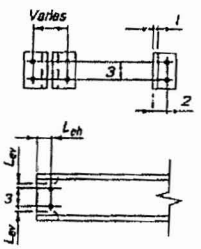
AISC-LRFD, 3rd Ed.

p. 20

Beam F_y = 50 ksi, F_u = 65 ksi

All

3/4-in. Bolts, 2 Rows, W12, 10, 8



Hole Type	L_{eh},* in.	Uncoped	1 1/
STD	1 1/2	175	12
	1 3/4	175	13
OVS	1 1/2	175	11
	1 3/4	175	12
SSLT	1 1/2	175	12
	1 3/4	175	13

Support Design Strength per Inch Thickness, kips/in

351

No
ST
OV
SS

SMRT	Project: MERCY	Date: 01/13/09
	Designed by: JSW	Page: 3

Connection check based on AISC-13th Ed.

(LFRD)

from Table 10.1 (p. 3a):

$\phi R_n = 95.4k$ ← DBL L

- beam web:

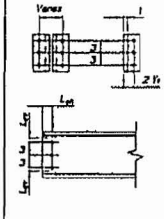
$\phi R_n = (263\ k/in) \times 0.295 = \underline{92.3k}$ ← govern

Beam F_y = 50 ksi, F_u = 65 ksi
Angle F_y = 36 ksi, F_u = 58 ksi

Table 10–1 (continued)
All-Bolted Double-Angle Connections

3/4-in. Bolts

Bolt and Angle Available Strength, kips

3 Rows W18, 16, 14, 12, 10* *Ltd to W10x12, 15, 17, 19, 22, 26, 30	ASTM Desig.	Thread Cond.	Hole Type	Angle Thickness 1/4 ASD	1/4 LRFD	5/16 ASD	5/16 LRFD	3/8 ASD	3/8 LRFD	1/2 ASD	1/2 LRFD
	A325/ F1852	N	—	50.9	76.4	63.6	95.4	63.6	95.4	63.6	95.4
		X	—	50.9	76.4	63.7	95.5	76.4	115	79.5	119
		SC Class A	STD	44.3	66.4	44.3	66.4	44.3	66.4	44.3	66.4
			OVS	32.0	48.0	32.0	48.0	32.0	48.0	32.0	48.0
			SSLT	37.7	56.5	37.7	56.5	37.7	56.5	37.7	56.5
		SC Class B	STD	50.9	76.4	63.3	94.9	63.3	94.9	63.3	94.9
			OVS	45.7	68.6	45.7	68.6	45.7	68.6	45.7	68.6
			SSLT	49.6	74.4	53.8	80.7	53.8	80.7	53.8	80.7
	A490	N	—	50.9	76.4	63.7	95.5	76.4	115	79.5	119
		X	—	50.9	76.4	63.7	95.5	76.4	115	99.4	149
		SC Class A	STD	50.9	76.4	55.4	83.1	55.4	83.1	55.4	83.1
			OVS	40.0	60.0	40.0	60.0	40.0	60.0	40.0	60.0
			SSLT	47.1	70.6	47.1	70.6	47.1	70.6	47.1	70.6
		SC Class B	STD	50.9	76.4	63.7	95.5	76.4	115	79.1	119
			OVS	47.9	71.8	57.1	85.7	57.1	85.7	57.1	85.7
			SSLT	49.6	74.4	62.0	92.9	67.2	101	67.2	101

Beam Web Available Strength per Inch Thickness, kips/in.

Hole Type	L_{ev}, in.	STD L_{eh}* 1 1/2 ASD	1 1/2 LRFD	STD 1 3/4 ASD	1 3/4 LRFD	OVS 1 1/2 ASD	1 1/2 LRFD	OVS 1 3/4 ASD	1 3/4 LRFD	SSLT 1 1/2 ASD	1 1/2 LRFD	SSLT 1 3/4 ASD	1 3/4 LRFD
Coped at Top Flange Only	1 1/4	125	188	133	200	117	176	125	188	122	183	130	195
	1 3/8	128	191	136	204	119	179	128	191	125	187	133	199
	1 1/2	130	195	138	207	122	183	130	195	127	190	135	203
	1 5/8	132	199	141	211	124	186	132	199	129	194	138	206
	2	140	210	148	222	132	197	140	210	137	205	145	217
	3	159	239	167	251	151	227	159	239	156	234	164	246
Coped at Both Flanges	1 1/4	115	172	115	172	107	161	107	161	115	172	115	172
	1 3/8	119	179	119	179	112	168	112	168	119	179	119	179
	1 1/2	124	186	124	186	117	176	117	176	124	186	124	186
	1 5/8	129	194	129	194	122	183	122	183	129	194	129	194
	2	140	210	144	216	132	197	137	205	137	205	144	216
	3	159	239	167	251	151	227	159	239	156	234	164	246
Uncoped		175	263	175	263	175	263	175	263	175	263	175	263

Support Available Strength per Inch Thickness, kips/in.

Hole Type	ASD	LRFD
STD/ OVS/ SSLT	351	526

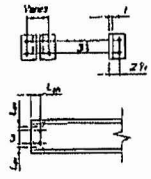
Notes:
STD = Standard holes
OVS = Oversized holes
SSLT = Short-slotted holes transverse to direction of load
N = Threads included
X = Threads excluded
SC = Slip critical

* Tabulated values include 1/4-in reduction in end distance L_{ch} to account for possible underrun in beam length

AISC - 13th ED.

Beam F_y = 50 ksi, F_u = 65 ksi
Angle F_y = 36 ksi, F_u = 58 ksi

All-

2 Rows W12, 10, 8	ASTM Desig	Thread Cond.
	A325/ F1852	N
		X
		SC Class A
		SC Class B
	A490	N
		X
		SC Class A
		SC Class B

Beam Web

Hole Type	L_{ev}, in.	1 1/2 ASD	L
Coped at Top Flange Only	1 1/4	83.7	
	1 3/8	86.1	
	1 1/2	88.6	
	1 5/8	91.0	
	2	98.3	
	3	116	
Coped at Both Flanges	1 1/4	73.1	
	1 3/8	78.0	
	1 1/2	82.9	
	1 5/8	87.8	
	2	98.3	
	3	116	
Uncoped		117	

Support Available Strength per Inch Thickness, kips/in.

Hole Type	ASD	LRFD
STD/ OVS/ SSLT	234	351

Notes:
STD = S
OVS = L
SSLT = S
t

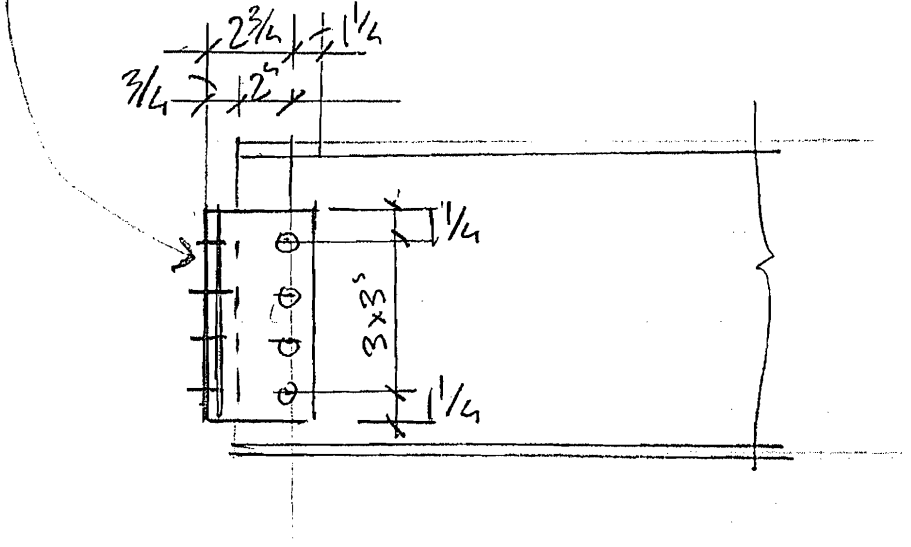
* Tabulat
underr

SMRT	Project: MERCY HOSPITAL	Date: 6/13/07
	Designed by: JSW	Page: 4

STANDARD SINGLE ANGLE BOLTED CONN.

- based on typ. beam W16×31 (t_w = 0.275)
  (steel grade 50 ksi)

L 4×4×5/8 × 0'-11½"
w/ 4 - 3/4" ϕ bolts



CONCLUSION (see p. 5 & 6)

AISC Ref.	SINGLE ANGLE BOLT CAP.
LFRD - 3rd ED., 1999	48.8k
- 13th ED, 2005	48.8k → NO CHANGE

Project:	MERCH	Date:	01/13/07
Designed by:	JSW	Page:	5

Connection check based on AISC-LRFD, 3rd Ed, 1999

- See p. 4 for conn. dtl.

$\phi R_n = C \times \phi r_n$

from Table 7-10 (See p. 5a) $\rightarrow \phi V_n = 15.9$ k/bolt

from Table 10-10 (See p. 5b) $\rightarrow C = 3.07$

$\phi R_n = 3.07 \times 15.9 = 48.8$ k

DBL JL

SINGLE L

P.50

SHEAR

FMC

MOM.

BRACE

COMP.

CONN.

Non-High-Strength Fasteners
Table 7-7

ominal Bolt Diameter d_b, in.					
5/8	3/4	7/8	1	1 1/8	1 1/4
34	35	55	80	122	163
10	116	172	232	321	412
16	76	107	142	189	243
4	02	05	−02	−01	−17
0	33	50	82	123	180
0	83	122	150	198	232
6	43	57	60	66	63
3	113	165	207	270	336
9	73	100	117	138	167

stitute (IFI)

gth Bolts
in., pounds

iameter d_b, in.						
2 3/4	3	3 1/4	3 1/2	3 3/4	4	
–	–	–	–	–		
680	900	1120	1390	1730	2130	
720	950	–	–	–		
168	200	235	272	313	356	
147	178	210	246	284	325	
–	–	–	–	–		
–	–	–	–	–		
738	950	1190	1530	1810	2180	

ute (IFI).

Table 7-10.
Design Shear Strength of One Bolt, kips

$\phi = 0.75$

ASTM Desig	Thread Cond	ϕF_v (ksi)	Loading	Nominal Bolt Diameter d_b, in.							
				5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
				Nominal Bolt Area, in.^{2}							
				0.307	0.442	0.601	0.785	0.994	1.23	1.48	1.77
A325 F1852	N	36.0	S	11.0	15.9	21.6	28.3	35.8	44.2	53.5	63.6
			D	22.1	31.8	43.3	56.5	71.6	88.4	107	127
	X	45.0	S	13.8	19.9	27.1	35.3	44.7	55.2	66.8	79.5
			D	27.6	39.8	54.1	70.7	89.5	110	134	159
A490	N	45.0	S	13.8	19.9	27.1	35.3	44.7	55.2	66.8	79.5
			D	27.6	39.8	54.1	70.7	89.5	110	134	159
	X	56.3	S	17.3	24.9	33.8	44.2	55.9	69.0	83.5	99.4
			D	34.5	49.7	67.6	88.4	112	138	167	199
A307	–	18.0	S	5.52	7.95	10.8	14.1	17.9	22.1	26.7	31.8
			D	11.0	15.9	21.6	28.3	35.8	44.2	53.5	63.6

N = Threads included in shear plane
X = Threads excluded from shear plane
S = Single shear
D = Double shear.

Table 7-11.
Design Shear Strength of *n* Bolts, kips

$\phi = 0.75$

n	ASTM A325 & F1852											
	N						X					
	3/4		7/8		1		3/4		7/8		1	
	S	D	S	D	S	D	S	D	S	D	S	D
12	191	382	260	520	339	679	239	477	325	649	424	848
11	175	350	238	476	311	622	219	437	298	595	389	778
10	159	318	216	433	283	565	199	398	271	541	353	707
9	143	286	195	390	254	509	179	358	244	487	318	636
8	127	254	173	346	226	452	159	318	216	433	283	565
7	111	223	152	303	198	396	139	278	189	379	247	495
6	95.4	191	130	260	170	339	119	239	162	325	212	424
5	79.5	159	108	216	141	283	99.4	199	135	271	177	353
4	63.6	127	86.6	173	113	226	79.5	159	108	216	141	283
3	47.7	95.4	64.9	130	84.8	170	59.6	119	81.2	162	106	212
2	31.8	63.6	43.3	86.6	56.5	113	39.8	79.5	54.1	108	70.7	141
1	15.9	31.8	21.6	43.3	28.3	56.5	19.9	39.8	27.1	54.1	35.3	70.7

n	ASTM A490											
	N						X					
	3/4		7/8		1		3/4		7/8		1	
	S	D	S	D	S	D	S	D	S	D	S	D
12	239	477	325	649	424	848	298	596	406	812	530	1060
11	219	437	298	595	389	778	273	547	372	744	486	972
10	199	398	271	541	353	707	249	497	338	676	442	884
9	179	358	244	487	318	636	224	447	304	609	398	795
8	159	318	216	433	283	565	199	398	271	541	353	707
7	139	278	189	379	247	495	174	348	237	474	309	619
6	119	239	162	325	212	424	149	298	203	406	265	530
5	99.4	199	135	271	177	353	124	249	169	338	221	442
4	79.5	159	108	216	141	283	99.4	199	135	271	177	353
3	59.6	119	81.2	162	106	212	74.6	149	101	203	133	265
2	39.8	79.5	54.1	108	70.7	141	49.7	99.4	67.6	135	88.4	177
1	19.9	39.8	27.1	54.1	35.3	70.7	24.9	49.7	33.8	67.6	44.2	88.4

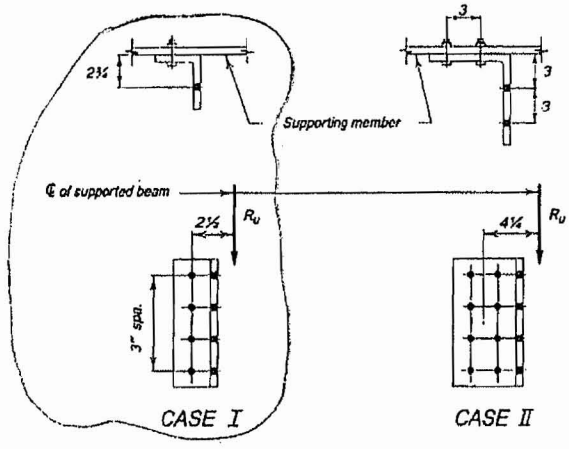
N = Threads included in shear plane
X = Threads excluded from shear plane
S = Single shear
D = Double shear.

AISC-LRFD, 3rd. Ed.

SINGLE L

AISC-LRFD, 3rd ED.

Table 10-10.
All-Bolted Single-Angle Connections



Note: standard holes in support leg of angle

Eccentrically Loaded Bolt Group Coefficients C

Number of Bolts in One Vertical Row, *n*	Case I	Case II
12	11 4	21 5
11	10 4	19 4
10	9.37	17 3
9	8 34	15 2
8	7 31	13 0
7	6 27	10 9
6	5 22	8 70
5	4.15	6 63
4	3.07	4 70
3	1 99	2 94
2	1 03	1 61
1	–	0.518

$\phi R_n = C \times \phi r_n$

where

C = coefficient from Table above
ϕr_n = design strength of one bolt in shear or bearing, kips/bolt

Notes:
For eccentricities less than or equal to those shown above, tabulated values may be conservatively used
For greater eccentricities, coefficient C should be recalculated from Table 7-17 or Table 7-18
Connection may be bearing-type or slip-critical.

p.56

Number of Bolts in One Vertical Row	A325 Shear k
	3/4 in.
12	191
11	175
10	159
9	143
8	127
7	111
6	95 4
5	79 5
4	63 6
3	47 7
2	31 8

Notes:
Gage in angle leg attachec
decreased
Tabulated weld design stre
these values being conser
half web or recalculated.
When the beam web thickr
back, either stagger the an
minimum thickness to dete

SMRT	Project: MERCY	Date: 01/13/06
	Designed by: JSW	Page: 6

Connection check based on AISC - 13th Ed. (LRFD)

See p. 4 for conn. det.

$\phi R_n = C \times \phi v_n$

from Table 7-1 → $\phi_v v_n = 15.9$ k
(see p. 6a)

from Table 10-10 → $C = 3.07$
(see p. 6b)

$\phi R_n = 3.07 \times 15.9 = 48.8$ k

Table 7–1
Available Shear Strength of Bolts, kips

Nominal Bolt Diameter d_b, in.					5/8		3/4		7/8		1	
Nominal Bolt Area, in.^{2}					0.307		0.442		0.601		0.785	
ASTM Desig.	Thread Cond.	F_{nv}/Ω (ksi)	ϕF_{nv} (ksi)	Loading	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$
		ASD	LRFD		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
A325 F1852	N	24.0	36.0	S	7.36	11.0	10.6	15.9	14.4	21.6	18.8	28.3
				D	14.7	22.1	21.2	31.8	28.9	43.3	37.7	56.5
	X	30.0	45.0	S	9.20	13.8	13.3	19.9	18.0	27.1	23.6	35.3
				D	18.4	27.6	26.5	39.8	36.1	54.1	47.1	70.7
A490	N	30.0	45.0	S	9.20	13.8	13.3	19.9	18.0	27.1	23.6	35.3
				D	18.4	27.6	26.5	39.8	36.1	54.1	47.1	70.7
	X	37.5	56.3	S	11.5	17.3	16.6	24.9	22.5	33.8	29.5	44.2
				D	23.0	34.5	33.1	49.7	45.1	67.6	58.9	88.4
A307	–	12.0	18.0	S	3.68	5.52	5.30	7.95	7.22	10.8	9.42	14.1
				D	7.36	11.0	10.6	15.9	14.4	21.6	18.8	28.3

Nominal Bolt Diameter d_b, in.					1 1/8		1 1/4		1 3/8		1 1/2	
Nominal Bolt Area, in.^{2}					0.994		1.23		1.48		1.77	
ASTM Desig.	Thread Cond.	F_{nv}/Ω (ksi)	ϕF_{nv} (ksi)	Loading	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$
		ASD	LRFD		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
A325 F1852	N	24.0	36.0	S	23.9	35.8	29.5	44.2	35.6	53.5	42.4	63.6
				D	47.7	71.6	58.9	88.4	71.3	107	84.8	127
	X	30.0	45.0	S	29.8	44.7	36.8	55.2	44.5	66.8	53.0	79.5
				D	59.6	89.5	73.6	110	89.1	134	106	159
A490	N	30.0	45.0	S	29.8	44.7	36.8	55.2	44.5	66.8	53.0	79.5
				D	59.6	89.5	73.6	110	89.1	134	106	159
	X	37.5	56.3	S	37.3	55.9	46.0	69.0	55.7	83.5	66.3	99.4
				D	74.6	112	92.0	138	111	167	133	199
A307	–	12.0	18.0	S	11.9	17.9	14.7	22.1	17.8	26.7	21.2	31.8
				D	23.9	35.8	29.5	44.2	35.6	53.5	42.4	63.6

ASD	LRFD
$\Omega_v = 2.00$	$\phi_v = 0.75$

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tions

he tabulated eccentrically
ible strength, ϕR_n or R_n/Ω,

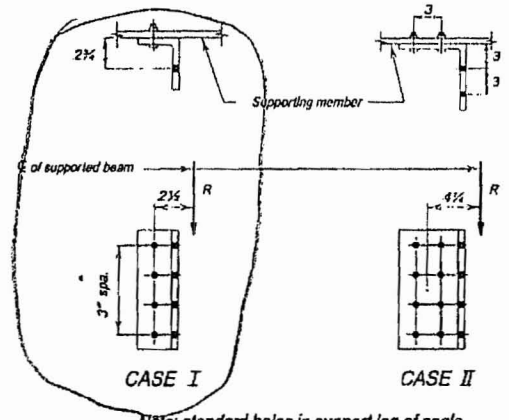
onnections

ections. Electrode strength
connection must be field-
d.
center of rotation method
alf-web thickness of 1/4 in.
. For half-web thicknesses
rtionally to eight percent at
ng flange or web thickness
to the strength of the weld
Table 10–2, the minimum

ds line up on opposite sides
sses required for each weld.
s present, the tabulated weld
thickness provided to the

p, 6b

Table 10–10
All-Bolted Single-Angle Connections



Note: standard holes in support leg of angle

Eccentrically Loaded Bolt Group Coefficients, C

Number of Bolts in One Vertical Row, n	Case I	Case II
12	11 4	21 5
11	10 4	19 4
10	9 37	17 3
9	8.34	15 2
8	7 31	13 0
7	6 27	10 9
6	5 22	8 70
5	4.15	6 63
4	3 07	4 70
3	1 99	2 94
2	1.03	1 61
1	—	0.518

LRFD

$\phi R_n = C \times \phi r_n$ or $R_n/\Omega = C \times r_n/\Omega$

where

C = coefficient from Table above

ϕr_n = design strength of one bolt in shear or bearing, kips/bolt

r_n/Ω = allowable strength of one bolt in shear or bearing, kips/bolt

Notes:

For eccentricities less than or equal to those shown above, tabulated values may be used.

For greater eccentricities, coefficient C should be recalculated from Part 7.

Connection may be bearing-type or slip-critical.

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FMC
MOM.
BRACE
COMP.
OTHER
SPEC.

AF&PA

American Forest & Paper Association
1111 19th St, NW Suite 800
Washington, DC 20036

Standard reference number	Title	Referenced in code section number
AF&PA/ASCE 16—95	Standard for Load and Resistance Factor Design (LRFD) for Engineered Wood Construction	2307.1
WCD No. 4—89	Plank and Beam Framing for Residential Buildings	2306.1.2
WFCM—01	Wood Frame Construction Manual for One-and Two-family Dwellings	2301.2.3, 2308.1, 2308.2.1
TR No. 7—87	Basic Requirements for Permanent Wood Foundation System	1805.4.6, 1807.2, 2304.9.5
NDS—01	National Design Specification (NDS) for Wood Construction with 2001 Supplement	721.6.3.2, 1715.1.1, 1715.1.4, 1805.4.5, 1808.1, 2306.1, 2306.2.1, 2306.3.2, Table 2306.3.1, Table 2306.4.1, 2306.3.4, 2306.3.5, 2306.4.1, Table 2308.9.3(4)
AF&PA—93	Span Tables for Joists and Rafters	2306.1.1, 2308.8, 2308.10.2, 2308.10.3

AHA

American Hardwood Association
1210 West N.W. Highway
Palatine, IL 60067

Standard reference number	Title	Referenced in code section number
A135.4—95	Basic Hardboard	1404.3.1, 2303.1.6
A135.5—95	Prefinished Hardboard Paneling	2303.1.6, 2304.6.2
A135.6—98	Hardboard Siding	1404.3.2, 2303.1.6
A194.1—85	Cellulosic Fiber Board	2303.1.5

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AISC

American Institute of Steel Construction
One East Wacker Drive, Suite 3100
Chicago, IL 60601-2001

Standard reference number	Title	Referenced in code section number
335—89s1	Specification for Structural Steel Buildings—Allowable Stress Design and Plastic Design, including Supplement No. 1, 2001	1604.3.3, Table 1617.6.2, Table 1704.3, 2203.2, 2205.1
LRFD (1999)	Load and Resistance Factor Design Specification for Structural Steel Buildings	1604.3.3, Table 1617.6, Table 1704.3, 2203.2, 2205.1, 2205.3
HSS (2000)	Load and Resistance Factor Design Specification for Steel Hollow Structural Sections	1604.3.3, Table 1617.6, 2203.2, 2205.1
341—02	Seismic Provisions for Structural Steel Buildings	1602.1, Table 1617.6.2, 1707.2, 1708.4, 2205.2.1, 2205.2.2, 2205.3, 2205.3.1

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AISI

American Iron and Steel Institute
1140 Connecticut Avenue
Suite 705
Washington, DC 20036

Standard reference number	Title	Referenced in code section number
NASPEC 2001	North American Specification for Design of Cold-Formed Steel Structural Members	1604.3.3, 2209.1
General	Standard for Cold-Formed Steel Framing-General Provisions, 2001	2210.1
Header	Standard for Cold-Formed Steel Framing-Header Design, 2001	2210.2
Truss	Standard for Cold-Formed Steel Framing-Truss Design, 2001	2210.3

SPEC. 05120 -1.6-D items

PART 16

SPECIFICATIONS AND CODES

(3) *LRFD SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS,*

(4) *LRFD SPECIFICATION FOR STEEL HOLLOW STRUCTURAL SECTIONS,*

(5) *LRFD SPECIFICATION FOR SINGLE-ANGLE MEMBERS,*

(6) *SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS,*

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Notes:
The above documents are available for free download in * pdf format at www.aisc.org. While not included in this Manual, the AISC *Seismic Provisions for Structural Steel Buildings*, April 15, 1997 and *Seismic Provisions Supplement No 2*, November 10, 2000 are available for free download in * pdf format at www.aisc.org. Information about AISC Certification of steel fabricators and steel erectors is available at www.aisc.org/quality.html.

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F. Mill Test Reports: Signed by manufacturers certifying that the following products comply with requirements:

1. Structural steel including chemical and physical properties.
2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
3. Shear stud connectors.

G. Source quality-control test reports.

H. Certifications: Submit documentation verifying compliance with fabricator and erector certifications specified in Section 1.6

I. Certification of Compliance: After completion of fabrication, the fabricator shall submit a letter certifying that the fabricated steel conforms with the construction documents for the project.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

B. Fabricator Qualifications: A qualified fabricator who participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category Sbd.

C. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel "

D. Comply with applicable provisions of the following specifications and documents:

1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."
2. AISC's "Seismic Provisions for Structural Steel Buildings," dated March 9, 2005 and "Supplement No. 1," dated November 16, 2005.
3. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design" or "Load and Resistance Factor Design Specification for Structural Steel Buildings."
4. AISC's "Specification for the Design of Steel Hollow Structural Sections."
5. AISC's "Specification for Allowable Stress Design of Single-Angle Members" or "Specification for Load and Resistance Factor Design of Single-Angle Members."
6. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

E. Preinstallation Conference: Conduct conference at Project site prior to shop drawing preparation to comply with requirements in Division 01 Section "Project Management and Coordination."

1. The following personnel are required to attend:
   a. Contractor's Project Manager
   b. Fabricator's Project Manager
   c. Detailer
   d. Erector's Foreman