

PROJECT: Portland Yacht  
SUBJ: New Yard  
ITEM: Legacy Bldg

GAGNON ENGINEERING, INC.  
Structural Consultants

DATE: 2/1/14  
BY: \_\_\_\_\_  
SHT: \_\_\_\_\_ of \_\_\_\_\_  
PROJ: \_\_\_\_\_

Bldg Fabrication  
Bolt Tension  
Seismic & Wind Categories

*PLD Yacht Legacy Bldg Fabrication*

International Accreditation Service

# CERTIFICATE OF ACCREDITATION

*This is to signify that*

**AMERICAN BUILDINGS COMPANY - ATLANTIC DIVISION**  
501 GOLDEN EAGLE DRIVE  
LA CROSSE, VIRGINIA 23950

Inspection Program for the Manufacture of Metal Building Systems MB-139  
Operating within the corporate umbrella of American Buildings Company

has demonstrated that its in-plant inspection program for Part A-Fabrication of Structural Weldments and Cold-formed Products Requiring Welding, Part B-Fabrication of Cold-formed Products Not Requiring Welding is in compliance with the International Accreditation Service, Inc., Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems (AC472) and is recognized under Section 1704.2.5.2 of the 2012 International Building Code®, and Section 1704.2.2 of earlier code editions, commencing January 14, 2013; expiring January 13, 2014.

Fabrication inspection procedures covered by this certificate are conducted in accordance with the fabricator's approved quality control manual. Periodic plant inspections are conducted by H. W. Lochner, Inc. (AA-586), at 501 Golden Eagle Drive, La Crosse, Virginia, to monitor the fabricator's quality management system verifying continual compliance with the requirements as listed in the above scope of accreditation. Accreditation is limited to the specified inspections related to the fabrication processes and procedures only. Accreditation does not cover the product, or the specific design or performance characteristics of fabricated products.



*Patrick V. McCullen*  
Patrick V. McCullen  
Vice President

*C.P. Raman*  
C. P. Raman, P.E.  
President

This accreditation certificate is valid only if the certificate holder complies with the conditions of accreditation. For more information, please visit our website at [www.iasinc.com](http://www.iasinc.com) or contact IAS directly at (562) 564-3800. Print Date: 02/19/2013



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## CONSTRUCTION OBSERVATION REPORT

**Project:** Portland Yacht Services  
**Client:** New Yard, LLC  
**Client's Rep.:** Phineas Sprague, Jr.

**SWCE Project No.:** 13-0912.1  
**Date:** 11-25-13  
**Weather:** Sunny, 20-30

**Work Performed by SWCE Rep.:** Performed bolt tension testing on several of the bolted slip critical connections.

**General Observations, Discussions, Etc:** In accordance with the requirements for special inspections associated with this project, we made a site visit to check in-situ bolt tension on a percentage of the slip critical connections where 1-inch diameter A325 bolts are utilized. A design tension value of 51-kips was provided to us by Dwayne Moench, P.E. (Legacy Building Solutions) which we understand is based on RCSC's table 8.1. We met on site with Nick (Legacy) and obtained one of the structural bolts which was set up in a bolt tension calibrator manufactured by Skidmore-Wilhelm. A series of trials on the Skidmore indicated that at 600 foot-pounds torque (wrench maximum without multiplier), bolt tension ranged from 42 to 48-kips. We understand from conversations with Nick that during erection, all bolts were torqued to 450 foot-pounds which based on the Skidmore values translate to 26 to 28-Kips. We performed a series of in-situ tension values within the capacity of our current equipment. At the five different connections we checked, tension values were found to vary from as little as 6-kips to greater than 45-kips. Based on our field work, it appears the bolts have not been sufficiently tensioned. Our findings were discussed in the field with Nick and we contacted Roger Gagnon, P.E. (special inspection coordinator) and recommended he follow up with Legacy's engineer.

**On Site:** 8-00 to 10:00  
**Attachments:** None  
**Sheet:** 1 of 1

**SWC Rep.:** K. Gimpel  
**Rev. by:** RED

P:\2013\13-0912.1 M - New Yard, LLC - Portland, ME - Portland Yacht Services - RED\Daily Field Reports - CORs\11-25-13 COR.doc

GRAY, ME OFFICE

286 Portland Road, Gray, ME 04039, Tel (207) 657-2866, Fax (207) 657-2840, (E) [infogray@swcole.com](mailto:infogray@swcole.com), (I) [www.swcole.com](http://www.swcole.com)

The SWCE field representative is on-site at the request of our client to provide construction materials testing and to observe and document construction activities. The contractor has sole responsibility for schedule, site safety, methods, completeness and quality of the work.



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## CONSTRUCTION OBSERVATION REPORT

**Project:** Portland Yacht Services  
**Client:** New Yard, LLC  
**Client's Rep.:** Phineas Sprague, Jr.

**SWCE Project No.:** 13-0912.1  
**Date:** 11-26-13 and 12-2-13  
**Weather:** Overcast, 30s

**Work Performed by SWCE Rep.:** Performed bolt tension testing on 10-percent of the bolted slip critical connections.

**General Observations, Discussions, Etc:** After discussing our 11-25-13 findings indicating insufficient tensioning of the A-325 bolts with Legacy Building Solutions, they opted to remove the nuts, apply thread lubricant and re-tension the bolts. We made a brief site visit on 11-26-13 to calibrate the torque wrench with the modified (lubricated) assembly. The results of several trials with the Skidmore, indicated 51 to 52-kips tension could consistently be achieved with 500 to 525 ft-lbs torque if the bolt threads were waxed to reduce friction. Our findings were verbally relayed to Legacy and they indicated rework would be complete and ready for testing on 12-2-13.

On 12-2-13, we returned to the site for in-situ testing on a percentage of the connections. Two of the intermediate splices in the rafter sections were checked and found to be between 525 and 550 ft-lbs. Two of the peak splices were also checked and found to be between 525 and 550 ft-lbs. At the peak connection, the uppermost bolt could not be accessed with a torque wrench; we understand that this bolt was hand tightened and we could not access to check tensioning. At the first haunch connection we checked, one of the bolts was loose (less than 350 ft-lbs) and after it was properly tensioned subsequent bolts in the same connection were found to have insufficient tension. Four out of five of the haunch connections we checked while on site were found to have at least one bolt that was insufficiently tensioned. We recommended that Legacy re-check all of the haunch connections.

**On Site:** 10:00 – 10:30 (11-26-13)  
8:30 - 10:00 (12-2-13)

**Attachments:** Photos

**Sheet:** 1 of 1

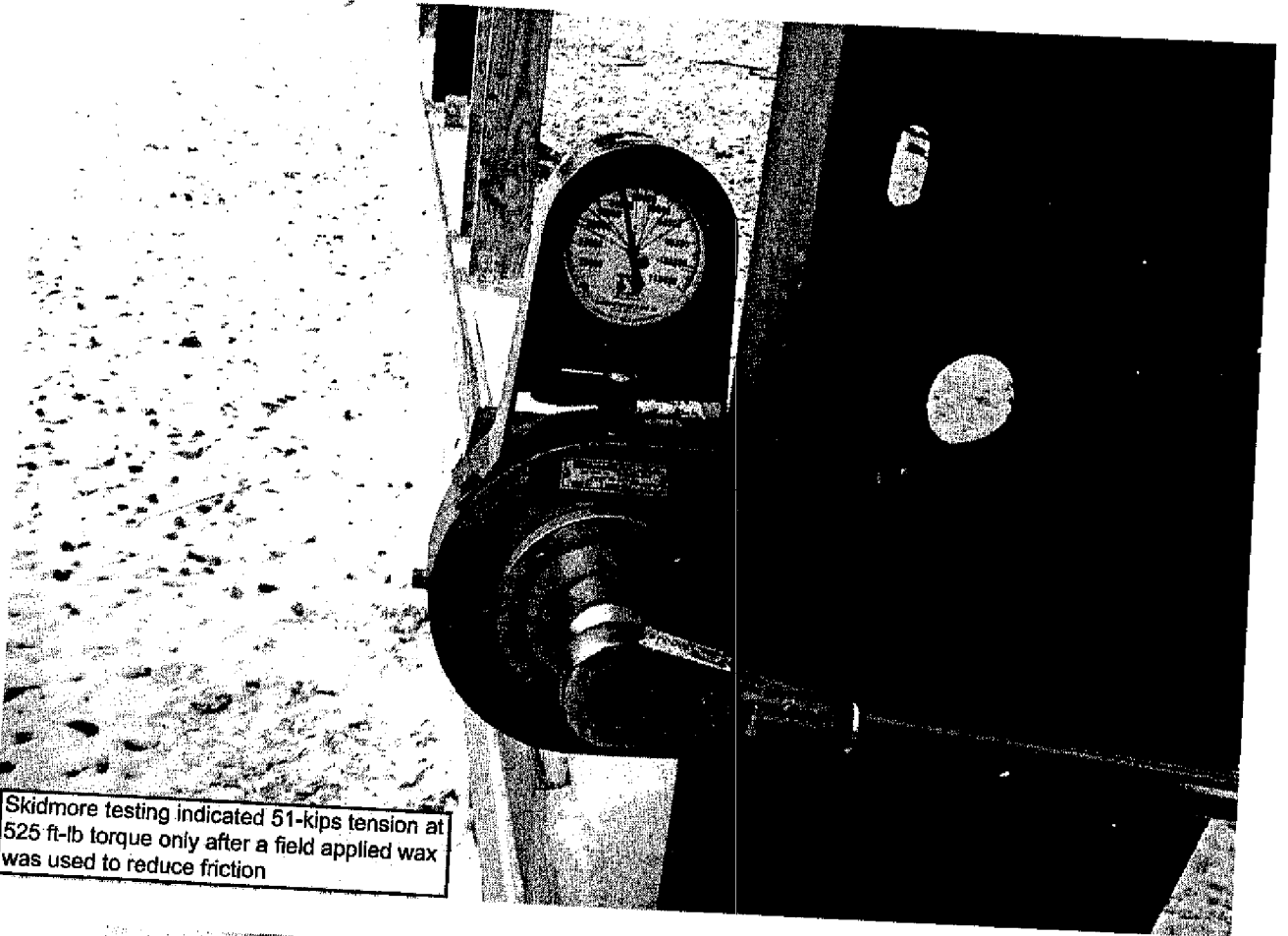
**SWC Rep.:** K. Gimpel  
**Rev. by:** RED

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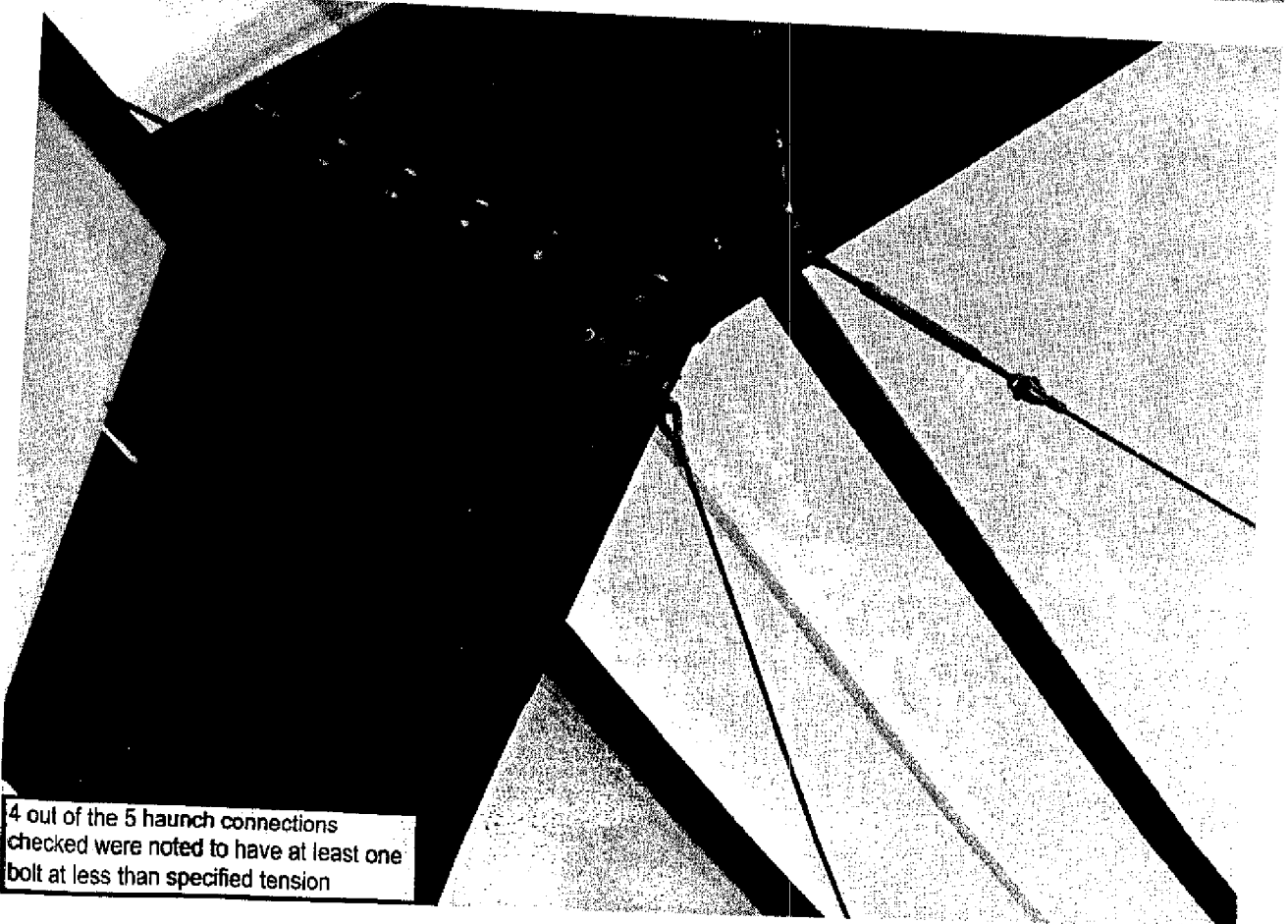
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286 Portland Road, Gray, ME 04039, Tel (207) 657-2866, Fax (207) 657-2840, (E) [info@swcole.com](mailto:info@swcole.com), (I) [www.swcole.com](http://www.swcole.com)

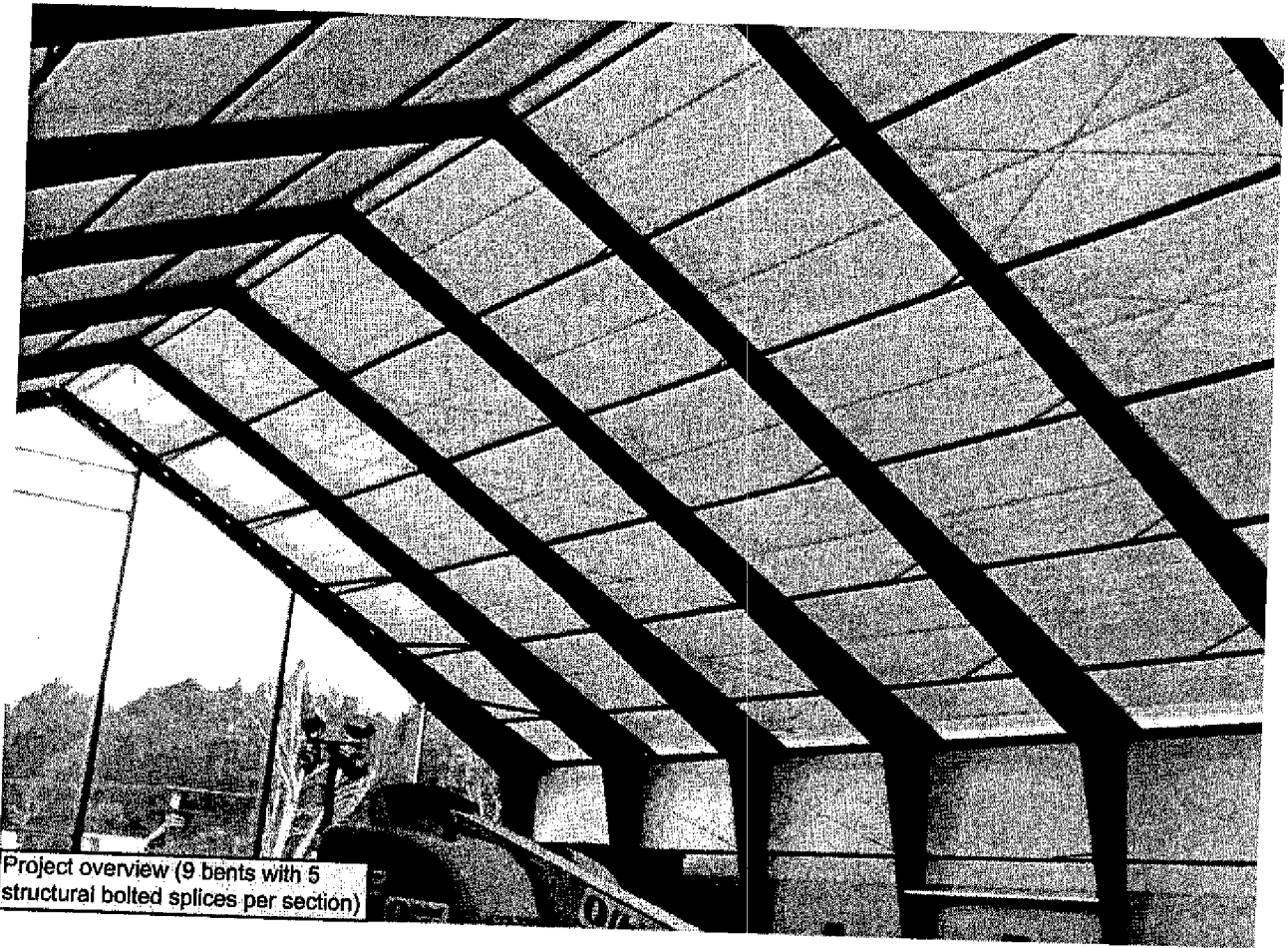
The SWCE field representative is on-site at the request of our client to provide construction materials testing and to observe and document construction activities. The contractor has sole responsibility for schedule, site safety, methods, completeness and quality of the work.



Skidmore testing indicated 51-kips tension at 525 ft-lb torque only after a field applied wax was used to reduce friction



4 out of the 5 haunch connections checked were noted to have at least one bolt at less than specified tension



Project overview (9 bents with 5 structural bolted splices per section)



2 out of 2 peak connections checked were found to be tensioned to specified 51-kips. (Note: A torque wrench does not fit on the top bolt - these bolts were hand tightened and tension could not be determined)

**Subject:** Re: FW: Bolt Inspection Letter

**From:** Roger Gagnon <roger@gagnonengineering.com>

**Date:** 12/3/2013 8:40 AM

**To:** Dwayne Moench <dmoench@legacybuildingsolutions.com>

**CC:** Tim Boyce <TBoyce@SWCole.com>, "Phineas Sprague, Jr."

<phin@portlandyacht.com>, Karl Gimpel <Karl.Gimpel@swcole.com>, Stephen Bushey <SBushey@fstinc.com>

Hi Dwayne

I have seen your 'Bolt-Torque' letter to Karl G. (S.W.Cole)

I understand that you are reducing bolt pre-tension requirements. Since this is a design/construction change; moreover, less than specified

Please provide rational, quantified, and/or code-based justification as appropriate for this reduction.

Call or email with questions or other

Thanks, Roger

GEI Tel: 207 839-8085

On 12/2/2013 11:15 AM, Tim Boyce wrote:

**Tim Boyce, P.E. | Senior Geotechnical Engineer**  
S. W. Cole Engineering Inc.  
286 Portland Road  
Gray, Maine 04039  
Phone: 207.657.2866  
Direct: 207.517.4869  
[www.swcole.com](http://www.swcole.com)

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**From:** Karl Gimpel

**Subject:** Re: FW: New yard steel special inspections  
**From:** Roger Gagnon <roger@gagnonengineering.com>  
**Date:** 11/25/2013 10:24 AM  
**To:** Dwayne Moench <dmoench@legacybuildingsolutions.com>  
**CC:** Tim Boyce <TBoyce@SWCole.com>, "Phineas Sprague, Jr." <phin@portlandyacht.com>, Stephen Bushey <SBushey@fstinc.com>

Hi Dwayne

I got a call from Carl G. (S.W.Cole), who is checking bolt tension in slip-critical joints (1" dia A325, Galvanized) for 'Special Inspections'

Carl reports the following issues/discrepancies

- a) He is not getting 52 kips tension (Skidmore) as a rule he can get 42 kips max
- b) There is a lot of variability/little consistency in measured tension (torque)

What do you propose to do?  
Response is relatively urgent.

Please call or email with questions or other

Thanks, Roger G.

GEI Tel: 207 839-8085

On 11/18/2013 1:44 PM, Dwayne Moench wrote:

Roger,

Here is the 'Certificate of Compliance'.

Dwayne

**From:** Roger Gagnon [<mailto:roger@gagnonengineering.com>]  
**Sent:** Friday, November 15, 2013 1:25 PM  
**To:** Dwayne Moench  
**Cc:** Stephen Bushey; Phineas Sprague, Jr.  
**Subject:** Re: New yard steel special inspections



Thanks Duane

On 11/15/2013 11:49 AM, Dwayne Moench wrote:

Roger,

Here is what is included with the steel special inspection sheets;

1. I have listed S.W. Cole as the bolt tightening special inspector, you will see them listed at the bottom of the first sheet.
2. I have also included the packing list sheets for the bolts purchased for this project. This should satisfy item one of the first sheet.
3. Item #7 will be performed by Legacy Building Solutions, as we are the erector and warranty our work are the best qualified to know if the primary and secondary members have been placed properly.
4. The second sheet that lists Fabrication and Implementation Procedures we have included the Certificate of Accreditation for American Buildings. They are currently looking for their standard Certificate of Compliance sheet and will get that to you if the accreditation sheet doesn't suffice for both items.

If you need any clarifications or more information please let me know as soon as possible.

Thanks,

Dwayne Moench, P.E., S.E., P. Eng.

Principal Structural Engineer

[dmoench@legacybuildingsolutions.com](mailto:dmoench@legacybuildingsolutions.com) | [www.LegacyBuildingSolutions.com](http://www.LegacyBuildingSolutions.com)

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**Subject:** Portland Yacht Legacy Building Bolt Tension (Inspection)

**From:** Roger Gagnon <roger@gagnonengineering.com>

**Date:** 11/25/2013 2:44 PM

**To:** Dwayne Moench <dmoench@legacybuildingsolutions.com>

**CC:** Tim Boyce <TBoyce@SWCole.com>, "Phineas Sprague, Jr." <phin@portlandyacht.com>, Stephen Bushey <SBushey@fstinc.com>

Hi Dwayne

The inspector is measuring bolt tension, which I understand (from you) is 51 kips.

Using a Skidmore, he is getting as-installed tension somewhat less than 51 kips.

As Engineer-of-Record; what do you want to do?

I have thoughts, but more questions

Please call me to discuss

Thanks, Roger

GE Tel: 207 839-8085

**Subject:** Re: New yard steel special inspections  
**From:** Roger Gagnon <roger@gagnonengineering.com>  
**Date:** 11/15/2013 2:25 PM  
**To:** Dwayne Moench <dmoench@legacybuildingsolutions.com>  
**CC:** Stephen Bushey <SBushey@fstinc.com>, "Phineas Sprague, Jr." <phin@portlandyacht.com>

Thanks Duane

On 11/15/2013 11:49 AM, Dwayne Moench wrote:

Roger,

Here is what is included with the steel special inspection sheets;

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If you need any clarifications or more information please let me know as soon as possible.

Thanks,

Dwayne Moench, P.E., S.E., P. Eng.

Principal Structural Engineer

[dmoench@legacybuildingsolutions.com](mailto:dmoench@legacybuildingsolutions.com) | [www.LegacyBuildingSolutions.com](http://www.LegacyBuildingSolutions.com)

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**Subject:** Portland Yacht Legacy Building - Seismic Resistance and...

**From:** Roger Gagnon <roger@gagnonengineering.com>

**Date:** 11/15/2013 3:51 AM

**To:** Sterling Mumaw <smumaw@legacybuildingsolutions.com>, Stephen Bushey <SBushey@fstinc.com>

**CC:** "Phineas Sprague, Jr." <phin@portlandyacht.com>

Hi Sterling

1. Please complete attached 'Seismic Resistance - Structural' (for structural steel)
2. Please email me final/certified design calculations (note: make sure dark enough to print, previous calculations were too light to print)

Please call or email with questions or other

Thanks, Roger

GEI Tel: 207 839-8085

Attachments:

special inspections seismic 111513.pdf

180 KB

**Subject:** Portland Yacht Legacy Building - IBC Special Inspections - Steel  
**From:** Roger Gagnon <roger@gagnonengineering.com>  
**Date:** 11/15/2013 3:28 AM  
**To:** Sterling Mumaw <smumaw@legacybuildingsolutions.com>  
**CC:** "Phineas Sprague, Jr." <phin@portlandyacht.com>, Stephen Bushey <SBushey@fstinc.com>, bobflight@ramislandgroup.com, Tim Boyce <TBoyce@SWCole.com>

Hi Sterling

Please see attached

Who is your inspector for structural steel?  
(name, contact information, coordinator)

This needs to be documented  
before steel work begins

Please call or email with questions  
or other

Thanks, Roger Gagnon, P.E.  
(Special Inspections Coordinator)

GEI Tel: 207 839-8085

Attachments:

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special inspections steel 111513.pdf

396 KB

**Subject:** Legacy Building IBC Special Inspections  
**From:** Roger Gagnon <roger@gagnonengineering.com>  
**Date:** 10/29/2013 3:35 PM  
**To:** Sterling Mumaw <smumaw@legacybuildingsolutions.com>  
**CC:** bobflight@ramislandgroup.com, "Phineas Sprague, Jr." <phin@portlandyacht.com>

Hi Sterling

Portland requires compliance  
with IBC Special Inspections (chap 17)  
for steel construction (see attached).

I assume Legacy will (oer can) provide  
needed inspections & certifications...

No matter who does this, I need  
to inform the city specifically  
who, contact information...

Please let me know how we can  
best meet this requirement

Thanks, Roger

GEI Tel: 207 839-8085

Attachments:

portland yacht legacy building inspections 102913.pdf

555 KB