SHEPPARD ENGINEERING, P.C.

1333 ROCHESTER ROAD TROY, MI 48083-6015 PH. (248) 585-4240 FAX: (248) 585-7371

April 6, 2015

Mr. Michael Fink
I3 Detroit
1481A Wordsworth
Ferndale, MI 48220

Re: I3 Detroit
1481A Wordsworth
Ferndale, MI 48220
SEPC Job No. 15-053-A

Dear Mr. ~~Stickler,~~

At your request, I met you at the above referenced project on March 26th, 2015, to inspect a sag in a portion of the ceiling in the classroom as well as step cracks in the concrete masonry wall above. The area of sag is located where a wall had been previously removed. At the time of the inspection, two access holes were cut in the gypsum ceiling of the classroom to determine the framing above. It was determined that a steel lintel exists parallel to the wall that had been removed, offset 1'-4" toward the offices. One end of the lintel was found to be inadequately supported by 2x6 ceiling joists supported by interior bearing walls, one of which was the wall recently removed. It was indicated at the time of the inspection that the end of this lintel be temporarily shored immediately.

We designed a new column and footing to support the lintel near its inadequately supported end. The column will be offset approximately 2' from the end of the lintel to align with the entry hallway/office wall. A new lintel has also been designed to span from the end of the existing lintel to the CMU wall to support the 2'-8" portion of CMU wall above that currently does not have an adequate support in place. The existing lintel shall be slowly jacked back up to its original position before the new column is installed. See the attached sketches for the repair design.

A list of questions was presented at the inspection. Here are the responses:

1. *Was the demolished wall load bearing?*
   Yes. It was supporting the end of the masonry lintel adjacent to it.
2. *Is the wall on the other side of the hallway load bearing?*
   Yes. It too supported the end of the masonry lintel. After the new column is installed, this wall will only support a portion of ceiling.
3. *Are the cracks in the cinder block wall above the hallway a concern?*
   Yes. The crack should close significantly as the existing steel lintel is jacked up. The masonry cracks should be tuck pointed after the repairs are complete.
4. *What sort of support is needed across the newly opened span, and does its current support suffice?*

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The current support (2-2x6 beam) does not suffice for the lintel support or to support the 2x ceiling joists over the hallway. After the new column is installed, the 2x6 beam and the 2x ceiling joists shall be completely removed. Gypsum can be attached directly to the underside of the mezzanine joists for the classroom ceiling. New 2x4 joists may need to be installed from the bottom plate of the steel lintel to the office wall to flush out with the remainder of the classroom ceiling.

5. *Does the 4-inch beam suggested by the contractor provide the required support, with no support columns between the ends?*
   No, it would not. Follow the prescribed repairs outlined in this letter and the sketches provided.
6. *Where should such a beam be situated?*
   A beam will not be installed as suggested here as it would not be an adequate repair. Follow the prescribed repairs outlined in this letter and the sketches provided.
7. *If the beam were positioned in the center of the hallway, directly under the block wall, would it mean that none of the hallway walls are structurally significant anymore?*
   A beam will not be installed as suggested here. Follow the prescribed repairs outlined in this letter and the sketches provided. The office wall will be supporting only a portion of ceiling load after the repairs are complete.
8. *What sort of support is required to hold up the end of the beam?*
   A beam will not be installed as suggested here. The supports necessary to support the existing lintel and the new lintel have been provided. See the attached sketches.
9. *How much load can the "loft" area above the classroom safely support?*
   The existing mezzanine framing is 2x8 joists at 16" o.c. These joists can support a live load of 25 pounds per square foot (psf). The current building code design live load for light storage is 125 psf which is significantly higher than the capacity of this storage mezzanine.
10. *Based on the current state of the front rooms, what is their construction history?*
    Without a thorough inspection of all of the framing in this area, it is not possible to conclude an accurate construction history.

Attached are sketches of the repair design including a partial first floor plan and connection detail. Also included are specifications for the prescribed repair. If you have any questions or need any additional information, please contact this office.

Sincerely,

John J. Gruber, Ph.D., P.E., S.E.
Sheppard Engineering, P.C.

Job No. 15-053-A
Sht. 1 Spec

SHEPPARD ENGINEERING, P.C.
1333 ROCHESTER ROAD
TROY, MICHIGAN 48083
PHONE: (248) 585-4240
FAX: (248) 585-7371

Date: 4/6/2015
By: RR
Chk: JG

STRUCTURAL SPECIFICATIONS:

CONCRETE SPECIFICATIONS:

1. Concrete work shall conform to the requirements of ACI 318-11, "Building Code Requirements for Structural Concrete", except as modified by supplemental requirements.

2. Concrete shall have a minimum of 3000 PSI, 28 day compressive strength, unless noted otherwise (u.n.o.), (517 lbs. of cement per cubic yard minimum (5.5 sacks) & a water/cement ratio not to exceed 6 gallons per sack). Exterior concrete slabs shall have a minimum of 4500 PSI, 28 day compressive strength, and 4% air entrainment.

3. The use of additives such as Fly Ash or Calcium Chloride is not allowed without prior review from the Engineer.

4. The concrete contractor shall submit the design mix of each type for review by the Engineer and Architect prior to placement.

REINFORCING STEEL SPECIFICATIONS:

1. Reinforcing bars, dowels, and ties shall conform to ASTM-615 GRADE 60 requirements and shall be free of rust, dirt and mud.

2. Welded wire fabric shall conform to ASTM A-1064 and be positioned at the mid height of slabs, u.n.o.

3. Reinforcing shall be placed and securely tied in place sufficiently ahead of placing of concrete to allow inspection and correction, if necessary, without delaying the concrete placement.

4. Extend reinforcing bars a minimum of 36" around corners and lap bars at splices a minimum of 24", u.n.o.

5. Welding of reinforcing steel is not allowed.

SOIL BEARING REQUIREMENTS:

1. All top soil, organic and vegetative material should be removed prior to construction. Any required fill shall be clean, granular material compacted to at least 95% of maximum dry density as determined by ASTM D-1557.

3. Foundations bearing on existing soils are designed for a minimum allowable soil bearing capacity of 1500 PSF, u.n.o.

4. Notify the Engineer/Architect if the allowable soil bearing capacity is less than 1500 PSF so that the foundations can be redesigned for the new allowable bearing capacity.

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STRUCTURAL STEEL SPECIFICATIONS:

1. Structural steel shapes, plates, bars, etc. are to be ASTM A-36, except wide flange shapes shall be ASTM A-992, Grade 50 (unless noted otherwise) designed and constructed per the ANSI/AISC 360-10 "Specifications for Structural Steel Buildings", and the 14th edition of the AISC "Steel Construction Manual".

2. Steel pipe columns shall be ASTM A-53, Grade B, Fy=35 ksi. Structural tubing shall be ASTM A500, Grade B, Fy=46 ksi.

3. Welded connections shall conform to the AWS D1.1-10 "Structural Welding Code - Steel", and shall utilize E70XX electrodes unless noted otherwise.

4. Bolted connections shall utilize ASTM A-325 bolts tightened to a "snug tight" condition (unless noted otherwise). Embedded anchor bolts shall be F1554, Grade 36, unless noted otherwise.

5. The steel erector is solely responsible for the design and installation of temporary guys, braces, falsework, cribbing and other elements required for the safe and proper installation of all building elements until the structure is permanently braced. The fabricator and erector shall perform all work in accordance with OSHA requirements.

6. The Design Engineer is not responsible for job site safety or other job site conditions.

7. Verify existing dimensions and conditions in field prior to construction.

MASONRY SPECIFICATIONS:

1. The design shown on the drawings is based on limited observations of the existing structure. The conditions of the existing masonry are unknown. If damage to the masonry is discovered during demolition, contact Sheppard Engineering, P.C. for further direction before altering structure.

2. Masonry work shall be in accordance with ACI 530-11, "Building Code Requirements for Masonry Structures", and ACI 530.1-11, "Specifications for Masonry Structures." Concrete masonry units shall conform to ASTM C-90, Grade N, Type I for hollow concrete masonry units, and ASTM C-145, Grade N, Type I for solid concrete masonry units. Brick shall meet the latest revisions of ASTM C-216, Grade SW.

3. Concrete masonry units shall have a minimum net area compressive strength of 1900 PSI.

4. Mortar shall conform to ASTM C-270, Type M or S, minimum compressive strength f'c=1800 PSI at 28 days.

5. Grout shall conform to ASTM C-476 with a minimum compressive strength of 2000 PSI.

6. The masonry contractor is solely responsible for the design and installation of temporary shoring and falsework required to withstand wind loads and temporary construction loads. Work performed shall be in accordance with OSHA requirements.

7. Steel beams bearing on masonry walls shall have a 7 1/2" x 7 1/2" x 3/8" bearing plate with two 1/2" diameter x 6" long headed studs, u.n.o. The top three courses of block below the bearing shall be grouted solid. Steel lintels supporting masonry from the bottom flange shall have a continuous 5/16" steel plate welded to the bottom flange as required.

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TEMPORARY CONSTRUCTION SHORING:

1. Sheppard Engineering, P.C. assumes no responsibility for the design or proper installation of temporary building bracing and shoring or the means and methods required to complete this project. The contractor and his engineer are responsible for the design and proper installation of both temporary shoring and bracing required for a safe and structurally sound project. The structural members indicated on these drawings are not self-bracing and shall be considered unstable until attached to the completed structure as indicated by these drawings and specifications. The contractor is responsible for all damages incurred due to improper shoring or bracing during the construction project. Acceptance of the construction project by the contractor is proof of acceptance of the above mentioned items.

Job No. 15-053-A
Sht. A

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PHONE: (248) 585-4240
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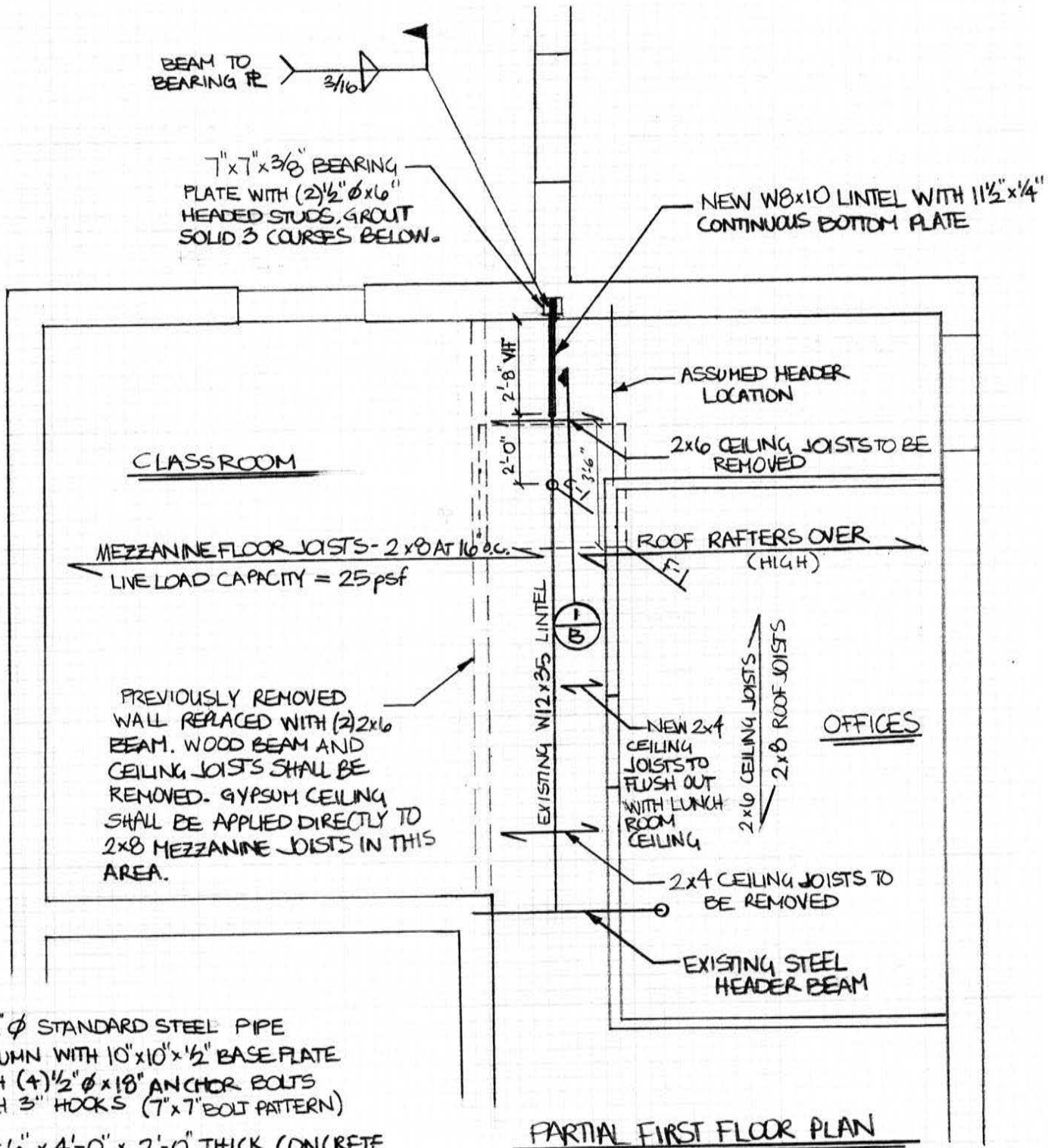
Date: 4/6/15
By: RR
Chk: JC



C-1: 3 1/2" Ø STANDARD STEEL PIPE COLUMN WITH 10"x10"x1/2" BASE PLATE WITH (4)1/2"Øx18" ANCHOR BOLTS WITH 3" HOOKS (7"x7" BOLT PATTERN)

F-1: 3'-6" x 4'-0" x 2'-0" THICK CONCRETE FOOTING WITH (5) #6 BARS EACH WAY AT BOTTOM (4" OF COVER REQUIRED)
TOP OF FOOTING IS 8" BELOW FINISHED FLOOR.

PARTIAL FIRST FLOOR PLAN

1/4"=1'-0"

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Sht. B

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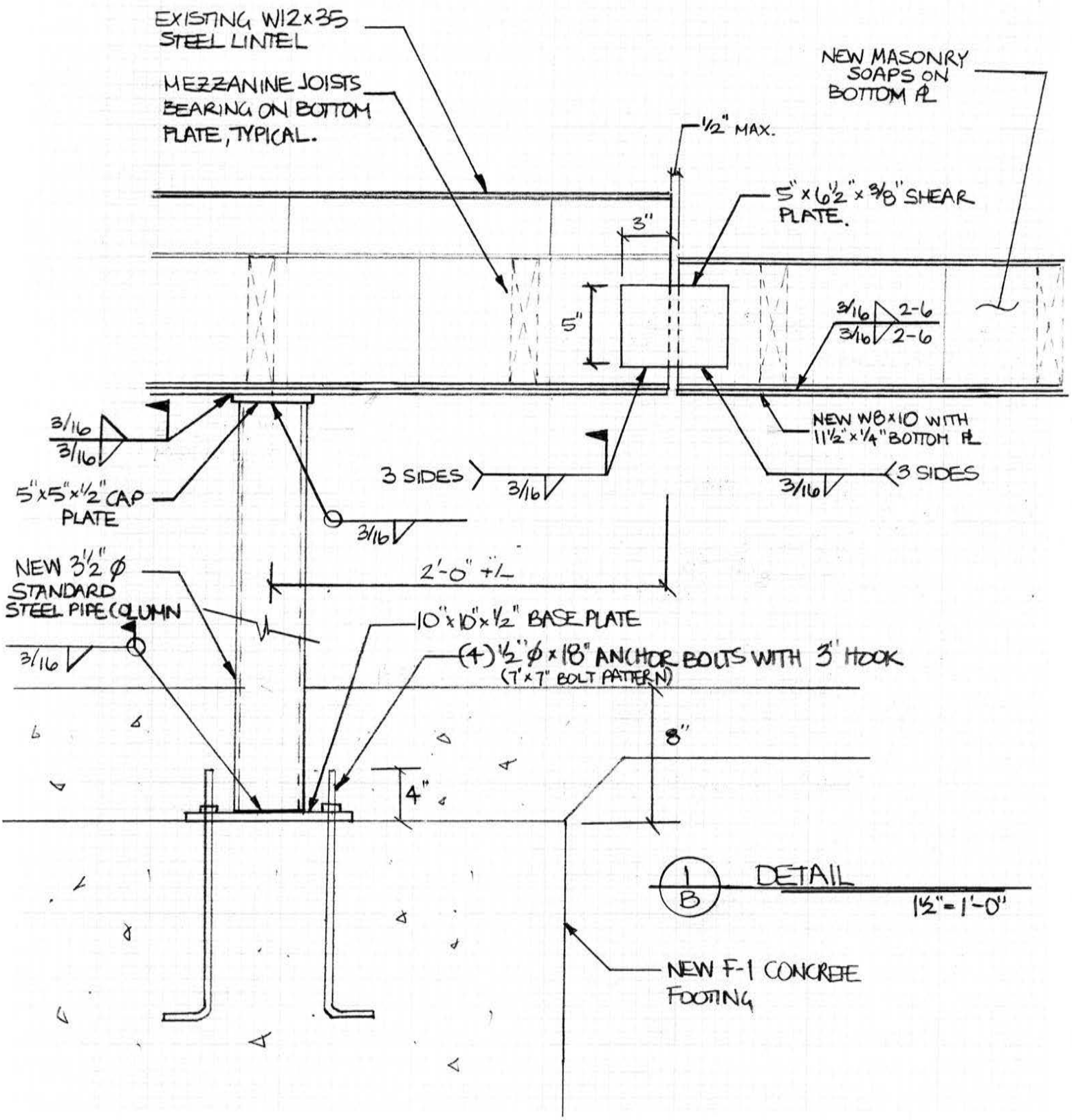
Date: 4/6/15

By: RR

Chk: JG



SHEPPARD ENGINEERING, P.C.
1333 Rochester Road
Troy, MI 48083-6015
Ph: 248-585-4240
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Agreement for the Provision of Limited Professional Services

Client:	**Date: 4/8/15**
I3 Detroit **1481A Wordworth** **Ferndale, MI 48220** **Phone: 440-915-8028 (Mike Fink)** **Fax:**	**Project Location/Name:** **I3 Detroit** **1481A Wordsworth** **Ferndale, MI**

Scope of Services:

Inspect new beam where wall was recently removed and wall cracks above to determine if the existing support is sufficient and, if not, design a repair. This includes the inspection, design, sketches, and a letter summarizing our findings.

ENGINEERING FEES:

Hourly Fee: $120.00/hour (approximately 8 hours total)

FEE PAYMENT TERMS:

Balance due upon completion, COD at this office.

Sheppard Engineering shall provide the above mentioned services for the amount and payment terms stipulated. Additional work or project revisions requested by the client shall be at additional cost to the client.

Authorizing Sheppard Engineering Agent: _____ **Date: 4/8/15**
John Gruber, P.E.

AGREED and ACCEPTED BY:

The scope of work, fees, payment terms, and the Terms and Conditions listed on Page 2 of 2 of this agreement are satisfactory and are hereby accepted:

Signed: _____ **of** _____ **Date:** 4/17/15

Print: Michael Fink

Terms and Conditions

Structural Engineer (SE) shall perform the services outlined in this Agreement for the stated fee arrangement.

Fee
The total fee, except stated lump sum, shall be understood to be an estimate, based upon Scope of Services. Where the fee arrangement is to be on an hourly basis, the rates shall be those that prevail at the time services are rendered.

Billings/Payments
Invoices will be submitted monthly, unless otherwise noted, for services and reimbursable expenses and are due when rendered. Invoices shall be considered PAST DUE if not paid within 30 days after the invoice date and the SE may, without waiving any claim or right against Client, and without liability whatsoever to the Client, terminate the performance of the service. Retainers shall be credited on the final invoice. A service charge will be charged at 1.5% (or the legal rate) per month on the unpaid balance. In the event any portion of an account remains unpaid 90 days after billing, the Client shall pay cost of collection, including reasonable attorneys' fees.

Access To Site
Unless otherwise stated, the SE will have access to the site for activities necessary for the performance of the services. The SE will take precautions to minimize damage due to these activities, but has not included in the fee the cost of restoration of any resulting damage

Hidden Conditions and Hazardous Materials
A structural condition is hidden if it is concealed by an existing finish or if it cannot be investigated by reasonable visual observation. If the SE has reason to believe that a condition may exist, the SE shall notify the Client who shall authorize and pay for all costs associated with the investigation of such a condition and, if necessary, all costs necessary to correct said condition. If (1) the Client fails to authorize such investigation or correction after due notification, or (2) the SE has no reason to believe that such a condition exists, the Client is responsible for all risks associated with this condition, and the SE shall not be responsible for the existing condition nor any resulting damages to persons or property. SE shall have no responsibility for the discovery, presence, handling, removal, disposal or exposure of persons to hazardous materials of any form.

Indemnification
The Client shall indemnify and hold harmless the SE and all of its personnel from and against any and all claims, damages, losses and expenses (including attorneys fees) arising out of or resulting from the project and/or the performance of the services, regardless of whether such claims, damage, loss or expense is caused in part by the SE or anyone for whose acts the SE may be liable. This indemnification shall include any claim, damage or loss due to the presence of hazardous materials. The indemnification obligations do not apply to any claims the client may have against the SE.

Limitation of Liability
In recognition of the relative risks, rewards and benefits of the project to both the Client and the SE, the risks have been allocated so that the Client agrees that, to the fullest extent permitted by law, the SE's total liability to the Client, for any and all injuries, claims, losses, expenses, damages or claim expenses arising out of this agreement, from any cause or causes shall not exceed the total amount of $5,000 or the amount of the SE's fee (whichever is greater). Such causes include, but are not limited to, claims against the SE for negligence, malpractice, errors, omissions, strict liability, breach of agreement or breach of warranty.

Statute of Limitation
The Client agrees that the applicable statute of limitations for any and all causes of action against the SE shall be two (2) years. Causes of action shall be deemed to have accrued and the applicable statute of limitations shall commence to run on the date that the SE last provides service to the Client as to the matters out of which the cause of action arose. However, causes of action that are incapable of discovery during the two (2) year statute of limitations period shall be brought within six (6) months of discovery. Under no circumstances shall any cause of action which could not be discovered during the two (2) year statute of limitations period be brought beyond six (6) years from the date of the SE's last service to the Client as to the matter out of which the cause of action arose.

Termination of Services
This Agreement may be terminated upon 10 days written notice by either party should the other fail to perform their obligations hereunder. In the event of termination, the Client shall pay the SE for all services rendered to the date of termination, all reimbursable expenses, and reasonable termination expenses.

Ownership of Documents
All documents produced by the SE under this Agreement shall remain the property of the SE, including all copyright interests, and may not be used by the Client for any other endeavor without the written consent of the SE. The client shall have a nonexclusive license to use the documents for this project only, so long as the client is not in breach of any terms of this agreement.

Dispute Resolution
Any claim or dispute the Client and the SE shall be submitted to non-binding mediation, with the parties selecting the mediator.

Governing Law
This agreement shall be governed by the laws of the State of Michigan.