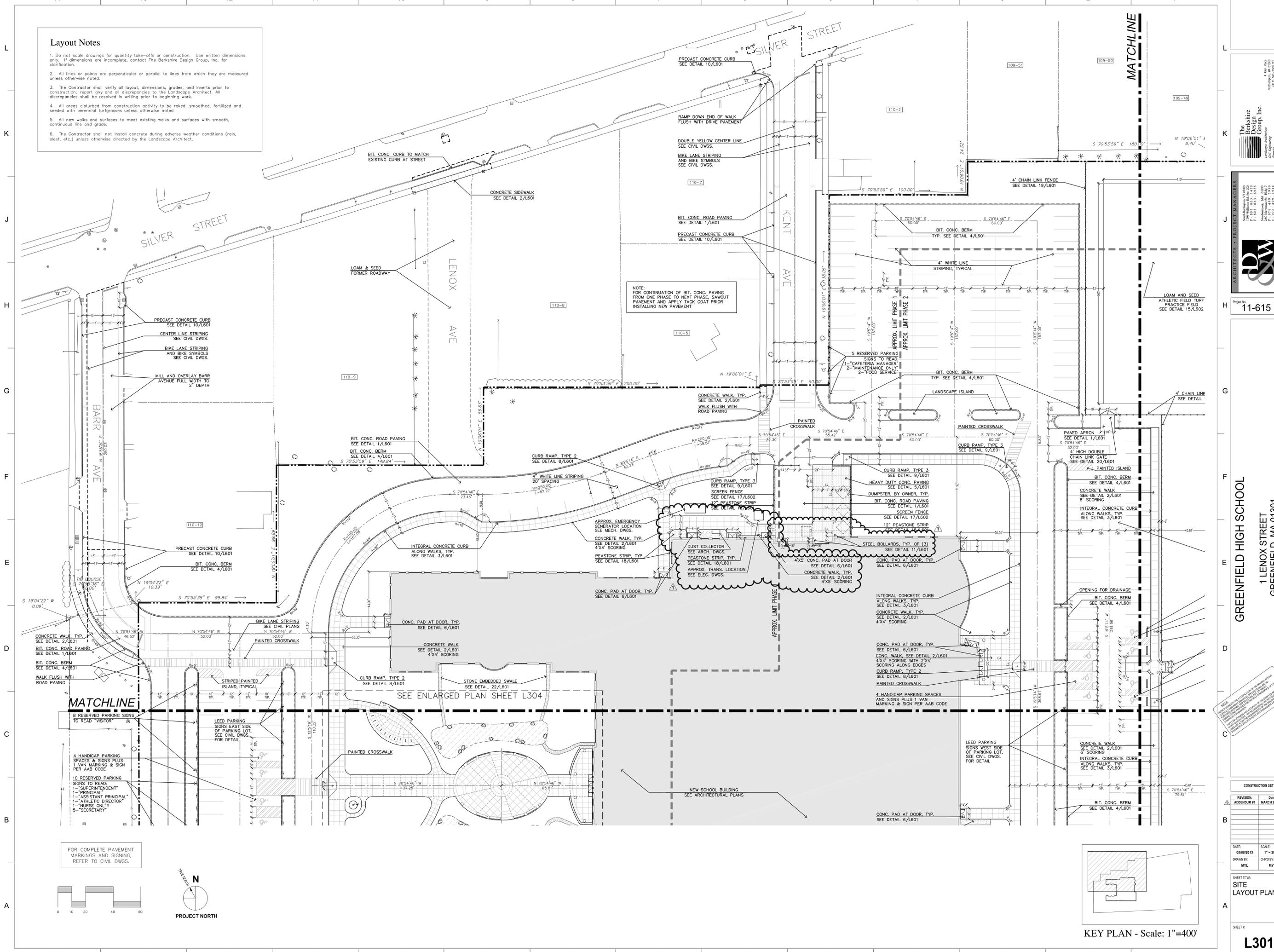


Attachment C
Aerial View of High School



Layout Notes

1. Do not scale drawings for quantity take-offs or construction. Use written dimensions only. If dimensions are incomplete, contact The Berkshire Design Group, Inc. for clarification.
2. All lines or points are perpendicular or parallel to lines from which they are measured unless otherwise noted.
3. The Contractor shall verify all layout, dimensions, grades, and inverts prior to construction; report any and all discrepancies to the Landscape Architect. All discrepancies shall be resolved in writing prior to beginning work.
4. All areas disturbed from construction activity to be raked, smoothed, fertilized and seeded with perennial turfgrasses unless otherwise noted.
5. All new walks and surfaces to meet existing walks and surfaces with smooth, continuous line and grade.
6. The Contractor shall not install concrete during adverse weather conditions (rain, sleet, etc.) unless otherwise directed by the Landscape Architect.



FOR COMPLETE PAVEMENT MARKINGS AND SIGNING, REFER TO CIVIL DWGS.



KEY PLAN - Scale: 1"=400'

The Berkshire Design Group, Inc.
 100 West Street
 Northampton, MA 01060
 Tel: 413-261-2000
 Fax: 413-261-2001

ARCHITECTS - PROJECT MANAGERS
D&W
 100 West Street
 Northampton, MA 01060
 Tel: 413-261-2000
 Fax: 413-261-2001

Project No: 11-615

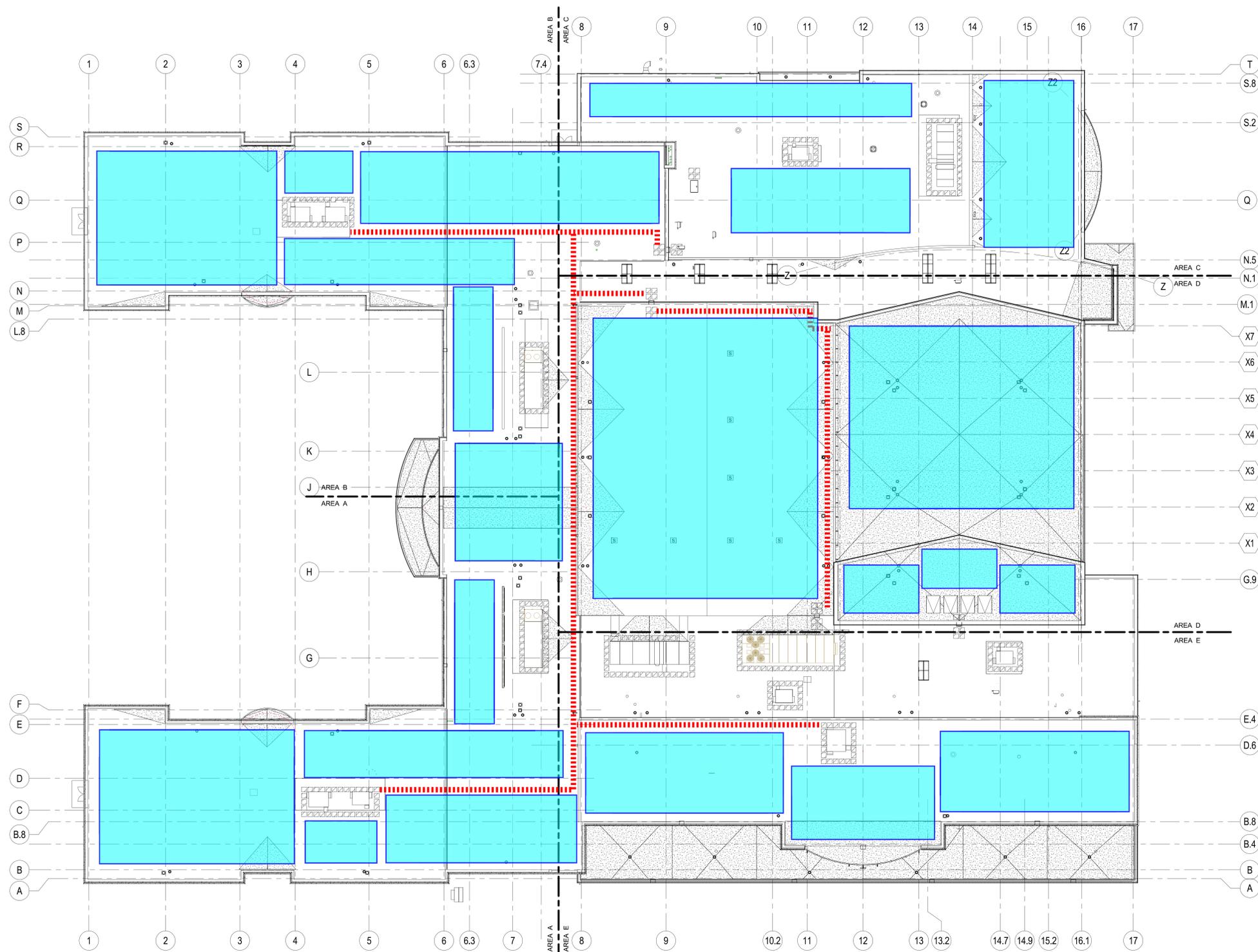
GREENFIELD HIGH SCHOOL
 1 LENOX STREET
 GREENFIELD, MA 01301

| CONSTRUCTION SET | |
|------------------|----------------|
| REVISION: | Date: |
| ADDENDUM #1 | MARCH 20, 2013 |

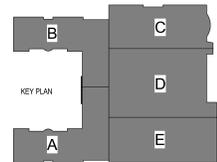
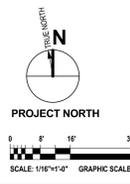
| | | | |
|-----------|------------|----------|-------------|
| DATE: | 05/08/2013 | SCALE: | 1" = 20'-0" |
| DRAWN BY: | MYL | CHKD BY: | MYL |

SHEET TITLE:
SITE LAYOUT PLAN

SHEET #
L301



IDEALIZED LOCATIONS OF SOLAR PV ARRAYS - CONFIRM ACTUAL CONDITIONS ON ROOF, SHADING, MECHANICAL EQUIPMENT LOCATIONS, ETC.



ARCHITECTS • PROJECT MANAGERS

DW

DESIGNWORK ARCHITECTS, INC.

1000 Main Street, 2nd Floor
 Northampton, MA 01060
 Tel: 413-542-4444
 Fax: 413-542-4445
 www.designwork.com

Project No: **11-615**

GREENFIELD HIGH SCHOOL
 1 LENOX AVENUE
 GREENFIELD, MA 01301

CONSTRUCTION SET

| REVISION: | Date: |
|-----------|-------|
| | |
| | |
| | |
| | |
| | |

| | |
|------------------|----------------------|
| DATE: 5/8/2013 | SCALE: 1/16" = 1'-0" |
| DRAWN BY: BN/AJC | CHKD BY: TPM |

SHEET TITLE:
OVERALL ROOF PLAN

SHEET #:
A3.10

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C:\Users\bnaj\Documents\11-615 - Greenfield High School_Arch.rvt

5/8/2013 10:39:56 AM

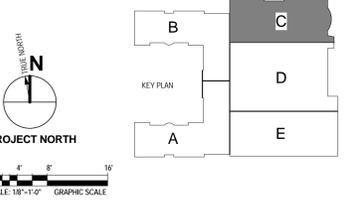
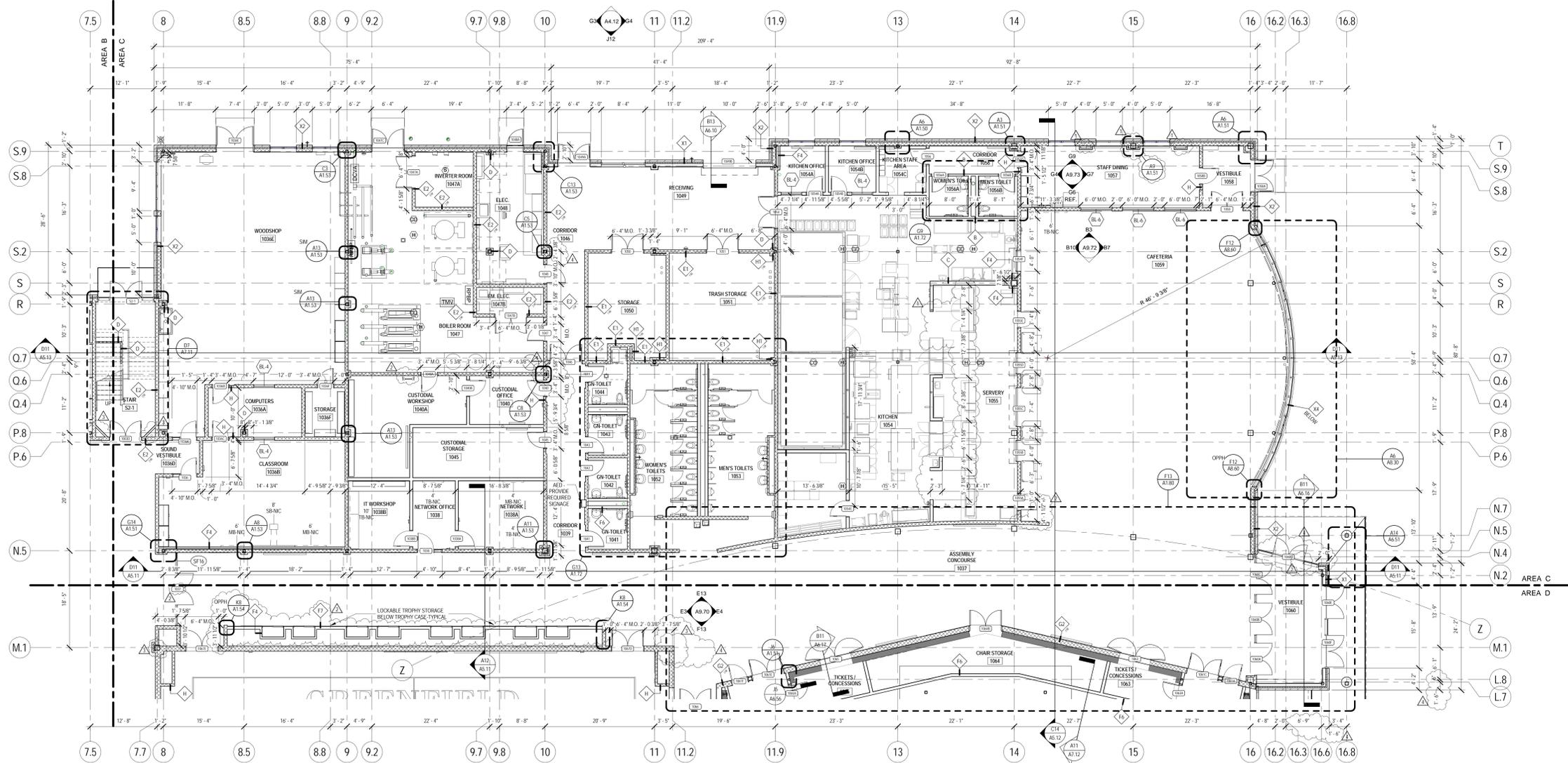
PLAN GENERAL NOTES

1. ALL INTERIOR BLOCK PARTITIONS ARE TYPE "1" UNLESS NOTED OTHERWISE. ALL INTERIOR STUD PARTITIONS ARE TYPE "1C" UNLESS NOTED OTHERWISE.
2. WHERE DOORS, WINDOWS, BORROWED LITES, GRILLES, OR OPENINGS OCCUR IT SHALL BE ASSUMED THAT THE WALL CONSTRUCTION IS THE SAME ABOVE AS ADJACENT, UNLESS NOTED OTHERWISE.
3. WHERE COLUMN LINES ARE SHOWN INSIDE WALLS AND PARALLEL TO THE WALL, IT SHALL BE ASSUMED THAT THE WALL IS CENTERED ON THE COLUMN LINE UNLESS DIMENSIONED OTHERWISE.
4. COORDINATE WITH STRUCTURAL DRAWINGS FOR SHEAR WALL CONSTRUCTION.
5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF EXISTING CONDITIONS IN THE FIELD.
6. WHERE ENLARGED PLANS ARE INDICATED, REFER TO ENLARGED PLAN SHEET FOR DIMENSIONS, WALL TYPES, AND DETAIL REFERENCES.
7. REFER TO HORIZONTAL CONTROL PLANS AND STRUCTURAL DRAWINGS FOR SLAB INFORMATION (INCLUDING DEPRESSIONS, EDGE DIMENSIONS, AND SHAFT OPENINGS).



Project No: **11-615**

GREENFIELD HIGH SCHOOL
1 LENOX AVENUE
GREENFIELD, MA 01301



NOTES:
1. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
2. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
4. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
5. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
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8. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
9. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
10. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.

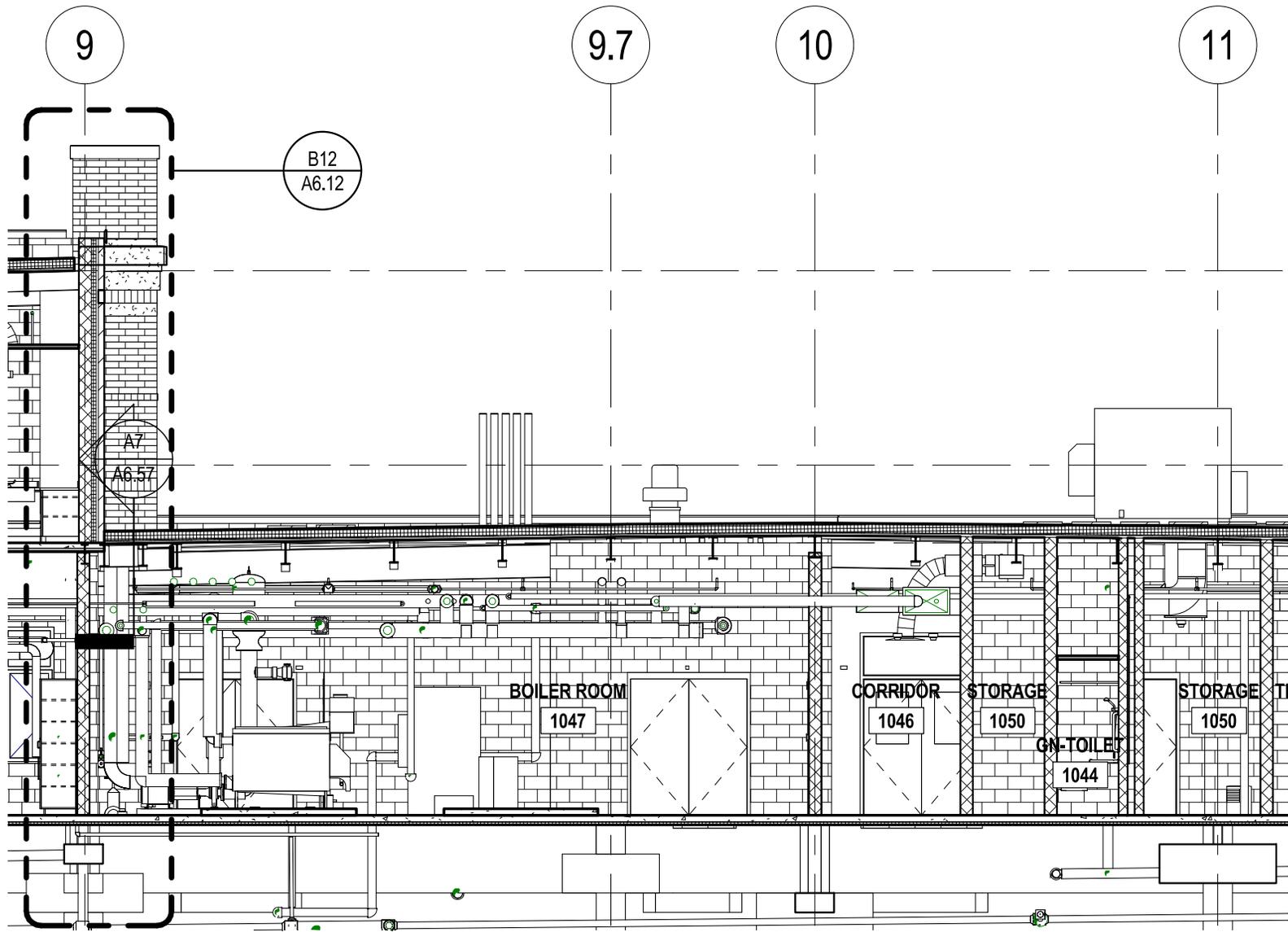
CONSTRUCTION SET

| REVISION: | Date: |
|-------------|------------|
| ADDENDUM #1 | 03/20/2013 |
| ADDENDUM #2 | 03/27/2013 |
| ADDENDUM #3 | 04/03/2013 |
| ADDENDUM #4 | 04/17/2013 |

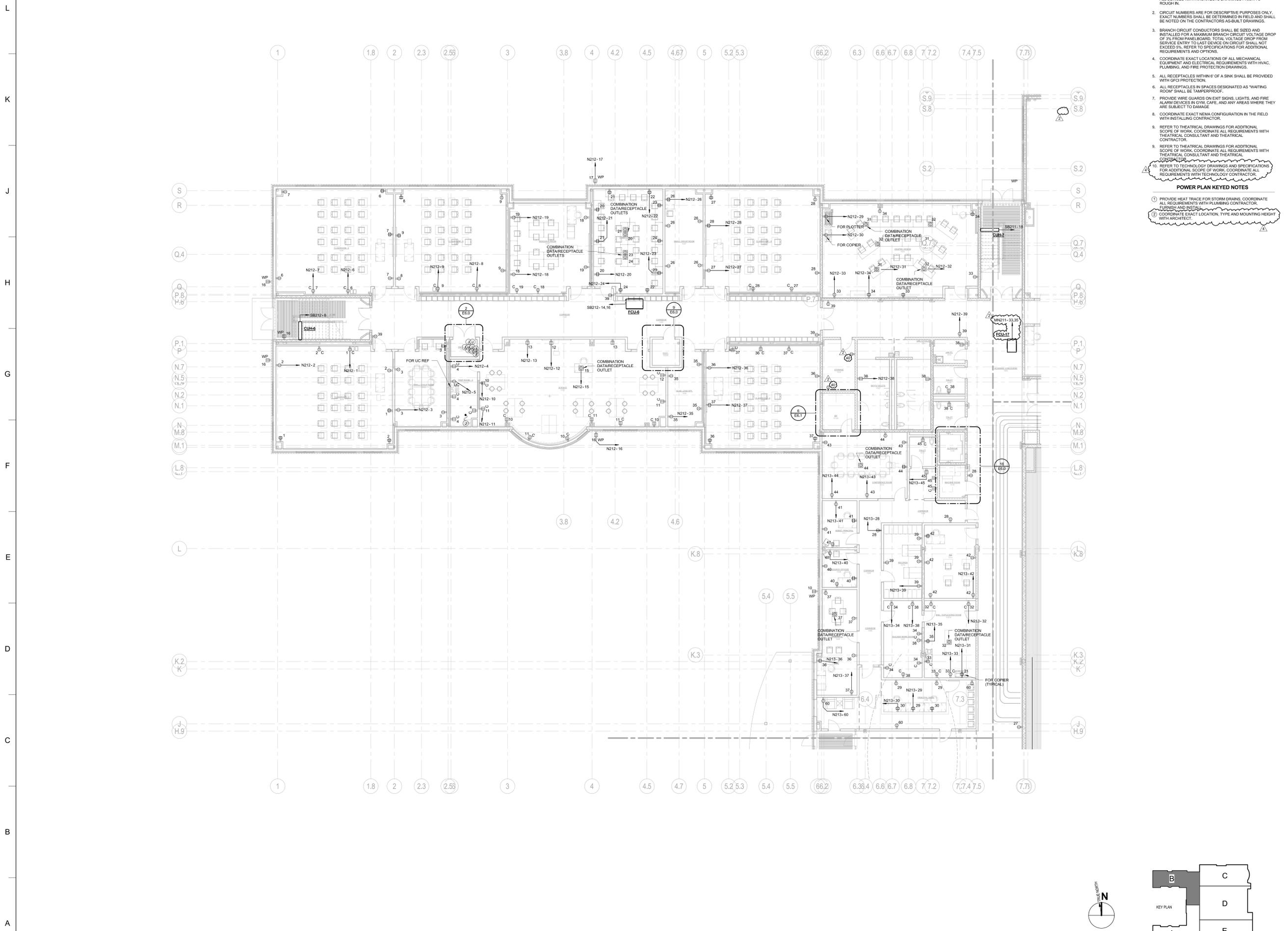
DATE: 5/8/2013 SCALE: 1/8" = 1'-0"
DRAWN BY: MJW CHKD BY: TPM

SHEET TITLE: **FLOOR PLAN - LEVEL 1 - AREA C**

SHEET #: **A1.13**



**GREENFIELD HIGH SCHOOL
BUILDING SECTION AT BOILER ROOM - SAME AS
INVERTER ROOM BEYOND**



- POWER PLAN NOTES**
- CONTRACTOR SHALL COORDINATE MOUNTING HEIGHT OF ALL DEVICES WITH ARCHITECTS DRAWINGS PRIOR TO ROUGH IN.
 - CIRCUIT NUMBERS ARE FOR DESCRIPTIVE PURPOSES ONLY. EXACT NUMBERS SHALL BE DETERMINED IN FIELD AND SHALL BE NOTED ON THE CONTRACTORS AS-BUILT DRAWINGS.
 - BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED AND INSTALLED FOR A MAXIMUM BRANCH CIRCUIT VOLTAGE DROP OF 3% FROM PANEL BOARD. TOTAL VOLTAGE DROP FROM SERVICE ENTRY TO LAST DEVICE ON CIRCUIT SHALL NOT EXCEED 5%. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND OPTIONS.
 - COORDINATE EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT AND ELECTRICAL REQUIREMENTS WITH HVAC, PLUMBING, AND FIRE PROTECTION DRAWINGS.
 - ALL RECEPTACLES WITHIN 6' OF A SINK SHALL BE PROVIDED WITH GFCI PROTECTION.
 - ALL RECEPTACLES IN SPACES DESIGNATED AS "WAITING ROOM" SHALL BE TAMPERPROOF.
 - PROVIDE WIRE GUARDS ON EXIT SIGNS, LIGHTS, AND FIRE ALARM DEVICES IN GYM, CAPE, AND ANY AREAS WHERE THEY ARE SUBJECT TO DAMAGE.
 - COORDINATE EXACT NEMA CONFIGURATION IN THE FIELD WITH INSTALLING CONTRACTOR.
 - REFER TO THEATRICAL DRAWINGS FOR ADDITIONAL SCOPE OF WORK. COORDINATE ALL REQUIREMENTS WITH THEATRICAL CONSULTANT AND THEATRICAL CONTRACTOR.
 - REFER TO THEATRICAL DRAWINGS FOR ADDITIONAL SCOPE OF WORK. COORDINATE ALL REQUIREMENTS WITH THEATRICAL CONSULTANT AND THEATRICAL CONTRACTOR.
 - REFER TO TECHNOLOGY DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK. COORDINATE ALL REQUIREMENTS WITH TECHNOLOGY CONTRACTOR.

- POWER PLAN KEYED NOTES**
- PROVIDE HEAT TRACE FOR STORM DRAINS. COORDINATE ALL REQUIREMENTS WITH PLUMBING CONTRACTOR. FURNISH AND INSTALL.
 - COORDINATE EXACT LOCATION, TYPE AND MOUNTING HEIGHT WITH ARCHITECT.

ARCHITECTS • PROJECT MANAGERS

DW
DESIGN WORKS
ARCHITECTS, INC.

1000 Main Street
Greenfield, MA 01302
Tel: 413.534.1414
Fax: 413.534.1415
www.designworksarchitects.com

Project No. **120058.01**

Greenfield High School
GREENFIELD, MASSACHUSETTS

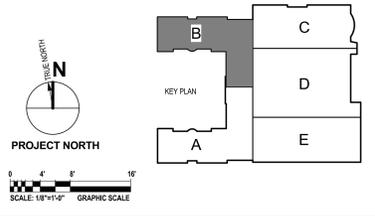
CONSTRUCTION SET

| | |
|------------|----------|
| REVISION: | Date: |
| ADDENDUM 2 | 03/27/13 |

DATE: 05/08/2013 SCALE: As Indicated
DRAWN BY: EK CHKD BY: Checker

SHEET TITLE:
**ELECTRICAL
FIRST FLOOR
POWER PLAN
PART B**

SHEET #:
E3.12

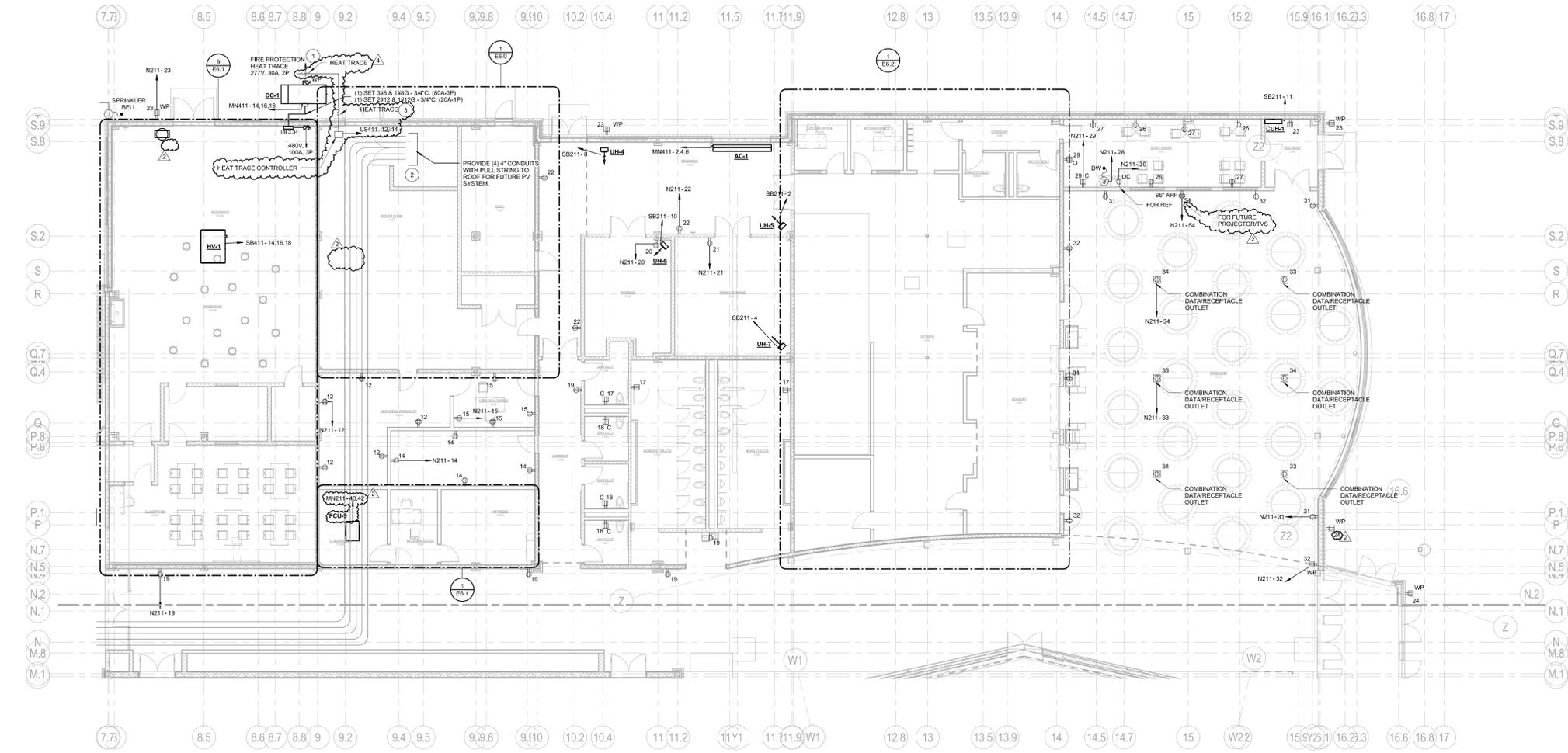


POWER PLAN NOTES

- CONTRACTOR SHALL COORDINATE MOUNTING HEIGHT OF ALL DEVICES WITH ARCHITECTS DRAWINGS PRIOR TO ROUGH IN.
- CIRCUIT NUMBERS ARE FOR DESCRIPTIVE PURPOSES ONLY. EXACT NUMBERS SHALL BE DETERMINED IN FIELD AND SHALL BE NOTED ON THE CONTRACTOR'S AS-BUILT DRAWINGS.
- BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED AND INSTALLED FOR A MAXIMUM BRANCH CIRCUIT VOLTAGE DROP OF 3% FROM PANELBOARD. TOTAL VOLTAGE DROP FROM SERVICE ENTRY TO LAST DEVICE ON CIRCUIT SHALL NOT EXCEED 5%. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND OPTIONS.
- COORDINATE EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT AND ELECTRICAL REQUIREMENTS WITH HVAC, PLUMBING, AND FIRE PROTECTION DRAWINGS.
- ALL RECEPTACLES WITHIN 6' OF A SINK SHALL BE PROVIDED WITH GFCI PROTECTION.
- ALL RECEPTACLES IN SPACES DESIGNATED AS "WAITING ROOM" SHALL BE TAMPERPROOF.
- PROVIDE WIRE GUARDS ON EXIT SIGNS, LIGHTS, AND FIRE ALARM DEVICES IN GYM, CAFETERIA, AND ANY AREAS WHERE THEY ARE SUBJECT TO DAMAGE.
- COORDINATE EXACT NEMA CONFIGURATION IN THE FIELD WITH INSTALLING CONTRACTOR.
- PROVIDE TEMPORARY POWER FOR TEMPORARY CONNECTOR AND TEMPORARY ENTRANCE. COORDINATE ALL REQUIREMENTS WITH ARCHITECT.
- REFER TO THEATRICAL DRAWINGS FOR ADDITIONAL SCOPE OF WORK. COORDINATE ALL REQUIREMENTS WITH THEATRICAL CONSULTANT AND THEATRICAL CONTRACTOR.
- REFER TO TECHNOLOGY DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK. COORDINATE ALL REQUIREMENTS WITH TECHNOLOGY CONSULTANT AND TECHNOLOGY CONTRACTOR.

POWER PLAN KEYED NOTES

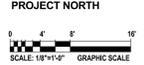
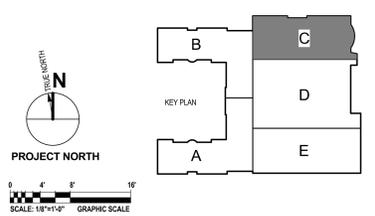
- PROVIDE HEAT TRACE FOR FIRE PROTECTION PIPES. COORDINATE ALL REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR. FURNISH AND INSTALL.
- PROVIDE (4) 4" CONDUITS FROM INVERTER ROOM TO FUTURE LOCATION OF PHOTOVOLTAIC ARRAY ON AUDITORIUM ROOF. PROVIDE PULL STRING, PULLBOXES AS REQUIRED. CAP END OF CONDUIT.
- FIRE PROTECTION HEAT TRACE. COORDINATE WITH FIRE PROTECTION DRAWINGS AND SPECIFICATIONS FOR REQUIREMENTS. EXACT LOCATION AND LENGTH. PROVIDE A FULLY FUNCTIONAL HEAT TRACE SYSTEM. COORDINATE WITH MANUFACTURER FOR ALL REQUIRED ACCESSORIES.



(SUGGESTED) FIRE PROTECTION HEAT TRACE BILL OF MATERIAL

| CATALOG NUMBER | DESCRIPTION | QTY |
|-------------------------|---|--------|
| 88V2-CT | 8 W/ft. 240V RAYCHEM SELF-REG HEATING CABLE | 20ft |
| E-100-A | ABOVE-INSULATION END SEAL KIT | 1 EACH |
| JBS-100-A | SINGLE-ENTRY POWER KIT WITH J-BOX | 1 EACH |
| 910E1PWL*EMR2 | DIGITRACE 910 1ph CONTROLLER, 2 POLE 30A EMR | 1 EACH |
| RTD10CS | DIGITRACE RTD WITH 10R S/S CORRUGATED SHIELD | 1 EACH |
| ETL-ENGLISH | ELECTRIC TRACED LABEL FOR TRACED PIPES AND TANKS | 1 EACH |
| GT-66 | GLASS TAPE (66#ROLL) NOT FOR STAINLESS-STEEL PIPES) | 1 ROLL |
| PS-10 | PIPE STRAP 3 TO 10in | 2 EACH |
| STRIPPING-TOOL-SR-CABLE | PIPE STRAP 3 TO 10in | 0 EACH |

- NOTES:**
- FIELD COORDINATE EXACT QUANTITY AND LENGTH REQUIRED. WIRE PER MANUFACTURER'S REQUIREMENTS.
 - FIELD COORDINATE EXACT LOCATION.
 - PROVIDE ALL ACCESSORIES REQUIRED FOR FACP MONITOR OF SYSTEM PER CODE.
 - COORDINATE WITH MANUFACTURER FOR EXACT BILL OF MATERIALS.



ARCHITECTS - PROJECT MANAGERS

DW
DESIGNWORK ARCHITECTS, INC.

100 South Main Street
New Bedford, MA 01900
Tel: 508.451.1418
Fax: 508.451.1419
2nd Floor
Tel: 508.451.1418
Fax: 508.451.1419

Project No. **120058.01**

Greenfield High School
GREENFIELD, MASSACHUSETTS

CONSTRUCTION SET

| REVISION | Date |
|------------|----------|
| Addendum 2 | 03/27/13 |
| Addendum 4 | 04/09/13 |

DATE: 05/08/2013 SCALE: As Indicated
DRAWN BY: EK CHKD BY: [Signature]
E3.13

Attachment E
Square footage of roof areas

GREENFIELD HIGH SCHOOL
SOLAR ARRAY AREA CALCS

17-Jul-15

PHASE 1

NORTH WING

4155
504
3684
1858

CENTER

960
2177
960

SOUTH WING

4410
2028
530
2202

PHASE 2 -

SCIENCE WING

2739
1760
2655

GYM ROOF

10,812

AUD ROOF

| | |
|-------|------|
| HOUSE | 7080 |
| FLY | 625 |
| | 488 |
| | 606 |

PHASE 3

CAFÉ

2586

SUBTOTAL

| |
|-------|
| 52819 |
|-------|

1906
1850

MAY NOT BE VIABLE DUE TO EQUIPMENT AND SHADING

TOTAL

| |
|-------|
| 56575 |
|-------|



11/15/2013 9:17:16 AM

Submittal Transmittal

Project # 120909
Greenfield High School

1 Lenox Avenue
Greenfield, MA 01301

Date: 11/15/2013

Transmitted To: Tom Hengelsberg
Dore & Whittier Architect, Inc.
260 Merrimac Street
Newburyport, MA 01950
Tel: (978) 499-2999
Fax: (978) 466-2944

Transmitted By: Tom Munson
Shawmut Design and Construction
1111 Elm St
West Springfield, MA 01089
Tel: 617-622-7000

| Submittal Package No | Sub Section | Description | Due Date | Package Action |
|----------------------|-------------|---|----------|----------------|
| 075300-01-1 | 2.05 & 2.07 | Resubmittal of 80 Mil TPO Roofing System Component Product Data & Firestone 60mil TPO Flashing Membrane per RFI 157 | | |

1. The 60 mil TPO Flashing Membrane in lieu of the 80 mil product previously submitted on is acceptable in the locations listed within RFI 157.
2. Per spec section 2.07 A 6; Tapered insulation shall be in addition to and above the minimum thicknesses indicated, such that no areas have less than the minimum thickness.
3. CM/Sub to confirm with Roofing Mfr that use of this product will not void or alter Roof Warranties.

Reviewed (No Comment)
 Reviewed (See Comments)
 Reviewed (Resubmit)

Checked only for conformance with the design concept of the project and with the information given in the contract documents: review of shop drawings shall not release the contractor from responsibility for deviations from drawings and specifications, errors in shop drawings or schedules, quantities, dimensions, fabrication, installation, and coordination requirements. The contractor shall check and verify all field measurements.

BY _____ Date: 11/19/2013

DORE AND WHITTIER ARCHITECTS, INC.

ARCHITECTS • PROJECT MANAGERS

Remarks

Items included for resubmittal as required by the review of 075300-01-0 and per response to RFI #157.

CONSTRUCTION MANAGER'S CERTIFICATION:

THE CONSTRUCTION MANAGER HEREBY CERTIFIES THAT HE HAS REVIEWED THE SUBMITTED ITEM / SYSTEM FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, VERIFIED ALL REQUIRED FIELD DIMENSIONS, AND COORDINATED THIS ITEM / SYSTEM WITH RELATED ITEMS/SYSTEMS AND THE OVERALL WORK PRIOR TO MAKING THIS SUBMITTAL.

SIGNED: *Tom Munson*

DATE: 11/15/2013

SHAWMUT DESIGN AND CONSTRUCTION

JOB NAME: Greenfield High School

JOB NUMBER: 120909 DATE 11/15/2013

REVIEWED BY: Tom Munson



Shop Drawing(s)

Product Data

Sample(s)

Review Only

Submittal Number: 075300-01-1 Sub Section: 2.05-07

J.D. Rivet & Co., Inc.

ROOFING - SHEETMETAL

1635 Page Boulevard
Springfield, MA 01104
P.O. Box 51068
Indian Orchard, MA 01151
TEL: (413) 543-5660
FAX: (413) 543-3373

November 5, 2013

Section No: 070002 – Roofing & Flashing:

- Submittal Package 075300- Elastomeric Membrane Roofing

1.07 - A.) Construction Submittals Cover Page:

Owner: **Town of Greenfield**
14 Court Square
Greenfield, MA 01301

CM: **Shawmut Design & Construction**
560 Harrison Avenue
Boston, MA 02118

Architect: **Dore & Whitter Architects Inc.**
1795 Williston Road
South Burlington, VT 05403

Project: **Greenfield High School**
1 Lenox Avenue – Greenfield, MA 01301

*Servicing
Our Customers
Since 1960*

SHAWMUT DESIGN AND CONSTRUCTIONJOB NAME: Greenfield High SchoolJOB NUMBER: 120909 DATE 11/15/2013REVIEWED BY: Tom Munson**SECTION 01 30 02****SUBMITTAL DATA SHEET**Shop Drawing(s)
Sample(s) Product Data
Review Only Submittal Number: 075300-01-1 Sub Section: 2.05-07

| | | |
|---------------|-----|------|
| 075300 | 1 | |
| SPEC DIVISION | NO. | REV. |

SHAWMUT DESIGN & CONSTRUCTION

| | |
|-------------------------------|--|
| DATE SUBMITTED: | 11/5/2013 |
| ITEM SUBMITTED: | Firestone 60mil UltraPly TPO Flashing Membrane |
| SPECIFICATION PARAGRAPH REF.: | 1.07-A & Sub. 2.05 Flashing - A) |
| IS THIS ITEM A SUBSTITUTION?: | Ref. RFI # 157 - Vert. Roofing 60mil TPO Flash. (IF YES, PROVIDE A SUBSTITUTION REQUEST FORM PER SECTION 01 60 00.01) |
| RETURN REQUESTED BY: | A.S.A.P (Product Accepted) (ALLOW 15 WORKING DAYS FOR ARCHITECT, 15 WORKING DAYS FOR CONSULTANT REVIEWS) |

CONSTRUCTION MANAGER'S CERTIFICATION:

THE CONSTRUCTION MANAGER HEREBY CERTIFIES THAT HE HAS REVIEWED THE SUBMITTED ITEM / SYSTEM FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, VERIFIED ALL REQUIRED FIELD DIMENSIONS, AND COORDINATED THIS ITEM / SYSTEM WITH RELATED ITEMS/SYSTEMS AND THE OVERALL WORK PRIOR TO MAKING THIS SUBMITTAL.

SIGNED: [Signature] - Matthew Theberge
J.D. Rivet & Co.

DATE: 11/5/13**OTHER NOTES:**

On Returned Submittal Package No: 075300-01-0, Sub Section 2.01-08
80 mil TPO Roofing System Component Product Data - Please Delete
the following Product Submittals (as they will NOT BE USED)

- 2.05 Item #9) Delete: UltraPly TPO 18" Curb flashing
- 2.05 Item #10) Delete: UltraPly TPO QS. 9 1/2" Flashing.

Thank You.

SHAWMUT DESIGN AND CONSTRUCTION

JOB NAME: Greenfield High School

JOB NUMBER: 120909 DATE 11/15/2013

REVIEWED BY: Tom Munson



TECHNICAL INFORMATION SHEET

Shop Drawing(s)

Product Data

Sample(s)

Review Only

UltraPly™ TPO Membrane (60mil - 2.05 Flashing) "White"

Submitted Number: 075300-01-1

Sub Section: 2.05.07

Item Description

Item Number

1 Roll

Various

Meets or exceeds ASTM D 6878.

Product Information

Description:

Firestone UltraPly™ TPO is a flexible Thermoplastic Polyolefin roofing membrane that is produced with polyester weft-inserted reinforcement. UltraPly TPO membrane meets or exceeds all requirements for ASTM D 6878 Specification. This heat weldable TPO membrane is available in 45 mil (1.14 mm) and 60 mil (1.52 mm) thicknesses. This reflective membrane is suitable for a variety of low-slope applications.

Method of Application:

1. Substrates must be clean, dry, smooth, and free of sharp edges, fins, loose or foreign materials, oil, grease, and other materials that may damage the membrane.
2. All roughened surfaces that can damage the membrane shall be repaired as specified to offer a smooth substrate.
3. All surface voids greater than 1/4" (6.3 mm) wide shall be properly filled with an acceptable fill material.
4. Firestone UltraPly TPO membrane is installed as continuous roofing or waterproofing layer on the roof. Rolls are overlapped (side laps and end laps) prior to the heat welding of the seam areas.
5. Install the UltraPly TPO Roofing System in accordance with current Firestone UltraPly TPO specifications, details and workmanship requirements.

Storage:

- Store away from sources of punctures and physical damage.
- Assure that structural decking will support the loads incurred by material when stored on rooftop. The deck load limitations should be specified by the project designer.
- Store away from ignition sources as membrane will burn when exposed to open flame.

Precautions:

1. Refer to Material Safety Data Sheets (MSDS) for safety information.
2. Exercise caution when lifting, moving, transporting, storing or handling membrane rolls to avoid sources of punctures and possible physical damage.
3. Contact your Technical Coordinator at 1-800-428-4511 for specific recommendations regarding chemical or waste product compatibility with Firestone UltraPly TPO Membrane.

* LEED® Information:

Post Consumer Recycled Content: 0%
 Pre Consumer Recycled Content: 15%
 Manufacturing Location: Wellford, SC
 Tuscumbia, AL



ICC-ES
ESR-2831

CCMC 13348-R

SHAWMUT DESIGN AND CONSTRUCTION

JOB NAME: Greenfield High School

JOB NUMBER: 120909 DATE 11/15/2013

REVIEWED BY: Tom Munson



TECHNICAL INFORMATION SHEET

Shop Drawing(s)

Product Data

Sample(s)

Review Only

UltraPly™ TPO Membrane

Submittal Number: 075300-01-1

Sub Section: 2.05-07

Product Sizes

| Membrane Thickness: 0.045" (1.14 mm) Membrane Weight: 0.23 lb/ft ² (1.1 kg/m ²) | | | Membrane Thickness: 0.060" (1.52 mm) Membrane Weight: 0.31 lb/ft ² (1.5 kg/m ²) | | |
|---|----------------|------------------|---|----------------|------------------|
| Available Sizes | | Available Colors | Available Sizes | | Available Colors |
| 5' x 100' | (1.5 x 30.5 m) | White, Tan, Gray | 5' x 100' | (1.5 x 30.5 m) | White, Tan, Gray |
| 5' x 200' | (1.5 x 61 m) | White | 5' x 200' | (1.5 x 61 m) | White |
| 6' 2" x 100' | (1.9 x 30.5 m) | White, Tan, Gray | 6' 2" x 100' | (1.9 x 30.5 m) | White, Tan, Gray |
| 8' x 100' | (2.4 x 30.5 m) | White, Tan, Gray | 8' x 100' | (2.4 x 30.5 m) | White, Tan, Gray |
| 8' x 200' | (2.4 x 61 m) | White | 8' x 200' | (2.4 x 61 m) | White |
| 10' x 100' | (3.0 x 30.5 m) | White, Tan, Gray | 10' x 100' | (3.0 x 30.5 m) | White, Tan, Gray |
| 10' x 200' | (3.0 x 61 m) | White | 10' x 200' | (3.0 x 61 m) | White |
| 12' 4" x 100' | (3.8 x 30.5 m) | White, Tan, Gray | 12' 4" x 100' | (3.8 x 30.5 m) | White, Tan, Gray |
| 12' 4" x 200' | (3.8 x 61 m) | White | 12' 4" x 200' | (3.8 x 61 m) | White |

Physical Properties

(Meets or exceeds ASTM D 6878 Specification.)

| Property | ASTM Standard | Performance Minimum | Typical Performance 45 mil | Typical Performance 60 mil |
|--|-------------------------------|---------------------|----------------------------|----------------------------|
| Overall Thickness: | D 751 | 0.039" (1 mm) | 0.045" (1.14 mm) ± 10% | 0.060" (1.52 mm) ± 10% |
| Coating over Scrim: | D 7635 | 0.015" (0.38 mm) | 0.017" (0.43 mm) | 0.021" (0.53 mm) |
| Breaking Strength: | D 751, Grab Method | 220 lbf (979 N) | 340 lbf (1,512 N) | 390 lbf (1,735 N) |
| Elongation of Reinforcement Break: | D 751, Grab Method | 15% | 25% | 25% |
| Tearing Strength: | D 751 | 55 lbf (245 N) | 120 lbf (534 N) | 120 lbf (534 N) |
| Brittleness Point: | D 2137 | -40 °F (-40 °C) | Pass | Pass |
| Ozone Resistance, No Cracks: | D 1149 | Pass (No Cracks) | Pass | Pass |
| Properties After Heat Aging (Retained Values) (ASTM D 573 670 h at 240 °F (116 °C)): | | | | |
| Breaking Strength: | D 751, Grab Method | 90% Minimum | > 90% | > 90% |
| Elongation at Break: | D 751, Grab Method | 90% Minimum | > 90% | > 90% |
| Tearing Strength: | D 751 | 60% Minimum | > 60% | > 60% |
| Weight of Change: | | ± 1% Maximum | < 1% | < 1% |
| Linear Dimension Change: | D 1204, 6 h at 158 °F (70 °C) | ± 1% Maximum | < 1% | < 1% |
| Water Absorption: | D 471 | ± 3% Maximum | < 3% | < 3% |

Physical Properties (Continued)

Firestone Building Products | Sales: (800) 428-4442 | Technical (800) 428-4511 | www.firestonebpco.com

SHAWMUT DESIGN AND CONSTRUCTION

JOB NAME: Greenfield High School

JOB NUMBER: 120909 DATE 11/15/2013

REVIEWED BY: Tom Munson



TECHNICAL INFORMATION SHEET

Shop Drawing(s)

Product Data

Sample(s)

Review Only

UltraPly™ TPO Membrane

Submittal Number: 075300-01-1 Sub Section: 2.05.07

| Property | ASTM Standard | Performance Minimum | Typical Performance 45 mil Membrane | Typical Performance 60 mil Membrane |
|---|-----------------------|----------------------------------|-------------------------------------|-------------------------------------|
| Weather Resistance, 80 °C Black Panel, no cracking, crazing when wrapped around a 3" mandrel and inspected at 7X magnification: | G 155 | 10,800 kJ/m ² Minimum | > 20,160 kJ/m ² | > 20,160 kJ/m ² |
| Puncture Resistance: | FTM 101C, Method 2031 | — | 265 (1,180) | 300 (1,300) |
| Dynamic Puncture Resistance MD: | D 5635 | — | Pass (20 J) | Pass (40 J) |
| Dynamic Puncture Resistance CD: | D 5635 | — | Pass (35 J) | Pass (50 J) |
| Static Puncture Resistance: | D 5602 | — | Pass (25 kg) | Pass (25 kg) |

Radiative Properties

| Cool Roof Rating Council (CRRC): Initial / 3 yr | White | Tan N/A | Gray N/A |
|--|-----------------|-------------|----------------|
| Solar Reflectance | 0.79 / 0.68 | 0.61 / 0.55 | 0.34 / Pending |
| Thermal Emittance | 0.85 / 0.83 | 0.81 / 0.84 | 0.89 / Pending |
| * Solar Reflectance Index (SRI) | 98 / 81 | 71 / 63 | 37 / Pending |
| Rated Product ID | 0008 | | |
| Licensed Manufacturer ID | 0608 | | |
| Classification | Production Line | | |
| ENERGY STAR®: Initial / 3 yr | White | Tan | |
| Solar Reflectance | 0.79 / 0.78* | 0.60 / 0.54 | |
| Thermal Emittance | 0.85 | 0.81 | |
| * White membrane sample cleaned prior to age test. | | | |
| CERT: LEED® | White | Tan | Gray |
| Solar Reflectance – ASTM E 903 | 0.81 | 0.63 | 0.37 |
| Thermal Emittance – ASTM E 408 | 0.95 | 0.95 | 0.95 |
| Solar Reflectance Index (SRI) – ASTM E 1980 | 102 | 77 | 43 |



ENERGY STAR is only valid in the United States



Please contact your Firestone Roof Systems Advisor at 1-800-428-4511 for further information.

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

SHAWMUT DESIGN AND CONSTRUCTION

JOB NAME: Greenfield High School

JOB NUMBER: 120909 DATE 11/15/2013

REVIEWED BY: Tom Munson



Shop Drawing(s)

Product Data

Sample **J.D. Rivet & Co., Inc.**

Review Only

ROOFING - SHEETMETAL

Section 01 30 02

SUBMITTAL DATA SHEET

Submittal Number: 075300-01-1 Sub Section: 2.05-07

1635 Page Boulevard - Springfield, MA

P.O. Box 51068 - Indian Orchard, MA 01151

TEL: (413) 543-5660

FAX: (413) 543-3373

| | | |
|---------------|----------|----------|
| <u>075300</u> | <u>1</u> | <u>1</u> |
| Spec Section | No: | Rev: |

SHAWMUT DESIGN & CONSTRUCTION

DATE SUBMITTED: 11/14/2013

ITEM SUBMITTED: 18" Tapered Edge Strip (Product Data Re-Submittal)
18" T.E. to Achieve Required Tapered Slope.

SPECIFICATION PARAGRAPH

REF: 2.07 A.7 & 3.03 B. 6) Product installed @ Drains & Roof Transitions.

IS THIS ITEM A SUBSTITUTION? NO

(IF YES, PROVIDED SUBSTITUTION REQUEST FORM ATTACHED PER SECTION 016000.01)

RETURN REQUESTED BY: A.S.A.P

CONSTRUCTION MANAGER'S CERTIFICATION:

THE CONSTRUCTION MANAGER HEREBY CERTIFIES THAT HE/SHE HAS REVIEWED THE SUBMITTED ITEM/ SYSTEM FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, VERIFIED ALL REQUIRED FIELD DIMENSIONS, AND COORDINATED THIS ITEM/ SYSTEM WITH RELATED ITEMS/SYSTEMS AND THE OVERALL WORK PRIOR TO MAKING THIS SUBMITTAL.

SIGNED:

[Signature]
Matthew Therberge - Project Manager
J.D. Rivet & Co., Inc.

DATE:

11/14/13

Submittal Notes:

18" Tapered Edge is commonly used @ Detail K6/A3.50 DRAIN Details D-1 & D-2
& at R1 to AHU PAD Roof Transition Detail J6/A3.50
Meets 2.07 Insulation Requirements & is compatible with Roofing System.

SHAWMUT Greenfield High School
 JOB NUMBER: 120909 High School Tapered Edge
 PROJECT NUMBER: Tom Munson DATE: 09/19/2013
 REVIEWED BY: Tom Munson

2.07A.7

Technical Data Sheet

Wood Fibre

BUILDING PRODUCTS OF CANADA CORP.
 Shop Drawing(s)
 Shop Drawing(s)
 Sample(s)
 Sample(s)

Product Data
 Product Data
 Review Only

1" Natural High Strength => 2' x 4' (BRN1024H)

Submittal Number: 075300-01-1
 Description: 075300-1-0
 Submittal Number: 075300-1-0
 Description: BP ESGARD High-Strength Roof

Sub Section: 2.05-07
 Physical Properties: 2.01-08

Insulation Wood Fibre Board is a uniform density product with good insulating properties. It is composed of interlocking fibres impregnated with a water-repellent petroleum paraffin emulsion that imparts a high moisture resistance to the product. ESGARD HIGH-STRENGTH has a very high compressive strength which increases the rigidity and strength of the roof system. It provides an excellent substrate for the roofing membrane and is an ideal surface for the application of hot asphalt.

Panels are available with square, shiplap and air channel edges.

Usage

BP Esgard Roof Insulation can be used as follows: as a roof insulator; as a cap sheet over other insulations; as a separation board between old and new roofs; as an underlay on steel deck applications; as an underlay on steel decks applications; as raw material in the making of slope insulation.

Storage

BP ESGARD Roof Insulation Wood Fibre Board must be stored above the deck or ground level and adequately protected from the elements with tarpaulins.

MANUFACTURED in :
 Pont-Rouge Plant
 420, Dupont street
 Pont-Rouge (Quebec), Canada
 G3H 1S2

Building Products of Canada Corp.
 9510, St. Patrick Street,
 LaSalle (Quebec), Canada
 H8R 1R9

| Physical Properties | | | |
|--|--|--------------------------|-------------|
| Dimensions | 610 mm x 1219 mm (24" x 48") | | |
| Panels / Bundle | 6 | | |
| Coverage / Bundle | 4.5 m ² (48 ft ²) | | |
| Characteristics | Imperial | Metric | Test Method |
| Nominal Thickness | 1 in | 25.4 mm | C-209 |
| Density | 15.4 lb/ft ³ | 246.68 kg/m ³ | D-1037 |
| Thermal resistance | R-3 | RSI 0.53 | C-518 |
| Linear expansion | 0.3% | 0.3% | D-1037 |
| Water absorption - 2hrs max. | 4.15% volume | 4.15% volume | C-209 |
| Compression strength @ 10% deformation | 24.5 lb/in ² | 168.97 Kpa | C-165 |
| Transverse load at rupture | 39.9 lb | 176.77 N | C-209 |
| Tensile strength (machine direction) | 316 lb/in ² | 2210 Kpa | C-209 |
| Tensile strength (cross direction), kN/m (lb/in ²) | 7.08 lb/in ² | 48.81 Kpa | C-209 |

Applicable Standards

CAN/ULC-S706-02 Type I, Grade 2

Sizes and Packaging

| SKU | Dimensions | Panels / Bundle | Coverage / Bundle |
|------------|------------------------------|-----------------|--|
| BRN1024H0B | 610 mm x 1219 mm (24" x 48") | 6 | 4.5 m ² (48 ft ²) |
| BRN1024H0S | 610 mm x 1219 mm (24" x 48") | 6 | 4.5 m ² (48 ft ²) |
| BRN1024H0A | 610 mm x 1219 mm (24" x 48") | 6 | 4.5 m ² (48 ft ²) |

1. Where is this product intended to be used?
2. Does not meet requirements for protection board or roof board.

Reviewed (No Comment)
 Reviewed (See Comments)
 Reviewed (Resubmit)

Checked only for conformance with the design concept of the project and with the information given in the contract documents: review of shop drawings shall not release the contractor from responsibility for deviations from drawings and specifications, errors in shop drawings or schedules, quantities, dimensions, fabrication, installation, and coordination requirements. The contractor shall check and verify all field measurements.

BY AJC Date: 9/25/2013
DORE AND WHITTIER ARCHITECTS, INC.
 ARCHITECTS • PROJECT MANAGERS

NATURAL ROOF Board- TAPERED Edge
LEED BACKUP

Shop Drawing(s)

Product Data

MANUFACTURING

Sample(s)

Review Cycle

Plant location : The BP Natural Wood Fibre panels are 100% manufactured in Canada at :

BP's Natural Wood Fibre Panels are amazingly gentle on the environment. They are made from natural materials

Building Products of Canada Corp.
420 Dupont, Pont-Rouge, Québec, Canada, G3H 1S2

2.01-08

LEED* MR 5.1 : Regional Materials (1 Point)

[for shipping by truck in a 800 km radius from point of origin or 2,400 km by rail]

Raw material procurement : Special effort is made to find suppliers of the raw materials required as close to the plant as possible. The majority comes from within a 60 km radius of the plant.



NATURAL wood fibre panels

BP Natural Wood Fibre Panels come in a variety of sizes and thicknesses and are used for many different applications: thermal insulation on the inside of the a building's exterior wall, sound attenuation in many wall and floor/ceiling assemblies, roof insulation/recover board, backer board, as shipping protection materials and other OEM manufacturing processes.

PROPERTIES AND FEATURES OF NATURAL WOOD FIBRE PANELS

The trademarks manufactured and sold by BP in this category are

- BP Natural Insulation Board
- BP Acoustic Board
- BP Natural Roof Insulation
- BP BIN¹ (board industrial - OEM), BP Calendar Board
- BP Prime Coat²

$53\% + 2\% = 55\%$

Product composition:

- 53% of the raw materials used to produce Natural panels (% of total weight) is post-industrial cellulosic fibre in the form of chips: by-products of the lumber and furniture industries.
- 42% is post-consumer cellulosic material extracted from building demolitions.
- 2% of the pre-consumer materials comes from recycling "sub-grade" panels directly at the plant.
- The remaining portion is split between wheat starch (wood fibre binding agent), wax and coatings^{1,2} (all water based).
^{1,2}BIN and prime coat receive 1% to 2% coating substances.

LEED* MR 4.2 : Recycled Content (2 Points)

[for minimum 15% post-consumer plus 1/2 post-industrial]

Volatile organic compounds / formaldehyde BP Natural panels emit
☑ VOCs: CFC/HCFC/Pantane and are 100% formaldehyde free.

LEED* EQ 4.4 : Low Emission Materials (1 Point)

[composite wood and agrifibre products containing no formaldehyde resins]

Recycle & reuse : Unused materials on job sites as well as products recovered at the end of the building's lifecycle can be recycled into other cellulosic based manufactured goods.

LEED* MR 2.1 : Construction Waste Management (2 Points)

[divert 50% from landfill: 1 Po point; 75%: 2 points]

SHAWMUT DESIGN AND CONSTRUCTION

JOB NAME: Greenfield High School

JOB NUMBER: 120909

REVIEWED BY: Tom Munson

DATE: 11/15/2013

New Tapered Edge Roof Insulation



BUILDING PRODUCTS OF CANADA CORP

Shop Drawing(s)

Sample(s)

Product Data

Review Only

TECHNICAL DATA SHEET ROOF INSULATORS

Submittal Number: 075300-01-1

Sub: **ROOF INSULATOR 1"**

DESCRIPTION:

BP ESGARD 1" High Strength Roof Insulators are composed of interlocking wood fibres impregnated with a water-repellent petroleum wax emulsion that imparts a high resistance to water absorption.

BP ESGARD 1" High Strength Roof Insulators have a very good insulation property. This product increases the rigidity and strength of the roof system. It provides an excellent substratum for the roofing membranes and it is an ideal surface for the application of hot asphalt.

BP ESGARD 1" Roof Insulators are available uncoated, impregnated with an asphalt emulsion or coated either with an asphalt or a regular coating. The emulsion or coating reduces asphalt penetration. They are available with shiplap, square or air channel edges.

USES:

BP ESGARD 1" Roof Insulators can be used as follows: as a roof insulator, as a cap sheet over other insulations, as a separation board between old and new roofs, as an underlay on steel deck applications and as raw material in the making of slope insulation or cant strips.

MAINTENANCE:

BP ESGARD 1" Roof Insulators must be stored above the deck or the ground level and adequately protected from the elements with tarpaulins.

610 MM X 1219 MM (2'X 4') ROOF INSULATORS

| SKU | Roof Insulator Description | Edge | Coverage/Bundle | Bundles/Pallet |
|------------|--|-----------------|---|----------------|
| BRN1024H0A | Natural | Air channel | 4.46 m ² (48 ft ²) | 16 |
| BRN1024H0B | Natural | Square edge | | |
| BRN1024H0S | Natural | Shiplap 1 in. | | |
| BRC1024H1S | Coated on 1 side with a regular coating | Shiplap 1 in. | | |
| BRI1024H0A | Impregnated on 1 side with an asphalt emulsion | Air channel | | |
| BRI1024H0B | Impregnated on 1 side with an asphalt emulsion | Square edge | | |
| BRI1024H0S | Impregnated on 1 side with an asphalt emulsion | Shiplap 1 in. | | |
| BRI1024H0W | Impregnated on 1 side with an asphalt emulsion | Shiplap 7/8 in. | 4.32 m ² (46.5 ft ²) | |

| CHARACTERISTICS | UNITS | | RESULTS BP | | REQUIREMENTS | | TEST METHOD |
|---|--------|----------|------------|----------|--------------|----------|-------------|
| | METRIC | IMPERIAL | METRIC | IMPERIAL | METRIC | IMPERIAL | ASTM |
| Thermal Resistance, 25.4 mm (1") | RSI | R | 0.528 | 3.0 | 0.455 | 2.58 | C518 |
| Transverse Load at Rupture | N | lbf | Pass | Pass | 60 | 13.4 | C209 |
| Compressive Strength @ 10% deformation, Min. | kPa | psi | Pass | Pass | 100 | 14.5 | C165-A |
| Tensile Parallel to Surface, (machine direction) Min. | kPa | psi | Pass | Pass | 350 | 50.8 | C209 |
| Tensile Perpendicular to Surface, Min. | kPa | Psi | Pass | Pass | 24 | 3.5 | C209 |
| Linear Moisture Expansion Max | % | % | Pass | Pass | 0.5 | 0.5 | D1037 |
| Water Absorption Max. | % | % | Pass | Pass | 10 | 10 | C209 |

APPLICABLE STANDARDS

↓ CAN ULC-S706-09 Type I & Type II, Class 1
CCMC #03240-L

SHAWMUT DESIGN AND CONSTRUCTION

JOB NAME: Greenfield High School

JOB NUMBER: 120909 DATE 11/15/2013

REVIEWED BY: Tom Munson

TAPERED EDGE STRIP

Shop Drawing(s)

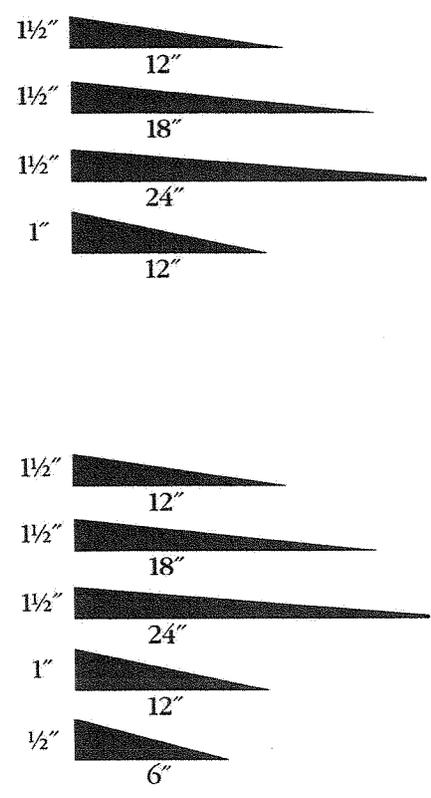
Product Data

Sample(s)

Review Only

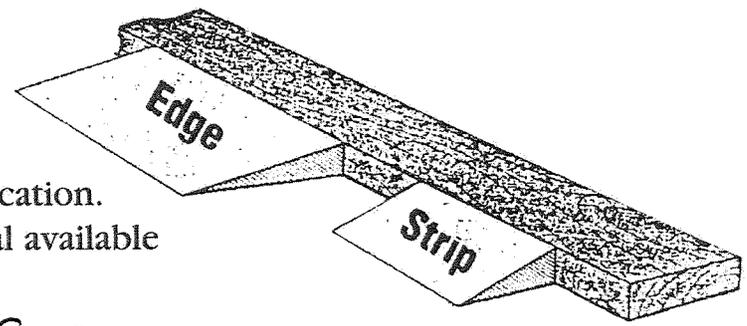
Submittal Number: 075300-01-1 Sub Section: 2.05-07

| Perlite Tapered Edge Strip <i>N/A</i> | | | |
|--|----------|--------|--------|
| | BDLS/PLT | FT/BDL | FT/PLT |
| 1½" x 12" | 20 | 48' | 960' |
| 1½" x 18" | 12 | 48' | 576' |
| 1½" x 24" | 10 | 48' | 480' |
| 1" x 12" | 20 | 72' | 1440' |
| Fiberboard Tapered Edge Strip | | | |
| | BDLS/PLT | FT/BDL | FT/PLT |
| 1½" x 12" | 20 | 48' | 960' |
| → 1½" x 18" | 12 | 48' | 576' |
| 1½" x 24" | 10 | 48' | 480' |
| 1" x 12" | 20 | 72' | 1440' |
| ½" x 6" | 40 | 144' | 5760' |



*USES: Tapered board provides smooth transitions from elevation to level field location. Please contact us for additional available sizes of tapered edge strip.

- Roof Drain Tapered Sump
- Roof R1 to AHU Pad Transition



SHAWMUT DESIGN AND CONSTRUCTION

JOB NAME: Greenfield High School
JOB NUMBER: 120909 DATE 11/15/2013
REVIEWED BY: Tom Munson



Shop Drawing(s)

Product Data

Samples

Review Only

Section 01 30 02

SUBMITTAL DATA SHEET

Submittal Number: 075300-01-1 Sub Section: 2.05-07

1635 Page Boulevard - Springfield, MA

P.O. Box 51068 - Indian Orchard, MA 01151

TEL: (413) 543-5660

FAX: (413) 543-3373

| | | |
|---------------|----------|------|
| <u>075300</u> | <u>1</u> | |
| Spec Section | No: | Rev: |

SHAWMUT DESIGN & CONSTRUCTION

DATE SUBMITTED: 11/14/2013

ITEM SUBMITTED: 12" Polyiso Tapered Edge Strip (New)
12" T.E to Achieve Required Tapered Slope

SPECIFICATION PARAGRAPH REF:
2.07 A.7 & 3.03 B.H) Product Installed to Size of Parapet Wood Blocking

IS THIS ITEM A SUBSTITUTION? NO
(IF YES, PROVIDED SUBSTITUTION REQUEST FORM ATTACHED PER SECTION 016000.01)

RETURN REQUESTED BY: A.S.A.P.

CONSTRUCTION MANAGER'S CERTIFICATION:

THE CONSTRUCTION MANAGER HEREBY CERTIFIES THAT HE/SHE HAS REVIEWED THE SUBMITTED ITEM/ SYSTEM FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, VERIFIED ALL REQUIRED FIELD DIMENSIONS, AND COORDINATED THIS ITEM/ SYSTEM WITH RELATED ITEMS/SYSTEMS AND THE OVERALL WORK PRIOR TO MAKING THIS SUBMITTAL.

SIGNED: [Signature]
Matthew Cheborge - Project Manager
J.D. Rivet & Co., Inc.

DATE: 11/14/13

Submittal Notes:

12" Polyiso Insulation Tapered Edge is to be used @ Typical Roof Parapet Wall Details (Sim. A10/A6.57, J6/A6.53, E6/A6.53 & J12/A6.53) Installed as required to Match the Height of the Perimeter Edge Nailer

SHAWMUT DESIGN AND CONSTRUCTION

JOB NAME: Greenfield High School

JOB NUMBER: 120909

DATE 11/15/2013

REVIEWED BY: Tom Munson

GEMINI™ TAPERED EDGE STRIP

DATA SHEET

Shop Drawing(s)

→ GEMINI™ TAPERED EDGE STRIP

→ RECOMMENDED USES

Sample(s)

Atlas is pleased to add another great product to our GEMINI™ Series of Pre-Cut Tapered Insulation, the GEMINI™ Series Tapered Edge Strip (TES).

Single Ply Roof Systems

- Modified Bituminous Roof Systems
- BUR Roof Systems*

Submittal

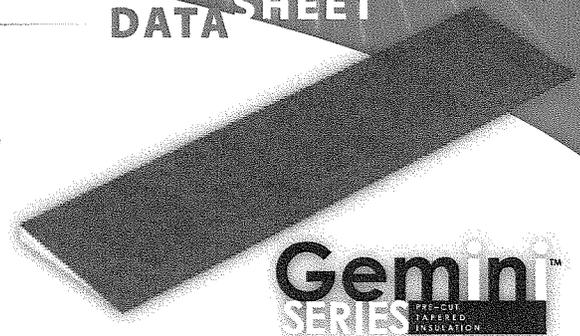
→ FEATURES & BENEFITS

Sub Section: 2.05-07

GEMINI™ TES panels are:

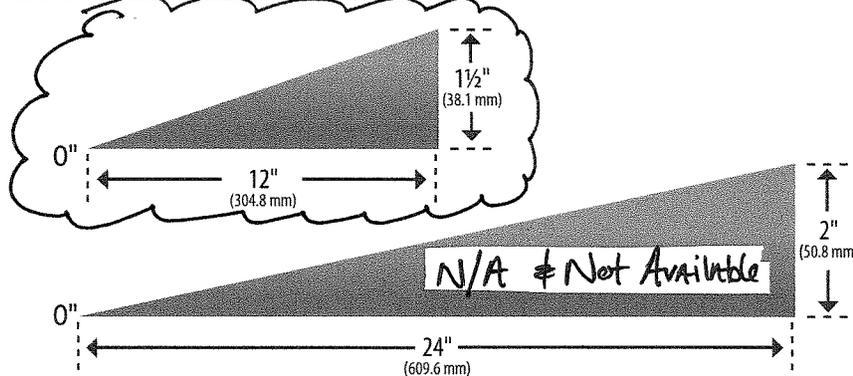
Check with the Atlas Technical Department for Specific Application Requirements.

- Smooth transition from tapered edge to roof surface.
- Dimensionally stable.
- Resistant to many solvents used in construction adhesives.
- Service temperatures in the range of -40° F to 200° F.
- Stronger, cleaner, lighter and more durable than perlite and fiberboard.



→ TYPICAL CROSS SECTIONS

GEMINI™ TES IS THE ONLY POLYISO TAPERED INSULATION WITH THE ZERO EDGE™ SOLUTION.



TAPERED DESIGN ASSISTANCE

Atlas designs and manufactures quality tapered roof insulation systems, which have evolved from a rooftop art to a sophisticated science. Atlas's Tapered Systems Group designs roof systems that drain properly and perform efficiently and is the only resource you need to resolve questions about the tapered phase of roof design.

Our pre-bid design assistance team works with architects and engineers worldwide in solving the most challenging roof drainage problems. We support our customers during the bidding process by generating quotes and shop drawings based on everything from architectural bid documents to faxed rough sketches. Once our submittals are reviewed and approved, we deliver the tapered system.

TAPERED INSULATION SYSTEM DESIGNS

The Atlas Tapered Systems Group provides you with the best drainage solution based on the following design or project criteria.

- Flashing height conditions/restrictions
- Complex drain configurations
- Roof design complexity
- Constant perimeter thickness
- Rooftop units/skylight locations
- Value/performance evaluation

→ THE ZERO EDGE™ SOLUTION

| TAPERED EDGE STRIPS PRODUCT DIMENSIONS | PACKAGING SPECIFICATIONS | |
|---|--------------------------|----------------------|
| | PIECES PER PACKAGE | PIECES PER BUNDLE |
| 1 1/2" TO 0" (MAX TO MIN) | | |
| 12" x 96" (Width x Length) | 12 (96 Linear Feet) | 96 (768 Linear Feet) |
| 12" x 48" (Width x Length) | 12 (48 Linear Feet) | 96 (384 Linear Feet) |
| 2" TO 0" (MAX TO MIN) | | |
| 24" x 96" (Width x Length) | 10 (80 Linear Feet) | 40 (320 Linear Feet) |

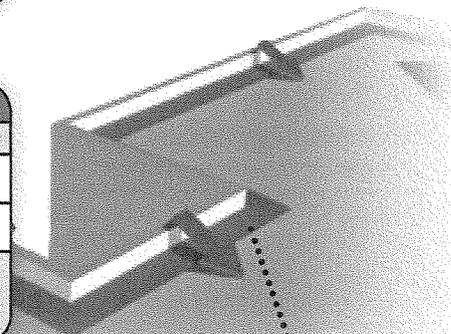
For more information on GEMINI™ Series Pre-Cut Tapered Insulation please visit:
www.AtlasRoofing.com/tapered

→ THERMAL DATA

| LTTR-VALUE | THICKNESS | | RSI* | SLOPE | |
|---------------|-----------|--------|------|---------|---------|
| | in | mm | | per ft. | percent |
| 4.5 (average) | 0-1.5 | 0-38 | .79 | 1.5" | 12.5% |
| 6.0 (average) | 0-2.0 | 0-50.8 | 1.09 | 1" | 8% |

LTTR (long-term thermal resistance) values were determined in accordance with ASTM C 1289. All test samples were third-party selected and tested by an accredited material testing laboratory. The LTTR results were reviewed and authorized by FM Approvals and certified by the PIMA Quality Mark Program.

*RSI is the metric expression of R-value (m² · K/W).



GEMINI™ Tapered Edge Strip

Attachment G
Electricity Consumption at High School for Fiscal Year 2015

| GREENFIELD High School Electricity Consumption FY2015 | | |
|--|---------------------------|--------------------|
| Read Date | Billed Demand (KW) | Usage (kwh) |
| 6/11/2015 | 175 | 74540 |
| 5/12/2015 | 165.5 | 65146 |
| 4/13/2015 | 170 | 85068 |
| 3/12/2015 | 175 | 80816 |
| 2/11/2015 | 157 | 75776 |
| 1/13/2015 | 165.5 | 32861 |
| 12/31/2014 | 165.5 | 50563 |
| 12/11/2014 | 160.5 | 70226 |
| 11/10/2014 | 132 | 63128 |
| 10/9/2014 | 155 | 57572 |
| 9/11/2014 | 172 | 62062 |
| 8/12/2014 | 132 | 53490 |
| 7/14/2014 | 76.5 | 54698 |
| Total kwh | | 825946 |

Thank you for contacting WMECO DG and submitting a request for a Pre-Application Report.

Pre-Application Report ID Number: PAR 225
Sent: 11/13/2014

Request Received: 11/10/2014

Report

Location: 1 Lenox Avenue, Greenfield, MA

Facility: Three phase, 207 kW PV generation facility to interconnect with Billing Account 54929566008

Interconnecting Customer: Town of Greenfield

The Company is providing the following information for the proposed Facility interconnection location(s) in the Pre-Application Report:

- 1) Circuit voltage at the substation: 13.8 kV
- 2) Circuit name: 22B7
- 3) Circuit voltage at proposed Facility: 13.8 kV
- 4) Whether Single or three phase is available near site: Three phase
- 5) If single phase – distance from three phase service: N/A
- 6) Aggregate connected Facilities (kW) on circuit: 313 kW
- 7) Submitted complete applications of Facilities (kW) on circuit that have not yet been interconnected: 701 kW
- 8) Whether the Interconnecting Customer is served by an area network, a spot network, or radial system: Radial
- 9) Identification of feeders within ¼ mile of the proposed interconnection site through a snap-shot of GIS map or other means: 22B2
- 10) Other potential system constraints or critical items that may impact the proposed Facility: The proposed location is on a long circuit. The circuit is sectionalized for reliability. The interconnection application will be reviewed to determine if any system modifications are required.

- **DISCLAIMER:** Be aware that this Pre-Application Report is simply a snapshot in time and is non-binding. Systems conditions can and do change frequently.
- **DPU Net Metering Requirements:** The Department of Public Utilities has a website dedicated to net metering which contains important information relative to net metering eligibility, including a *Fact Sheet: Rules on Net Metering*, and Frequently Asked Questions. Please visit: <http://www.mass.gov/dpu/netmetering> or call 617-305-3500. The System of Assurance is (www.MassACA.org) responsible for determining net metering eligibility and granting cap allocations. The MassACA can be reached at administrator@massaca.org or 877-357-9030. To be considered a Public Facility, the Host Customer and any customers they are allocating to must apply to the DPU for certification as a Municipality or Other Governmental Entity (<http://www.env.state.ma.us/dpu/docs/electric/12-01/7912dpuordapc.pdf>). The DPU can be reached at dpu.netmetering@state.ma.us or 617-305-3500.

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- Please see WMECO's distributed generation website for a copy of the DG Tariff along with interconnection applications: www.wmeco.com/distributedgeneration
- Please see WMECO's net metering website for a copy of the Net Metering Tariff along with the Schedule Z form: www.wmeco.com/netmetering
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Thank you,

Cindy Janke
WMECO DG