SPS THREE SCHOOL RE-ROOFS, SUFFOLK, VA

Oakland Elementary School
Mack Benn Jr. Elementary School
Northern Shores Elementary School

Addendum Two
February 23, 2022

The contractor shall attach this addendum to the inside front cover of each project manual issued to them and shall inform all concerned that the bidding documents are hereby modified by this addendum.

The following revisions, additions, or clarifications are now part of the contract documents and supersede or otherwise modify the requirements of the published project manual and drawings dated January 14, 2022.

- After a project award has been made, the selected contractor(s) will be permitted to access the roof by using their own extension ladders. A stair tower will not be required as referenced in Addendum One.

- A request was received from Metal Roofing Systems, Inc to approve their MRS System 2500 as an approved equal. The request has been reviewed and is hereby approved. A copy of the request is attached for reference.

- CLARIFICATION ON BID BONDS: A bond will be required for each roof that you bid on and for the total bid as well. Simply put, for each line that you bid (Items 1-4 on the bid), you will need to provide a bond. In theory, should you want to bid all line items in the bid, you will need as many as four bonds

- The existing roof deck on the gymnasium roof areas of Oakland Elementary School and Mack Benn Jr. Elementary School have been determined to be Loadmaster Engineered Assemblies. Therefore, the new roof system composition for these specific roof areas on each school is changed to meet the requirements of the attached Loadmaster Retrofit CompuDesign roof assemblies.

The new roof system composition for the gymnasium roof areas shall be as follows:

- New Standing Seam Metal Roof Panels as per Project Specifications
- New High Temperature Underlayment as per Project Specifications
- New Layer of 1/2-Inch DuraFlex Mineral Board Mechanically Attached Per Loadmaster Requirements
- Existing Double Layer 1/2-Inch DuraFlex Mineral Board (replace wet or damaged as required)
- Existing Loadmaster 4-Inch Isocyanurate Insulation (replace wet or damaged as required)
- Existing Loadmaster Fiberglass Sound Batts (replace wet or damaged as required)
- Existing Pyro Span Acoustical 22 Gauge Steel Roof Deck (replace wet or damaged as required)

Oakland Elementary School
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Addendum Two
February 23, 2022

It is the contractor's responsibility to field verify the exact location and size of gymnasium roof areas prior to submitting their bid.

Attachments:

- Oakland Elementary School - Loadmaster Retrofit CompuDesign dated February 15, 2022
- Mack Benn Jr. Elementary School - Loadmaster Retrofit CompuDesign dated February 15, 2022
- Metal Roofing Systems, Inc substitution request.

END OF ADDENDUM TWO

METAL ROOFING
Systems, Inc

February 16, 2022

RRMM Architects

Project: Sps Three School Re-roof (Suffolk, VA)

We know that the **Sps Three School Re-roof (Suffolk, VA)** needs a permanent roof solution with a competitive price to keep the project within the owner's budget. Metal Roofing Systems (MRS) has been requested by some of the better roofers to provide them with a quote for our quality roofing products for this project. As a local manufacturer of top quality metal panels and edge metal products, our competitive pricing will help keep the project within your owner's budget.

You may recall that your firm has used our material on your projects in the past such as:

- Chesterfield County Central Library
- Elkhardt-Thompson Middle School (Richmond, VA)
- George Mason Elementary School Project (Richmond, VA)
- Matoaca Elementary School (Petersburg, VA)
- E.S.H. Greene Elementary School (Richmond, VA)
- New Ettrick Elementary High School (Petersburg, VA)
- Culpeper County Public Schools - Career & Technical Education Center (Culpeper, VA)

Your design for this project reflects your interest in looking after the owner's best interest. MRS likewise tries to look after the owner's best interest by offering the best quality products on the market today at competitive pricing and these products are installed by our network of trained, certified roofing contractors.

Having performed a detailed review of the contract documents, we want to assure you that we have the same products as you have specified and that they meet or exceed your relevant performance requirements.

Since a number of roofing contractors have asked for our pricing on this project, we ask for you to please review and approve the attached CSI Substitution Request Form and let us know if you have any questions. Also, please let us know if you need for us to make the substitution request with some other form.

Please feel free to call me on my cell phone (804) 385-5798 if you should have any additional questions on the MRS product's compliance to the specified requirements.

Sincerely,

Peter Ryan
Metal Roofing Systems, Inc.

SUBSTITUTION REQUEST

Project: Sps Three School Re-roof (Suffolk, VA)

Substitution Request Number:

From: Peter Ryan, Metal Roofing System

To: RRMM Architects

Date: February 16, 2022

A/E project Number:

Re:

Contract For:

Specification Title: Division 7
Section: 07 41 13 Page:5

Description: Standing Seam Metal Roofing
Article/Paragraph: Part 2 Products 2.1,C

Proposed Substitution: MRS System 2500
Manufacturer: Metal Roofing Systems
Address:7670 Mikron Road Stanley, NC 28164 Phone: 704-820-3110 Fax: 704-820-0113
Trade Name: Metal Roofing Systems Inc.

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product
- Same maintenance service and source of replacement parts, as applicable, is available
- Proposed substitution will have no adverse effect on other trades and wilt not affect or delay progress schedule
- Proposed substitution docs not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Peter Ryan

Firm: Metal Roofing Systems Inc.

Address: 7670 Mikron Drive Stanley, NC 28164

Telephone: 704-820-3110

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section.

☐ Substitution approved as noted - Make submittals in accordance with Specification Section

☐ Substitution rejected - Use specified materials.

☐ Substitution Request received too late - Use specified materials.

Signed by

Supporting Data Attached: ■ Drawings ■ Product Data ☐ Samples ■ Tests ☐ Reports ☐ _____

SUBSTITUTION REQUEST FORM

To: RRMM Architects

Project: Sps Three School Re-roof (Suffolk, VA)

We hereby submit for your consideration the following product instead of the specified item for the above project:

DRAWING: SPEC. SECT. NO: **074113 – STANDING SEAM METAL ROOFING**
PARAGRAPH: **PART 2 – PRODUCTS 2.1, C**
Proposed Substitution: **MRS SYSTEM 2500**

Attach complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance.

Fill in blanks below:

A. Does the substitution affect dimensions shown on the Drawings? **No**
If yes, clearly indicate the changes:

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution? **Yes**
If no, fully explain: **Note: MRS product is equal to the specified product and thus will not affect the building design.**

C. What effect does substitution have on other Contracts or other Trades? **None**

D. What effect does substitution have on construction schedule?
None. Possible shorter lead time because MRS is a local Manufacturer.

E. Manufacturer's warranties of the proposed and specified items are.
Equal to warranties specified

F. Reason for request: **MRS product is comparable to the specified profile and meets/exceeds performance requirements. MRS is a local manufacturer providing possible shorter lead times.**

G. Itemized comparison of specified item(s) with the proposed substitution; list significant variations: **See attached document**

H. Accurate cost data comparing proposed substitution with product specified:

I. Designation of maintenance services and sources:

(Attach additional sheets if required.)

Certification of Equal Performance And Assumption Of Liability For Equal Performance

The undersigned states that the function, appearance and quality are equivalent or superior to the specified item. Submitted By:

Peter Ryan

Signature: Peter Ryan Title: Architectural Manager

Firm: Metal Roofing Systems, Inc.

Address: 7687 Mikron Drive, Stanley, NC 28164

Telephone: 704-820-3110

Signature shall be by person having authority to legally bind his firm to the above terms. Failure to provide legally biding signature will result in rejection of proposed substitution

For Use By Architect:

Accepted Not Accepted as Noted Received

Accepted Too Late

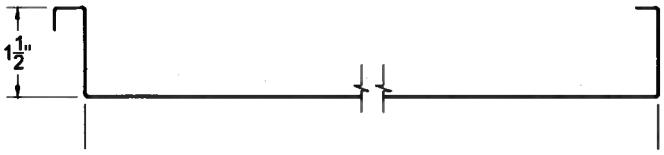
By:_____

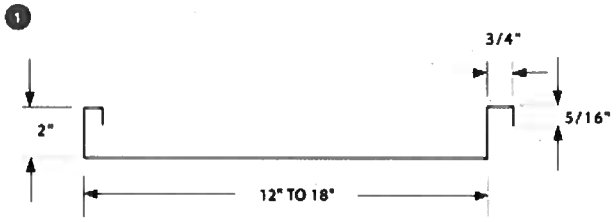
Date:

Remarks:

METAL ROOFING
Systems, Inc

Comparison sheet for equal





Drexel DMC 150SS **MRS System 2500**

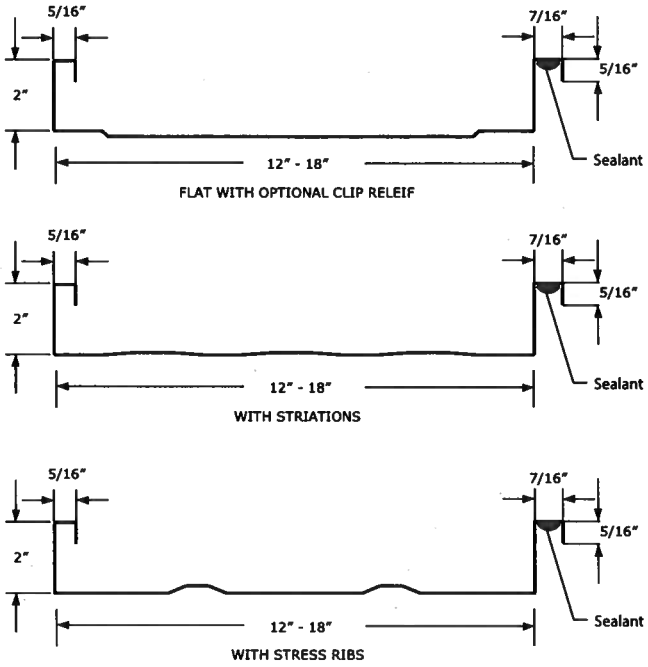
Feature	Specified	Metal Roofing Systems
Manufacturer	Drexel Metals	MRS
Model	DMC 150SS	MRS System 2500
Seamed	Mechanically	Mechanically
Panel Lock	Single/Double	Single/Double
Panel Width	16"	12" – 18"
Seam Height	1 1/2"	2"
Panel Finish	Smooth/Beads/pencil ribs/Striations	Smooth/Ribs/Striations
Fastener Type	Blind, Self Drilling	Blind, Self Drilling
Created Location	Factory	Factory
Test Procedure	ASTM E 1680, 1646, 1592	ASTM E 1680, 1646, 1592
UL Testing	UL 90	UL 90
Material	Galvalume or Aluminum	Galvalume or Aluminum
Material Finish	Kynar 500	Kynar 500
Material Color	As Selected	As Selected
Material Thickness	22 or 24 Ga. Galvalume .032 Aluminum	22 or 24 Ga. Galvalume .032 or .040 Aluminum
Finish Warranty		35 Yrs
Watertight Warranty	20 yrs	20 Yrs
Material Warranty	20 yrs	25 Yrs

Will Meet LEED Requirements for SS7.2 and MR4.1

MRS System 2500

12",14",16", or 18" o.c.
2" high
Mechanical Seam
Single Lock & Double Lock

24 & 22 Ga. Galv.
.032, .040, .050 Alum.
16 & 20 Oz. Copper



U.L. 580 Class 90 Certified
ASTM E1592, E1646, E1680 Tested

Ideal for low slope conditions in commercial or residential applications

Material: 24 & 22 GA Galvalume
.032,.040,.050 Aluminum,
16 & 20 Oz. Copper
12",14",16", or 18" o.c.

Features: Stiffening Ribs, Pencil Ribs, Striated, and Flat Profiles are all Available.
Clip Relief Optional.

Requirements: Solid Substrate, Open Framing
Ice & Water Shield or Synthetic Underlayment
Minimum Roof Pitch: 1/2" on 12"

Finish: Hylar 5000 or Kynar 500

Locations:

7670 Mikron Drive
Stanley, NC 28164
Tel: 704-820-3110
Fax: 704-820-0113

2451 Bulk Plant Road
Conway, SC 29526
Tel: 843-365-6673
Fax: 843-365-6683

5512 Fort Henry Drive
Kingsport, TN 37663
Tel: 423-239-0013
Fax: 423-447-7150

METAL ROOFING
Systems, Inc

Website: www.metalroofingsystems.biz

METAL ROOFING
Systems, Inc

20-Year Watertightness Limited Warranty

Building Owner :_____ MRS Work Order Number_____

Building/Job Name: _____ Date Roof Completed_____

Building Location:_____ Contract Amount (MRS Materials):_____

Metal Roofing Systems, Inc. (hereinafter referred to as "MRS") and the Roofing Contractor/Installer whose signature appears below (hereinafter referred to as "Roofer") severally warrant [Roofer only for any matter arising during the first two years after completion of installation of the subject roof on the above referenced Building and MRS only for any matter first arising after the second anniversary of successful completion of installation of the subject roof but arising not later than the twentieth anniversary of such completion] to the above named Building Owner (hereinafter referred to as "Owner") that subject to each and every term(s), condition(s), limitation(s), allocation(s) of warranty, and responsibility(ies) stated herein, Roofer's workmanship on the above named building will be adequate to prevent leaks for 20 years commencing with the date of completion of Installation of the Roofing System. This warranty will be fully satisfied by repair of the Roof, and any such repairs shall carry a warranty against leaks for any then remaining balance of the original 20-year warranty period.

MRS'S AND ROOFER'S AGGREGATE TOTAL COMULATIVELIABLITY UNDER THIS 20 YEAR WATERTIGHTNESS LIMITED WARRANTY IS LIMITED TO THE AMOUNT OF THE OWNER'S ORIGINAL PAYMENT MADE TO THEM FOR MATERIALS FURNISHED BY MRS ONLY AND FOR THE INSTALLATION OF THOSE MATERIALS ONLY, NEITHER MRS NOR ROOFER MAKES ANY OTHER WARRANTY WHATERVER, EXPRESS OR IMPLIED, ALL IMPLIED WARRANTIES OF MERCHANTIBILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE WHICH EXCEED OR DIFFER FROM THE WARRANTIES HEREIN EXPRESSED ARE DISCLAIMED BY EACH AND ALL OF SAID PARTIES AND EXCLUDED FROM THIS 20 YEAR WATERTIGHTNESS LIMITED WARRANTY. MRS DOES NOT IN ANY WAY WARRANTY THE MERCHANTIBILITY OF THE GOODS SOLD HEREBY. NO WARRRANTIES EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.
IN NO EVENT SHALL ANY ONE OR MORE OF MRS AND ROOFER HAVE ANY LIABILITY FOR ANY COMMERCIAL LOSS, CLAIMS FOR LABOR, OR CONSEQUENTIAL DAMAGES OF ANY OTHER TYPE WHETHER OWNER'S CLAIM BE BASED IN CONTRACT, TORT, WARRANTY, STRICT LIABILITY, OR OTHERWISE, IT IS EXPRESSLY AGREED THAT OWNER'S REMEDIES EXPRESSED IN THIS 20 YEAR WATERTIGHTNESS LIMITED WARRANTY ARE OWNER'S EXCLUSIVE REMEDIES.

TERMS, CONDITIONS, LIMIATIONS

1. Owner shall provide MRS and Roofer with written notice within thirty days of the discovery of any leak(s) in the Roof. Failure of the Owner to do so shall automatically relieve both MRS and Roofer of any and all responsibility and/or liability under the 20 year Watertightness Limited Warranty.
2. In the event a roof repair is necessary during the first two-year period or any extension thereof, the Roofer's responsibility [which shall be in lieu of any and all MRS liability during this period and any such extensions] shall be extended for a two-year period from the date of the last such repair. In any such case, MRS will be responsible only for the balance remaining after the end of such a period and any and all extension(s) of the original twenty-year period from the date of completion or installation of the Roofing System.
3. Following MRS's inspection, MRS determines that the leak(s) in the Roof are caused by defects in MRS materials or in the workmanship of the Roofer, Roof repair obligations shall then arise in accordance herewith, but Owner's remedies and MRS's liability shall in any event be limited to repair of the Roof, subject to the cost limitations set forth above. Otherwise, neither MRS nor Roofer shall have any liability. The Roofer's two year liability (which is in lieu of any and all MRS liability for such period) shall be extended an additional two years from date of last repair, should such repairs be necessary during the first two years of the Roofer's liability or during any extension thereof.

4. Neither MRS nor Roofer shall have any liability or responsibility under or in connection with either this 20-Year Watertightness Limited Warranty or the Roof if any one or more of the following shall occur:
    a) Deterioration caused by marine(salt water) atmosphere or by regular spray of either salt or fresh water.
    b) Corrosion caused by heavy fallout or exposure to corrosive chemicals, ash or fumes from any chemical plant, foundry, planting works, kiln, fertilizer manufacturing, paper plant, and the like.
    c) Deterioration caused by any corrosive substance or any condensate of any condensate or any harmful substance contained, generated or released inside the building.
    d) Damage caused by worker(s) on the roof.
    e) Any other cause beyond MRS's control.
    f) Damage to the Roof caused by natural disasters, including but not limited to, lightning, or any strong gale, hurricane, tornado, or earthquake.
    g) Failure by any contractor or subcontractor to follow MRS's recommended installation instructions for the layout design and installation of the Roof.
    h) If, after installation of the Roof by Roofer, there are any alterations, such as, but not limited to, structures, fixtures, or utilities being place upon or attached to the roof without prior written authorization from MRS, or
    i) If there is any failure by the Owner or lessee or other occupant or user to use reasonable care in maintaining the Roof, or
    j) If Owner fails to comply with every term and/or condition stated in this 20-Year Watertightness Limited Warranty, or
    k) If any panels or other parts are installed in a manner that does not permit drainage of water from all surfaces.
    l) MRS shall not have any liability or responsibility with leakage caused by ridge vents.
    m) MRS shall not have any liability or responsibility with failure of gutters and gutter accessories.
    n) Failure of roofing installation and the materials supplied by MRS for the flashing and metal roofing due to reaction of dissimilar metals will not be the responsibility of MRS, nor will MRS be held liable for any claims due to failures caused by dissimilar metals.
5. MRS shall not have any liability or responsibility under or in connection with either this 20-Year Watertightness Limited Warranty or the Roof in the event of a failure by any contractor or subcontractor to use approved installation details for roof curbs, roof jacks, sealants, sub framing, and flashing furnished by MRS, [or to substitute therefore only products approved in writing in advance by MRS as equal (if provided by the contractor)].
6. During the term of this Warranty, MRS, its Sales Representative and employees, shall have free access to the roof during regular business hours
7. MRS shall not have any obligation under this 20-Year Watertightness Limited Warranty until final drawings of the completed roof are submitted by MRS to the Roofer and accepted in writing by MRS. Such drawings must show the exact number, size and location of all roof penetrations and rooftop equipment. Photos of the roof showing these items must accompany the drawings.
8. MRS shall not have any obligation under this 20-Year Watertightness Limited Warranty until all invoices for installation, supplies and services have been paid in full to each of MRS and Roofer and each material supplier.
9. Neither MRS nor Roofer shall be responsible for any consequential damages or loss to the building its contents or other materials.
10. Neither MRS nor Roofer's failure at any time to enforce any of the terms or conditions stated herein shall be construed to be a waiver of such provision or of the right to exercise any right in the future.
11. This 20-Year Watertightness Limited Warranty supercedes and is in lieu of any and all other warranties (whether express or implied) that are either in addition to or in conflict with the term(s) and condition(s) stated herein. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE WHICH EXCEED OR DIFFER FROM THE WARRANTIES HEREIN EXPRESSED ARE DISCLAIMED BY EACH AND ALL OF SAID PRETIES AND EXCLUDED FROM THIS 20-YEAR WATERTIGHTNESS LIMITED WARRANTY.
12. If the subject roof is covered by products of more than one roofing products manufacturer, this 20-Year Watertightness Limited Warranty applies only to those portions of such roof which are covered solely by MRS manufactured products.
13. Notwithstanding any other provision of this 20-Year Watertightness Limited Warranty, MRS shall not have any liability or responsibility at any time for or as a consequence of any condensation or underside corrosion which is or was caused at any time in part or wholly by any condensation resulting from either or both of the following:
    a) The use of an inadequate vapor barrier where the insulation is installed immediately beneath the roof panels. An adequate vapor barrier is defined as on which has a perm rating of .05 or less with sealed joints and perimeter.

b) Inadequate ventilation of the attic space between a roof panel and insulation.

14. Roofing installation must be supervised ay an authorized MRS installer or an individual that has been factory trained in the installation of MRS roofing products.
15. MRS roof panels must be made of a material which carries a 20-year durability warranty from manufacturer, such as a 20-year warranty Kynar 500 painted panel.

WARRANTY RESPONSIBILITY:

ROOFER:

- First through second Year, plus any applicable extension period(s) as describe hereinabove.

MRS:

- The thereafter remaining balance of the first 20 years from date of completion of installation of the subject Roof.

This 20-Year Watertightness Limited Warranty is tendered for the sole benefit of the original purchaser as named below is not transferable or assignable. It becomes valid only when signed by each of Roofer, Owner, and MRS.

EXCEPT ONLY AS EXPRESSLY PROVIDED HEREIN, MRS MAKES NO REPRESENTATION(S) OR WARRANTY(IES) OR MERCHANTABILITY AND WARRANT(IES) OF FITNESS FOR ANY PARTICULAR PURPOSE, ALL OF WHICH ARE EXPRESSLY DISCLAIMED WITH RESPECT TO THE GOODS AND OR SERVICES COVERED HEREBY, NOR DOES MRS MAKE ANY WARRANTY OR RESUME ANY RESPONSIBILITY WITH THE RESPECT TO THE VALIDITY OF ANY PATENT(S), DESIGN(S), COPYRIGHT(S), OR TRADEMARK(S) WHICH MAY COVER ANY OF SUCH GOODS. THE CONDITIONS OF LIABILITY, RIGHTS, OBLIGATIONS AND REMEDIES OF THE PARTIES RELATING TO CLAIMS ARISING FROM ANY DEFECTIVE GOODS AND/OR WORKMANSHIP SHALL BE GOVERNED EXCLUSIVELY BY THE TERMS HEREOF. THIS 20-YEAR WATERTIGHTNESS LIMITED WARRANTY MAY NOT BE CHANGED ORALLY.

This 20-Year Watertightness Limited Warranty shall be governed by and construed and enforced in accordance with the laws of the State of North Carolina.

Roofing Contractor/Installer: _____

Owner: _____

By: _____

Title: _____

Date: _____

Metal Roofing Systems, Inc.: _____

Date: _____

METAL ROOFING
Systems, Inc

35 -Year Limited COOLR "Paint " Warranty
AZ50 Galvalume®, G90 Galvanized, or Aluminum

EXCLUSIVE WARRANTY

This Warranty (collectively, the "Warranty") is issued by Metal Roofing Systems Inc. (hereinafter referred to as MRS"), to the customer identified in this Certificate (hereinafter referred to as "Customer") and applies to the finish on AZ50 Galvalume®, G90 Galvanized, or Aluminum flat sheet and coil products (hereinafter referred to as the "Product") with PVDF based coating consisting of KYNAR 500® or Hylar 5000® resin (hereinafter referred to as the "Coating") if erected anywhere within the Continental United States including Alaska, Hawaii and Canada.

1. Subject to the provisions contained herein, MRS warrants that during the Thirty-Five (35) Year Warranty Period, MRS' COOLR stock Coatings will not chip, crack, peel, flake or check (except for such slight crazing or cracking as may occur on tightly roll-formed edges or break bends at the time of roll forming or other fabrication of pre-painted sheet or coil and which is accepted in the industry as standard). Subject to the provisions contained herein, MRS warrants that for Thirty (30) years from the date of installation of panels, the Coating will not chalk in excess of ASTM D-4214-89 method D659 number eight (8) rating, or change color more than Five (5.0) Hunter E units as determined by ASTM method D-2244-2. Color change will be measured on an exposed painted surface that has been cleaned of surface soils and chalk, and the corresponding values measured on the original or unexposed surface. It is understood that fading or color change may not be uniform, if the surfaces are not equally exposed to the sun and elements.

2. This Warranty does not apply to circumstances beyond MRS' control, including:

a. Fire or other casualty or physical damage;

b. Unusual harmful fumes, foreign substances in the atmosphere or standing water. No warranty is provided for the coating on any substrate that is subjected to sea spray or installed on a property located 1500 or fewer feet from a coastline, salt or brackish water, or any salt water environment;

c. Improper treatment of or defects in the metal or in the fabrication or areas where items such as snow guards or solar panels are attached / adhered to the product.

d. Intermittent or continual submersion in water or any other liquid or solid material;

e. Damage from wind, deliberate damage, improper handling by erectors, from abrasive or chemical cleaners.

f. Mishandled Products, e.g., ANY PRODUCT WHICH HAS BEEN ABUSED, ALTERED, MODIFIED, USED IN A MANNER NOT ORIGINALLY INTENDED, OR STORED CONTRARY TO OUR INSTRUCTIONS.

g. Stored or installed in a way that allows for poor air circulation, contact with animals or animal waste.

h. Embossing that fractures or severely stretches the film (i.e. film is diminished at the point of emboss by greater than 0.2 mils.

3. This Warranty does not cover damage or deterioration resulting from moisture contamination or entrapment or any other contamination detrimental to the coating, which occurs prior to installation of the Products, including, without limitation, contamination occurring during shipment of the Product to the jobsite or during storage at the jobsite. This Warranty does not cover failure due to corrosion of substrate.

4. EXCLUDED ATMOSPHERIC CONDITIONS
This Warranty does not apply to sheet exposed at any time to corrosive, aggressive, harmful or other abnormal atmospheric conditions, including but not limited to:

A. Areas subject to fallout exposure to corrosive chemicals, ash, fumes, cement dust, animal waste, or it's decomposition by-products, fallout from copper, lead, nickel or silver mining or refining operations and carbon black;

B. Conditions/circumstances where corrosive fumes or condensation are generated or released inside the building;

C. Areas subject to water run-off from lead or copper flashing or piping or areas in contact with lead or copper or lumber containing same;

5. All Warranty work will be performed by MRS, or any company, dealer, contractor, applicator, or distributor selected by MRS. Since there may be a color variance between the replacement or repainted Product and the originally installed Product due to normal weathering (i.e. exposure to sunlight and extremes of temperature and weather) of the originally installed Products, this condition shall not be indicative of a defect.

6. NOT WITHSTANDING ANYTHING TO THE CONTRARY CONTAINED HEREIN, MRS' LIABILITY SHALL NOT EXCEED THE LESSER OF THE FOLLOWING: (I) THE CUSTOMER'S LIABILITY DIRECTLY ATTRIBUTABLE TO A BREACH OF THIS WARRANTY, OR (II) THE REFINISHING OR REPLACEMENT OF THE FAILED COATED MATERIAL, OR AT MRS' OPTION, REFUND OF THE PURCHASE PRICE WHICH SHALL NOT EXCEED AN AMOUNT EQUAL TO ONE HUNDRED PERCENT (100%) OF THE AMOUNTS PAID TO MRS BY THE CUSTOMER FOR THE PURCHASE OF THE DEFECTIVE PRODUCT. MRS SHALL NOT BE LIABLE FOR INJURY TO PROPERTY OTHER THAN THE FLAT SHEET AND/OR COIL PRODUCTS COATED WITH FLUOROCARBON PAINT SYSTEMS, IN THE CONDITION AND AS PURCHASED BY CUSTOMER FROM MRS. MRS, IN ALL INSTANCES, SHALL HAVE THE SOLE AND EXCLUSIVE RIGHT TO DETERMINE WHETHER OR NOT REFINISHING OR REPLACEMENT OF THE FAILED AREAS IS REQUIRED, AND TO FULFILL ITS OBLIGATION UNDER THE WARRANTY, MRS RESERVES THE RIGHT TO NEGOTIATE AND APPROVE ANY FINAL CONTRACT LET FOR REFINISHING AND REPLACEMENT AS THE CASE MAY BE.

7. This Warranty applies only to products manufactured by the customer within six (6) months from shipment thereof by Metal Roofing Systems Inc.

8. Claims under this Warranty must be presented by the customer to MRS in writing during the Warranty period and within thirty (30) days after Customer becomes aware that any warranted condition has occurred. Time is of the essence and failure to give notice within the specified time shall discharge MRS from any obligations under this Warranty. MRS must be given a reasonable opportunity to do an on-site inspection to determine if there is a coating failure.

9. The laws of the State of Ohio shall exclusively govern the rights and duties of the parties to this Warranty. Any controversy or claim arising out of or related to this Warranty, or the breach thereof shall be brought before a court of competent jurisdiction in Cleveland, Ohio under the substantive and procedural laws of the State of Ohio.

10. Customer acknowledges that MRS is not the manufacturer or applicator of the coating warranted herein and agrees that all issues arising from or related to the exceptions set forth herein shall be determined finally and conclusively as to Customer, by the original manufacturer.

11. Due to pigment limitations, Regal Red, Matte Black and L/S Antique Black are covered by a number eight (8) rating for chalk, and five (5) E units for fade for a period of ten (10) years from installation. Copper and other metallic colors have no rating available for color change.

12. This Warranty applies solely to MRS "inventoried stock" colors. Custom matched colors and noninventoried items may have different Warranty terms, or not be warranted.

13. For this Warranty to apply, the Customer must retain certain records. In order for MRS to process a claim, we will need to be told the original coil or skid tag number.

14. THIS WARRANTY IS GIVEN AS THE SOLE AND EXCLUSIVE WARRANTY AND EXCLUSIVE REMEDY BY OR AGAINST MRS, AND NO OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR PURPOSES, ARE MADE, AND ANY SUCH OTHER WARRANTIES ARE EXPRESSLY DISCLAIMED. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION CONTAINED IN THIS INSTRUMENT. CUSTOMER WAIVES THE BENEFIT OF ANY RULE THAT THE DISCLAIMERS OF WARRANTY SHALL BE CONSTRUED AGAINST THE SELLER, AND AGREES THAT THE DISCLAIMERS IN THIS INSTRUMENT SHALL BE CONSTRUED LIBERALLY IN FAVOR OF MRS. MRS SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. MRS HEREBY DISCLAIMS ALL LIABILITIES FOR DAMAGES BASED ON THEORIES OF NEGLIGENCE AND STRICT PRODUCT LIABILITY. THIS WARRANTY IS EXTENDED TO CUSTOMER ALONE AND NO OTHERS, IS NON-TRANSFERABLE AND NON-ASSIGNABLE, AND MAY NOT BE ENLARGED IN ITS SCOPE BY ANY REPRESENTATIVE, SALES PERSON, AGENT OR OTHER EMPLOYEE OF MRS. THE CUSTOMER SHALL NOT PERMIT ANYONE TO CLAIM OR IMPLY THAT THIS WARRANTY EXTENDS OR CAN BE "PASSED THROUGH" TO ANYONE OTHER THAN THE CUSTOMER. THIS PROVISION IS A MATERIAL TERM OF THIS WARRANTY AND ITS VIOLATION OR BREACH BY CUSTOMER OR ANY OF CUSTOMER'S AGENTS OR REPRESENTATIVES, SHALL VOID AND CANCEL THIS WARRANTY FOR ALL PURPOSES.

THE LIABILITY OF SELLER MRS SHALL NOT EXTEND TO PERSONAL INJURY, PROPERTY DAMAGE, LOSS OF PROFIT, DELAY OR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE FAILURE OF ANY PRODUCT OR COATING TO CONFORM WITH THE PROVISIONS OF THIS LIMITED WARRANTY.

MRS SHALL NOT IN ANY EVENT BE LIABLE TO THE CUSTOMER OR ANY OTHER PERSON OR ENTITY FOR ANY ACTIONS, CLAIMS, CAUSES OF ACTION, DAMAGES, EXPENSES AND/OR LIABILITIES ARISING FROM OR RELATED TO THE DESIGN, USE OR FAILURE OF THE PRODUCT OR COATING, FOR THE INTERRUPTION OF THE CUSTOMER'S OPERATIONS OR BUSINESS, FOR THE COST OF LABOR EXPENDED BY OTHERS ON ANY DEFECTIVE PRODUCT OR COATING OR FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES WHATSOEVER OR LOSS OF PROFIT OR OTHER FINANCIAL LOSS ARISING OUT OF THE USE OR FAILURE OF THE PRODUCT OR COATING, EVEN IF MRS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH ACTIONS, CLAIMS, CAUSES OF ACTION, DAMAGES, EXPENSE, LOSS AND/OR LIABILITIES, WHETHER ARISING FROM BREACH OF CONTRACT, BREACH OF WARRANTY, TORT, INCLUDING NEGLIGENCE, STRICT LIABILITY OR OTHERWISE TO ANYONE BY REASON OF THE FACT THAT SUCH PRODUCT OR COATING SHALL HAVE BEEN DEFECTIVE.

SIGNATURE:

This Warranty is not valid unless signed by an authorized employee or agent of Metal Roofing Systems Inc.

METAL ROOFING SYSTEMS INC.

By: _____

Name Printed:

Title: President

Date:

"Metal Roofing Systems"

Issued To:

For:

Job:

Color:

Completion Date:

METAL ROOFING Systems, Inc

35 YEAR WARRANTY

SEE REVERSE SIDE FOR MATERIAL AVAILABILITY

ENVIRONMENTALLY SMART COLORS - DESIGNED ENERGY EFFICIENT

TERRA COTTA	AGED COPPER	BONE WHITE	SANDSTONE	SURREY BEIGE
COLONIAL RED	PATINA GREEN	REGAL WHITE	ASH GRAY	SIERRA TAN
REGAL RED	HEMLOCK GREEN	STONE WHITE	DOVE GRAY	MEDIUM BRONZE
BURGUNDY	HARTFORD GREEN	SLATE BLUE	SLATE GRAY	MANSARD BROWN
MATTE BLACK	EVERGREEN	REGAL BLUE	CHARCOAL GRAY	DARK BRONZE

METALLIC COLORS

NON-PAINTED

*SILVER	*COPPER	*CHAMPAGNE	*PRE-WEATHERED GALVALUME®	ACRYLIC COATED GALVALUME®

* CONTACT YOUR REPRESENTATIVE FOR EXACT COLOR CHIP SAMPLE

LOCATIONS

7687 Mikron Drive
Stanley, NC 28164
P: 704.820.3110
F: 704.820.0113

370-C Allied Drive
Conway, SC 29526
P: 843.347.6673
F: 843.347.6693

3214 Hanover Drive
Johnson City, TN 37604
P: 423.434.0535
F: 423.434.0537

www.metalroofingsystems.biz

Faster. Smarter. Better. Period.

ENERGY STAR PARTNER

U.S. GREEN BUILDING COUNCIL

*Available at a slight price premium.
Colors shown are matched as accurately as possible, but may vary slightly from finished product. These rich and vibrant colors are produced with either Kynar 500 ® or Hylar 5000 ® resins, which provide superior color retention, and allow us to offer non-prorated coating warranties for most applications. Coating warranty varies for Regal Red, Matte Black, Copper, Silver, Champagne, and Pre-Weathered Galvalume. Metallics are warranted for chip, crack, and peel only. Please contact your representative for more information.

STOCK AVAILABILITY MATRIX

							GALVALUME		ALUMINUM			
			ISR	EMI	3yr.	SRI	24 ga.	22 ga.	.032	.040	.050	.063
Aged Copper	★	L	0.47	0.85	0.46	53	●		●			
Ash Gray	★	L	0.39	0.84	0.39	41	●	●	●	●		
Bone White	★	L	0.47	0.83	N/A	58	●		●	●	●	●
Burgundy	★		0.25	0.85	0.23	23	●					
Champagne Metallic	★	L	0.37	0.80	0.35	37	●					
Charcoal Gray	★		0.29	0.84	0.28	28	●	●	●	●		
Colonial Red	★	L	0.30	0.85	0.29	30	●		●	●	●	
Copper Metallic	★	L	0.49	0.86	0.47	56	●		●			
Dark Bronze	★		0.26	0.84	0.25	24	●	●	●	●	●	●
Dove Gray	★	L	0.49	0.86	N/A	56	●	●	●	●		
Evergreen	★		0.27	0.86	0.26	26	●		●	●	●	
Hartford Green	★		0.26	0.85	0.25	24	●		●	●	●	
Hemlock Green	★	L	0.29	0.86	0.29	29	●					
Mansard Brown	★		0.27	0.86	0.25	26	●	●	●	●	●	
Matte Black	★		0.29	0.83	0.27	27	●	●	●	●	●	
Medium Bronze	★	L	0.30	0.87	0.28	31	●	●	●	●	●	●
Patina Green	★		0.28	0.87	0.28	28	●					
Pre-weathered Galvalume*	★		0.30	0.79	0.28	27	●		●			
Regal Blue	★		0.26	0.85	0.25	24	●		●			
Regal Red	★	L	0.42	0.83	0.41	45	●		●		●	
Regal White	★	L	0.67	0.86	0.67	81	●	●	●	●	●	●
Sandstone	★	L	0.54	0.86	0.53	63	●		●	●	●	
Sierra Tan	★	L	0.35	0.86	0.34	37	●	●	●	●	●	
Silver Metallic	★	L	0.59	0.79	0.60	67	●		●	●	●	
Slate Blue	★		0.29	0.85	0.28	28	●		●			
Slate Gray	★	L	0.33	0.84	0.33	33	●	●	●	●	●	
Stone White	★	L	0.60	0.86	0.56	71	●		●	●	●	●
Surrey Beige	★	L	0.42	0.85	0.41	46	●					
Terra Cotta	★	L	0.35	0.86	0.35	37	●		●	●		
Acrylic Coated Galvalume*	★	L	0.67	0.14	0.55	56	●	●				

*** IF DESIRED COLOR IS NOT LISTED ON MATRIX PLEASE CONTACT METAL ROOFING SYSTEMS FOR AVAILABILITY**

NOTES

- All metal is painted with a .20 mil primer and .70 -.90 mil Top Coat of 70% Kynar 500 or Hylar 5000. The reverse side has a .20 primer and .30 - .40 backer coating.
- 22 gauge steel available upon request.
- For low slope roofing to meet Energy Star requirements the ISR must be ≥ 0.65. After 3 years, the solar reflectance must be ≥0.50.
- For steep slope roofing to meet Energy Star requirements the ISR must be ≥ 0.25. After 3 years, the solar reflectance must be ≥0.15.
- For low slope roofing to meet LEED 2009 requirements the SRI must be ≥ 78.
- For steep slope roofing to meet LEED 2009 requirements the SRI for 100% of the roof must be ≥ 29.
- Low slope is defined as ≤2:12.
- Steep slope is defined as >2:12.

KEY

●	Stocked Item
★	Energy Star Compliant
L	LEED 2009 Compliant
ISR	Initial Solar Reflectance
EMI	Emissivity
SRI	Solar Reflectance Index

METAL ROOFING Systems, Inc

35 YEAR PAINT WARRANTY

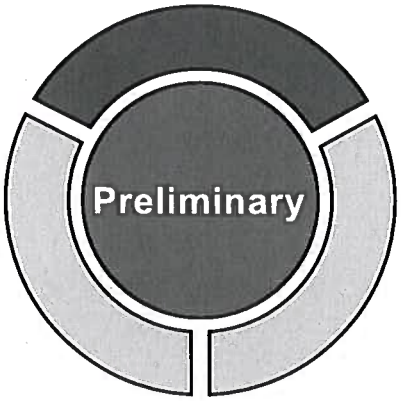
ENERGY STAR PARTNER

Oil canning is an aesthetic issue and is an inherent part of light gauge cold formed metal products. By using coil that has been processed properly, designing for thermal movement, following stringent specifications for installation and proper handling most oil canning can be eliminated. Oil canning is not grounds for coil/panel rejection.

Galvalume® is a registered trademark of BIEC. Hylar 5000 is a registered trademark of Solvay Solexis, Inc. Kynar 500 is a registered trademark of Atofina, Inc.

CompuDesign

Existing Loadmaster Roof Deck System Retrofit Design Proposal



Loadmaster Systems, Inc.

Loadmaster is reusable!

Retrofit CompuDesign

202202006.1
February 15, 2022

Roof Retrofit Project w/Standing Seam Metal Roof

Mack Benn Elementary School
1253 Nansemond Pkwy
Suffolk, VA 23434

Prepared For

Mr. Mark Gero
Architectural Exterior Solutions, LLC
P.O. Box 6448
Williamsburg, VA 23188
757-564-8907

Loadmaster Representative

Mr. Mark Gero
Architectural Exterior Solutions, LLC
P.O. Box 6448
Williamsburg, VA 23188
757-564-8907

visit our web site: www.loadmaster.net

Loadmaster Systems, Inc.

(770) 381-6067
(800) 527-4035
Fax (770) 381-1783
www.loadmaster.net

3100 Northwoods Pl, Ste. E Peachtree Corners, Georgia 30071 PO Box 2169 Duluth, Georgia 30096

February 15, 2022

Mr. Mark Gero
Architectural Exterior Solutions, LLC
P.O. Box 6448
Williamsburg, VA 23188

Re: Gymnasium Roof Retrofit, Mack Benn Elementary School, Suffolk, VA

Dear Mr. Gero:

This CompuDesign Design Proposal is provided as an informational service of Loadmaster Systems, Inc. It has been developed to assist in the evaluation, design and specification of retrofitting a Steel Roof Deck Assembly. The information we have received about the existing condition and intended design for the roof deck on the above referenced project is presented on the Input Data page under the following headings:

BUILDING DESIGN DATA includes general project design information and work items associated with the roof deck assembly, the support system and the roof covering.

ASSEMBLY PERFORMANCE REQUIREMENTS lists the specific performance characteristics required of the roof deck assembly.

Based upon this information, we have engineered the most economical Loadmaster Substrate Assembly that meets the design criteria specified. The proposed retrofit assembly is presented on the Design Proposal page under these headings:

PROPOSED RETROFIT ASSEMBLY designates and describes in detail the proposed Loadmaster Substrate Assembly.

ASSEMBLY PERFORMANCE lists the performance attributes and qualifications of the proposed assembly.

By comparing the performance of the proposed assembly to the required performance, an informed and educated decision can be made by the responsible Design Professional regarding the suitability and desirability for retrofitting this project. For your convenience, we have included drawings and a complete custom-written specification.

We trust you will find this information helpful in designing and specifying a Loadmaster Retrofit Substrate Assembly for this project.

Sincerely,
Loadmaster Systems, Inc.

Joseph A. Nelson

Joseph A. Nelson P.E.
Director of Technical Services

"A Good Roof Starts With a Good Roofing Foundation."

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FORESITE
Group

3740 Davinci Court, Suite 100
Peachtree Corners, Georgia 30092
o | 770.368.1399
f | 770.368.1944
w | www.fg-inc.net

February 15, 2022

Re: Gymnasium Roof Retrofit, Mack Benn Elementary School, Suffolk, VA

Foresite Group is a multidisciplinary engineering, planning, design, and consulting firm founded in 2003. Foresite Group currently has registered engineers in thirty six of the fifty states. We have been retained by Loadmaster Systems, Inc. of Peachtree Corners, GA on a continuing basis to review certain design proposals and project submittals for compliance with stated specifications, applicable building codes and adherence to sound structural practices.

When requested by Loadmaster Systems, Inc., Foresite Group reviews the submittal documents as well as the structural adequacy of the recommended system for compliance with project stated specifications, applicable building codes and sound structural principles. If the submittal complies with the above criteria based on our review, Foresite Group will issue a letter of compliance, signed and sealed with appropriate stamps for the state in which the project is located.

Should there be any questions regarding Foresite Group, our qualifications or the above stated procedure, or if we may provide additional information or service, please contact us.

Sincerely,
FORESITE GROUP, INC.

Janice Weaver, PE
Structural Division Director

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Design Concept

DESIGN PHILOSOPHY	*"A Good Roof Starts With A Good Roofing Foundation."* This simple principle defines roof deck assemblies that provide TOTAL PERFORMANCE. Each Loadmaster Roof Deck Assembly in this proposal is designed with this idea in mind.
DESIGN CRITERIA	A *"Good Roofing Foundation"* must be: • Compatible • Durable • Weatherable • Permanent • Stable • Insulative Every Loadmaster Roof Deck Assembly provides these essential performance characteristics.
DESIGN PROCESS	In order to provide all six characteristics necessary for a *"Good Roofing Foundation"*, the roof deck assembly must be integrally designed and engineered; all components must work together for the benefit of the whole assembly. Each Loadmaster Roof Deck Assembly in this proposal has been created through this process.
DESIGN VERIFICATION	To establish assembly qualifications and performance, third party testing must be conducted on the total assembly. Loadmaster designs have been integrally tested to verify assembly qualifications and performance. Test results are certified under a licensed Structural Engineer's seal.

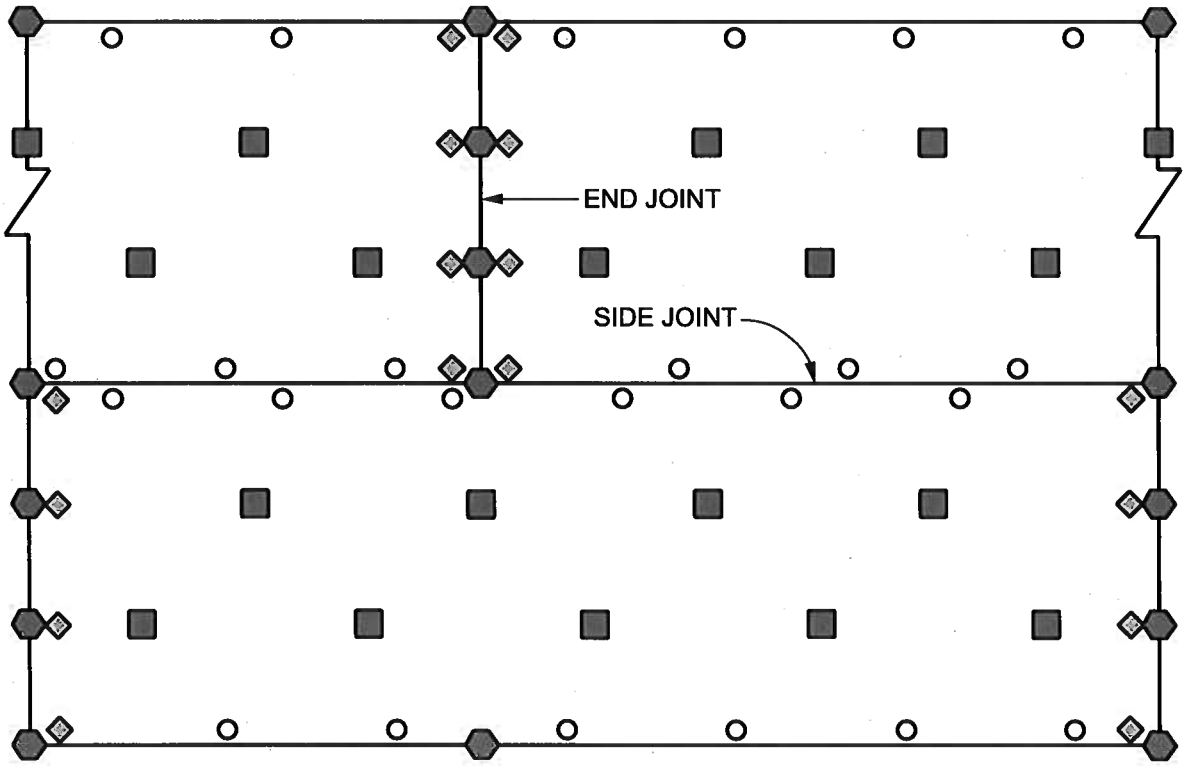
Stabilization Design

Four distinct physical forces act upon the roofing foundation to create instability. These forces are:

- Gravity
- Wind Uplift
- Seismic/Horizontal Wind
- Thermal Movement

A good roofing foundation remains stable while resisting these forces. All Loadmaster Board Attachment Patterns create the necessary stability. Each symbol below represents a fastening device and the force it is designed to resist.

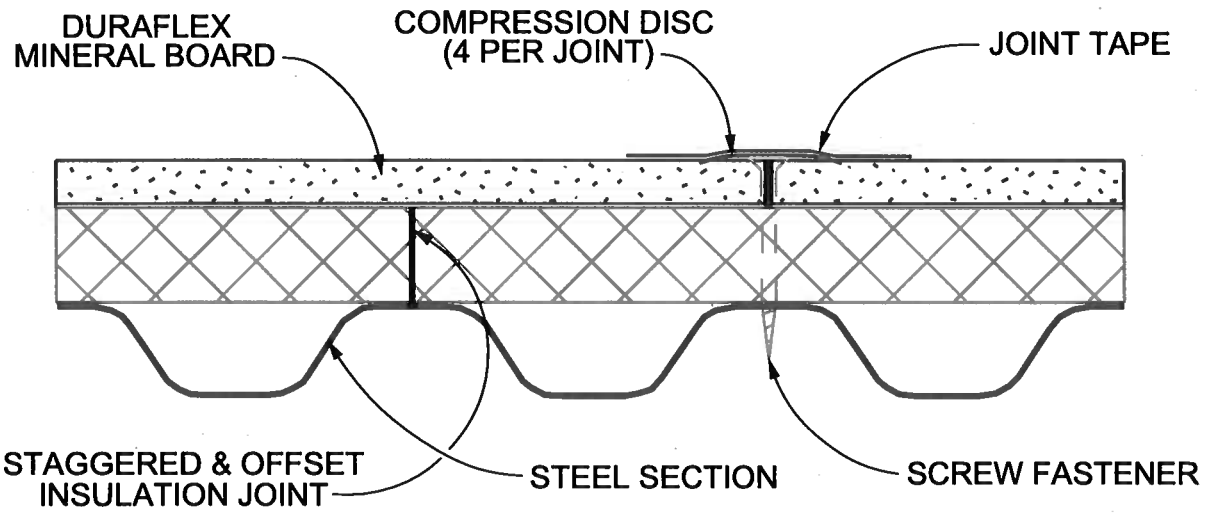
TYPICAL LOADMASTER BOARD ATTACHMENT PATTERN



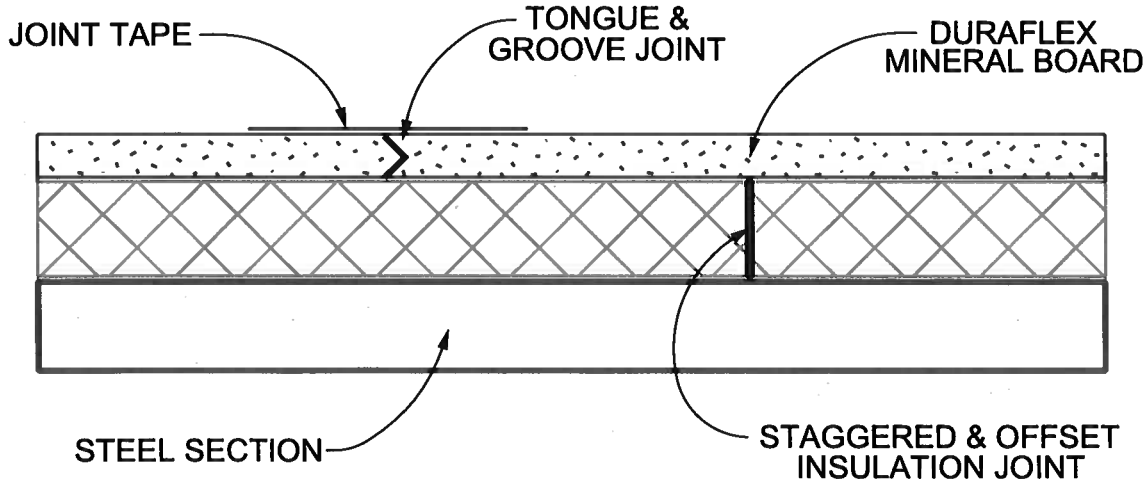
Joint Design

Joints, the greatest discontinuity in the roof deck, must be stabilized.

LOADMASTER END JOINT DESIGN



LOADMASTER SIDE JOINT DESIGN



Input Data

Mack Benn Elementary School
Suffolk, VA

Gymnasium Roof Retrofit
February 15, 2022
CD# 202202006.1

EXISTING BUILDING CONDITIONS

Existing Roof Covering	Asphalt Shingles
Original Assembly	Pyro Span Acoustical (22 gauge) I-400 Insulated Nailable Roof Deck Assembly
Area Square Feet	Approximately 10,000
Type of Steel Supports	LGST
Maximum Structural Support Spacing	5'-0" o.c.
Steel Section Attachment Means	Weld
Steel Section	Pyro Span AC
Steel Section Gage or Steel Thickness	22 ga.
Height of Roof Area	approx. 30'-0"
Slope of Roof Area	4:12
Date of Original Construction	1997

BUILDING DESIGN DATA*

Fire Protection Type	Non-Combustible
Building Code Authority	IEBC 2018
	IECC 2018
Wind Design Criteria	ASCE 7-16
Exposure	B
Building Category	Category III
Building Type	Enclosed

ASSEMBLY PERFORMANCE REQUIREMENTS

New Roof Covering	Standing Seam Metal Roof
Uniform Total Load Requirement	min. 30 psf
Minimum Thermal Resistance Value	R=24.9
Acoustical Rating	NRC=0.85
Wind Design Velocity	126
Fire Classification	Non-Combustible
Minimum Diaphragm Shear Strength	120 plf*

*Loadmaster has calculated a Diaphragm Shear, but welcomes the input and determination of the EOR.

Design Proposal

Mack Benn Elementary School
Suffolk, VA

Gymnasium Roof Retrofit
February 15, 2022
CD# 202202006.1

PROPOSED RETROFIT SUBSTRATE ASSEMBLY

Existing Assembly Modifications: The existing roof covering and underlayment will be removed down to the existing Loadmaster Duraflex mineral boards. The existing roof deck assembly (including steel deck sections) in all areas will be inspected and repaired/replaced as needed prior to the attachment of new Loadmaster components.

Assembly Designation: **Pyro Span Acoustical (22 ga) I-400 Insulated Nailable Retrofit Roof Deck Assembly.**

Assembly Description: The structural roof deck assembly shall consist of existing (22 gauge) Pyro Span Acoustical steel deck sections with Prime painted coating, 4.0" of ISO Insulation board, and three (3) layers (two existing and one new overlay) of 1/2-inch Loadmaster Duraflex Mineral Board. All components shall be mechanically anchored to the steel deck sections using 7-inch Loadmaster Screw Fasteners and compression devices, with all joints staggered in both directions as per Loadmaster recommendations to form a composite structural retrofit roof deck assembly. Any new/replacement steel deck sections shall be Pyro Span Acoustical (22 gauge) and will be secured to the steel structure with #12 joist screws and #12 sidelap screws.

PROPOSED ASSEMBLY PERFORMANCE

Uniform Total Load Capacity	127 psf @ 5'-0" o.c.
Thermal Resistance Value	R = 24.9 LTTR
Acoustical Rating	NRC=0.85
Assembly Thickness (w/o roof covering)	7.0 inches
Assembly Weight (w/o roof covering)	8.5 psf
Perimeter Width of Zone 2 & 3 (value of a)	10.5 feet
Fire Classification	Non-Combustible
Substrate Compressive Strength	400 psi
Assembly Performance Warranty	Ten Year Limited Suitability Warranty

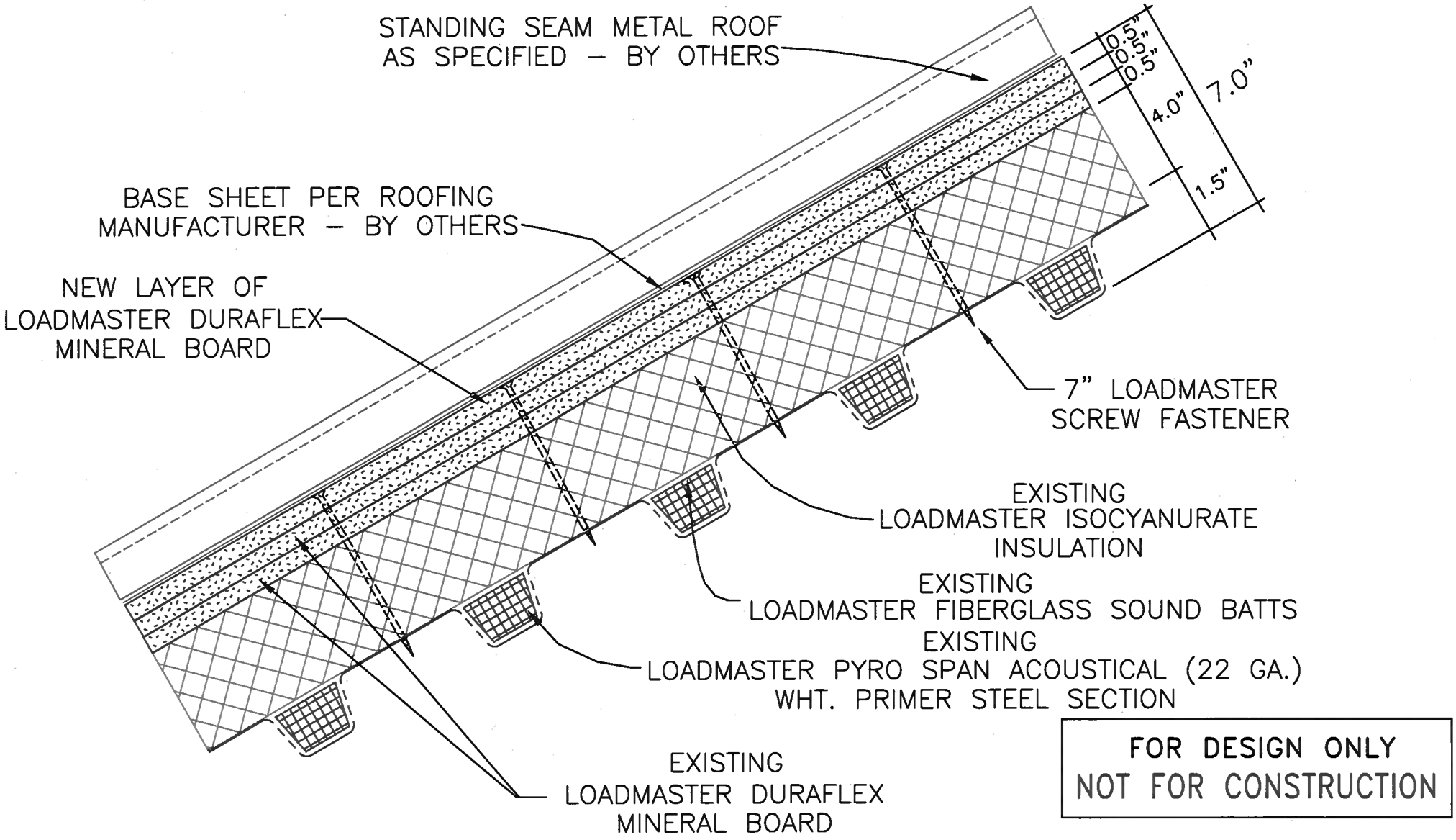
	Steel Deck Attachment Pattern*	Board Attachment Pattern	Diaphragm Shear Capacity (plf)***	Wind Uplift Capacity (psf)**
Zone 1	PS.5-1 (JS)	600.10-1112	121	30
Zone 3	PS.5-1 (JS)	600.10-1112	121	30
Zone 3OH	PS.5-2 (JS)	600.10-1112	150	32
Zone 2eH	PS.5-1 (JS)	600.10-1112	121	30
Zone 2r	PS.5-1 (JS)	600.10-1112	121	30
Zone 2eOH	PS.5-1 (JS)	600.10-1112	121	30
Zone 2rOH	PS.5-2 (JS)	600.10-1112	150	32

*Steel deck attachments are based upon combined loading of shear and uplift.

**Per ASCE7-16 Allowable Stress Design

***Loadmaster has calculated a Diaphragm Shear Capacity but welcomes the input and determination of the EOR.

REV	DESCRIPTION	DATE



FOR DESIGN ONLY
NOT FOR CONSTRUCTION

LOADMASTER SYSTEMS, INC.

AREA NAME: GYMNASIUM ROOF RETROFIT

LOADMASTER PYRO SPAN I–400 ACOUSTICAL INSULATED NAILABLE RETROFIT ROOF DECK ASSEMBLY

SCALE: NOT TO SCALE | DRAWING NAME / COMPUDESIGN#: | DATE: 02/15/2022

Section 05 30 00
Loadmaster Retrofit Roof Deck Assembly

PART 1: GENERAL

1.01 SUMMARY

A. Section includes all work required to modify the existing Loadmaster roof deck assembly and complete the proper installation of the Loadmaster Retrofit Assembly in preparation for new Standing Seam Metal Roof (SSMR) and underlayment as indicated by the Contract Documents.

B. Section includes demolition and removal of the existing shingles and underlayment.

C. The requirements of Division 0 - "Bidding and Contract Requirements" and Division 1 - "General Requirements" of this project manual shall apply to all work required in this Section.

1.02 RELATED SECTIONS

A. Structural Steel Framing: Section 05 12 00

B. Roof and Deck Insulation: Section 07 22 00

C. Standing Seam Metal Roofing: Section 07 41 13:

1.03 SYSTEM DESCRIPTION

The existing Loadmaster Roof Deck Assembly consists of high tensile steel deck sections covered with special high density, fire-resistant roofing substrate panels; ISO insulation board(s); special screw fasteners; joint reinforcement tape and compression devices; and shingles and underlayment.

Existing Roof Deck Assembly Designation:
Area 1, Gymnasium:
Loadmaster Pyro Span Acoustical (22 ga) I-400 Insulated Nailable Roof Deck Assembly with Asphalt Shingle roof covering.

1. **Demolition of Roof Deck Assembly:** Existing roof deck assembly shall be removed down to the Loadmaster steel deck sections in areas of saturated insulation or other water damage. In all other areas, the roof covering will be removed down to the existing Loadmaster Duraflex boards The existing roof deck assembly (including steel deck sections) in all areas will be inspected and repaired/replaced as needed prior to the attachment of new Loadmaster components. Existing steel deck sections in undamaged areas and Terminator Base Piece shall remain in place and treated as specified in this Section.

2. **Loadmaster Retrofit Roof Assembly:** After completing the demolition of the existing shingle roof and underlayment down to the existing Loadmaster Duraflex Boards and the necessary repairs to the existing Loadmaster roof deck assembly, add one (1) layer of ½" Loadmaster Duraflex Mineral boards on top of existing Duraflex Board using special screw fasteners and compres-sion devices, which will be assembled on the jobsite in accor-dance with the project plans, specifications, and Loadmaster recommendations. Any new/replacement steel deck sections shall be Pyro Span 22 gauge and will be secured to the steel structure with #12 joist screws and #12 sidelap screws.

Retrofit Roof Deck Assembly Designation:
Area 1, Gymnasium:

Loadmaster Pyro Span Acoustical (22 ga) I-400 Insulated Nailable Retrofit Roof Deck Assembly with SSMR covering

3. **Structural Requirements:**

   a. **Wind Uplift Requirements:** The Wind Uplift performance requirements, per Section 2.03, shall be achieved through the composite structural action of the existing Loadmaster steel deck, and the new layer Loadmaster Duraflex mineral board all attached with engineered attachment patterns. Roof deck assembly uplift load capacity is based upon the existing roof deck assembly materials and existing fasteners to be structurally sound and free of rust, water damage, and deterioration.

   b. **Diaphragm Shear Requirements:** The Diaphragm Shear performance requirements, per Section 2.03, shall be maintained through composite action of the existing Loadmaster roof deck assembly, and the new layer of Loadmaster Duraflex mineral board all attached with engineered attachment patterns. Roof deck assembly diaphragm shear capacity is based upon the existing roof deck assembly materials and existing fasteners to be structurally sound and free of rust, water damage, and deterioration.

4. **Thermal Requirements**: Submit manufacturer's certification of the thermal resistance value of the retrofit roof deck assembly as described in this Section. No through joints between the insulation and Duraflex Mineral Board will be allowed.

1.04 CODES AND STANDARDS

A. The work described in this Section, unless otherwise noted on the drawings, or herein specified, shall be governed by the following codes and specifications.

1. Underwriters Laboratories, Inc. - U.L.
2. Factory Mutual Research Corporation - FM.
3. International Building Code - IBC.
4. American Society for Testing and Materials - ASTM.
5. American Society of Civil Engineers - ASCE.

1.05 SUBMITTALS

A. **Requirements:** Submit in exact accordance with Section 01 34 00 - Shop Drawings, Product Data and Samples.

B. **Assembly Data**: Submit complete, exact and specific design data for the assemblies specified as follows:

1. Submit manufacturer's specifications to evidence compliance with Section 2.03, Assembly Performance Requirements, as specified.

2. Design information confirming the roofing substrate shall have no more than thirty-three (33) linear feet of joints per one hundred (100) square feet of surface area.

3. Design data and details establishing the stabilization of both longitudinal and end joints against differential vertical deflection under concentrated loads.

4. Design details establishing the technique used to seal all roofing substrate joints with a weather-resistant covering.

5. Design details establishing the roofing substrate's screw attachment pattern that resists wind uplift, as well as movement due to temperature changes.

6. Design details establishing the elimination of air passages or thermal gaps in all directions between layers of materials.

C. **Component Data:**

1. Manufacturer's Component Data shall be clearly and specifically marked to indicate each component's use in the Loadmaster assembly intended for approval.

2. Component Data which is submitted unmarked or unclear as to its exact intended use in the assembly will be returned unreviewed to the submitter.

D. **Shop Drawings:** Shop drawings including erection sequences, procedures, board screw patterns, schedules and complete details shall be submitted to the Design Professional for approval. Any fabrication of material before approval of drawings will be at the risk of the Contractor.

1.06 QUALITY ASSURANCE

A. **Manufacturer Qualifications:**

1. All new components for the Loadmaster roof deck assembly covered under this section shall be provided by Loadmaster Supply, Inc., unless otherwise specified.

B. **Subcontractor Qualifications:**

1. The subcontractor shall be licensed by Loadmaster.

2. The subcontractor shall submit evidence of skill and not less than three (3) years specialized experience with the Loadmaster roof deck assembly.

1.07 DELIVERY, STORAGE AND HANDLING

A. Refer to Section _____ - Material and Equipment.

B. Deliver, store and handle products in exact accordance with the manufacturer's latest published requirements and specifications.

1.08 PERFORMANCE WARRANTY

A. Upon completion of the work described in this section, Loadmaster shall provide in one document a ten (10) year suitability limited warranty, executed jointly by Loadmaster and the subcontractor. The limited performance warranty coverage shall include the suitability of the specified structural roof deck assemblies to function as a roofing substrate. Insurance coverage shall include the shingles and underlayment for a minimum aggregate of $3,000,000 against non-performance of suitability.

B. Upon completion of the work described in this section, Loadmaster shall provide an owner's manual describing the specified structural roof deck assemblies installed on each area of the project. The manual shall include cross-sectional drawings and details illustrating the construction of the roof deck assembly installed as well as recommendations for maintenance, repair and re-

roofing operations.

PART 2: ASSEMBLY

2.01 ACCEPTABLE ASSEMBLY/MATERIAL MANUFACTURER

A. The specified Loadmaster roof deck assembly whose components are described in Paragraph 2.04, Components, shall be manufactured by:

Loadmaster Systems, Inc.
P. O. Box 2169
Duluth, Georgia 30096
(800) 527-4035 or (770) 381-6067

2.02 ASSEMBLY REFERENCE STANDARDS

A. UL 1256 - Fire Test of Roof Deck Construction Standard
B. UL 580 - Test for Wind Uplift Resistance of Roof Assemblies Standard
C. UL 263 - Fire Test of Building Construction and Materials Standard
D. FM 4450 - Approval Standard for Class I Insulated Steel Roof Decks.
E. FM 4470 - Approval Standard for Class I Roof Covers.
F. ASCE7-16 - Minimum Design Loads for Buildings and Other Structures
G. 2018 IEBC - International Existing Building Code, 2018 Edition
H. 2018 IECC - International Energy Conservation Code, 2018 Edition

2.03 ASSEMBLY PERFORMANCE REQUIREMENTS

The Loadmaster roof deck assembly, in accordance with Paragraph 1.03, System Description, shall provide the following performance characteristics:

Area 1, Gymnasium:
Loadmaster Pyro Span Acoustical (22 ga) I-400 Insulated Nailable Retrofit Roof Deck Assembly:

Mean Roof Height	Approximately 30 feet
Roof Covering	Standing Seam Metal Roof (SSMR)
Design Wind Speed (per ASCE7-16)	126 mph
Exposure Factor	B
Building Category	Category III
Type of Structure	Enclosed
Minimum Uniform Load Capacity	30 psf
Minimum Uplift Resistance (per ASCE7-16)	30 psf (Zone 1) 30 psf (Zone 3) 32 psf (Zone 3OH) 30 psf (Zone 2e) 30 psf (Zone 2r) 30 psf (Zone 2eOH) 32 psf (Zone 2rOH)

Minimum Shear Diaphragm	120 plf
Slope of Structure	4/12
Minimum Thermal Resistance Value	R - 24.9
Acoustical Rating	NRC=0.85
Fire Classification	Non-Combustible
Substrate Compressive strength	400 psi
Warranty	10-year Limited Suitability Warranty

2.04 COMPONENTS

A. Existing Steel Sections: Steel deck sections are roll-formed cold steel, having a minimum yield strength (virgin steel) 33,000 psi. The configuration and physical properties of the existing section conform to those furnished by Loadmaster Systems, Inc., and designated as Pyro Span (22 gauge). **Replacement steel sections, if needed, shall be Loadmaster Pyro Span Acoustical (22 gage) with a prime painted finish**. Steel sections shall be installed in continuous lengths. However, the minimum length shall not be less than a two-span condition.

B. The Loadmaster Duraflex Mineral Board (new and existing) is a fire-resistant, weather-resistant, fiberglass-reinforced mineral core board with a minimum density of 48 lbs./cf. and a minimum compressive strength of 400 psi. The mineral boards are 1/2" thick, 4'-0" in width and 12'-6" in length. The long edges of the boards are V-type tongue-and-groove configuration with the ends being square cut. Guide markings are clearly printed on the top surface of each board to facilitate proper location and spacing of the screw fasteners. In addition, the boards also bear the Loadmaster label.

C. Existing Loadmaster Thermal Insulation is U.L. Rated, Polyisocyanurate rigid plastic insulation, having a U.L. Flame Spread of 35 or less. Replacement Material shall be furnished in 4' x 8' panels and in thickness designated for assembly I-400 to achieve an overall "U" Factor of 0.042 BTU/hour/sf/degree difference in temperature through the roof deck assembly based on summer (heat flow down) conditions.

D. Fasteners for the Loadmaster Duraflex Mineral Board shall be corrosion-resistant, Phillips bugle-head, self-driving, case-hardened screws with modified buttress threads for increased resistance to backout forces. Minimum corrosion resistance shall be passage of DIN 51008 (2.0 liters sulphur dioxide) for 40 cycles with less than 15% red rust and ASTM B117 salt spray for 750 hours or more.

E. Loadmaster Compression Discs shall be 1-1/4" hexagonal-shaped discs formed from G-90 galvanized iron or Galvalume steel.

F. If required, Loadmaster Roof Deck Plates shall be nominal 3" square plates formed from G-90 galvanized iron or Galvalume steel.

G. If required, Loadmaster Joint Reinforcement Tape shall be a weather-resistant, pressure-sensitive tape.

PART 3: EXECUTION

3.01 PREPARATION

A. Prior to the removal of any existing shingles and underlayments, etc., the existing structural framing shall be inspected, if required, by an independent structural engineer, employed by the owner, for

structural integrity of the roof support framing. Any deficiencies with structural framing shall be repaired/replaced by qualified contractors under the direction of the structural engineer. All areas of leaks and concern for excessive wear shall be clearly identified at bid time for repair/replacement of roof assembly components.

B. Prior to the removal of any existing shingles and underlayments, etc., the existing steel deck shall be inspected by an independent structural engineer, employed by the owner, for structural integrity of the steel deck. If necessary, the steel deck shall be tested/evaluated for compliance with the local building code and structural design criteria. Any areas of deficiency requiring repair/replacement of steel deck shall be designated as such at bid time. All steel deck requiring replacement must be of like kind and profile of existing steel deck and shall be installed by a certified Loadmaster installer, in accordance with Loadmaster recommendations. Any demolition of existing steel deck must be done to avoid single-span conditions for remaining deck section. This condition may require the removal of additional steel deck.

C. Prior to starting any phase of work, a pre-construction meeting shall be held to coordinate the activities of all parties, including but not limited to, building owner, demolition contractor, Loadmaster installer and the roofer, and outline the responsibilities of each party. The construction schedule should be developed to minimize the exposure of the interior of the building and the Loadmaster assembly to weather and construction traffic as much as possible. Demolition and protection of interior items are not the responsibility of Loadmaster, or the Loadmaster installer. If required, review the schedule for opening and closing of roof drains and scuppers.

3.02 DEMOLITION

A. Existing shingles and underlayment shall be removed down to the existing Duraflex Mineral boards. Special care must be taken to properly remove these materials to avoid additional damage to the adjacent components as they will be reused wherever possible. All materials shall be disposed of in accordance with local rules and regulations, or as instructed by the building owner.

B. In areas that require replacement of the steel deck, all steel deck bearing surfaces must be cleared of excess welds and steel deck by means of grinding and filing to create a smooth deck bearing surface. Rust inhibitor paint should be applied to all such bare metal surfaces.

C. In areas that require replacement of the steel deck, special care shall be taken to protect the roof deck components directly adjacent to the demolition from additional damage. New components will be required to be properly "woven" into the existing assembly to maintain staggered joints within the assembly and avoid thermal losses due to stacked component joints.

D. Remove any and all other roof deck assembly components, dirt, and debris prior to installation of any new materials.

3.03 EXAMINATION

A. During the demolition phase, visually examine the existing roof deck assembly from above and below for structural integrity. Verify that all steel deck end laps and sidelaps are properly seated and structurally supported in accordance with Loadmaster recommendations. Any steel deck with "white" rust or "red" rust must be inspected to confirm the steel deck is not compromised in thickness and performance. Any steel deck that is severely deteriorated, punctured, or otherwise damaged, must be replaced.

B. During the examination of the steel deck, visually examine from below all deck support framing at all roof penetrations and perimeter locations. Any deficiencies should be noted and reported to the appropriate building owner/representative for repair prior to installing any new materials.

C. Report any unsatisfactory conditions to the building owner/representative.

3.04 INSTALLATION

Retrofit Areas of Wet Roof Deck Assembly

A. Upon removal of the existing shingles, underlayment and any necessary Loadmaster components, evaluate the condition of the existing Loadmaster steel deck in accordance with Loadmaster recommendations, and determine the severity of the water damage to the steel deck. Any steel deck that is severely rusted, punctured, or otherwise damaged must be removed as well and disposed of in accordance with jobsite requirements.

B. All steel deck requiring replacement must be installed in accordance with current Loadmaster recommendations. Replacement deck sections must be of like kind and profile of existing steel deck. New steel deck sections should be a minimum of 2-span condition. New sections shall be properly cut to length to avoid excessive overlaps. All end laps should be a minimum of 1-1/2" and properly positioned over the structural support members. Steel deck fasteners in adjacent deck sections should be removed to allow for proper installation of fasteners in end laps and sidelaps. There should not be any deck ends or laps unsupported by structural framing. Installation shall be by a certified Loadmaster Erector, in accordance with Loadmaster recommendations.

C. If replacement deck sections of like kind and profile are not obtainable, every effort must be made to obtain a similar depth and profile. Special attention shall be given at all butt connections to insure minimum deck bearing of 1-1/2" for existing and new steel deck sections. Additional fasteners will be required at all butt connections to maintain proper resistance to uplift and shear diaphragm loads. Sidelaps are required to maintain minimum shear diaphragm. Additional sidelap fasteners may be required for non-matching deck sections to maintain design criteria.

Retrofit Existing Roof Deck Assembly

D. After removing all roof covering(s), add one (1) layer of Loadmaster Duraflex Mineral Boards on top of existing Duraflex Mineral Boards with the length of the board parallel, but offset, to the lengths of the existing Duraflex Mineral Boards. If necessary, reduce the width of all boards in the initial run across the structure to prevent longitudinal joints from occurring over structural supports or insulation board joints. However, additional length adjustments may be required in order for all end board joints to occur over the high corrugation of the steel deck. In a like manner, reduce the length of the first board in the adjacent run so that a staggering of end joints is accomplished. End staggers should be approxi-mately half the board length (6'-3") and should never be less than 4'-0". Place subsequent runs so that the tongue-and-groove configuration on the long edges of the boards will be tightly nested. The square cut ends should be tightly abutted to adjacent boards. Where projections or roof openings occur, the substrate board shall be carefully cut so that a tight fit is accomplished.

All Loadmaster Roof Deck Assemblies

E. The Loadmaster Retrofit Assembly, without the shingles and underlayment, should not be left exposed to the weather any longer than necessary. Loadmaster Duraflex mineral board is water resistant, however, it should never be walked on or covered when wet. If the Duraflex mineral board is wet, it must be allowed to dry or replace it. Do not apply joint tape, shingles or underlayment over wet Duraflex mineral board.

F. Screw attachment of the top layer of Loadmaster Duraflex Mineral Board shall occur when the board has been positioned and properly aligned with all joints (both side and end) tightly abutted. Install Loadmaster Screw Fasteners, Compression Discs and/or Roof Deck Plates as required and in accordance with Loadmaster board patterns indicated in Section 2.03. Select Loadmaster Screw Fasteners of sufficient length to allow a minimum 5/8" penetration into high flute of steel deck. All screws shall be inserted perpendicular to the mineral board surface and the heads shall be set

flush with the board surface.

G. Installation of end joint compression discs shall commence after the mineral board has been properly positioned and fixed into place. Where end joints occur, install one Loadmaster Compression Disc at each junction of interior guide markings and at each corner of adjacent boards. Center the discs over the joint and secure with a Loadmaster Screw Fastener of sufficient length to allow a minimum 5/8" projection through the steel sections. Use sufficient screw driving torque to compress the disc to a flat profile.

H. If required, wood blocking is not part of the Loadmaster Roof Deck Assembly and is not a part of this Section. It should be noted that current chemicals in pressure-treated lumber will corrode steel. In response, Loadmaster requires all such lumber to be completely isolated from any direct contact with Loadmaster steel products by using a minimum of 40 mil waterproof peel-n-stick membrane. All Loadmaster steel anchors in contact with such lumber must be stainless steel.

3.05 CLEANING

A. Upon completion of the installation, broom clean the surface of all construction debris.

3.06 FINAL INSPECTION

A. Prior to the application of the shingles and underlayment, inspect completed portions of the Loadmaster Roof Deck Assembly and correct any deficiencies and/or damage to the surface.

END OF SECTION

Suitability Warranty

The Loadmaster Retrofit Roof Deck Assembly(s) and, if applicable, the Termination and Transitions described in this proposal are eligible to receive the Loadmaster Suitability Warranty, stating the Loadmaster Retrofit Roof Deck Assembly is a suitable substrate for the application of an approved roof membrane. The performance of the Assembly(s) is covered by a minimum $3,000,000 of insurance protection for the roofing membrane. For complete information on coverage and limitations, consult the Loadmaster Suitability Warranty Document.

Assembly Specifications

Complete specifications for the Loadmaster Retrofit Roof Deck Assembly contained in this proposal, specifically written for this project, were included on the preceding pages. Because the Loadmaster Retrofit Roof Deck Assembly performs as a structural element of the building, it is recommended that they be specified under Section 05300 (05 30 00) of the Construction Specifications Institute (CSI) format (MasterFormat). To further assist in the design and specification of Loadmaster Retrofit Roof Deck Assemblies, the drawings and specification contained herein are available on computer disk or via e-mail. To receive your free copy, contact the Loadmaster CompuDesign Department at (800) 527-4035 EXT. 129.

Architectural Notes

1. In order to provide the required support for the roof covering and to control anticipated concentrated load deflection, the roof deck assembly requires structural frame support at the perimeter of all openings greater than 12 inches wide, all changes in joist direction, all changes of plane and all perimeter terminations and transitions.

2. The Loadmaster Retrofit Roof Deck Assembly(s) described in this proposal is not designed to be a support system for a suspended ceiling, light fixtures, duct work, or any other building construction element.

3. The design of wood blocking, where required, is not a part of the Loadmaster Retrofit Roof Deck System. It is the responsibility of others.

4. Loadmaster Retrofit Roof Deck Assembly(s) is designed to meet or exceed the wind uplift designs as outlined by the applicable International Building Code (IBC) or International Existing Building Code (IEBC).

5. Shear Diaphragm Design for the proposed Loadmaster Retrofit Roof Deck Assembly(s) (if applicable) has been determined from limited evaluation of the roof structure in relation to local wind design requirements. Loadmaster welcomes a review and verification by the Engineer of Record prior to construction. All Loadmaster diaphragm designs are in accordance with the conservative methodology of the Steel Deck Institute Diaphragm Design Manual.

6. Adherence of sprayed fireproofing (if applicable) is dependent upon many variables. Loadmaster Systems, Inc., is not responsible for cleaning the underside of the steel deck to ensure bonding of any type of fireproofing material. Nor is Loadmaster responsible for the ability of the fireproofing material to adhere to the Loadmaster steel deck section. If the retrofit process requires the replacement of any steel deck, the application of fireproofing to the replacement steel deck is specifically excluded by Loadmaster.

7. All original Loadmaster steel sections have either been prime painted, galvanized or primer painted over galvanized coating prior to the original installation. Over time the exposed bottom surface original steel deck will discolor or fade in accordance with the inside environment. In order to properly retrofit the existing roof deck assembly, some steel deck sections may be removed and replaced with new steel deck sections of equal profile. Loadmaster excludes any, and all, means or methods of cleaning or refinishing any steel decks. Upon completion of the Loadmaster Retrofit Roof Deck Assembly, any cleaning or painting of the exposed steel deck sections is by others.

8. Although the Loadmaster Retrofit Roof Deck Assembly(s) described in this proposal is designed to perform under the conditions stated on the Input Data page(s), certain conditions such as, but not limited to the necessity for an air barrier/vapor retarder, that are unknown to Loadmaster may or could potentially exist. For more information, please refer to the next page entitled Design Limitations, or consult the Loadmaster Reference Manual.

9. Duraclad is designed to function as an underlayment for certain roof coverings and to protect the roof deck assembly from damaging moisture. The protection that Duraclad provides is limited to the roof deck assembly only. Loadmaster makes no statement or claim pertaining to the capacity or the ability of Duraclad to act as a temporary roofing membrane to protect the building interior from moisture damage. The physical properties of Duraclad are well established and are available for review.

10. NRCA does not recommend application of asphalt shingles, at maximum exposure, on slopes less than 3 inches per foot (3:12). Some manufactures allow application of asphalt shingles on lesser slopes. However, more stringent underlayment specifications and reduced shingle course exposures, as well as careful consideration of roof layout, valley dead ends and climatic conditions are thought necessary by NRCA. Loadmaster recommends that NRCA recommendations be closely followed by the design professional for all roof covering installations.

Engineering Notes

1. The design of all Loadmaster steel sections conforms to the American Iron and Steel Institute Specification for the Design of Cold-Formed Steel Structural Members, 2013 edition, as well as the design provisions of the Steel Deck Institute. For complete information on section properties, load capacities, materials, finishes, etc., please consult the Loadmaster Technical Department.

2. In order to provide the required support for the roof covering and to control anticipated concentrated load deflection, the roof deck assembly requires structural frame support at the perimeter of all openings greater than 12 inches wide, all changes in joist direction, all changes of plane and all perimeter terminations. To accommodate the specified design loads, the structural frame must provide sufficient in-plane bearing area to facilitate proper deck attachment. Loadmaster steel sections are attached to the structural frame at a maximum spacing of 18 inches o.c. at all roof deck perimeter locations. Neither is the design, manufacture nor installation of support elements constructed of structural steel or cold-formed framing a part of the Loadmaster Retrofit Roof Deck System. It is the responsibility of others.

3. Without detailed knowledge and historical data of the existing structural support framing, the required shear diaphragm of the roof deck assembly is unknown. However, in accordance with current IBC/IEBC design loads, and limited evaluation of the building structure in relation to local wind design requirements, Loadmaster has determined a conservative diaphragm design for this retrofit project. Loadmaster welcomes a review and verification by the Engineer of Record prior to construction. Shear Diaphragm performance of the proposed Loadmaster Retrofit Roof Deck Assembly(s) has been determined in accordance with the conservative methodology of the Steel Deck Institute Diaphragm Design Manual.

4. Structural framing must be provided around all opening perimeters greater than 12 inches wide, all changes in joist direction, all changes of plane and all perimeter terminations. Sizing of the structural frame must be sufficient to accommodate all design and transient loads to include diaphragm shear transfer as well as adequate in-plane bearing for proper steel section attachment. Consult the Loadmaster Technical Department for complete diaphragm design requirements. Neither is the design, manufacture nor installation of support elements constructed of structural steel or cold-formed framing a part of the Loadmaster Retrofit Roof Deck System. It is the responsibility of others.

5. The design of wood blocking its attachment to the structural frame, where required, is not a part of the Loadmaster Retrofit Roof Deck System. It is the responsibility of others.

6. The Loadmaster Retrofit Roof Deck Assembly(s) described in this proposal is not designed to be a support system for a suspended ceiling, light fixtures, duct work, or any other building construction element.

Design Limitations

1. Roof Coverings: While the Loadmaster Retrofit Roof Deck Assembly(s) described in this proposal is designed to function as a superior substrate for roofing, experience has shown that not all roofing materials are suitable and/or compatible. Loadmaster Systems, Inc., does not recommend that the following be used over Loadmaster Retrofit Roof Deck Assemblies: black surfaced roof coverings; roof covering membranes whose installation technique creates an air plenum between the roof deck assembly and the roof covering membrane, such as mechanically-attached roof membranes; built-up roofing membranes that do not meet the requirements of NBS-BSS 55; any roof covering that does not meet the installation recommendations of the National Roofing Contractors Association; membranes utilizing coal tar pitch exclusively, asbestos felt, cold process or fluid application; and solvent-based adhesives in conjunction with any assembly which contains expanded/extruded polystyrene insulation board.

2. Air Barrier/Vapor Retarder: Since Loadmaster Systems, Inc., does not practice architecture, it is the sole responsibility of the Design Professional(s) to determine when the use of an air barrier/vapor retarder is necessary. When required, the preferred method of installation of air barrier/vapor retarder is over a continuous bearing surface of Loadmaster Duraflex Mineral Board. Laboratory testing has proven this method to be superior in developing a seal between membrane joints and a seal around screws which may penetrate the membrane upon installation. Placement of air barrier/vapor retarder directly on top flanges of steel sheet, while a common industry practice, does not provide the continuous support required for positive joint sealing over the building service life.

3. Environment: Loadmaster Retrofit Roof Deck Assemblies are not recommended for use on buildings where inside temperatures will be maintained at or above 200°F. Furthermore, Loadmaster Retrofit Roof Deck Assemblies are not recommended for use on buildings where the inside relative humidity will be maintained in excess of 70%.

4. Positive Deck Drainage: Good roof deck design practice includes positive drainage of all steel sections. In order to accomplish this design concept, Loadmaster recommends that all steel sections be installed with the corrugations positioned parallel to the roof slope.

5. Winter Installation: Loadmaster Systems, Inc., in accordance with sound construction practice recommends that the roof covering membrane be installed as soon as possible after the roof deck assembly is in place. However, when roof covering installation delays are likely to occur, resulting in extended exposure of the roof deck assembly, it is recommended that the following steps be taken to prevent or substantially limit exposure damage to the roof deck assembly caused by repeated freeze/thaw cycles:

   A. Buildings should be designed with built-in slopes so that water will be able to drain from the steel section corrugations. See Paragraph 4 above regarding positive deck drainage.
   B. On buildings with a flat structure, or where concept A above cannot be accomplished, fully vented steel sections should be utilized to facilitate water drainage.
   C. If long-term freezing precipitation is anticipated, temporary dampproofing protection should be employed.

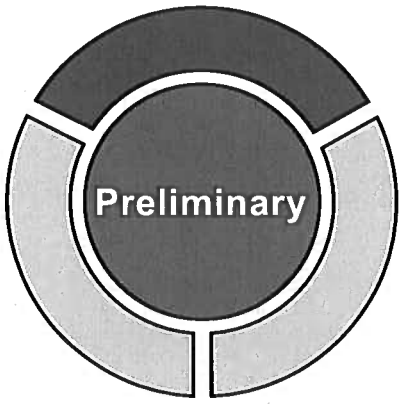
   For guidance, please contact the Loadmaster Technical Department at (800) 527-4035.

CompuDesign

Loadmaster
Systems, Inc.

CompuDesign

Existing Loadmaster Roof Deck System Retrofit Design Proposal



Loadmaster Systems, Inc.

Retrofit CompuDesign

202202005.1
February 15, 2022

Roof Retrofit Project w/Standing Seam Metal Roof

Oakland Elementary School
5505 Godwin Blvd.
Suffolk, VA 23434

Prepared For

Mr. Mark Gero
Architectural Exterior Solutions, LLC
P.O. Box 6448
Williamsburg, VA 23188
757-564-8907

Loadmaster Representative

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3100 Northwoods Pl, Ste. E Peachtree Corners, Georgia 30071 PO Box 2169 Duluth, Georgia 30096

February 15, 2022

Mr. Mark Gero
Architectural Exterior Solutions, LLC
P.O. Box 6448
Williamsburg, VA 23188

Re: Gymnasium Roof Retrofit, Oakland Elementary School, Suffolk, VA

Dear Mr. Gero:

This CompuDesign Design Proposal is provided as an informational service of Loadmaster Systems, Inc. It has been developed to assist in the evaluation, design and specification of retrofitting a Steel Roof Deck Assembly. The information we have received about the existing condition and intended design for the roof deck on the above referenced project is presented on the Input Data page under the following headings:

BUILDING DESIGN DATA includes general project design information and work items associated with the roof deck assembly, the support system and the roof covering.

ASSEMBLY PERFORMANCE REQUIREMENTS lists the specific performance characteristics required of the roof deck assembly.

Based upon this information, we have engineered the most economical Loadmaster Substrate Assembly that meets the design criteria specified. The proposed retrofit assembly is presented on the Design Proposal page under these headings:

PROPOSED RETROFIT ASSEMBLY designates and describes in detail the proposed Loadmaster Substrate Assembly.

ASSEMBLY PERFORMANCE lists the performance attributes and qualifications of the proposed assembly.

By comparing the performance of the proposed assembly to the required performance, an informed and educated decision can be made by the responsible Design Professional regarding the suitability and desirability for retrofitting this project. For your convenience, we have included drawings and a complete custom-written specification.

We trust you will find this information helpful in designing and specifying a Loadmaster Retrofit Substrate Assembly for this project.

Sincerely,
Loadmaster Systems, Inc.

Joseph A. Nelson

Joseph A. Nelson P.E.
Director of Technical Services

"A Good Roof Starts With a Good Roofing Foundation."

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FORESITE
group

3740 Davinci Court, Suite 100
Peachtree Corners, Georgia 30092
o | 770.368.1399
f | 770.368.1944
w | www.fg-inc.net

February 15, 2022

Re: Gymnasium Roof Retrofit, Oakland Elementary School, Suffolk, VA

Foresite Group is a multidisciplinary engineering, planning, design, and consulting firm founded in 2003. Foresite Group currently has registered engineers in thirty six of the fifty states. We have been retained by Loadmaster Systems, Inc. of Peachtree Corners, GA on a continuing basis to review certain design proposals and project submittals for compliance with stated specifications, applicable building codes and adherence to sound structural practices.

When requested by Loadmaster Systems, Inc., Foresite Group reviews the submittal documents as well as the structural adequacy of the recommended system for compliance with project stated specifications, applicable building codes and sound structural principles. If the submittal complies with the above criteria based on our review, Foresite Group will issue a letter of compliance, signed and sealed with appropriate stamps for the state in which the project is located.

Should there be any questions regarding Foresite Group, our qualifications or the above stated procedure, or if we may provide additional information or service, please contact us.

Sincerely,
FORESITE GROUP, INC.

Janice Weaver, PE
Structural Division Director

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Design Concept

DESIGN PHILOSOPHY	*"A Good Roof Starts With A Good Roofing Foundation."* This simple principle defines roof deck assemblies that provide TOTAL PERFORMANCE. Each Loadmaster Roof Deck Assembly in this proposal is designed with this idea in mind.
DESIGN CRITERIA	A *"Good Roofing Foundation"* must be: • Compatible • Permanent • Durable • Stable • Weatherable • Insulative Every Loadmaster Roof Deck Assembly provides these essential performance characteristics.
DESIGN PROCESS	In order to provide all six characteristics necessary for a *"Good Roofing Foundation"*, the roof deck assembly must be integrally designed and engineered; all components must work together for the benefit of the whole assembly. Each Loadmaster Roof Deck Assembly in this proposal has been created through this process.
DESIGN VERIFICATION	To establish assembly qualifications and performance, third party testing must be conducted on the total assembly. Loadmaster designs have been integrally tested to verify assembly qualifications and performance. Test results are certified under a licensed Structural Engineer's seal.

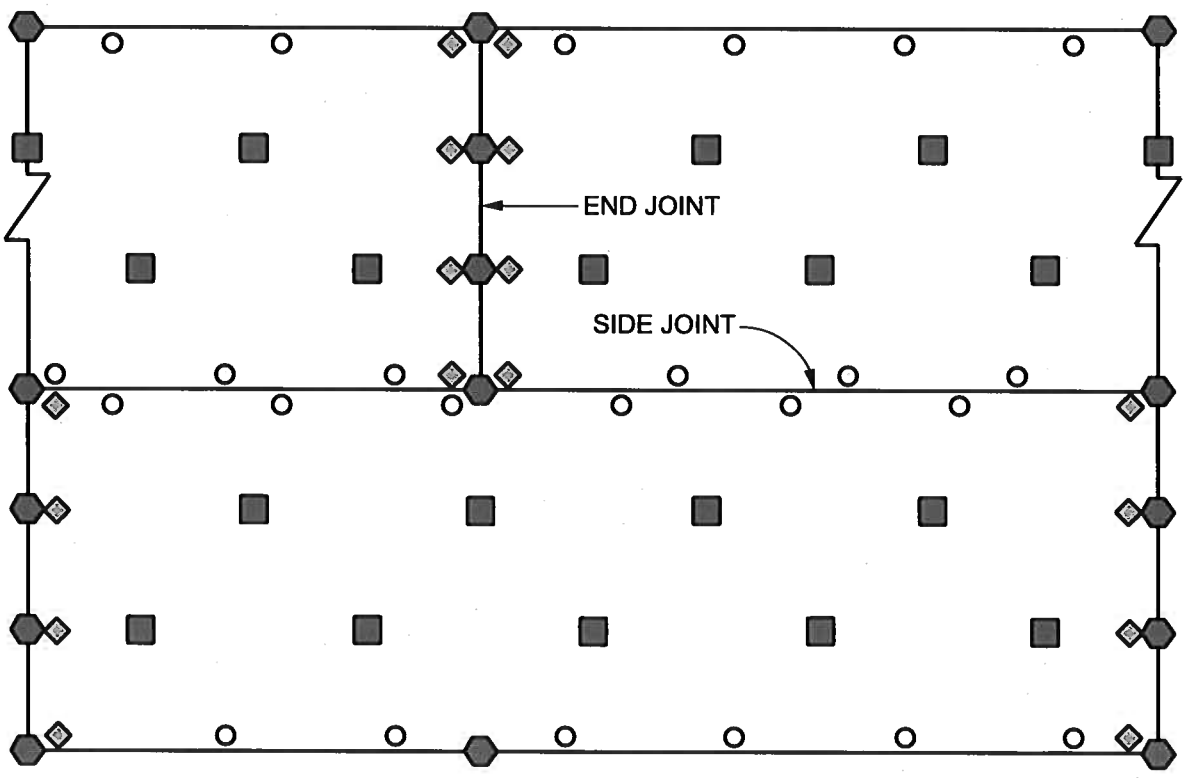
Stabilization Design

Four distinct physical forces act upon the roofing foundation to create instability. These forces are:

- Gravity
- Wind Uplift
- Seismic/Horizontal Wind
- Thermal Movement

A good roofing foundation remains stable while resisting these forces. All Loadmaster Board Attachment Patterns create the necessary stability. Each symbol below represents a fastening device and the force it is designed to resist.

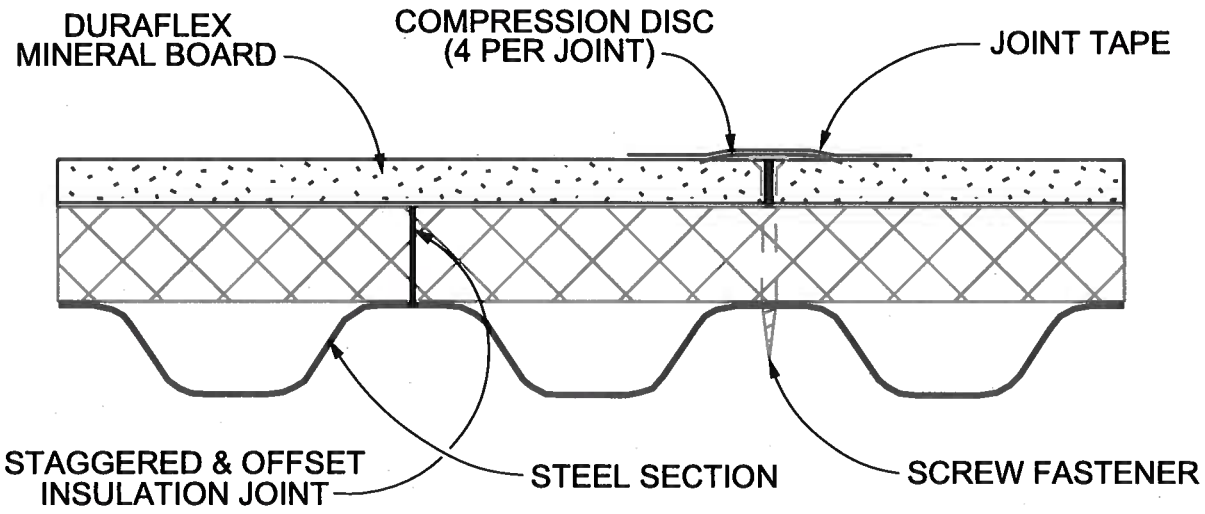
TYPICAL LOADMASTER BOARD ATTACHMENT PATTERN



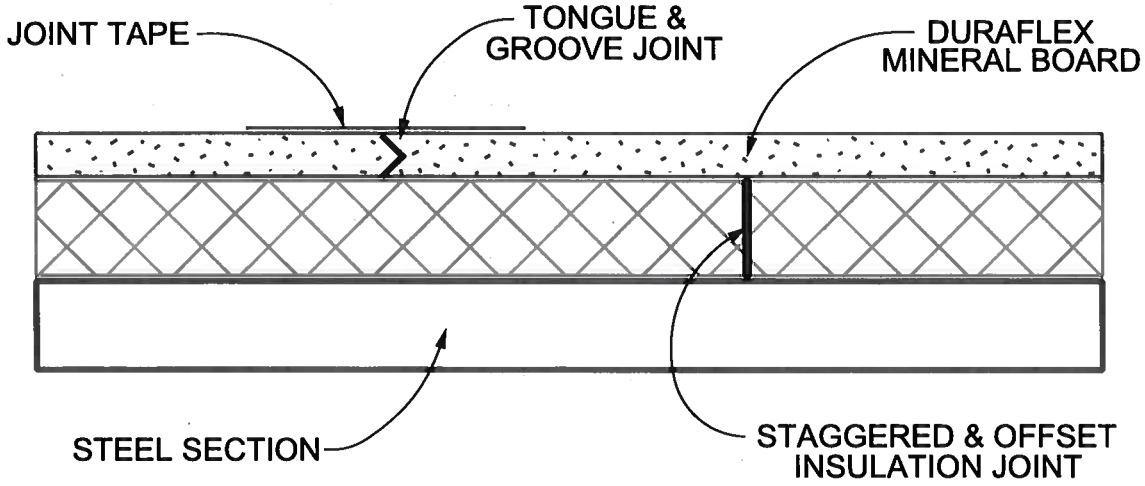
Joint Design

Joints, the greatest discontinuity in the roof deck, must be stabilized.

LOADMASTER END JOINT DESIGN



LOADMASTER SIDE JOINT DESIGN



Input Data

Oakland Elementary School
Suffolk, VA

Gymnasium Roof Retrofit
February 15, 2022
CD# 202202005.1

EXISTING BUILDING CONDITIONS

Existing Roof Covering	Asphalt Shingles
Original Assembly	Pyro Span Acoustical (22 gauge) I-400 Insulated Nailable Roof Deck Assembly
Area Square Feet	Approximately 10,000
Type of Steel Supports	LGST
Maximum Structural Support Spacing	5'-0" o.c.
Steel Section Attachment Means	Weld
Steel Section	Pyro Span Acoustical
Steel Section Gage or Steel Thickness	22 ga.
Height of Roof Area	approx. 30'-0"
Slope of Roof Area	4:12
Date of Original Construction	1996

BUILDING DESIGN DATA*

Fire Protection Type	Non-Combustible
Building Code Authority	IEBC 2018
	IECC 2018
Wind Design Criteria	ASCE 7-16
Exposure	B
Building Category	Category III
Building Type	Enclosed

ASSEMBLY PERFORMANCE REQUIREMENTS

New Roof Covering	Standing Seam Metal Roof
Uniform Total Load Requirement	min. 30 psf
Minimum Thermal Resistance Value	R=24.9
NRC	.85
Wind Design Velocity	125
Fire Classification	Non-Combustible
Minimum Diaphragm Shear Strength	120 plf*

*Loadmaster has calculated a Diaphragm Shear, but welcomes the input and determination of the EOR.

Design Proposal

Oakland Elementary School
Suffolk, VA

Gymnasium Roof Retrofit
February 15, 2022
CD# 202202005.1

PROPOSED RETROFIT SUBSTRATE ASSEMBLY

Existing Assembly Modifications: The existing roof covering and underlayment will be removed down to the existing Loadmaster Duraflex mineral boards. The existing roof deck assembly (including steel deck sections) in all areas will be inspected and repaired/replaced as needed prior to the attachment of new Loadmaster components.

Assembly Designation: **Pyro Span Acoustical (22 ga) I-400 Insulated Nailable Retrofit Roof Deck Assembly.**

Assembly Description: The structural roof deck assembly shall consist of existing (22 gauge) Pyro Span Acoustical steel deck sections with Prime painted coating, 4.0" of ISO Insulation board, and three (3) layers (two existing and one new overlay) of 1/2-inch Loadmaster Duraflex Mineral Board. All components shall be mechanically anchored to the steel deck sections using 7-inch Loadmaster Screw Fasteners and compression devices, with all joints staggered in both directions as per Loadmaster recommendations to form a composite structural retrofit roof deck assembly. Any new/replacement steel deck sections shall be Pyro Span Acoustical (22 gauge) and will be secured to the steel structure with #12 joist screws and #12 sidelap screws.

PROPOSED ASSEMBLY PERFORMANCE

Uniform Total Load Capacity	127 psf @ 5'-0" o.c.
Thermal Resistance Value	R = 24.9 LTTR
Acoustical Rating	NRC=0.85
Assembly Thickness (w/o roof covering)	7.0 inches
Assembly Weight (w/o roof covering)	8.5 psf
Perimeter Width of Zone 2 & 3 (value of a)	10.5 feet
Fire Classification	Non-Combustible
Substrate Compressive Strength	400 psi
Assembly Performance Warranty	Ten Year Limited Suitability Warranty

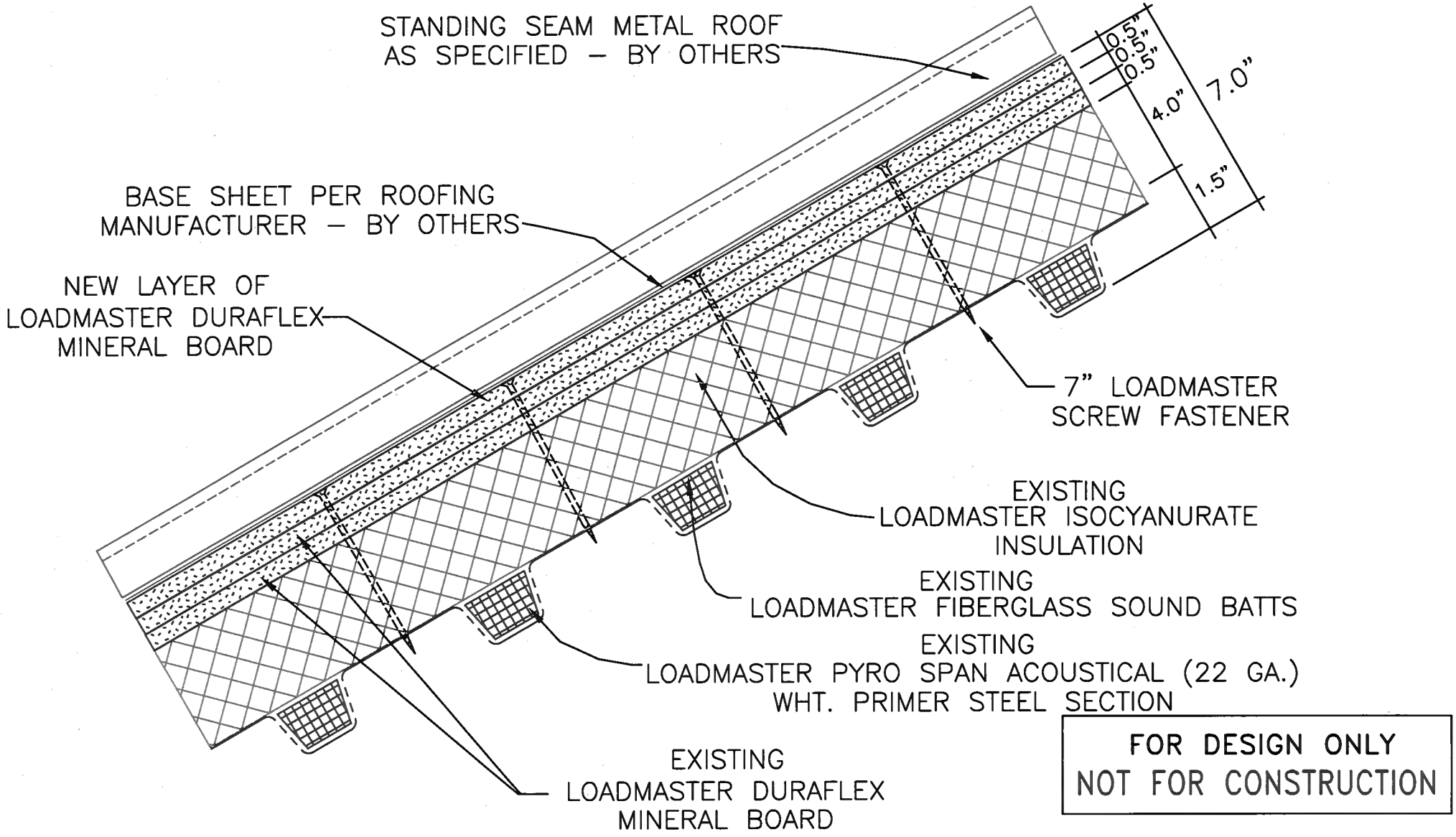
	Steel Deck Attachment Pattern*	Board Attachment Pattern	Diaphragm Shear Capacity (plf)***	Wind Uplift Capacity (psf)**
Zone 1	PS.5-1 (JS)	600.10-1112	121	30
Zone 3	PS.5-1 (JS)	600.10-1112	121	30
Zone 3OH	PS.5-2 (JS)	600.10-1112	152	31
Zone 2eH	PS.5-1 (JS)	600.10-1112	121	30
Zone 2r	PS.5-1 (JS)	600.10-1112	121	30
Zone 2eOH	PS.5-1 (JS)	600.10-1112	121	30
Zone 2rOH	PS.5-2 (JS)	600.10-1112	152	31

*Steel deck attachments are based upon combined loading of shear and uplift.

**Per ASCE7-16 Allowable Stress Design

***Loadmaster has calculated a Diaphragm Shear Capacity, but welcomes the input and determination of the EOR.

REV	DESCRIPTION	DATE



FOR DESIGN ONLY
NOT FOR CONSTRUCTION

LOADMASTER SYSTEMS, INC.

AREA NAME: GYMNASIUM ROOF RETROFIT

LOADMASTER PYRO SPAN I–400 ACOUSTICAL INSULATED NAILABLE RETROFIT ROOF DECK ASSEMBLY

SCALE: NOT TO SCALE | DRAWING NAME / COMPUDESIGN#: | DATE: 02/15/2022

Section 05 30 00
Loadmaster Retrofit Roof Deck Assembly

PART 1: GENERAL

1.01 SUMMARY

A. Section includes all work required to modify the existing Loadmaster roof deck assembly and complete the proper installation of the Loadmaster Retrofit Assembly in preparation for new Standing Seam Metal Roof (SSMR) and underlayment as indicated by the Contract Documents.

B. Section includes demolition and removal of the existing shingles and underlayment.

C. The requirements of Division 0 - "Bidding and Contract Requirements" and Division 1 - "General Requirements" of this project manual shall apply to all work required in this Section.

1.02 RELATED SECTIONS

A. Structural Steel Framing: Section 05 12 00

B. Roof and Deck Insulation: Section 07 22 00

C. Standing Seam Metal Roofing: Section 07 41 13:

1.03 SYSTEM DESCRIPTION

The existing Loadmaster Roof Deck Assembly consists of high tensile steel deck sections covered with special high density, fire-resistant roofing substrate panels; ISO insulation board(s); special screw fasteners; joint reinforcement tape and compression devices; and shingles and underlayment.

Existing Roof Deck Assembly Designation:
Area 1, Gymnasium:
Loadmaster Pyro Span Acoustical (22 ga) I-400 Insulated Nailable Roof Deck Assembly with Asphalt Shingle roof covering.

1. **Demolition of Roof Deck Assembly:** Existing roof deck assembly shall be removed down to the Loadmaster steel deck sections in areas of saturated insulation or other water damage. In all other areas, the roof covering will be removed down to the existing Loadmaster Duraflex boards. The existing roof deck assembly (including steel deck sections) in all areas will be inspected and repaired/replaced as needed prior to the attachment of new Loadmaster components. Existing steel deck sections in undamaged areas and Terminator Base Piece shall remain in place and treated as specified in this Section.

2. **Loadmaster Retrofit Roof Assembly:** After completing the demolition of the existing shingle roof and underlayment down to the existing Loadmaster Duraflex Boards and the necessary repairs to the existing Loadmaster roof deck assembly, add one (1) layer of ½" Loadmaster Duraflex Mineral boards on top of existing Duraflex Board using special screw fasteners and compres-sion devices, which will be assembled on the jobsite in accor-dance with the project plans, specifications, and Loadmaster recommendations. Any new/replacement steel deck sections shall be Pyro Span 22 gauge and will be secured to the steel structure with #12 joist screws and #12 sidelap screws.

Retrofit Roof Deck Assembly Designation:
Area 1, Gymnasium:

Loadmaster Pyro Span Acoustical (22 ga) I-400 Insulated Nailable Retrofit Roof Deck Assembly with SSMR covering

3. **Structural Requirements:**

   a. **Wind Uplift Requirements:** The Wind Uplift performance requirements, per Section 2.03, shall be achieved through the composite structural action of the existing Loadmaster steel deck, and the new layer Loadmaster Duraflex mineral board all attached with engineered attachment patterns. Roof deck assembly uplift load capacity is based upon the existing roof deck assembly materials and existing fasteners to be structurally sound and free of rust, water damage, and deterioration.

   b. **Diaphragm Shear Requirements:** The Diaphragm Shear performance requirements, per Section 2.03, shall be maintained through composite action of the existing Loadmaster roof deck assembly, and the new layer of Loadmaster Duraflex mineral board all attached with engineered attachment patterns. Roof deck assembly diaphragm shear capacity is based upon the existing roof deck assembly materials and existing fasteners to be structurally sound and free of rust, water damage, and deterioration.

4. **Thermal Requirements**: Submit manufacturer's certification of the thermal resistance value of the retrofit roof deck assembly as described in this Section. No through joints between the insulation and Duraflex Mineral Board will be allowed.

1.04 CODES AND STANDARDS

A. The work described in this Section, unless otherwise noted on the drawings, or herein specified, shall be governed by the following codes and specifications.

1. Underwriters Laboratories, Inc. - U.L.
2. Factory Mutual Research Corporation - FM.
3. International Building Code - IBC.
4. American Society for Testing and Materials - ASTM.
5. American Society of Civil Engineers - ASCE.

1.05 SUBMITTALS

A. **Requirements:** Submit in exact accordance with Section 01 34 00 - Shop Drawings, Product Data and Samples.

B. **Assembly Data**: Submit complete, exact and specific design data for the assemblies specified as follows:

1. Submit manufacturer's specifications to evidence compliance with Section 2.03, Assembly Performance Requirements, as specified.

2. Design information confirming the roofing substrate shall have no more than thirty-three (33) linear feet of joints per one hundred (100) square feet of surface area.

3. Design data and details establishing the stabilization of both longitudinal and end joints against differential vertical deflection under concentrated loads.

4. Design details establishing the technique used to seal all roofing substrate joints with a weather-resistant covering.

5. Design details establishing the roofing substrate's screw attachment pattern that resists wind uplift, as well as movement due to temperature changes.

6. Design details establishing the elimination of air passages or thermal gaps in all directions between layers of materials.

C. **Component Data:**

1. Manufacturer's Component Data shall be clearly and specifically marked to indicate each component's use in the Loadmaster assembly intended for approval.

2. Component Data which is submitted unmarked or unclear as to its exact intended use in the assembly will be returned unreviewed to the submitter.

D. **Shop Drawings:** Shop drawings including erection sequences, procedures, board screw patterns, schedules and complete details shall be submitted to the Design Professional for approval. Any fabrication of material before approval of drawings will be at the risk of the Contractor.

1.06 QUALITY ASSURANCE

A. **Manufacturer Qualifications:**

1. All new components for the Loadmaster roof deck assembly covered under this section shall be provided by Loadmaster Supply, Inc., unless otherwise specified.

B. **Subcontractor Qualifications:**

1. The subcontractor shall be licensed by Loadmaster.

2. The subcontractor shall submit evidence of skill and not less than three (3) years specialized experience with the Loadmaster roof deck assembly.

1.07 DELIVERY, STORAGE AND HANDLING

A. Refer to Section _____ - Material and Equipment.

B. Deliver, store and handle products in exact accordance with the manufacturer's latest published requirements and specifications.

1.08 PERFORMANCE WARRANTY

A. Upon completion of the work described in this section, Loadmaster shall provide in one document a ten (10) year suitability limited warranty, executed jointly by Loadmaster and the subcontractor. The limited performance warranty coverage shall include the suitability of the specified structural roof deck assemblies to function as a roofing substrate. Insurance coverage shall include the shingles and underlayment for a minimum aggregate of $3,000,000 against non-performance of suitability.

B. Upon completion of the work described in this section, Loadmaster shall provide an owner's manual describing the specified structural roof deck assemblies installed on each area of the project. The manual shall include cross-sectional drawings and details illustrating the construction of the roof deck assembly installed as well as recommendations for maintenance, repair and re-

roofing operations.

PART 2: ASSEMBLY

2.01 ACCEPTABLE ASSEMBLY/MATERIAL MANUFACTURER

A. The specified Loadmaster roof deck assembly whose components are described in Paragraph 2.04, Components, shall be manufactured by:

Loadmaster Systems, Inc.
P. O. Box 2169
Duluth, Georgia 30096
(800) 527-4035 or (770) 381-6067

2.02 ASSEMBLY REFERENCE STANDARDS

A. UL 1256 - Fire Test of Roof Deck Construction Standard
B. UL 580 - Test for Wind Uplift Resistance of Roof Assemblies Standard
C. UL 263 - Fire Test of Building Construction and Materials Standard
D. FM 4450 - Approval Standard for Class I Insulated Steel Roof Decks.
E. FM 4470 - Approval Standard for Class I Roof Covers.
F. ASCE7-16 - Minimum Design Loads for Buildings and Other Structures
G. 2018 IEBC - International Existing Building Code, 2018 Edition
H. 2018 IECC - International Energy Conservation Code, 2018 Edition

2.03 ASSEMBLY PERFORMANCE REQUIREMENTS

The Loadmaster roof deck assembly, in accordance with Paragraph 1.03, System Description, shall provide the following performance characteristics:

Area 1, Gymnasium:
Loadmaster Pyro Span Acoustical (22 ga) I-400 Insulated Nailable Retrofit Roof Deck Assembly:

Mean Roof Height	Approximately 30 feet
Roof Covering	Standing Seam Metal Roof (SSMR)
Design Wind Speed (per ASCE7-16)	125 mph
Exposure Factor	B
Building Category	Category III
Type of Structure	Enclosed
Minimum Uniform Load Capacity	30 psf
Minimum Uplift Resistance (per ASCE7-16)	30 psf (Zone 1) 30 psf (Zone 3) 31 psf (Zone 3OH) 30 psf (Zone 2e) 30 psf (Zone 2r) 30 psf (Zone 2eOH) 31 psf (Zone 2rOH)

Minimum Shear Diaphragm	120 plf
Slope of Structure	4/12
Minimum Thermal Resistance Value	R - 24.9
Acoustical Rating	NRC=0.85
Fire Classification	Non-Combustible
Substrate Compressive strength	400 psi
Warranty	10-year Limited Suitability Warranty

2.04 COMPONENTS

A. Existing Steel Sections: Steel deck sections are roll-formed cold steel, having a minimum yield strength (virgin steel) 33,000 psi. The configuration and physical properties of the existing section conform to those furnished by Loadmaster Systems, Inc., and designated as Pyro Span (22 gauge). **Replacement steel sections, if needed, shall be Loadmaster Pyro Span Acoustical (22 ga) with a prime painted finish**. Steel sections shall be installed in continuous lengths. However, the minimum length shall not be less than a two-span condition.

B. The Loadmaster Duraflex Mineral Board (new and existing) is a fire-resistant, weather-resistant, fiberglass-reinforced mineral core board with a minimum density of 48 lbs./cf. and a minimum compressive strength of 400 psi. The mineral boards are 1/2" thick, 4'-0" in width and 12'-6" in length. The long edges of the boards are V-type tongue-and-groove configuration with the ends being square cut. Guide markings are clearly printed on the top surface of each board to facilitate proper location and spacing of the screw fasteners. In addition, the boards also bear the Loadmaster label.

C. Existing Loadmaster Thermal Insulation is U.L. Rated, Polyisocyanurate rigid plastic insulation, having a U.L. Flame Spread of 35 or less. Replacement Material shall be furnished in 4' x 8' panels and in thickness designated for assembly I-400 to achieve an overall "U" Factor of 0.042 BTU/hour/sf/degree difference in temperature through the roof deck assembly based on summer (heat flow down) conditions.

D. Fasteners for the Loadmaster Duraflex Mineral Board shall be corrosion-resistant, Phillips bugle-head, self-driving, case-hardened screws with modified buttress threads for increased resistance to backout forces. Minimum corrosion resistance shall be passage of DIN 51008 (2.0 liters sulphur dioxide) for 40 cycles with less than 15% red rust and ASTM B117 salt spray for 750 hours or more.

E. Loadmaster Compression Discs shall be 1-1/4" hexagonal-shaped discs formed from G-90 galvanized iron or Galvalume steel.

F. If required, Loadmaster Roof Deck Plates shall be nominal 3" square plates formed from G-90 galvanized iron or Galvalume steel.

G. If required, Loadmaster Joint Reinforcement Tape shall be a weather-resistant, pressure-sensitive tape.

PART 3: EXECUTION

3.01 PREPARATION

A. Prior to the removal of any existing shingles and underlayments, etc., the existing structural framing shall be inspected, if required, by an independent structural engineer, employed by the owner, for

structural integrity of the roof support framing. Any deficiencies with structural framing shall be repaired/replaced by qualified contractors under the direction of the structural engineer. All areas of leaks and concern for excessive wear shall be clearly identified at bid time for repair/replacement of roof assembly components.

B. Prior to the removal of any existing shingles and underlayments, etc., the existing steel deck shall be inspected by an independent structural engineer, employed by the owner, for structural integrity of the steel deck. If necessary, the steel deck shall be tested/evaluated for compliance with the local building code and structural design criteria. Any areas of deficiency requiring repair/replacement of steel deck shall be designated as such at bid time. All steel deck requiring replacement must be of like kind and profile of existing steel deck and shall be installed by a certified Loadmaster installer, in accordance with Loadmaster recommendations. Any demolition of existing steel deck must be done to avoid single-span conditions for remaining deck section. This condition may require the removal of additional steel deck.

C. Prior to starting any phase of work, a pre-construction meeting shall be held to coordinate the activities of all parties, including but not limited to, building owner, demolition contractor, Loadmaster installer and the roofer, and outline the responsibilities of each party. The construction schedule should be developed to minimize the exposure of the interior of the building and the Loadmaster assembly to weather and construction traffic as much as possible. Demolition and protection of interior items are not the responsibility of Loadmaster, or the Loadmaster installer. If required, review the schedule for opening and closing of roof drains and scuppers.

3.02 DEMOLITION

A. Existing shingles and underlayment shall be removed down to the existing Duraflex Mineral boards. Special care must be taken to properly remove these materials to avoid additional damage to the adjacent components as they will be reused wherever possible. All materials shall be disposed of in accordance with local rules and regulations, or as instructed by the building owner.

B. In areas that require replacement of the steel deck, all steel deck bearing surfaces must be cleared of excess welds and steel deck by means of grinding and filing to create a smooth deck bearing surface. Rust inhibitor paint should be applied to all such bare metal surfaces.

C. In areas that require replacement of the steel deck, special care shall be taken to protect the roof deck components directly adjacent to the demolition from additional damage. New components will be required to be properly "woven" into the existing assembly to maintain staggered joints within the assembly and avoid thermal losses due to stacked component joints.

D. Remove any and all other roof deck assembly components, dirt, and debris prior to installation of any new materials.

3.03 EXAMINATION

A. During the demolition phase, visually examine the existing roof deck assembly from above and below for structural integrity. Verify that all steel deck end laps and sidelaps are properly seated and structurally supported in accordance with Loadmaster recommendations. Any steel deck with "white" rust or "red" rust must be inspected to confirm the steel deck is not compromised in thickness and performance. Any steel deck that is severely deteriorated, punctured, or otherwise damaged, must be replaced.

B. During the examination of the steel deck, visually examine from below all deck support framing at all roof penetrations and perimeter locations. Any deficiencies should be noted and reported to the appropriate building owner/representative for repair prior to installing any new materials.

C. Report any unsatisfactory conditions to the building owner/representative.

3.04 INSTALLATION

Retrofit Areas of Wet Roof Deck Assembly

A. Upon removal of the existing shingles, underlayment and any necessary Loadmaster components, evaluate the condition of the existing Loadmaster steel deck in accordance with Loadmaster recommendations, and determine the severity of the water damage to the steel deck. Any steel deck that is severely rusted, punctured, or otherwise damaged must be removed as well and disposed of in accordance with jobsite requirements.

B. All steel deck requiring replacement must be installed in accordance with current Loadmaster recommendations. Replacement deck sections must be of like kind and profile of existing steel deck. New steel deck sections should be a minimum of 2-span condition. New sections shall be properly cut to length to avoid excessive overlaps. All end laps should be a minimum of 1-1/2" and properly positioned over the structural support members. Steel deck fasteners in adjacent deck sections should be removed to allow for proper installation of fasteners in end laps and sidelaps. There should not be any deck ends or laps unsupported by structural framing. Installation shall be by a certified Loadmaster Erector, in accordance with Loadmaster recommendations.

C. If replacement deck sections of like kind and profile are not obtainable, every effort must be made to obtain a similar depth and profile. Special attention shall be given at all butt connections to insure minimum deck bearing of 1-1/2" for existing and new steel deck sections. Additional fasteners will be required at all butt connections to maintain proper resistance to uplift and shear diaphragm loads. Sidelaps are required to maintain minimum shear diaphragm. Additional sidelap fasteners may be required for non-matching deck sections to maintain design criteria.

Retrofit Existing Roof Deck Assembly

D. After removing existing roof covering(s) and underlayment, add one (1) layer of Loadmaster Duraflex Mineral Boards on top of existing Duraflex Mineral Boards with the length of the board parallel, but offset, to the lengths of the existing Duraflex Mineral Boards. If necessary, reduce the width of all boards in the initial run across the structure to prevent longitudinal joints from occurring over structural supports or insulation board joints. However, additional length adjustments may be required in order for all end board joints to occur over the high corrugation of the steel deck. In a like manner, reduce the length of the first board in the adjacent run so that a staggering of end joints is accomplished. End staggers should be approxi-mately half the board length (6'-3") and should never be less than 4'-0". Place subsequent runs so that the tongue-and-groove configuration on the long edges of the boards will be tightly nested. The square cut ends should be tightly abutted to adjacent boards. Where projections or roof openings occur, the substrate board shall be carefully cut so that a tight fit is accomplished.

All Loadmaster Roof Deck Assemblies

E. The Loadmaster Retrofit Assembly, without the shingles and underlayment, should not be left exposed to the weather any longer than necessary. Loadmaster Duraflex mineral board is water resistant, however, it should never be walked on or covered when wet. If the Duraflex mineral board is wet, it must be allowed to dry or replace it. Do not apply joint tape, shingles or underlayment over wet Duraflex mineral board.

F. Screw attachment of the top layer of Loadmaster Duraflex Mineral Board shall occur when the board has been positioned and properly aligned with all joints (both side and end) tightly abutted. Install Loadmaster Screw Fasteners, Compression Discs and/or Roof Deck Plates as required and in accordance with Loadmaster board patterns indicated in Section 2.03. Select Loadmaster Screw Fasteners of sufficient length to allow a minimum 5/8" penetration into high flute of steel deck. All screws shall be inserted perpendicular to the mineral board surface and the heads shall be set

flush with the board surface.

G. Installation of end joint compression discs shall commence after the mineral board has been properly positioned and fixed into place. Where end joints occur, install one Loadmaster Compression Disc at each junction of interior guide markings and at each corner of adjacent boards. Center the discs over the joint and secure with a Loadmaster Screw Fastener of sufficient length to allow a minimum 5/8" projection through the steel sections. Use sufficient screw driving torque to compress the disc to a flat profile.

H. If required, wood blocking is not part of the Loadmaster Roof Deck Assembly and is not a part of this Section. It should be noted that current chemicals in pressure-treated lumber will corrode steel. In response, Loadmaster requires all such lumber to be completely isolated from any direct contact with Loadmaster steel products by using a minimum of 40 mil waterproof peel-n-stick membrane. All Loadmaster steel anchors in contact with such lumber must be stainless steel.

3.05 CLEANING

A. Upon completion of the installation, broom clean the surface of all construction debris.

3.06 FINAL INSPECTION

A. Prior to the application of the shingles and underlayment, inspect completed portions of the Loadmaster Roof Deck Assembly and correct any deficiencies and/or damage to the surface.

END OF SECTION

Suitability Warranty

The Loadmaster Retrofit Roof Deck Assembly(s) and, if applicable, the Termination and Transitions described in this proposal are eligible to receive the Loadmaster Suitability Warranty, stating the Loadmaster Retrofit Roof Deck Assembly is a suitable substrate for the application of an approved roof membrane. The performance of the Assembly(s) is covered by a minimum $3,000,000 of insurance protection for the roofing membrane. For complete information on coverage and limitations, consult the Loadmaster Suitability Warranty Document.

Assembly Specifications

Complete specifications for the Loadmaster Retrofit Roof Deck Assembly contained in this proposal, specifically written for this project, were included on the preceding pages. Because the Loadmaster Retrofit Roof Deck Assembly performs as a structural element of the building, it is recommended that they be specified under Section 05300 (05 30 00) of the Construction Specifications Institute (CSI) format (MasterFormat). To further assist in the design and specification of Loadmaster Retrofit Roof Deck Assemblies, the drawings and specification contained herein are available on computer disk or via e-mail. To receive your free copy, contact the Loadmaster CompuDesign Department at (800) 527-4035 EXT. 129.

Architectural Notes

1. In order to provide the required support for the roof covering and to control anticipated concentrated load deflection, the roof deck assembly requires structural frame support at the perimeter of all openings greater than 12 inches wide, all changes in joist direction, all changes of plane and all perimeter terminations and transitions.

2. The Loadmaster Retrofit Roof Deck Assembly(s) described in this proposal is not designed to be a support system for a suspended ceiling, light fixtures, duct work, or any other building construction element.

3. The design of wood blocking, where required, is not a part of the Loadmaster Retrofit Roof Deck System. It is the responsibility of others.

4. Loadmaster Retrofit Roof Deck Assembly(s) is designed to meet or exceed the wind uplift designs as outlined by the applicable International Building Code (IBC) or International Existing Building Code (IEBC).

5. Shear Diaphragm Design for the proposed Loadmaster Retrofit Roof Deck Assembly(s) (if applicable) has been determined from limited evaluation of the roof structure in relation to local wind design requirements. Loadmaster welcomes a review and verification by the Engineer of Record prior to construction. All Loadmaster diaphragm designs are in accordance with the conservative methodology of the Steel Deck Institute Diaphragm Design Manual.

6. Adherence of sprayed fireproofing (if applicable) is dependent upon many variables. Loadmaster Systems, Inc., is not responsible for cleaning the underside of the steel deck to ensure bonding of any type of fireproofing material. Nor is Loadmaster responsible for the ability of the fireproofing material to adhere to the Loadmaster steel deck section. If the retrofit process requires the replacement of any steel deck, the application of fireproofing to the replacement steel deck is specifically excluded by Loadmaster.

7. All original Loadmaster steel sections have either been prime painted, galvanized or primer painted over galvanized coating prior to the original installation. Over time the exposed bottom surface original steel deck will discolor or fade in accordance with the inside environment. In order to properly retrofit the existing roof deck assembly, some steel deck sections may be removed and replaced with new steel deck sections of equal profile. Loadmaster excludes any, and all, means or methods of cleaning or refinishing any steel decks. Upon completion of the Loadmaster Retrofit Roof Deck Assembly, any cleaning or painting of the exposed steel deck sections is by others.

8. Although the Loadmaster Retrofit Roof Deck Assembly(s) described in this proposal is designed to perform under the conditions stated on the Input Data page(s), certain conditions such as, but not limited to the necessity for an air barrier/vapor retarder, that are unknown to Loadmaster may or could potentially exist. For more information, please refer to the next page entitled Design Limitations, or consult the Loadmaster Reference Manual.

9. Duraclad is designed to function as an underlayment for certain roof coverings and to protect the roof deck assembly from damaging moisture. The protection that Duraclad provides is limited to the roof deck assembly only. Loadmaster makes no statement or claim pertaining to the capacity or the ability of Duraclad to act as a temporary roofing membrane to protect the building interior from moisture damage. The physical properties of Duraclad are well established and are available for review.

10. NRCA does not recommend application of asphalt shingles, at maximum exposure, on slopes less than 3 inches per foot (3:12). Some manufactures allow application of asphalt shingles on lesser slopes. However, more stringent underlayment specifications and reduced shingle course exposures, as well as careful consideration of roof layout, valley dead ends and climatic conditions are thought necessary by NRCA. Loadmaster recommends that NRCA recommendations be closely followed by the design professional for all roof covering installations.

Engineering Notes

1. The design of all Loadmaster steel sections conforms to the American Iron and Steel Institute Specification for the Design of Cold-Formed Steel Structural Members, 2013 edition, as well as the design provisions of the Steel Deck Institute. For complete information on section properties, load capacities, materials, finishes, etc., please consult the Loadmaster Technical Department.

2. In order to provide the required support for the roof covering and to control anticipated concentrated load deflection, the roof deck assembly requires structural frame support at the perimeter of all openings greater than 12 inches wide, all changes in joist direction, all changes of plane and all perimeter terminations. To accommodate the specified design loads, the structural frame must provide sufficient in-plane bearing area to facilitate proper deck attachment. Loadmaster steel sections are attached to the structural frame at a maximum spacing of 18 inches o.c. at all roof deck perimeter locations. Neither is the design, manufacture nor installation of support elements constructed of structural steel or cold-formed framing a part of the Loadmaster Retrofit Roof Deck System. It is the responsibility of others.

3. Without detailed knowledge and historical data of the existing structural support framing, the required shear diaphragm of the roof deck assembly is unknown. However, in accordance with current IBC/IEBC design loads, and limited evaluation of the building structure in relation to local wind design requirements, Loadmaster has determined a conservative diaphragm design for this retrofit project. Loadmaster welcomes a review and verification by the Engineer of Record prior to construction. Shear Diaphragm performance of the proposed Loadmaster Retrofit Roof Deck Assembly(s) has been determined in accordance with the conservative methodology of the Steel Deck Institute Diaphragm Design Manual.

4. Structural framing must be provided around all opening perimeters greater than 12 inches wide, all changes in joist direction, all changes of plane and all perimeter terminations. Sizing of the structural frame must be sufficient to accommodate all design and transient loads to include diaphragm shear transfer as well as adequate in-plane bearing for proper steel section attachment. Consult the Loadmaster Technical Department for complete diaphragm design requirements. Neither is the design, manufacture nor installation of support elements constructed of structural steel or cold-formed framing a part of the Loadmaster Retrofit Roof Deck System. It is the responsibility of others.

5. The design of wood blocking its attachment to the structural frame, where required, is not a part of the Loadmaster Retrofit Roof Deck System. It is the responsibility of others.

6. The Loadmaster Retrofit Roof Deck Assembly(s) described in this proposal is not designed to be a support system for a suspended ceiling, light fixtures, duct work, or any other building construction element.

Design Limitations

1. Roof Coverings: While the Loadmaster Retrofit Roof Deck Assembly(s) described in this proposal is designed to function as a superior substrate for roofing, experience has shown that not all roofing materials are suitable and/or compatible. Loadmaster Systems, Inc., does not recommend that the following be used over Loadmaster Retrofit Roof Deck Assemblies: black surfaced roof coverings; roof covering membranes whose installation technique creates an air plenum between the roof deck assembly and the roof covering membrane, such as mechanically-attached roof membranes; built-up roofing membranes that do not meet the requirements of NBS-BSS 55; any roof covering that does not meet the installation recommendations of the National Roofing Contractors Association; membranes utilizing coal tar pitch exclusively, asbestos felt, cold process or fluid application; and solvent-based adhesives in conjunction with any assembly which contains expanded/extruded polystyrene insulation board.

2. Air Barrier/Vapor Retarder: Since Loadmaster Systems, Inc., does not practice architecture, it is the sole responsibility of the Design Professional(s) to determine when the use of an air barrier/vapor retarder is necessary. When required, the preferred method of installation of air barrier/vapor retarder is over a continuous bearing surface of Loadmaster Duraflex Mineral Board. Laboratory testing has proven this method to be superior in developing a seal between membrane joints and a seal around screws which may penetrate the membrane upon installation. Placement of air barrier/vapor retarder directly on top flanges of steel sheet, while a common industry practice, does not provide the continuous support required for positive joint sealing over the building service life.

3. Environment: Loadmaster Retrofit Roof Deck Assemblies are not recommended for use on buildings where inside temperatures will be maintained at or above 200°F. Furthermore, Loadmaster Retrofit Roof Deck Assemblies are not recommended for use on buildings where the inside relative humidity will be maintained in excess of 70%.

4. Positive Deck Drainage: Good roof deck design practice includes positive drainage of all steel sections. In order to accomplish this design concept, Loadmaster recommends that all steel sections be installed with the corrugations positioned parallel to the roof slope.

5. Winter Installation: Loadmaster Systems, Inc., in accordance with sound construction practice recommends that the roof covering membrane be installed as soon as possible after the roof deck assembly is in place. However, when roof covering installation delays are likely to occur, resulting in extended exposure of the roof deck assembly, it is recommended that the following steps be taken to prevent or substantially limit exposure damage to the roof deck assembly caused by repeated freeze/thaw cycles:

   A. Buildings should be designed with built-in slopes so that water will be able to drain from the steel section corrugations. See Paragraph 4 above regarding positive deck drainage.

   B. On buildings with a flat structure, or where concept A above cannot be accomplished, fully vented steel sections should be utilized to facilitate water drainage.

   C. If long-term freezing precipitation is anticipated, temporary dampproofing protection should be employed.

   For guidance, please contact the Loadmaster Technical Department at (800) 527-4035.

CompuDesign

Loadmaster
Systems, Inc.