

EES Gymnasium Roof Replacement Building Committee
Eastford Elementary School
Thursday
August 2, 2018
Minutes

- I. Chair Robert Torcellini called the meeting to order at 7:05 PM.
- II. Attendance: Robert Torcellini, Paul Torcellini, Tom DeJohn, Linda Loretz
Also: Michael Pereira, Architect (by telephone), first half hour
Absent: Garry Carabeau, Christine Hustus, Brendan Owens
- III. Architect Michael Pereira gave a progress report on the roof project
 - A. As of the meeting date, the roof membrane and membrane flashing work was completed on both the gymnasium and stage roofs. The roof hatch had been installed at the stage roof. All equipment, materials and dumpsters had been removed from the site. The remaining items of work are installation of:
 - 1. Perimeter edge metal;
 - 2. Guardrail system at the stage roof;
 - 3. Roof access ladder at the roof hatch; and
 - 4. Roof ladder from the stage roof to the gymnasium roof.
 - B. Imperial Roofing proposed a substitution to the roof railing for the Eastford Elementary School. The contract documents included a custom welded plate, anchored to the top of the wall, with a fully welded, permanent railing. What is proposed by Imperial is a freestanding, counterweight-type railing that sits atop the roof and is non-penetrating. The architects were verifying code compliance and planned to make a recommendation to accept or reject as soon as they could confirm it.
 - C. Subsequent to the meeting, correspondence and specs regarding the freestanding roof railing and its code compliance was received. The correspondence and specs are being attached to these minutes for distribution.
 - D. The committee decided to agree to the substitution as long as it is code compliant. The committee particularly likes the idea that there would be no penetration. The committee wondered about a cost differential since this substitution would be less expensive. Training would be crucial and warnings would have to be present.
- IV. After the conference call with the architect, there was a lengthy discussion and review of the final plans to determine whether insulation should have been tapered on the drains. It was determined that the plans had been appropriately modified to address the insulation concern but it was not clear whether the contractor was held accountable for following the plan.

A drawing prepared by the committee and subsequent correspondence from the architect are attached to these minutes.

V. PV Discussion

- A. Due to a number of circumstances, the PV work is behind schedule. Two main reasons are:
 - 1. There were paperwork and engineering issues; and
 - 2. **Nothing can be placed on the roof before there is a warranty issued on the roof.** The warranty will only be issued after an inspection from the manufacturer. The contractor and architect are scheduling this.
- B. Mrs. Loretz was asked to contact Brendan Owens to discuss a suitable schedule for installation.
- C. There will be no solar panels on the stage roof. This was not part of the plan.
- D. The committee would like to review the plans from Summer Hill Solar before any work is begun, including the conduit work.

VI. The meeting was adjourned at 9:10 PM.

M E M O R A N D U M

August 8, 2018
Eastford Elementary School Roof Replacement

To: Linda Loretz
From: Mike Fortuna
Copy: Bruce Raulukaitis, Mike Pereira, file

Re: Proposed Substitution - Roof Railing

Linda,

Imperial Roofing has proposed a substitution to the roof railing for the Eastford Elementary School. The Contract Documents include a custom welded plate, anchored to the top of the wall, with a fully-welded, permanent railing. What is proposed is a freestanding, counterweight-type railing that sits atop the roof and is non-penetrating.

Due to the proximity of the roof hatch to the edge of the roof, this railing is a Code-required guardrail, and must meet the structural loading defined in the Code. Our design took an approach of a permanent railing to meet this requirement.

The freestanding railing manufacturer provided test data to verify the load capacity as defined in the Code. This data is attached for your review. We had some concerns due to the rotation of the railing under load, and contacted the International Code Council to review the data and verify compliance. ICC indicated that the Code does not address deflection, only loads, and as such, the railing seems to comply. Because the railing is free-standing, staff needs to understand that it cannot be relocated or removed, as Code compliance may not be met if the railing is modified. It should also be noted that staff training is appropriate, in accordance with OSHA procedures, so workers understand that the railing is a fall-protection device, but not in the same way that a permanent railing would. Anyone accessing the roof should be made aware of this, and some signage at the hatch and/or railing is appropriate, in addition to the training. The obvious advantage is no roof penetrations and reduced likelihood of a leak in the future. The disadvantage is the potential for human error.

As a reminder, we also have a fixed OSHA rail attached to the hatch, so the risk of stumbling over the curb into the non-penetrating railing is fairly low.

If all of this sounds acceptable to you and the Building Committee, we recommend that you accept the substitution and we will inquire about potential cost savings with the Contractor.

T:\2017-022_Eastford Elementary School\CA\Correspondence\Roof Railing Memo_08-08-18.doc



2601 Niagara Lane Plymouth, MN 55447 (763) 694-2614 Fax 763-553-1093

RE: Wind Load Calculation for RailGuard 200 Railing System

Regarding the question of the wind uplift rating for the RailGuard 200 system I offer the following conclusion. The system will withstand the lateral load forces generated by 135 mph wind conditions. We assume that the barrier be assembled in an "U" shape, rectangular or square configuration as is standard practice in any RailGuard 200 installation.

The force imparted on the RailGuard system by a 135 mph wind will not cause the system to fail. However, in conditions like this, any relatively flat piece of debris blown against the guardrail can significantly increase the force imparted on the guardrail. This debris will act as a sail and "catch" more wind. This condition changes the dynamics of the situation and Garlock makes no claim regarding the efficacy of our system when debris abuts itself against our system. These conditions are random and not readily calculable.

If you have any further questions, please feel free to call.

Best Regards,
Rick Stoffels
Eng. Mgr.
Garlock Safety Systems
612-747-8076

OSHA Compliance Test for Garlock Rail Guard 200 System

Overview: Pictorial record with supporting text to record the test procedure and results of OSHA compliance testing of Rail Guard 200 System by Garlock Equipment Co.

Goal: To ensure compliance with OSHA Standard 1926.502 which requires the Rail Guard to resist a 200 pound pull in any direction without failure.

General Description: Tests were performed at the Garlock facility. A series for 10 foot railings were assembled to yield an overall length of 50 ft. At each end a 5 foot rail was installed at a 90 degree angle and extending in the direction opposite the test pull. This is commonly referred to as an "outrigger". To maximize the load placed on a Base, the test pull was performed at the juncture of (2) five foot rails in the center of the 50 foot run. Under this configuration, the entire test pull is transferred to a single base. A pull bar was created and connected directly to the terminus of the straight sections of each 5 foot rail. A winch was attached to a 2600 pound weight. This weight was positioned to provide the correct angle and location for the source of the test pull. The force was measured by a load cell manufactured by Artech Industries p/n 20210-2K (see Fig. 3) connected to a GSE Model 550 digital scale. See Figs 4-5 for details.



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5

Occupational Safety and Health Services Inc.
6320 Limerick Lane Edina, MN. 55349

Detailed Results of Test #1: This test was performed on the bare asphalt surface under the conditions outlined in the section entitled "General Description". The test provided the following results:

At the point of pull, the top rail deflected, due to tipping, a total of 16 inches with no slippage of the base along the test surface. Fig. 8 shows the amount of test pull to be 221 pounds. Upon release of the test pull, the system was shown to have remained its' original position/location.



Fig. 6



Fig. 7

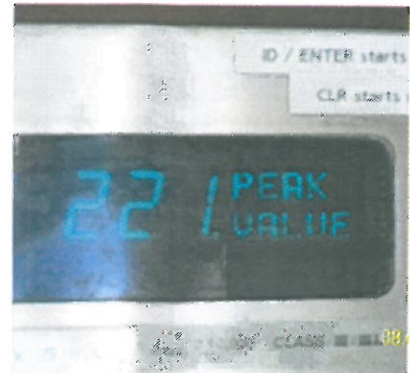


Fig. 8

Detailed Results of Test #2: The purpose of this test was to simulate the surface encountered when installing rails on a covered roof. This test was performed with the base placed on a neoprene mat to simulate the surface and resilient characteristics of a covered roof. This test was performed under the conditions outlined in the section entitled "General Description" and provided the following results:

At the point of pull, the top rail deflected, due to tipping, a total of 16 inches with no slippage of the base along the test surface. Fig. 11 shows the amount of test pull to be 225.5 pounds. Upon release of the test pull, the system was shown to have remained in its' original position/location.



Fig. 9



Fig. 10

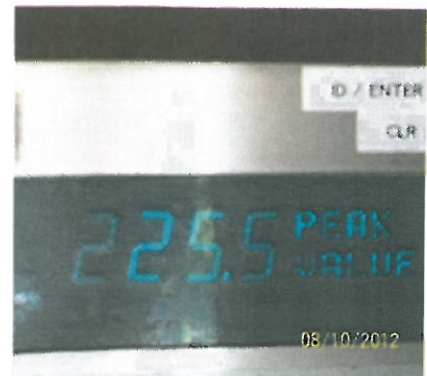


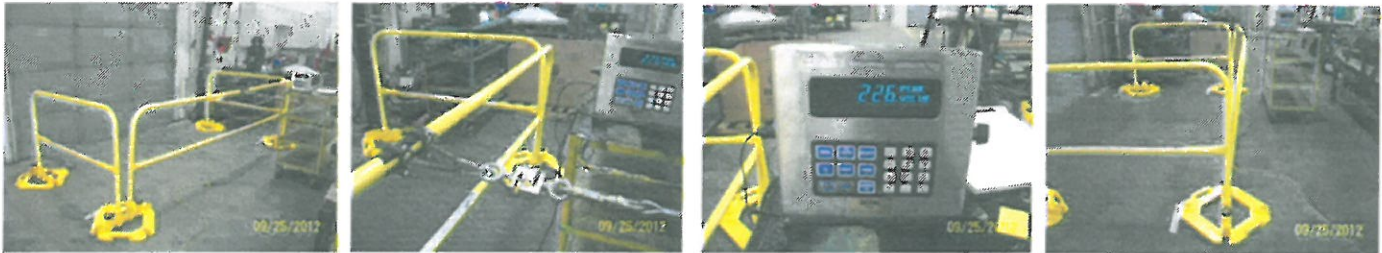
Fig. 11

Occupational Safety and Health Services Inc.
6320 Limerick Lane Edina, MN. 55349

Additional tests were performed with Rail set up in the standard "C" configuration. In this configuration, the Rails' ability to withstand the 200 pound load "without failure" (OSHA 1926.502(b)(3)) is demonstrated.

A 10 foot, a 7.5 foot and a 5 foot long Rail were each set up with a 5 foot outrigger on each end. Each configuration was tested separately and provided the following results:

Each Rail was tested to a minimum of 113% of the required load with no failure of any component. A maximum tipping of the bases of 1.5" as measured from the back lower edge of base to the floor was identical for each configuration.



10 Foot Rail Test.



7.5 Foot Rail Test



5 Foot Rail Test

Conclusion: The Garlock Railguard 200 systems complies with section 1926.502 of the Occupational Safety and Health Act of 1970 and must be accompanied by a complete worker Anti-Fall Safety Program formulated and implemented by the employer/equipment owners for the protection of affected persons from falls. It is the responsibility of the employer/equipment owner to adopt appropriate administrative controls and training with documentation as required by section 1926.503 of OSHA.

Lewis C. Barbe

Lewis C. Barbe
Registered Professional Engineer
State of California
License #SF717
Expiration March 31 2013



GARLOCK
SAFETY SYSTEMS

RailGuard 200 Fit-Rite Series Rail System



Custom perimeter safety rail just got easier with RailGuard Fit-Rite railing systems. The latest in Passive Fall Protection from Garlock offers complete customization to fit any rooftop, mezzanine or loading dock.

Assembled On-site to fit your application:

1. Choose from 3 Styles of Stanchion Kits:
Straight, Curved, or Inclined.
2. Select the Base Style: Weighted, Standing Seam, or Permanent Mount.
3. Order Rail by the Linear Foot.

Multiple fittings are available for customization to allow Fit-Rite to solve just about any rail solution.

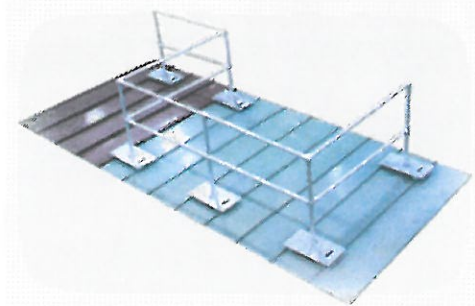
Beyond Perimeter Protection:

Fit-Rite can be utilized throughout your facility for everything from Skylights, Roof Hatches, Machine Guarding, Mezzanines, Loading Docks, Ladder, or Stairway Protection.

A variety of self-closing and swing gate options are available to complete your system.

Rugged Construction:

Fit-Rite is designed for rugged outdoor or indoor use with standard galvanized finish. Custom powdercoat colors are available.



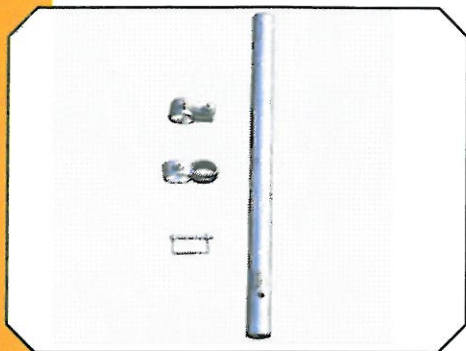
Fit-Rite system on standing metal seam deck.



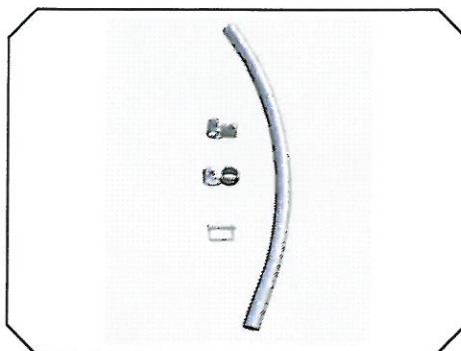
Fit-Rite system machine guarding application with self-closing gate.

www.garlocksafety.com

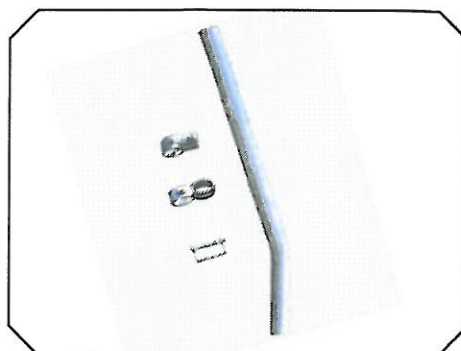
RAILGUARD FIT-RITE FEATURES:



Straight Stanchion Kit

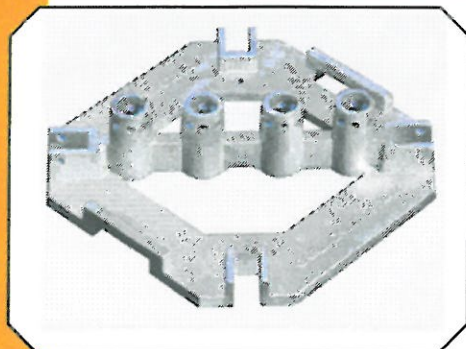


Curved Stanchion Kit



Inclined Stanchion Kit

SIMPLY CHOOSE THE STANCHION STYLE, BASE, AND ORDER RAIL BY THE LINEAR FOOT



Weighted Base



Standing Seam Base (3 sizes)



Permanent mount (many choices)

SPECIFICATIONS

Weighted Base

Mounts up to four rail sections
Allows turns in 45 deg. increments
90 lbs.

Standing Seam Base

3 sizes to choose from

Rail Sections

Top Rail Height = 42" tall

Mid-Rail Height = 20" tall

Rail = 1.25" schedule 40 pipe.

Shipped in 21 ft. sections and cut
to length onsite by user or installer.

Standard galvanized finish.

Custom colors available.



Multiple fitting choices available

**Meets OSHA 1910.23(c)
and 1926.502 (b)**

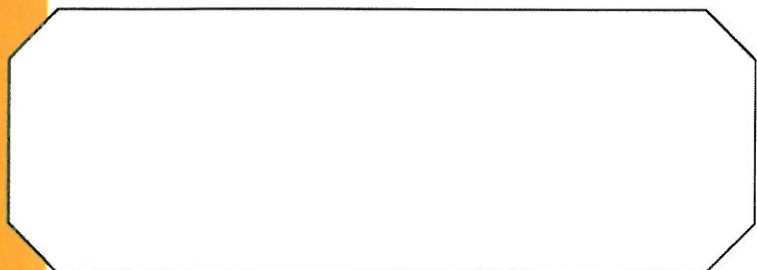
RailGuard 200 has been deemed OSHA
compliant by an independent certified Safety
Engineering firm. Test results available upon
request.



FULL PRODUCT LINE



Distributed By:

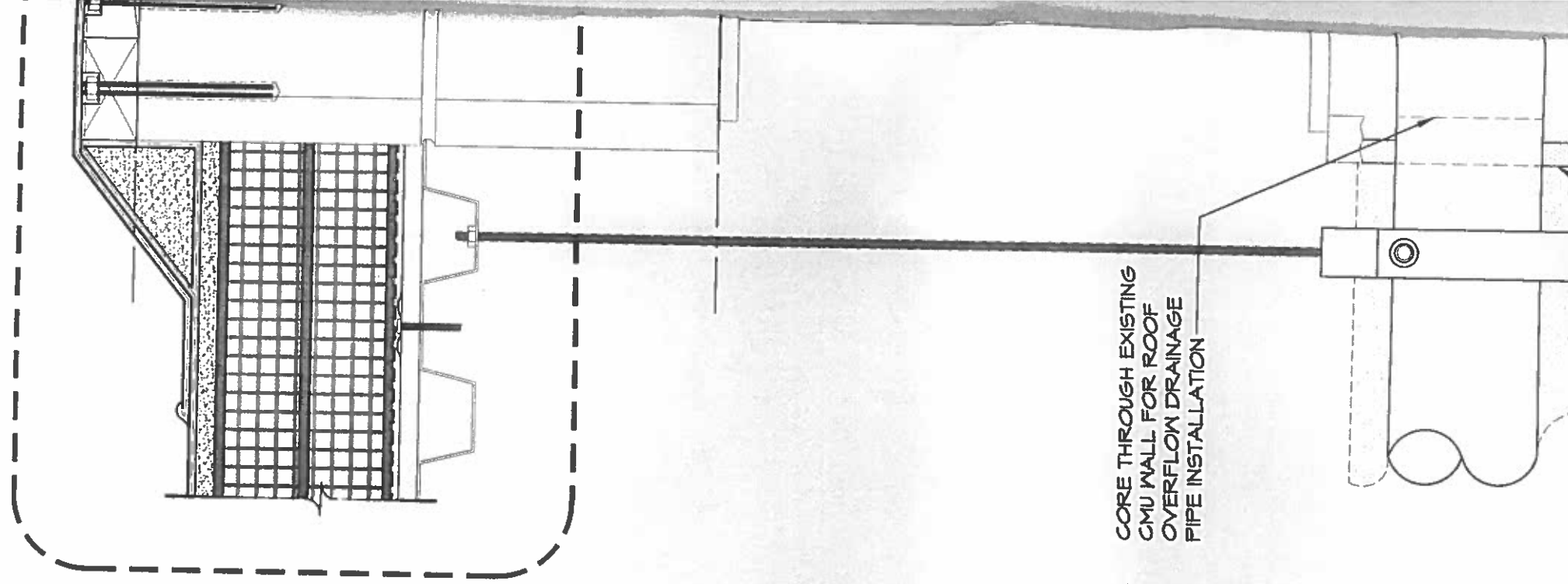


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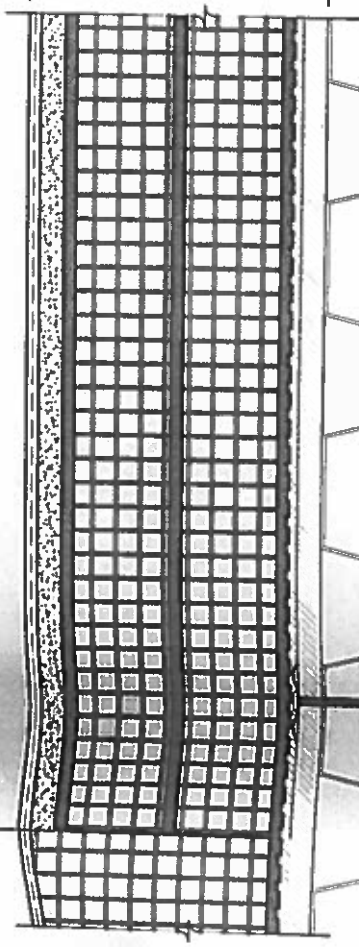
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(877) 791-4446 / P: (763) 694-2624 / F: (800) 820-3268



CORE THROUGH EXISTING CMU WALL FOR ROOF OVERFLOW DRAINAGE PIPE INSTALLATION

SEE ROOF SYSTEM
DETAIL 11/A1.1

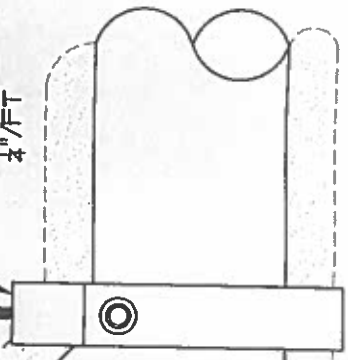


TAPERED INSULATION AT SUMP SET IN ADHESIVE
VAPOR BARRIER ROOF BOARD MECHANICALLY FASTENED

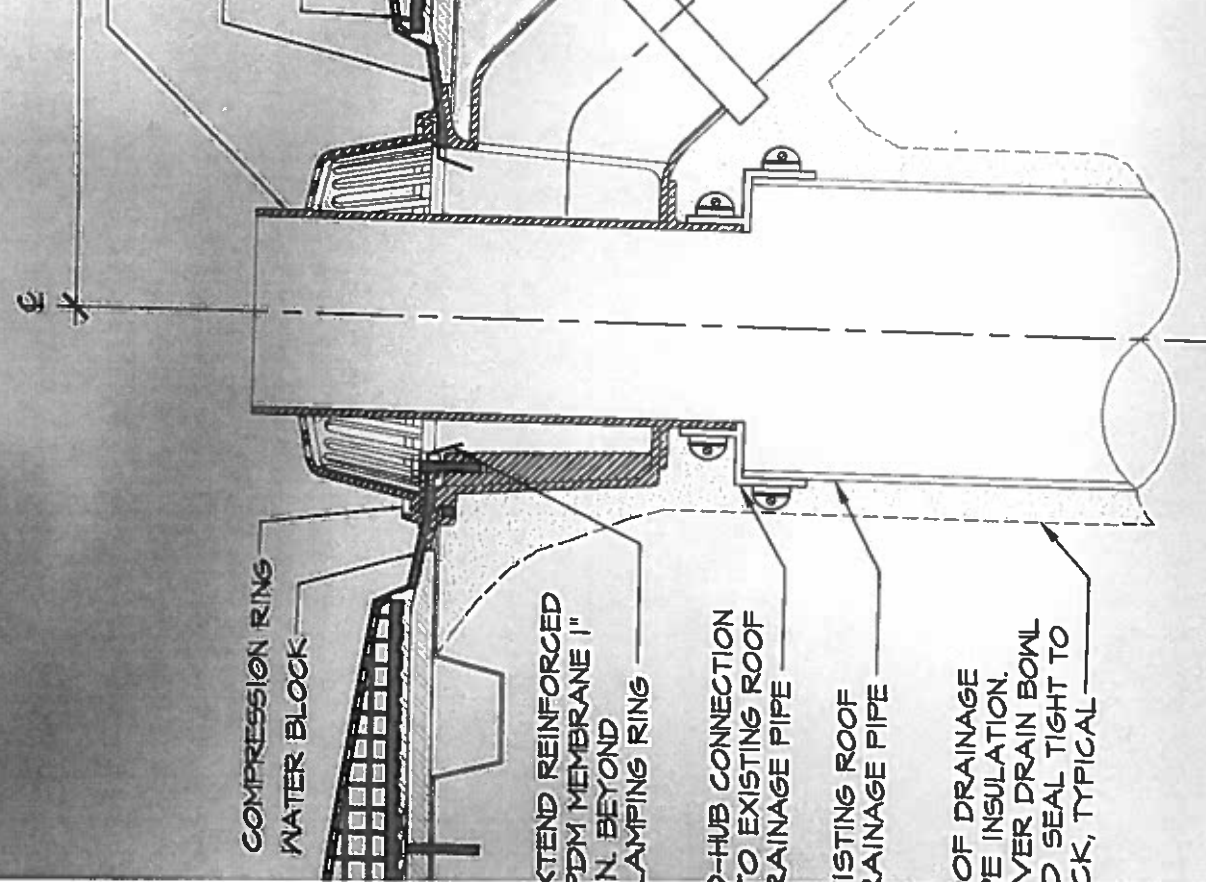
4" DIA. PVC ROOF OVERFLOW DRAINAGE PIPE, TYPICAL OF (2)

STAINLESS STEEL ROD.
STAINLESS STEEL STANDARD CLEVIS HANGER.

SLOPE
1/4" / FT



2'-0" DUAL OUTLET OVERFLOW ROOF DRAIN
EPDM ROOFING MEMBRANE
ADHESIVE SLOPE



COMPRESSION RING
WATER BLOCK

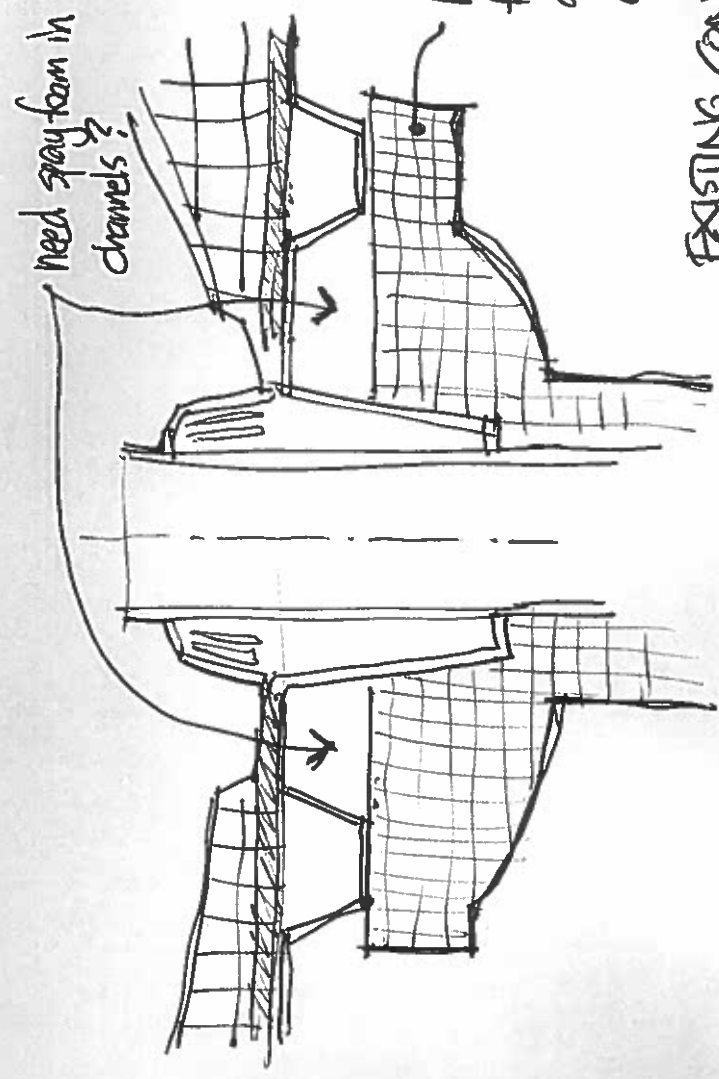
STEND REINFORCED EPDM MEMBRANE 1" N. BEYOND LAMPING RING

2-HUB CONNECTION TO EXISTING ROOF DRAINAGE PIPE

EXISTING ROOF DRAINAGE PIPE

OF DRAINAGE PIPE INSULATION. OVER DRAIN BOWL TO SEAL TIGHT TO DECK, TYPICAL

need stay form in channels?



18" rand disk with flat upper surface, but not apparently sealed at roof deck configurations?

EXISTING CONDITION OBSERVED BY COMMITTEE ON 9/2/12



Linda Loretz <lloretz@eastfordct.org>

Aug 6 (3
days ago)

to Michael

Mike,

A lengthy conversation ensued after the conference call with you last Thursday night. Committee members reviewed the plans and took a picture of their area of concern.

The final plans had been appropriately modified to address the insulation concern brought up upon reviewing an earlier draft. Your comments on Thursday didn't seem to indicate that the contractor was held accountable for sticking with the plan.

Attached is the last page of your plans with comments and a drawing from the committee as well as a photograph of the area of concern.

Linda Loretz
Superintendent
Eastford School District
PO Box 158
12 Westford Rd.
Eastford, CT 06242-0158
860-974-1130
860-974-0837 (fax)
lloretz@eastfordct.org

2 Attachments

Michael Pereira

Aug 7 (2
days ago)

to Michael, me

Good Morning Linda,

Thank you for sending the photo of the potential area of concern. In reviewing the photo you sent, the roof drainage pipe is insulated and the drain bowl is insulated to the underside of the deck. That is the standard detail for a roof drain installation. When the roofing contractor schedules the warranty and punch list visit, we can have them stuff mineral batt insulation in between the flutes of the metal decking at the roof drain locations.

I've attached a photo of when the roofing contractor and the plumber were roughing in the roof drain assembly. In the photo you can see that insulation is installed beneath and around the roof drain. There could have been some misinterpretation during the call when we were discussing insulation at the roof drains. I will be reaching out to the roofing contractor to get a status update this morning. In meantime, please feel free to email or call if you have any questions or concerns.

Sincerely,
Mike

[Michael S. Pereira, Assoc. AIA](#)

TLBARCHITECTURE, LLC

