

Raymond Engineering – Georgia, Inc.

401104237



RAYMOND

ENGINEERING

Roofs: The Good, The Bad, & The Ugly

BE101

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E N G I N E E R I N G

Course

Information, discussion and updates related to roof warranties, guarantees, management systems to track roof condition, costs of repair and replacement, maintenance and inspection equipment, and long term performance of roofing systems associated with design, construction or maintenance issues.

Learning

At the end of the this course, participants will be able to:

- Learning Objective 1: Understand roofing warranties and guarantees, their limitations, and owner responsibilities.
- Learning Objectives 2: Learn the advantages and disadvantages of asset management systems that track roofing assemblies.
- Learning Objectives 3: Understand the methods available to building owners that will assist in improved roofing maintenance.
- Learning Objectives 4: Understand the design, construction and maintenance issues that can affect long-term roof performance.

**ROOFS:
THE GOOD,
THE BAD,
&
THE UGLY**

You are getting that new roof installed



The buildings are operational



You may have even decided to modify the building to improve roof slope



Or just want to give the building a new look



**THE JOB IS DONE, BUILDINGS
ARE TURNED OVER, AND
OWNERS ARE LEAK FREE FOR
THE NEXT 20, 30 YEARS.
RIGHT?**



SINGLE SOURCE I 20-YEAR ROOF SYSTEM WARRANTY

Project Name _____ Panel Profile _____
Project Location (City, State, Zip) _____ Date of Substantial Completion _____
Amount of Material (square feet) _____
Building Owner _____ Manufacturer Customer _____
Manufacturer Job/Work Order Number(s) _____ Project End Use _____

For a period of twenty (20) years from the date of substantial completion, MBCL, a division of NCI Group, Inc. (hereinafter referred to as "Manufacturer") WARRANTS to the Building Owner ("Owner"): that the Manufacturer furnished roof panels, flashing and related items used to fasten the roof panels and flashing (including roof jack and curb attachments preapproved, in writing, by Manufacturer) ("Manufacturer Roof System") to the roof structure will not allow intrusion of water from the exterior of the Manufacturer Roof System into the building envelope, when exposed to ordinary weather conditions and ordinary wear and usage. The Date of substantial completion is the date that is certified by the Architect, Owner or Owner Representative, when the Manufacturer Roofing System is completed and accepted by or on behalf of the Owner.

Manufacturer shall have the SOLE AND EXCLUSIVE obligation for all warranty work commencing on the date of substantial completion and under all circumstances terminates on the twenty (20) year anniversary of the date certified as Substantial Completion of the Manufacturer Roof System. During the period in which Manufacturer has any warranty obligation Manufacturer shall take appropriate actions necessary to cause the non-performing portions of the Roof System to perform their proper functions.

MANUFACTURER LIABILITY

The total liability of Manufacturer under this warranty is limited to \$7.00 per square foot of roofing material. Manufacturer shall have the right to charge to the liability account all reasonable expenses (including, but not limited to, investigation expenses) incurred in satisfying the requirements of this warranty.

TERMS, CONDITIONS, LIMITATIONS

- Owner shall provide Manufacturer with written notice within thirty (30) days of the discovery of any leak(s) in the Roofing System. Failure of the Owner to do so shall automatically relieve Manufacturer of any and all responsibility and/or liability under this Warranty. If upon Manufacturer's investigation, Manufacturer determines that the leaks in the Roofing System are not covered in this warranty, the party requesting Manufacturer's investigation shall be liable for all direct investigation expenses incurred by Manufacturer. NCI Group, Inc. Warranty Dept., 14031 W. Hardy, Houston, TX 77060
- Manufacturer shall not have any liability or responsibility if any of the following shall occur:
 - If a Manufacturer Certified Installer was not present at all times during the installation of the Manufacturer's roof system.
 - Deterioration caused by marine (salt-water) atmosphere or constant spray from either salt or fresh water.
 - Corrosion caused by heavy fallout or exposure to corrosive chemicals, ash or fumes from any chemical plant, foundry, plating works, kiln, fertilizer manufacturing, paper plant, aviation fuel or the like or corrosion caused by contact of the panels and trim with dissimilar materials such as copper, lead or graphite or water runoff from these materials onto the panels and trim.
 - Deterioration caused by condensation, any corrosive substance or any condensate of any harmful substance contained, generated or released inside the building.
 - Damage caused by worker(s), other than Manufacturer's or Roofing Contractor's workers, on the roof.
 - Failure by the Roofing Contractor to correct all deficiencies listed in the Manufacturer inspection reports.
 - If there are any alterations or additions, such as, but not limited to, structures, fixtures or utilities being placed upon or attached to the roof without prior written authorization from Manufacturer.
 - Deficiencies in or water infiltration from other building materials adjacent to or in contact with the Manufacturer's Roof System.
 - Natural disasters such as hurricanes, earthquakes, extraordinary winds, winds which detach from the facility any part of the building substrate to which the Manufacturer's Roof System is attached, lightning, hail, fire, radiation or other acts of God which are normally covered by hazard insurance.
 - Deficiencies of the facility to which the Manufacturer's Roof System is attached, such as structure, wall or foundation movement.
 - If roof leaks are due to ventilators or light transmitting panels.
 - Failure to maintain the Roof System as set forth in Manufacturer's "Roof Owner's Maintenance Manual."
 - If roof leaks are due to roof jacks, curbs or any other penetration of the Roof System that is not preapproved in writing by Manufacturer.
 - Failure to use long-life fasteners in all exposed applications.
- During the term of this Warranty, Manufacturer, its sales representatives and employees shall have free access to the roof during regular business hours.

What you need to know about these guarantees

First, guarantees limit the manufacturer's exposure if something goes wrong with the roof.

One paragraph, three sentences, two limitations of liability/responsibility; and it can cost you money.

“Owner shall provide Manufacturer with written notice within thirty (30) days of the discovery of any leak(s) in the Roofing System. Failure of the Owner to do so shall automatically relieve Manufacturer of any and all responsibility and/or liability under this Warranty. If upon Manufacturer’s investigation, Manufacturer determines that the leaks in the Roofing System are not covered in this warranty, the party requesting Manufacturer’s investigation shall be liable for all direct investigation expenses incurred by Manufacturer.”

Another Guarantee Example

Under General Provisions:

“The original installation of the roofing membrane must be free of errors, omissions, or poor workmanship by the roofing contractor...”

What you need to know about these guarantees

Second, Owners are part of the guarantee process

You, the owner, can void the guarantee if you fail to do periodic maintenance.

“This guarantee is not a maintenance agreement or an insurance policy. Therefore, routine inspections and maintenance are the Building Owner’s responsibility... Failure to follow the Maintenance Program on the reverse side of this document will void the Guarantee...”

Solutions to protect against “guarantee failures”

1. Periodic maintenance program
2. Know the Guarantee Terms and Conditions
3. System to “protect” rights
4. Develop a Management/Tracking System
 1. Controlled access
 2. Coordination of other trades
 3. Track Guarantee issues/resolutions

Roof database systems

1. Commercial products
 - a. Roofer
 - b. Roofpro
2. Manufacturer's propriety program
3. In-house tracking system

Database issues

1. Who is the keeper of the database?
 - a. Building Owner?
 - b. Contractor?
 - c. Engineer/Consultant?
2. How will it be updated?
 - a. In-house personnel?
 - b. Manufacturer?
 - c. Outside consultants?
3. Which database to use?
 - a. Will it interface with job order software?
 - b. What information do you want to track?
4. Money/dinero/scratch

Why roofs fail prematurely

- Out of sight, out of mind
- Poor installation
- Improper repairs
- Wrong roof for the building
- Poor design
- God

POP QUIZ

“The Enemy”



“The Target”



“Direct Hit”



“Strategic Defense Initiative”



“Defeat”









04/05/2007





















05/31/2011



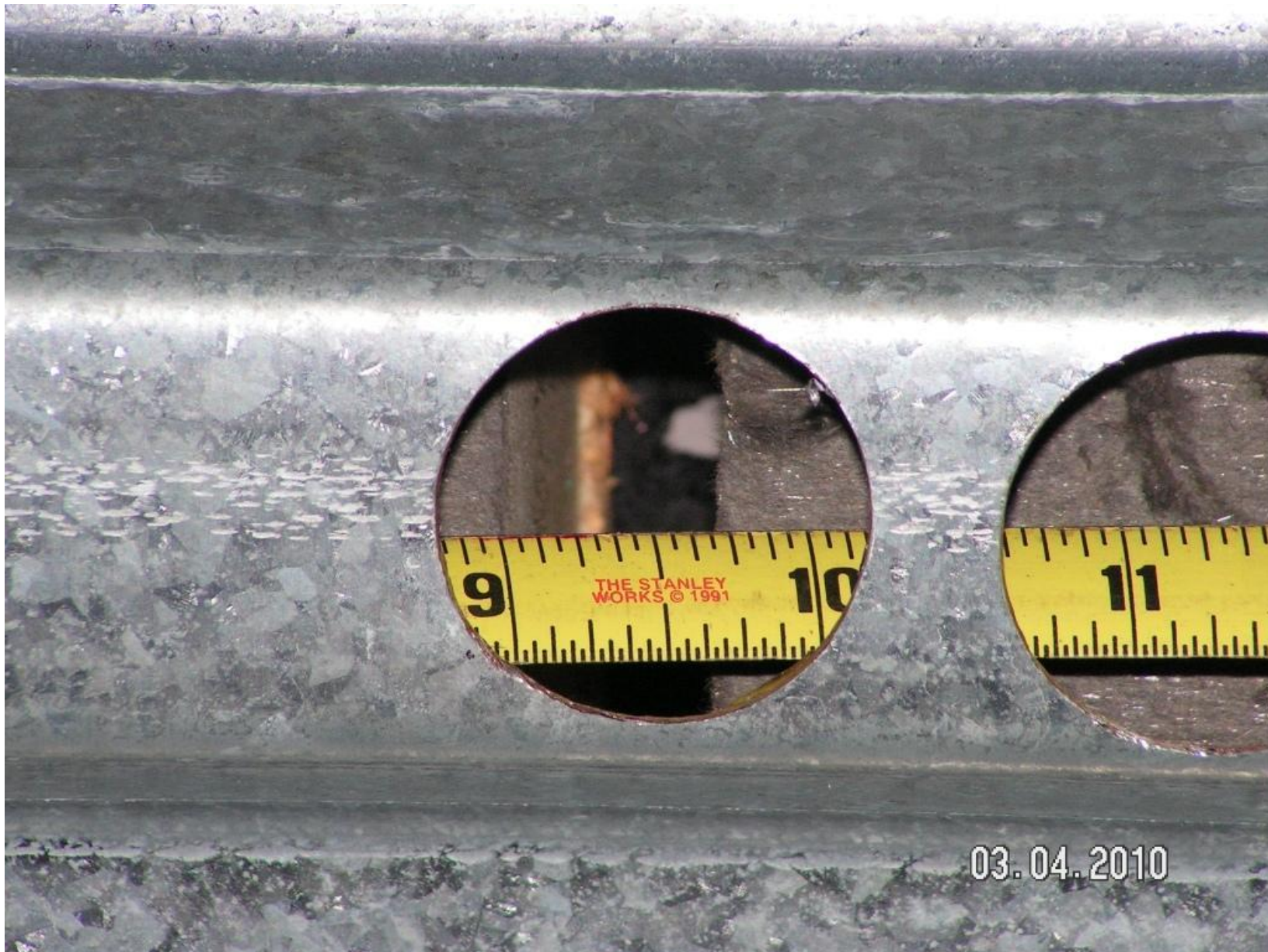




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And then there's God!!



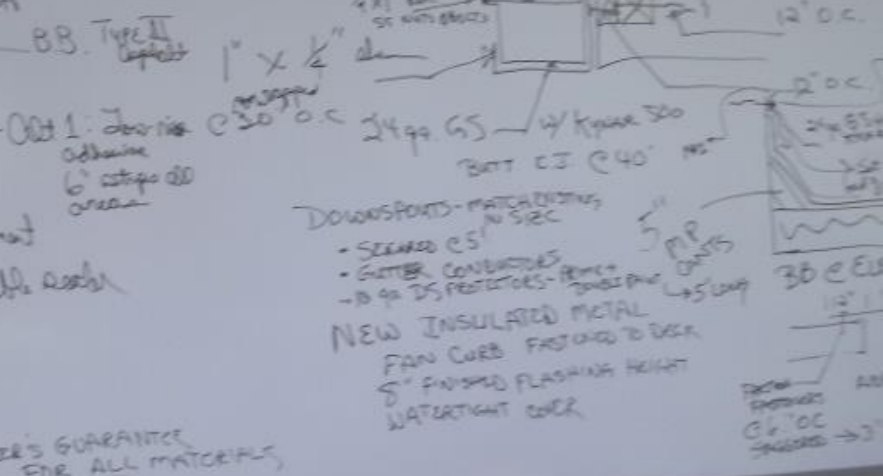




This is what you get when the client wants bids 24 hours after the blow-off..

1. Bids Due CoB 6/24/11; 3:00PM
2. USE DCS DOCUMENTS - PROVIDED BY H. MITCHELL
3. GC/SC PROVISION 1 DOCS FROM CHAPEL HILL MS REEF
4. USE YOUR PROPOSAL FORM
5. BASE BID
 - a. 2 BLOW-OFF AREAS + ELEVATOR SHAFT
 - b. DO NOT INCLUDE REMOVALS - BH REEF TO ACCOMPLISH
 - c. General conditions for BUR apply
 - d. $\frac{1}{4}$ " / ft tapered system
 - e. Tech: 2 ply SBS or APP
Cap sheet is white granules
Center: one ply smooth + one granules
 - f. 4 ft lead boots w/ 24" x 24" flange cat inment
 - g. 24 ga. GS, w/ soldered joints/rivets; possible seal
 - h. ELEVATOR
 - i. REMOVE LP SYSTEM; TURN OVER TO COUNTY
 - j. 2 YR CONTRACTOR + 20 YR NDL MANUFACTURER'S GUARANTEE FOR ALL MATERIALS

COMPLETION DATE 1 AUGUST 2011
 ALT 2: RE-ROOF CAPITAL BLDG
 LESS WATER TANK BY 1/2 FOOT



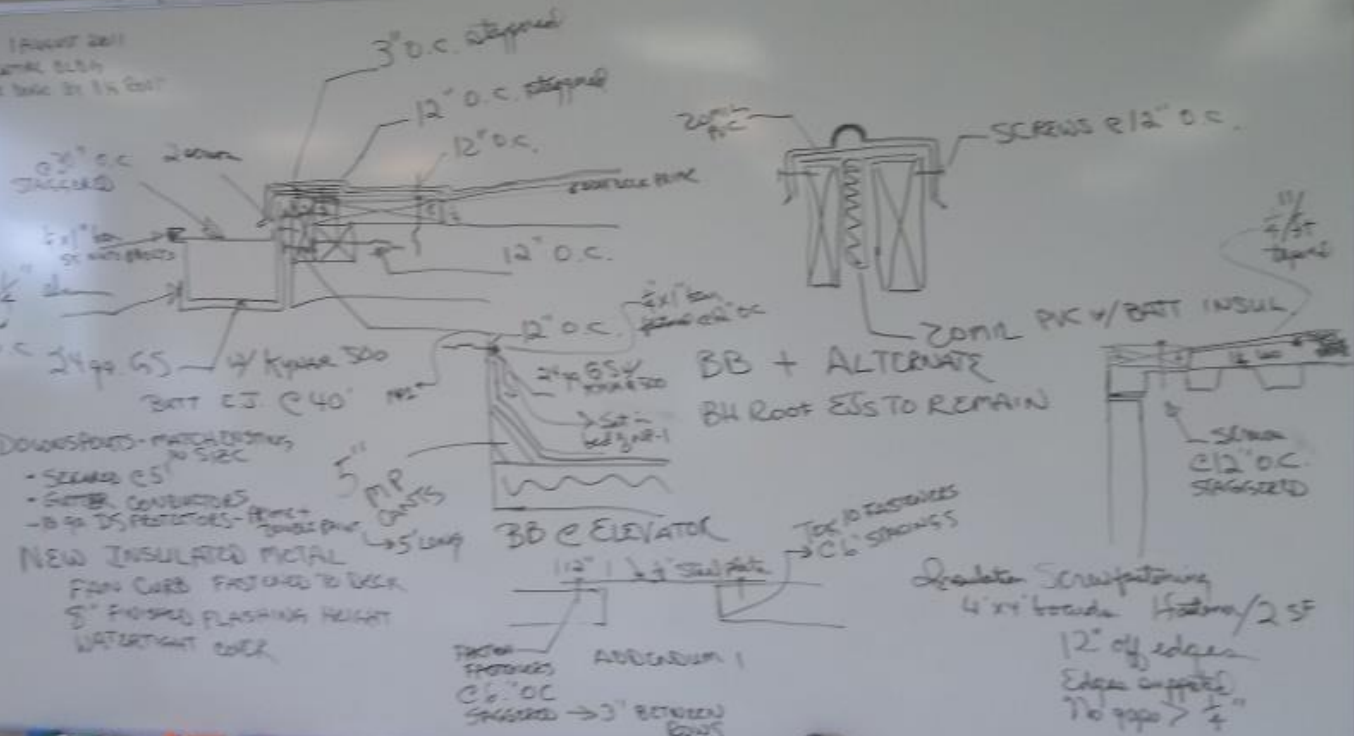
COMPLETION: 15 AUGUST 2011
 ACT 2: RE-ROOF CANAL BLDG
 LEAK WATER FROM IN EAST

88. Roof

89. Top II

90. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

IS GUARANTEE FOR ALL MATERIALS



DOWNSPOUTS - MATCH EXISTING TO DECK

- SCREWS @ 5'
- GUTTER CONDUIT
- 8 GA DS PROTECTORS - 1" RING + 2" OVERLAP

NEW INSULATED METAL
 FIRM CURB FLASHING TO DECK
 5" FINISHED FLASHING HEIGHT
 WATER TIGHT COVER

5" MP GASTES
 5' LAMP

FACTORY FLASHINGS @ 6" OC STAGGERED → 3' BETWEEN EDGES

Insulation Screwpitching
 4" x 4" boards 1/2" Holes / 2 SF
 12" off edges
 Edges supported
 No gaps > 1/4"

This concludes The American Institute of Architects Continuing Education Systems Course

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