



The Role of the Observer

Rooftop Quality Assurance



Role of the Observer

“Quality assurance observation of roofing projects is an important process for determining if the removal, installation, repair, or maintenance of roofing materials or systems follows the scope and intent of the Contract Documents and are installed and executed in accordance with accepted roofing practices and the Contract Documents.” ASTM Standard D 7186-05.

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Designation: D 7186-05

Standard Practice for Quality Assurance Observation of Roof Construction and Repair¹

This standard is issued under the fixed designation D 7186; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

- 1.1 This practice covers procedures for performing visual monitoring of roofing construction to:
 - 1.1.1 Establish guidelines for quality assurance observation practices; and
 - 1.1.2 Define the role and responsibilities of the quality assurance observer.
- 1.2 This practice pertains to daily, full-time, quality assurance observation of roofing projects. This practice is applicable to new construction or reroofing projects involving the installation of a new roof system, the removal of existing roofing and installation of a new roof system, or recovering an existing roof. It is also applicable to roofing projects involving repairs or scheduled maintenance to an existing roof.
- 1.3 This practice contains the following information:
 - 1.3.1 The objectives of the quality assurance process;
 - 1.3.2 The responsibilities and qualifications of the individual(s) involved in the observations of the roof construction or repair;
 - 1.3.3 Identification and use of the basic tools or equipment required for the visual roof observation process; and
 - 1.3.4 Monitoring, recording, and reporting procedures.
- 1.4 This practice does not address practices of roof investigation, condition reporting, or analysis of preexisting roofs.
- 1.5 This practice does not pertain to quality control processes or techniques performed by persons or entities representing or under contract to the roofing contractor. The quality control process is separate and distinct from the quality assurance observation process.
- 1.6 Assessment of safe work practices or safety monitoring procedures followed by the contractor are outside the scope of this practice.
- 1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials
- E 631 Terminology of Building Constructions

2.2 Other Documents:

The Contract Documents

Specification Literature or Roof System Installation Requirements, supplied by the applicable manufacturer, supplier, or distributor of the roof system material

ARMA/NRCA/SPRI Repair Manual for Low-Slope Membrane Roof Systems^{3,4,5}

ARMA/NRCA Quality Control Guidelines for the Application of Built-Up Roofing^{3,4}

¹This practice is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.20 on Roofing Membrane Systems.

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²For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³Available from Asphalt Roofing Manufacturer's Association (ARMA), Public Information Department, 1156 15th St., NW, Suite 900, Washington, DC 20005.

⁴Available from National Roofing Contractor's Association (NRCA), 10255 W. Higgins Rd., Suite 600, Rosemont, IL 60018-5607.

⁵Available from Single Ply Roofing Institute (SPRI), 77 Rumford Ave., Suite 3B, Waltham, MA 02453.

Major Headings ASTM D 7186-05

1. Scope
2. Referenced Documents
3. Terminology
4. Significance and Use
5. The role of the Quality Assurance Observer (QAO)
6. Qualifications of the Quality Assurance Observer
 - Significance of Qualifications
 - Technical Qualifications of the QAO

Major Headings ASTM D 7186-05

- 7. Required Project documents
- 8. Observation and Recording Procedures
 - Documentation
 - Pre-construction Damage Reporting
 - Daily Construction Reporting
 - Progress Reporting and Unit Tracking
- 9. Photographic Documentation
- 10. Reporting Procedures/Schedule
- 11. Tools and Equipment
- 12. Insurance Requirements of the QAO

Appendix X1. Attachments

The following optional forms are included:

- Record of Training and Experience
- Pre-Construction Damage Report
- Material Delivery Examination Report
- Daily Construction Report, Page 1&2
- Progress Summary and Unit Cost Tracking Report

Role of the Observer

The Observer has the right and authority to:

- Observe all construction materials, equipment, and supplies for quality and for compliance with the Contract documents and/or approved shop drawings and submittals.
- Observe workmanship for compliance with the standards described in the Contract Documents.
- Recommend to the owner's representative rejection of Work which does not conform to requirements of the Contract documents.
- Plus seven more items

Role of the Roof Observer

Your role may vary from project to project:

- who are you providing your services for?
- written contract will define your role with respect to:

Contract Will Define:

➤ Written contract will define your role with respect to:

- time spent on site
- when to be on site
- how often to be on site
- who to send reports to
- nature of reports
- protocols for emergencies, critical roof problems, etc.
- what to report on

What Front End Documents Are You Using?

- Standard owner/architect RAIC agreement: *Canadian Standard Form of Contract for Architectural Services – DOCUMENT SIX*
 - requires that designers ensure general conformity
- Provincial associations have varying interpretations on determination of general conformity
- Generally, designers will:
 - Observe the work
 - Conduct inspections to determine the dates of Substantial Completion and Final Completion

Observe or Inspect?

Important Legal Significance

OBSERVE: perceive, notice, see

INSPECT: examine carefully and critically, especially for flaws

RAIC Document 6

- “Field Review/General Review observations are for the purpose of becoming familiar with the progress and quality of the work in order to report that the Work is in general conformity with the construction contract documents”
- Inspections are for the specific purpose of determining the dates of substantial and final completion.”

Continuous Observation

- Will require modification of the standard scope of work.
- Will provide:
 - Continuous record of progress
 - Continuous record of observations concerning conformance with the Contract Documents, deviations, and deviation resolution
 - Timely communications between A/E and contractor
 - Continuous record of personnel and weather conditions

Main Premise

The roof quality observer should not erode or encroach on the responsibilities of the designer of record, applicator, contractor or manufacturer, but rather, ensure that the design intent is fulfilled. Design improvement or changes can be identified by the RQO but can only be changed by the designer of record.

SPECIFICATIONS

OXBOW PUBLIC SCHOOL ADDITION

13624 ILBERTON ROAD

ILBERTON, ONTARIO, N0M 2A0

TELEPHONE: 519-666-0310

FAX: 519-666-0365

THAMES VALLEY DISTRICT SCHOOL BOARD

1250 DUNDAS STREET EAST

LONDON, ONTARIO, N5W 5P2

TELEPHONE: 519-452-2000

FAX: 519-452-2395

* * *

DICKSON PARTNERSHIP INCORPORATED ARCHITECTS

21 RIDGEWAY CIRCLE

WOODSTOCK, ONTARIO, N4V 1C9

TELEPHONE: 519-539-1281

FAX: 519-539-5297

STANTEC CONSULTING LTD., STRUCTURAL CONSULTANTS

800-171 QUEENS AVENUE

LONDON, ONTARIO, N6A 5J7

TELEPHONE: 519-645-2007

FAX: 519-645-6575

CHORLEY & BISSET LTD., MECH./ELEC. CONSULTANTS

521 COLBORNE STREET

LONDON, ONTARIO, N6B 2T6

TELEPHONE: 519-679-8660

FAX: 519-679-2145

PROJECT NUMBER: **9139**

DATE: **OCTOBER 15, 1999**

building envelope.

1.11. EXAMINATION

- a. Before proceeding with roofing application, ensure that:
 - 1) all surfaces are clean of debris and free of snow, frost, and moisture.
 - 2) the deck is clean and sufficiently dry to ensure specified adhesion will be obtained.
 - 3) roof deck is sound, constructed smooth, in true planes and level or sloped to drains, in conformity to design intent.
 - 4) roof drains are set at a level to drain. Take spot levels to verify that pools of water in excess of 13mm (12.5"). Tabulate levels and submit to Consultant.
 - 5) roofing surfaces are free of cracks that are wider than bridging ability of roofing materials.
 - 6) adjacent construction and installation of work of others incorporated with roof is completed.
 - 7) preparations have been made for bases to receive equipment.
 - 8) wood blocking has been installed and parapets are sloped to facilitate positive drainage of completed surfaces in conformity to design intent.
 - 9) advise Architect of any unusual circumstances affecting the work. Do not commence work until defects and incorrect levels have been rectified.
 - 10) the commencement of work is proof that the Contractor has accepted surfaces as satisfactory and accepts responsibility for appearance and performances of completed work.
 - 11) defective work resulting from working on unsatisfactory surfaces will be considered the responsibility of those performing the work of this Section.
 - 12) be responsible to repair and pay all costs and fees required to rectify damages and unsatisfactory work caused by this Section with materials and finish to match the original.

1.12. VENTILATION

- a. Ensure that spaces beneath decks receiving roofing application are sufficiently heated and ventilated to prevent migration of moisture into roofing system.

1.13. FIELD QUALITY CONTROL

- a. Inspection and testing of roofing application will be carried out by testing laboratory designated by the Architect.

6.1 General Information

6.1.1 The following section covers the application specifications currently available from Johns Manville (JM) for built-up roofing membranes.

6.1.2 All general information contained in this section and the current Johns Manville Commercial/Industrial Roofing Systems Manual should be considered part of these specifications.

6.1.3 Specifications are available for systems installed over insulation, nailable, non-nailable and lightweight insulating fill substrates. JM offers systems that can be installed in hot asphalt.

6.1.4 For hot applied built-up roofing system applications, JM approved asphalt is required. Asphalts are thoroughly evaluated before they are approved for use in any JM built-up roofing system. JM acknowledges that some specifiers choose to use coal tar pitch in built-up roofing systems. However, the use of coal tar pitch is not eligible for use within JM Roofing System Guarantees.

6.1.5 Each specification in this section is eligible to receive a JM Roofing Systems Guarantee. The system must be installed by a JM Approved Roofing Contractor that is approved for Built-Up Roofing Systems. Prior to issuance of any JM Built-Up Roofing System Guarantee, the JM Approved Roofing Contractor must provide an Asphalt Confirmation Number indicating that the asphalt for the project was registered and that an "approved" asphalt source was used. Refer to the information on Guarantees in the current JM Commercial/Industrial Roofing Systems Manual, or contact the nearest JM sales representative.

6.1.6 This manual clearly differentiates between **requirements and recommendations**. This manual has been written to assist the specifier to develop a comprehensive bid package. The information is presented in an explanatory fashion rather than the authoritative, instructive manner commonly utilized in construction specifications. When experience, technical knowledge, or established testing procedures support a policy or position, it is clearly identified, (i.e., "JM requires" or "is not acceptable"). When the use of a particular product or practice is undesirable or questionable, the reference is stated as an opinion rather than an absolute fact, (i.e., "JM recommends" or "JM suggests"). **It is mandatory that all requirements be complied with, however it may not be necessary to follow all recommendations to qualify for a Guarantee.**

6.1.7 Drainage of water off any roof membrane is recognized as being critical to the proper performance of any roofing system.

6.1.8 Drainage: Design and installation of the deck and/or substrate must result in the roof draining freely and to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable and will not be eligible for a JM Roofing System Guarantee.

6.1.9 Flashings: Refer to Section 8 in this manual on Flashing Specifications.

6.2 Membrane Substrate

6.2.1 The surface on which the built-up roofing membrane is to be applied should be one of JM's roof insulations (Fesco, Tapered Fesco, Fesco Foam, Tapered Fesco Foam, E'NRG'Y 2, Tapered E'NRG'Y 2, Fiber Glass Roof Insulation or 1/2" Retro-Fit Board) or an approved structural substrate. The surface must be clean, smooth, flat and dry. Built-up roofing should not be applied directly to foam plastic insulations, as referenced in NRCA Bulletin #9.

6.3 Built-Up Roofing Over Non-Nailable Decks

6.3.1 These specifications are for use over any type of structural deck which is not nailable and which offers a suitable coating to receive the roof. Poured and precast concrete require coating with JM Concrete Primer prior to the application of hot asphalt. Pre-cast concrete panels also require a layer of approved roof insulation prior to installing a roof membrane.

6.3.2 These specifications are also for use over JM roof insulations (Fesco, Tapered Fesco, Fesco Foam, Tapered Fesco Foam, E'NRG'Y 2", Tapered E'NRG'Y 2, Fiber Glass Roof Insulation and 1/2" Retro-Fit Board) or other approved insulations that offer a suitable surface to receive the roof. Built-up roofing should not be applied directly to foam plastic insulations, as referenced in NRCA Bulletin #9. These specifications are not to be used over lightweight insulating concrete decks or over a fill made of lightweight insulating concrete.

6.3.3 Non-nailable specifications are denoted by an "I" as the third character in the specification designation (e.g., 4GIG). See the "Roof Finder Index" in this section for more information.

6.4 Built-Up Roofing Over Nailable Decks

6.4.1 These specifications are for use over any type of structural deck (without insulation) which can receive and adequately retain nails or other types of mechanical fasteners recommended by the deck manufacturer. Examples of such decks are wood and plywood. Certain specifications are eligible for use over lightweight insulating concrete decks or over fill made of lightweight insulating concrete. Contact a JM Technical Service Specialist for approval of the lightweight fill to be used.

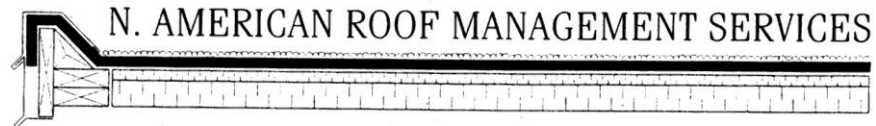
6.4.2 Nailable specifications are denoted by an "N" or an "L" as the third character in the specification designation (e.g., 4GNG, 4GLG). See the "Roof Finder Index" in this section for more information.

6.4.3 One ply of sheathing paper must be used over wood board decks under the base felt.

6.4.4 All of the specifications in this section require the use of a nailable base felt. Use nails or fasteners appropriate to the type of deck. See fastener data in the Roof Deck section.

6.5 Application of Materials

6.5.1 The proper application of roofing materials is as important to the satisfactory performance of the roof membrane as the materials themselves. JM suggests the following guidelines for application of all roofing materials.



ROOF REPLACEMENT SPECIFICATIONS

NUMBER 06-14-99-008

THAMES VALLEY DISTRICT SCHOOL BOARD

951 LEATHORNE STREET

LONDON, ONTARIO

N5Z 3M7

JUNE 1999

PREPARED BY: DENIS SYKORA
N. AMERICAN ROOF MANAGEMENT SERVICES LTD.

CLOSING DATE: WEDNESDAY, JUNE 30, 1999, 12:00 NOON

THAMES VALLEY DISTRICT SCHOOL BOARD
951 LEATHORNE STREET, LONDON

- f. The Contractor shall not load or permit to be loaded any part of the work with a weight or force that will endanger the work.
- g. The Contractor shall be permitted to use, at no cost, existing water and power facilities at or on the site.
- h. The Contractor shall co-operate with the school principal and not interfere with the daily operation of the school.

23. EXISTING CONDITIONS

- a. Building space directly under roof area covered by this specification will be utilized by on-going operations. Do not interrupt School Board operations unless written approval is received from the School Board.
- b. Access to roof shall be from exterior only. No roofing employees will be allowed within building without prior approval from the School Board. If internal access is allowed, it is the Contractor's responsibility to return the premises to its original clean and undamaged condition.
- c. Air conditioning units and other equipment shall be moved as required to install roofing materials complete and in accordance with plans and specifications. When units and equipment are to be moved, they shall be carefully disconnected and moved to a protected area so as not to damage part or component thereof, and shall be reconnected in such a way that they are restored to a prior work operating condition.
- d. All disconnection and re-connection shall be performed by a mechanical and/or electrical company as specified by the School Board.

24. INSPECTION IN PROGRESS AND UPON COMPLETION

- a. School Board shall authorize N. American Roof Management Services Ltd. to periodically examine the Work in progress, as well as upon completion, in order to assist in ascertaining the extent to which the materials and procedures conform to the requirements of these specifications and to the published instructions of the material manufacturer.
- b. When directed by the School Board's representative, the Contractor shall, at their own cost, cut not more than four (4) cores of approximately 200 square inches each from every roof area worked upon under the contract and shall restore all such areas to sound and watertight condition.
- c. The School Board or their representative shall have access to the Work for the purpose of inspection. The School Board or their representative may order any extra tests or inspections that may be deemed necessary to ascertain the proper execution of the Work. If the Work is found in accordance with the Contract, the School Board shall pay the cost of the extra tests or inspections. If the Work is found deficient in terms of the Contract, then the Contractor shall pay the costs, including any additional costs necessary to make the Work acceptable under the Contract.
- d. At the completion of any patching, flashing repair, or cleaning, and prior to any resurfacing and restoration work, the Contractor shall notify the School Board's representative. Twenty-four (24) hours notice shall be given to above, at which time an inspection of the prepared roof may be made.

***THAMES VALLEY DISTRICT SCHOOL BOARD
951 LEATHORNE STREET, LONDON***

28 QUALITY ASSURANCE

- a. Upon request, before commencing with the Work, the Contractor and the Consultant shall meet at the site and examine all surfaces to be covered, review material application procedures, and verify that all facets of application are understood. The Consultant shall make such additional visits as required to ensure proper application of materials related to the forthcoming guarantee.
- b. Workmen shall be thoroughly experienced in the particular class of Work in which they are employed. The Consultant reserves the right to reject any workmen whom, in his opinion, do not have the skills necessary to properly complete any job they are so assigned.
- c. The Contractor shall be responsible for maintaining all work areas in a neat and orderly manner. All ground areas shall be clean, neat, and orderly at the end of each day's work. Any and all landscaping damaged or destroyed shall be restored to its original condition paid for by the Contractor.

All roof top areas shall be clean and materials properly stored at the end of each day's work.
- d. If the Contractor does not comply with the requirements to keep the premises clean or does not take steps to correct any damage that may have occurred, a written notice will be issued to the Contractor....

Roof Observer is a TEAM Member

Primary function

- Observe workmanship
- Provide documentation
- Communicate

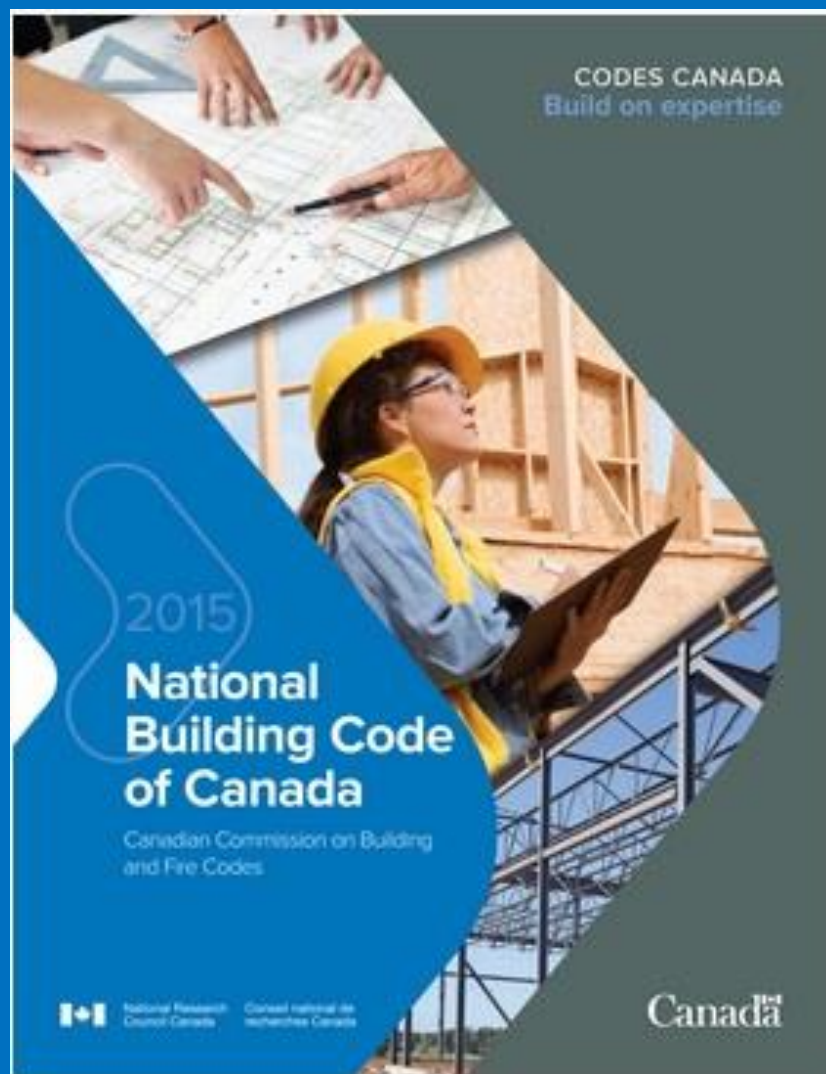
CSC Construction Contract Administration

The team approach:

- “The success of the project is dependent on how well the participants understand their roles and responsibilities and those of the others, and how well they meet the expectations of the others.”

Roof Observer is NOT

- A policeman
- A safety inspector





CSST

CSA BC The Construction
Safety Association
of British Columbia

/// building safety through training



Occupational Health and Safety Act and Regulations for Construction Projects

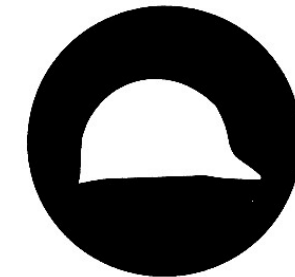
**Occupational Health and
Safety Act**

Revised Statutes of Ontario, 1980

Chapter 321

**Revised Regulations of
Ontario, 1980, Regulation 691,
as amended by O. Reg. 156/84
and O. Reg. 635/86**

Ontario Regulation 714/82



MATERIAL SAFETY DATA SHEET

SECTION I – PRODUCT IDENTIFICATION

PRODUCT NAME: ASPHALT BUR TYPE I, II, III, IV

OTHER NAMES: Oxidized Bitumen, I Oxidized Asphalt, Air blown Asphalt, Roofing Asphalt

CHEMICAL SYNONYMS & FAMILY: Petroleum Hydrocarbon

PRODUCT USE: BUR Type I, II, III, IV are primarily used for roofing applications.

Supplier name and address:

Lexsco Corporation
85 Vulcan Street
Bobbicoke, Ontario
M9W 1L4

Manufacturer name and address:

Refer to supplier

Emergency Tel. # (416) 249-3331

SECTION II – INGREDIENTS

<u>Ingredients</u>	<u>CAS#</u>	<u>% (VOL)</u>	<u>Allowable Limits (8H)</u>
Oxidized bitumen	64742-93-4	97	5 mg/m3 (asphalt fumes)
Sulphur	7704-34-9	3	not regulated

Note: During storage or transit of hot asphalt, toxic hydrogen sulphide (7783-06-4) may be generated.

SECTION III – PHYSICAL DATA

ODOUR AND APPEARANCE: Black, highly viscous, semi-solid with characteristic tarry odour; solid at ambient temperature.

VAPOUR PRESSURE (mm Hg): Nil

BOILING POINT: > 470 ° C (@ 1 ATM)

VAPOUR DENSITY (@ 20° C): N/A

EVAPORATION RATE:

VOLATILES, % (@ 20° C): Nil

SOLUBILITY IN WATER: Insoluble

DENSITY (@ 15° C): 1.0 kg/L

VISCOSITY: (kinematics): N/A

PENETRATION: (@ 25° C): 37,22,17,16,(typical respectively) (100 g, 5 sec)

SOFTENING POINT: 62,79,90,102° C (typical respectively)

Preparation

- Review the specifications before going to the site.
- Understand your role and responsibilities.

Preparation, continued

Come to the roof site “armed” with:

- job specification
- contact phone numbers and cell phone
- camera and film
- approved work boots, hard hat, and safety glasses
- contractor’s name and foreman’s name
- inspection forms – hard copy or on computer

The Missing Link

Third party roof observers help provide a better roof.

- We are all human and sometimes we make an error, therefore a third set of eyes can help prevent an error from occurring.

The Observer provides a solid professional service, often key to the success of the consulting firm.

Be Professional

- Your role is not to grandstand for personal gratification.
- Your role is not to upstage the foreman, employer, or owner.
- Your role is to observe and document the application of the roof as contracted.

Daily Reports

- Reports are filled out on a daily basis.
- Distribution of reports on a same-day basis:
 - contractor
 - general contractor
 - owner
 - designer
 - roof observer
- These reports can be used by the owner as their quality assurances and control at the work site.

SAMPLE REPORT

Reported By: _____ Page _____ of _____ Pages

General Requirements

Knowledge of:

- codes
- safety requirements
- Specification

Dress code:

- image is important
- personal grooming
- attire

Roof Observer

An asset for the roofing contractor?

Or a pain in the butt?

Summary

- The Roof Observer is a critical member of the team and as such is an aid in the installation of the specified roof system.
- By understanding your role and providing the contracted services in a professional manner, you assist in the process of installation of the roof and reduce the frequency of disputes.

Questions and Discussion

