



**NEW ROOF
FOR AN OLD
COURTHOUSE
IN ST. LOUIS,
GATEWAY TO
THE WEST**

***Sustainability and Preservation - How We Maintain Our
Built Environment***



QUINN EVANS
ARCHITECTS

***Ilene R. Tyler, FAIA, FAPT, LEED AP
Ann K. Dilcher, AIA, LEED AP***

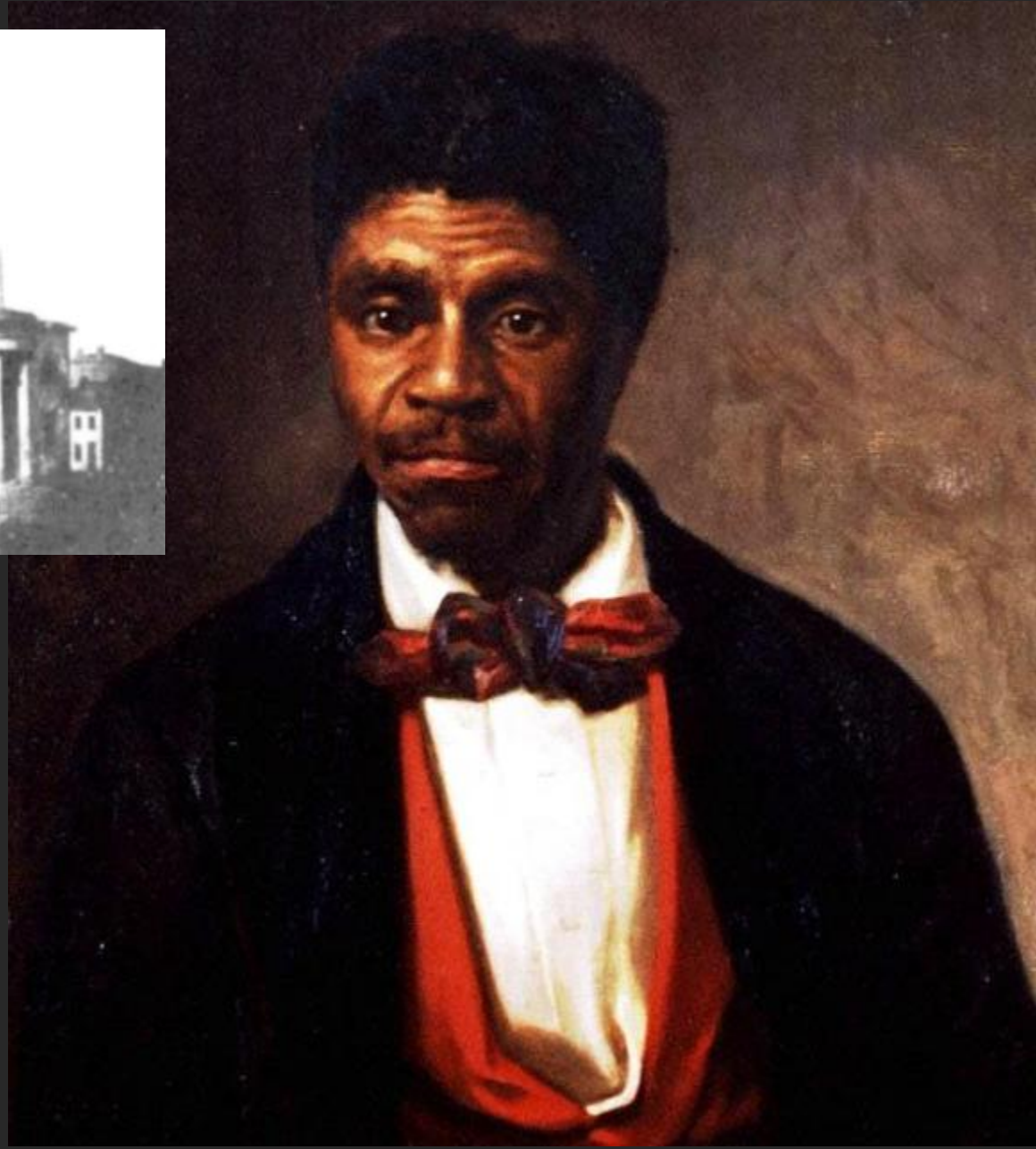
- Create details that ensure roof integrity, i.e. no leaks.
- Write technical specifications for added quality control.
- Anticipate and manage construction oversight.



1844, original construction, site of 1847 Dred Scott case



1870 view looking northwest



HISTORIC BACKGROUND

REMOVE OLD ROOF

Old Standing Seam Roof

Demolition in 1940s



PRESERVE HISTORIC FEATURES

1940s “dry-in” w/ tarps

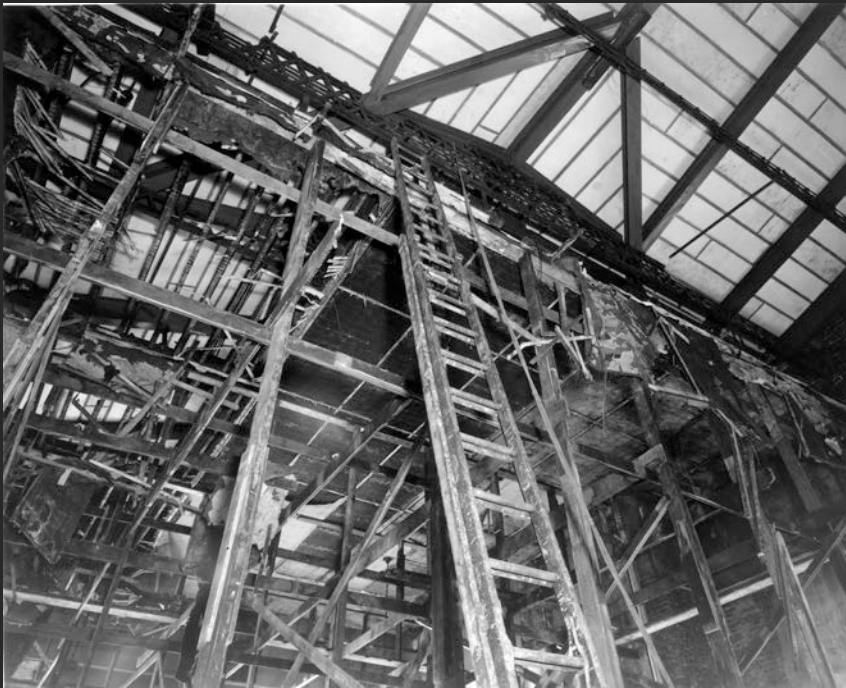


Minimal gutter & Internal Drains



RECONSTRUCT INTERIOR SPACES

Gypsum plank



Altered floors



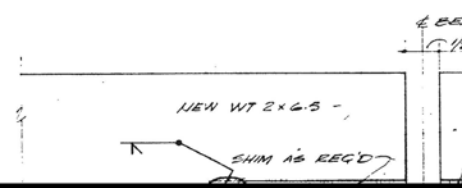


HISTORIC BACKGROUND

1942, new roof installed and exterior painted

WOOD ANCHORED
WITH 1/2" x 3/4" 10-24
SCREWS OR BOLTS
LOCK
AND ALONG SPACES
PROVIDE
FACING. SPACING

EXISTING STANDING S
BASED TO ALLOW EBMG
AND INSTALLATION OF
ROOFING SHALL BE SET.
FITTED TO NEW APPROX.



EXISTING CONDITIONS

Gutter areas reconfigured, 1977

- 40% of roof detached
- Failed seams
- Puncture holes
- Leaking drains
- Corroded steel structure
- Water infiltration at pediments
- Falling cornice stone fragments



EXISTING CONDITIONS

FAILED ROOF

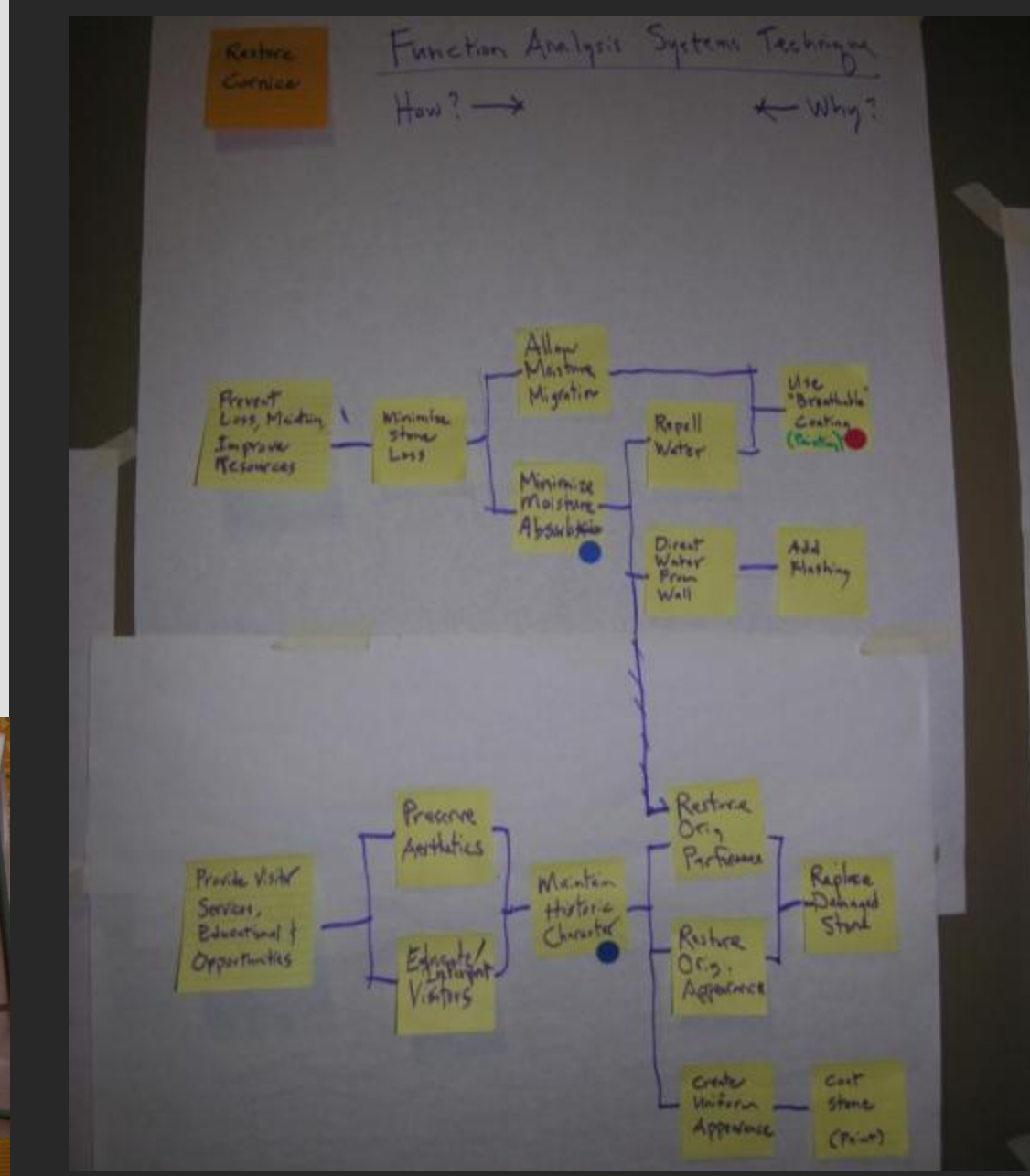
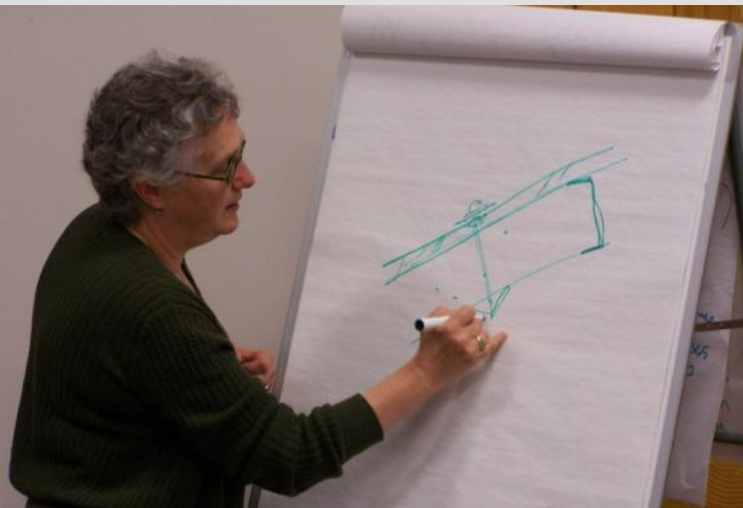


FAILED CORNICE



“How” and “Why”

- Aesthetics
- Historic compatibility
- Anticipated life of the installed system
- First cost versus life cycle cost



VALUE ANALYSIS WORKSHOP



- Cover sloping pediments
- Use a heavier gauge sheet metal
- Improve detail and placement of expansion joints
- Add secondary drainage system

MODIFY THE ORIGINAL DESIGN

SLOPED PEDIMENTS COVERED



SLOPED PEDIMENTS COVERED



EXPANSION JOINTS & DRAINS ADDED



SECONDARY DRAINAGE ADDED

Drain under the Copper



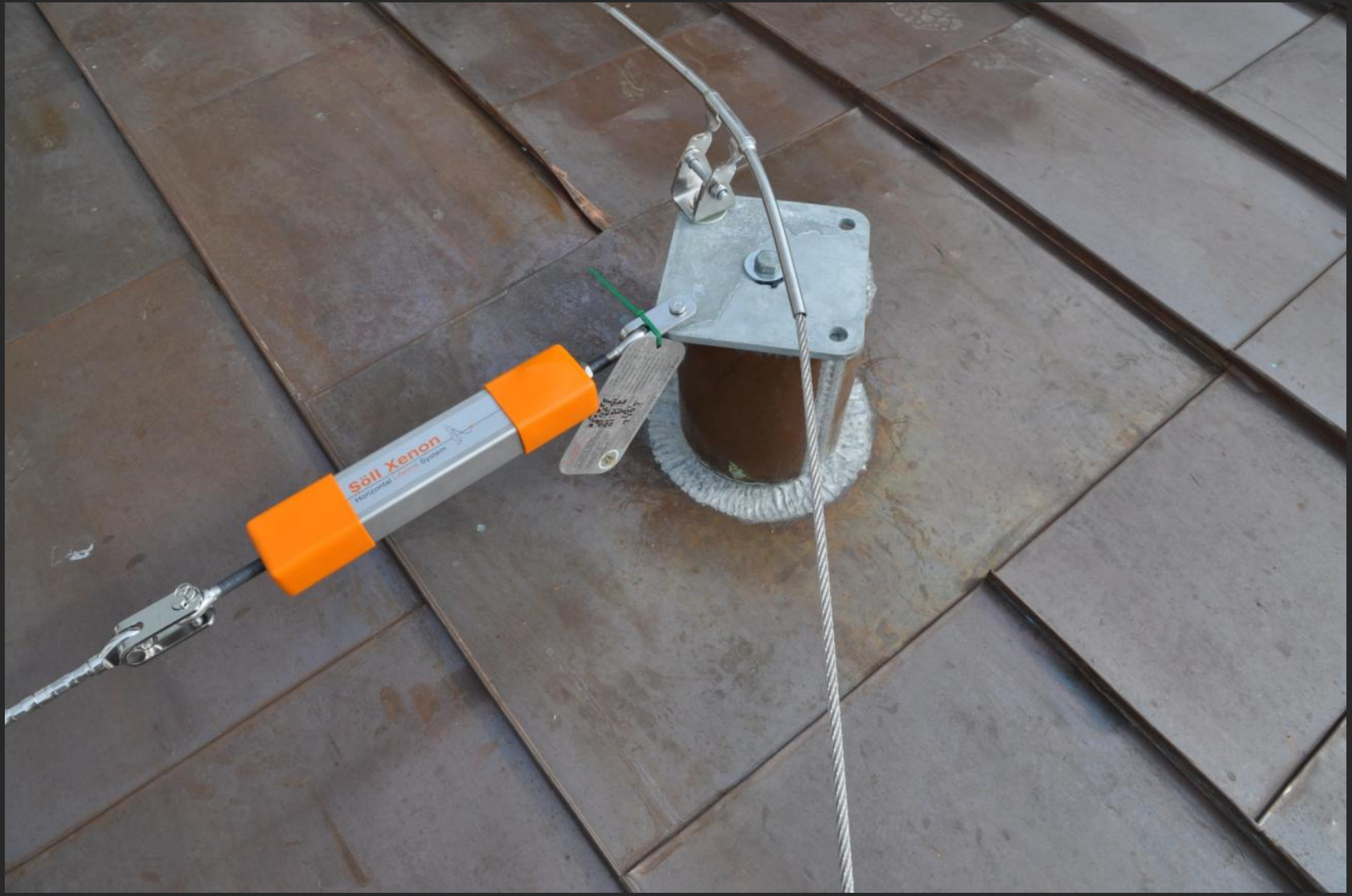
Buckets on the catwalks



- Add features that protect against slipping and falling
- Improve access to all parts of the roof and underside of the roof

ADD SAFETY FEATURES

FALL PROTECTION



ROOF HATCHES



CATWALKS



CATWALKS

Stairs and Ladders to All Levels



Bolted Connections to Existing Structure



- Drain Lines
- Skylights
- Cornice Covers



CONNECTIONS TO EXISTING REMAIN

RAIN CONDUCTORS



SKYLIGHTS



SKYLIGHTS

Reused Aluminum Coping



Copper Termination Bar



- Establish work quality expectations
- Photograph and then share photos
- Full time COTR
- NPS roof specialist



INSPECTIONS, MOCKUPS, SITE MEETINGS

TECHNICAL SPECIFICATIONS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

076000 ROOF INSPECTION AND TESTING

076010 ROOF INSTALLER CERTIFICATION

076100 SHEET METAL ROOFING

076200 SHEET METAL FLASHING AND TRIM

077200 ROOF ACCESSORIES

079200 JOINT SEALANTS

TECHNICAL SPECIFICATIONS

ROOFING SHEET METALS

Built-in Gutters: Copper: 32 oz./sq. ft.

Standing Seam Pans: Copper: 20 oz./sq. ft.

Flat Seam Sloped Pediment Cover: Lead Coated Copper: 24 oz./sq. ft.

Flat Seam Parapet Cover: Lead Coated Copper: 20 oz/sq. ft.

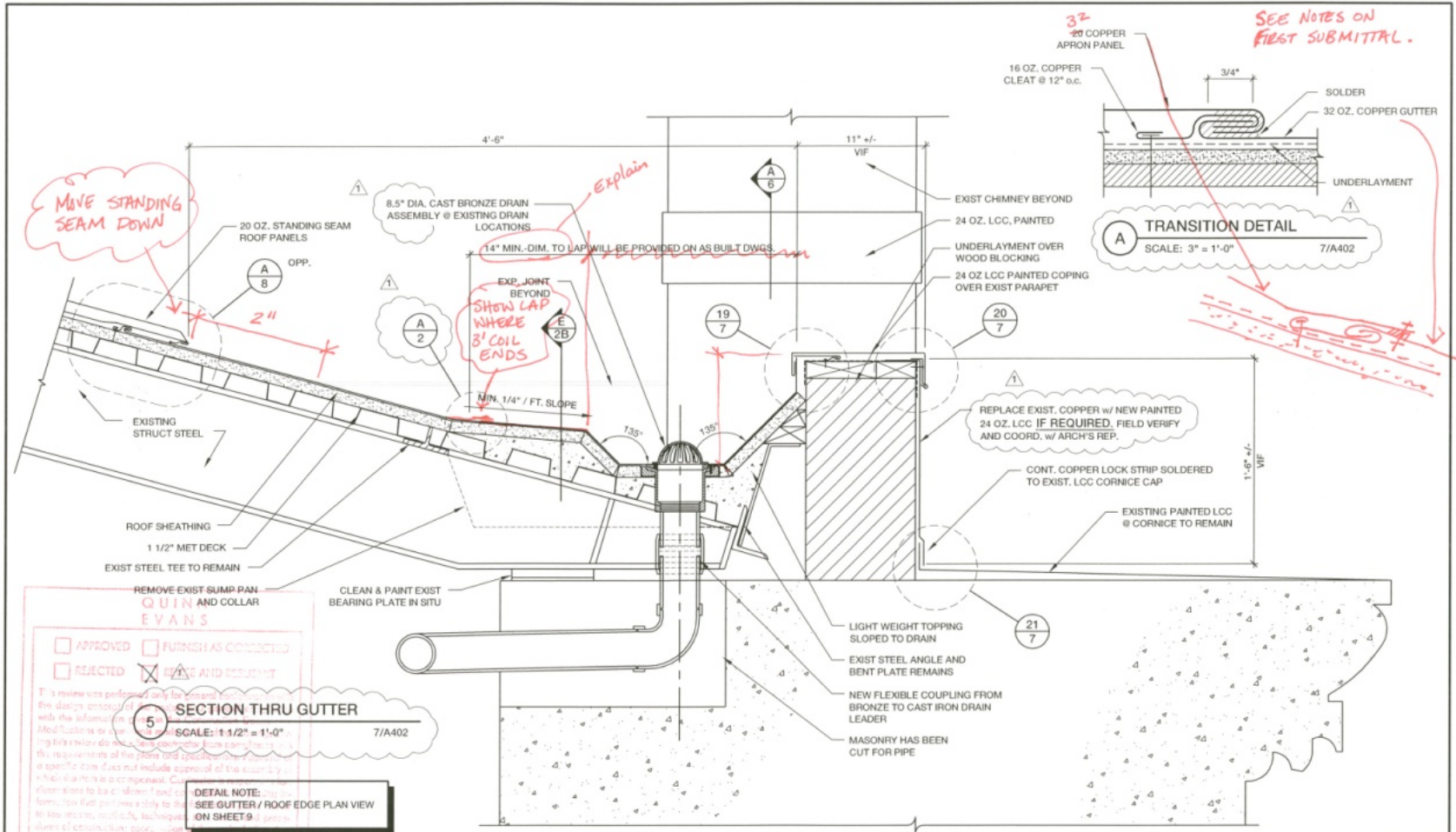
Valley Flashing: Copper: 20 oz./sq. ft.

Base Flashing: Copper: 20 oz./sq. ft

Counterflashing: Copper: 16 oz./sq. ft.

Expansion-Joint Cover: Copper: 16 oz./sq. ft

SHOP DRAWINGS



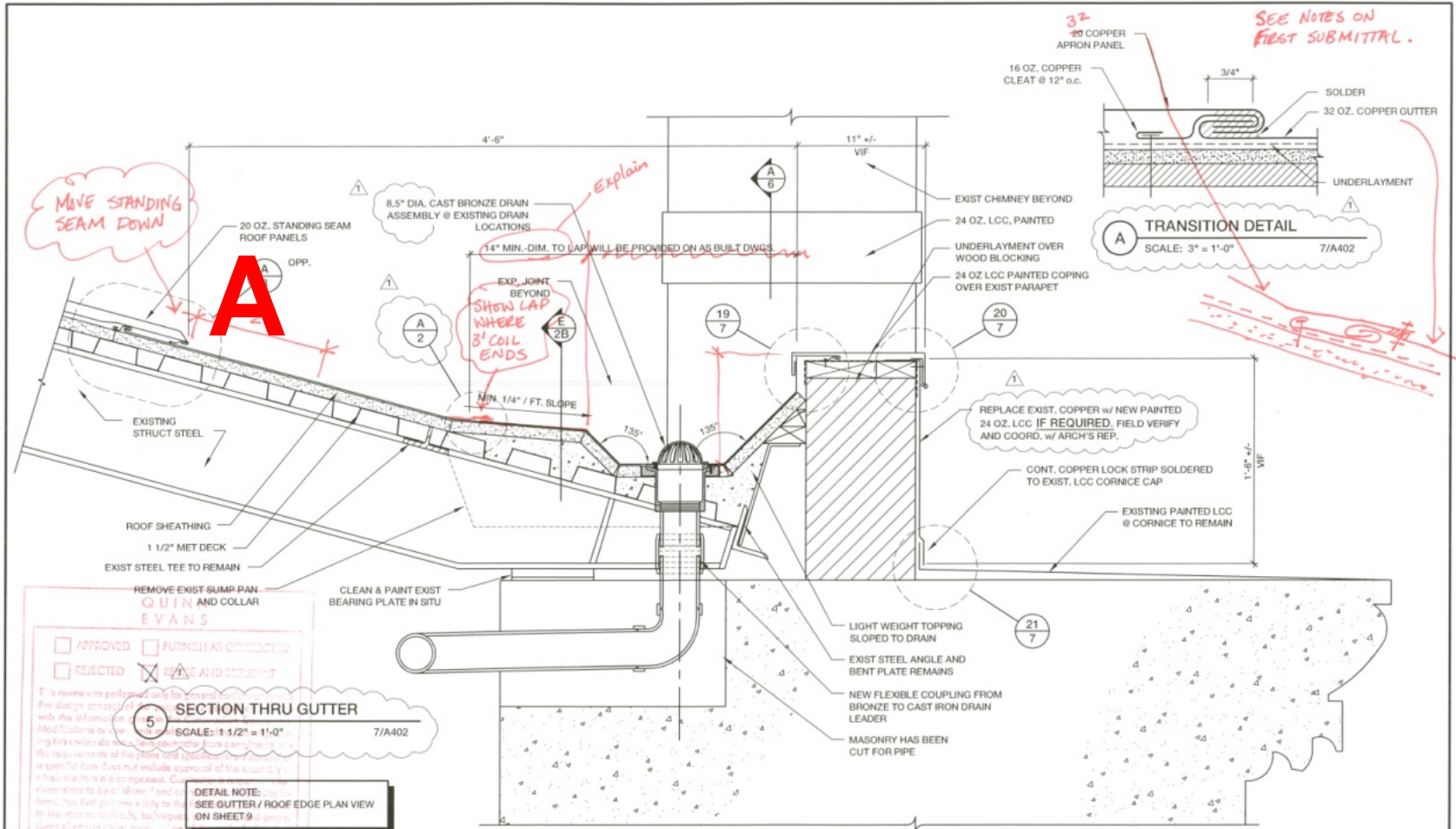
APPROVED FURNISH AS CONNECTED
 REJECTED REVISE AND RESUBMIT

This review was performed only for the purpose of the design consistency of the drawings with the information provided. It does not constitute an approval of the design or the construction of the project. The contractor is responsible for obtaining all necessary permits and for performing all work in accordance with the applicable codes and standards.

Date: 1/11/2010 By: *Ar. [Signature]*

ARCHITECTS

SHOP DRAWINGS



APPROVED FURNISH AS CONNECTED
 REJECTED REVISION AND COMMENT

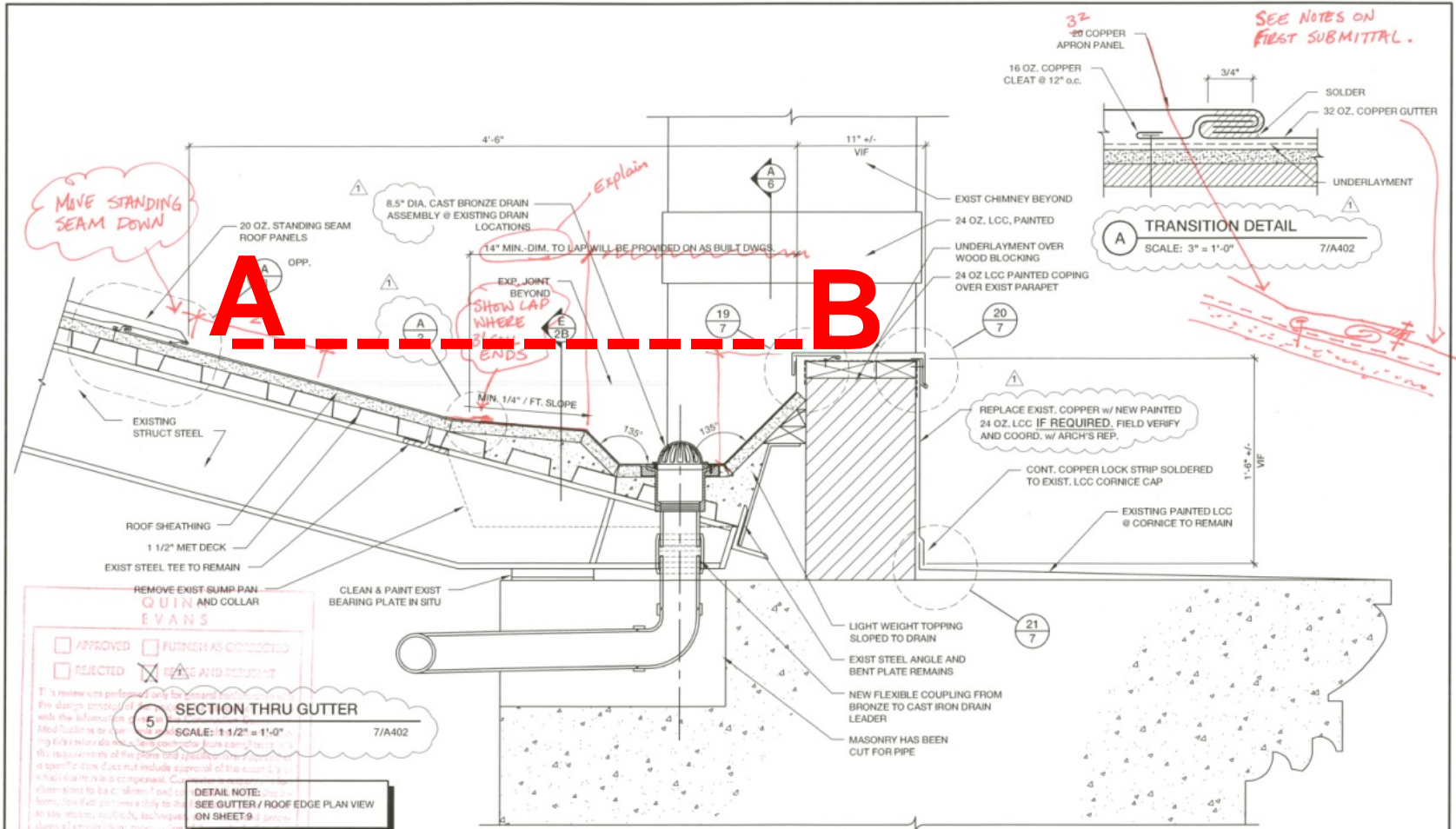
This review was performed only for compliance with the design contract and does not constitute an approval of the design or any part thereof. The architect's liability is limited to the design and construction of the building as shown on the drawings and specifications. The architect does not assume any liability for the performance of the work or for any damage or injury to persons or property resulting from the use of the building.

Date: 1/11/2010 By: *Ar. [Signature]*

ARCHITECTS

The Tradesmen Group, Inc. Contact: Erik Henry - (740) 225-8149		PROJECT: Jefferson National Expansion Memorial LOCATION: St. Louis, Missouri	REV. #1, ARCH. COMMENTS-12-23-09 FILE NO: JCH-D2 CONTRACT NUMBER: 1443C2011090674	DATE: 01-06-10 SHEET 2 OF 18
--	--	---	---	---------------------------------

SHOP DRAWINGS



REMOVE EXIST SUMP PAN QUIN AND COLLAR EVANS

APPROVED FURNISH AS CONNECTED
 REJECTED REVISION AND COMMENT

This review was performed only for the purpose of the design consistency of the drawings with the information provided. It does not constitute an approval of the design or the construction of the project. The contractor is responsible for obtaining all necessary permits and for performing all work in accordance with the applicable codes and standards.

Date: 1/11/2010 By: *Ar. [Signature]*

SECTION THRU GUTTER

SCALE: 1 1/2" = 1'-0"

7/A402

DETAIL NOTE:
SEE GUTTER / ROOF EDGE PLAN VIEW ON SHEET 9

REV. #1, ARCH. COMMENTS-12-23-09

The Tradesmen Group, Inc.	PROJECT: Jefferson National Expansion Memorial	FILE NO: JCH-D2	DATE: 01-06-10
Contact: Erik Henry - (740) 225-8149	LOCATION: St. Louis, Missouri	CONTRACT NUMBER: 1443C2011090674	SHEET 2 OF 18

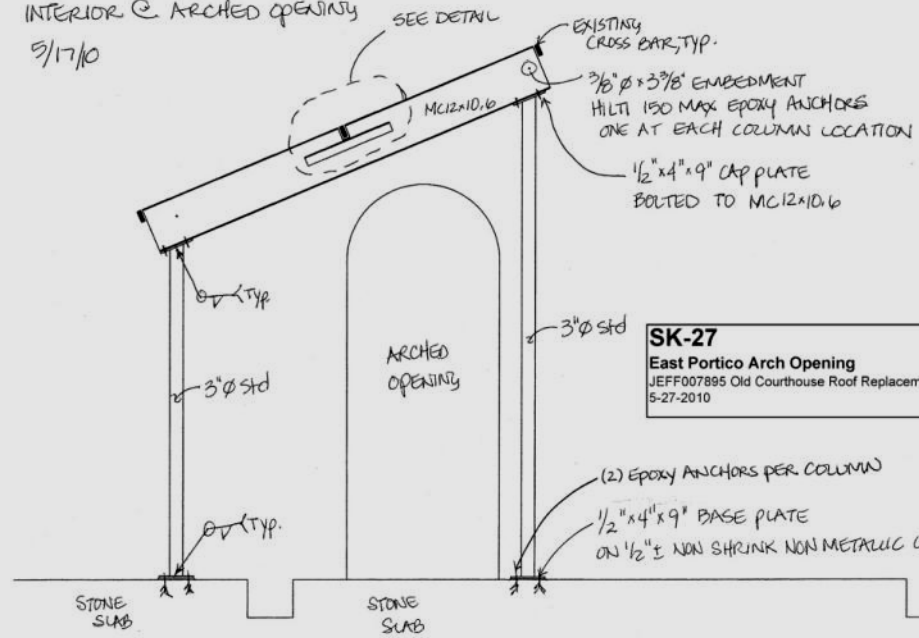
ARCHITECTS

FIELD SKETCHES

EAST PORTICO WALL

INTERIOR @ ARCHED OPENING

9/17/10



SK-27

East Portico Arch Opening

JEFF007895 Old Courthouse Roof Replacem
5-27-2010



RAINY-DAY “DRY-IN” PROTECTION



PROTECTION IN THE ATTIC



- Explain pre-tinning requirements early
- Call for heavier gauge copper
- Detail more expansion joint conditions



LESSONS LEARNED - DETAILS

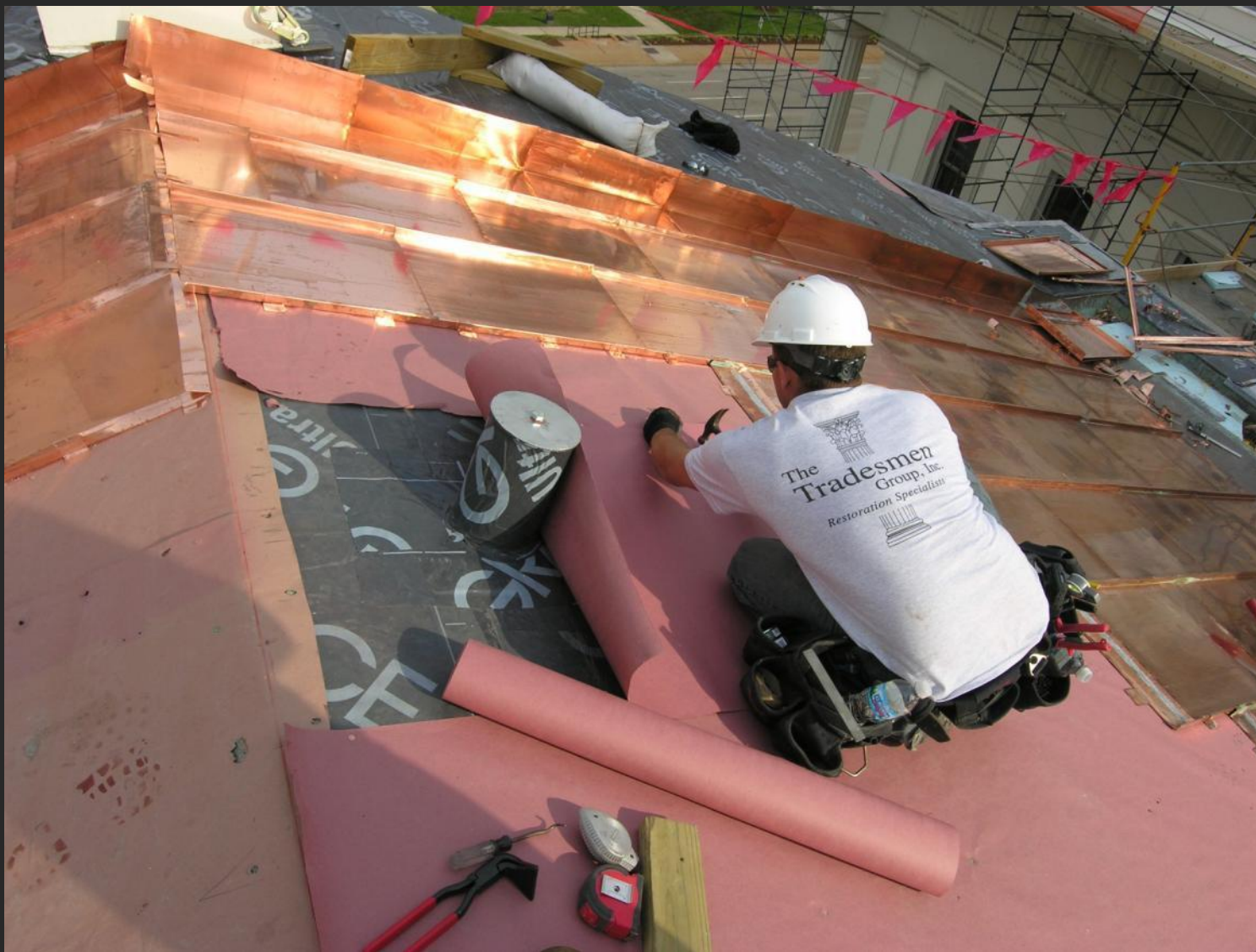
INSIST ON PRE-TINNING



RIVET AND DOUBLE SOLDER



PAN LAYOUT



CONSISTENT STANDING SEAMS



EXPANSION JOINTS



- Don't start a roof project in December
- Investigate concealed conditions
- Hold weekly team meetings – we did, and they were invaluable!
- Allow time for final inspection and corrections



DON'T START IN DECEMBER

Wind, cold, and snow



...hampered the work



INACCESSIBLE PORCH ATTICS



CONFERENCE CALLS AND IN-PERSON



PUNCH LIST INSPECTION



PUNCH LIST INSPECTION



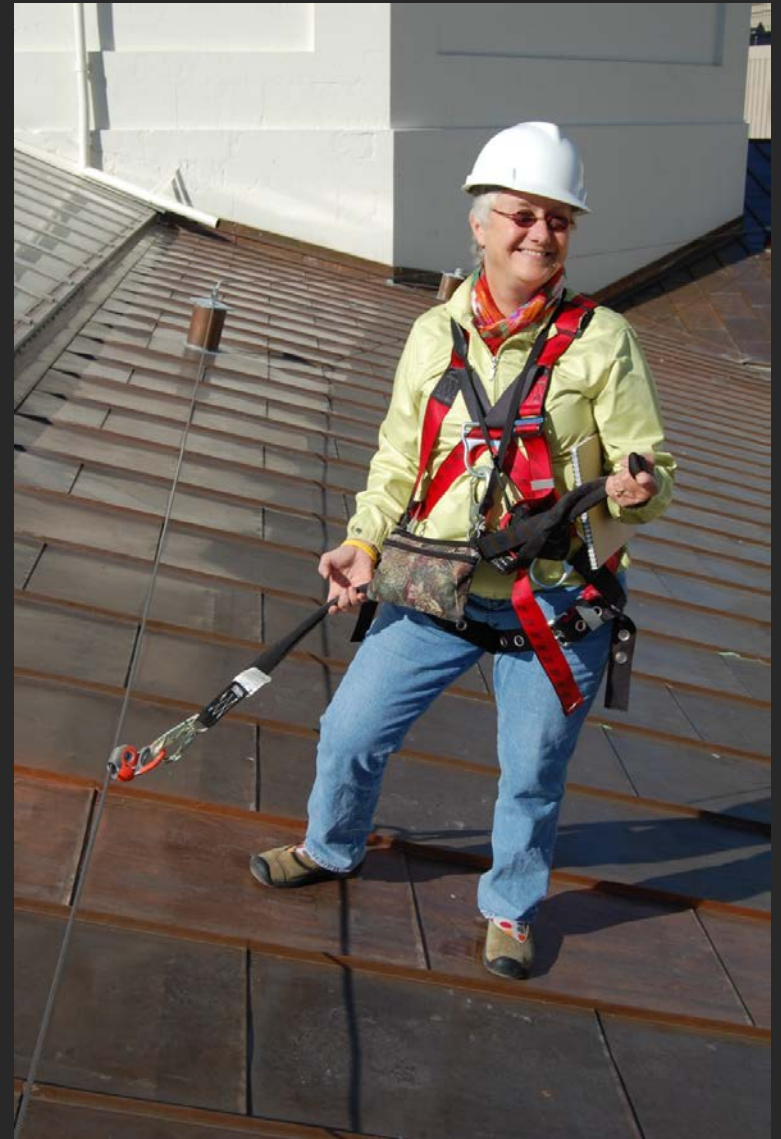
PUNCH LIST INSPECTION



PUNCH LIST INSPECTION



PUNCH LIST INSPECTION





**NEW ROOF
FOR AN OLD
COURTHOUSE
IN ST. LOUIS,
GATEWAY TO
THE WEST**

*Sustainability and Preservation - How We Maintain Our
Built Environment*



QUINN EVANS
ARCHITECTS

*Ilene R. Tyler, FAIA, FAPT, LEED AP
Ann K. Dilcher, AIA, LEED AP*



QUESTIONS AND DISCUSSION

*Sustainability and Preservation - How We Maintain Our
Built Environment*



QUINN EVANS
ARCHITECTS

Ilene R. Tyler, FAIA, FAPT, LEED AP
Ann K. Dilcher, AIA, LEED AP