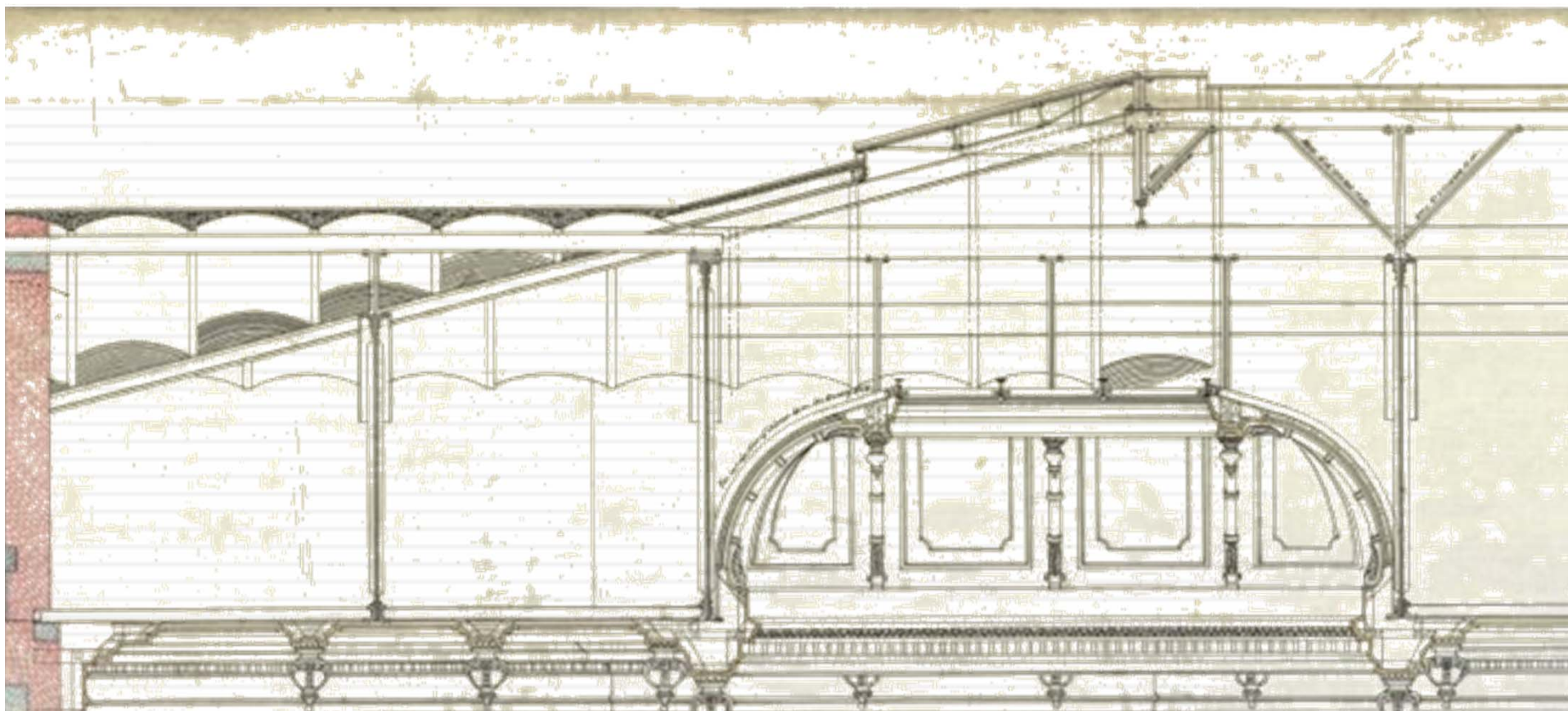


Roof & Skylight Replacement

COLORADO STATE CAPITOL



Project Team



Humphries Poli Architects



HPA creates livable communities through buildings that:

Ennoble the Site

Inspire the Participants

Sustain the Resources

Bring Joy to the Users

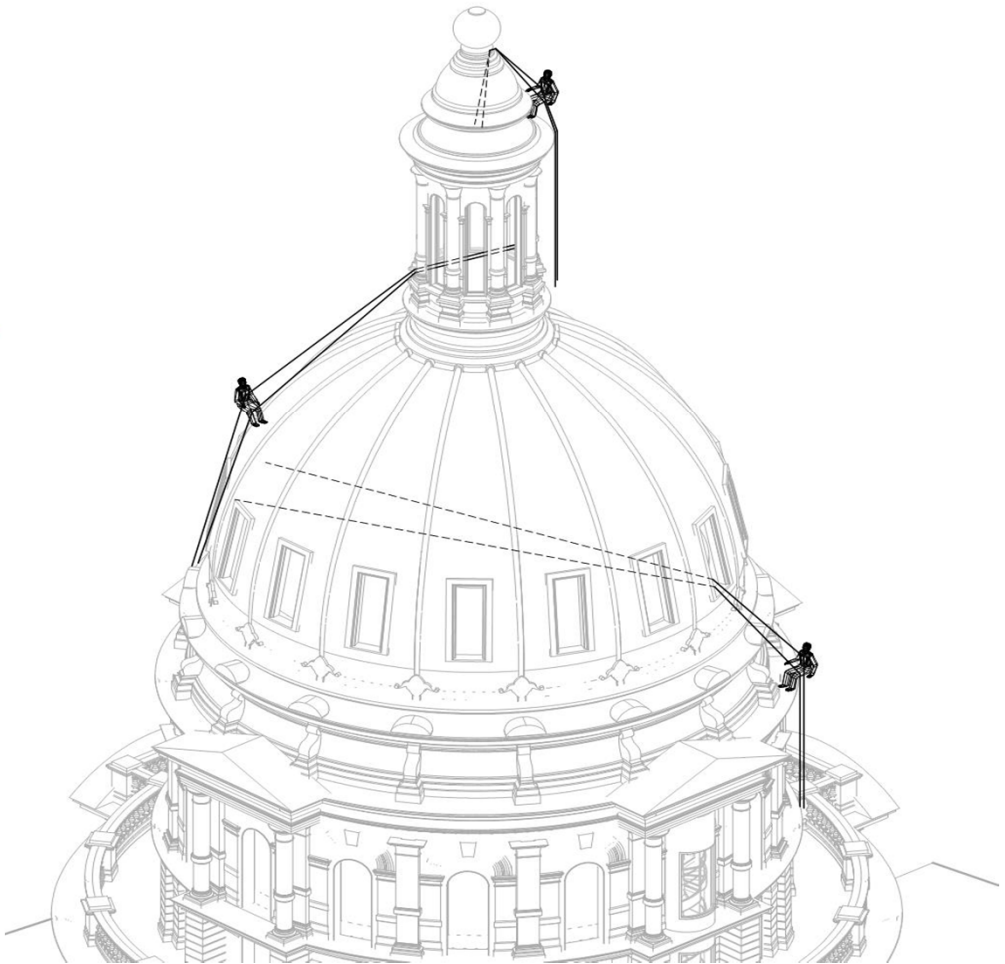
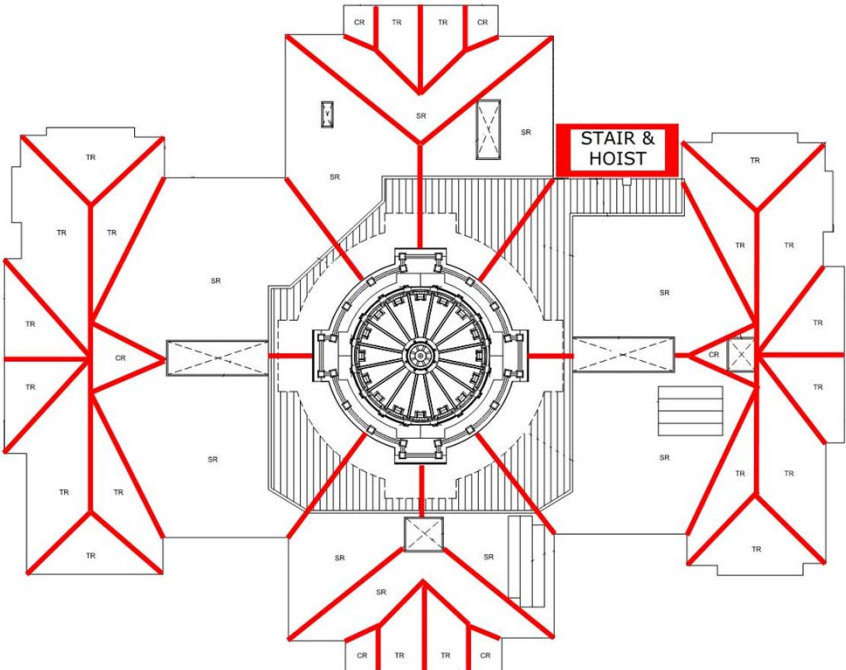
Expertise

□ Quinn Evans Architects

□ Martin/Martin, Inc.

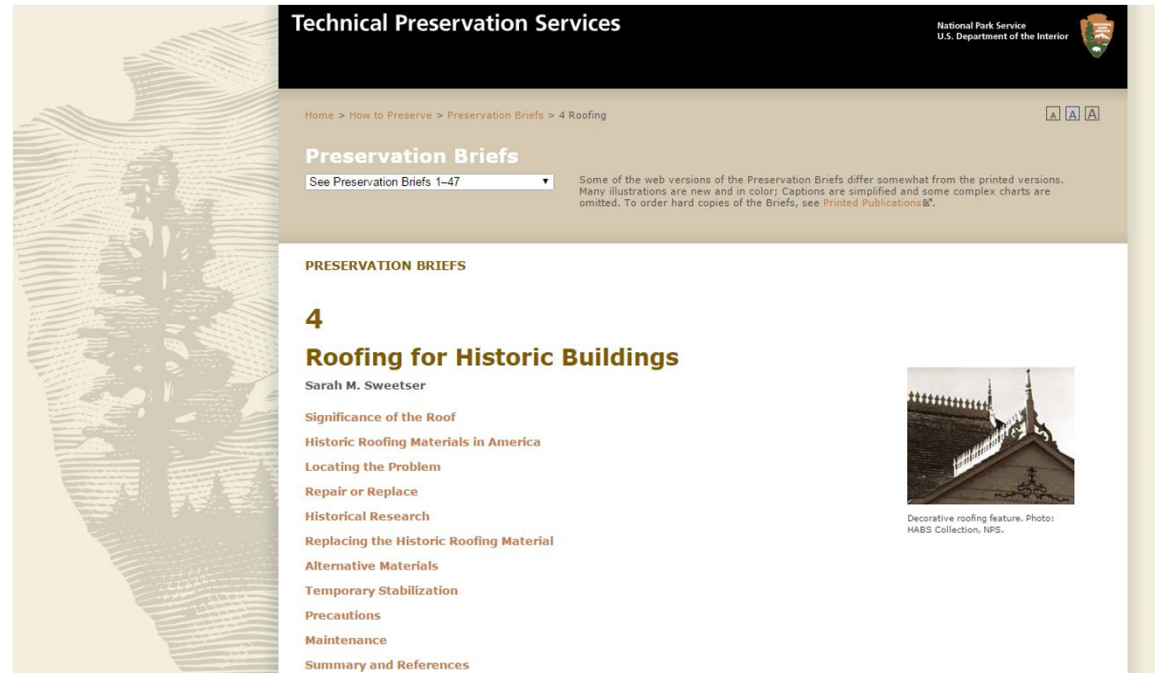


Unique Knowledge



Project Goals

- On time /On Budget
- Preservation
- Long Term Performance
- Sustainability



Technical Preservation Services

National Park Service
U.S. Department of the Interior

Home > How to Preserve > Preservation Briefs > 4 Roofing

Preservation Briefs

See Preservation Briefs 1-47

Some of the web versions of the Preservation Briefs differ somewhat from the printed versions. Many illustrations are new and in color; Captions are simplified and some complex charts are omitted. To order hard copies of the Briefs, see [Printed Publications](#).


PRESERVATION BRIEFS

4

Roofing for Historic Buildings

Sarah M. Sweetser

- Significance of the Roof
- Historic Roofing Materials in America
- Locating the Problem
- Repair or Replace
- Historical Research
- Replacing the Historic Roofing Material
- Alternative Materials
- Temporary Stabilization
- Precautions
- Maintenance
- Summary and References



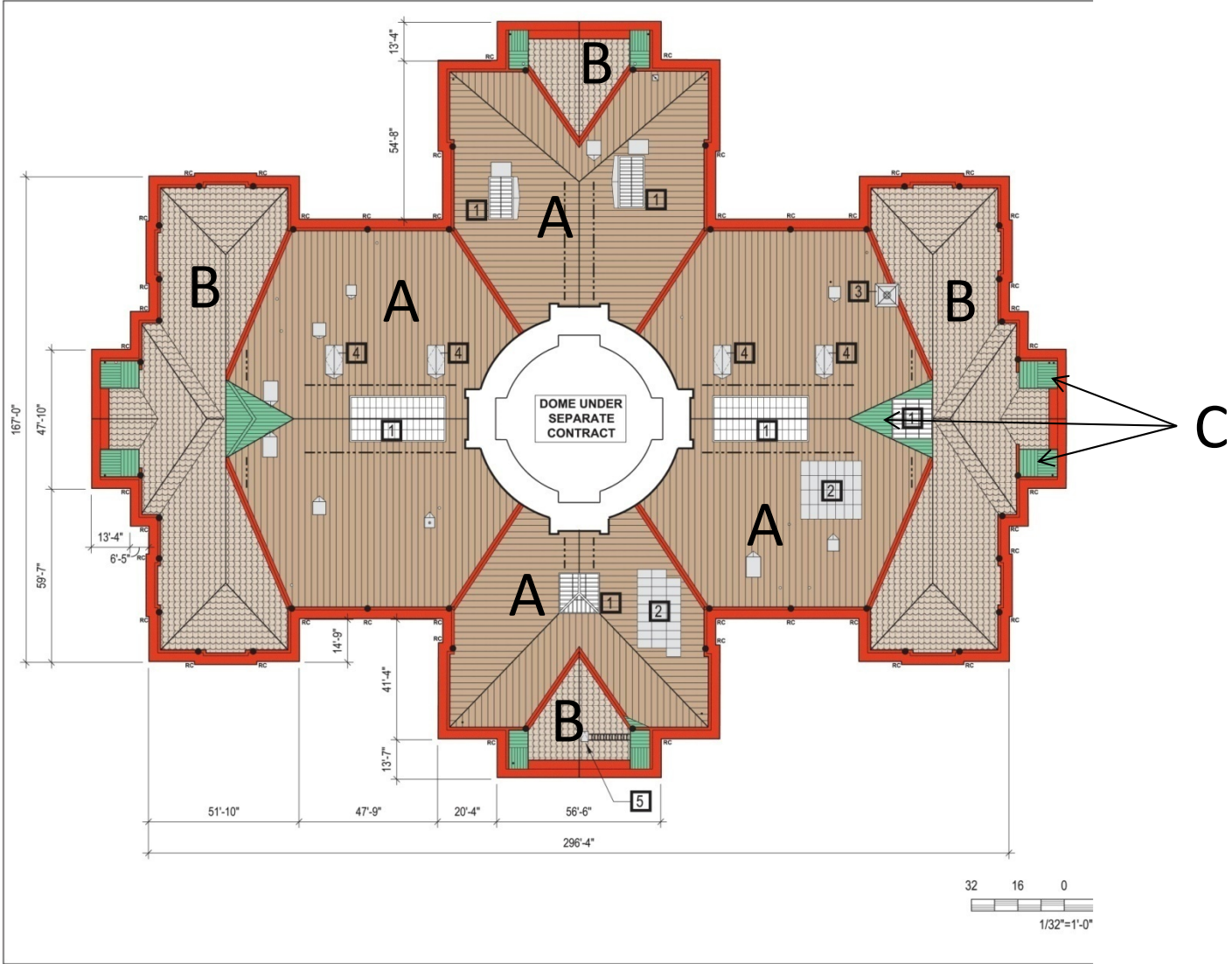
Decorative roofing feature. Photo: HABS Collection, NPS.

Research and Documentation

PROJECT APPROACH



2012 Roof Study



Restoration Design

Roofing

1905 - Buckingham Slate

1910 - Period of Significance

1951 - Terra Cotta

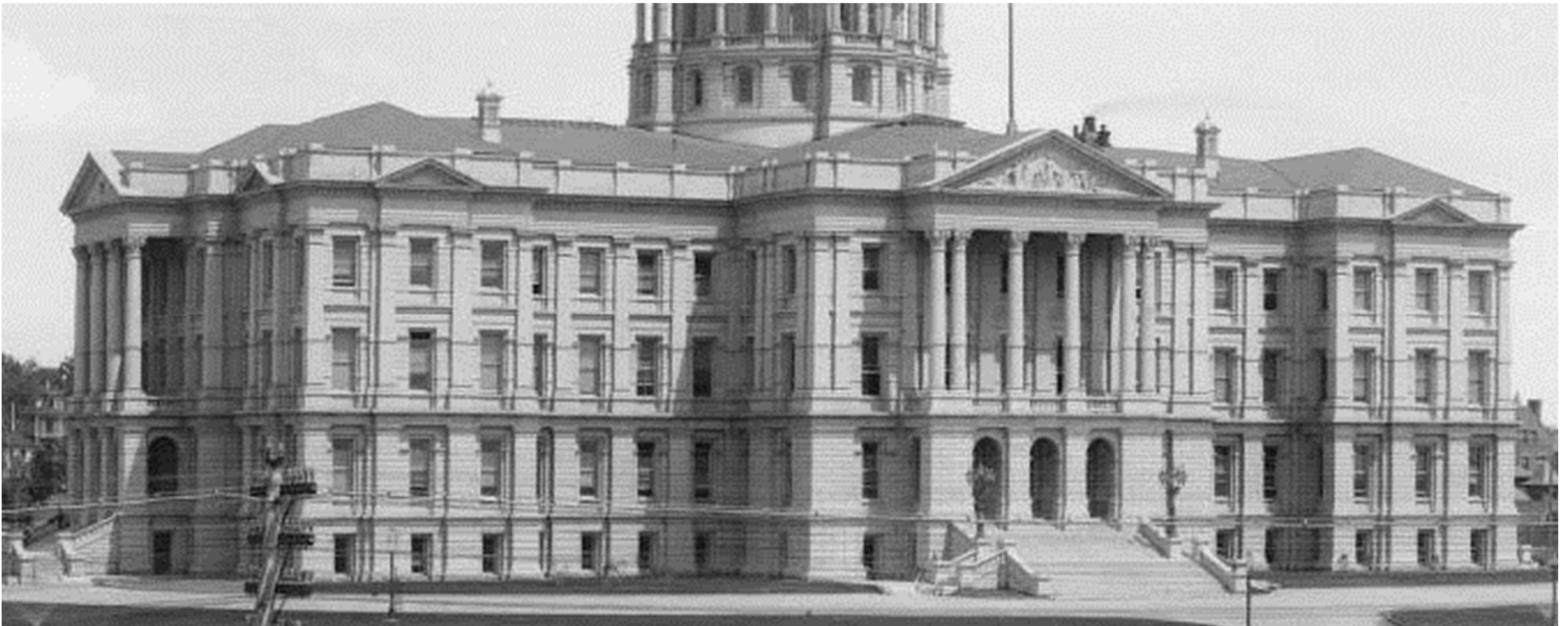
1980 - Asphalt Shingle and
Terra Cotta

2015 - Current Project




Historical Review

- Original roof “Buckingham Slate”



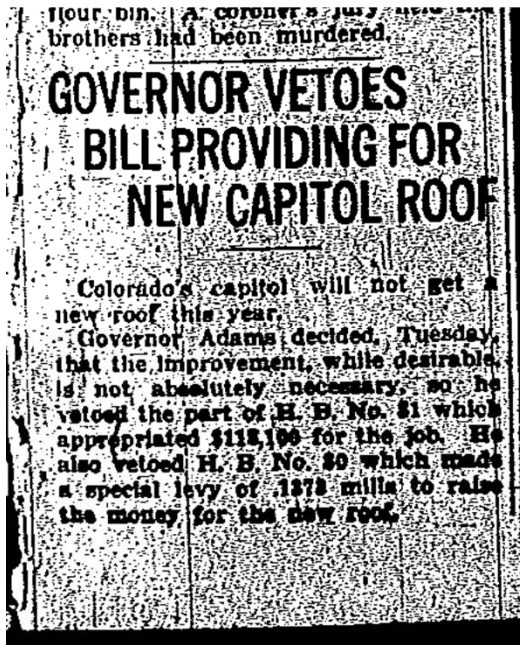
Circa. 1910

Roof Restoration Goals and Guidelines



1. Replicate the original slate appearance to extent feasible.
2. Provide service life of 50 to 100 years.
3. Provide extended rain-proof and material warranties with a goal of 20 years.
4. Meet economical and maintenance needs.
5. Select quality roof based on long term life cycle cost.

History of Performance and Failure



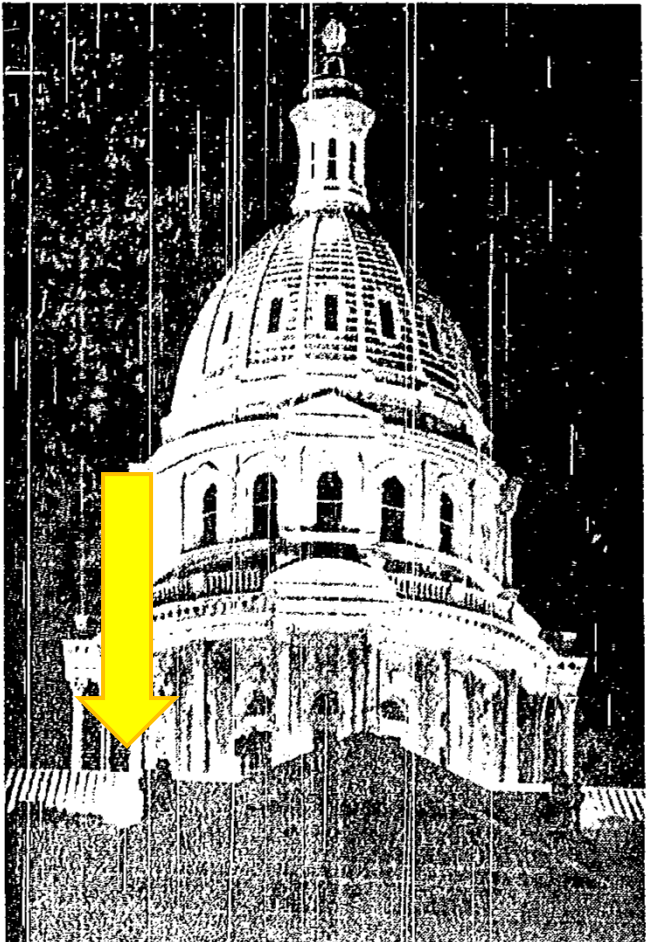
MAY 4, 1927

1951 Terra Cotta Roof

THE DENVER POST: Friday, Sept. 7, 1951

15

The Lights Go On Again



2015

1980 Asphalt Roof

70—Rocky Mountain News

Fri., April 25, 1980, Denver, Colo.

Leaking roof stirs bucket brigade

Colorado ship of state taking on water — again

By JOHN J. SANKO

United Press International

The ship of state isn't in any danger of sinking, but she certainly is drawing water.

The roof covering the Colorado Capitol Building is leaking again.

As a result of a rainstorm which turned into a wet, heavy snow on Thursday, water began collecting on the roof and soon found its way inside.

Maintenance crews placed 55-gallon drums in strategic places in the attic area of the building to catch the water as it seeped through. The drums already were available because of leakage problems in previous years.

"We still had 55-gallon drums up there," said a crew chief. "We just moved them to different

places. We haven't had to start bailing out yet, but we're watching it."

Last year, the problem became so bad that water leaked into the Senate chambers and damaged the walls in a third-floor committee room. On one occasion, Sen. Ruth Stockton, R-Lakewood, sat with an umbrella over her head to ward off the unwanted moisture.

There were five days when maintenance and janitorial crews had to work round-the-clock to empty the barrels, dumping water into the downspouts by bucket.

The problem isn't so bad this year, although Capitol staff members are watching the situation closely. Legislators don't have to worry about any water problems from above because the General Assembly is in recess until May 7.

In order to correct the problem a year ago, legislators appropriated \$625,940 for the 1979-80 fiscal year for repair of the roof, parts of which had not seen any maintenance in decades. The money was requested by Jack E. McLaughlin, physical plant manager and director of the Capitol buildings section.

McLaughlin said despite the fact funding was granted last year, the major part of the work on the Capitol roof is now just beginning.

"The contracts are all out now on the whole thing," McLaughlin said. "Adams County Roofing has a contract. They're taking off the old roof now and they're going to put on a new one. They will be doing that for the next four months."

McLaughlin said workmen are scraping the gravel off and will put on the shingle portion in

the center shortly. By July, tiles will be available to replace some of the broken ones atop the building.

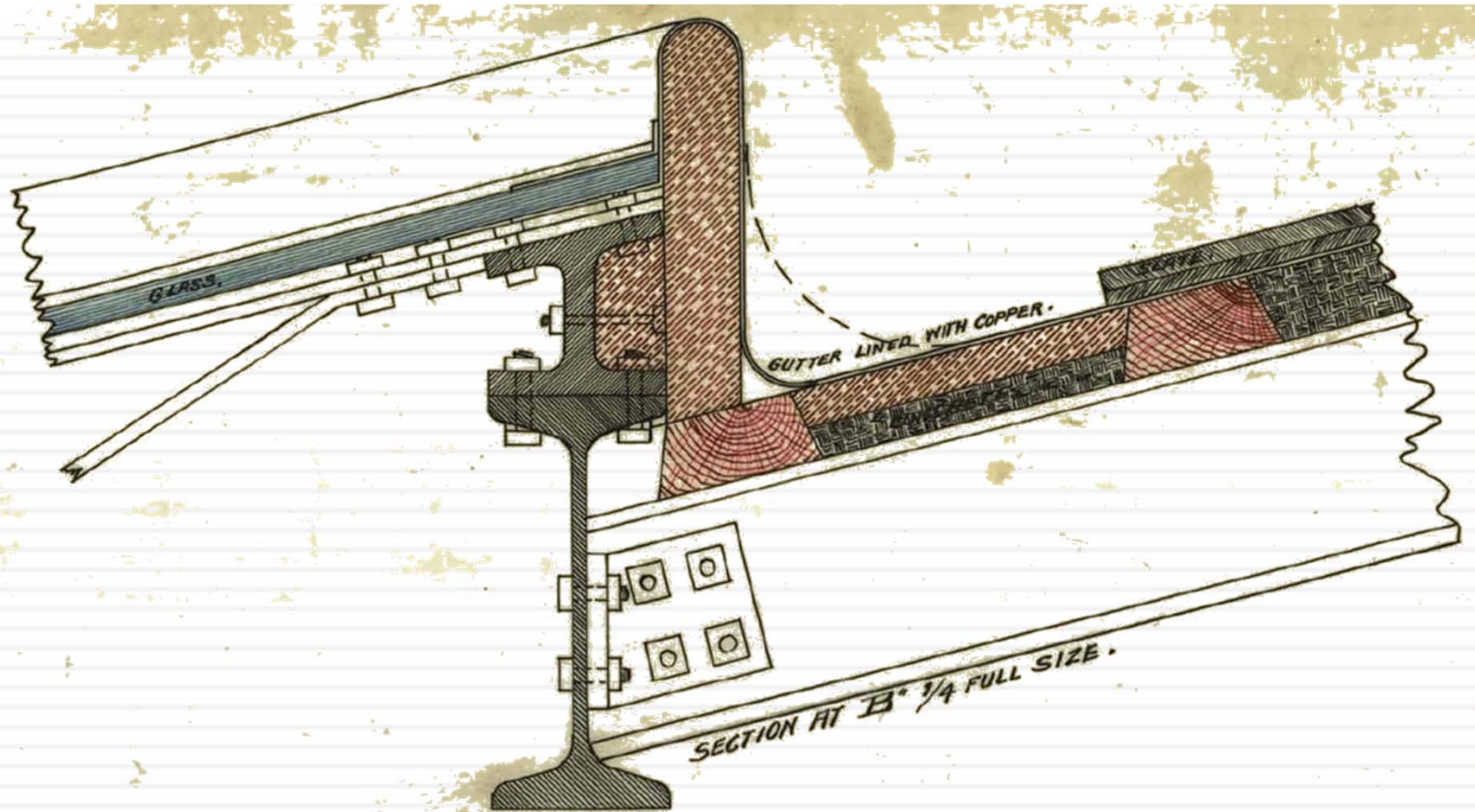
"We tried to get going on it last year, but didn't make it," McLaughlin said. "They've been working on the roof. They patched some of the old leaks. So it's not coming down where it used to be last summer, but in the scrapping that is going on, they apparently have opened up some other areas and we're just catching them."

McLaughlin said the situation was not nearly as bad as a year ago. He said everything actually was in pretty good shape.

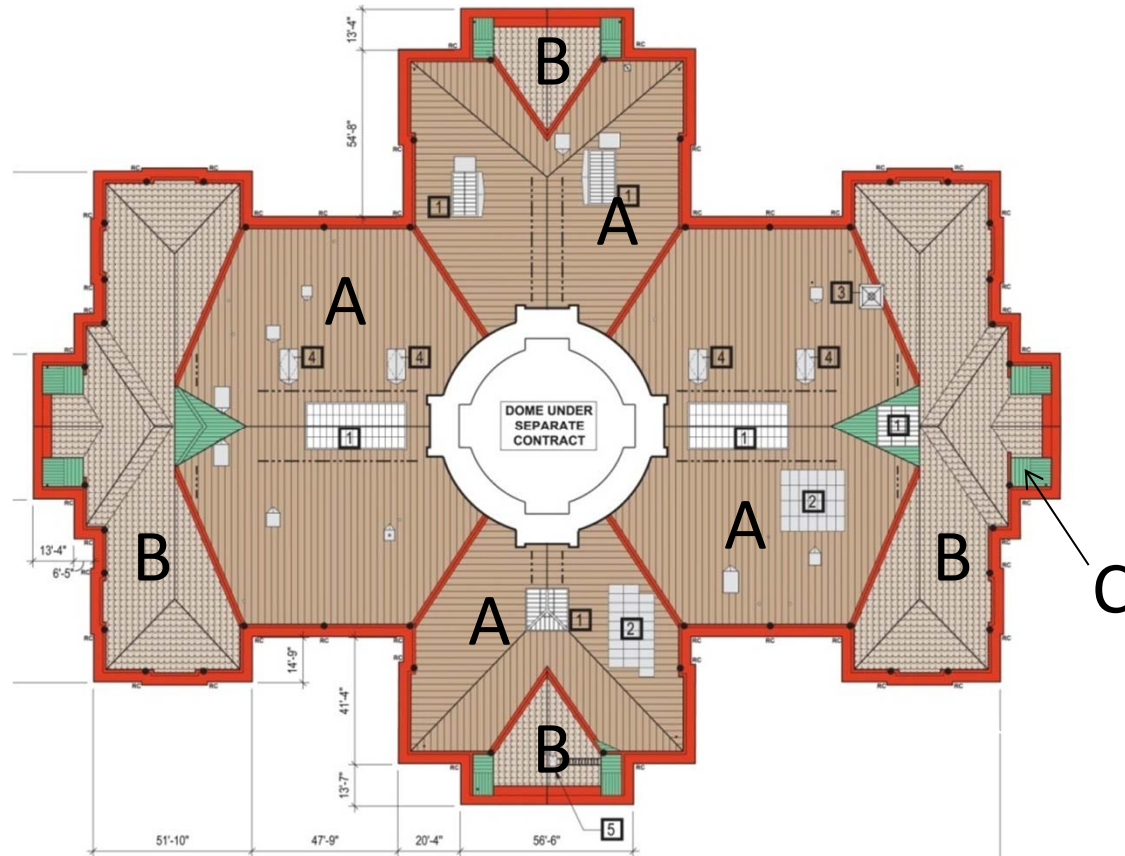
"It's normal when you open up a roof and start working on it at this time of year that you are going to have something coming through," he said. "You just can't catch it all."

Design

PROJECT APPROACH



Roof Materials



Materials Researched

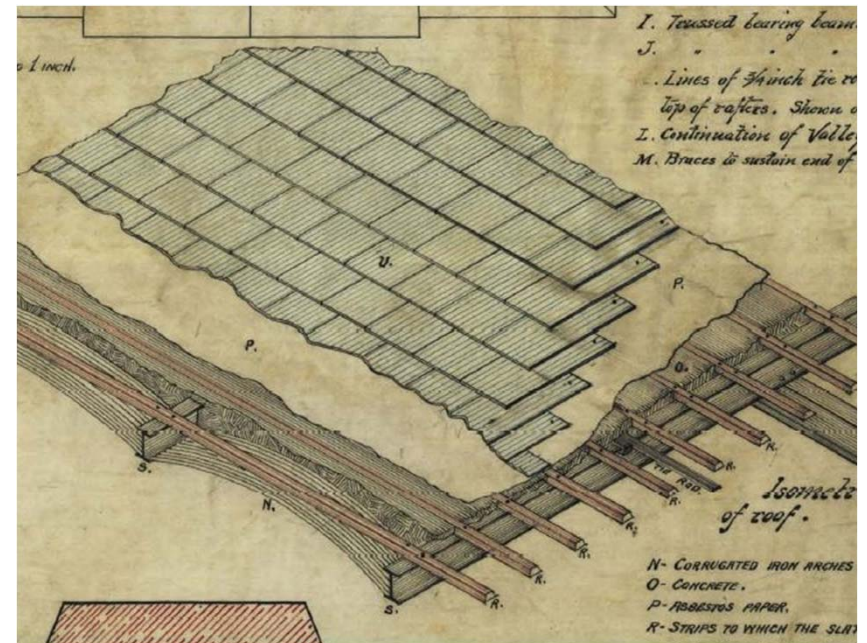
1. Slate

2. Terra Cotta

3. Alternatives

a. Composite Shingles
Synthetic Slate

b. Metal Roofing
Coated Sheet Metal
Coated Stainless Steel
Copper
Coated Copper



Recommended Alternatives

Metal Roofing

1. Coated Copper

'Freedom Gray'

Light gray to darker gray

2. Natural Copper

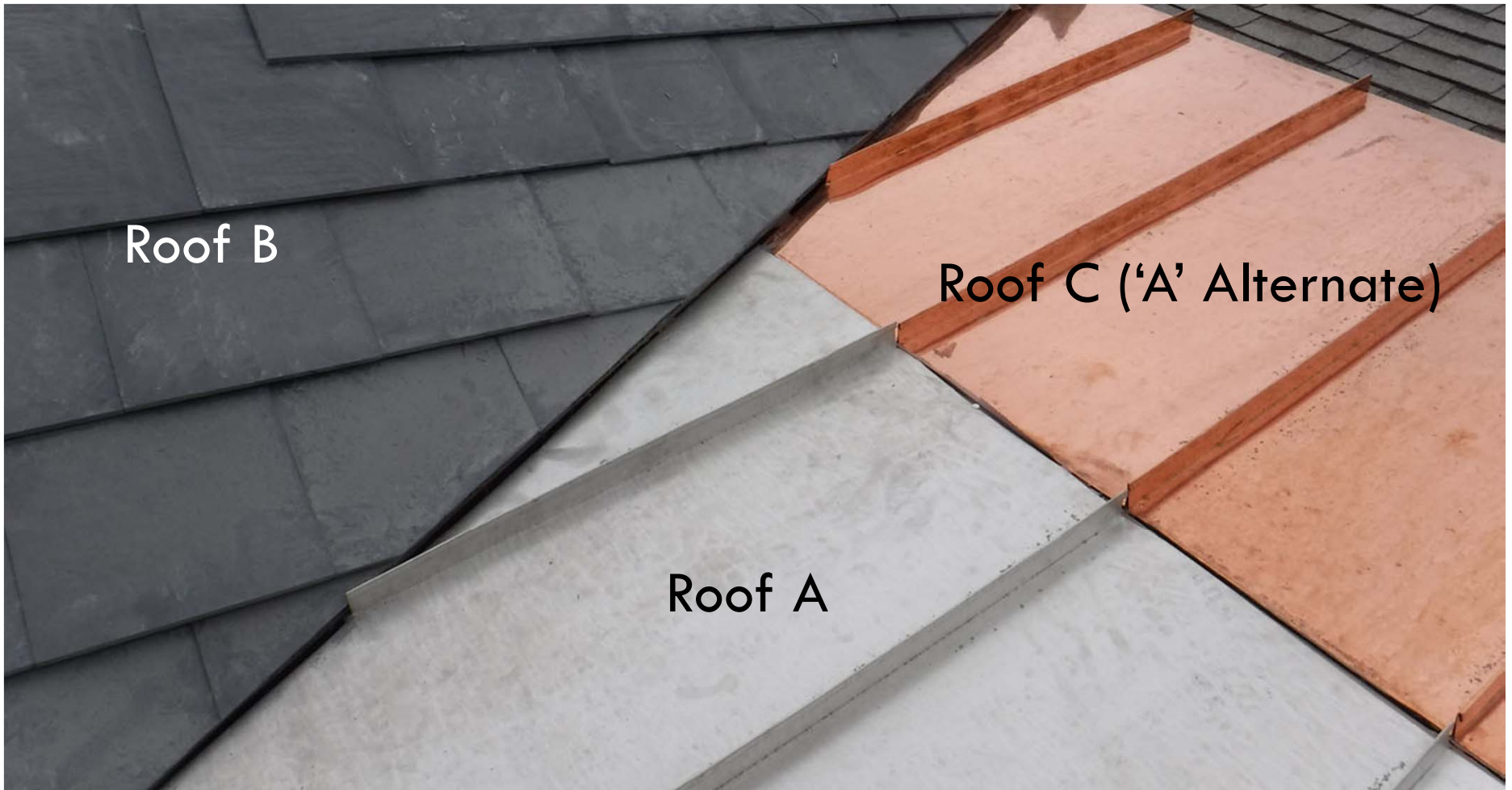
Dark brown to dull green

Workability, 50-100 years, maintenance

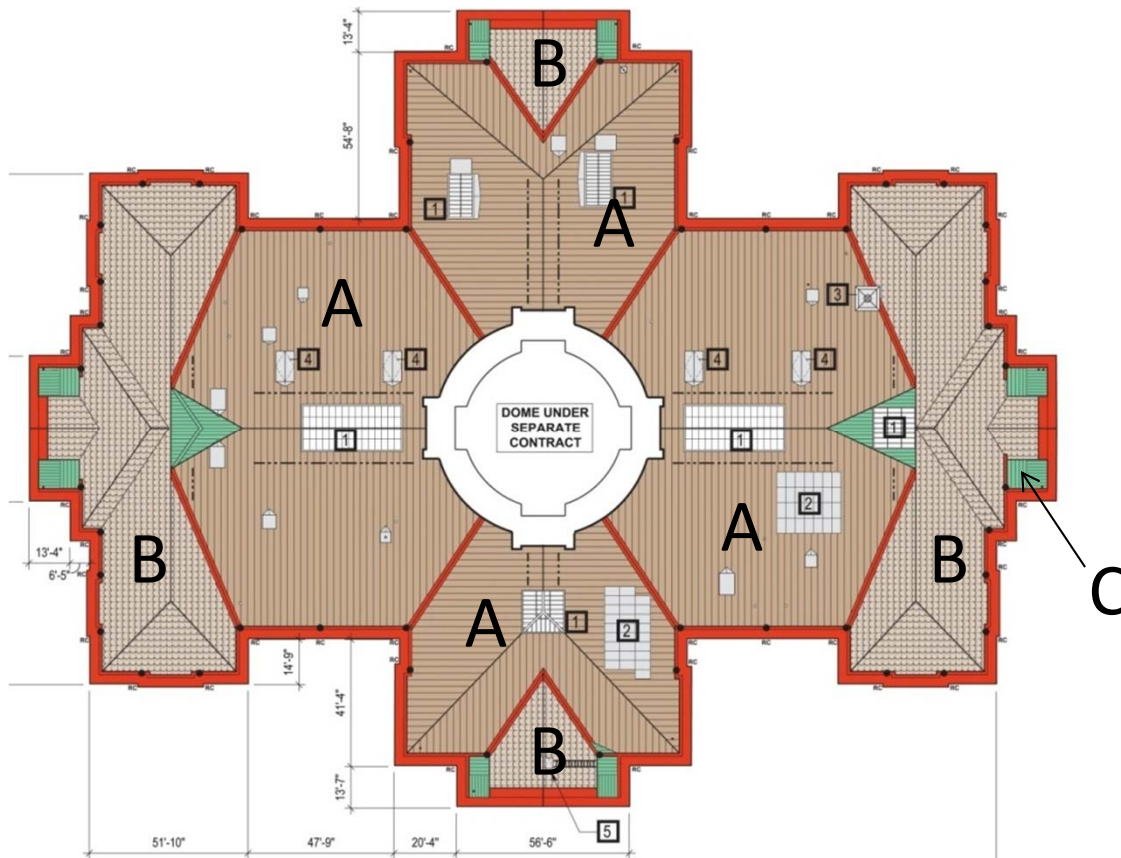
Michigan State Capitol



Recommended Materials



Recommended Roof Materials



'Freedom Gray' Copper



A

Buckingham Slate



B

Natural Copper



C
(B Alt.)

Questions?

