

# SOLOMON R. GUGGENHEIM MUSEUM

1071 FIFTH AVENUE, NEW YORK, NY 10128

## EXTERIOR RESTORATION AND BUILDING ENHANCEMENT



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Partner, Preservation Group

WASA/Studio A

and

Adjunct Associate Professor,

Columbia University Graduate School of Architecture, Planning and Preservation

# SOLOMON R. GUGGENHEIM MUSEUM

## PROJECT TEAM:

### Owner:

THE SOLOMON R. GUGGENHEIM FOUNDATION  
575 Broadway, 2nd Floor, New York, NY 10012  
Tel: 212.423.3688 Fax: 212.360.4292  
Web: [www.guggenheim.org](http://www.guggenheim.org)

### Project Director:

PARATUS GROUP  
568 Broadway, Suite 602, New York, NY 10012  
Tel: 212.334.7700 Fax: 212.334.0323  
Web: [www.paratusgroup.com](http://www.paratusgroup.com)

### Architect:

WANK ADAMS SLAVIN ASSOCIATES LLP  
740 Broadway, New York, NY 10003  
Tel: 212.420.1160 Fax: 212.529.9079  
Web: [www.go2wasa.com](http://www.go2wasa.com)

### Structural Engineer:

ROBERT SILMAN ASSOCIATES, P.C.  
88 University Place, New York, NY 1003  
Tel: 212.620.7970 Fax: 212.620.8157  
Web: [www.rsapc.com](http://www.rsapc.com)

### Architectural Conservator:

INTEGRATED CONSERVATION RESOURCES  
41 East 11th Street, New York, NY 10003  
Tel: 212.947.4499 Fax: 212.947.7766  
Web: [www.icr-icc.com](http://www.icr-icc.com)

### Exterior Envelope Consultant:

WILLIAM B. ROSE & ASSOCIATES  
207 W. Iowa Street, Urbana IL 61801  
Tel: 217.333.4698 Fax: 217.244.2204

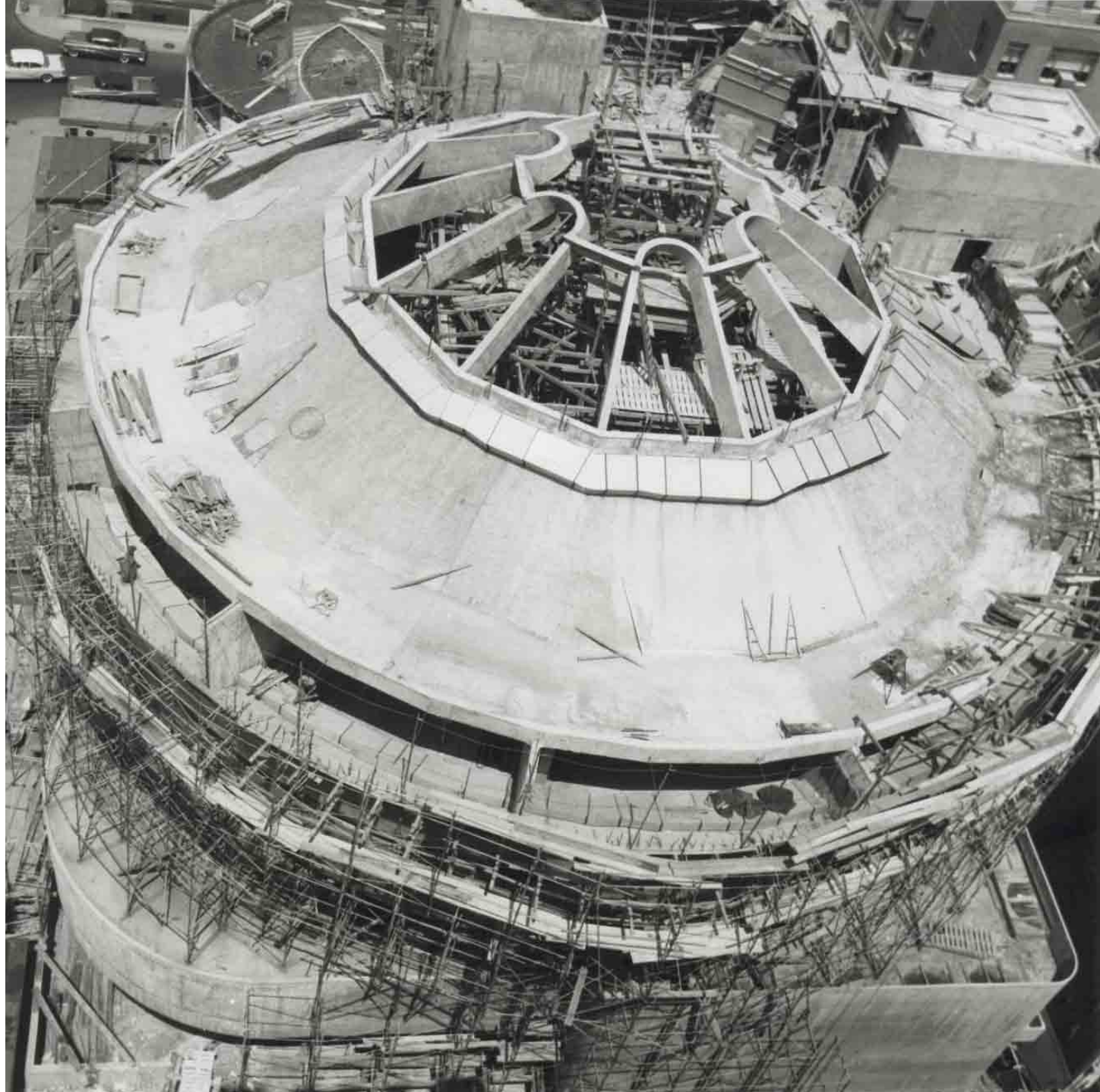
### M.E.P. Engineer:

ATKINSON KOVEN FEINBERG ENGINEERS, LLP  
1501 Broadway, Suite 700, New York, NY 10036  
Tel: 212.354.5656 Fax: 212.354.5668  
Web: [www.akf-eng.com](http://www.akf-eng.com)

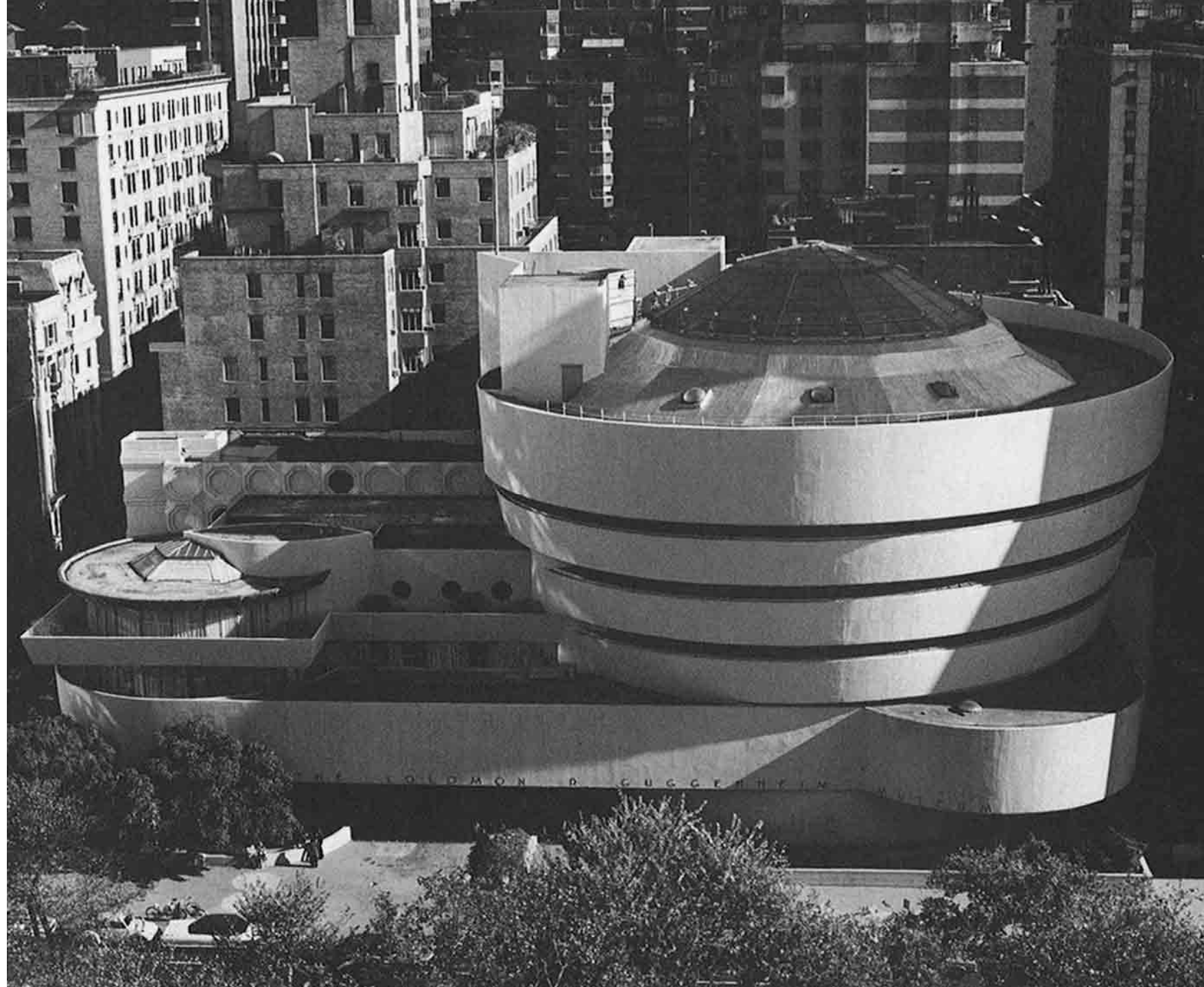
### Construction Manager:

F. J. SCIAME CONSTRUCTION CO., INC.  
80 South Street, New York, NY 10038  
Tel: 212.232.2200 Fax: 212.248.5299  
Web: [www.sciame.com](http://www.sciame.com)











THE SOLOMON R. GUGGENHEIM MUSEUM

THE ART DEPARTMENT

ONE WAY  
ONE WAY

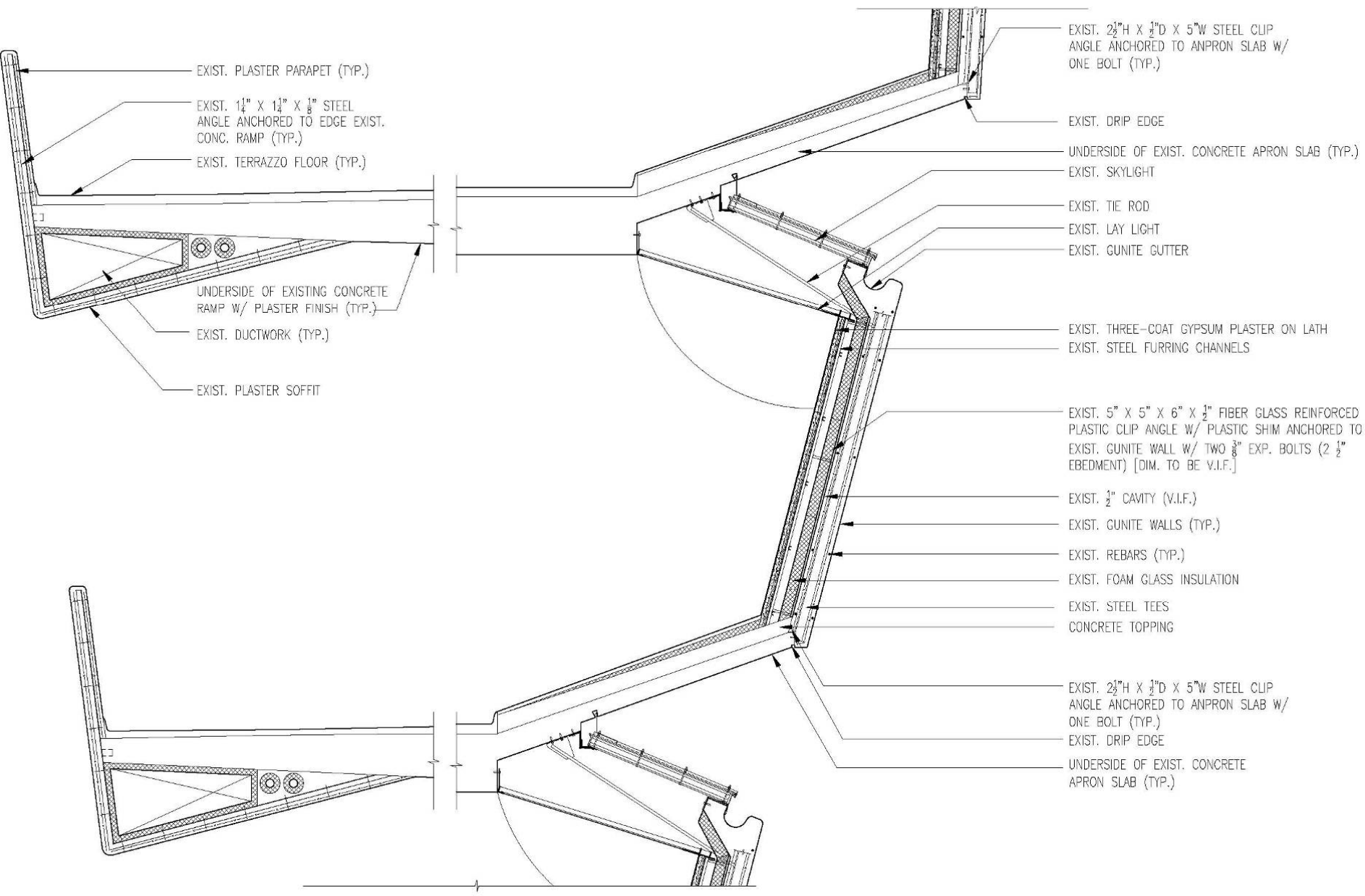
30

P

ONE WAY

ONE WAY

PEDESTRIAN





## PRESERVATION APPROACH:

1. Retain the building's historic character by keeping original materials.
2. Retain changes that occurred over time.
3. Preserve distinctive features.
4. Repair rather than replace; replace in kind if necessary; substantiate replacements.
5. Treatments must not be injurious.
6. New work must not destroy historic character, and must be differentiated from, and be compatible with, existing historic building fabric.
7. New work must be reversible with historic materials unimpaired.
8. Avoid radical changes that will obscure, damage, or destroy character-defining materials or features in the process of rehabilitation work to meet current code and energy requirements.
9. Add no historical elements without evidence.
10. Retain historical use of property.





THE

Inches

1

2

# CTL GROUP

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MM

1.50

1.25

1.00

.90

.80

.60

.50

.40

.33

.30

.25

.20

.15

INCHES

0.060

0.050

0.040

0.035

0.030

0.025

0.020

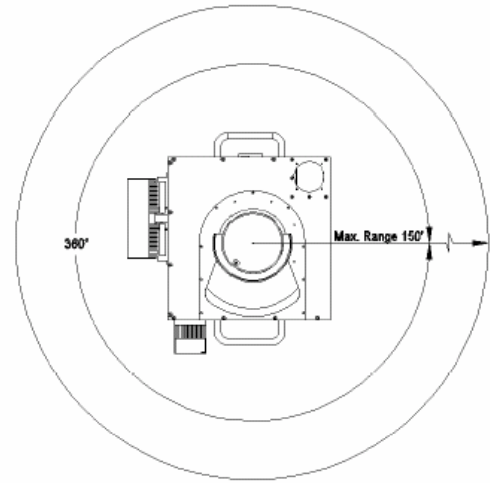
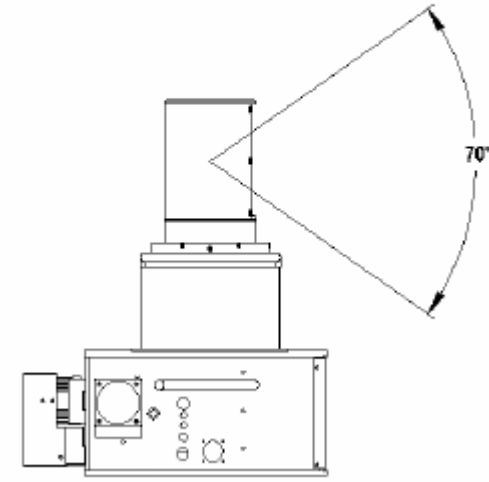
.015

## Crack Comparator

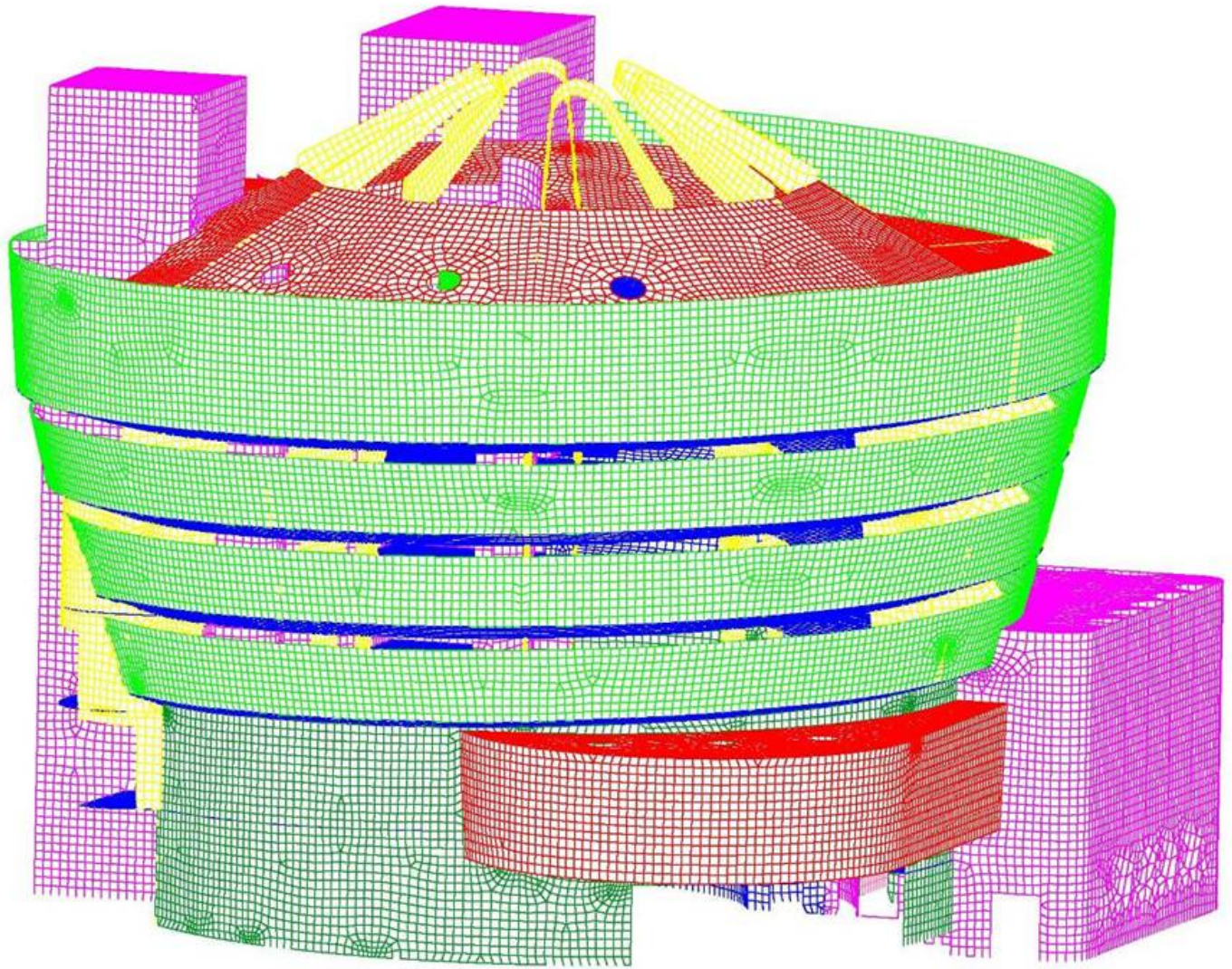
CTL GROUP

CM

2



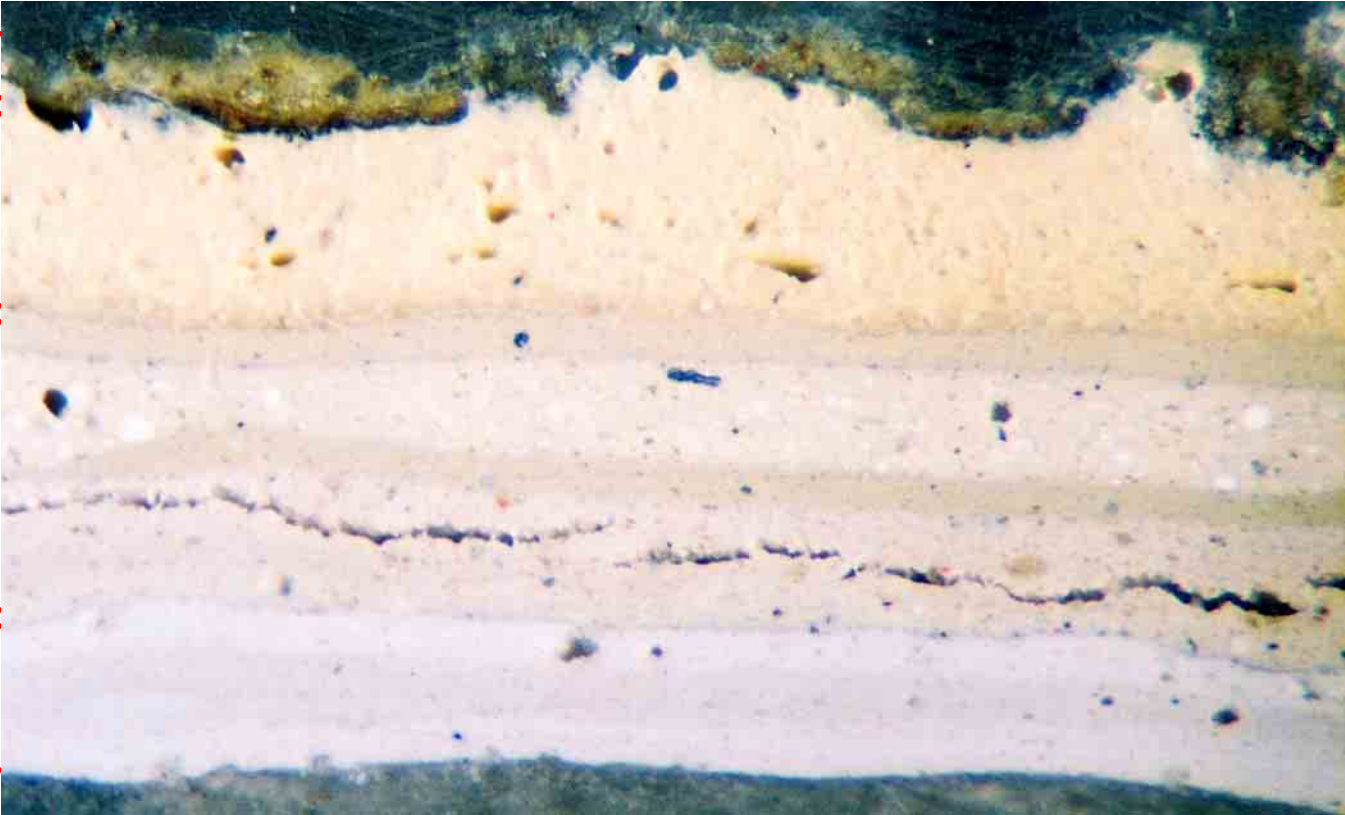
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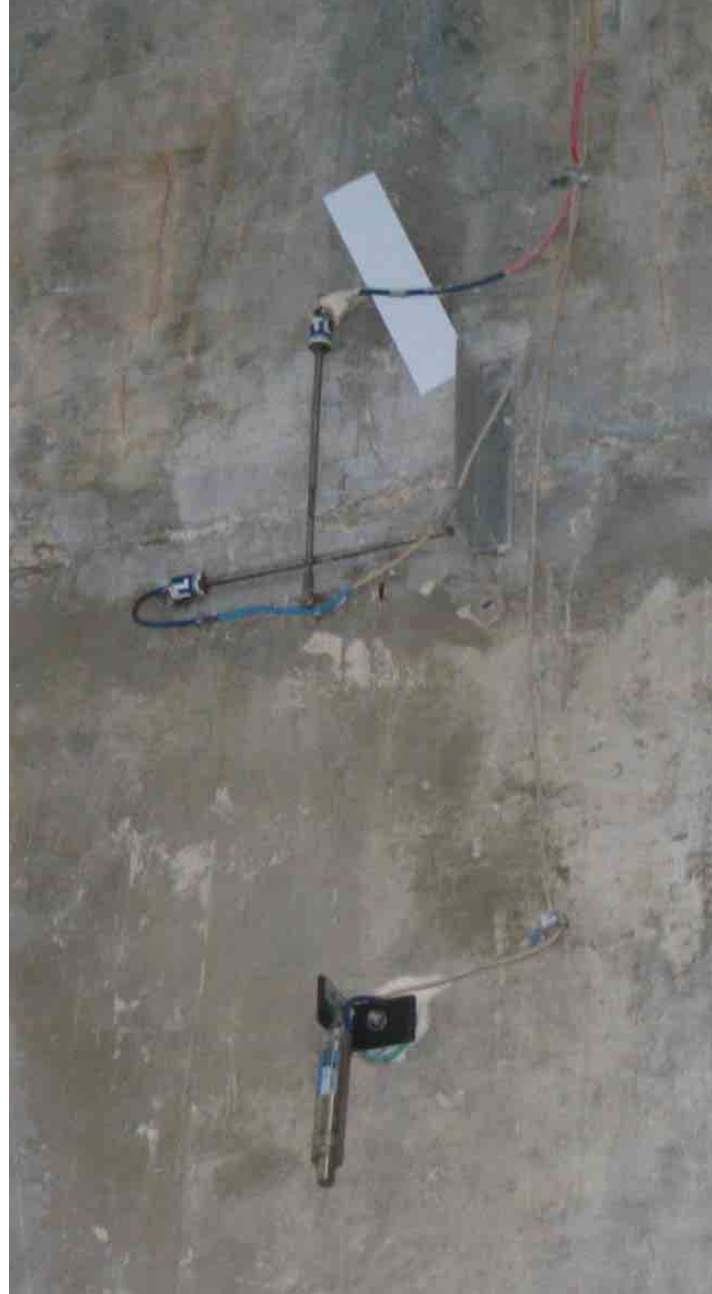


Sample 35B (~30x) – First Level West Thannhauser

Shotcrete  
Original primer  
and Cocoon  
1963 – 1991?  
four layers  
1992 – present  
four layers











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Crack Comparison Scale

0.005
0.007
0.009
0.010
0.012
0.015
0.020
0.025
0.030
0.040
0.50
1.00
1.25
1.50

INCHES 2 1

CM 1 2 3 4 5

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All measurements are approximate.

# Face-Lift for an Aging Museum

Since the Guggenheim Museum opened in 1959, Frank Lloyd Wright's massive spiral facade has been showing signs of cracking, mainly from seasonal temperature fluctuations that cause the concrete walls, built without expansion joints, to contract and expand. While museum officials say the facade is structurally

sound, they have spent the last year inspecting each crack and have now devised a repair plan. Work on the facade as well as on the sidewalks and on updating mechanical systems is expected to be completed by next summer.

HAEYOUN PARK

A computer model simulated movement in the walls of an inch or more.

Exaggerated view of wall movement

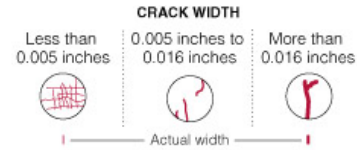


Up to 12 coats of paint were stripped from the facade to make the cracks more visible and easier to study.

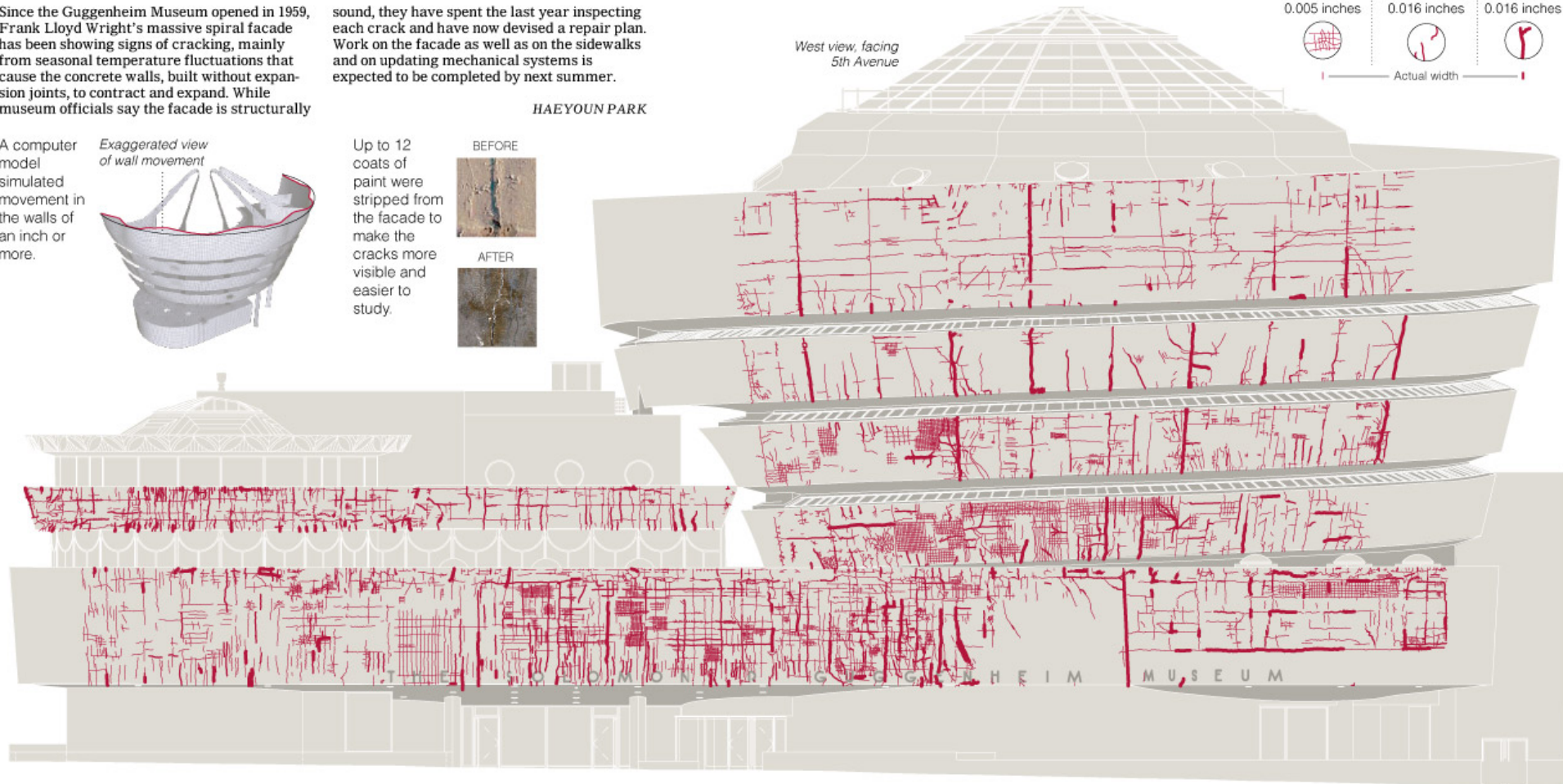
BEFORE

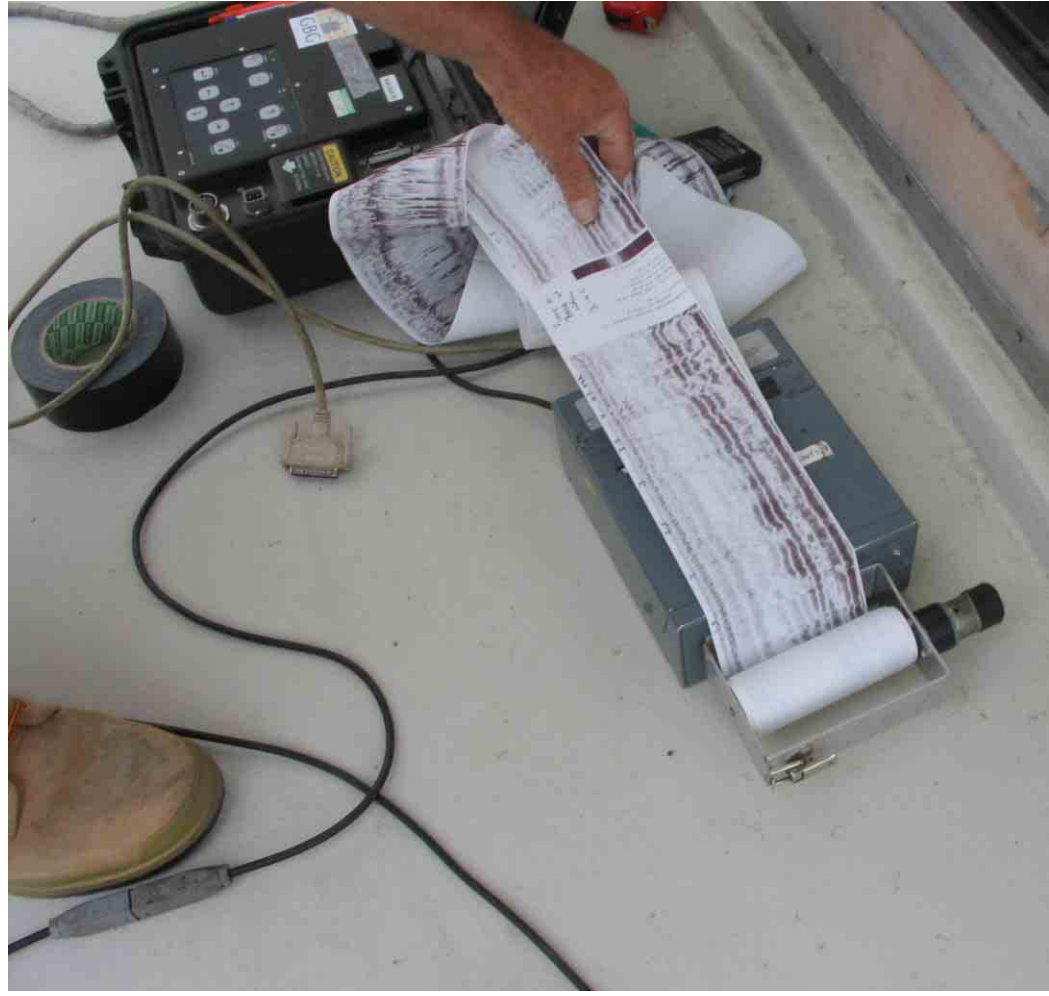


AFTER



West view, facing 5th Avenue

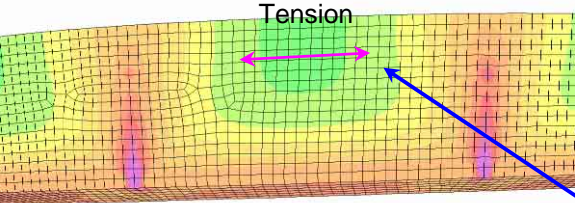






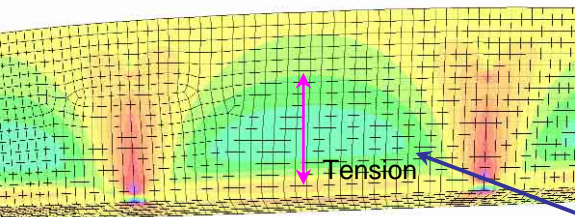


# Correlations with Existing Cracks



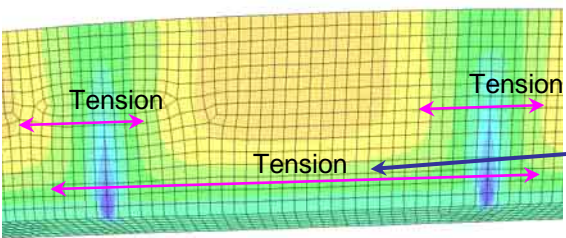
A. Stress contours in the circumferential direction due to thermal expansion

- Correlates with exist. vertical cracks



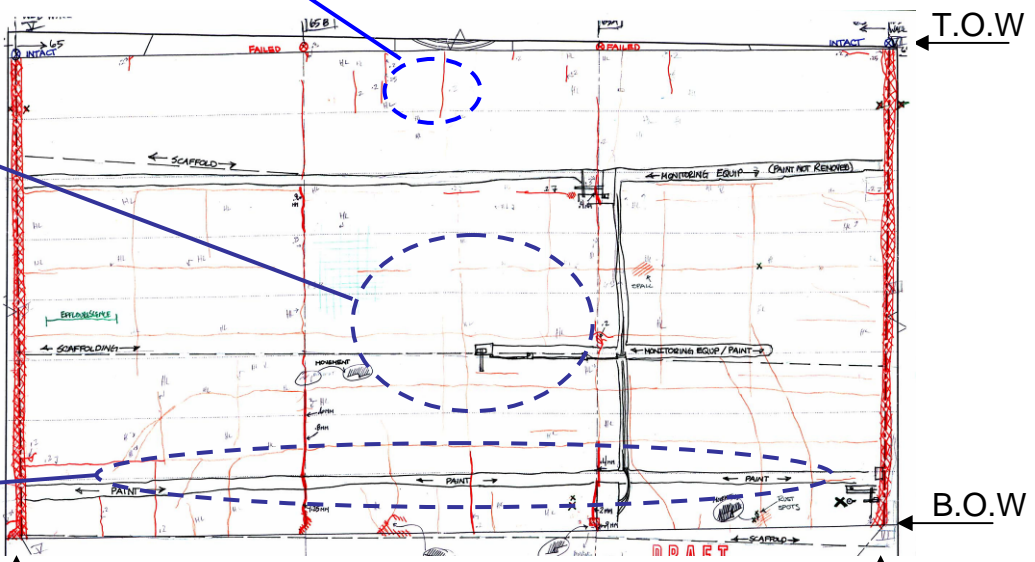
B. Stress contours in the vertical direction due to thermal expansion

- Correlates with exist. horizontal cracks



C. Stress contours in the circumferential direction due to thermal contraction

- Correlates with exist. vertical cracks at web walls and 4" apron slab

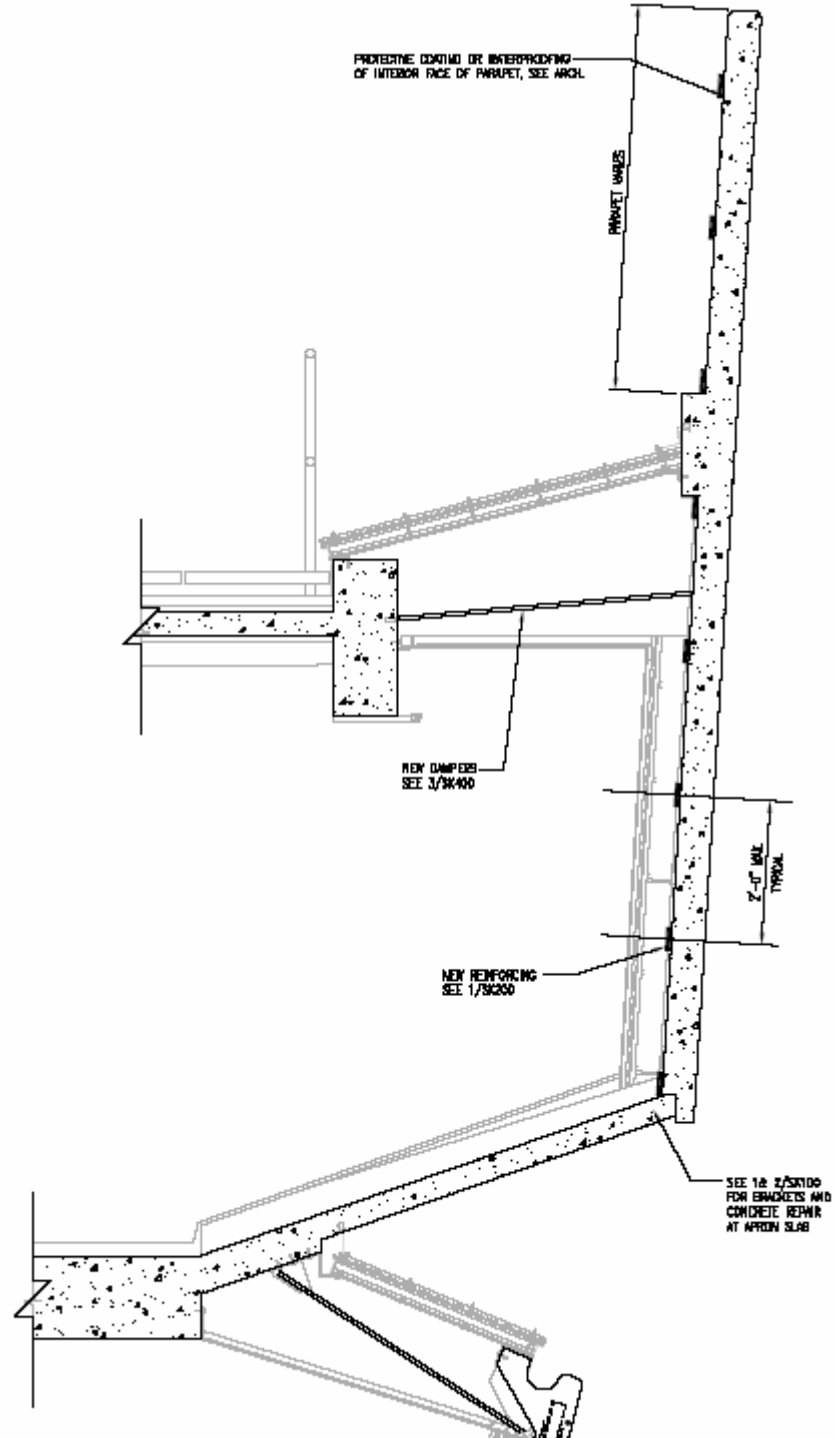


Existing Cracks at Bay 65 between Web Wall V and VI

Web wall V

Web wall VI





PROTECTIVE COATING OR INTERLOCKING  
OF INTERIOR FACE OF PARAPET, SEE ARCH.

PARAPET WALLS

NEW DAMPERS  
SEE 3/24/00

NEW REINFORCING  
SEE 1/26/00

2'-0\"/>  
TYPICAL

SEE 1/26/00  
FOR BRACKETS AND  
CONCRETE REPAIR  
AT APRON SLAB





KEEP FIRE AWAY







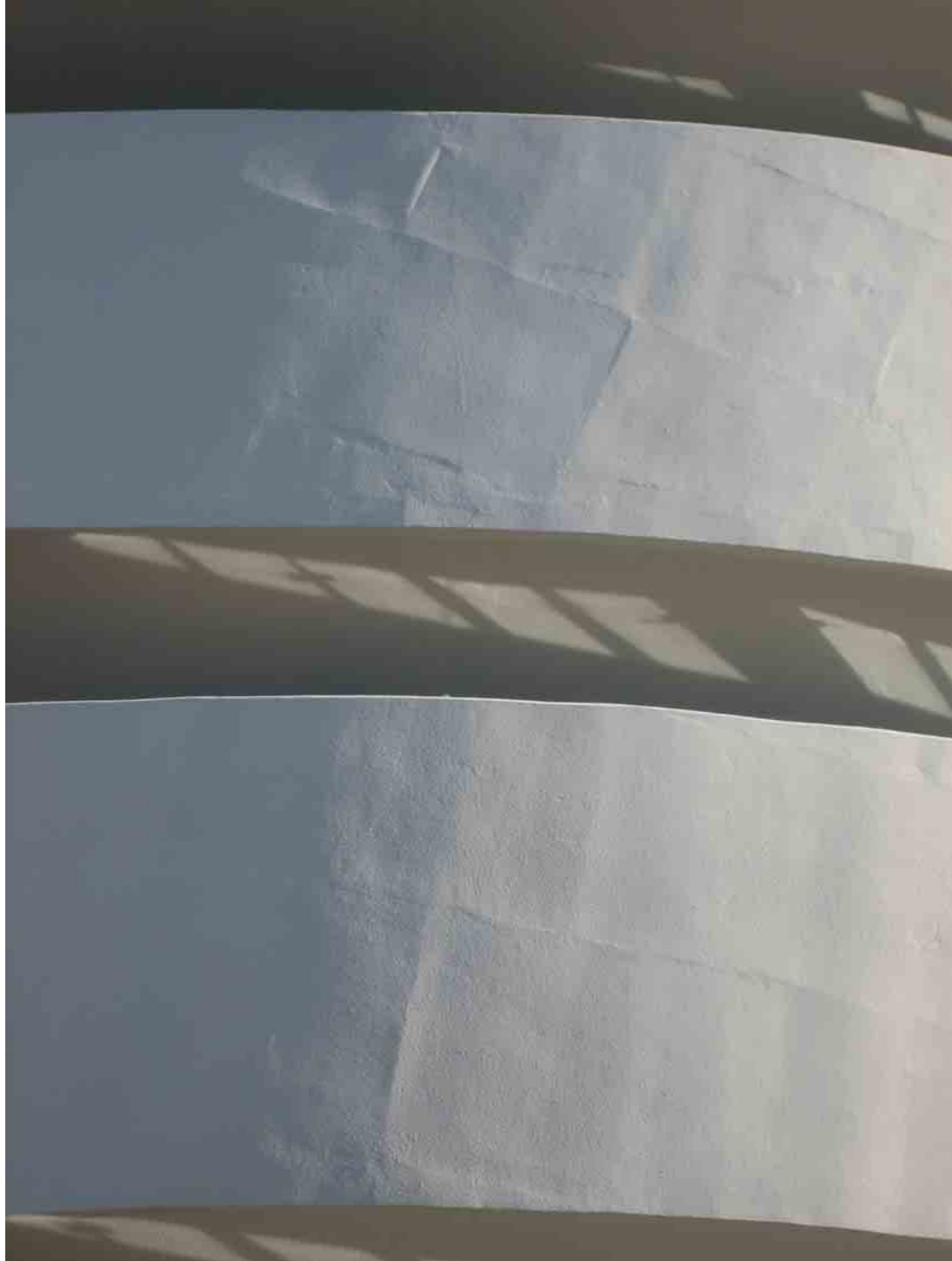




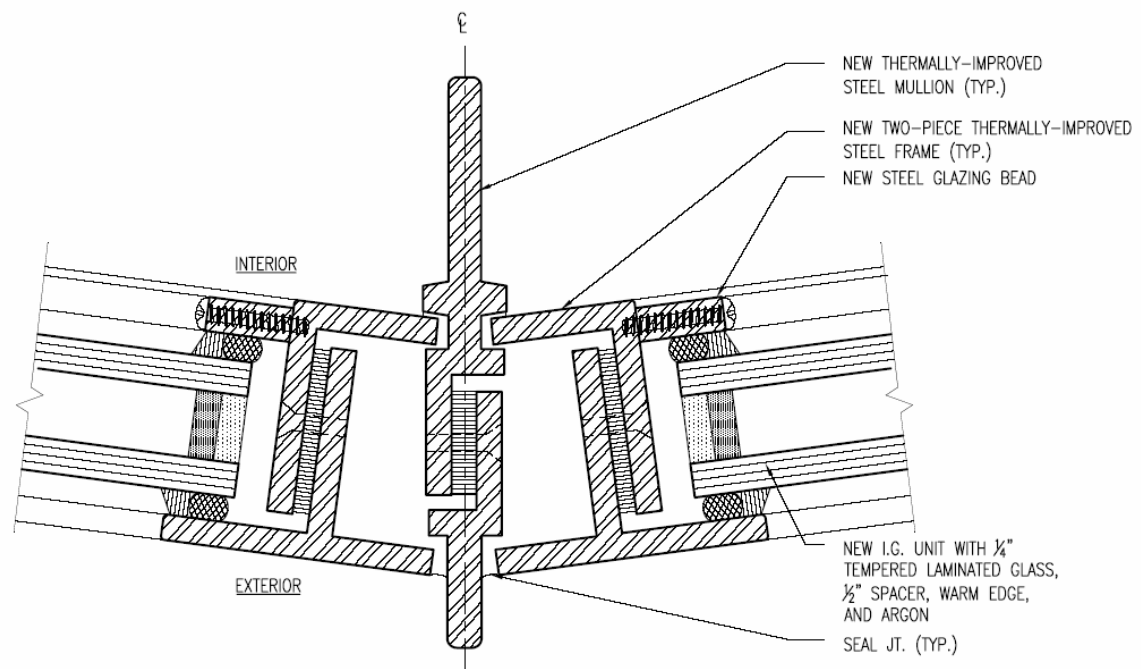
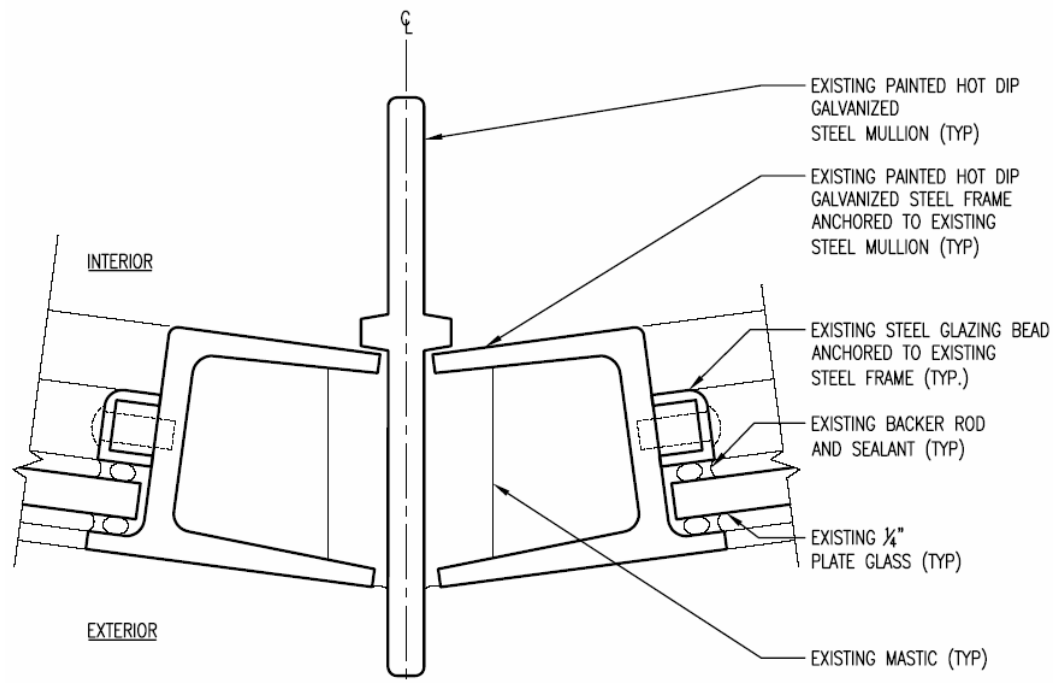


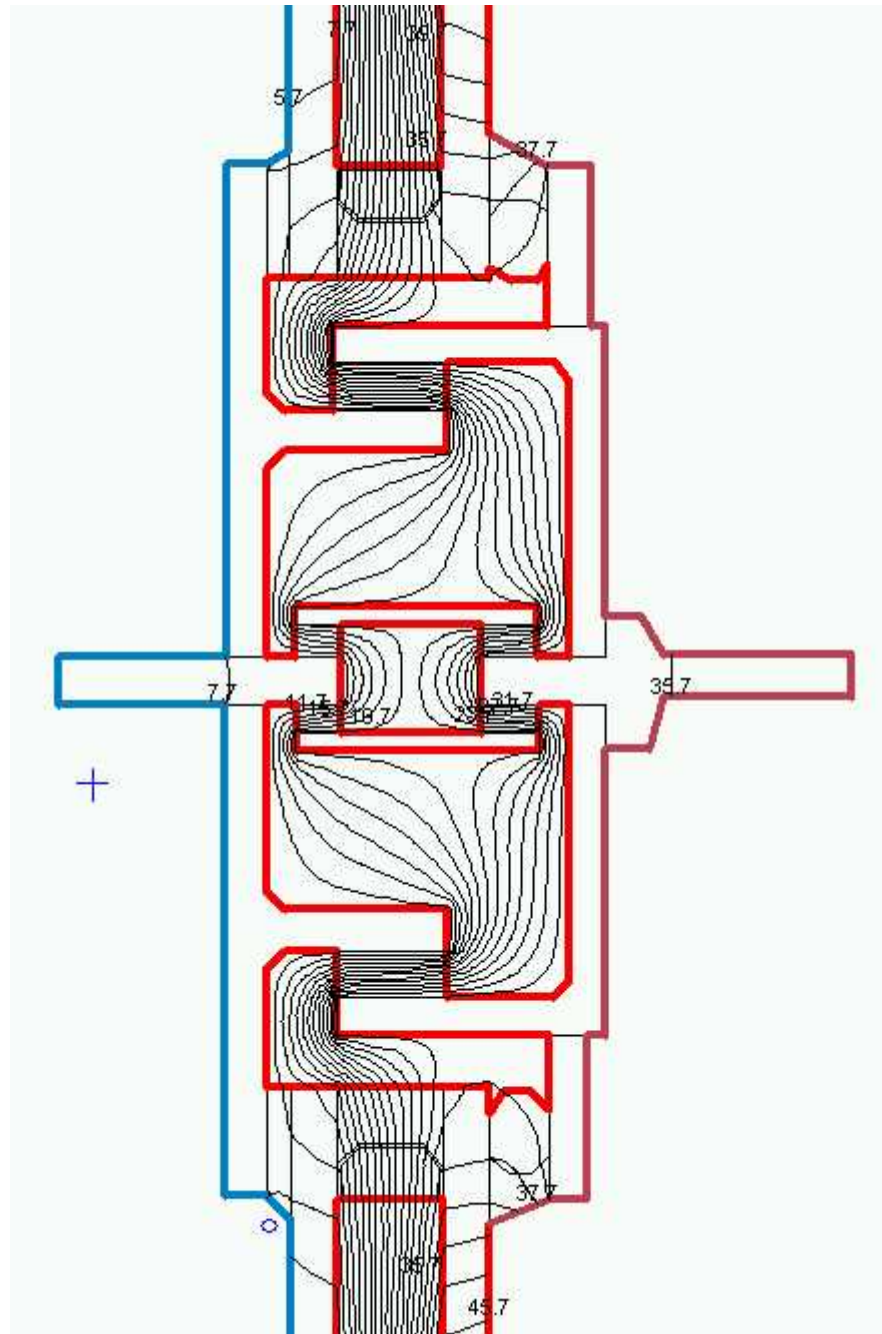






















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