

A Design-Build Project: Repairing the Courthouse Square Complex





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Salem government building being vacated

By: Daniel Savickas in Construction ⌚ July 22, 2010 12:08 pm



Marion County offices and other tenants will vacate the Courthouse Square building in Salem within 90 days after inspections found the building to be structurally unsound. (Photo courtesy of Marion County)

Tenants will vacate the Courthouse Square office building in Salem within 90 days, following reports that the building is unsafe for occupancy.

The building has long been plagued by structural problems, but the recent findings created a new sense of urgency, prompting the evacuation.

The findings indicate the load-bearing weight on some of the building's columns is too heavy for the building to be safely inhabitable.

Home to **Marion County** government offices, transit agency **Salem-Keizer Transit** and two retail spaces leased by the county, the Courthouse Square building was only occupied for two years in 2002 before cracks were noticed in the interior walls.

Project Inception



Courthouse Square -It's worse than you think

BY: SALEM WEEKLY EDITORS · · NO COMMENTS

Video: Is Salem's Courthouse Square unfixable?

County officials accelerate evacuation of structurally deficient facility

Jul. 29, 2010

Courthouse Square: Falling through the cracks

BY: MICHELLE ANDUJAR · · NO COMMENTS

Salem adds Courthouse Square to 'dangerous buildings' list

City plans to investigate how inspectors missed problems that led to office facility's closure

Aug. 4, 2010

Presenters



Structural Repairs Project Manager for Engineer of Record

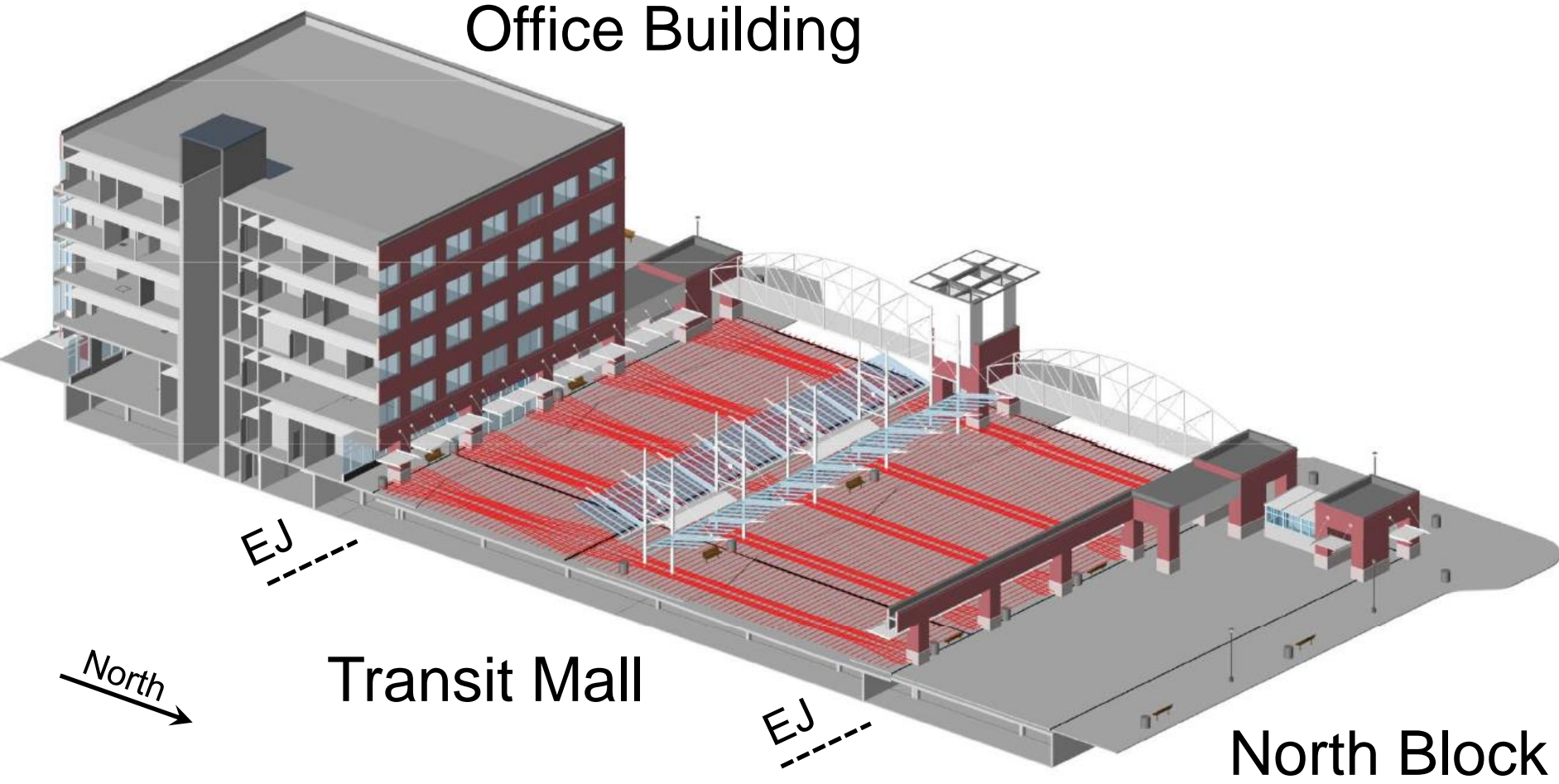
Michael Ahern, P.E.

struc'tur'al

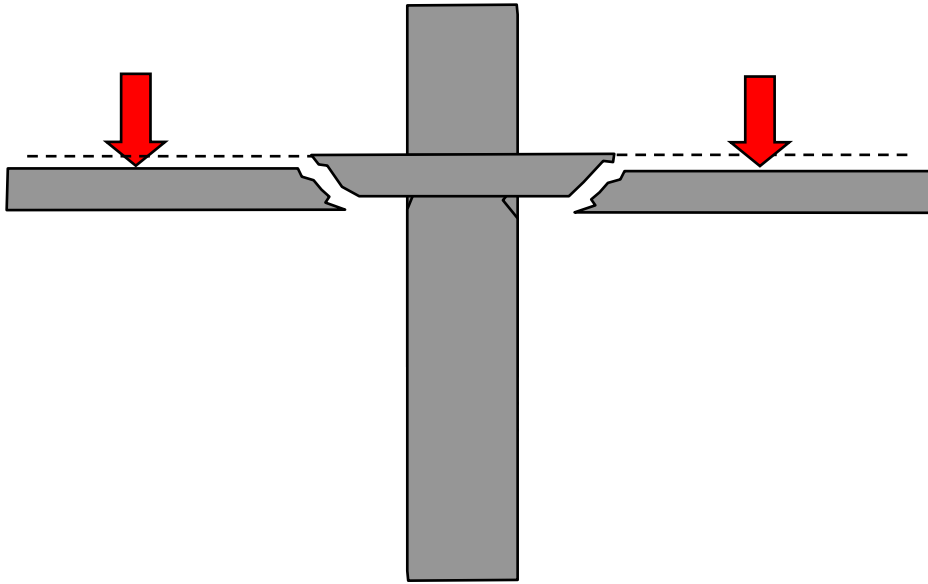
Project Manager for General Contractor

David Clark

Courthouse Square Complex (CH2) Overview



Punching Shear Deficiency



Punching Shear Failure



Cracking Pattern on the Roof of a Building with Punching Shear Deficiency (not CH2)

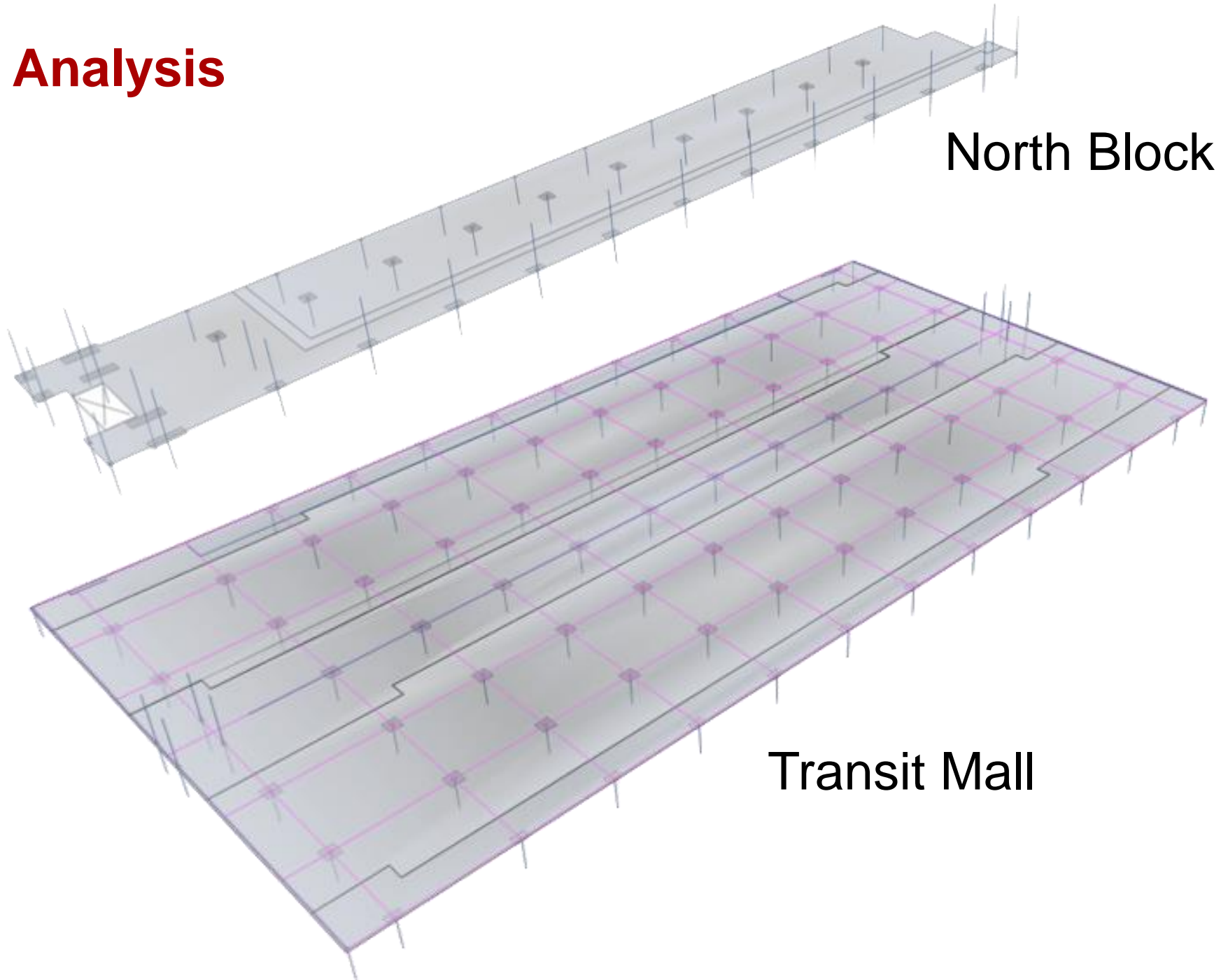
Field Investigation



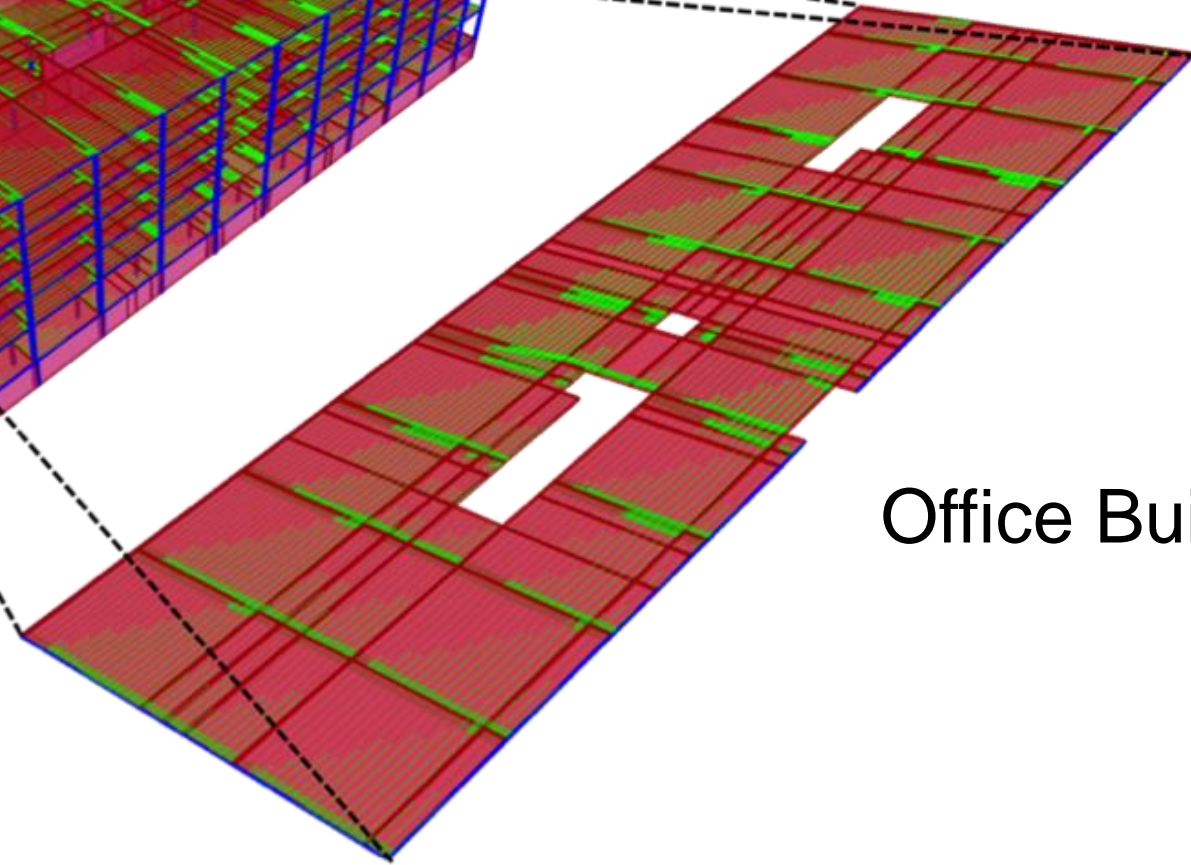
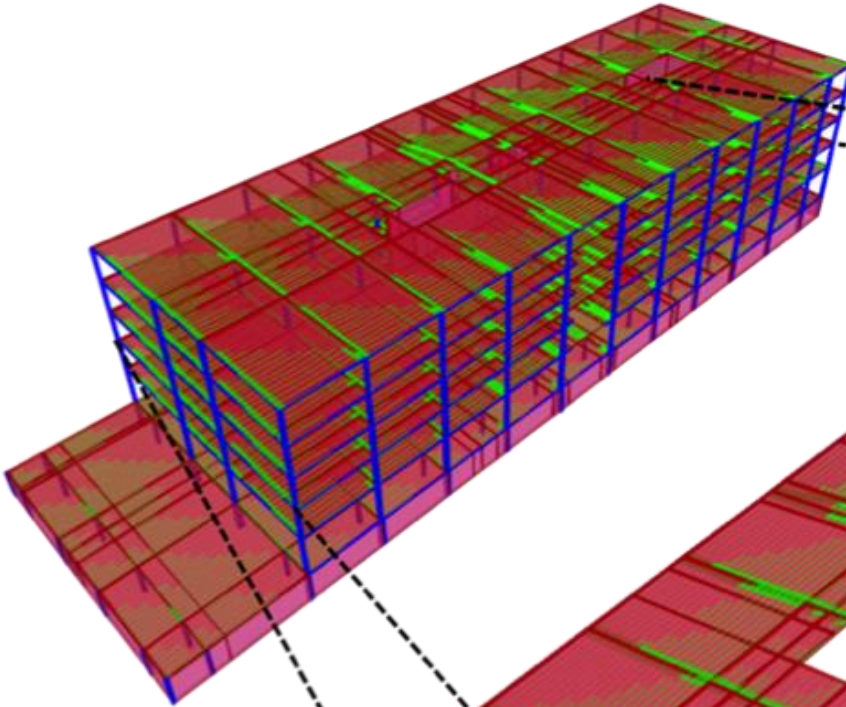
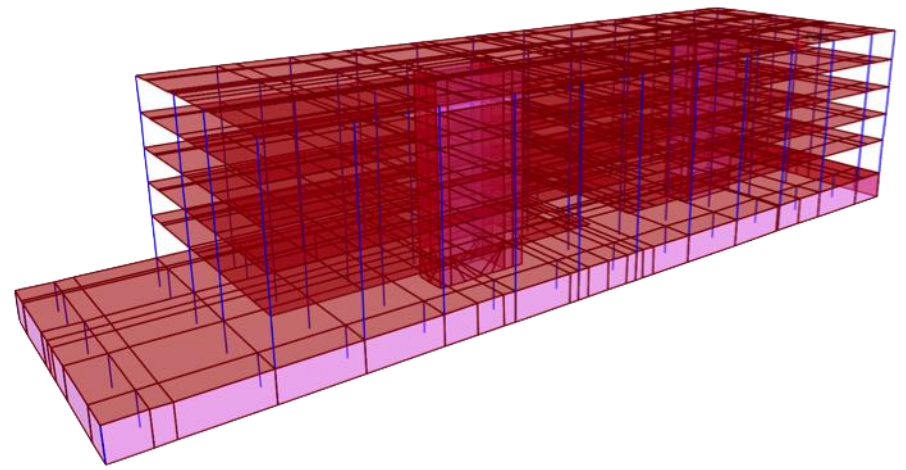
Field Investigation



Analysis



Analysis



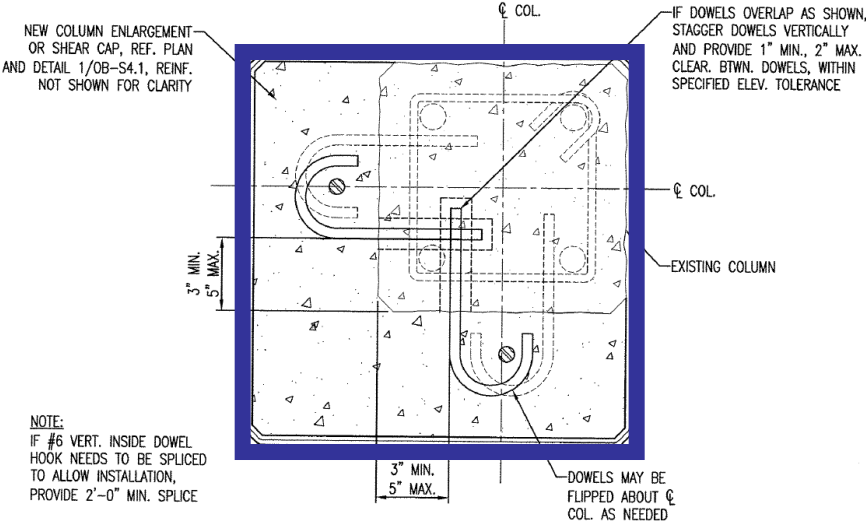
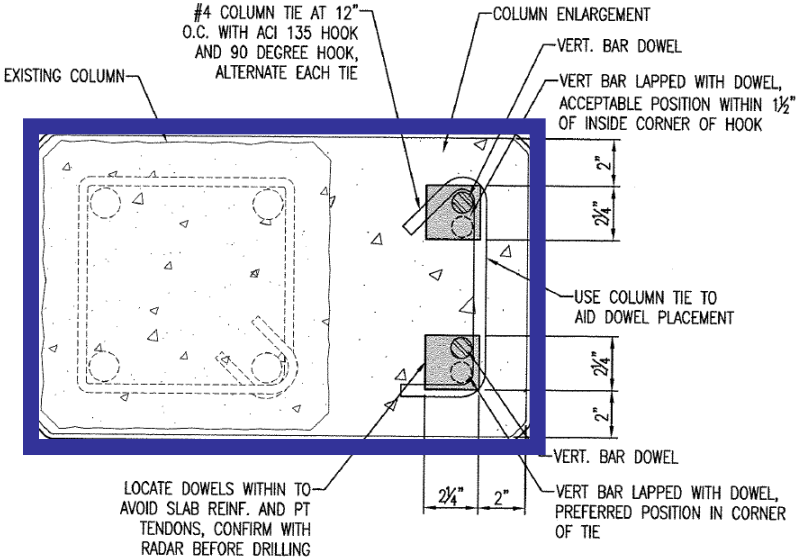
Office Building

Design

- Example: Office Building
Perimeter Column Enlargements



Design



Combination of section enlargement and FRP strengthening to meet seismic ductility requirements

Design



Design

- Office Building Shear Caps



Shear Cap for punching shear deficiency



Design

- Transit Mall:
 - Enlarged Footings
 - Strengthened Columns with FRP
 - Drop Panels



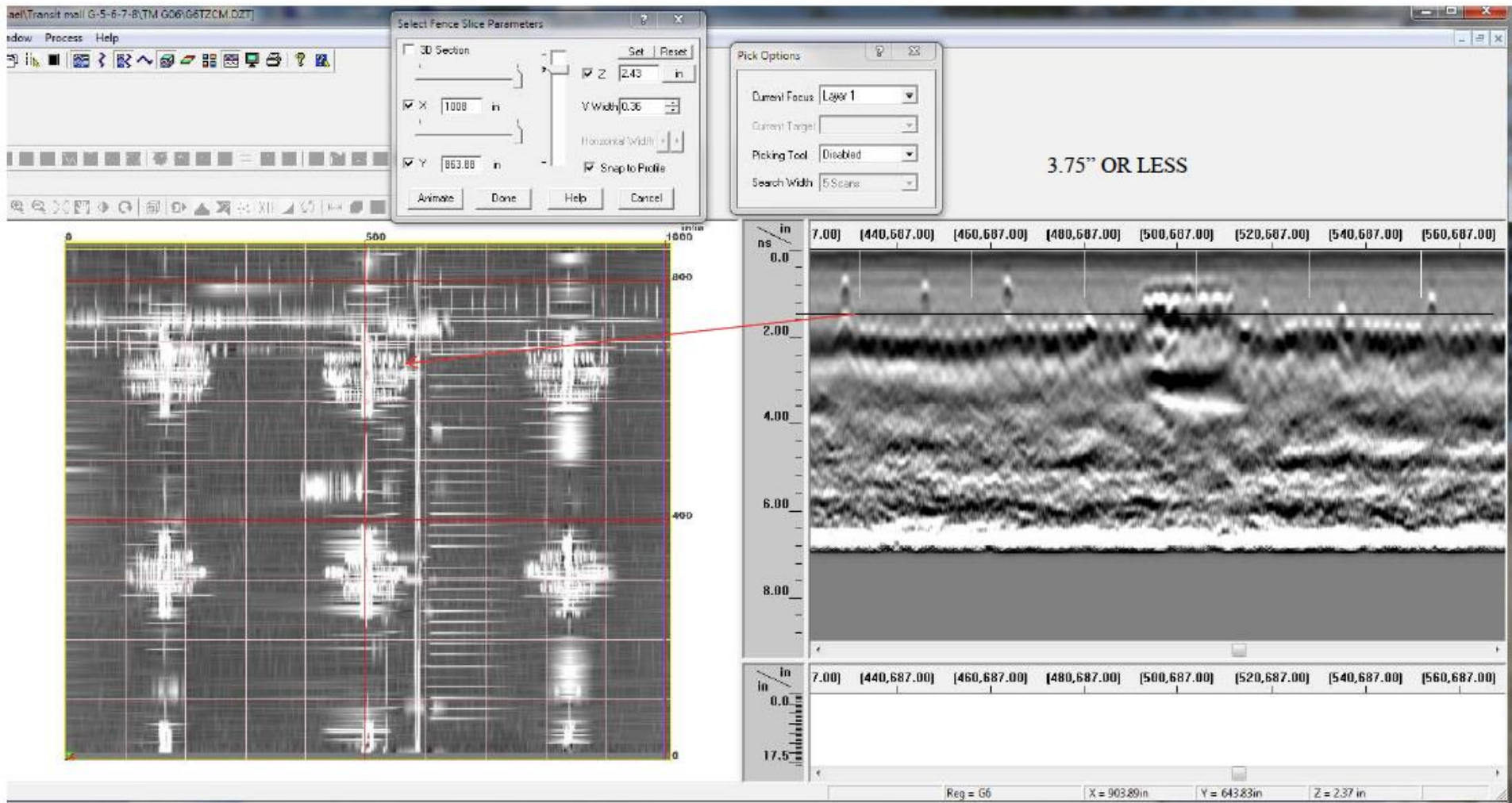
Design

- Example: Transit Mall Bonded Overlay





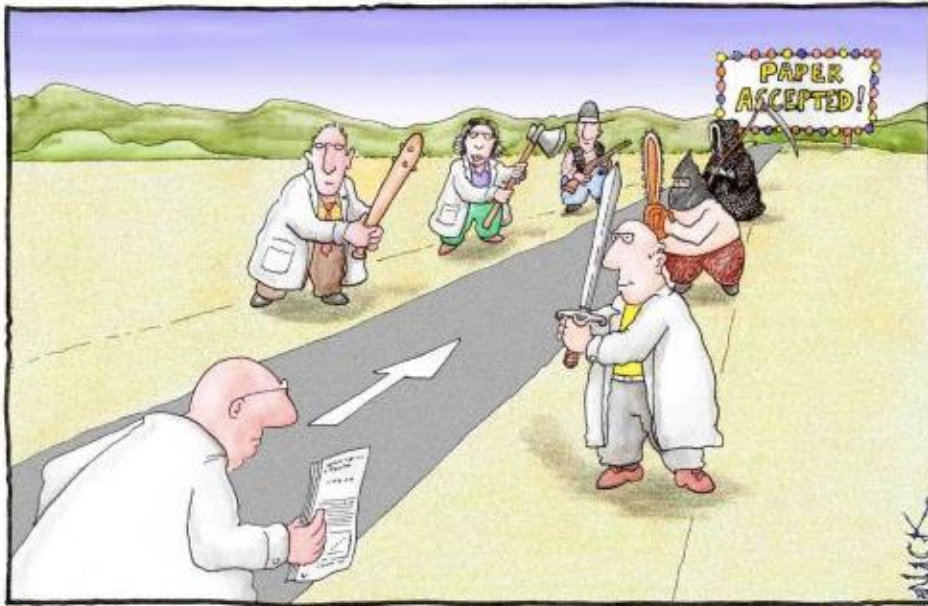
Design



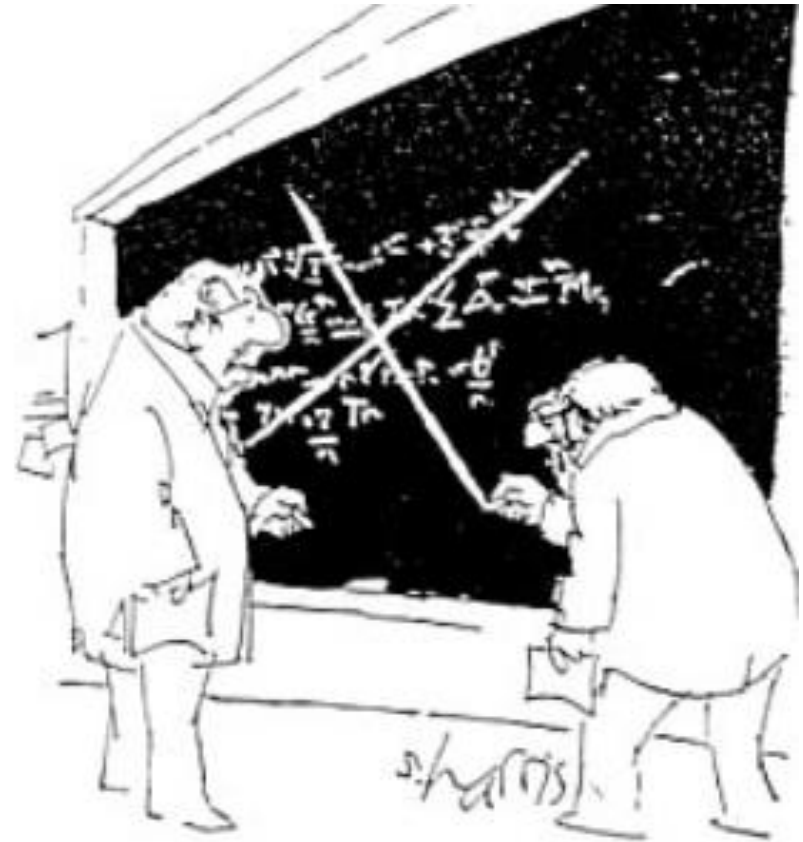


Peer Review

- Structural Preservation Systems Review
- City of Salem Review
- Owner's Representative Review

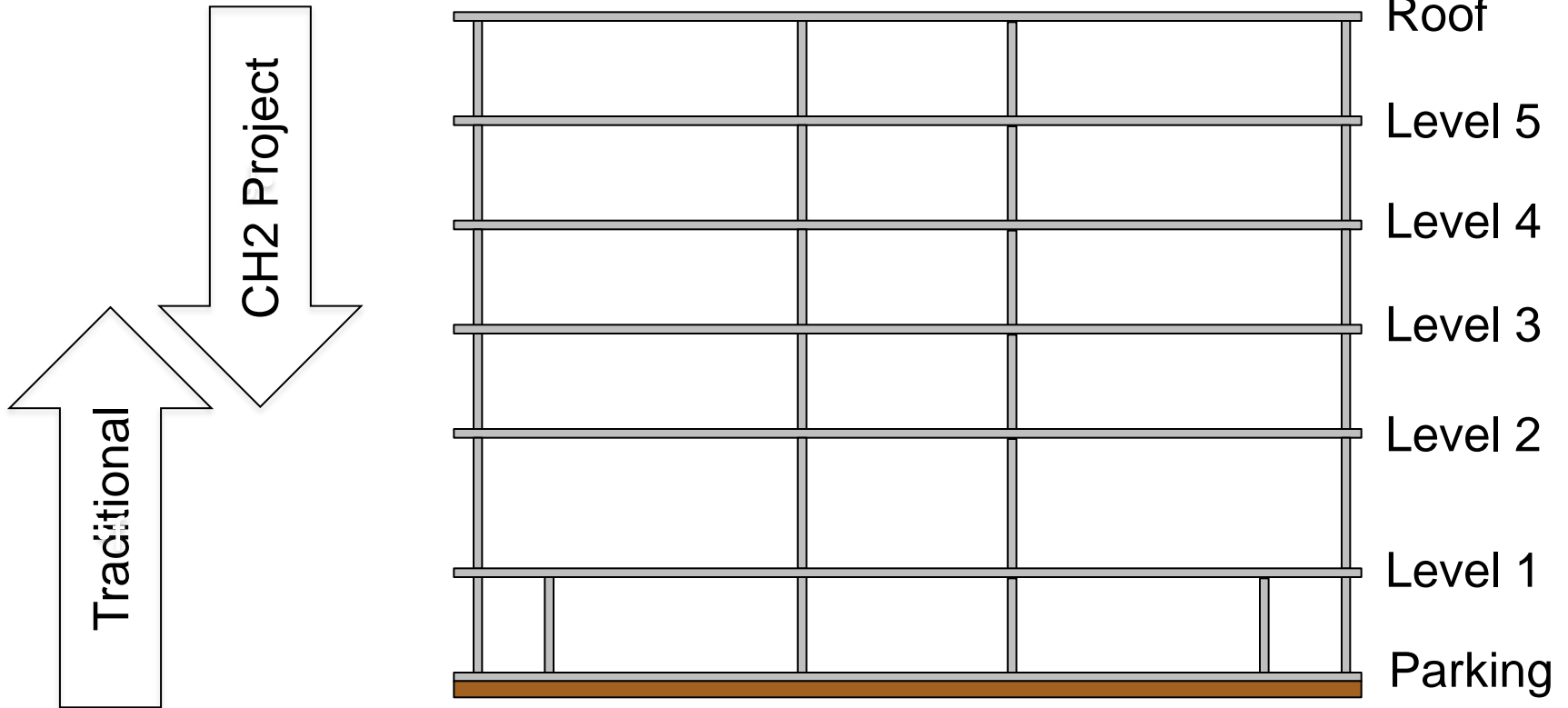


Most scientists regarded the new streamlined peer-review process as 'quite an improvement.'



"That's it? That's peer review?"

Construction Sequence

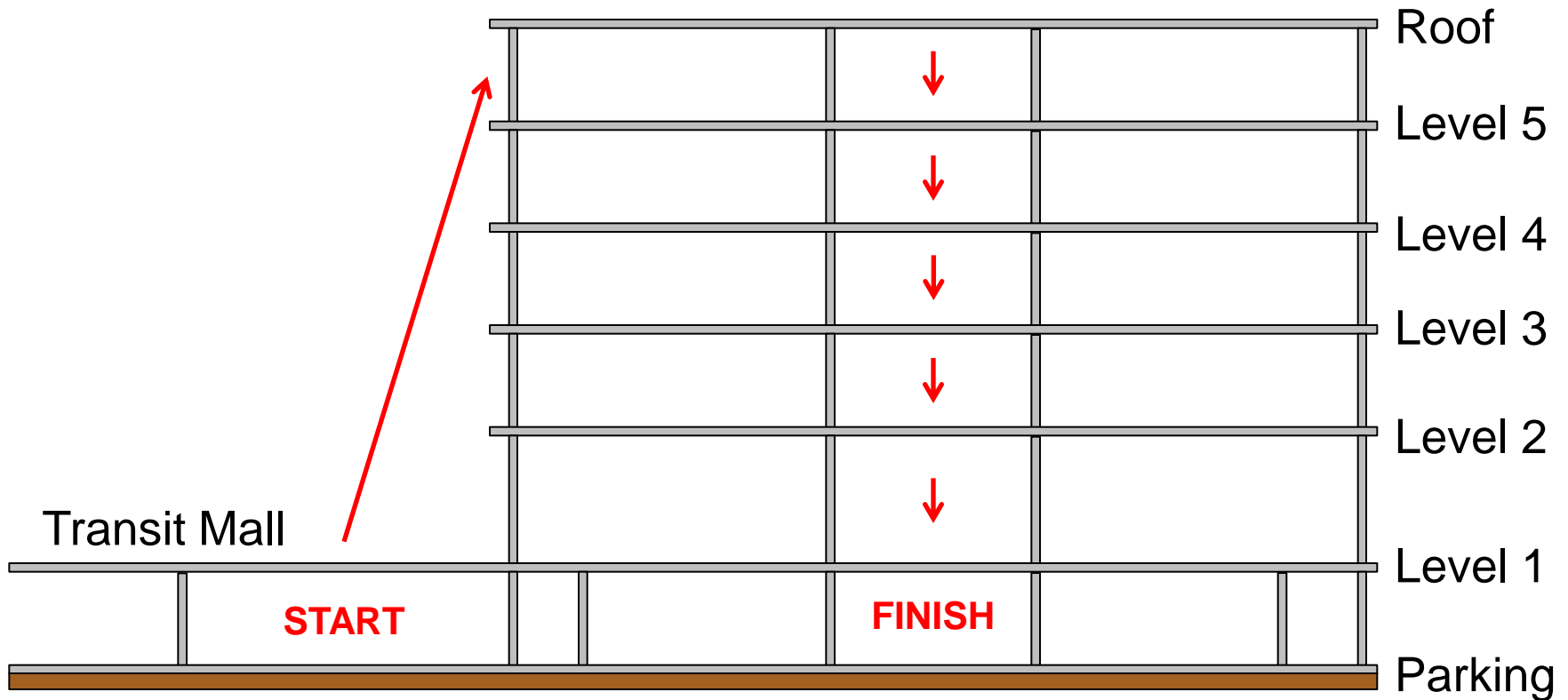


Engineering Considerations

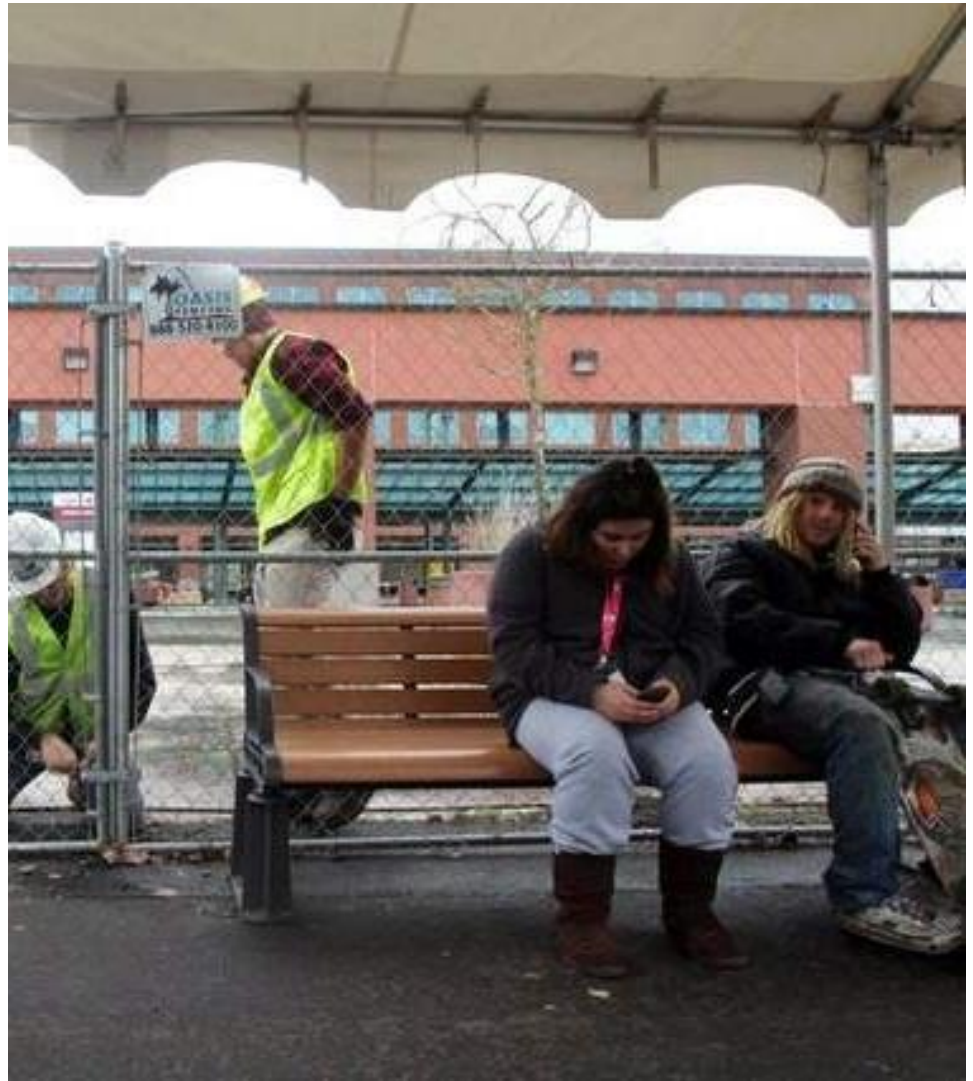
- Relatively small amount of dead load added
- Detailed construction live load restrictions

Construction Sequence

- 1) Demolition
- 2) Strengthening
- 3) Finishes



Schedule



Schedule

COURTHOUSE SQUARE COMPLEX SALEM, OREGON REMEDATION CONSTRUCTION DOCUMENTS

OWNER INFORMATION

OWNER:
 MAJOR COUNTY
 401 PENDER STREET SE
 SALEM, OREGON 97301
 (503) 588-6256
 WWW.MAJORCOUNTY.ORG
 CONTACT: JOHN LEFNER

OWNER:
 DAVID ANDERSON STREET SE, SUITE 100
 SALEM, OREGON 97301
 (503) 588-6256
 WWW.CITYOFSALEM.ORG
 CONTACT: KYLE PELICK

OWNER'S REPRESENTATIVE:
 CDR FORENSIC CORPORATION
 4425 NORTH RIVERVIEW BOULEVARD
 PORTLAND, OREGON 97217
 (503) 253-1100
 WWW.CDRFORENSIC.COM
 CONTACT: KEVIN BLUMHARDT, P.E.

DESIGN-BUILD TEAM INFORMATION

CONSTRUCTION TEAM LEADS:
 CONSTRUCTION
 STRUCTURAL PRESERVATION SYSTEMS, LLC
 8000 VAN TRAMP ROAD
 CLARKSBURG, MARYLAND 21031
 (410) 861-8800
 WWW.PRESERVATIONSYSTEMS.COM
 CONTACT: JAY THOMAS

CONSTRUCTION TEAM LEADS:
 CONSTRUCTION
 REP. A. WOODRUFF, INC.
 100 WESTERN DRIVE, SUITE 201
 ALFALFA, TEXAS 75001
 (972) 471-9274
 WWW.WOODRUFFCONSTRUCTION.COM
 CONTACT: MICHAEL FOSTER, P.E.

SITE



VICINITY MAP

NE TO SCALE

LOCATION

NE TO SCALE



Building and Safety
 PAC: (503) 588-6256
 Inspections: (503) 588-6256
 Fax: (503) 588-6115

City Hall
 555 Liberty St SE
 Room 320
 Salem, OR 97301-3503

CRAIG CARLSON
 3095 RIVER RD N
 SALEM OR 97303

Building Seq #: 13-102178-BP
Date Issued: Mar 05, 2013

Property Address: 555 COURT ST NE
 Legal Description: Sub: N Lot: 0 Blk: 0

Parcel: 90000
 STRUCTURAL SLAB LEVELS 5

Contractor's Construction Board #: 175669
 Occupancy and Group: B
 Fire Sprinkler Installed?: Yes
 Slope: 0
 In LUSH?: Yes
 # Sheets Size C or larger copies: 27
 Total Project Valuation: \$4,300,000.00

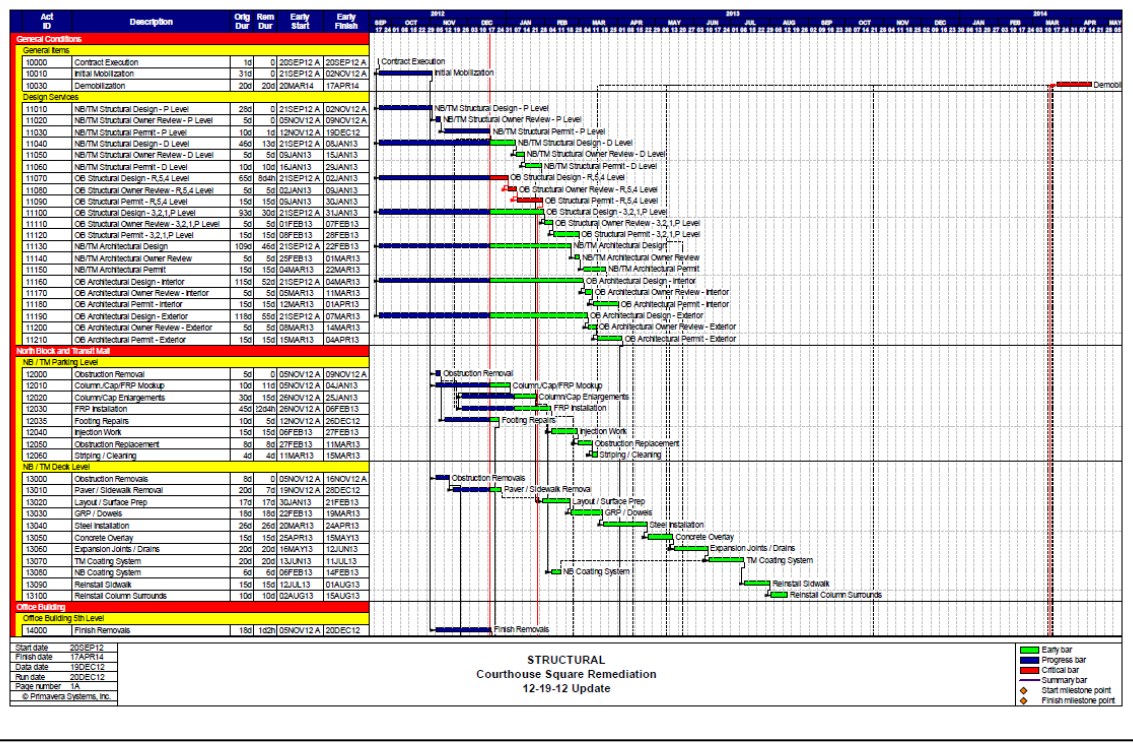
contractor:
 UCTURAL PRESERVATION
 ITEMS LLC
 8 SAN TOMAS RD
 BRIDGE MD 21075
 R: (410) 796-5000

client:
 MCG CARLSON
 8 RIVER RD N
 EM OR 97303

agree to complete the installations in
 s and specifications, and to call this

3/5/13
 within 180 days, or if construction or
 work has commenced.

Issued by: Twila Pichardo



STRUCTURAL
 Courthouse Square Remediation
 12-19-12 Update

- Early bar
- Progress bar
- Critical bar
- Summary bar
- ◆ Start milestone point
- ◆ Finish milestone point

Public Opinion

OMG! WTF, Courthouse Square?

Posted on Feb 9, 2011 in Opinion | 0 comments



OMG! WTF, Courthouse Square? It's time to once again revisit the crumbling of a major square in the heart of downtown Salem. Yes, Courthouse Square is still there, with its \$39 million fence filling concrete. Marion County offices are gone, the two restaurants on the floor levels are gone, and the transit system that was built around using that block is still teetering back into optimal service levels.

SERA Architects and Miller Consulting Engineers compiled a 106 page report detailing three plans for the project based on Marion County's direction. The three options were to demolish the building, remediate it or replace it. The costs ranged from \$2.5 million to \$59 million. That's not counting the existing debt still on the building, the ramifications of the Transit District displacement, or the rent on the new Marion County office locations.

Public Opinion

Carbon fiber plays key role in Courthouse Square repairs

Written by Michael Rose Statesman Journal
Nov. 29, 2012

statesmanjournal.com



SAL1129-COURTHOUSE SQUARE

Purchase Image Zoom

Workers practice using the saturation machine as Carbon Fiber Reinforced Polymer fabric goes through a resin bath and is squeezed between two rollers. The demonstration allowed workers who will be a part of the remediation project to practice at mock stations. / KOBBI R. BLAIR / Statesman Journal

Contractors

the Square repair project.
Systems LLC

GP Engineers Inc; Carlson Veit Architects;

Construction workers filled Courthouse Square's parking garage on Wednesday and brushed up on

near walls, and slabs. A carbon fiber material, element in Courthouse Square's nearly \$23





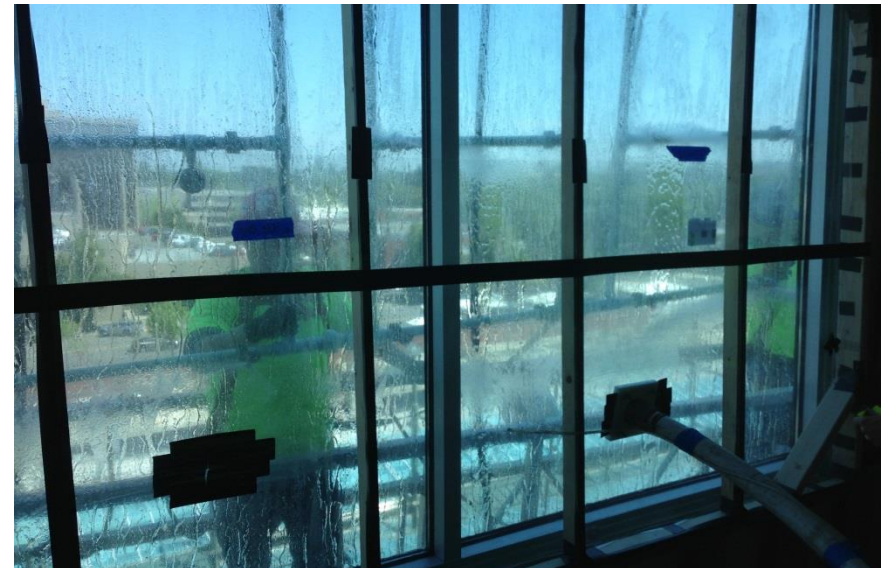
Public Opinion



Quality Control

2-D-13

	STRUCTURAL Inspected	CASE <i>Owners' Quality Assurance Review</i> No Exception Taken	NW Geotech Approved	City Approved
1) Dowel Installation 	_____	_____	_____	_____
2) Pre-Pour Steel Inspection 	_____	_____	_____	_____



Contract Scope

For greater clarity, Design-Builder shall perform the following items which shall define the Work:

1 OFFICE BUILDING		
1.A Life Safety		
1.A.1	Strengthening of deficient isolated footings as determined by Design-Builder to be required to meet design criteria	
1.A.2	Strengthening of west stair core mat foundation as determined by Design-Builder to be required to meet design criteria	
1.A.3	Column strengthening using concrete enlargement and/or fiber reinforced polymer (FRP) as determined by Design-Builder to be required to meet design criteria	
1.A.4	Slab strengthening using fiber reinforced polymer (FRP) as determined by Design-Builder to be needed to meet strength requirements	
1.A.5	Slab shear strengthening using cast in place enlargements as determined by Design-Builder to be required to meet design criteria	
1.A.6	Strengthening of deficient shear walls as determined by Design-Builder to be required to meet design criteria	
1.A.7	Bonding of structural cracks in concrete floor slabs and shear walls using epoxy adhesive as deemed necessary by Design-Builder to meet structural requirements	
1.B Serviceability		
1.B.1	Chemical grout injection of cracks currently leaking in the foundation walls (no warranty shall be provided for chemical grouting work)	
1.B.2	Routing and sealing of durability cracks in areas of structural concrete exposed to weather or in areas with potential for water infiltration as determined by Design-Builder	
1.B.3	Re-stripping of underground parking garage based upon existing layout	
1.B.4	Removal and replacement of insulation at underside of first floor slab in areas where removal is required to perform the structural remediation work	
1.B.5	Floor surface leveling (around existing partition walls) using leveling compound to areas where slab deflection exceeds 1.9" (L/240 based on 38' span)	
1.B.6	Removal and replacement of interior finishes on exterior-walls on floors 2 to 5. Existing insulation to be left in place and reused	
1.B Serviceability (Continued)		
1.B.7	Removal and replacement of isolated portions of interior partition wall framing and finishes only to the extent as needed to access structural members to perform repairs	
1.B.8	Repair existing damaged interior drywall finishes to remain (cracks, openings, small holes)	
1.B.9	Removal and replacement of all acoustic ceiling tile (ACT) systems	
1.B.10	Removal and replacement of all carpet floor coverings (including rubber base), and replacement of other isolated floor finishes only to the extent where removal is required to perform the structural remediation. Custom logo on 5 th floor to be re-used.	
1.B.11	Replacement of wall coverings or repainting of interior walls at areas affected by the structural remediation	
1.B.12	Removal and re-installation of existing casework and countertops as required to perform the structural remediation	
1.B.13	Repair or modification of existing interior doors identified in the SERA Report as having a "function issue" as required to restore proper alignment within frames (replacement of missing door hardware not included)	
1.B.14	Repair interior hollow metal door frames	
1.B.15	Replacement or reinstallation, at Design-Builder's election, of laminate window sills where removed for work at exterior walls	
1.B.16	Removal and re-installation of existing window blinds	
1.B.17	Repair of existing metal stair landings to reduce existing deflections and buckling	
1.B.18	Repainting of metal stair structures within East and West stairwells	
1.B.19	Repainting of interior face of East and West stairwell walls	
1.B.20	Provide adequate pedestrian overhead protection adjacent to office building along Church and Court Streets as reasonably required during building envelope repair phase	
1.B.21	Removal and replacement of all brick at each of the four building corners within the extents of the adjacent vertical expansion joints located approximately 24" away on either side of each corner.	
1.B.22	Removal and replacement of the exterior brick starting from the course above the 5 th floor bullnose up to the top of the parapet wall	
1.B.28	Perform general detergent and pressure wash cleaning of the facade	
1.B.29	Removal, repair and resetting (or replacing if damage is severe) of up to 20 punched windows on floors 2 to 5	
1.B.30	At all existing punched windows to remain, inspect window system and make the following repairs as determined by the Design-Builder: re-shim frames, repair damaged gaskets, re-seal end dams, repair fasteners, and re-center insulated glazing units (IGU) within frame	
1.B.31	Replacement of up to 6 damaged insulated glazing units (IGU)	
1.B.32	Repair closure detail between punched window frames and existing air/water resistive systems from the exterior on 5 th floor utilizing repair details as determined by Design-Builder	
1.B.33	Repair closure detail between punched window frames and existing air/water resistive systems from the interior on floors 2 to 4 utilizing repair details as determined by Design-Builder	
1.B.34	At four projecting curtain wall system locations, perform repairs as Design-Builder deems necessary by field investigation results to system components including: snap trim, pressure bars, zone plugs, end dams, fasteners, gaskets, IGT alignment, frame alignment, closures performance or wet glazing	
1.B.35	Repair or replace roofing membrane as required at the four projecting curtain wall locations	
1.B.36	Remove and re-adhere portions of wrinkled roof membrane on parapet walls, and replace localized area of damaged roof membrane near penthouse access (approximately 500 SF) Roof repairs do not incorporate any extensions or additions to current roofing warranties	
1.B Serviceability (Continued)		
1.B.37	Temporary removal, storage, and re-installation of existing mechanical, electrical (including low voltage data), plumbing, and fire protection systems to accommodate Design-Builder's structural remediation work	
1.B.38	Perform maintenance repairs to AC units 1-4 as Design-Builder deems necessary to bring equipment into good working order including: Treat rust at facade section to avoid structure damage, replace rusting cooling coil condensate pan, grease fan and motor zerk fittings, resal compartment doors to prevent water infiltration, check load fan motors and replace bearings if found to be faulty, repair refrigerant leaks in coils, recharge units per manufacturer's recommendations	
1.B.39	Perform maintenance repairs to CRU-1 as Design-Builder deems necessary to bring equipment into good working order including: Reclaim remaining refrigerant charge, pressure test, fix leaks if any and then recharge with refrigerant per manufacturer's recommendations.	
1.B.40	Perform isolated plumbing repairs as Design-Builder deems necessary to bring systems into good working order including: replacement of two hose bibs, clean drinking fountain drains and check vent lines, clean clogged floor drains and covers, install low-flow aerators on lavatory faucets with high-flow rate	
1.B.41	Perform isolated electrical system repairs as Design-Builder deems necessary to bring systems into good working order including: replacement of burned out lamps, removal of lead-acid batteries from room 4252	
2 TRANSIT MALL		
2.A Life Safety		
2.A.1	Strengthening of deficient isolated footings as determined by Design-Builder to be required to meet design criteria	
2.A.2	Column strengthening using concrete enlargement and/or fiber reinforced polymer (FRP) as determined by Design-Builder to be required to meet design criteria	
2.A.3	Slab strengthening using fiber reinforced polymer (FRP) and/or reinforced concrete overlay as determined by Design-Builder to be needed to meet strength requirements	
2.A.4	Slab shear strengthening using cast in place enlargements as determined by Design-Builder to be required to meet design criteria	
2.A.5	Bonding of structural cracks in concrete floor slabs and shear walls using epoxy adhesive as deemed necessary by Design-Builder to be to meet structural requirements	
2.A.6	Routing and sealing of durability cracks in areas of structural concrete exposed to weather or in areas with potential for water infiltration as determined by Design-Builder	
2.B Serviceability		
2.B.1	Chemical grout injection of cracks currently leaking in the foundation walls (no warranty shall be provided for chemical grouting work)	
2.B.2	Re-stripping of underground parking garage and bus lanes based upon existing layout	
2.B.3	Removal of transit mall brick paver system, curbs and sidewalks as determined by Design-Builder to be required for installation of reinforced concrete overlay	
2.B.4	Reconfiguration of slab isolation joints at North and South ends of transit mall	
3 NORTH BLOCK		
3.A Life Safety		
3.A.1	Slab strengthening using fiber reinforced polymer (FRP) as determined by Design-Builder to be needed to meet strength requirements	
3.A.2	Slab shear strengthening using cast in place enlargements as determined by Design-Builder to be required to meet design criteria	
3.A.3	Bonding of structural cracks in concrete floor slabs and shear walls using epoxy adhesive as deemed necessary by Design-Builder to meet structural requirements	
3.B SERVICEABILITY		
3.B.1	Routing and sealing of durability cracks in areas of structural concrete exposed to weather or in areas with potential for water infiltration as determined by Design-Builder	
3.B.2	Chemical grout injection of cracks currently leaking in the foundation walls (no warranty shall be provided for chemical grouting work)	
3.B.3	Re-stripping of underground parking garage based upon existing layout	
3.B.4	Repair deficiencies and/or replace existing urethane waterproofing membrane system as determined by Design-Builder during field investigations	

Design-Builder shall perform all design and construction services, and provide all material, equipment, tools, labor, transportation, services, and incidentals reasonably necessary to successfully perform the Remediation and shall perform the Services and complete the Work described in or reasonably inferable from the Contract Documents (defined in Section 2.1 of the Contract) in accordance with current industry standards and current applicable building codes for new construction.

For greater clarity, and without limiting the generality of the foregoing, Design-Builder shall perform additional field investigation and testing to support design development; and shall perform, as it determines applicable and appropriate: floor surface leveling; bonding of structural cracks with epoxy; routing and sealing of durability cracks; enhancement of the foundation bearing capacity; concrete enlargement; fiber reinforced polymer (FRP) installation; drop panel installation; reconfiguration and restriping of parking; removal and resetting of windows with air/water resistive systems; repair and replacement of insulated glazing units (IGU); removal and replacement of brick at each building corner and above the bullnose at the top of the 4th floor and where necessary due to significant displacement; re-cutting of vertical control joints where compressed; reconstruction and transition of flashing and installation of air/water resistive barrier and sealants, zone plugs, and other elements for curtain walls; re-glazing of curtain walls where necessary; local replacement of damaged, loose, or wrinkled roof membrane; integration of roof system into main flashing systems, rails, and parapets; replacement of flashing system where necessary; removal and reinstallation of all exterior-wall finishes; removal and reinstallation, or repair, of damaged interior wall finishes; removal and reinstallation of all ceiling systems; repainting of metal stair structures; correction of the mechanical and electrical issues noted in the Environmental and Engineering Services Inc. (EESI) Comprehensive Building Conditions Assessment Report, dated February 6, 2012; removal of transit mall brick pavers and bedding sand; installation of bonded reinforced concrete overlay and FRP reinforcement bonded to slab underside in transit mall; installation of epoxy overlay on transit mall; and replacement of isolation joint on transit mall adjacent to building column face.

When Design-Builder must remove and replace, Design-Builder shall make reasonable efforts to match or come as close to matching the *in situ* materials with new replacement materials; however, the parties hereto recognize that it is often difficult, if not impossible, to provide an exact match, and sometimes not possible to even closely match the existing materials.

Owners' Initial Scope

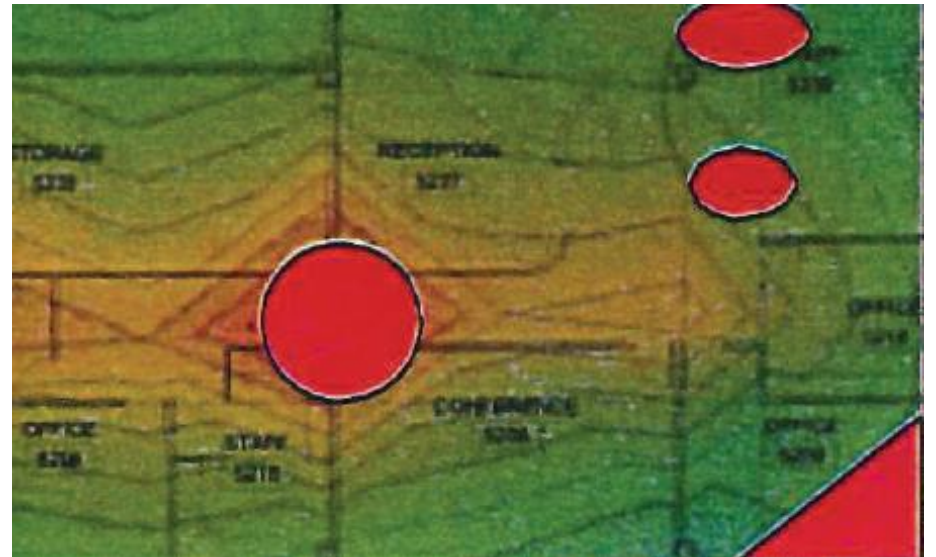
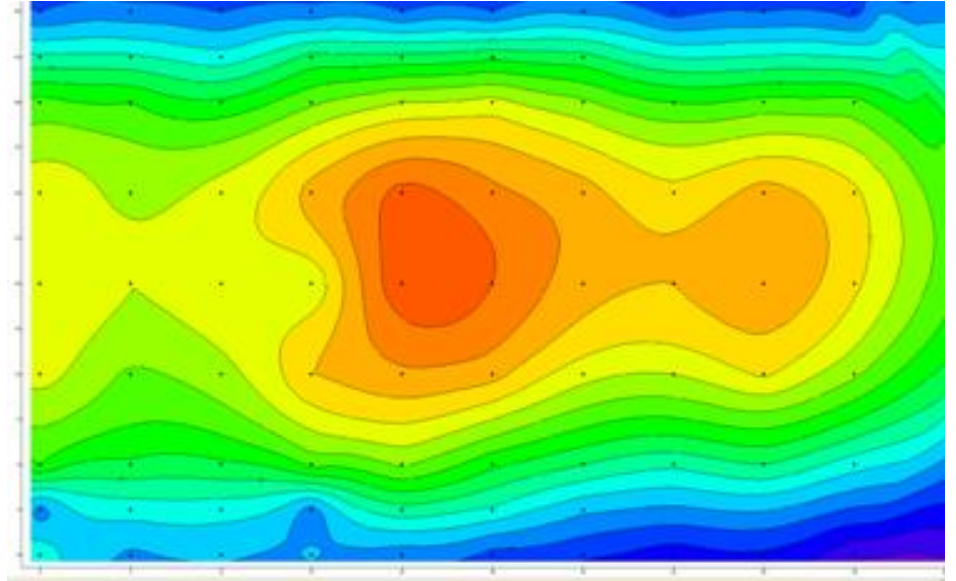
Design/Build Team's Initial Scope

Contract Scope



Aligning Expectations

Floor Leveling



Aligning Expectations

Carpet Selection

9828

09880-3

2 PRODUCTS

2.1 MATERIALS:


A. Carpet Types:

1. Carpet Type 1: Patcraft "Fundamental - 281"
 - a. Type Yarn: 100% Solutia Ultron VIP Continuous Filament Nylon.
 - b. Construction: Cut/Uncut
 - c. Dye Method: Piece Dyed
 - d. Ply: 2
 - e. Gauge: 1/8
 - f. Stitches Per Inch: 13.0
 - g. Tufted Pile Height: 11/32" (.344) - 1/4" (.250)
 - h. Yarn Weight (Sq. Yd.): 41.5 oz.
 - i. Finished Pile Thickness: .252"
 - j. Density: 5929
 - k. Weight Density: 246,054
 - l. Special Treatments: Treated with 3M Commercial Carpet Protector
 - m. Primary Backing: Woven Polypropylene
 - n. Secondary Backing: Woven Polypropylene
 - o. Width: 12'0"
 - p. Flammability:
 - (1) Methenamine Pill Test (DOC FF-1-70): Passes.
 - (2) Flooring Radiant Panel (ASTM E-648): Class 1.
 - (3) Smoke Density (ASTM E-862): Less than 450.
 - q. Wearability: Patcraft 10-year wear warranty.
 - r. Static Control: Built-in Permanent Static Control.
 - s. Traffic Class: Heavy.
 - t. ADA Compliance: Product to meet guidelines as set forth in the Americans with Disabilities Act for minimum static coefficient of friction of 0.6 for accessible routes.
2. Carpet Type 2: Shaw Commercial "Beach Music"
 - a. Style Number: 50186
 - b. Description: Graphic Loop
 - c. Fiber Content: 100% Solutia Ultron VIP BCF Nylon with 3M Scotchgard Carpet Protector
 - d. Tufted Yarn Weight: 32.0 ozs./s.y.
 - e. Tufted Pile Height: .250 inches
 - f. Finished Pile Thickness: .165 inches
 - g. Total Thickness: .352 inches
 - h. Gauge: 1/10
 - i. Stitches Per Inch: 12.0
 - j. Primary Backing: Polypropylene
 - k. Secondary Backing: Polypropylene
 - l. Total Weight: 70.0 ozs./s.y.
 - m. Density: 6981 ozs./c.y.
 - n. Weight Density: 223,392
 - o. Coefficient of Friction: .78
 - p. Stock Colors: 13 Pre-dyed
 - q. Flammability:
 - (1) Pill Test: (DOC FF1-70): Pass.
 - (2) Radiant Panel (Direct Glue), ASTM E-648: Class 1.
 - (3) NBS Smoke Density: ASTM E-862.
 - (a) Flaming Mode: Less than 450; at 4 minutes, less than 300.
 - (b) Non-flaming Mode: Less than 450; at 4 minutes, less than 300.



Design-Build Lump Sum Contract

FOR COUNCIL MEETING OF: April 23, 2012 _____
AGENDA ITEM NO.: 3.2 (d) _____

TO: MAYOR AND CITY COUNCIL
FROM: LINDA NORRIS, CITY MANAGER 
SUBJECT: RESOLUTION IN SUPPORT OF THE REMEDIATION PLAN FOR
COURTHOUSE SQUARE

ISSUE:

Shall Council adopt Resolution 2012-29 supporting the remediation plan for Courthouse Square?

RECOMMENDATION:

Staff recommends that Council adopt Resolution 2012-29.

BACKGROUND:

Last week, the Courthouse Square Evaluation Committee completed its work and provided its recommendation to the Marion County Board of Commissioners and Salem Area Mass Transit District Board of Directors. The Committee's recommendation is to engage a design-build firm to remediate the building and transit mall structural deficiencies. The project goal is to deliver repairs that will provide Courthouse Square with a 50 year service life. Both Boards are now considering the Committee's recommendation, along with a cost-benefit analysis and public comment.

The Courthouse Square block is an important component of downtown Salem. Its location in downtown Salem is an ideal location for efficient public transportation and access to essential county services. It is important to the health of the downtown core that the Boards approve a plan for correcting the building's problems as quickly as possible. Once fixed, Courthouse Square will once again consolidate County services at one location. It will also house the 300 County and Transit District employees in the heart of downtown and move the Cherrits bus mall operations off the street.

FACTS AND FINDINGS:

The Courthouse Square Evaluation Committee has engaged a number of experts over the course of its work to provide it with a well-reasoned opinion upon which to base its recommendation. The Marion County Board of Commissioners and Salem Area Mass Transit District Board of Directors are now considering this recommendation and are seeking public comment prior to making a final decision on the future of Courthouse Square. If approved by Council, the attached resolution will serve as the City's official comment on this matter.

Solution Building



Typical 4-Sided Shear Cap



Custom 3-Sided Shear Cap





JCPenney

Clemson University

EXIT

BUSES



EXIT





MOTORCYCLE

54





Project Completion

