

Project Title	CCAA Parking Garage Repairs
Property Name	Charleston County Aviation Authority-Charleston International Airport
Location	5500 International Blvd – Charleston SC
Entry Classification	Sealant
Project Cost (dollar amt)	783 796.00
Duration (calendar days)	140
Start Date (mm/dd/yy)	7/30/2010
End Date (mm/dd/yy)	5/26/2011

Scope of Work

Base Bid work included miscellaneous structural repairs to concrete elements repairs to concrete surfaces sealant replacements preformed joint replacements / repairs and select areas of vehicular traffic coating application to Parking Structure. 1. Demolition of selected components in accordance with Section 02040 Cutting and Patching and Section 02050 Demolition and Removal to complete all work within the Contract Documents. 2. Poured-in-place epoxy repairs in accordance with Section 03701 Poured-In-Place (Gravity Feed) Epoxy Repairs. 3. Epoxy injection in accordance with Section 07302 Epoxy Injection. 4. Epoxy injection and pinning in accordance with Section 07304 Epoxy Injection & Pinning. 5. Polymer modified concrete restoration in accordance with Section 03900 Polymer Latex Cement Concrete Restoration. 6. Polyurethane based vehicular traffic coating in accordance with Section 07181 Vehicular Traffic Coating. System includes primer base coat wearing course & top coat (for UV exposure). Areas of deck coating are required to be restriped relettered & renumbered to match existing layout. 7. Sheet metal components & accessories per Section 07600 Sheet Metal. 8. Repairs & replacement to expansion joints in accordance with Section 07900 Preformed Parking Structure Expansion Joints. 9. Replacement of sealant systems from the building envelope & skylights in accordance with Section 07921 Sealants for Building Envelope. 10. Fluid applied sealants for horizontal surfaces in accordance with Section 07922 Fluid Applied Sealants for Horizontal Surfaces. Concrete crack repairs are required under two categories: 1. Structural & 2. Maintenance. Included in this Contract are the following: Structural: Areas to be identified by color coded painting in the field painted by the Contractor. 1. Epoxy Repairs (Section 03701) (LF Quantity/Unit Price) (Crack thickness less than or equal to 1/16" . 2. Epoxy Repairs (Section 03701) (LF Quantity/Unit Price) (Crack thickness greater than 1/16" . Maintenance: All remaining cracks within the area of coating application. 3. Routing cracks/sealer (non-moving cracks greater than 1/16" in width) (Section 07181) (LF Quantity/Unit Price). 4. Crack filler (non-moving cracks less than 1/16" in width) (Section 07181) (All remaining cracks within the area of the coating application). Bid Item Number 1 includes the following: 1. Contractor shall use a white traffic paint

(except for handicap parking spaces which shall be blue) meeting the requirements of the South Carolina Manual on Uniform Traffic Control Devices for concrete pavements & paint shall be applied in accordance with manufacturer's written instructions. Paint shall be applied uniformly by suitable equipment at a rate between 100 to 110 square feet per gallon. Markings shall be protected until paint has dried. 2. Repaint all markings on all three levels. Repaint all striping letters and numbers stop bars handicap symbols and directional arrows. Please note that in some cases only a shadow of the marking remains on the concrete surface.

Abstract

Parking structure renovations require significant coordination to maintain sufficient parking and protection at parked vehicles. Also common to parking structures is the coordination to maintain safe ingress / egress to the visitors to the Charleston Airport. The difficulty factor is the security and safety requirements that are unique to an International Airport.

Unforeseen Conditions:

The scope of work for this project was based on a detailed building envelope survey and management. Thus unforeseen conditions were minor and minimized to largest degree. No change orders for unforeseen conditions occurred.

Problems/Challenges/Solutions:

The main problem resolved with a custom solution was the concrete columns / parapet walls that had substantial joint variations intersecting with expansion joints and penetrated with electrical conduits and copper lightning protector cables. The Contractor fabricated a series of custom stainless steel sheet metal caps / closures to address / correct this issue.

Safety Considerations (public/property/hours accident free, etc):

The project was completed without incident. This was due to the general project scope the Contractor's safety plan and ongoing committed efforts.

Community/Environmental Impact:

N/A

Technology/Innovation:

N/A

Site Constraints

The sequence of work was critical for this project. Sequence plan and weekly coordination updates was required. Critical issues for this structure included the following: 1. Maintaining all ingress/egress at all times. 2. Coordination with Owner to maintain maximum parking spaces at all times. 3. Adhere to all safety / security requirements of CCAA and FAA. 4. Protection of vehicles / pedestrians in the Parking Structure and surrounding areas during construction. 5. Egress and ingress was maintained at all times. 6. No more than 1/3 of any one parking level / deck was closed off for work at any given time. 7. Written request for scheduling closing off work areas was required to be completed at least seven (7) days in advance. 8. Replacement of joints at traffic locations (helixes) required for maintaining access / traffic flow. Use only approved laydown and storage areas discussed in Pre-Construction Conference unless otherwise discussed and specifically approved by Owner.

Quality Control/Field Testing

Contractor had full and complete responsibility for the quality control of this project. Quality assurance services by the Owner and the design consultants were provided for the benefit of the Owner. The regular meetings and coordination between the Owner construction and design team resulted in limited issues and quality work. Within this Contract the Contractor provided scheduling coordination and written responses to all quality assurance and third party inspection services.

Rigging Approach

Rigging approach was not applicable for this project. Exterior work was completed with JLG / man lifts / ladders.

Sustainment

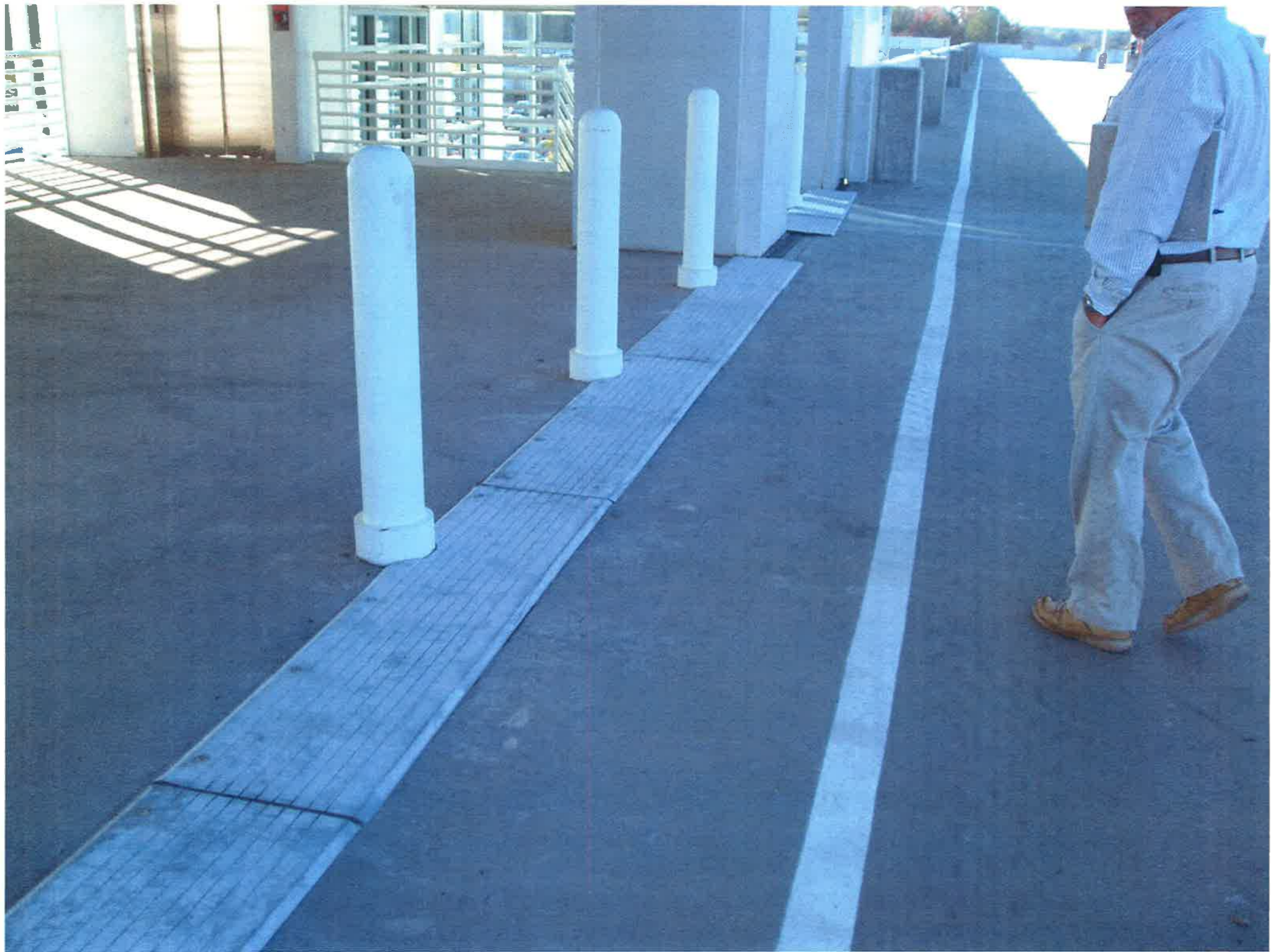
The best definition of sustainability is “to endure”. To endure we must maintain. This project focused on maintaining the building envelope for a 100+

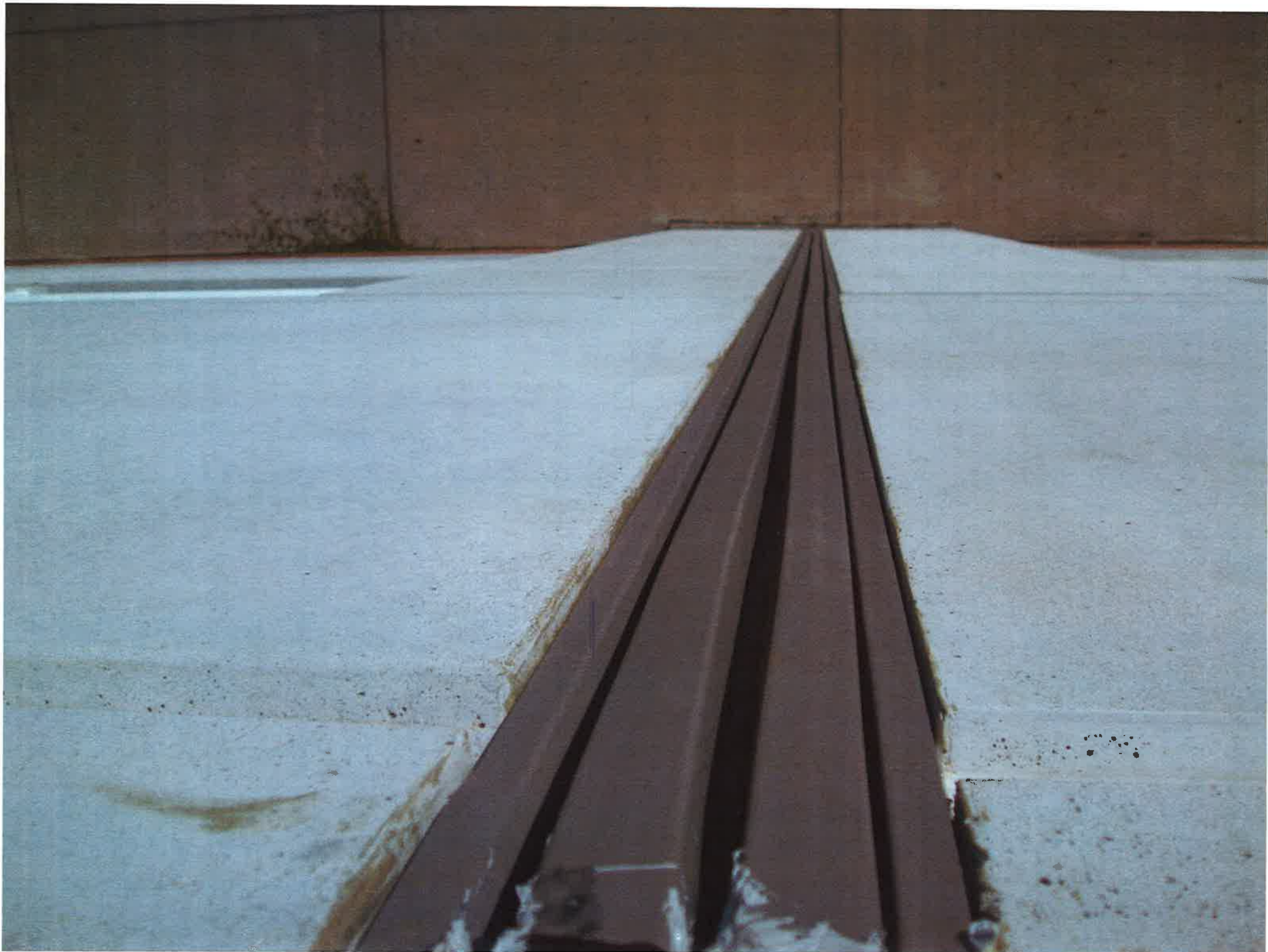
year old building so it will be there for the next 100 years.









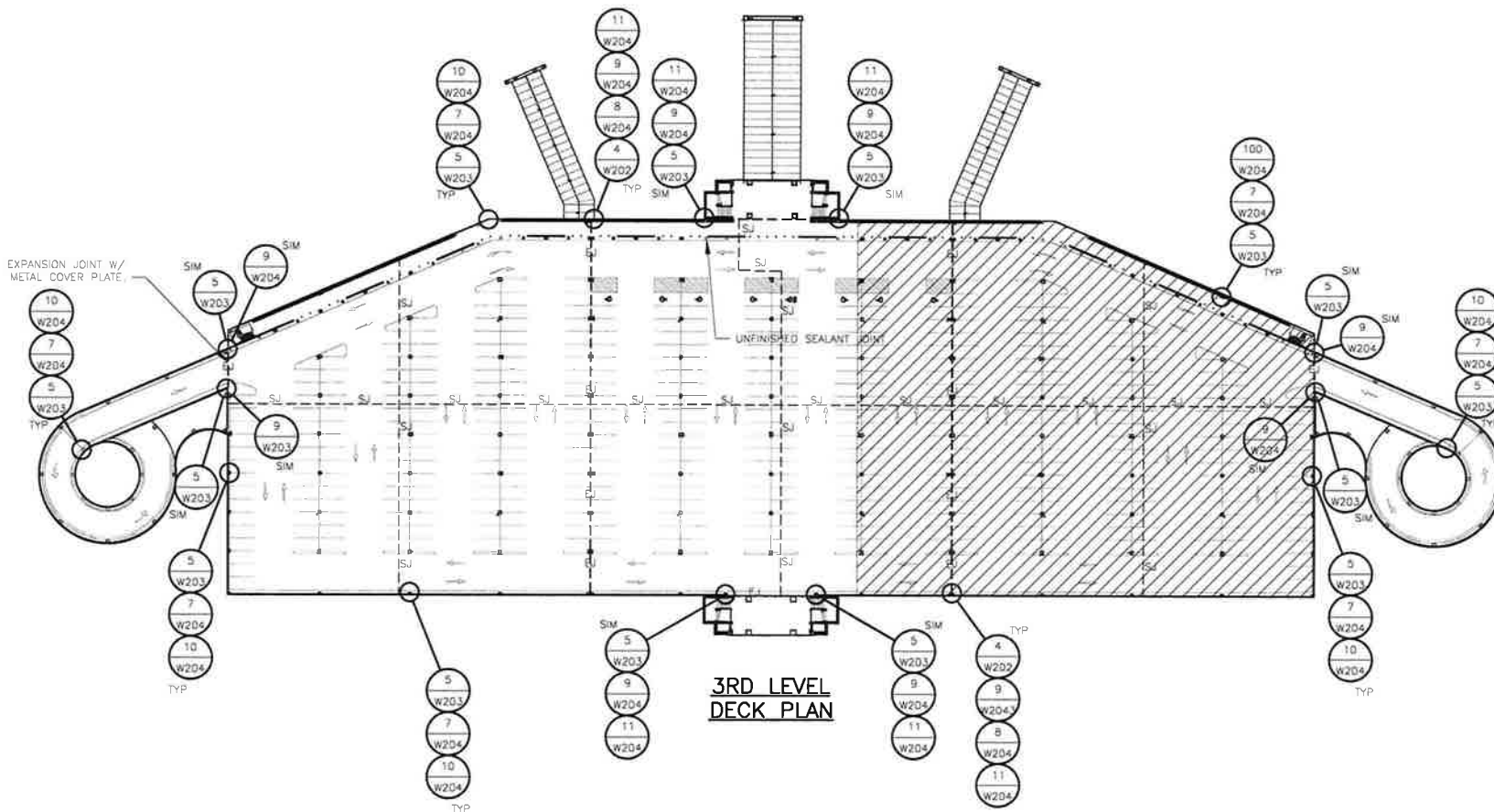








↑ Exit



**3RD LEVEL
DECK PLAN**

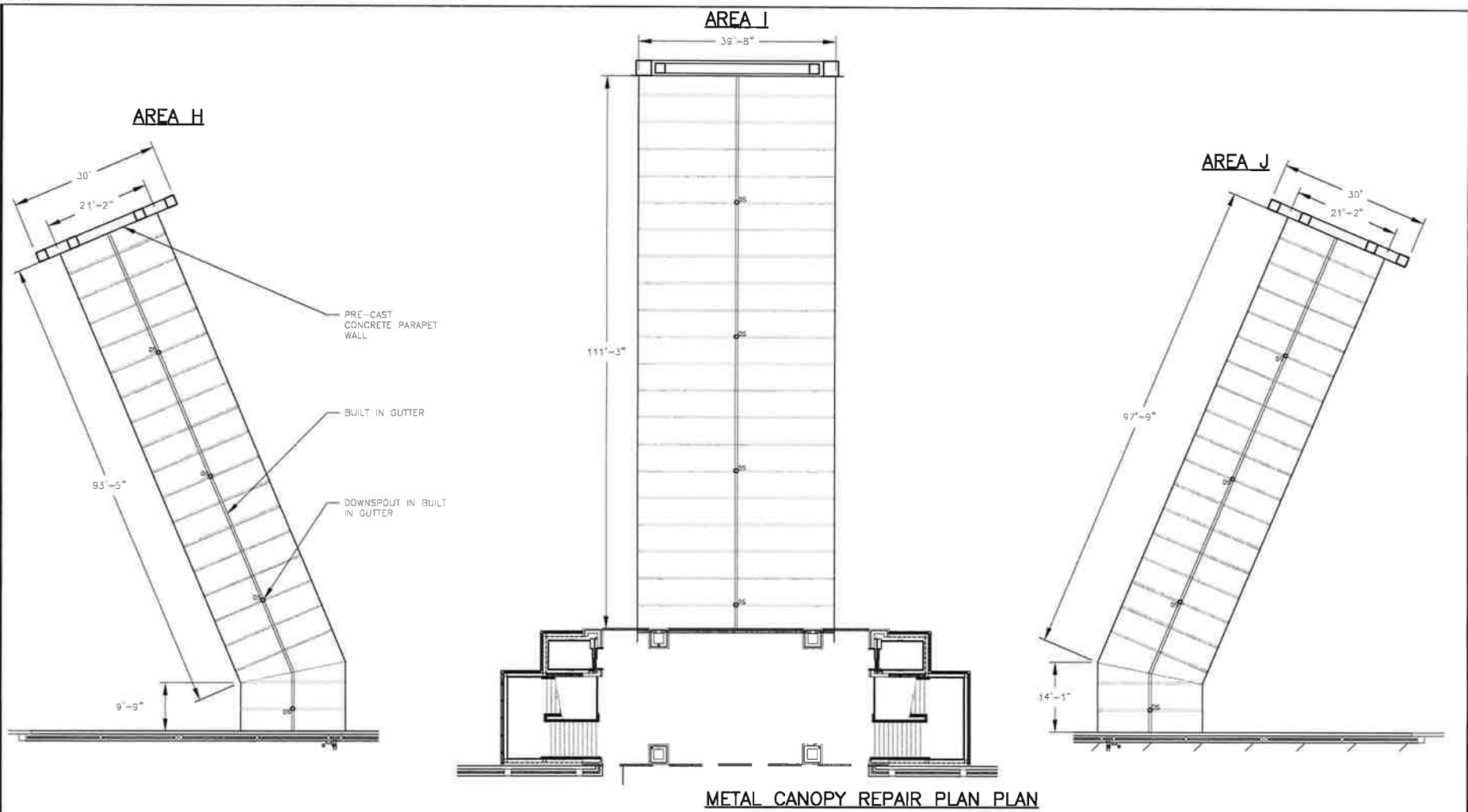
NOTES:

1. COMPLETE ALL PARKING STRUCTURE REPAIRS IN ACCORDANCE WITH THE SUMMARY OF WORK, THE TECHNICAL SPECIFICATIONS AND DRAWINGS.
2. PROVIDE CONCRETE REPAIRS AND MODIFICATIONS PER THE STRUCTURAL DRAWINGS.
3. PROVIDE SHEET METAL CLOSURES AND FLASHINGS PER THE DRAWINGS.
4. REPLACE ALL EXTERIOR SEALANT JOINTS AND WET SEAL ALL FENESTRATION.
5. REPLACE THE PRE-FABRICATED EXPANSION JOINTS, AND COMPLETE REPLACEMENT/REPAIRS TO COVERS AS NOTED IN DRAWINGS.
6. THE EXACT LOCATION OF ALL UNIT PRICE ITEMS/QUANTITIES ARE NOT INDICATED ON THESE DRAWINGS.
7. DETAILS INDICATED TYPICAL ARE REQUIRED TO BE PROVIDED AT ALL SIMILAR LOCATIONS.



GRAPHIC SCALE

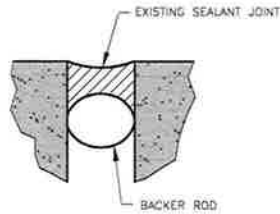
CONSTRUCTION DOCUMENTS



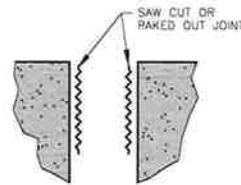
METAL CANOPY REPAIR PLAN PLAN

- ROOF SYSTEM REPAIR NOTES:**
1. COMPLETE ALL ROOF REPAIRS/MODIFICATIONS IN ACCORDANCE WITH SECTION SECTION 07800 SHEET METAL AND THE APPLICABLE DETAILS
 2. THE EXACT LOCATION OF ALL UNIT PRICE ITEMS/QUANTITIES ARE NOT INDICATED ON THESE DRAWINGS.
 3. DETAILS INDICATED AS "TYPICAL" ARE REQUIRED TO BE PROVIDED AT ALL SIMILAR LOCATIONS.





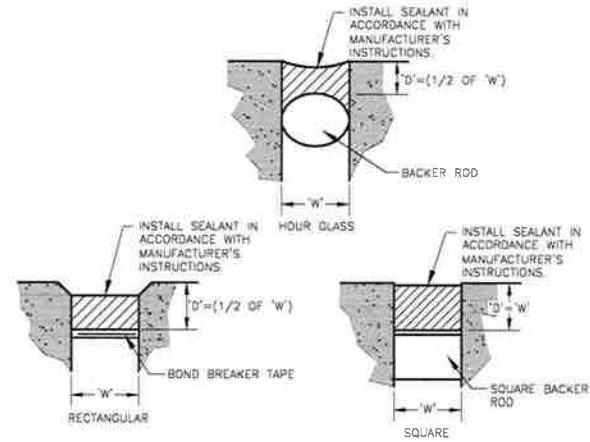
EXISTING STANDARD JOINT
STEP ONE



NOTES:

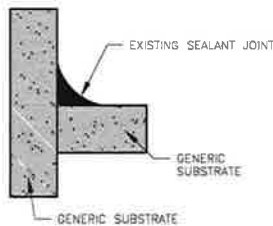
1. A SEALANT IS NO BETTER THAN THE SURFACE TO WHICH IT IS ATTACHED. PROPER PREPARATION IS CRITICAL.
2. THE MANUFACTURERS INSTRUCTIONS MUST BE CAREFULLY FOLLOWED TO OBTAIN PROPER SEALANT ADHESION
3. ADHERE TO THE JOINT DESIGN AND APPLICATION REQUIREMENTS.

PREPARE STANDARD JOINT
STEP TWO

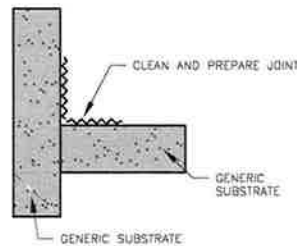


REPAIR STANDARD JOINT OPTIONS
STEP THREE

1 STANDARD JOINT DETAIL
W201 NOT TO SCALE (TYPICAL)



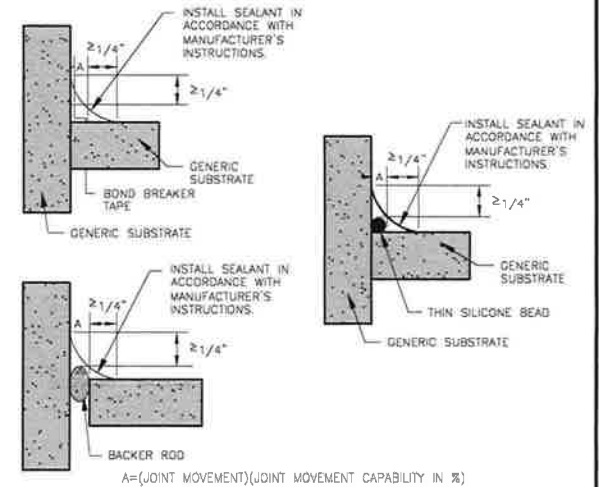
EXISTING CORNER/FILLET JOINT
STEP ONE



NOTES:

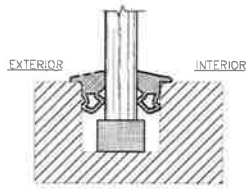
1. A SEALANT IS NO BETTER THAN THE SURFACE TO WHICH IT IS ATTACHED. PROPER PREPARATION IS CRITICAL.
2. THE MANUFACTURERS INSTRUCTIONS MUST BE CAREFULLY FOLLOWED TO OBTAIN PROPER SEALANT ADHESION
3. ADHERE TO THE JOINT DESIGN AND APPLICATION REQUIREMENTS
4. CONTRACTOR OPTIONS FOR BOND BREAKER/BACKER ROD FOR CORNER/FILLET JOINT

PREPARE CORNER/FILLET JOINT
STEP TWO

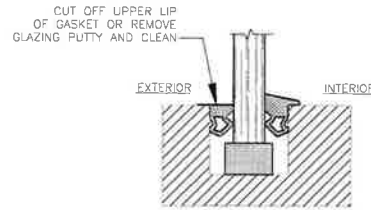


REPAIR CORNER/FILLET JOINT
STEP THREE

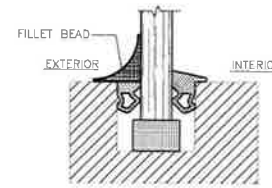
2 CORNER/FILLET JOINT
W201 NOT TO SCALE (TYPICAL)



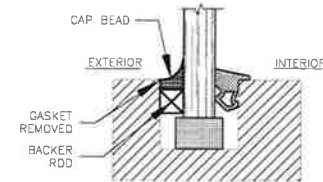
EXISTING WINDOW GLAZING
STEP ONE



PREPARE, CUT OFF LIP OF GASKET
STEP TWO



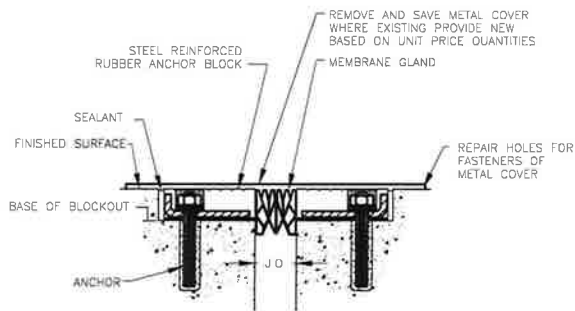
WET SEAL



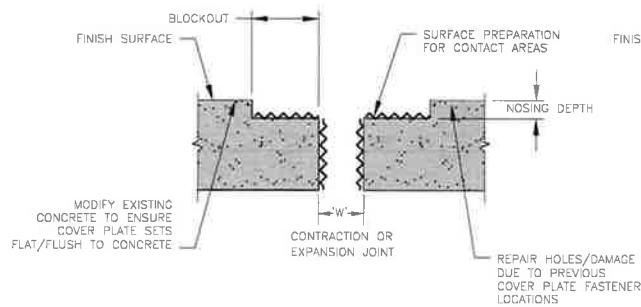
CAP BEAD

REPAIR CRACKS
STEP THREE

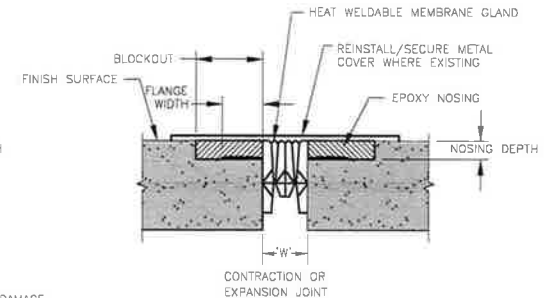
3 WET SEAL DETAIL
W202 NOT TO SCALE TYPICAL



EXISTING JOINT

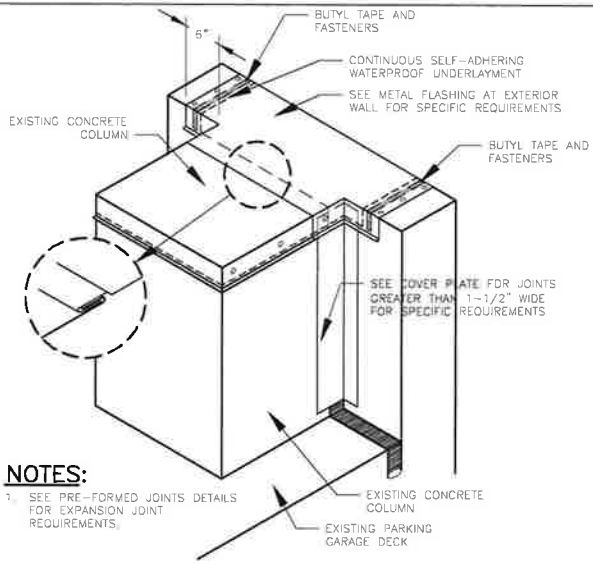


JOINT PREPARATION



REPAIR CONTRACTION / EXPANSION JOINT

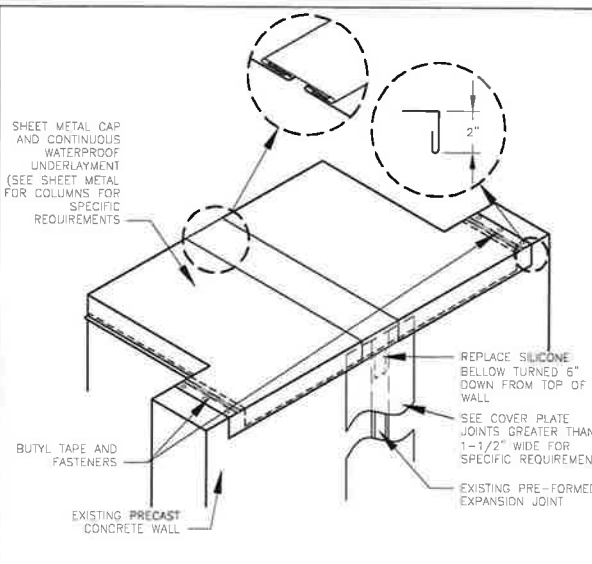
4 PREFABRICATED JOINT
W202 NOT TO SCALE (TYPICAL)



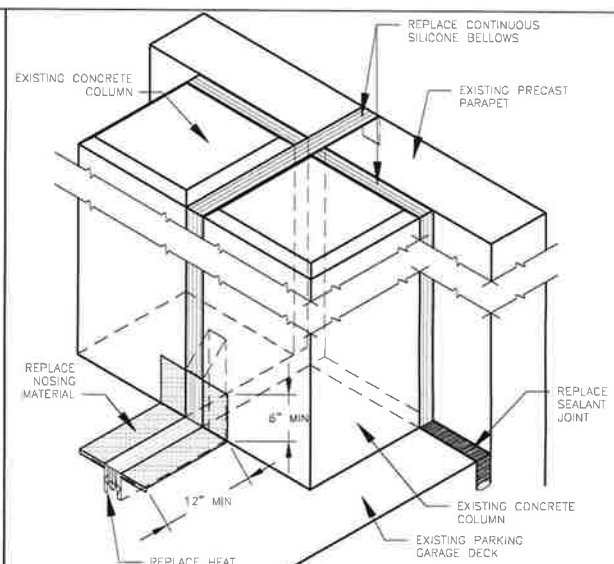
NOTES:

- 1. SEE PRE-FORMED JOINTS FOR EXPANSION JOINT REQUIREMENTS.

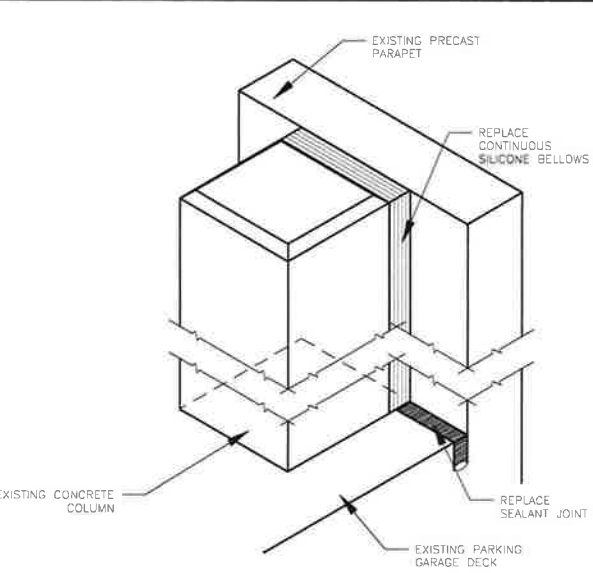
7 SHEET METAL FOR COLUMNS
W204 NOT TO SCALE (TYPICAL)



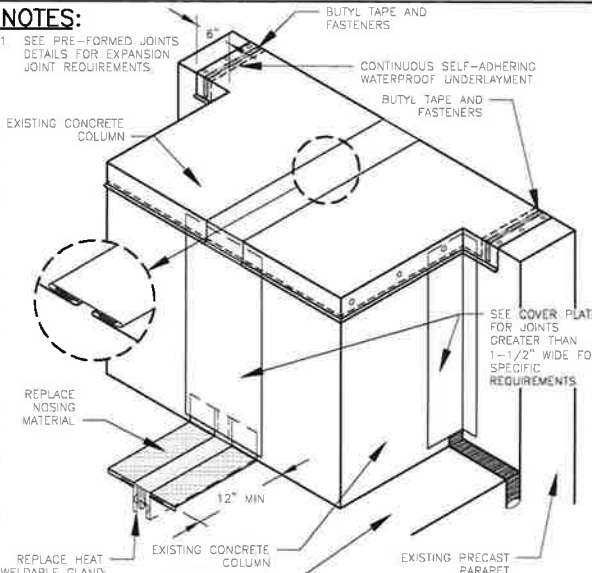
8 METAL FLASHINGS AT EXTERIOR WALL
W204 NOT TO SCALE (TYPICAL)



9 PRE-FORMED EXPANSION JOINT DETAIL
W204 NOT TO SCALE (TYPICAL)



10 PRE-FORMED EXPANSION JOINT DETAIL
W204 NOT TO SCALE (TYPICAL)



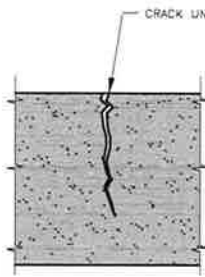
NOTES:

- 1. SEE PRE-FORMED JOINTS DETAILS FOR EXPANSION JOINT REQUIREMENTS.

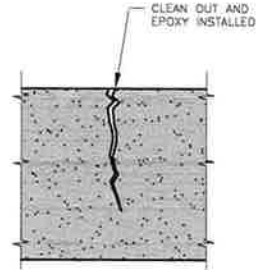
11 SHEET METAL FOR COLUMNS
W204 NOT TO SCALE (TYPICAL)

NOTES:

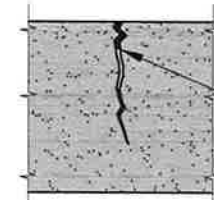
- 1. ALL PARAPET WALLS AND CONCRETE COLUMNS SHALL HAVE SEALANT JOINTS, PRE-FABRICATED JOINTS, AND BELLOWS REMOVED AND REPLACED.
- 2. A STAINLESS STEEL SHEET METAL CAP/COVER SHALL BE INSTALLED OVER ALL CONDITIONS.



EXISTING CRACK
STEP ONE

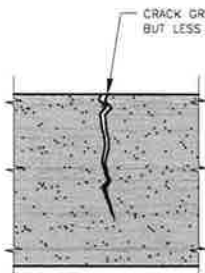


PREPARE CRACK / CLEAN OUT
STEP TWO

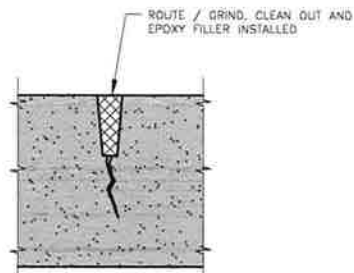


REPAIR CRACK
STEP THREE

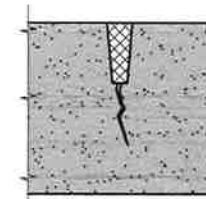
3 POUR-IN-PLACE (GRAVITY FEED) EPOXY REPAIR (LESS THAN 1/16")
S502 NOT TO SCALE (TYPICAL)



EXISTING CRACK
STEP ONE

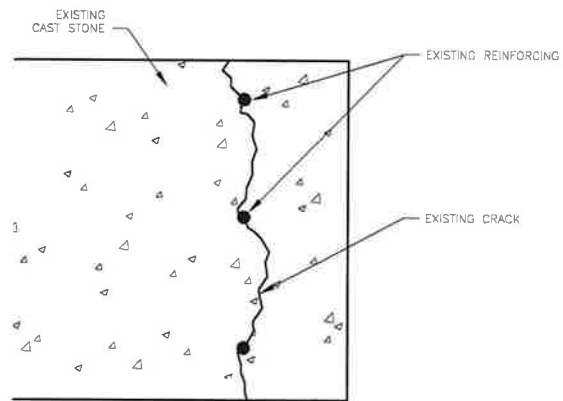


PREPARE CRACK / CLEAN OUT
STEP TWO



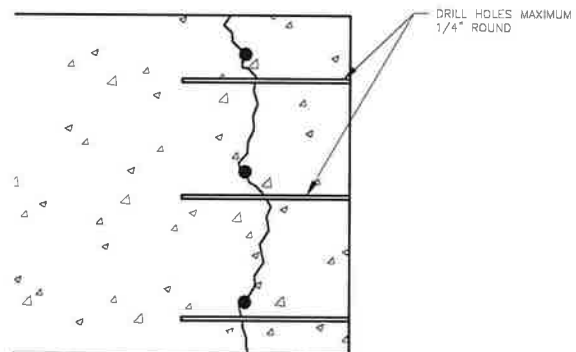
REPAIR CRACK
STEP THREE

4 POUR IN PLACE EPOXY (GRAVITY FEED) REPAIR (GREATER THAN 1/16")
S502 NOT TO SCALE (TYPICAL)



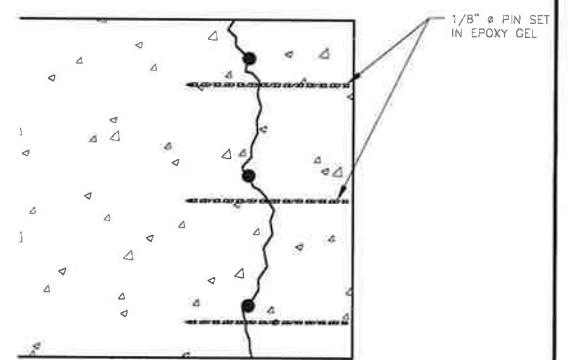
EXISTING CRACKED CAST STONE

STEP ONE



DRILL HOLES FOR PINS

STEP TWO



EPOXY PINNING

STEP THREE



EPOXY PINNING (RODS) OF CAST STONE IN PLACE

NOT TO SCALE

TYPICAL

INTENTIONALLY LEFT BLANK