

Engineering Services

Schematic Design Report

**Building Envelope
Consulting**

**The Metropolitan Condo
5320 N Sheridan Road
Chicago, IL**

BIM Consulting

Structural Engineering



Date: 9/23/2025

ZS Project Number: 257018.1

Forensic Engineering

Prepared for:

**Client: Briarwood Management
Client Address: 1055 W. Bryn Mawr Avenue
Suite F293
Chicago, IL 60660
Attn: David Slack**

Prepared by:
ZS LLC (ZS)

MILWAUKEE

6737 W Washington St. Suite 2120
Milwaukee, WI 53214
Phone 414.727.5000

CHICAGO

1525 East 53rd St. Suite 443
Chicago, IL 60615
Phone 773.688.4545

DENVER

7535 East Hampden Avenue, Suite 400
Denver, Colorado, 80231
Phone 720.334.8964

Contents

1.0 Introduction	2
2.0 PT Investigation	2
Investigation Approach	2
Investigation Methodology	3
Observations / Discussion	4
3.0 Schematic Drawings and Updated Budget.....	4
Table-1 Engineer's Estimate of Probable Repair Cost	5
4.0 Representative Photos	6

1.0 Introduction

The parking structure attached to the Metropolitan Condo building in Chicago, Illinois (Figure 1) is in need of repair. The assessment report created by ZS in March, 2025 recommended repairs to the Post-Tension (PT) structure, including slabs, walls, and columns; repairs to the CMU walls; and replacement of the waterproofing system currently in place. To aid in the preparation of the construction documents and to improve the budget recommendations, ZS performed investigative openings into the structure to test the PT tendons. With that information, Schematic Design (SD) drawings were produced and an updated budget prepared.



Figure 1: Project Location

This report summarizes the findings of the PT investigation and includes the SD drawings and updated budget

2.0 PT Investigation

Investigation Approach

ZS conducted an initial walkthrough of the structure on June 25, 2025. During this visit, locations of interest were marked with the intent of identifying PT tendons positioned close to the surface. These locations were selected based on a review of the provided structural drawings. According to the tendon profiles shown in the drawings, areas with approximately 1½ - 2 ½ inches of concrete cover above the tendons were targeted. It was determined that the highest likelihood of encountering main PT tendons was adjacent to or directly in front of

columns (Photo 1), as the primary tendon groupings are typically centered around these structural elements. The high point of the temperature tendons was located in line with the column.

While on site, several locations where tendons had been exposed at spalled concrete were tested to verify that the standard testing methodology would be valid at the Metropolitan parking structure. The test involves driving a metal tool into the tendon; a flat screwdriver and small pry bar were used for the testing (Photo 2 and Photo 3). If the tendon still holds tension, the tool will not separate the metal strands that make up the tendon. Where the tendon has failed, the tool will separate the strands (Photo 4).

Investigation Methodology

ZS was onsite July 14 through July 17, 2025 to perform the PT testing. Grove Masonry Maintenance was onsite to perform the concrete work. The test process was:

- Grove Masonry was tasked with making approximately 6" x 6"- 18" openings in the concrete slab to expose PT tendons within the marked locations.
- The surface of the concrete was cut into a 1 in deep hatched pattern using a concrete saw. This allowed for a jack hammer to carefully chip away the concrete to expose the intended tendon(s). Grove worked around existing rebar and other miscellaneous material within the concrete.
- Openings were limited to 3 ½ - 4 ½ inches deep. If no tendon was found, the area was reviewed by ZS and recorded accordingly. Once it was determined that the opening would not be excavated further, Grove Masonry was tasked with squaring off the opening as well as roughening the walls of the opening which allows for a stronger bond with the repair mortar. Once the opening was prepared, the repair mortar (SIKA 421) mortar was poured into the opening.
- If a tendon was discovered, the surrounding concrete was excavated so testing could occur. Once a tendon was exposed properly ZS performed tension testing. A test consisted of cutting the tendon's protective sheathing, exposing the steel cable (Photo 5). The tendon test described above was then performed by ZS. Depending on the result of the test, the tendon was prepared and the opening was patched following the guidelines described for locations where no tendon was found as follows:
 - A failing tendon required no preparation (Photo 6).
 - A passing tendon requires more excavation around the tendon in order to apply grease and waterproofing tape. Grease was applied into open sheathing and anywhere steel tendons were exposed. Waterproofing tape was wrapped around entire tendon where sheathing was cut or steel was exposed (Photo 7).
 - For tendons located at a depth of approximately 4½ inches, or in areas where adjacent tendons were present, concrete was not removed from the underside of the tendon. This approach was taken to avoid working too close to the bottom surface of the slab, which could risk creating holes through the entire slab or was limited by lack of access to the underside. Despite this, grease and waterproofing tape were applied to the top side of the tendon at the location of the cut sheathing to provide protection (Photo 8).

Observations / Discussion

In the four days of work, 75 PT tendons were tested; of those 75, 22 (30%) were discovered to be no longer holding tension.

There were 52 main reinforcing tendons tested; of those 52, 12 tendons (23%) were no longer holding tension. The majority of the failed tendons were in areas where the garage floor was flat. There were 23 temperature tendons tested (temperature tendons run perpendicular to the main reinforcing and help with load distribution). Ten of the temperature tendons were found to be failed (43%). Those ten were evenly distributed throughout the structure. Based on a detailed review of the original construction plans, the total number of tendons in this structure is 1,010 (562 main tendons and 448 temperature tendons). Therefore, and based on the test results, ZS estimates 200 tendons will require repair.

That there were more failed tendons in the flat areas of the structure suggests runoff from vehicles may not be affectively draining from those areas of the parking structure. A properly maintained traffic coating as well as power-washing of the floor to remove road salt deposits will be essential in maintaining the health of the structure.

3.0 Schematic Drawings and Updated Budget

SD drawings based on the recommendations made in ZS' initial report were developed and shared with contractors who work in the Chicago area and perform PT repairs to create a more detailed budget for the parking structure repairs. The drawings are included with this report. Table 1 below is a summary of the repairs as detailed in the drawings along with the revised budget.

As part of developing the SD drawings set and discussing the project with contractors, ZS reviewed the possibility of phasing the work to allow for some parking stalls to remain available while the work is being performed. No practical way of phasing the work was found. The repairs will be through slab, meaning that there will be work on the underside of the slab at each PT repair. Therefore, the level that is being worked on as well as the level below will be inaccessible for safety reasons.

While it may be technically possible to park cars on the 1st and 2nd levels during work on the 5th and 6th levels, contractors will require the entire structure to be vacated during the PT repair process. This is due to safety concerns, liability insurance requirements, and the fact that destressing the tendons temporarily weakens the concrete slab.

Table-1 Engineer's Estimate of Probable Repair Cost

Repair Item	Description	Quantity	Unit Price	Total Cost
G1	Mobilization and General Conditions	LS	LS	\$500,000
1	Repair Concrete Spalls at cast on grade horizontal surface	15 sqft	\$100/sqft	\$1,500
2	Repair concrete spalls on vertical surface (wall)	360 sqft	\$200/sqft	\$72,000
3	Repair concrete spalls on overhead surface (underside of slab)	60 sqft	\$200/sqft	\$12,000
4	Repair concrete spalls on column surface	50 sqft	\$200/sqft	\$10,000
5	Repair Cracks in concrete slab on grade	3,000 lnft	\$12/lnft	\$36,000
6	Install new traffic coating	53,650 sqft	\$6/sqft	\$321,900
7	Construction joint in slab on grade	250 lnft	\$16/lnft	\$4,000
8	Repair cracks in concrete wall or columns	3,330 lnft	\$16/lnft	\$53,280
9	Remove and repair existing repair patch or spalled concrete	16,000 sqft	\$60/sqft	\$960,000
10	Repair cracks in PT slab floor	340 lnft	\$12/lnft	\$4,080
11	Install water repellent sealer on cast on grade slab	25,000 sqft	\$1/sqft	\$25,000
12	Pt tendon repair	200 ea	\$13,600ea	\$2,720,000
Sub Total				\$4,720,000
Engineering Construction Administration				\$140,000
10% Contingency				\$470,000
Total				\$5,330,000

4.0 Representative Photos



Photo 1: Main Tendon Location Markings – Green Arrow Indicates Temperature Tendon Location Marking



Photo 2: Tendon Exposed at Concrete Spall



Photo 3: Tenson Testing



Photo 4: Failed Tendon Test



Photo 5: Cut in Tendon Sheathing

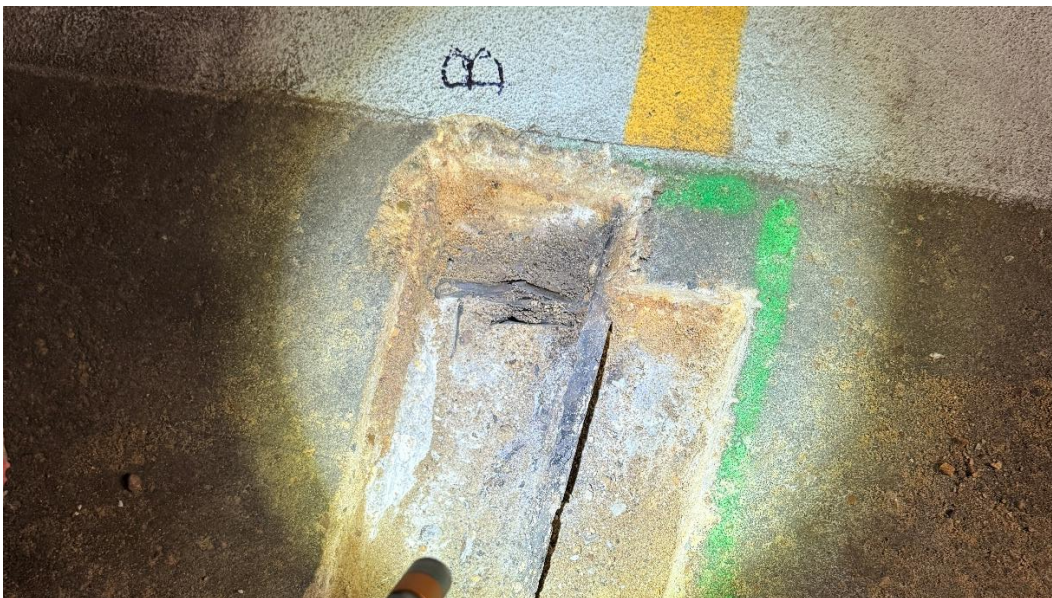


Photo 6: Abandoned Failed Tendon



Photo 7: Good Tendon; Greased and Wrapped



Photo 8: Tendon Protection Where Tendon Could Not be Fully Wrapped

THE METROPOLITAN PARKING STRUCTURE REPAIRS

SCHEMATIC DRAWINGS

5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS

OWNER:

THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

ARCHITECT/ENGINEER:

ZS LLC
1525 EAST 53RD SREET, SUITE 815
CHICAGO, ILLINOIS 60615





ARCHITECTURAL ENGINEERING
1525 East 53rd Street, Suite 827
Chicago, IL 60615
Phone: (414) 727-5000
Fax: (414) 727-6666
www.zsllc-usa.com

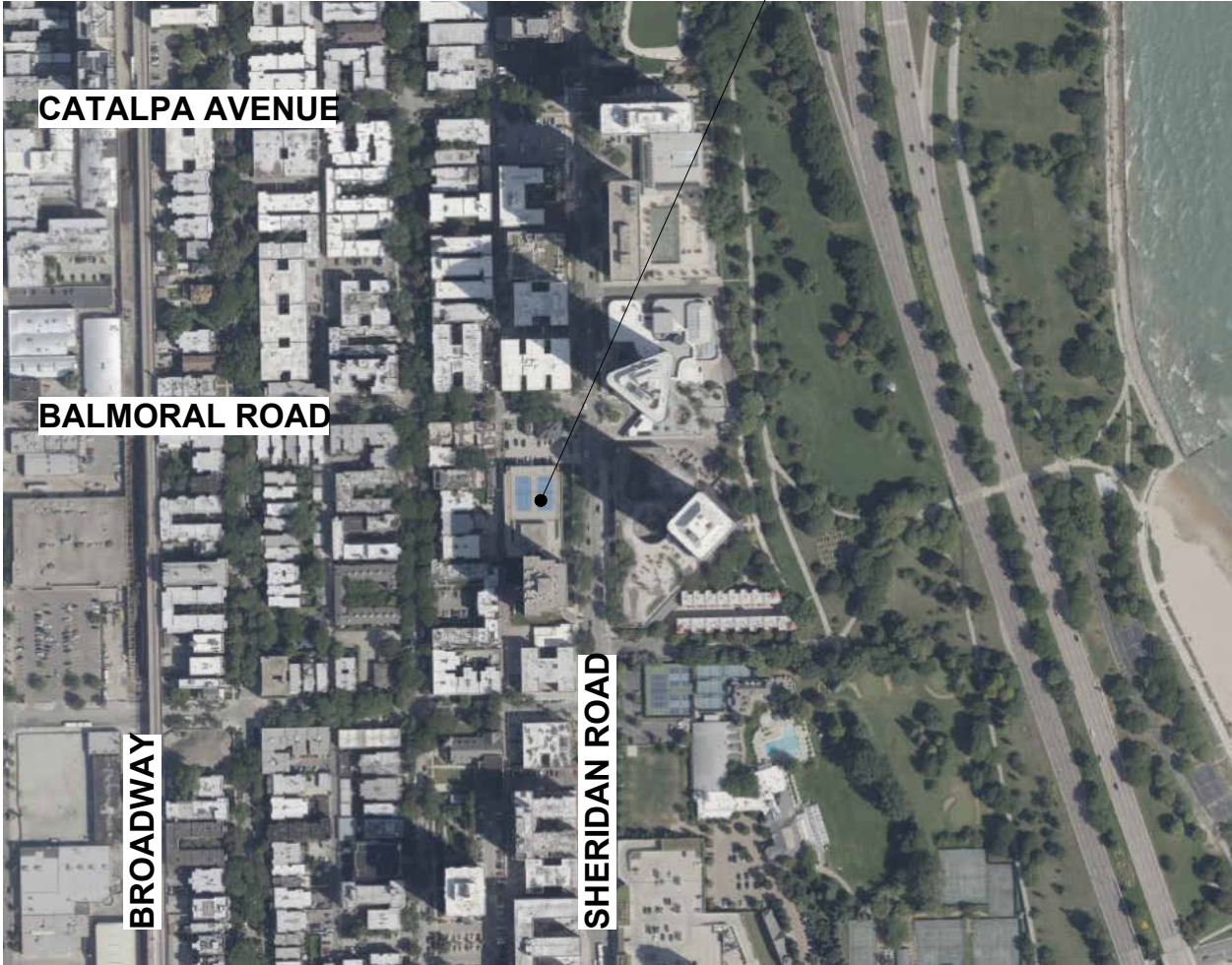
THE METROPOLITAN PARKING STRUCTURE REPAIRS

5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS

INDEX OF DRAWINGS:

Sheet Number	Sheet Name
S001	TITLE PAGE
S002	GENERAL NOTES
S003	SITE UTILIZATION PLAN
S004	REPAIR PLAN - LEVEL 1 AND LEVEL 2
S005	REPAIR PLAN - LEVEL 3 AND LEVEL 4
S006	REPAIR PLAN - LEVEL 5 AND LEVEL 6
S007	REPAIR PLAN - PARTIAL LEVEL 6
S008	REPAIR DETAILS
S009	REPAIR DETAILS
S010	REPAIR DETAILS
S011	PT ELEVATIONS
S012	PT DETAILS

LOCATION MAP:



SITE LOCATION

No.	Description	Date
1	Schematic Drawings	09/23/2025

Owner:

THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

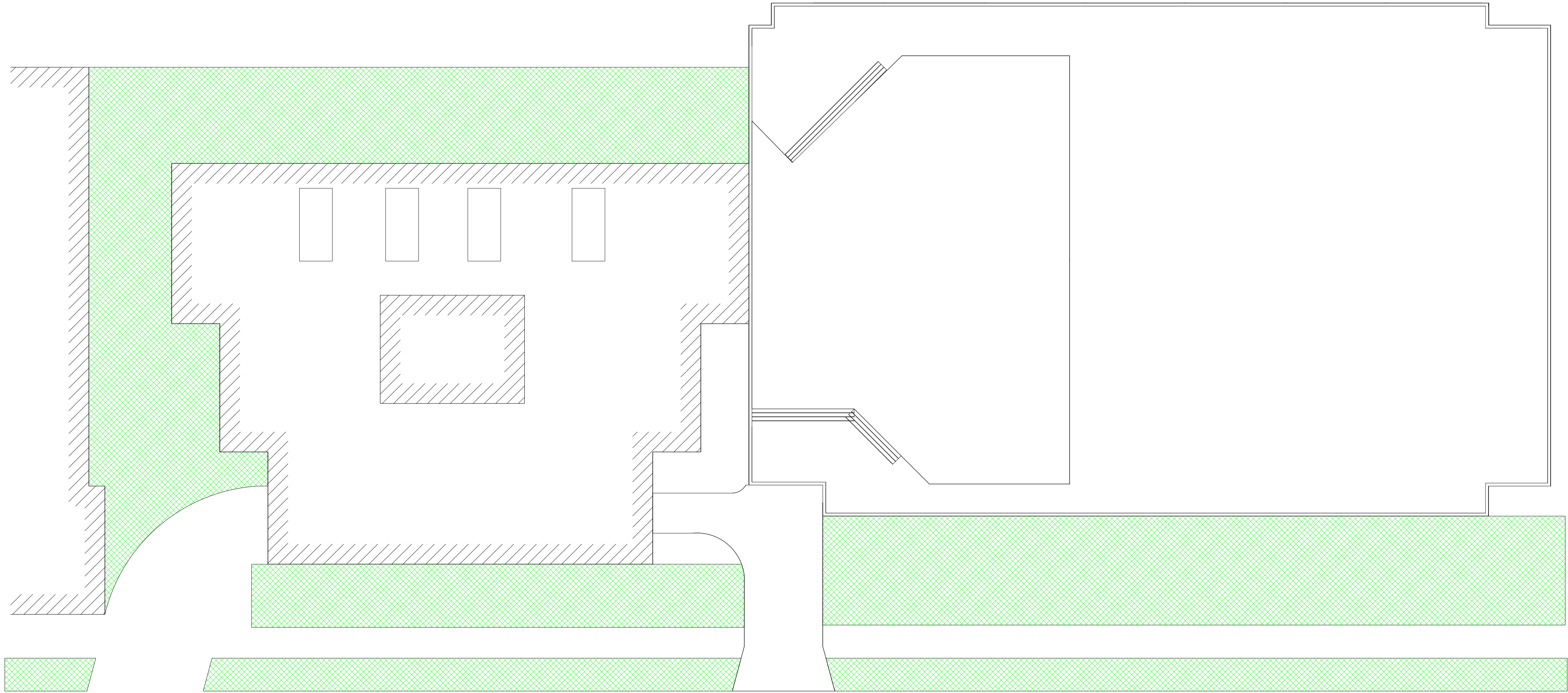
TITLE PAGE

Project number	257018
Date	SEPTEMBER 23, 2025

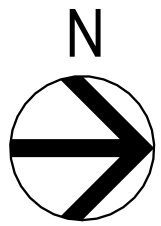
S001

THE METROPOLITAN PARKING STRUCTURE REPAIRS

5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS



1 SITE UTILIZATION PLAN
S003 1/16" = 1'-0"



No.	Description	Date
1	Schematic Drawings	09/23/2025

Owner:
THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

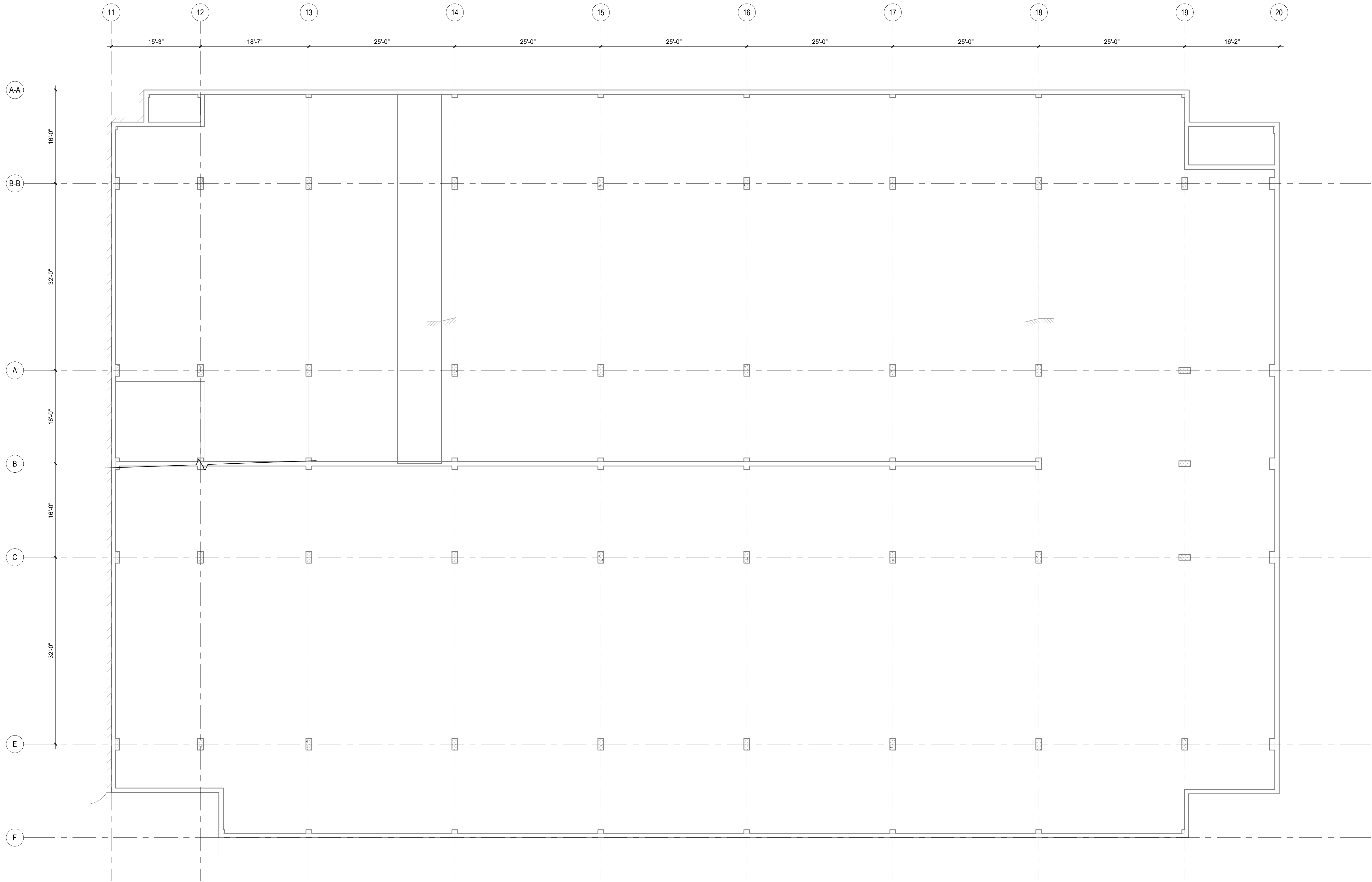
SITE UTILIZATION
PLAN

Project number 257018
Date SEPTEMBER 23, 2025

S003

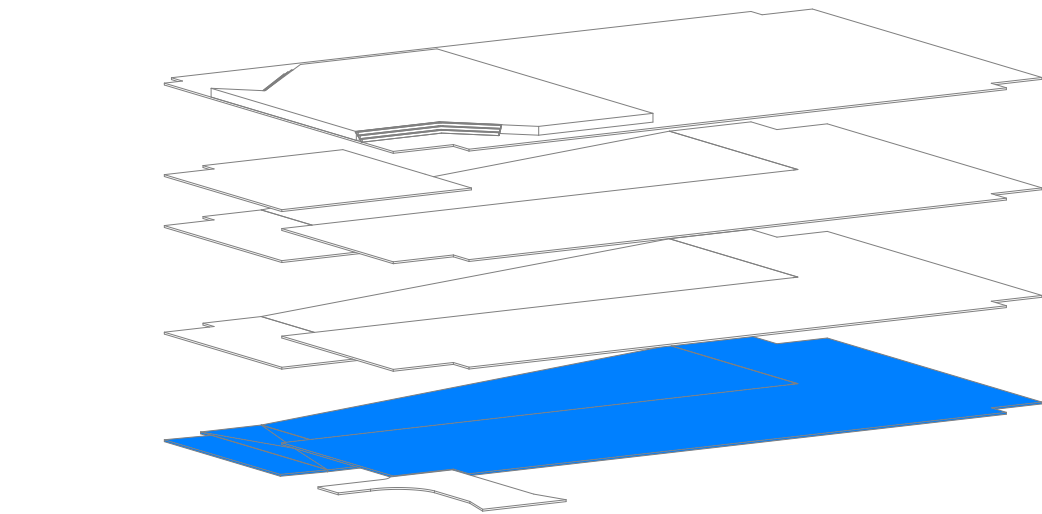
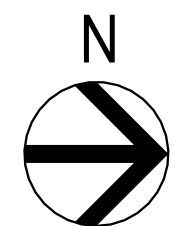
THE METROPOLITAN PARKING STRUCTURE REPAIRS

5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS



KEYED NOTES LEVEL 1 AND LEVEL 2				
NO.	DESCRIPTION	REPAIR DETAILS	QUANTITY	UNITS
1	REPAIR CONCRETE SPALLS AT CAST ON GRADE HORIZONTAL SURFACE; PREPARE SURFACE AND PATCH CONCRETE	1/S008	15	SQFT
2	REPAIR CONCRETE SPALLS ON VERTICAL SURFACE (WALL); PREPARE SURFACE AND PATCH CONCRETE	6/S008 5/S009	61	SQFT
3	REPAIR CONCRETE SPALLS ON OVERHEAD SURFACE (UNDERSIDE OF SLAB); PREPARE SURFACE AND PATCH CONCRETE	4/S008 5/S008	10	SQFT
4	REPAIR CONCRETE SPALL ON COLUMN SURFACE; PREPARE SURFACE AND PATCH CONCRETE	1/S009 2/S009	15	SQFT
5	REPAIR CRACKS IN CONCRETE SLAB ON GRADE; ROUT AND SEAL CRACK	8/S008	3000	LNFT
7	CONSTRUCTION JOINT IN CONCRETE SLAB ON GRADE	8/S008	250	LNFT
8	REPAIR CRACKS IN CONCRETE WALL OR COLUMN; ROUT AND SEAL CRACK	8/S009	177	LNFT
11	INSTALL WATER REPELLENT ON CAST ON GRADE SLAB	2/S008 7/S009	25000	SQFT

1
S004 REPAIR PLAN - LEVEL 1 AND LEVEL 2 1/8" = 1'-0"



2
S004 KEYPLAN - LEVELS 1 AND 2

NOTE IN REGARD TO EXISTING CONDITIONS
INFORMATION SHOWN ON THESE DRAWINGS, WITH RESPECT TO EXISTING CONDITIONS, TO THE BEST OF OUR KNOWLEDGE, REPRESENT THE GENERAL AND CURRENT FIELD CONDITIONS. ZS MAKES NO WARRANTY AS TO THE COMPLETENESS OR ACCURACY OF ANY AND ALL EXISTING CONDITIONS SHOWN ON THESE DRAWINGS. CONTRACTORS SHALL VERIFY ALL EXISTING CONDITIONS RELATED TO THE NEW WORK AND REPORT TO THE AE FOR REVIEW ANY DISCREPANCIES BEFORE PERFORMING ANY WORK. ANY WORK PERFORMED PRIOR TO AE REVIEW AND SUBSEQUENT RESOLUTION OF DISCREPANCIES BY THE AE IS SUBJECT TO REMOVAL AND REPLACEMENT AT NO ADDITIONAL COST OR BURDEN TO THE CONTRACT.

No.	Description	Date
1	Schematic Drawings	09/23/2025

Owner:
THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

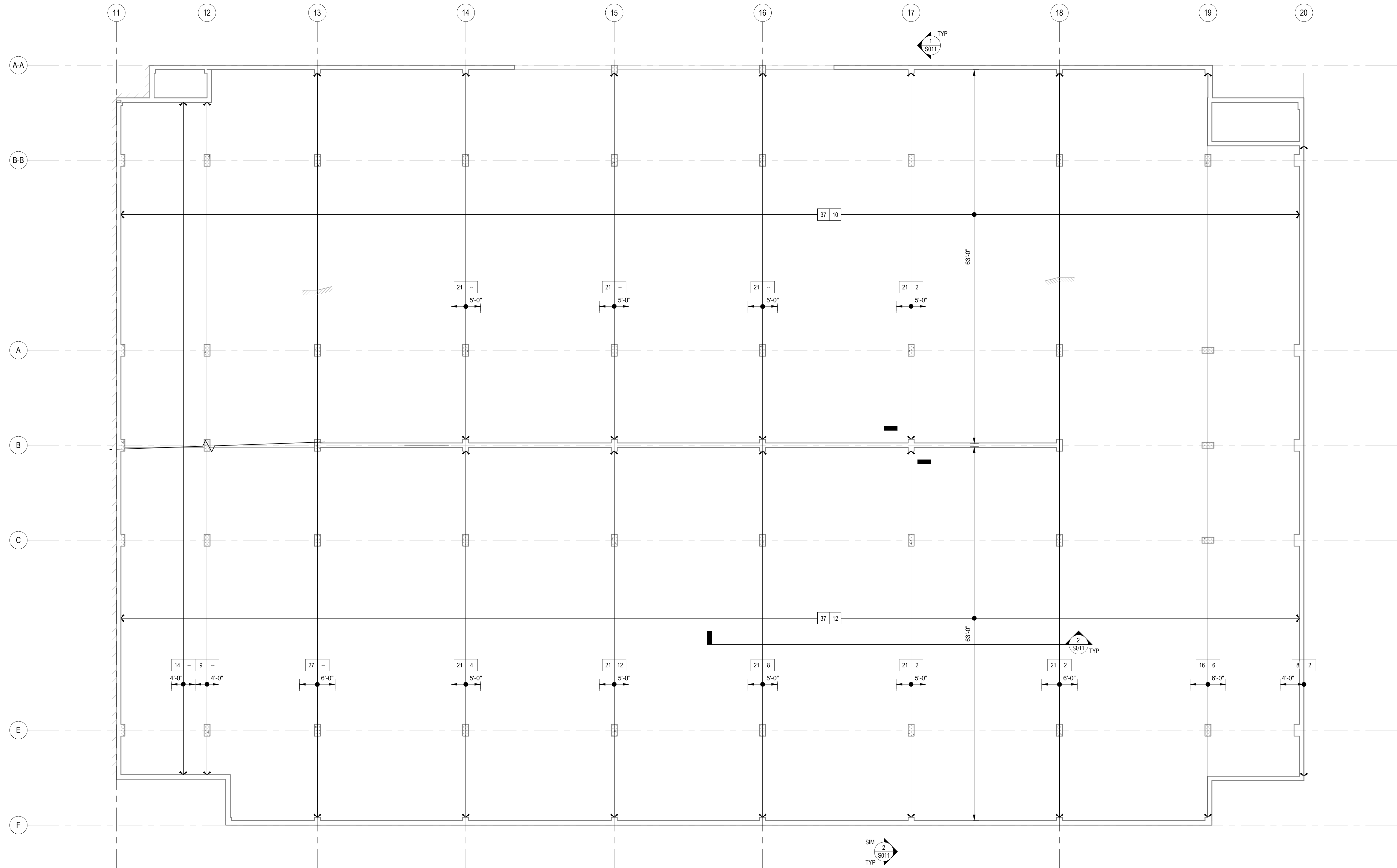
REPAIR PLAN - LEVEL 1 AND LEVEL 2

Project number 257018
Date SEPTEMBER 23, 2025

S004

THE METROPOLITAN PARKING STRUCTURE REPAIRS

5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS



1
S005
REPAIR PLAN - LEVEL 3 AND LEVEL 4
1/8" = 1'-0"

KEYED NOTES LEVEL 3 AND LEVEL 4				
NO.	DESCRIPTION	REPAIR DETAILS	QUANTITY	UNITS
2	REPAIR CONCRETE SPALLS ON VERTICAL SURFACE (WALL); PREPARE SURFACE AND PATCH CONCRETE	6/5008 5/5009	230	SQFT
4	REPAIR CONCRETE SPALL ON COLUMN SURFACE; PREPARE SURFACE AND PATCH CONCRETE	1/5009 2/5009	20	SQFT
6	PT SLAB COATING; PREPARE CONCRETE SURFACE AND INSTALL TRAFFIC COATING	3/5008 7/5009	25000	SQFT
8	REPAIR CRACKS IN CONCRETE WALL OR COLUMN; ROUT AND SEAL CRACK	8/5009	850	LNFT
9	REMOVE EXISTING REPAIR PATCH OR SPALLED CONCRETE; PREPARE SURFACE; INSTALL NEW CONCRETE PATCH	1/5008	7400	SQFT
10	REPAIR CRACKS IN CONCRETE PT SLAB FLOOR; ROUT AND SEAL CRACK	6/5009	210	LNFT

PT TENDON LEGEND

EXISTING TENDON ANCHOR LOCATION

EXPECTED QUANTITY OF TENDONS THAT REQUIRE REPAIRS

EXPECTED QUANTITY OF EXISTING TENDONS IN GROUP

WIDTH OF EXISTING TENDON GROUP

• PT ANCHOR LOCATION AND QUANTITIES PROVIDED FOR BIDDING PURPOSES ONLY. ALL TENDON LOCATIONS SHOWN ON PLAN TO BE EXPOSED AND TESTED FOR TENSION

• PT REPAIR DETAILS PROVIDED FOR DESIGN INTENT. FINAL REPAIRS AND SEQUENCING THE RESPONSIBILITY OF PT REPAIR CONTRACTOR

• PT REPAIR CONTRACTOR TO SUBMIT RESTRESSING PLAN FOR ENGINEER'S APPROVAL. PLAN TO INCLUDE SEQUENCING FOR ADJACENT SLAB OPENINGS SO AS NOT TO OVERSTRESS REMAINING CONCRETE WITH PT FORCE

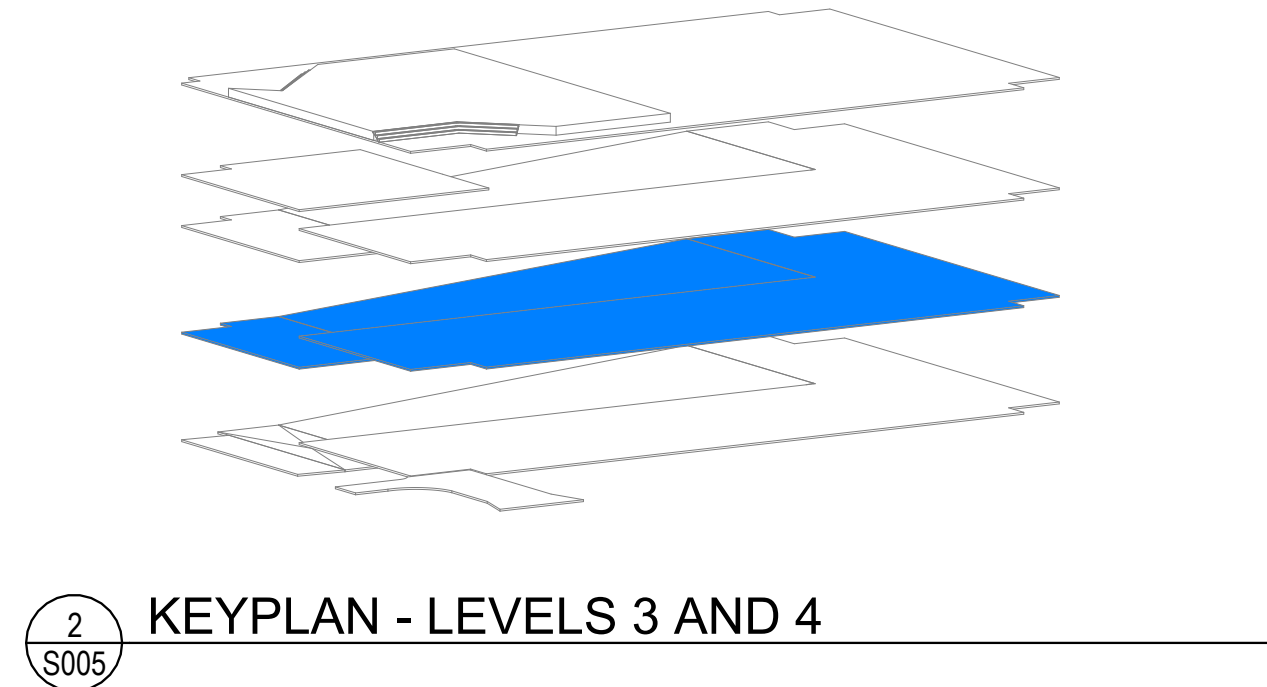
• REPAIR ALL DAMAGED TENDON SHEATHING PER DETAILS 1 / S012 2 / S012 AND 3 / S012

• REPLACE PT TENDON ANCHORS AS REQUIRED PER DETAIL 4 / S012

• REPLACE DAMAGED TENDON SECTIONS. SPLICE AS REQUIRED PER DETAIL 6 / S012 7 / S012 AND 9 / S012

• PROVIDE TEMPORARY LOCK-OFF ANCHORS TO MAINTAIN PT FORCES IN AREAS NOT SHORED OR AS REQUIRED BY CONTRACTOR PER DETAIL 8 / S012

• PROVIDE DOG-BONE STYLE COUPLERS WHERE TENDON TO BE RE-STRESSED AT MID-SPAN PER DETAIL 5 / S012



NOTE IN REGARD TO EXISTING CONDITIONS

INFORMATION SHOWN ON THESE DRAWINGS, WITH RESPECT TO EXISTING CONDITIONS, TO THE BEST OF OUR KNOWLEDGE, REPRESENT THE GENERAL AND CURRENT FIELD CONDITIONS. ZS MAKES NO WARRANTY AS TO THE COMPLETENESS OR ACCURACY OF ANY AND ALL EXISTING CONDITIONS SHOWN ON THESE DRAWINGS. CONTRACTOR(S) SHALL VERIFY ALL EXISTING CONDITIONS RELATED TO THE NEW WORK AND REPORT TO THE AE FOR REVIEW ANY DISCREPANCIES BEFORE PERFORMING ANY WORK. ANY WORK PERFORMED PRIOR TO AE REVIEW AND SUBSEQUENT RESOLUTION OF DISCREPANCIES BY THE AE IS SUBJECT TO REMOVAL AND REPLACEMENT AT NO ADDITIONAL COST OR BURDEN TO THE CONTRACT.

No.	Description	Date
1	Schematic Drawings	09/23/2025

Owner:

THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

**REPAIR PLAN -
LEVEL 3 AND
LEVEL 4**

Project number 257018
Date SEPTEMBER 23, 2025

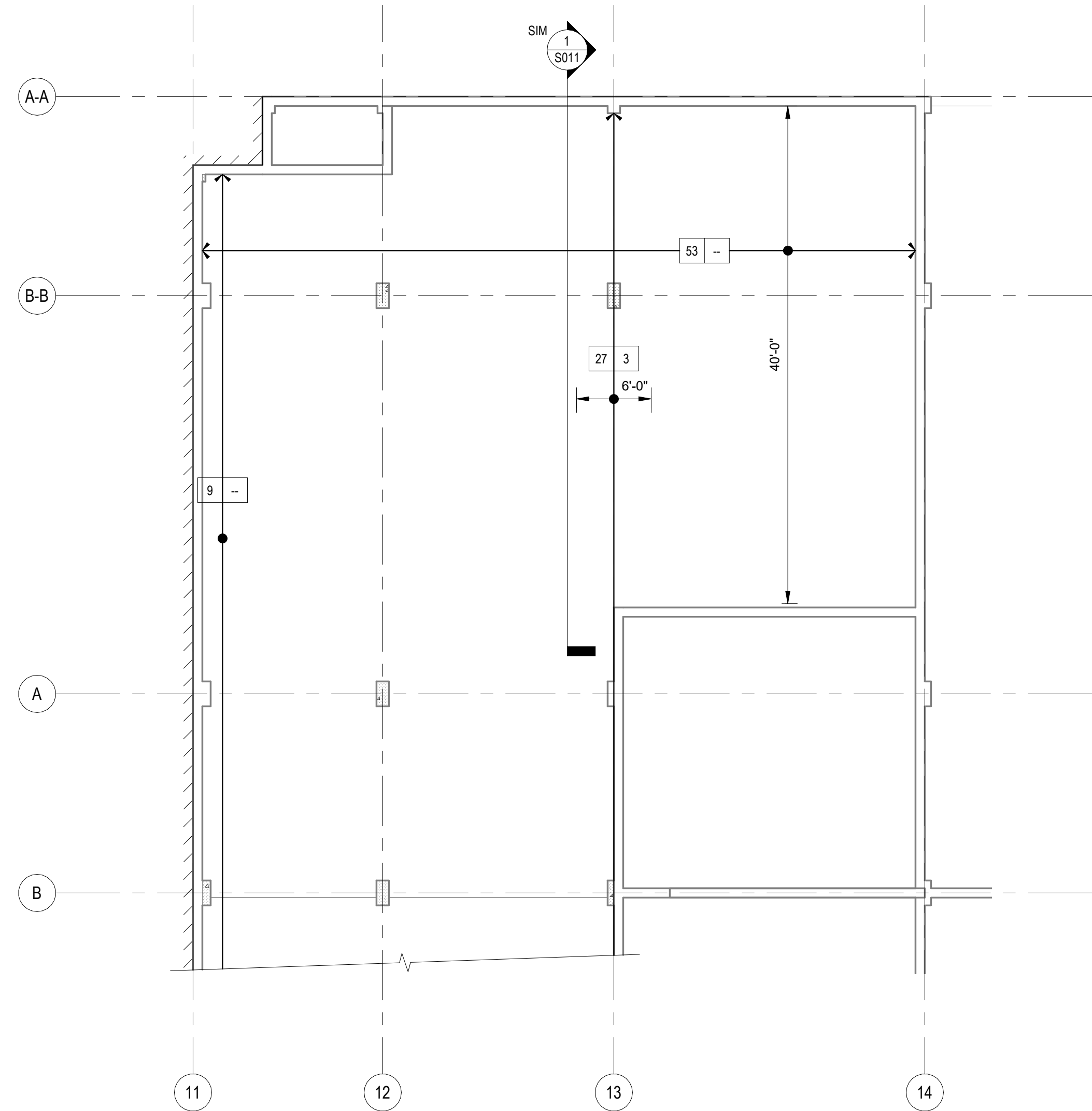
S005



S006

THE METROPOLITAN PARKING STRUCTURE REPAIRS

5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS



1
S007
REPAIR PLAN - PARTIAL LEVEL 6
1/8" = 1'-0" N

KEYED NOTES LEVEL 6				
NO.	DESCRIPTION	REPAIR DETAILS		UNITS
6	PT SLAB COATING; PREPARE CONCRETE SURFACE AND INSTALL TRAFFIC COATING	3/S008 7/S009	3650	SQFT
9	REMOVE EXISTING REPAIR PATCH OR SPALLED CONCRETE; PREPARE SURFACE; INSTALL NEW CONCRETE PATCH	1/S008	120	SQFT

PT TENDON LEGEND

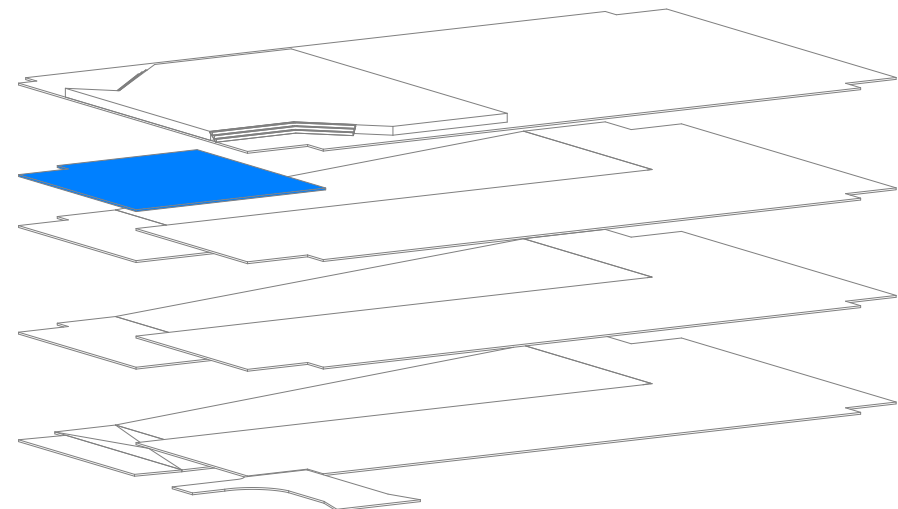
EXISTING TENDON ANCHOR LOCATION

EXPECTED QUANTITY OF TENDONS THAT REQUIRE REPAIRS

EXPECTED QUANTITY OF EXISTING TENDONS IN GROUP

WIDTH OF EXISTING TENDON GROUP

- PT ANCHOR LOCATION AND QUANTITIES PROVIDED FOR BIDDING PURPOSES ONLY. ALL TENDON LOCATIONS SHOWN ON PLAN TO BE EXPOSED AND TESTED FOR TENSION
- PT REPAIR DETAILS PROVIDED FOR DESIGN INTENT. FINAL REPAIRS AND SEQUENCING THE RESPONSIBILITY OF PT REPAIR CONTRACTOR
- PT REPAIR CONTRACTOR TO SUBMIT RESTRESSING PLAN FOR ENGINEER'S APPROVAL. PLAN TO INCLUDE SEQUENCING FOR ADJACENT SLAB OPENINGS SO AS NOT TO OVERSTRESS REMAINING CONCRETE WITH PT FORCE.
- REPAIR ALL DAMAGED TENDON SHEATHING PER DETAILS 1 / S012
- 2 / S012 AND 3 / S012
- REPLACE PT TENDON ANCHORS AS REQUIRED PER DETAIL 4 / S012
- REPLACE DAMAGED TENDON SECTIONS, SPLICE AS REQUIRED PER DETAIL 6 / S012 - 7 / S012 AND 9 / S012
- PROVIDE TEMPORARY LOCK-OFF ANCHORS TO MAINTAIN PT FORCES IN AREAS NOT SHORED OR AS REQUIRED BY CONTRACTOR PER DETAIL 8 / S012
- PROVIDE DOG-BONE STYLE COUPLERS WHERE TENDON TO BE RE-STRESSED AT MID-SPAN PER DETAIL 5 / S012



2
S007
KEYPLAN - LEVEL 6

NOTE IN REGARD TO EXISTING CONDITIONS
INFORMATION SHOWN ON THESE DRAWINGS, WITH RESPECT TO EXISTING CONDITIONS, TO THE BEST OF OUR KNOWLEDGE, REPRESENT THE GENERAL AND CURRENT FIELD CONDITIONS. ZS MAKES NO WARRANTY AS TO THE COMPLETENESS OR ACCURACY OF ANY AND ALL EXISTING CONDITIONS SHOWN ON THESE DRAWINGS. CONTRACTOR(S) SHALL VERIFY ALL EXISTING CONDITIONS RELATED TO THE NEW WORK AND REPORT TO THE AE FOR REVIEW ANY DISCREPANCIES BEFORE PERFORMING ANY WORK. ANY WORK PERFORMED PRIOR TO AE REVIEW AND SUBSEQUENT RESOLUTION OF DISCREPANCIES BY THE AE IS SUBJECT TO REMOVAL AND REPLACEMENT AT NO ADDITIONAL COST OR BURDEN TO THE CONTRACT.

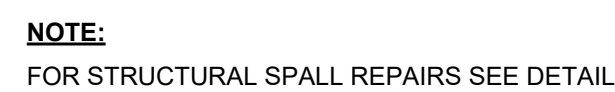
No.	Description	Date
1	Schematic Drawings	09/23/2025

Owner:
THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

REPAIR PLAN - PARTIAL LEVEL 6

Project number 257018
Date SEPTEMBER 23, 2025

S007



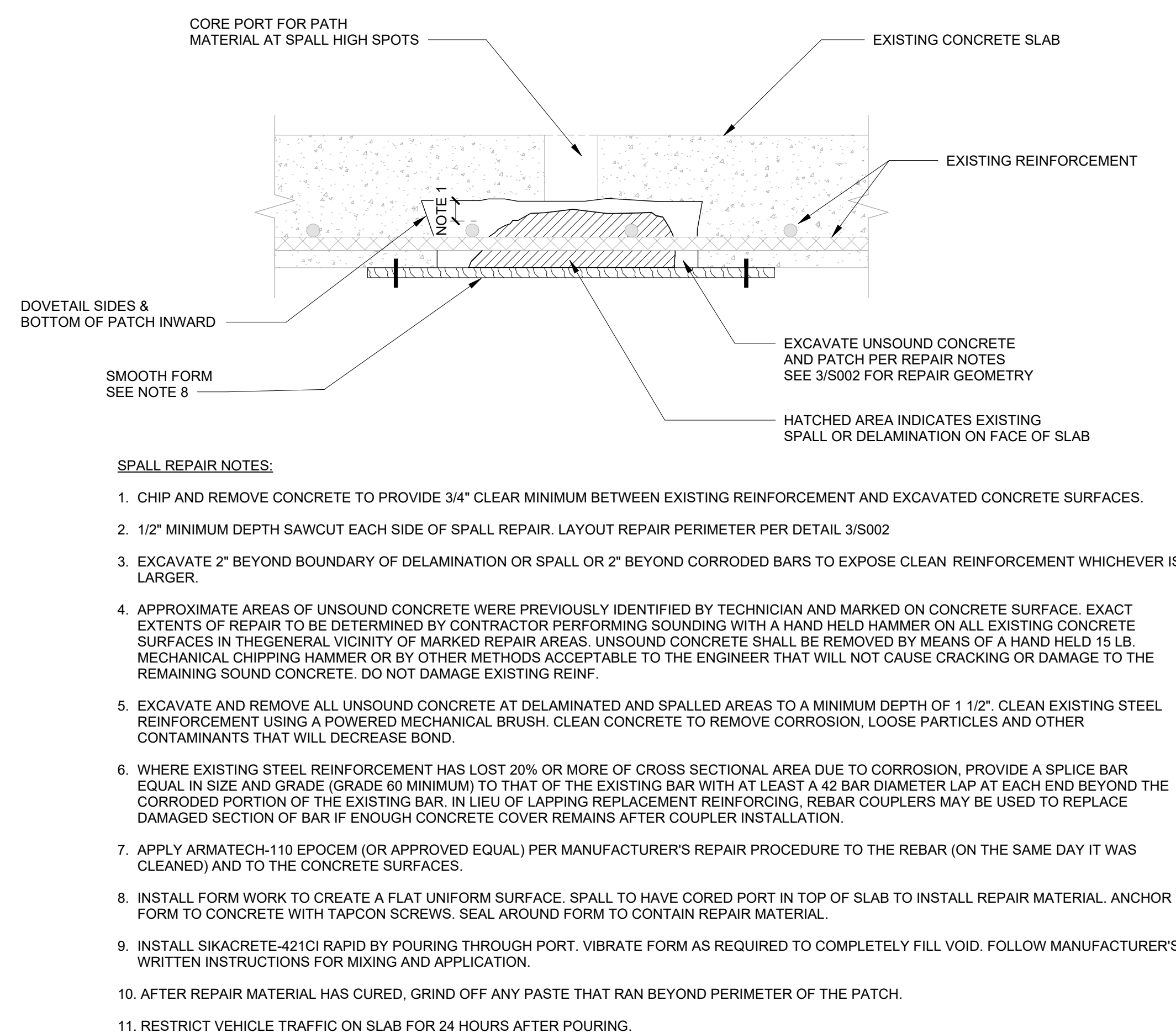
1 CONCRETE SURFACE REPAIR
S008 6" = 1'-0"



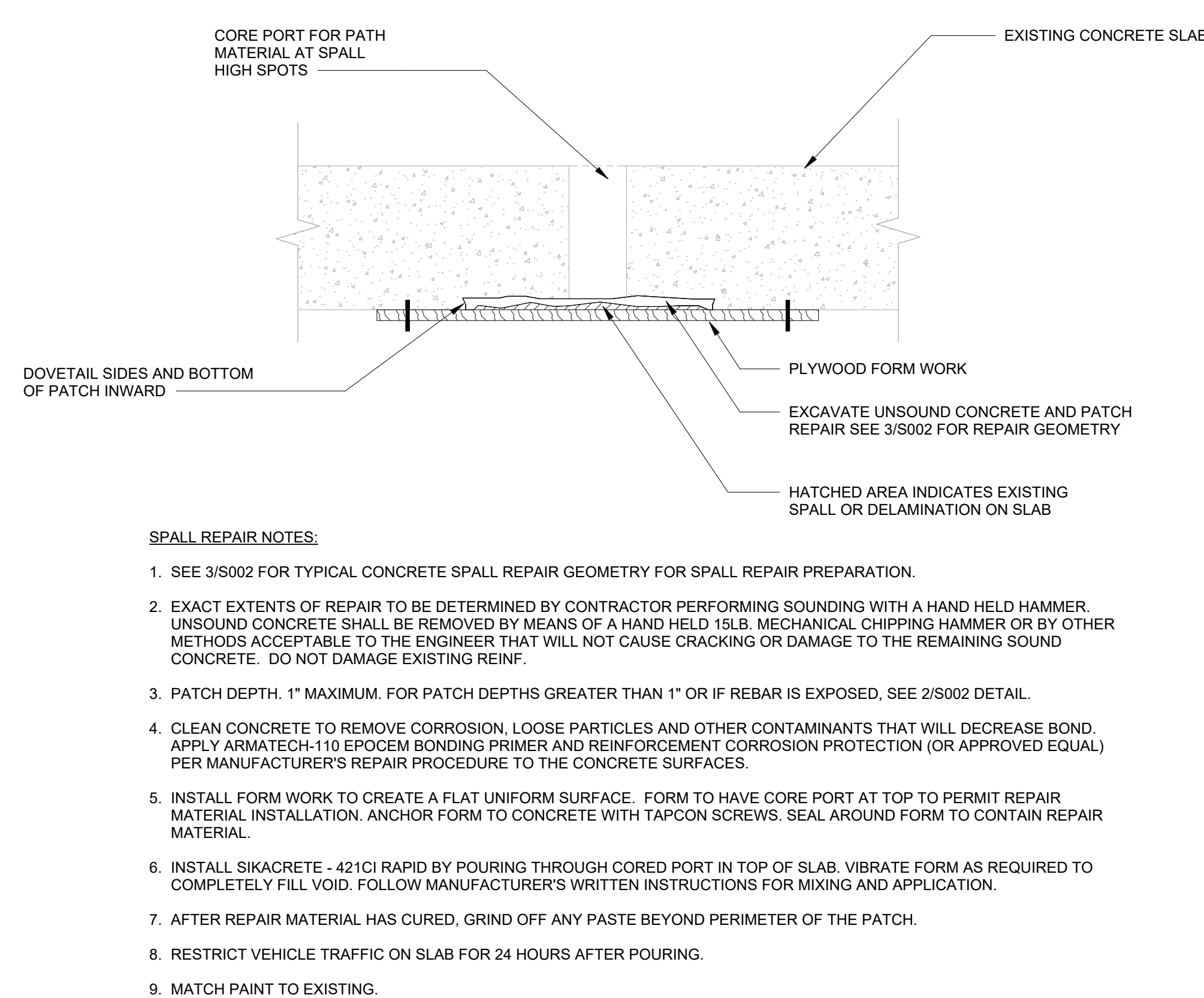
3
S008

TYPICAL EPOXY HYBRID DECK SYSTEM AT POST
TENSIONED STRUCTURE

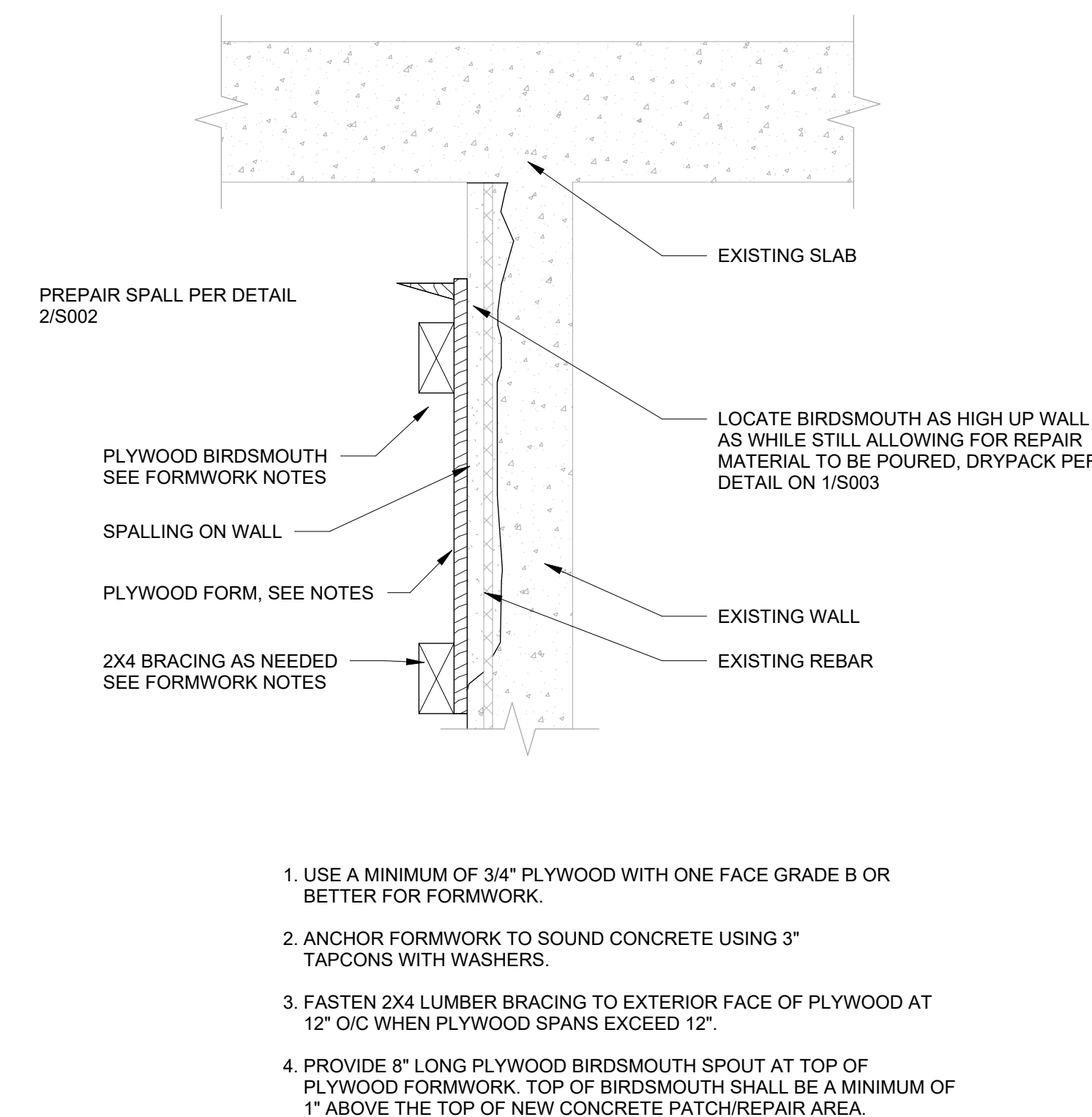
6" = 1'-0"



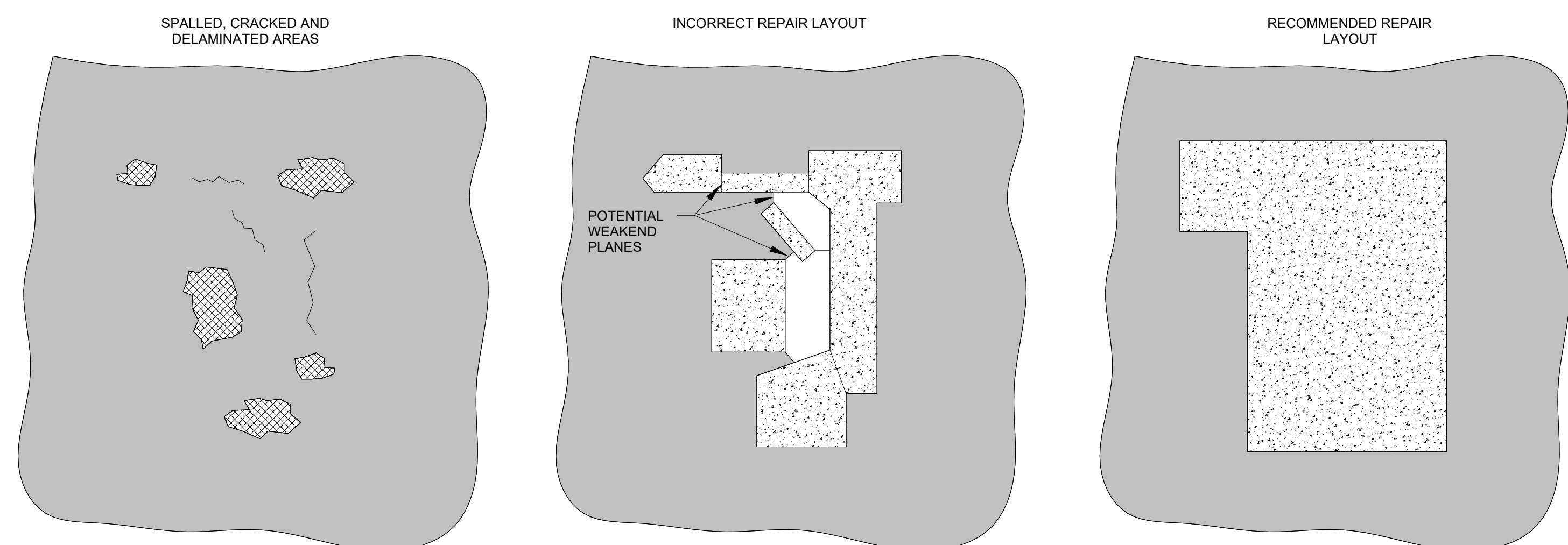
4 CONCRETE SPALL REPAIR DETAIL DEEPER THAN 1"
S008 1 1/2" = 1'-0"



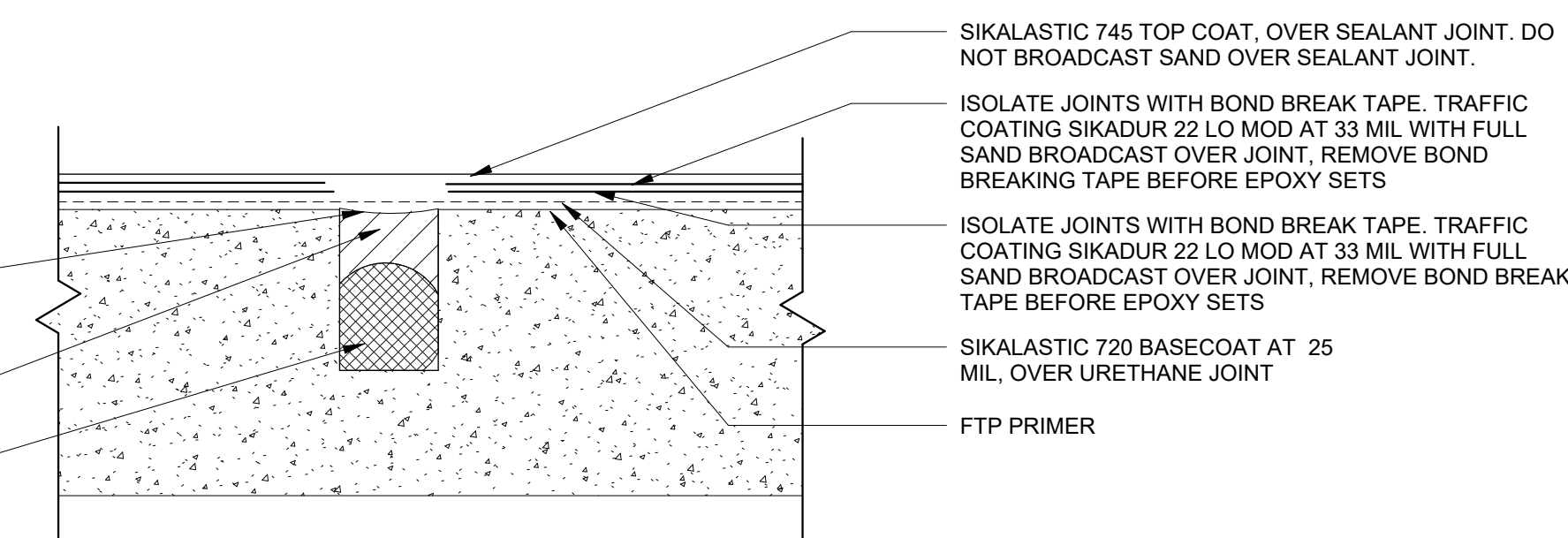
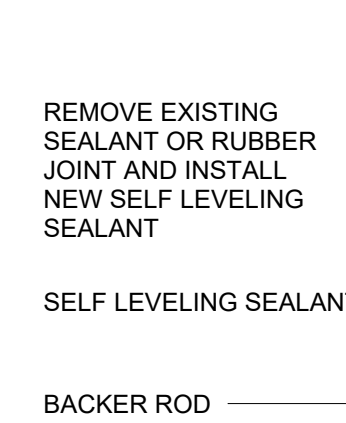
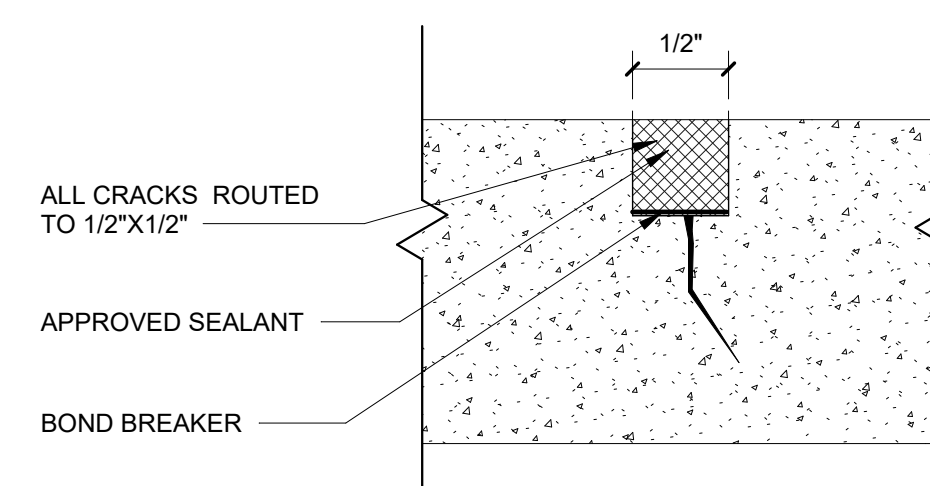
5 CONCRETE SPALL REPAIR DETAIL 1" DEEP & LESS
S008 1 1/2" = 1'-0"



6 WALL REPAIR DETAIL
S008 1 1/2" = 1'-0"



7 REPAIR GEOMETRY LAYOUT DETAIL FOR SPALLED, CRACKED, AND DELAMINATED AREAS
S008 1" = 1'-0"



NOTES:

1. INSTALL ALL NEW BACKER ROD AND ELASTOMERIC SELF LEVELING SEALANT AS BELOW. BACKER ROD SHALL BE SET USING A BACKER ROD SETTING TOOL CALIBRATED FOR THE DEPTH INDICATED.
2. SEE DETAIL, 4 / S009 FOR SEALANT INSTALLATION RATIOS
5. FOR JOINT LESS THEN 1/4" THICK, REPLACE BACKER ROD WITH A BOND BREAKER TAPE.

8 CRACK DETAIL AT SLAB ON GRADE
S008 12" = 1'-0"

9 CONCRETE SLAB JOINT DETAIL
S008 12" = 1'-0"

[illegible]

Owner

THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

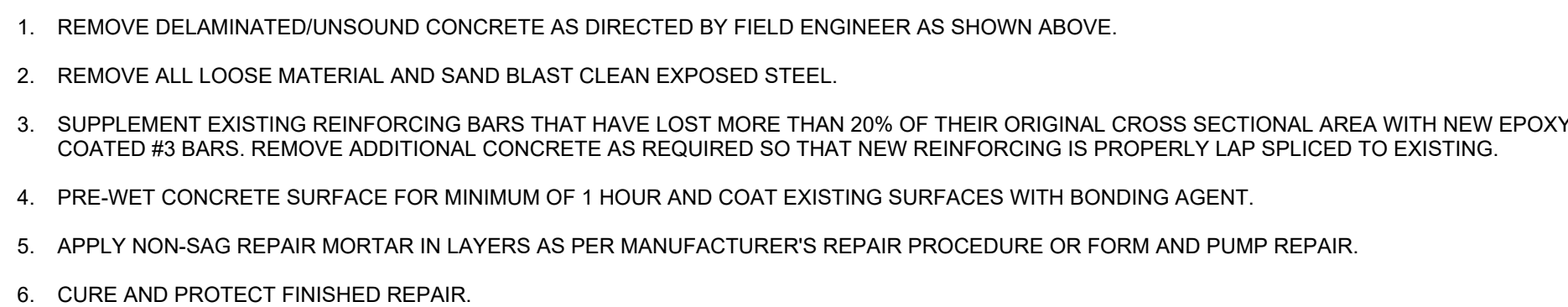
REPAIR DETAILS

Project number	25701
Date	SEPTEMBER 23, 202

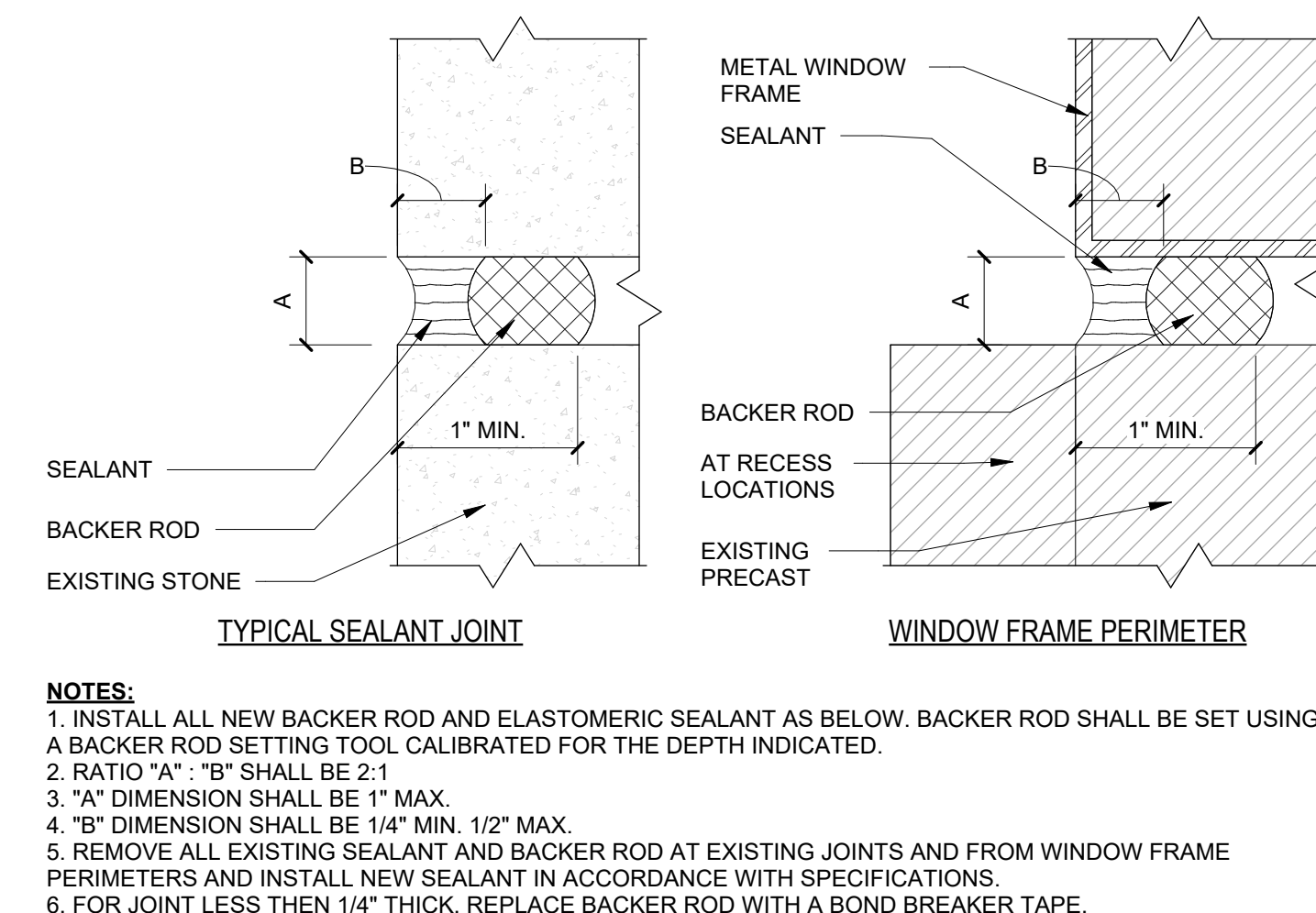
S008



5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS



1. BEFORE BEGINNING ANY WORK, CONTRACTOR SHALL ERECT DUST BARRIERS AROUND WORK AREA COMPLETE WITH "HEPA" FILTERS TO PREVENT THE SPREAD OF DUST TO OTHER PARTS OF THE BUILDING. LIKEWISE CONTRACTOR SHALL USE TOOLS EQUIPPED WITH DUST COLLECTING DEVICES DURING CONCRETE REMOVAL AND SAND BLASTING FOR 100% DUST CONTROL. TO LOCATE AREAS OF UNSOUND CONCRETE, UNSOUND CONCRETE SHALL BE REMOVED BY MEANS OF A HAND HELD 15 LB. MECHANICAL CHIPPING HAMMER OR BY OTHER METHODS ACCEPTABLE TO THE ENGINEER THAT WILL NOT CAUSE CRACKING.
2. LOCATE AND REMOVE ALL UNSOUND CONCRETE AT DELAMINATED AND SPALLED AREAS TO A MINIMUM DEPTH OF 1 1/2" AND TO AT LEAST 3/4" BEHIND AND ALL AROUND EXISTING STEEL REINFORCING BARS. CLEAN EXISTING STEEL REINFORCING BARS TO REMOVE ALL CORROSION. REMAINING SOUND CONCRETE SHALL BE REINFORCED WITH CORROSION PRODUCT AND LOOSE CONCRETE PARTICLES. VACUUM OR CLEAN AREA AFTER CLEANING WITH COMPRESSED AIR TO REMOVE ANY PARTICLES FROM THE PATCH AREA. PROVIDE MINIMUM 1/2" DEEP SMOOTH CUT IN EXISTING SOUND CONCRETE.
3. DO NOT REMOVE MORE THAN 20% OF THE COLUMN CROSS-SECTIONAL AREA AT ONE TIME AND DO NOT REMOVE SECTIONS MORE THAN 36" HIGH. WHERE EXISTING REMOVED DETERIORATED CONCRETE REACHES ONE OF THESE LIMITS, THE REPAIR SHALL BE MADE ACCORDING TO THE INFORMATION GIVEN IN THIS DETAIL AND THE COMPRESSIVE STRENGTH OF THE PATCH.
4. WHERE EXISTING COLUMN/BEAM/WALL TIE/STIRRUP STEEL REINFORCEMENT HAS LOST 20% OR MORE OF CROSS SECTIONAL AREA DUE TO CORROSION, A NEW #3 TIE SHALL BE ADDED AS SHOWN IN THE DETAIL, WITH THE LEGS OF THE TIE DRILLED AND EPOXY GROUTED INTO THE EXISTING COLUMN OR WALL WITH AT LEAST 8" EMBEDMENT.
5. WHERE EXISTING VERTICAL OR HORIZONTAL CONTINUOUS LONGITUDINAL STEEL REINFORCEMENT HAS LOST 20% OR MORE OF ITS ORIGINAL CROSS SECTIONAL AREA DUE TO CORROSION, PROVIDE A SPLICE BAR EQUAL IN SIZE AND GRADE. EPOXY COATED/GRADE 60 MINIMUM) TO THAT OF THE EXISTING BAR WITH AT LEAST A 42 BAR DIAMETER LAP AT EACH END BEYOND THE CORRODED PORTION OF THE EXISTING BAR WHERE THERE IS NOT LESS THAN 5% CROSS SECTIONAL AREA LOSS.
6. AFTER THE AREA TO RECEIVE THE PATCH IS CLEANED, THOROUGHLY WET WITH WATER TO REVEAL ANY CRACKS THAT MAY BE PRESENT. PERFORM EPOXY INJECTION FOR ALL EXISTING COLUMN GRABBS WITHIN THE EXCAVATED AREA PRIOR TO PLACING PATCH CONCRETE. SEE EPOXY INJECTION DETAIL 404.5 AND REMOVE ALL REMNANT SEAL AND FEE EPOXY.
7. COVER ALL EXPOSED NEW AND EXISTING REINFORCING BARS AFTER CLEANING TO A BARE METAL FINISH WITH "SIKA ARMATEC 110 EPOCURE" ACCORDING TO THE MANUFACTURER'S PUBLISHED INSTRUCTIONS. BONDING AGENT SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S PUBLISHED INSTRUCTIONS AND PATCHING MATERIAL SHALL BE PLACED WITHIN THE SPECIFIED TIME FRAME AFTER BONDING AGENT HAS BEEN APPLIED. PATCH SHALL BE "SIKATOP 123 PLUS MIXED AND PURED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS. CONTRACTOR SHALL FORM THE FACE OF THE REPAIR AREA AND FILL WITH PATCH MATERIAL REMOVING THE FORM WORK SHORTLY AFTER THE PATCH MATERIAL HAS REACHED INITIAL SET SO THAT A SMOOTH TROWEL FINISH AND SMOOTH CHAMFERED EDGES CAN BE PROVIDED TO MATCH THE EXISTING CONCRETE COLUMN OR WALL FINISH.
8. AT LOCATIONS WHERE THE EXISTING REINFORCEMENT IS EXPOSED TO VIEW AND THE SPACING OF THE EXISTING REINFORCEMENT IS NOT MARKED, GRIND PATTERN DIRECTLY TO THE EXISTING REINFORCEMENT. WELD STAINLESS STEEL PINS AND STAINLESS STEEL WIRE ACCORDING TO DETAIL 214.5 IN ADDITION TO THE REQUIREMENTS ABOVE.
9. AFTER PATCH HAS CURED AND FORM WORK HAS BEEN REMOVED, GRIND PATCH SURFACE TO REMOVE ALL REMNANT PATCH. GRIND MARKS AND GRIND PATCH TO A SMOOTH FINISH. PATCH SHALL BE FLUSH EVEN FIT WITH EXISTING CONCRETE THAT REMAINS. FILL MINOR PIT HOLES WITH PATCH MATERIAL SURFACE.

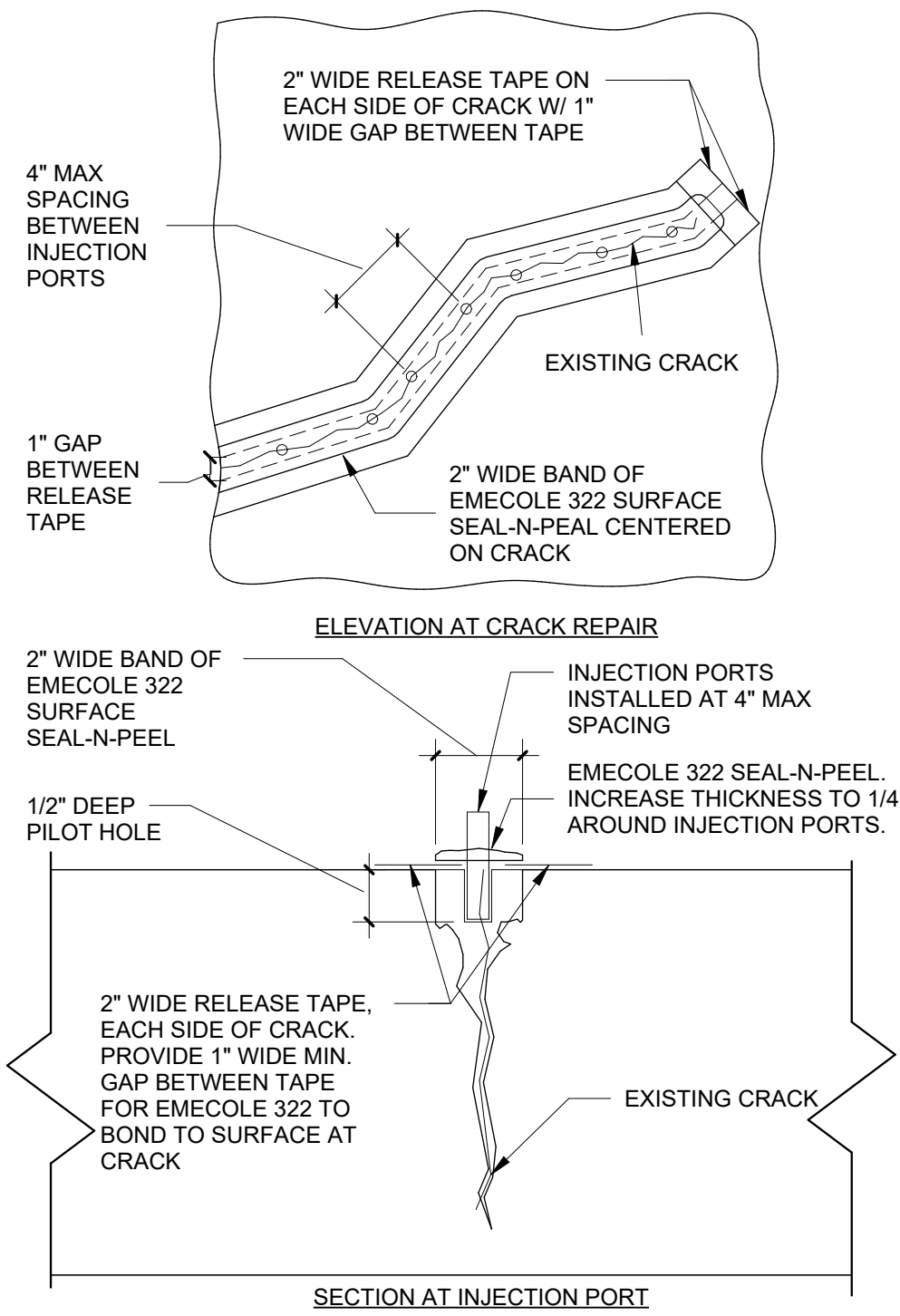
Owner:

THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

REPAIR DETAILS

Project number	257018
Date	SEPTEMBER 23, 2025

S009



ANTICIPATED EPOXY INJECTION REPAIR SEQUENCE:

1. PREPARE SURFACE FOR EMECOLE 322 SEAL-N-PEEL APPLICATION PER MANUFACTURER'S RECOMMENDATION FOR A MINIMUM OF 1" WIDTH ON EACH SIDE OF THE CRACK.
2. DRILL 1/2" DEEP PILOT HOLES CENTERED ON CRACK FOR INJECTION PORT INSTALLATION. SPACE PILOT HOLES AT 4" O/C MAX. SPACING.
3. INSTALL RELEASE TAPE EACH SIDE OF CRACK AS SHOWN ON DETAILS.
4. INSERT INJECTION PORTS INTO PILOT HOLES. BUTTER INSERTED END OF INJECTION PORT WITH EMECOLE 322.
5. APPLY 1/8" THICK BAND OF EMECOLE 322 OVER CRACK AND OVERLAPPING RELEASE TAPE. AT INJECTION PORTS INCREASE THICKNESS OF EMECOLE 322 TO 1/4". ALLOW EMECOLE 322 TO CURE PER MANUFACTURER'S RECOMMENDATIONS.
6. INJECT SIKADUR 52 EPOXY RESIN ADHESIVE INTO INJECTION PORTS STARTING AT LOWEST PORT WORKING UPWARD. INJECT ADHESIVE UNDER STEADY PRESSURE UNTIL EPOXY COMES OUT OF THE PORT ABOVE. SEAL INJECTED PORT AND REPEAT INJECTION AT NEXT PORT AND CONTINUE PROCESS UNTIL ALL THE PORTS HAVE BEEN INJECTED. ALLOW SIKADUR 52 TO CURE PER MANUFACTURER'S RECOMMENDATIONS.
7. DRILL OUT INJECTION PORTS AND REMOVE EMECOLE 322 FROM REPAIR SURFACE.
8. FILL DRILLED HOLES WITH APPROVED, UV RESISTANT SEALANT WHICH MATCHES COLOR OF MATERIAL SURFACE.

1 CRACK REPAIR / EPOXY INJECTION DETAIL
S010 3" = 1'-0"

THE METROPOLITAN PARKING STRUCTURE REPAIRS

5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS

No.	Description	Date
1	Schematic Drawings	09/23/2025

Owner:
THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

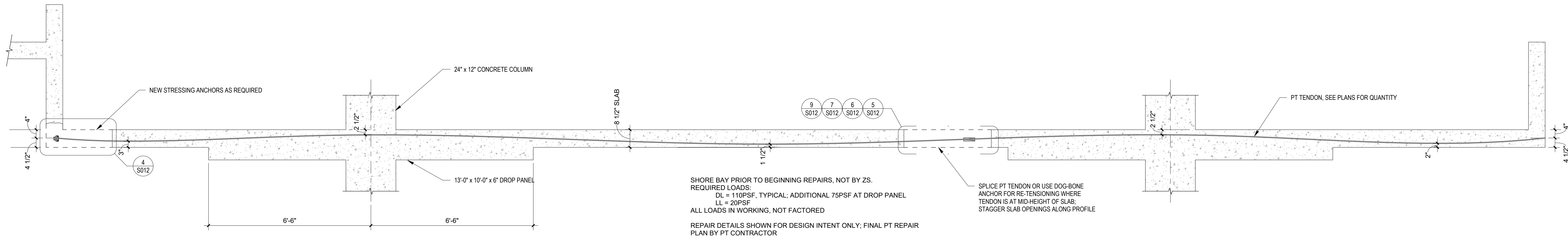
REPAIR DETAILS

Project number 257018
Date SEPTEMBER 23, 2025

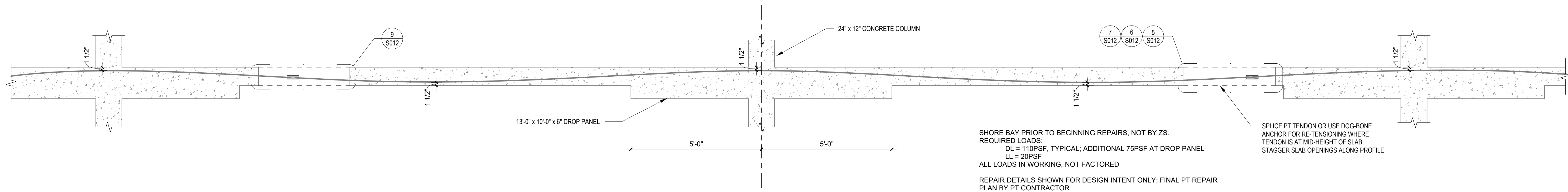
S010

NOTE IN REGARD TO EXISTING CONDITIONS

INFORMATION SHOWN ON THESE DRAWINGS, WITH RESPECT TO EXISTING CONDITIONS, TO THE BEST OF OUR KNOWLEDGE, REPRESENT THE GENERAL AND CURRENT FIELD CONDITIONS. ZS MAKES NO WARRANTY AS TO THE COMPLETENESS OR ACCURACY OF ANY AND ALL EXISTING CONDITIONS SHOWN ON THESE DRAWINGS. CONTRACTOR(S) SHALL VERIFY ALL EXISTING CONDITIONS RELATED TO THE NEW WORK AND REPORT TO THE AE FOR REVIEW ANY DISCREPANCIES BEFORE PERFORMING ANY WORK. ANY WORK PERFORMED PRIOR TO AE REVIEW AND SUBSEQUENT RESOLUTION OF DISCREPANCIES BY THE AE IS SUBJECT TO REMOVAL AND REPLACEMENT AT NO ADDITIONAL COST OR BURDEN TO THE CONTRACT.



1
S011
MAIN TENDON SECTION
1/2" = 1'-0"



2
S011
TEMPERATURE TENDON SECTION
1/2" = 1'-0"

THE METROPOLITAN PARKING STRUCTURE REPAIRS

5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS

No.	Description	Date
1	Schematic Drawings	09/23/2025

Owner:
THE METROPOLITAN
5320 SHERIDAN ROAD
CHICAGO, IL

PT ELEVATIONS

Project number 257018
Date SEPTEMBER 23, 2025

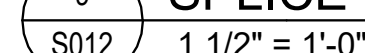
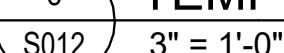
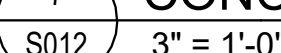
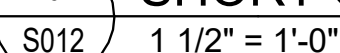
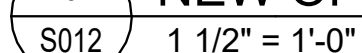
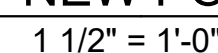
S011



INFORMATION SHOWN ON THESE DRAWINGS, WITH RESPECT TO EXISTING CONDITIONS, TO THE BEST OF OUR KNOWLEDGE, REPRESENT THE GENERAL AND CURRENT FIELD CONDITIONS. ZS MAKES NO WARRANTY AS TO THE COMPLETENESS OR ACCURACY OF ANY AND ALL EXISTING CONDITIONS SHOWN ON THESE DRAWINGS. CONTRACTOR(S) SHALL VERIFY ALL EXISTING CONDITIONS RELATED TO THE NEW WORK AND REPORT TO THE AE FOR REVIEW ANY DISCREPANCIES BEFORE PERFORMING ANY WORK. ANY WORK PERFORMED PRIOR TO AE REVIEW AND SUBSEQUENT RESOLUTION OF DISCREPANCIES BY THE AE IS SUBJECT TO REMOVAL AND REPLACEMENT AT NO ADDITIONAL COST OR BURDEN TO THE CONTRACT.



5320 N SHERIDAN ROAD
CHICAGO, ILLINOIS



S012