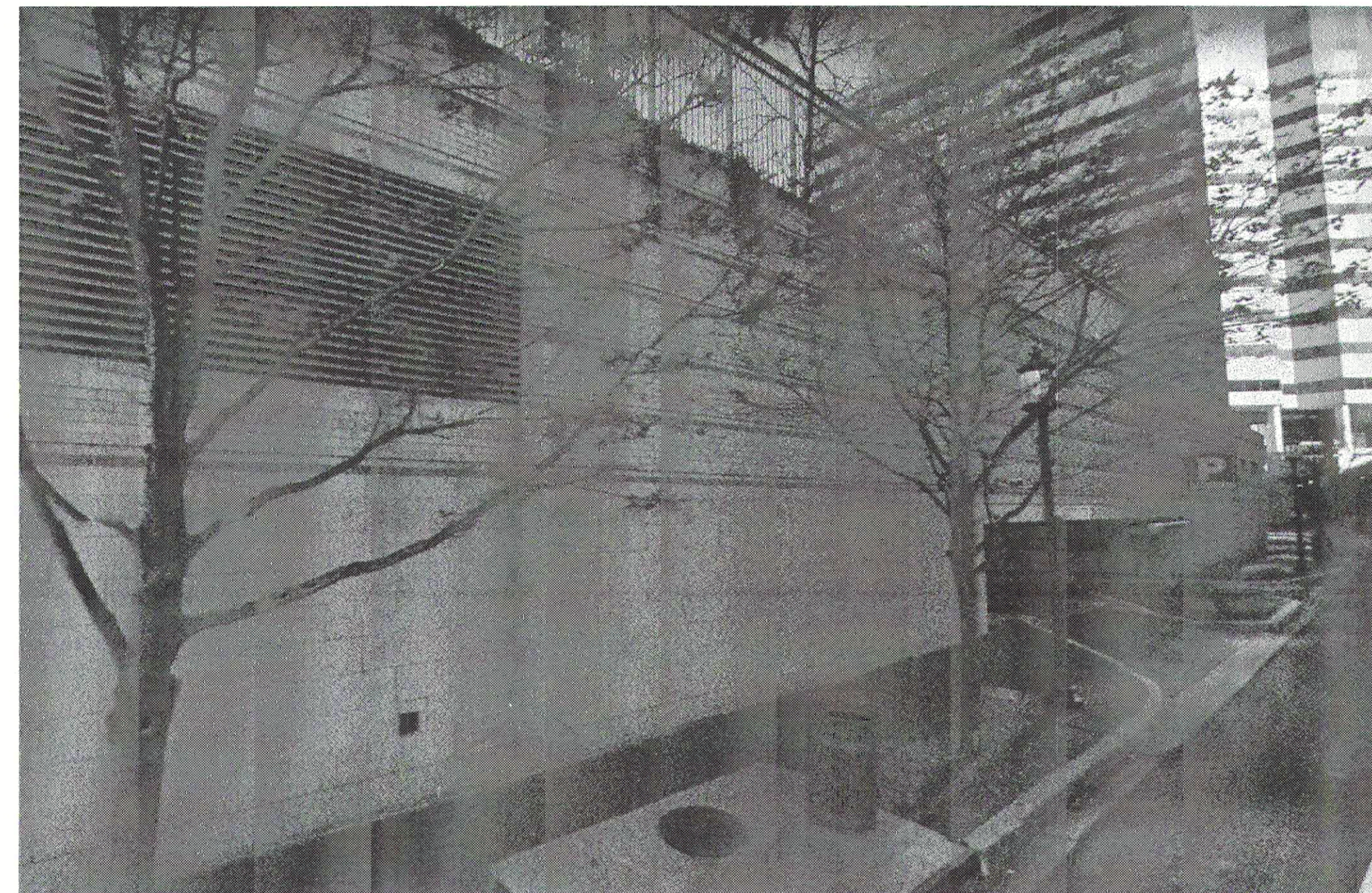


# GARAGE #49 SLAB REPAIRS

## MONTGOMERY COUNTY GARAGE #49

### BETHESDA, MARYLAND

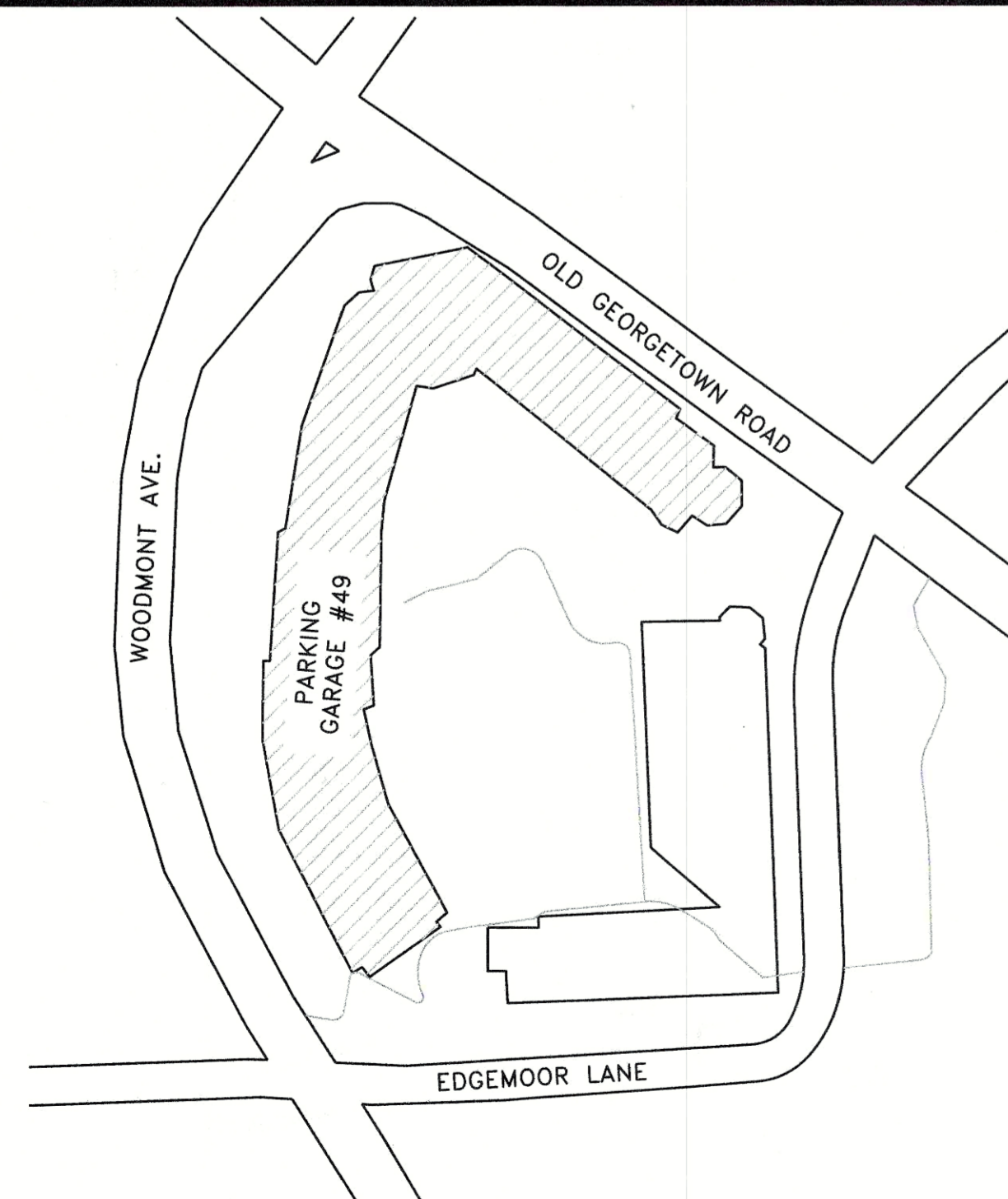
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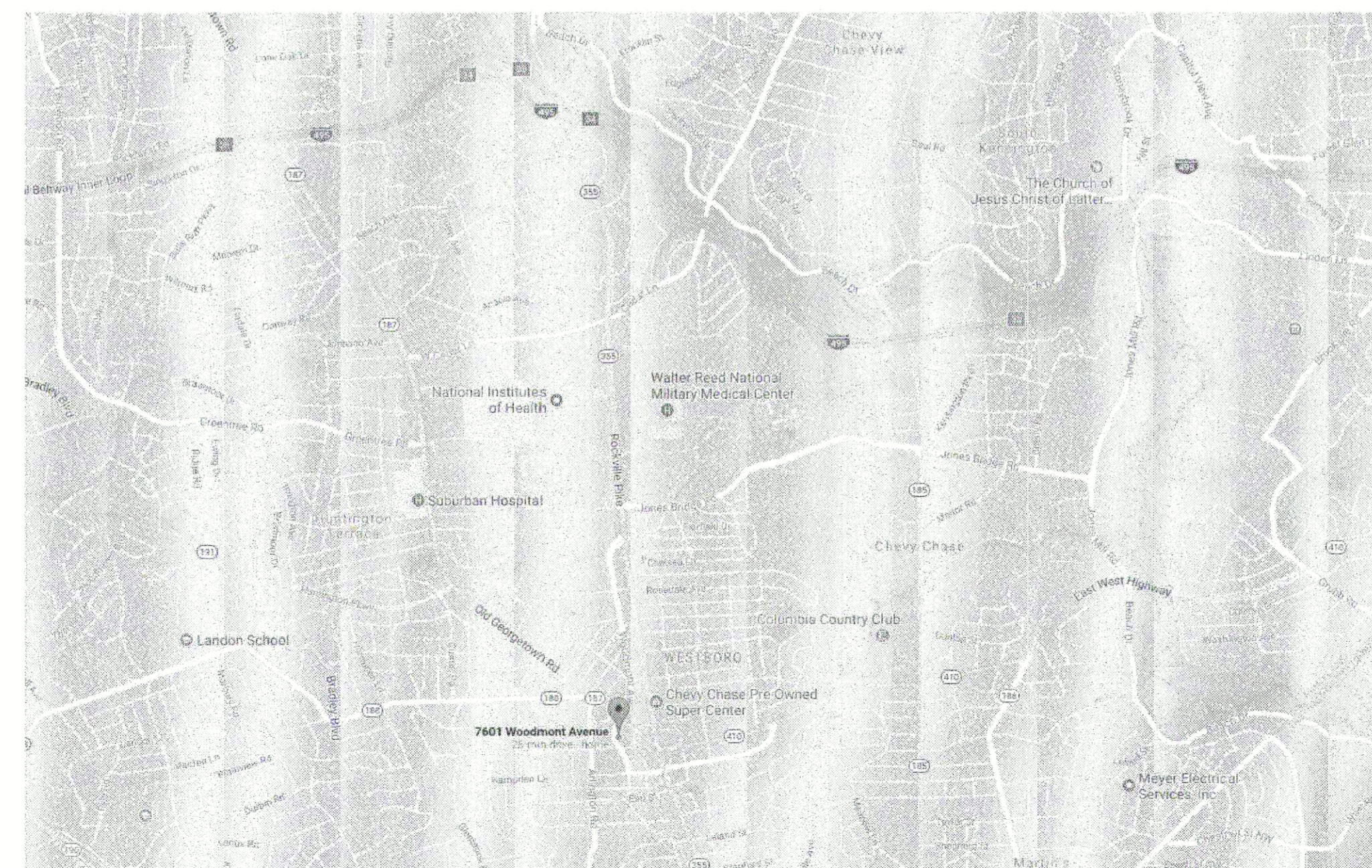
**H** ASSOCIATES  
 HOLBERT APPLE ASSOCIATES, INC.  
 STRUCTURAL ENGINEERS  
 3423 Olney-Laytonville Road, Suite 6  
 Olney, Maryland 20832  
 Ph (301) 570-1460  
 Fax (301) 570-1462

**GARAGE #49 SLAB REPAIRS**  
**MONTGOMERY COUNTY PARKING GARAGE NO. 49**  
 7601 WOODMONT AVE  
 BETHESDA, MD

SITE MAP



VICINITY MAP



DRAWING LIST

CS	COVER SHEET
S-0	STRUCTURAL GENERAL NOTES
S-1	LEVEL G3 REPAIR PLAN SOUTH AND SECTIONS
S-2	LEVEL G3 REPAIR PLAN NORTH
S-3	LEVEL G2 REPAIR PLAN SOUTH AND CONCRETE REPAIR DETAILS
S-4	LEVEL G2 REPAIR PLAN NORTH
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S-7	LEVEL G REPAIR PLAN SOUTH
S-8	LEVEL G REPAIR PLAN NORTH



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NO.	REVISION	DATE

COVER SHEET

PROJECT NO. 17-030	SHEET NO. <b>CS</b>
DATE 3/14/18	
SCALE AS NOTED	

STRUCTURAL GENERAL NOTES

THESE NOTES SUPPLEMENT THE SPECIFICATIONS WHICH SHALL BE REFERRED TO FOR ADDITIONAL REQUIREMENTS. THESE NOTES APPLY TO CONTRACTORS, SUBCONTRACTORS, MANUFACTURERS, SUPPLIERS, FABRICATORS, ERECTORS, ETC. ENGAGED IN THE EXECUTION OF WORK INDICATED ON THESE DRAWINGS.

A. CODES AND STANDARDS

THE FOLLOWING CODES AND STANDARDS, INCLUDING ALL SPECIFICATIONS REFERENCED WITHIN, SHALL APPLY TO THE DESIGN, CONSTRUCTION AND QUALITY CONTROL OF ALL WORK PERFORMED ON THE PROJECT. USE THE LATEST EDITION UNLESS NOTED OTHERWISE.

- 1. BUILDING CODES:
a. 'INTERNATIONAL BUILDING CODE - 2015'
b. 'INTERNATIONAL EXISTING BUILDING CODE - 2015'
c. 'MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES' (ASCE 7-10)
2. AMERICAN CONCRETE INSTITUTE (ACI)
a. 'BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 318-14'
b. 'ACI MANUAL OF CONCRETE PRACTICE - PARTS 1 THROUGH 5'
3. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
a. 'MANUAL OF STANDARD PRACTICE', CONCRETE REINFORCING STEEL INSTITUTE
4. POST TENSIONING INSTITUTE (PTI)
a. 'POST TENSIONING MANUAL', SIXTH EDITION.

B. DESIGN DATA

- 1. LIVE LOADS (PER ASCE 7-10)
a. PARKING AND DRIVE ABLE LIVE LOAD: 50 PSF
b. STAIRS AND ELEVATOR LOBBY LIVE LOAD: 100 PSF
2. SUPERIMPOSED SLAB DEAD LOAD: 3 PSF
3. WIND LOADS
a. THE SCOPE OF WORK OF THIS PROJECT DOES NOT ALTER THE WIND LOADING ON THE EXISTING SEISMIC FORCE RESISTING SYSTEM BY MORE THAN 5%, PER IBC PROVISIONS, NO GLOBAL ANALYSIS OR UPGRADE OF THE MAIN WIND FORCE RESISTING SYSTEM HAS BEEN CONDUCTED.
4. SEISMIC LOADS
a. THE SCOPE OF WORK OF THIS PROJECT DOES NOT ALTER THE SEISMIC LOADING ON THE EXISTING SEISMIC FORCE RESISTING SYSTEM BY MORE THAN 5%, PER IBC PROVISIONS, NO GLOBAL ANALYSIS OR UPGRADE OF THE SEISMIC FORCE RESISTING SYSTEM HAS BEEN CONDUCTED.

C. RENOVATION / REHABILITATION / ADJACENT STRUCTURES

- 1. EXISTING CONDITIONS SHOWN ARE BASED ON BEST AVAILABLE INFORMATION, INCLUDING ORIGINAL DRAWINGS BY SKIDMORE OWINGS & MERRILL, DATED 2/14/89 AND SUBSEQUENT REPAIR DRAWINGS BY SMISLOVA, KEHNEMULI & ASSOCIATES, DATED 04-01-05 WITH CORRESPONDING AS-BUILT DRAWINGS DATED 05-17-07. THE CONTRACTOR IS STRONGLY ENCOURAGED TO OBTAIN COPIES OF THESE DRAWINGS FROM THE OWNER AND TO VISIT THE SITE TO OBSERVE THE EXISTING CONDITIONS PRIOR TO DETERMINING THE SCOPE OF THEIR WORK.
2. ACTUAL FIELD CONDITIONS MAY VARY FROM THOSE INDICATED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING IN THE FIELD ALL EXISTING BUILDING INFORMATION (DIMENSIONS, ELEVATIONS, UTILITIES, ETC.) WHETHER SHOWN ON CONTRACT DOCUMENTS OR NOT, AFFECTING THE INSTALLATION OF NEW WORK. NOTIFY THE SER OF EXISTING CONDITIONS THAT ARE SUBSTANTIALLY DIFFERENT FROM THOSE SHOWN ON THE CONTRACT DRAWINGS.
3. HOLBERT APPLE ASSOCIATES, INC. IS NOT RESPONSIBLE FOR THE APPLICABILITY, IDENTIFICATION, CLASSIFICATION, METHODS, OR SCOPE OF ANY HAZARDOUS MATERIAL MITIGATION (IF REQUIRED).

D. MATERIALS

THE FOLLOWING ASTM STANDARDS AND DESIGN STRESSES SHALL BE USED FOR THE APPROPRIATE MATERIALS USED IN THE CONSTRUCTION OF THIS PROJECT.

- 1. CEMENT: ASTM C150, TYPE I OR II
2. AGGREGATES: ASTM C33 (NORMAL WEIGHT), 3/4" NOMINAL MAXIMUM AGGREGATE SIZE
3. ADMIXTURES: AIR ENTRAINING ADMIXTURES ASTM C260
CHEMICAL ADMIXTURES ASTM C494
4. CONCRETE: AIR ENTRAIN ALL CONCRETE 0% ± 1.5% UNLESS OTHERWISE NOTED IN THE SPECIFICATIONS. INCLUDE 2.5 GALLONS OF CORROSION INHIBITING ADMIXTURE PER CY OF CONCRETE. NO AIR ENTRAINMENT FOR SLABS TO RECEIVE STEEL TROWEL FINISH
APPLICATION F/C @ 28 DAYS (PSI) MIX TYPE
a. SLAB SURFACE REPAIRS 5000 LATEX-OR MICROSILICA MODIFIED CONCRETE
b. SLAB FULL DEPTH REPAIRS 5000 MAXIMUM 0.40 W/C RATIO CONCRETE
c. PARTIAL DEPTH SLAB SOFFIT REPAIRS 5000 POLYMER MODIFIED REPAIR MORTAR
5. REINFORCEMENT:
a. DEFORMED REINFORCING BARS ASTM A615, GRADE 60
b. WELDED WIRE FABRIC (WWF) ASTM A195
c. SEVEN WIRE LOW RELAXATION PRESTRESSING STRANDS ASTM A416, GRADE 270
d. EPOXY COATED REINFORCING BARS ASTM A775
e. ADHESIVE REINFORCING BAR DOWEL SYSTEM HELTIHY-150, HILTI RES500, OR APPROVED EQUIVALENT

E. CONSTRUCTION

- 1. GENERAL:
a. DO NOT SCALE DRAWINGS
b. THIS BUILDING HAS BEEN PREVIOUSLY DESIGNED BY OTHERS FOR THE WEIGHTS OF THE MATERIALS INDICATED ON THE DRAWINGS AND FOR THE SUPERIMPOSED LOADS INDICATED IN THE LOAD DATA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS WITH CONSIDERATION OF REDUCED STRUCTURAL CAPACITY DUE TO DEMOLITION AND EXISTING DAMAGE AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, SHORING, BRACING, SHEETING AND SHORING ETC. DRAWINGS OF SUCH TEMPORARY SUPPORTS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION.
c. IMPLEMENTING JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
d. EXISTING BUILDING INFORMATION SHOWN IS AS INDICATED ON EXISTING BUILDING DRAWINGS PROVIDED BY OTHERS. FIELD VERIFY ALL EXISTING BUILDING INFORMATION SHOWN (DIMENSIONS, ELEVATIONS, UTILITIES, ETC.) AND NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
e. UNLESS INDICATED OTHERWISE, NEW SLABS ARE TO BE AT THE SAME ELEVATIONS AS ADJACENT EXISTING SLABS.
f. IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES, DETAILS AND SPECIFICATIONS, THE MOST RIGID REQUIREMENTS GOVERN.
g. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS WORK FROM THE PROPER GOVERNING AGENCIES.
h. WORK NOT INCLUDED ON SOME OF THE DRAWINGS BUT IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES ON OTHER DRAWINGS SHALL BE REPEATED.
i. ANY DAMAGE TO EXISTING FACILITIES OR SITE CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
j. THE CONTRACTOR SHALL PERFORM HIS WORK IN A MANNER WHICH CAUSES THE LEAST DISRUPTION TO EXISTING BUILDING OPERATIONS OR FACILITIES. THE CONTRACTOR SHALL CONSULT WITH, AND FOLLOW THE DIRECTION OF, THE OWNER CONCERNING ACCEPTABLE TIME OF CONSTRUCTION ACTIVITIES, NOISE CONTROL, ACCESS, SAFETY, EMPLOYEE PARKING, USE OF BUILDING FACILITIES, ETC.
k. THE CONTRACTOR SHALL PROVIDE DUST AND NOISE CONTROL PARTITIONS, DAMS OR OTHER METHODS AS NOTED OR AS REQUIRED TO PREVENT DUST, WATER OR EXCESSIVE NOISE FROM ENTERING OCCUPIED AREAS OF THE BUILDING. THE CONTRACTOR SHALL CLEAN ALL AREAS IN WHICH DUST, WATER OR DEBRIS FROM CONSTRUCTION OPERATIONS ENTERS.
l. STORE AND HANDLE STRUCTURAL CONSTRUCTION MATERIALS TO PREVENT ANY ADVERSE EFFECTS ON THE PHYSICAL PROPERTIES OF THE MATERIAL.
m. THE CONTRACTOR SHALL PAY ALL COSTS, INCLUDING INVESTIGATION AND/OR REDESIGN, DUE TO CONTRACTOR MISLOCATION OF STRUCTURAL ELEMENTS OR OTHER LACK OF CONFORMANCE WITH THE CONTRACT DOCUMENTS TO BRING WORK IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

2. SHOP DRAWINGS AND SUBMITTALS:

- a. REPRODUCTION OF ANY PORTION OF THE STRUCTURAL CONTRACT DRAWINGS FOR RESUBMITTAL AS SHOP DRAWINGS IS PROHIBITED. SHOP DRAWINGS PRODUCED IN SUCH A MANNER WILL BE REJECTED WITHOUT REVIEW AND RETURNED.
b. SUBMIT SHOP DRAWINGS AT LEAST 15 BUSINESS DAYS BEFORE DATE REVIEWED SUBMITTALS WILL BE NEEDED. SHOP DRAWINGS SHALL BEAR THE CONTRACTOR'S STAMP OF APPROVAL WHICH SHALL CONSTITUTE CERTIFICATION THAT THE CONTRACTOR HAS VERIFIED ALL FIELD MEASUREMENTS, CONSTRUCTION CRITERIA, MATERIALS AND SIMILAR DATA AND HAS CHECKED EACH DRAWING FOR COMPLETENESS, COORDINATION AND COMPLIANCE WITH THE CONTRACT DOCUMENTS.
c. SUBMIT CALCULATIONS AND DRAWINGS CONCURRENTLY FOR EACH OF THE FOLLOWING ASSEMBLIES. DESIGN EACH ASSEMBLY UNDER THE DIRECT SUPERVISION OF AN ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION. ALL PORTIONS OF SUBMITTALS SHALL BEAR THIS ENGINEER'S SEAL AND SIGNATURE. UNSEALED SUBMITTALS WILL BE RETURNED AND REJECTED WITHOUT REVIEW. REVIEW SHALL BE FOR GENERAL CONFORMANCE WITH THE PROJECT PARAMETERS AS INDICATED ON THE DRAWINGS AND IN THE GENERAL NOTES AND SPECIFICATIONS, AND FOR IMPACTS ON THE SUPERSTRUCTURE AND SYSTEM. DESIGN FOR ALL GRAVITY AND LATERAL LOADS AND OTHER EFFECTS INCLUDING CREEP, SHRINKAGE, THERMAL, ETC. REQUIRED BY APPLICABLE CODES AND STANDARDS AS WELL AS THOSE INDICATED ON THE DRAWINGS.
1) FORMWORK, SHORES AND RESHORES
a) INDICATE PLAN OF STRIPPING AND RESHORING PROCEDURES AND OPERATIONS ON SHOP DRAWINGS.
b) DESIGN FORMWORK, SHORES AND RESHORING SYSTEMS TO ACCOUNT FOR ADDITIONAL LOADS RESULTING FROM POST-TENSIONING SEQUENCES INDICATED.
c) REMOVAL OF FORMS IS NOT PERMITTED UNTIL CONCRETE HAS ACHIEVED A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH ENABLING THE MEMBERS TO CARRY THEIR DEAD LOAD AND ANTICIPATED CONSTRUCTION LOADS.
d. SUBMITTALS AND CERTIFICATIONS, IN ADDITION TO STANDARD INDUSTRY PRACTICE
1) CAST-IN-PLACE CONCRETE AND SPECIALTY REPAIR MATERIALS
a) MIX DESIGNS, INCLUDING DOCUMENTATION USED TO DETERMINE STANDARD DEVIATION IN ACCORDANCE WITH ACI 309
b) CERTIFICATIONS OF REINFORCING STEEL COMPLIANCE WITH REFERENCED STANDARDS
2. INSPECTION AND TESTING
a. THE CONTRACTOR SHALL ENGAGE AN APPROVED TESTING AGENCY, ACCEPTABLE TO THE OWNER, TO PROVIDE ALL SERVICES AS INDICATED BELOW OR IN THE SPECIFICATIONS. SUBMIT REPORTS TO THE SER AND CODE OFFICIAL AS APPLICABLE.
b. CAST-IN-PLACE CONCRETE:
1) THE AGENCY SHALL INSPECT THE FORMWORK AND POST-TENSIONING AND REINFORCING STEEL PLACEMENT FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND SHOP DRAWINGS. THE AGENCY SHALL MONITOR ALL STRUCTURAL CONCRETE PLACEMENTS FOR CONFORMANCE WITH APPLICABLE ACI REQUIREMENTS.
2) SAMPLE FRESH CONCRETE IN ACCORDANCE WITH ASTM C172. MOLD TEST CYLINDERS IN ACCORDANCE WITH ASTM C31.
3) THE FOLLOWING NUMBER OF TEST CYLINDERS SHALL BE CAST FOR EACH DAY'S POUR OR EACH 50 CUBIC YARDS, WHICHEVER RESULTS IN MORE TEST CYLINDERS.
FOR ELEVATED SLAB
2 @ 7 DAYS, LAB CURED
2 @ 7 DAYS, FIELD CURED
2 @ 28 DAYS, LAB CURED
2 @ 28 DAYS, FIELD CURED
2 @ 56 DAYS, LAB CURED
\* 28-DAY BREAKS ARE THE STANDARD FOR CONCRETE ACCEPTANCE IN THE FINAL STRUCTURE. RESERVE 56-DAY CYLINDERS FOR ADDITIONAL TESTING AT LOW 28-DAY BREAKS.
4) THE AGENCY SHALL OBTAIN AND TEST FIELD-CORED SAMPLES OF IN-PLACE CONCRETE AT THE CONTRACTOR'S EXPENSE WHEN TEST RESULTS INDICATED SPECIFIED CONCRETE STRENGTHS HAVE NOT BEEN ATTAINED. CORING LOCATIONS AND QUANTITIES SHALL BE DIRECTED BY THE ENGINEER.
5) INSPECTION BY AN APPROVED TESTING AGENCY IS REQUIRED FOR ALL POST-TENSIONED WORK.

3. INSPECTION AND TESTING

- a. THE CONTRACTOR SHALL ENGAGE AN APPROVED TESTING AGENCY, ACCEPTABLE TO THE OWNER, TO PROVIDE ALL SERVICES AS INDICATED BELOW OR IN THE SPECIFICATIONS. SUBMIT REPORTS TO THE SER AND CODE OFFICIAL AS APPLICABLE.
b. CAST-IN-PLACE CONCRETE:
1) THE AGENCY SHALL INSPECT THE FORMWORK AND POST-TENSIONING AND REINFORCING STEEL PLACEMENT FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND SHOP DRAWINGS. THE AGENCY SHALL MONITOR ALL STRUCTURAL CONCRETE PLACEMENTS FOR CONFORMANCE WITH APPLICABLE ACI REQUIREMENTS.
2) SAMPLE FRESH CONCRETE IN ACCORDANCE WITH ASTM C172. MOLD TEST CYLINDERS IN ACCORDANCE WITH ASTM C31.
3) THE FOLLOWING NUMBER OF TEST CYLINDERS SHALL BE CAST FOR EACH DAY'S POUR OR EACH 50 CUBIC YARDS, WHICHEVER RESULTS IN MORE TEST CYLINDERS.

F. CAST-IN-PLACE CONCRETE

- 1. GENERAL:
a. COMPLY WITH REQUIREMENTS OF 'STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE' (ACI 309-10), EXCEPT AS MODIFIED BY THESE NOTES AND PROJECT SPECIFICATIONS. KEEP COPY OF 'ACI FIELD REFERENCE MANUAL, SP-15' IN FIELD OFFICE.
b. PROVIDE MINIMUM CLEAR COVER FOR REINFORCING AS FOLLOWS, UNLESS OTHERWISE NOTED IN THE DRAWINGS:
1) NON-POST-TENSIONED CONCRETE:
a) CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS: #1 BARS AND SMALLER 1" (BOTTOM); 3/4" (TOP)
2) POST-TENSIONED CONCRETE:
a) CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS: 1" (BOTTOM); 3/4" (TOP)
c. ANY SPECIALTY REPAIR MATERIALS SHALL BE MIXED AND PLACED AS NOTED IN THE SPECIFICATIONS OR, IF A PROPRIETARY MATERIAL, THE MANUFACTURER'S INSTRUCTIONS.
d. ALL CONCRETE MATERIALS SHALL MEET OR EXCEED THE SPECIFICATION REQUIREMENTS.
e. EPOXY COAT THE FOLLOWING IN PARKING STRUCTURES AND WHERE NOTED ON THE DRAWINGS:
1) ALL REINFORCING STEEL IN SLABS INCLUDING POUR STRIPS
2) ALL ACCESSORIES USED TO SUPPORT OR POSITION REINFORCING STEEL AND P-T TENDONS, SUCH AS SUPPORT BARS, SLAB BOLSTERS, HIGH CHAIRS, ETC. PLASTIC COAT ALL THE WIRE.
3) OTHER REINFORCEMENTS AND EMBEDS AS INDICATED.
f. SPLICE REINFORCEMENT AS DETAILED OR AUTHORIZED BY THE SER. MAKE BARS CONTINUOUS AROUND CORNERS. SPLICES SHALL BE MADE BY CONTACT TENSION LAP SPLICES, UNLESS OTHERWISE NOTED.
g. WELDING OF REINFORCING IS NOT PERMITTED.
h. FIELD BENDING OF REINFORCING PARTIALLY EMBEDDED IN CONCRETE IS NOT PERMITTED UNLESS OTHERWISE SHOWN OR APPROVED BY THE SER.
i. FURNISH ALL ACCESSORIES, CHAIRS, SPACE BARS, SUPPORTS, ETC. NECESSARY TO SECURE REINFORCING.
j. PROVIDE PLASTIC TIPPED BOLSTERS AND CHAIRS AT ALL LOCATIONS WHERE THE CONCRETE SURFACE IN CONTACT WITH THE BOLSTERS OR CHAIRS IS EXPOSED.
k. ERECT AND REMOVE FORMWORK, SHORES AND RESHORES IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS AND CALCULATIONS PREPARED, SIGNED AND SEALED BY THE ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION.
l. ANY STOP IN CONCRETE WORK MUST BE MADE WITH VERTICAL BULKHEADS AND KEYS, UNLESS OTHERWISE SHOWN.
m. FINISH CONCRETE SLABS FLAT AND LEVEL WITHIN TOLERANCE, TO THE ELEVATION INDICATED ON THE DRAWINGS. PROVIDE ADDITIONAL CONCRETE REQUIRED DUE TO FORMWORK AND FRAMING DEFLECTION TO ACHIEVE THIS FINISHED TOP-OF-SLAB ELEVATION.
n. CORE DRILLING OF ANY CONCRETE ELEMENT IS NOT PERMITTED UNLESS AUTHORIZED IN WRITING BY THE ENGINEER.
o. CHAMFER EXPOSED CONCRETE CORNERS, 3/4" X 3/4" MINIMUM, UNLESS OTHERWISE NOTED ON ARCHITECTURAL DRAWINGS.

G. SEALANT, COATINGS AND JOINT MATERIALS

- 1. SEE SPECIFICATIONS FOR APPROVED SEALANT MATERIALS AND APPLICATION PROCEDURES.
2. UPON COMPLETION OF SEALANT AND DECK COATING WORK, THE CONTRACTOR SHALL PAINT PARKING STRIPING AND TRAFFIC MARKINGS TO MATCH EXISTING CONDITIONS. THE CONTRACTOR SHALL PREPARE A PLAN SHOWING THE EXISTING STRIPING AND MARKINGS AND SUBMIT FOR APPROVAL PRIOR TO BEGINNING DEMOLITION WORK.

H. DEMOLITION

- 1. ALL SHORING AND DEWATERING, IF REQUIRED, SHALL BE THE TOTAL RESPONSIBILITY OF THE CONTRACTOR. SHORING SHALL BE DESIGNED BY AN ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION. ALL SUBMITTALS SHALL BEAR HIS SEAL AND SIGNATURE.
2. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT ALL EXISTING OCCUPIED SPACES, STRUCTURES, CURBS, STREETS, SUBWAY SYSTEM, ETC. FROM DAMAGE BY CONSTRUCTION DEBRIS, WATER OR EQUIPMENT. THE CONTRACTOR SHALL NOT DISPOSE OF ANY DEBRIS, LIQUIDS, SLURRY, SPILLS OR CHEMICALS ON THE SITE, EXCEPT AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL RESOURCES.
3. PRIOR TO BEGINNING DEMOLITION ON SLABS, THE CONTRACTOR SHALL INSTALL SHORING AND BRACING ADEQUATE TO FULLY SUPPORT THE LOADS NORMALLY SUPPORTED BY THE SLABS AS NOTED IN THE REPAIR DETAILS. THE CONTRACTOR SHALL ALSO PERFORM A GROUND-PENETRATING RADAR, OR X-RAY, SCAN OF THE SLAB AREA TO BE DEMOLISHED TO LOCATE ALL POST-TENSIONING TENDONS AND ANCHORS SO THAT PROPER PRECAUTIONS MAY BE TAKEN TO PREVENT DAMAGE TO THE SLAB POST-TENSIONING SYSTEM DURING DEMOLITION.
4. REMOVE DELAMINATED CONCRETE TO EXPOSE SOUND CONCRETE FREE OF FRACTURES, LOOSE AGGREGATE OR EXCESSIVE CRACKING. IF SUCH REMOVAL EXPOSES CORRODED REINFORCING BARS OR MORE THAN HALF OF ANY CLEAN REINFORCING BAR, REMOVE ADDITIONAL CONCRETE TO PROVIDE A MINIMUM 3/4" CLEARANCE AROUND THE BARS. IF THE ENDS OF BARS INTERSECTING THE EDGE OF THE REPAIR AREA ARE CORRODED, REMOVE CONCRETE ALONG THE BAR (A MINIMUM CLEAR ALL AROUND) UNTIL THE BARS ARE CLEAN OF CORROSION, IF SO DIRECTED BY THE ENGINEER.
5. THE EDGES OF ALL REPAIR AREAS SHALL BE CHIPPED AT APPROXIMATELY 90° FROM THE SURFACE OF THE MEMBER TO A MINIMUM OF 3/4" BEHIND THE REINFORCEMENT IF EXPOSED OR TO A MINIMUM DEPTH OF 1" FROM THE SURFACE IF NO REINFORCEMENT IS EXPOSED.
6. IF SURFACE PERIMETER OUTLINE OF REPAIR AREA IS IRREGULAR, TRIM ANY RE-ENTRANT CORNERS ≤ 100" ALONG A LINE WHICH INTERSECTS A POINT 2" BACK FROM THE CORNER ALONG EACH EDGE FORMING THE CORNER.
7. IF THE REINFORCING STEEL IS REDUCED BY CORROSION TO LESS THAN 75% OF ITS ORIGINAL CROSS-SECTIONAL AREA, ADD A NEW BAR OF THE SAME SIZE AS NOTED IN DETAIL 'S'. IF THERE IS INADEQUATE ROOM TO PROVIDE A LAP SPLICE FOR THE NEW BAR, CUT OFF THE EXISTING BAR AT THE UNDAUNAGED SECTION ON EACH SIDE OF THE DAMAGED SECTION AND USE TENSION COUPLERS TO SPLICE IN A REPLACEMENT SECTION OF THE NEW BAR. BUILD OUT THE PATCH TO PROVIDE A MINIMUM 1 1/2" OVER THE COUPLER.
8. IF THE DEMOLITION DOES NOT EXTEND BEHIND THE EXISTING REINFORCING STEEL, DRILL AND EPOXY-GROUT 'X' HOOKED ALL-THREAD 'PINS' MINIMUM 3" INTO THE FACE OF THE REPAIR AREA AT 6" O.C. EACH WAY.
9. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, REMOVE ANY CONDUIT UNCOVERED IN REPAIR AREAS.
10. ALL EXISTING SURFACES AGAINST WHICH A CONCRETE POUR IS TO BE PLACED SHALL BE ABRASIVE-BLAST CLEANED OR HYDRO-SCAFFERED AND THEN WASHED DOWN WITH HIGH-PRESSURE WATER.

I. MECHANICAL, ELECTRICAL AND PLUMBING WORK

- 1. THE CONTRACTOR SHALL PROTECT ALL EXISTING MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS DURING CONSTRUCTION. ANY DAMAGE TO THE SYSTEMS CAUSED BY THE WORK SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.



HOLBERT APPLE ASSOCIATES, INC. STRUCTURAL ENGINEERS
3423 Olney-Laytonville Road, Suite 6 Olney, Maryland 20832
Ph (301) 570-1460 Fax (301) 570-1462

GARAGE #49 SLAB REPAIRS
MONTGOMERY COUNTY PARKING GARAGE NO. 49
7601 WOODMONT AVE
BETHESDA, MD

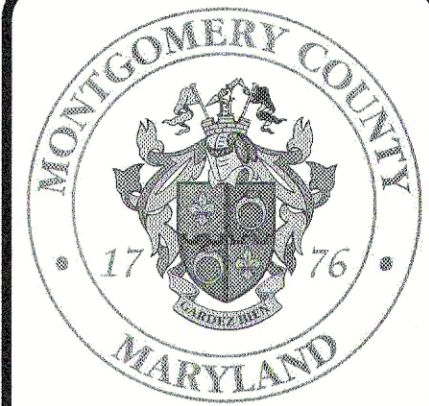
Table with 3 columns: NO., REVISION, DATE

STRUCTURAL GENERAL NOTES

PROJECT NO: 17-030
DATE: 3/14/18
SCALE: AS NOTED
SHEET NO: S-0







**H** ASSOCIATES

HOLBERT APPLE ASSOCIATES, INC.  
STRUCTURAL ENGINEERS  
3423 Olney-Laytonville Road, Suite 6  
Olney, Maryland 20832  
Ph (301) 570-1460  
Fax (301) 570-1462

# GARAGE #49 SLAB REPAIRS MONTGOMERY COUNTY PARKING GARAGE NO. 49

7601 WOODMONT AVE  
BETHESDA, MD

NO.	REVISION	DATE

LEVEL G3  
REPAIR PLAN  
NORTH

PROJECT NO: 17-030	SHEET NO: <b>S-2</b>
DATE: 3/14/18	
SCALE: AS NOTED	

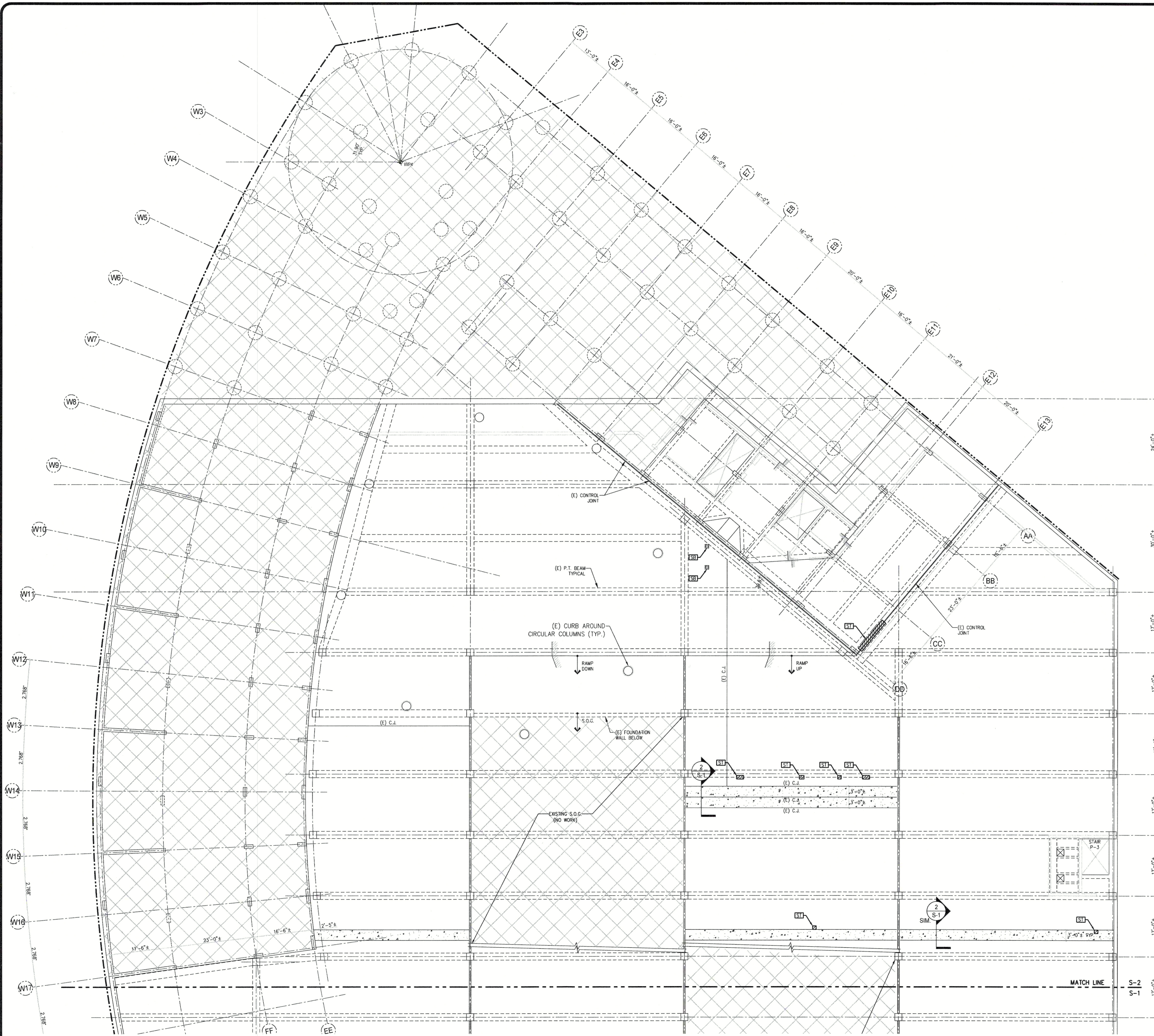
### PLAN NOTES

- EXISTING STRUCTURE CONSISTS OF 8" THICK POST-TENSIONED 1-WAY SLAB AND POST-TENSIONED BEAMS UNLESS NOTED OTHERWISE. CONTRACTOR TO AVOID DAMAGE TO EXISTING POST-TENSIONING TENDONS, USE GPR AND/OR X-RAY, AS REQUIRED TO LOCATE TENDONS PRIOR TO DEMOLITION.
- REMOVE WATERPROOFING COATING AT POUR STRIPS, REPLACE JOINT SEALANTS IN CONSTRUCTION JOINTS, THEN APPLY NEW COATING PER DETAILS ON S-5. COATING REMOVAL TO EXTEND 1 FOOT BEYOND THE EDGE OF THE POUR STRIP AT EACH SIDE.
- ALL CONCRETE REPAIRS TO BE COMPLETED PRIOR TO APPLYING DECK COATING OR SEALANTS.
- REPLACE SEALANTS AT ALL CONTROL/CONSTRUCTION JOINTS SHOWN ON PLAN.
- REPAIR COATING AT WORN LOCATIONS AND APPLY NEW TOP COAT TO ALL HORIZONTAL AREAS SHOWN ON PLAN INCLUDING CURBS. SEE DETAILS ON S-5.
- AFTER COMPLETING COATING REPAIR, REPAINT DECK STRIPING TO MATCH ORIGINAL STRIPING.

### DRAWING SYMBOL KEY

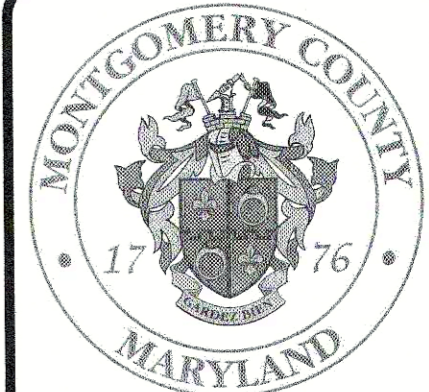
APPROXIMATE EXTENT OF DAMAGE DETECTED - CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL EXTENT AND LOCATIONS OF REPAIR AREAS IN ACCORDANCE WITH THE SPECIFICATIONS. AREAS SHOWN ARE ONLY FOR REFERENCE TO ILLUSTRATE TYPES OF REPAIRS REQUIRED. ACTUAL LOCATIONS OF DAMAGE MAY DIFFER FROM THOSE INDICATED. DEPTH OF REPAIRS SHALL BE ASSUMED TO BE NOMINAL 4" UNLESS OTHERWISE NOTED. SLAB SOFFIT DAMAGE SHOWN OCCURS ON THE UNDERSIDE OF THE LEVEL SHOWN UNLESS NOTED OTHERWISE. ALL OTHER DAMAGE SHOWN OCCURS ON OR ABOVE THE SURFACE OF THE LEVEL SHOWN UNLESS OTHERWISE NOTED.

- DENOTES AREAS NOT IN CONTRACT - WORK IN PLAN NOTES ABOVE DOES NOT APPLY TO THESE AREAS
- DENOTES APPROXIMATE LOCATION OF EXISTING SLAB POUR STRIPS
- DENOTES APPROXIMATE SIZE AND LOCATION OF SLAB OR CURB SURFACE CONCRETE DELAMINATIONS. REPAIR PER 2/S-3
- DENOTES APPROXIMATE SIZE AND LOCATION OF SLAB SOFFIT CONCRETE DELAMINATIONS OR SPALLS - REPAIR PER 3/S-3
- DENOTES EXISTING CONSTRUCTION/CONTROL JOINT-REMOVE AND REPLACE SEALANT



**1** PARKING LEVEL G3 REPAIR PLAN  
NORTH  
3/32"=1'-0"





**HA ASSOCIATES**

HOLBERT APPLE ASSOCIATES, INC.  
STRUCTURAL ENGINEERS

3423 Olney-Laytonville Road, Suite 6  
Olney, Maryland 20832  
Ph (301) 570-1460  
Fax (301) 570-1462

**GARAGE #49 SLAB REPAIRS**  
**MONTGOMERY COUNTY PARKING GARAGE NO. 49**  
7601 WOODMONT AVE  
BETHESDA, MD

NO.	REVISION	DATE

LEVEL G2  
REPAIR PLAN  
SOUTH AND  
CONCRETE  
REPAIR DETAILS

PROJECT NO.	SHEET NO.
17-030	S-3
DATE:	SCALE:
3/14/18	AS NOTED

**PLAN NOTES**

- EXISTING STRUCTURE CONSISTS OF 8" THICK POST-TENSIONED 1-WAY SLAB AND POST-TENSIONED BEAMS UNLESS NOTED OTHERWISE. CONTRACTOR TO AVOID DAMAGE TO EXISTING POST-TENSIONING TENDONS. USE GPR AND/OR X-RAY, AS REQUIRED TO LOCATE TENDONS PRIOR TO DEMOLITION.
- REMOVE WATERPROOFING COATING AT POUR STRIPS, REPLACE JOINT SEALANTS IN CONSTRUCTION JOINTS, THEN APPLY NEW COATING PER DETAILS ON S-5. COATING REMOVAL TO EXTEND 1 FOOT BEYOND THE EDGE OF THE POUR STRIP AT EACH SIDE.
- ALL CONCRETE REPAIRS TO BE COMPLETED PRIOR TO APPLYING DECK COATING OR SEALANTS.
- REPLACE SEALANTS AT ALL CONTROL/CONSTRUCTION JOINTS SHOWN ON PLAN.
- REPAIR COATING AT WORN LOCATIONS AND APPLY NEW TOP COAT TO ALL HORIZONTAL AREAS SHOWN ON PLAN INCLUDING CURBS. SEE DETAILS ON S-5.
- AFTER COMPLETING COATING REPAIR, REPAINT DECK STRIPING TO MATCH ORIGINAL STRIPING.

**DRAWING SYMBOL KEY**

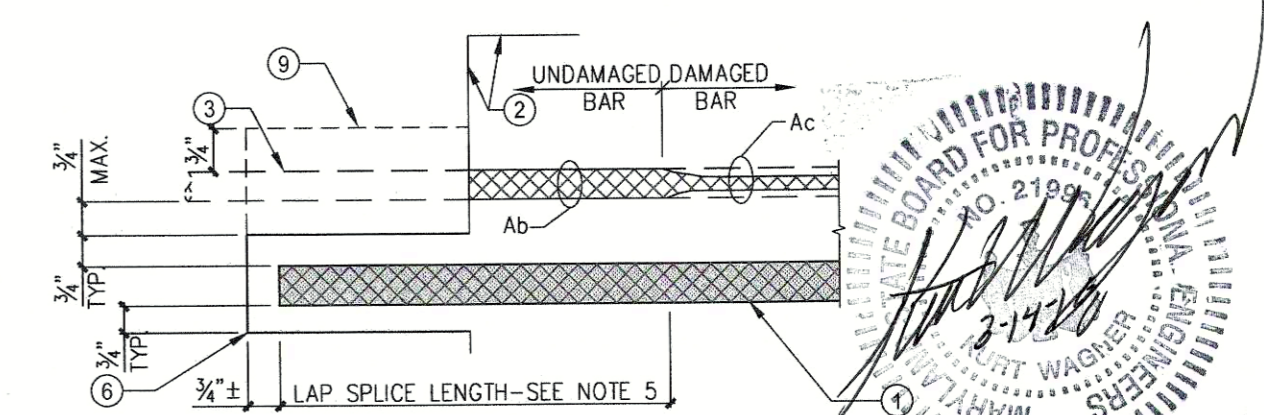
APPROXIMATE EXTENT OF DAMAGE DETECTED - CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL EXTENT AND LOCATIONS OF REPAIR AREAS IN ACCORDANCE WITH THE SPECIFICATIONS. AREAS SHOWN ARE ONLY FOR REFERENCE TO ILLUSTRATE TYPES OF REPAIRS REQUIRED. ACTUAL LOCATIONS OF DAMAGE MAY DIFFER FROM THOSE INDICATED. DEPTH OF REPAIRS SHALL BE ASSUMED TO BE NOMINAL 4" UNLESS OTHERWISE NOTED. SLAB SOFFIT DAMAGE SHOWN OCCURS ON THE UNDERSIDE OF THE LEVEL. SHOW UNLESS NOTED OTHERWISE ALL OTHER DAMAGE SHOWN OCCURS ON OR ABOVE THE SURFACE OF THE LEVEL SHOWN UNLESS OTHERWISE NOTED.

- DENOTES AREAS NOT IN CONTRACT - WORK IN PLAN NOTES ABOVE DOES NOT APPLY TO THESE AREAS
- ▨ DENOTES APPROXIMATE LOCATION OF EXISTING SLAB POUR STRIPS
- ▧ DENOTES APPROXIMATE SIZE AND LOCATION OF SLAB OR CURB SURFACE CONCRETE DELAMINATIONS. REPAIR PER 2/S-3
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- (E) C.J. DENOTES EXISTING CONSTRUCTION/CONTROL JOINT - REMOVE AND REPLACE SEALANT



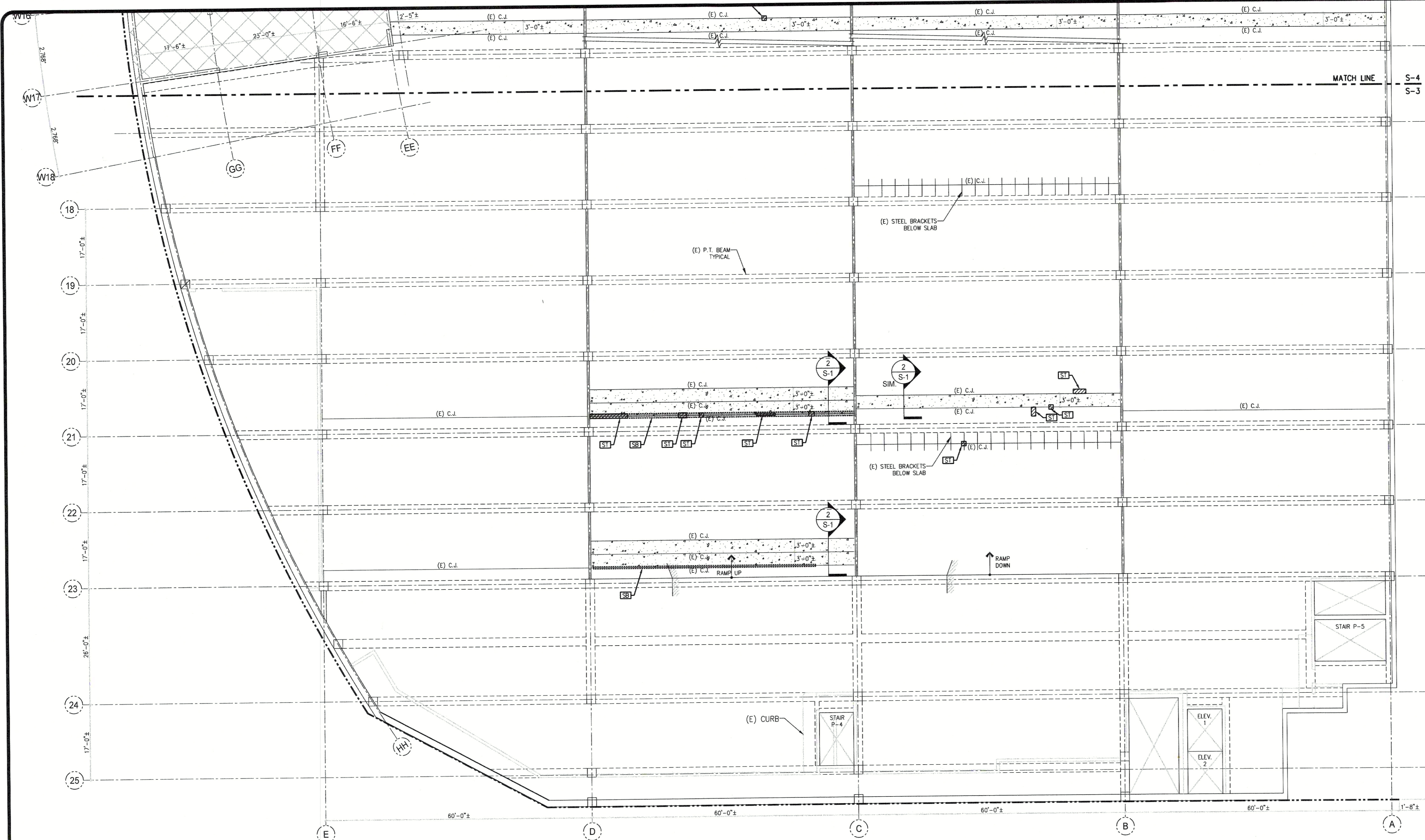
- EXIST. REBAR OR PT TENDON.
- PROVIDE MIN. 1" THICK PATCH. BUILD OUT SURFACE OF PATCH IF REQUIRED.
- FACE OF SOUND EXISTING CONC.
- DRILL AND EPOXY GROUT 3/8" STAINLESS STEEL ALL-THREAD "PINS" A MIN. 2" INTO EXIST. CONC. @ 8" O.C. MAX. EA. WAY. PROVIDE MIN. 2" 90° HOOK AT END OF EACH PIN.
- IF PATCH AREA EXCEEDS 2 SQ. FT., ADD GALVANIZED, OR EPOXY-COATED, 4x4 W/4 x W/4 WWF REINFORCING.
- DETAIL IS APPLICABLE TO TOP SURFACE, SOFFIT OR VERTICAL DAMAGE AREAS.

**1 SHALLOW REPAIR DETAIL** N.T.S.

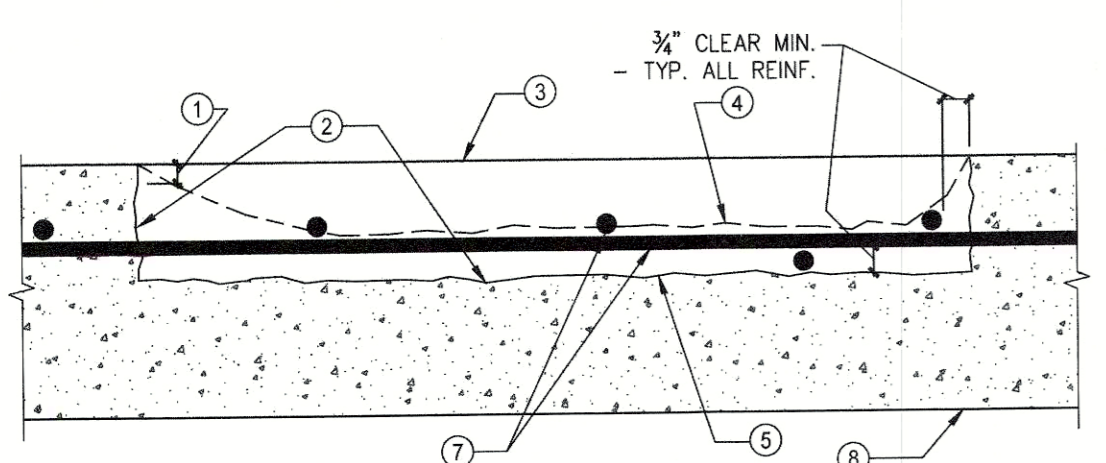


- ADDITIONAL REINFORCING STEEL, IF REQUIRED - SEE NOTE 5.
- PERIMETER OF REPAIR AREA.
- EXISTING REINFORCING STEEL.
- CLEAN EXPOSED REINFORCING STEEL OF CORROSION AND SCALE BY AN OIL-FREE ABRASIVE-BLAST METHOD, THEN COAT WITH EPOXY OR OTHER APPROVED RUST-INHIBITIVE MATERIAL.
- IF DAMAGED BAR AREA AC IS LESS THAN 75% OF ORIGINAL AREA AB, ADD ADDITIONAL GRADE 60 REINFORCING STEEL OF AREA AB OR GREATER. AT EACH END OF THE CORRODED AREA, PROVIDE A MINIMUM LAP SPlice LENGTH OF 44 TIMES THE EXISTING STEEL DIAMETER. IF THE ADDITIONAL STEEL ENCOUNTERS THE END OF THE MEMBER, PROVIDE A HOOK OR MECHANICAL ANCHORAGE CAPABLE OF DEVELOPING THE FULL TENSION CAPACITY OF THE STEEL.
- IF LAP SPlice OF ADDITIONAL STEEL EXTENDS BEYOND THE REPAIR AREA PERIMETER, CUT A NOTCH IN THE EXISTING CONCRETE TO PROVIDE A 3/4" CLEAR SPACE BEHIND AND ON EACH SIDE OF THE ADDED STEEL.
- AT CONTRACTORS OPTION, UPON APPROVAL BY ENGINEER, IN LIEU OF CLEANING & EPOXY COATING EXISTING REINFORCING STEEL, IT MAY BE REMOVED AND REPLACED WITH EPOXY-COATED REINFORCING HAVING PROPER SPlice LENGTHS.
- AT CONTRACTORS OPTION, OR WHERE ROOM OR ACCESS FOR LAP SPlice LENGTH IS NOT AVAILABLE, CUT OFF DAMAGED PORTION OF STEEL AND ADD NEW REINFORCING STEEL WITH ENGINEER APPROVED MECHANICAL TENSION SPlice COUPLER IN LIEU OF LAP SPlice DETAIL.
- IF NEW BAR IS LOCATED WITHIN 1/2" OF EXISTING BAR, CHIP OUT CONCRETE BEYOND AND UNDER EXISTING BAR FOR LENGTH OF SPlice WITH NEW BAR.

**5 EXISTING REINFORCING STEEL PREPARATION DETAIL** N.T.S.

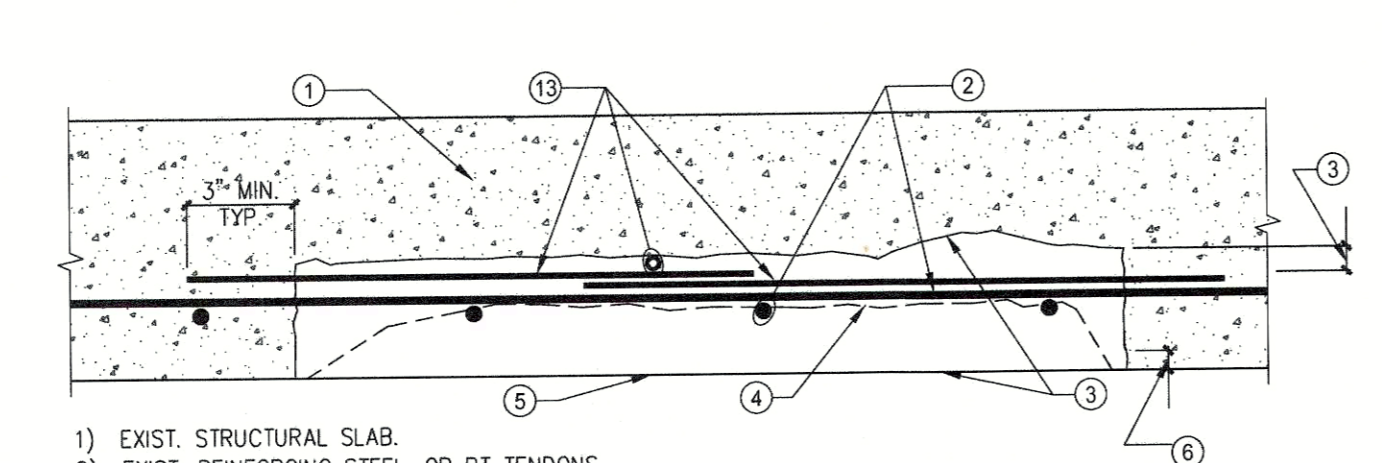


**1 PARKING LEVEL G2 REPAIR PLAN SOUTH**  
3/32"=1'-0"



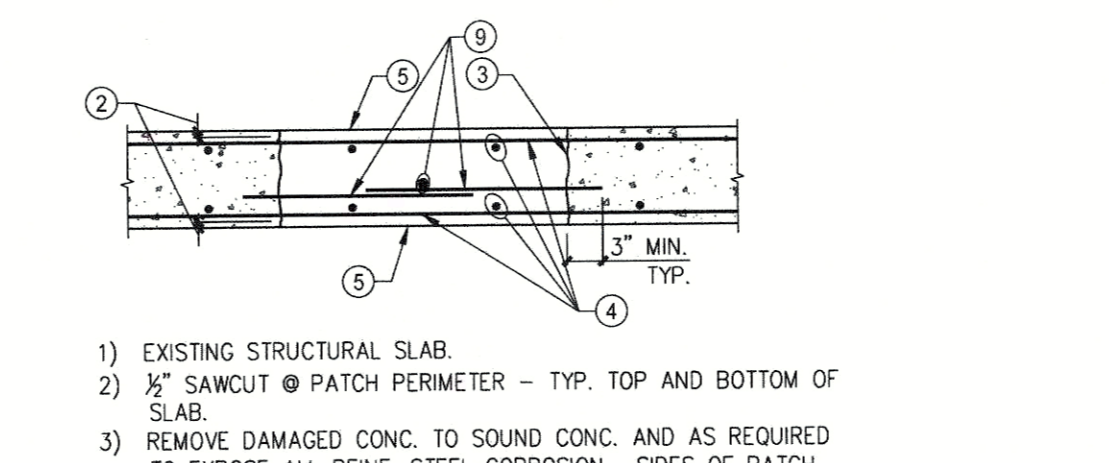
- 1/2" SAWCUT AROUND PATCH PERIMETER.
- REMOVE CONC. TO HORIZ. SURFACE BETWEEN ADJ. BARS OR TENDONS WHEN CAVITY ENCOMPASSES MORE THAN ONE BAR OR TENDON.
- PATCH TO ORIGINAL SURFACE.
- EXISTING CAVITY SURFACE.
- REMOVE BEYOND DELAMINATION TO SOUND CONC.
- PROVIDE SHORING OF SLAB IF AREA OF REPAIR EXCEEDS 5 SQ. FT. OR IF SUM OF INDIVIDUAL REPAIR AREAS EXCEED 10 SQ. FT. IN ANY 100 SQ. FT. AREA OF THE SLAB.
- EXIST. REINFORCING STEEL OR POST-TENSIONING TENDONS.
- EXISTING STRUCTURAL SLAB.
- EPOXY COAT ALL EXPOSED REINFORCING STEEL - SEE 5/S-3.
- REMOVE ANY CONDUIT ENCOUNTERED WITHIN REPAIR AREA UPON APPROVAL FROM OWNER. CAUTION: WIRES IN CONDUIT MAY BE LIVE.
- DETAIL 4/S-3 MAY BE USED AT NO ADDITIONAL COST TO THE OWNER.
- REPLACE HEAVILY CORRODED REINFORCING STEEL AS REQUIRED - SEE 5/S-3.
- IF THE CONCRETE REMOVAL EXPOSES LESS THAN HALF OF ANY CLEAN EXISTING REINFORCING STEEL TO WHICH THE REMAINING CONCRETE IS STILL TIGHTLY BONDED, DO NOT CHIP OUT THE REMAINING CONCRETE AROUND THE REINFORCING STEEL - ADD PINS PER DETAIL 1/S-3.
- PROVIDE SHORING OF SLAB IF AREA OF REPAIR EXCEEDS 5 SQ. FT. OR IF SUM OF INDIVIDUAL REPAIR AREAS EXCEED 10 SQ. FT. IN ANY 100 SQ. FT. AREA OF THE SLAB.
- IF EXISTING REBARS ARE SPACED > 12" O.C. OR > 6" FROM EDGE OF PATCH, DRILL AND EPOXY GROUT #4 EPOXY COATED BARS IN EACH SIDE OF PATCH WITH 16" LAP AT MAX. 12" O.C. OR MAX. 6" FROM EDGE OF PATCH. - TYP. EA. WAY.

**2 SLAB SURFACE PARTIAL DEPTH REPAIR DETAIL** N.T.S.



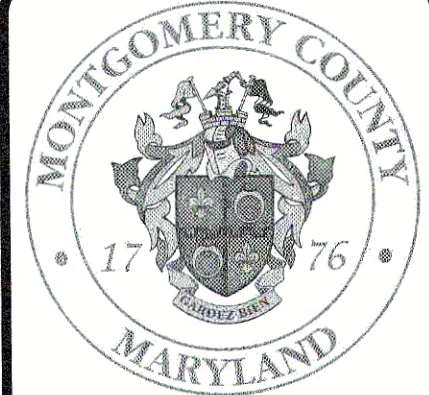
- EXIST. STRUCTURAL SLAB.
- EXIST. REINFORCING STEEL OR PT TENDONS.
- REMOVE BEYOND DELAMINATION TO SOUND CONCRETE & MIN. 3/4" CLEAR ABOVE REINFORCING STEEL.
- EXIST. CAVITY SURFACE.
- PATCH TO ORIGINAL SURFACE.
- 1/2" SAWCUT TYPICAL AT PATCH PERIMETER.
- EPOXY COAT ALL EXPOSED REINFORCING STEEL - SEE 5/S-3.
- REMOVE ANY CONDUIT WITHIN REPAIR AREA UPON APPROVAL FROM OWNER. CAUTION: WIRES IN CONDUIT MAY BE LIVE.
- DETAIL 4/S-3 MAY BE USED AT NO ADDITIONAL COST TO THE OWNER.
- REPLACE HEAVILY CORRODED REINFORCING STEEL AS REQUIRED - SEE 5/S-3.
- IF THE CONCRETE REMOVAL EXPOSES LESS THAN HALF OF ANY CLEAN EXISTING REINFORCING STEEL TO WHICH THE REMAINING CONCRETE IS STILL TIGHTLY BONDED, DO NOT CHIP OUT THE REMAINING CONCRETE AROUND THE REINFORCING STEEL - ADD PINS PER DETAIL 1/S-3.
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**3 SLAB SOFFIT PARTIAL DEPTH REPAIR DETAIL** N.T.S.



- EXISTING STRUCTURAL SLAB.
- 1/2" SAWCUT @ PATCH PERIMETER - TYP. TOP AND BOTTOM OF SLAB.
- REMOVE DAMAGED CONC. TO SOUND CONC. AND AS REQUIRED TO EXPOSE ALL REIN. STEEL CORROSION. SIDES OF PATCH SHALL BE VERTICAL OR SLOPED UP MAX. 6:1 H AWAY FROM PATCH.
- EXIST. REINFORCING STEEL OR POST-TENSIONING TENDONS - AVOID DAMAGING DURING DEMOLITION.
- PATCH TO ORIGINAL SURFACE UNLESS NOTED OTHERWISE.
- REPLACE HEAVILY CORRODED REINFORCING STEEL AS REQUIRED - SEE 5/S-3.
- REMOVE ANY CONDUIT ENCOUNTERED WITHIN REPAIR AREA UPON APPROVAL FROM OWNER. CAUTION: WIRES IN CONDUIT MAY BE ACTIVE.
- PROVIDE SHORING OF SLAB IF AREA OF REPAIR EXCEEDS 5 SQ. FT. OR IF SUM OF INDIVIDUAL REPAIR AREAS EXCEED 10 SQ. FT. IN ANY 100 SQ. FT. AREA OF THE SLAB.
- IF EXISTING REBARS AND/OR TENDONS ARE SPACED > 12" O.C. OR > 6" FROM EDGE OF PATCH DRILL AND EPOXY GROUT #4 EPOXY COATED BARS IN EACH SIDE OF PATCH W/ 16" LAP @ MAX. 12" O.C. OR MAX. 6" FROM EDGE OF PATCH. - TYP. EA. WAY.

**4 FULL DEPTH SLAB REPAIR DETAIL** N.T.S.



**HA ASSOCIATES**

HOLBERT APPLE ASSOCIATES, INC.  
STRUCTURAL ENGINEERS

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Olney, Maryland 20832

Ph (301) 570-1460  
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# GARAGE #49 SLAB REPAIRS MONTGOMERY COUNTY PARKING GARAGE NO. 49

7601 WOODMONT AVE  
BETHESDA, MD

NO.	REVISION	DATE

LEVEL G2  
REPAIR PLAN  
NORTH

PROJECT NO:  
17-030  
DATE:  
3/14/18

SHEET NO:  
**S-4**  
SCALE:  
AS NOTED

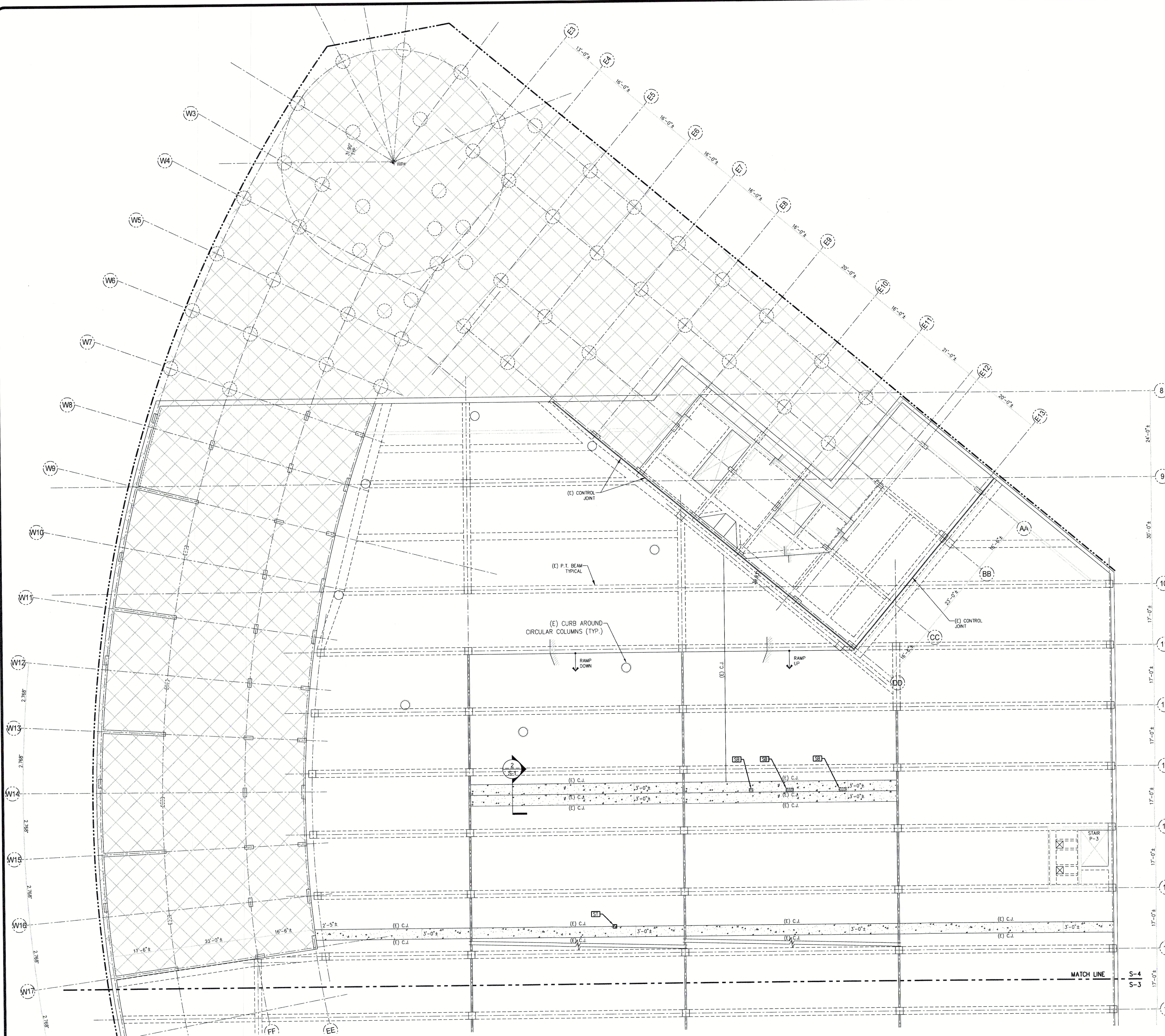
### PLAN NOTES

- EXISTING STRUCTURE CONSISTS OF 8" THICK POST-TENSIONED 1-WAY SLAB AND POST-TENSIONED BEAMS UNLESS NOTED OTHERWISE. CONTRACTOR TO AVOID DAMAGE TO EXISTING POST-TENSIONING TENDONS. USE GPR AND/OR X-RAY, AS REQUIRED TO LOCATE TENDONS PRIOR TO DEMOLITION.
- REMOVE WATERPROOFING COATING AT POUR STRIPS, REPLACE JOINT SEALANTS IN CONSTRUCTION JOINTS, THEN APPLY NEW COATING PER DETAILS ON S-5. COATING REMOVAL TO EXTEND 1 FOOT BEYOND THE EDGE OF THE POUR STRIP AT EACH SIDE.
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### DRAWING SYMBOL KEY

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**1** PARKING LEVEL G2 REPAIR PLAN  
NORTH  
3/32"=1'-0"





**H ASSOCIATES**  
 HOLBERT APPLE ASSOCIATES, INC.  
 STRUCTURAL ENGINEERS  
 3423 Olney-Laytonville Road, Suite 6  
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**GARAGE #49 SLAB REPAIRS**  
**MONTGOMERY COUNTY PARKING GARAGE NO. 49**  
 7601 WOODMONT AVE  
 BETHESDA, MD

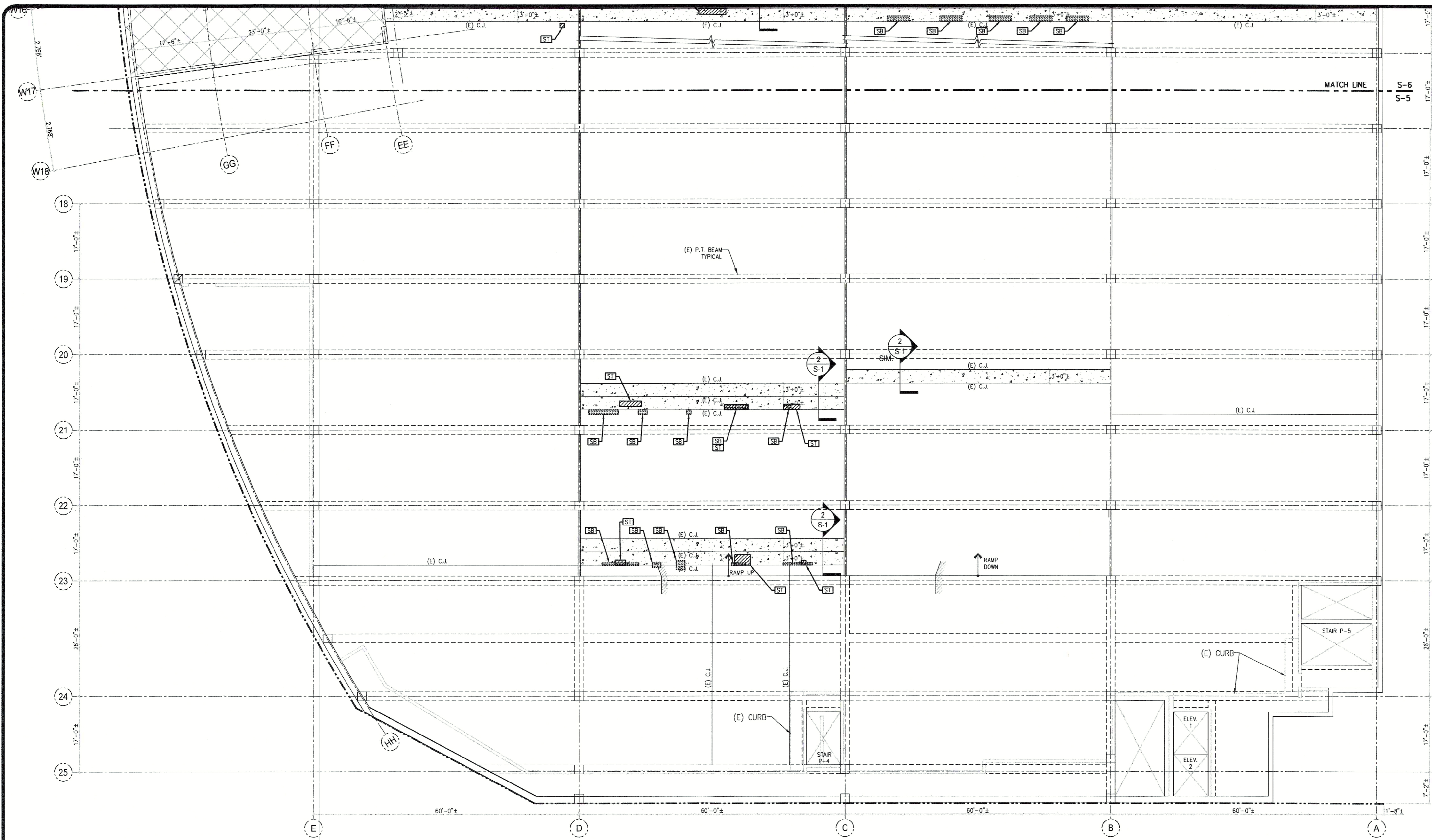
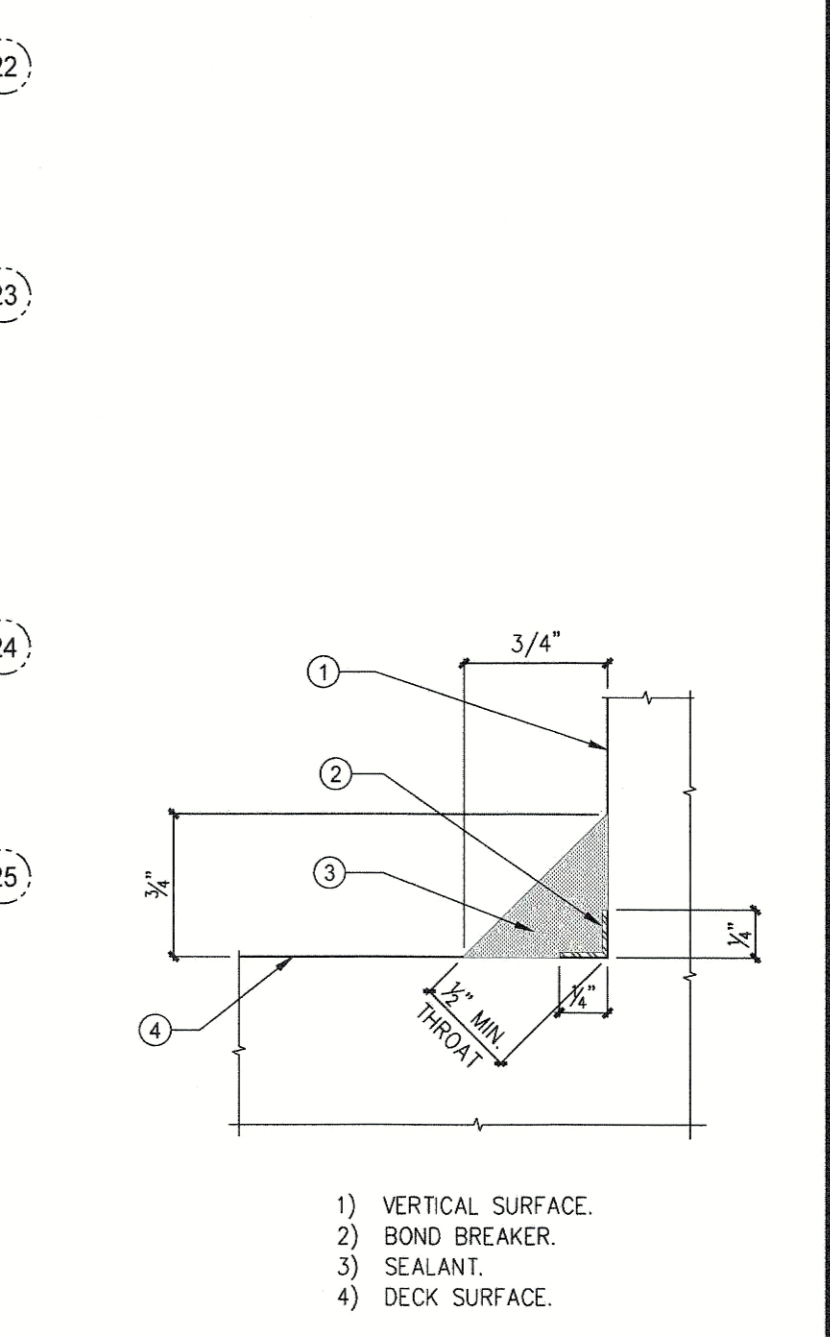
NO.	REVISION	DATE

**LEVEL G1 REPAIR PLAN SOUTH AND WATERPROOFING DETAILS**

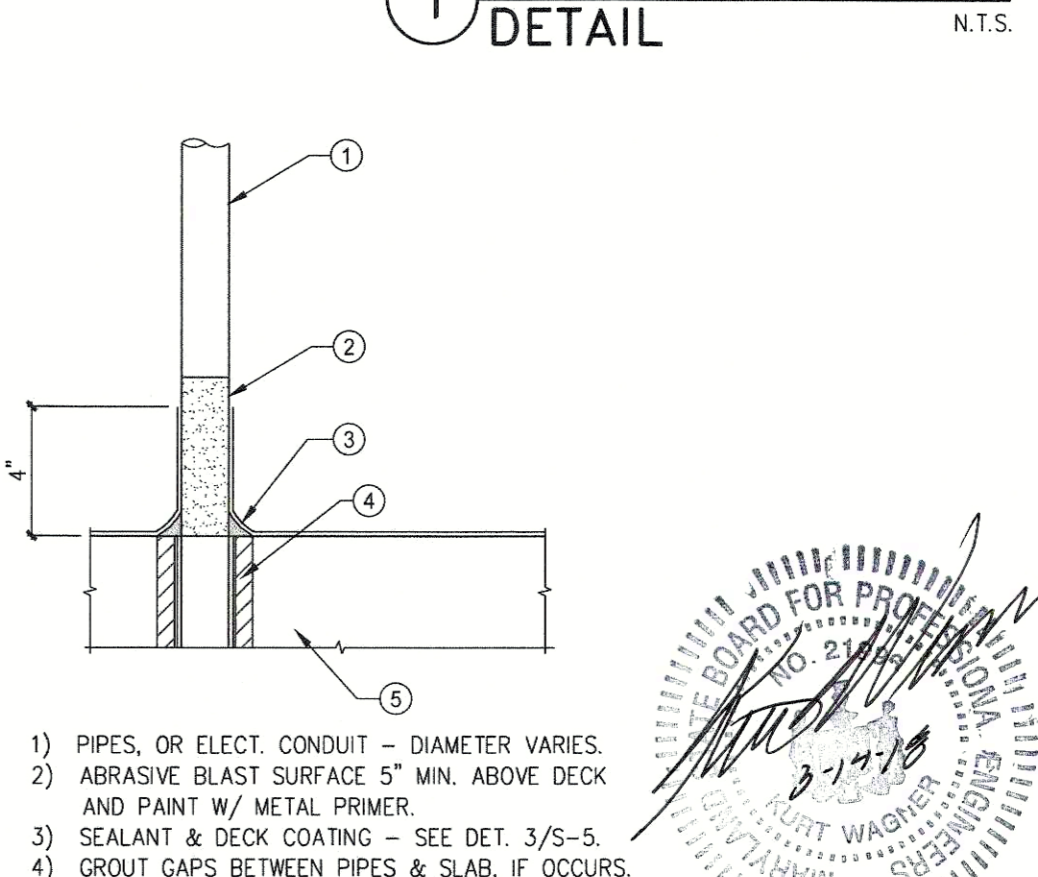
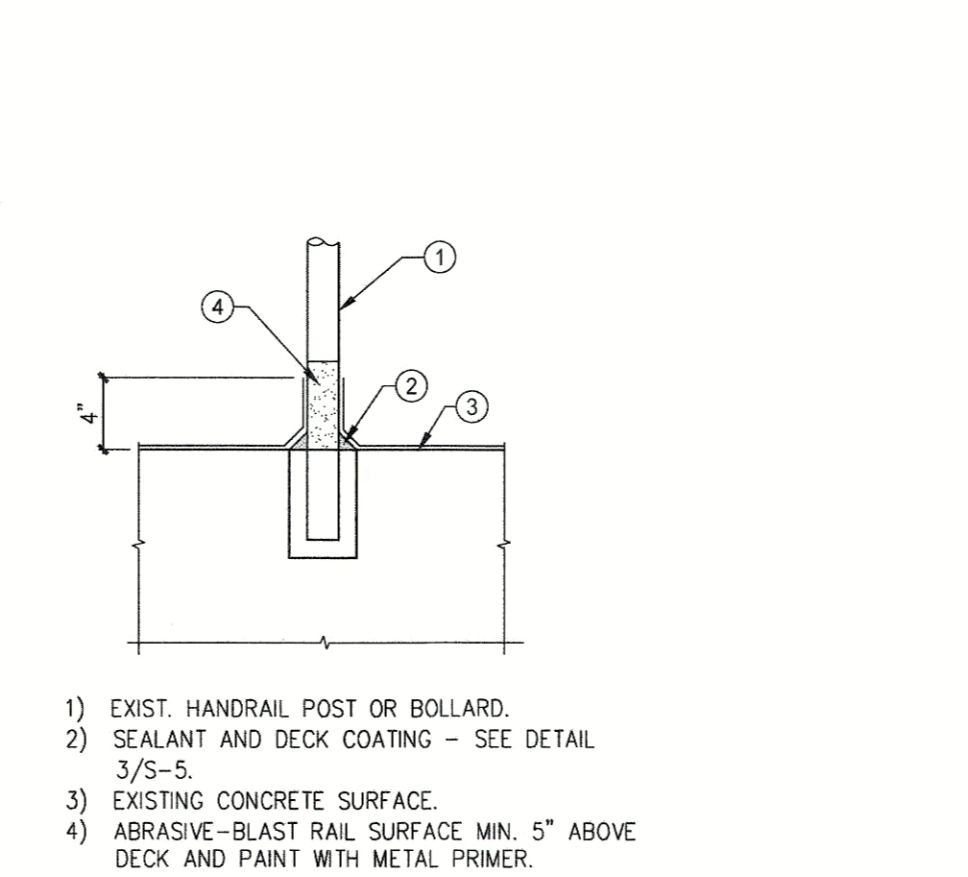
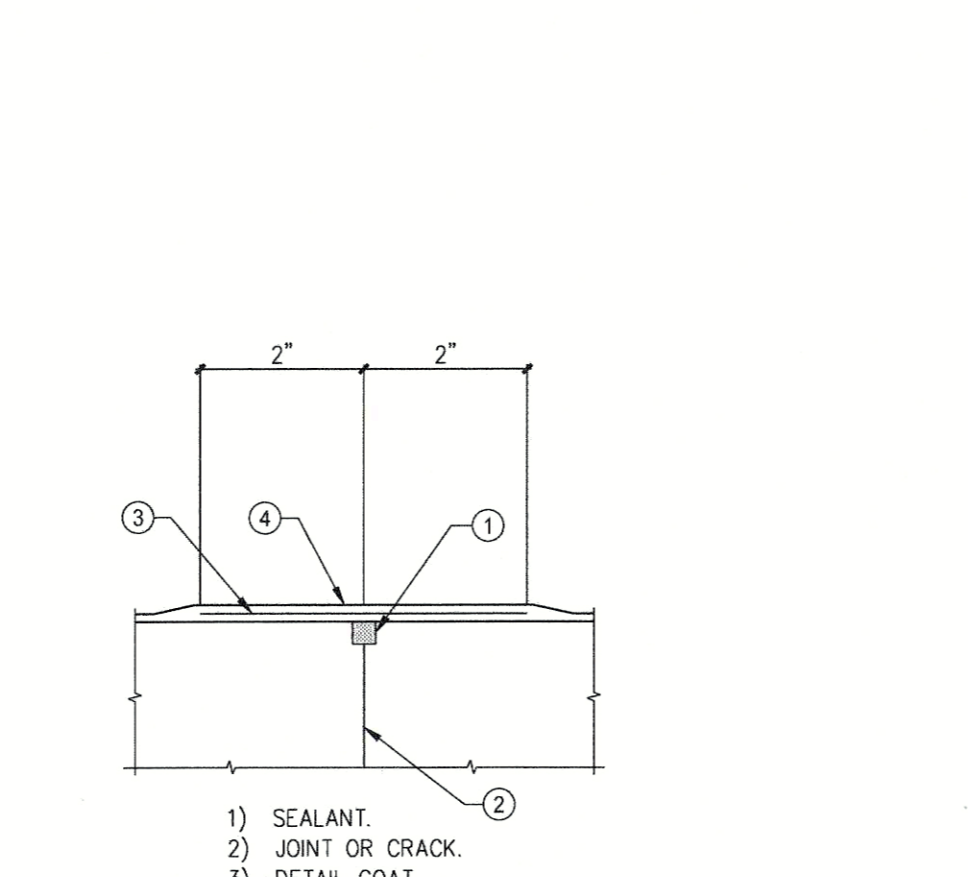
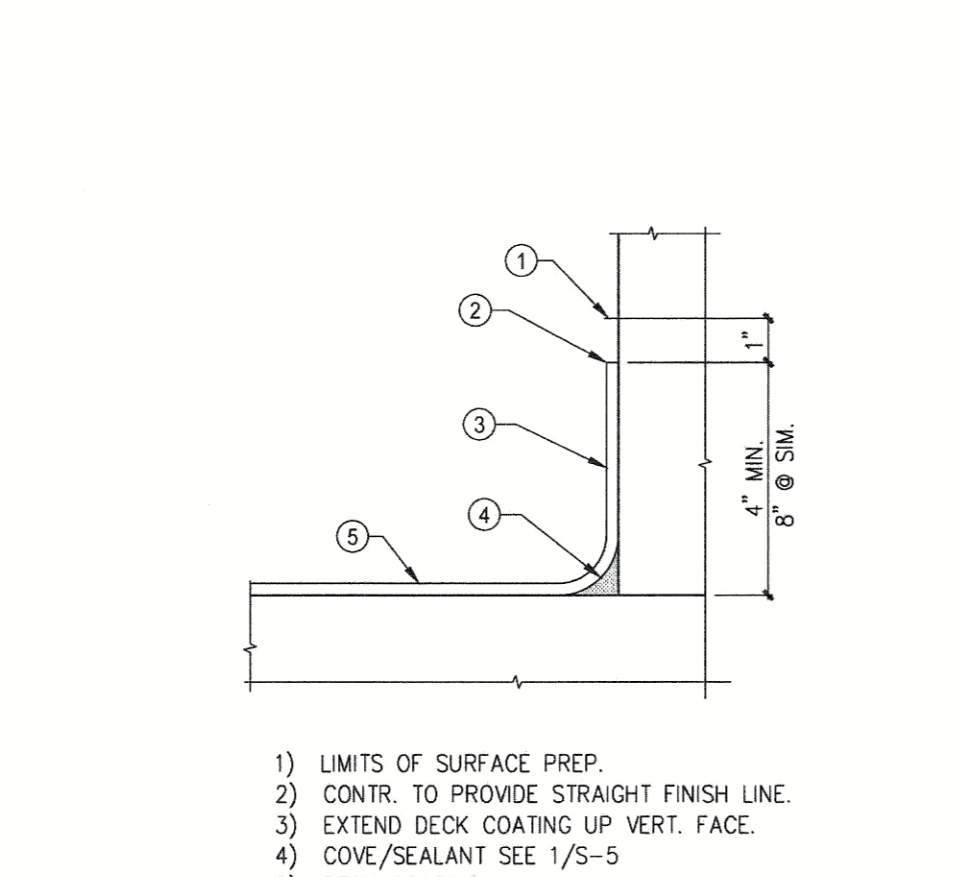
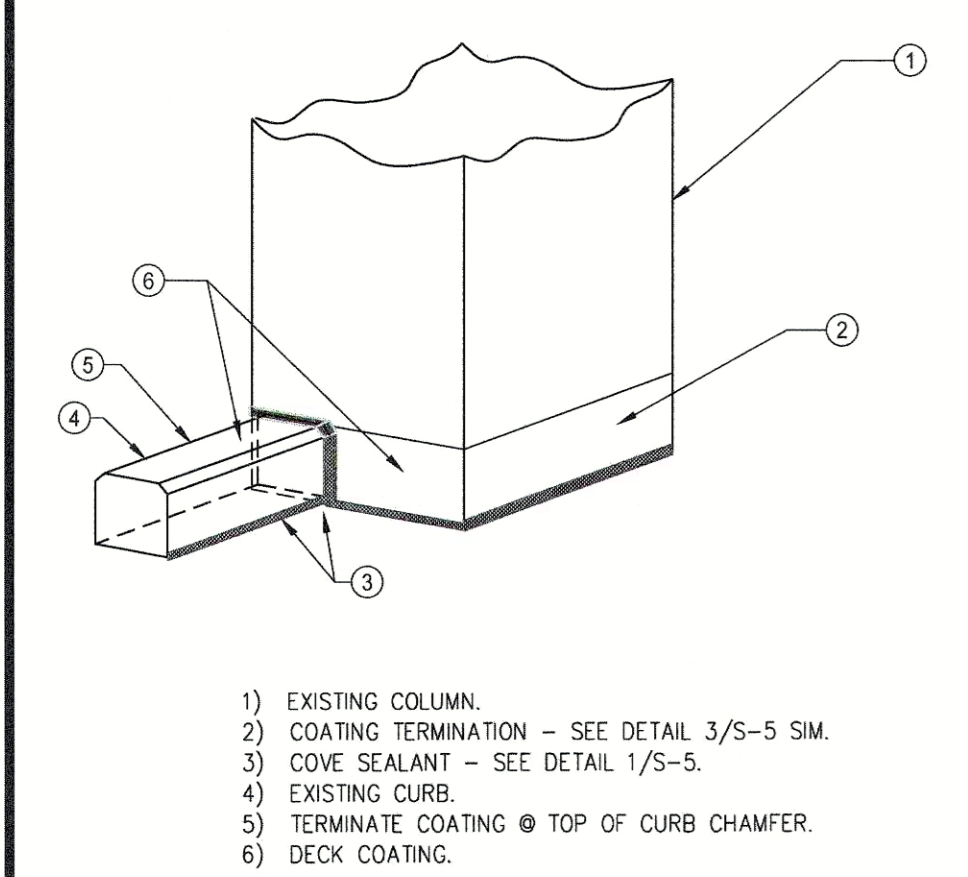
PROJECT NO. 17-030	SHEET NO. S-5
DATE 3/14/18	SCALE AS NOTED

- PLAN NOTES**
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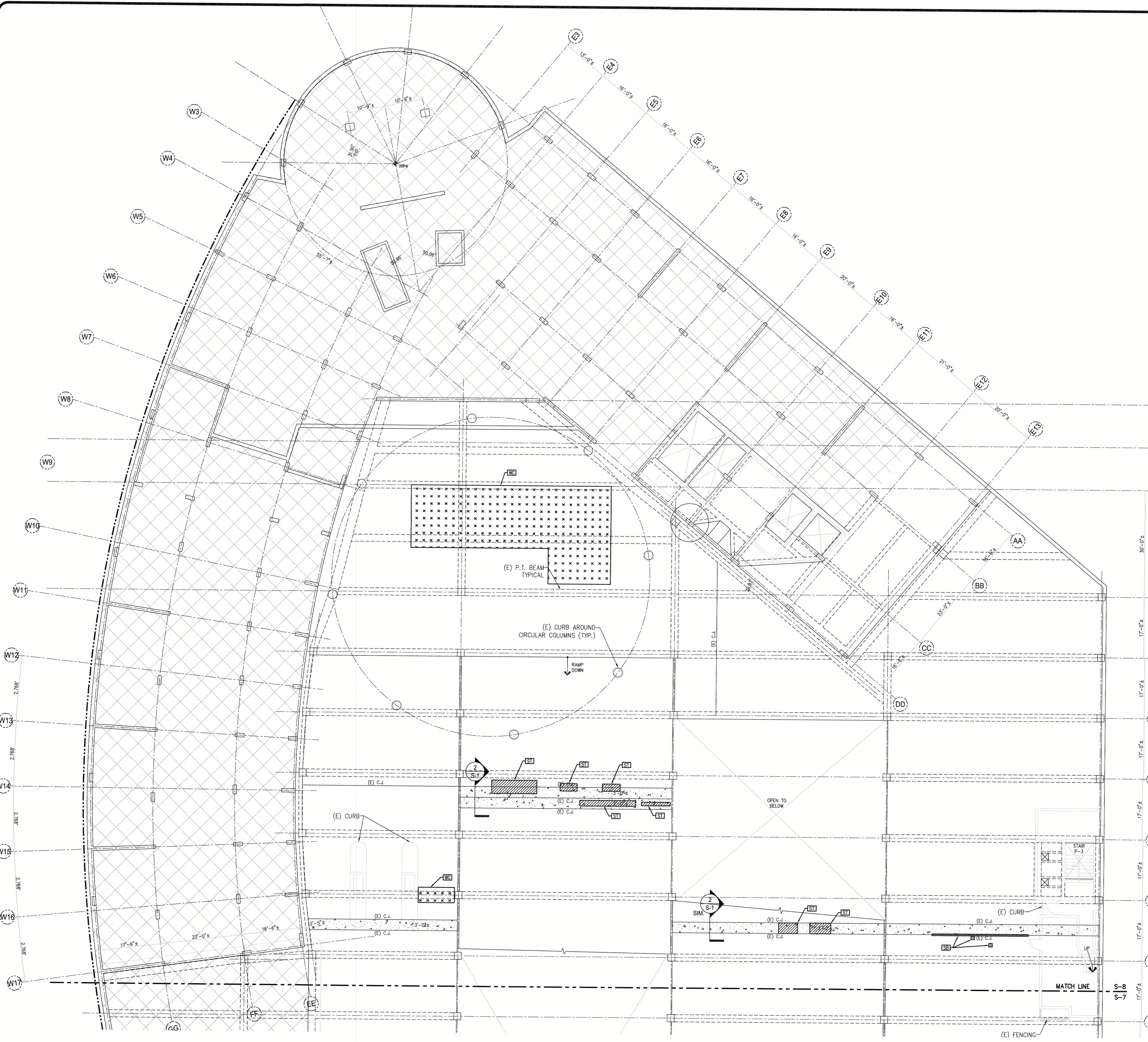
**1 PARKING LEVEL G1 REPAIR PLAN SOUTH**  
3/32"=1'-0"











**PLAN NOTES**

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- DENOTES EXISTING CONSTRUCTION/CONTROL JOINT-REMOVE AND REPLACE SEALANT
- DENOTES APPROXIMATE SIZE AND LOCATION OF WORN COATING TO BE REPLACED.



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**GARAGE #49 SLAB REPAIRS**  
**MONTGOMERY COUNTY PARKING GARAGE NO. 49**  
 7601 WOODMONT AVE  
 BETHESDA, MD

NO.	REVISION	DATE

**LEVEL G**  
**REPAIR PLAN**  
**NORTH**

PROJECT NO: 17-030  
 SHEET NO: S-8  
 DATE: 3/14/18  
 SCALE: AS NOTED

**1 PARKING LEVEL G REPAIR PLAN NORTH**  
 3/32"=1'-0"

