



# SUMMERVILLE PARKING GARAGE SPALLING ASSESSMENT AND REPAIR

## 109 CENTRAL AVENUE SUMMERVILLE, SC 29483

### PROJECT NUMBER: CEMS 21009

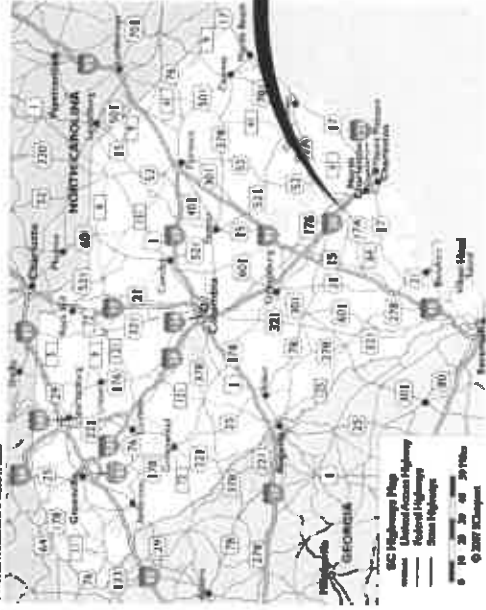
ISSUE DATE: 12 JAN 2022

#### OWNER

CONCRETE REPRESENTATIVE: MARSHALL W. BROWNER  
POSITION: DIRECTOR OF PUBLIC WORKS & TOURISM  
TOWN OF SUMMERVILLE  
200 S MARKET  
SUMMERVILLE, SC 29483  
PHONE NUMBER: 843.691.4258

#### ENGINEERING/ARCHITECTURE

CEMS ENGINEERING, INC  
100 BENTONS LODGE RD, SUITE B  
SUMMERVILLE, SC 29485  
PHONE NUMBER: 843.691.4258  
PROJECT MANAGER: BRAD BINKER, P.E., M.A.S.E.



STATE LOCATION MAP  
SCALE NOT TO SCALE

PROJECT LOCATION

INDEX OF DRAWINGS	
SHEET NO.	SHEET TITLE
0-001	COVER SHEET / INDEX OF DRAWINGS
STRUCTURE	
0-001	GENERAL NOTES, DESIGN LOADS, AND SUGGESTED REPAIR PROCEDURES
0-101	STAIR A - PLAN LEVELS 1 TO 5
0-400	STAIR B - PLAN LEVELS 1 TO 3
0-400	STAIR B - PLAN LEVELS 4 AND 5
0-201	STAIR A - SECTIONS
0-201	STAIR B - SECTIONS
0-200	STAIR B - SECTION
TOTAL: 8	



SITE LOCATION MAP  
SCALE NOT TO SCALE



SUMMERVILLE  
PARKING GARAGE  
JOB TITLE

COVER SHEET /  
INDEX OF  
DRAWINGS  
SHEET TITLE



REVISIONS

NO.	DATE	DESCRIPTION
1	12/15/2021	ISSUED FOR PERMITS
2	12/15/2021	ISSUED FOR PERMITS
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STRUCTURAL ABBREVIATIONS:

Table with columns K, L, M, N, O, P, Q, R, S, T, U, V, W. Contains various structural abbreviations and their meanings.

SUGGESTED REPAIR PROCEDURE A

- 1. PREPARE CONCRETE SURFACE...
2. REMOVE WEAK CONCRETE...
3. REPAIR WITH EPOXY...
4. FINISH WITH SMOOTH SURFACE...

SUGGESTED REPAIR PROCEDURE B

- 1. FORM AND REINFORCE...
2. PLACE AND VIBRATE...
3. CURING...
4. FINISH SURFACE...

SUGGESTED REPAIR PROCEDURE C

- 1. ROUTER CRACKS...
2. ROUTER WIDEN...
3. CLEAN SURFACE...
4. FILL CRACKS WITH EPOXY...

DESIGN REFERENCES:

- ACI 308-10 SPECIFICATIONS FOR STRUCTURAL CONCRETE...
ACI 308-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE...
ACI 308-17 STEEL CONSTRUCTION MANUAL...
ACI 308-18 DESIGN OF CONCRETE STRUCTURES...
ACI 308-19 DESIGN OF STEEL STRUCTURES...
ACI 308-20 INTERNATIONAL BUILDING CODE...
ACI 308-21 INTERNATIONAL BUILDING CODE...
ACI 308-22 INTERNATIONAL BUILDING CODE...

GENERAL NOTES:

- 1. THE STRUCTURE IS DESIGNED AS A STABLE UNIT...
2. WHEN A DETAIL IS SHOWN ON THE STRUCTURAL DRAWINGS...
3. ALL DIMENSIONS ARE IN UNITS...
4. DESIGN CRITERIA:

RECORD DRAWINGS:

- 1. SUMMERSVILLE TOWN HALL...
2. WALLER, INC. TRUSS HALL...
3. CONCRETE PRODUCTS, INC.

DESIGN CRITERIA:

- A: FLOOR LIVE LOAD...
B: ROOF LIVE LOAD...
C: GROUND SNOW LOAD...
D: WIND LOAD...
E: DESIGN WIND SPEED...
F: WIND EXPOSURE...
G: DESIGN WIND DIRECTION...
H: DESIGN WIND DIRECTION...
I: DESIGN WIND DIRECTION...
J: DESIGN WIND DIRECTION...

GENERAL NOTES, DESIGN LOADS, AND SUGGESTED REPAIR PROCEDURES. SHEET TITLE: SUMMERSVILLE PARKING GARAGE.

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### LEGEND

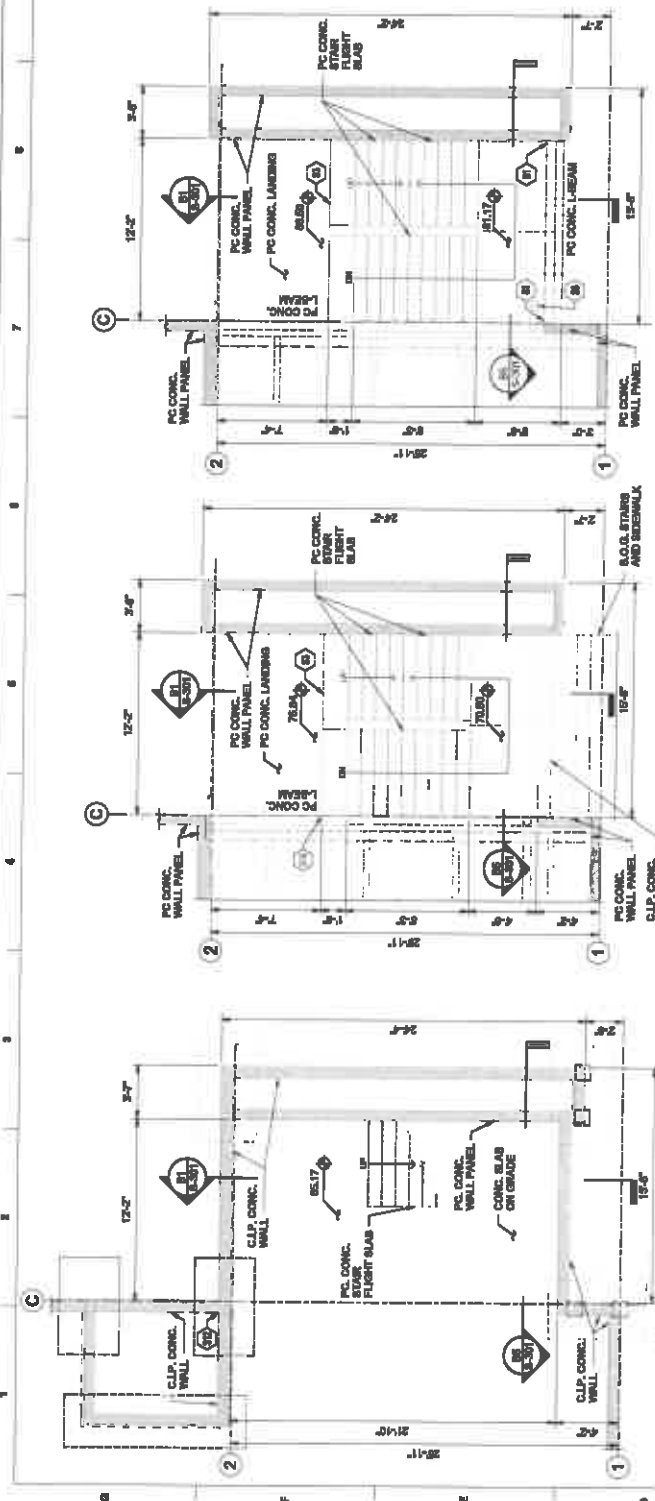
- EXISTING CONCRETE IN SECTION
- PROPOSED CONCRETE IN SECTION
- SHEET KEYNOTE
- ABSOLUTE ELEVATION AT THIS POINT

### GENERAL NOTES

- ALL EXISTING CONDITIONS AND MATERIALS TO REMAIN SHALL BE SHOWN AS SUCH ON DRAWINGS AND NOT BE CONSIDERED FOR REMOVAL OR REPAIR UNLESS SPECIFICALLY NOTED OTHERWISE. VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION.
- THE STRUCTURE IS DESIGNED AS A STEEL UNIT AFTER ALL COMPONENT PARTS ARE IN PLACE. THEREFORE, ALL CONTRACTOR SHALL PROVIDE ALL BRACING AS REQUIRED TO ENSURE STABILITY DURING CONSTRUCTION.

### SHEET KEYNOTES

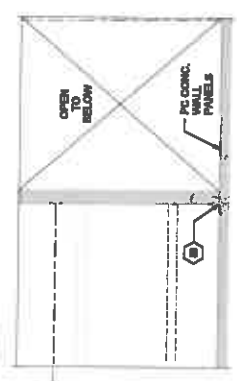
- B1 REPAIR CONCRETE CONCERNING AND SPALLS AT END CONNECTION OF PRECAST INTERMEDIATE LEVEL LANDING AND STAIR FLIGHT SLAB. SEE SUGGESTED REPAIR PROCEDURE A ON S-401.
- B2 REMOVE CORROSION ON UNDERSIDE OF CONNECTION BETWEEN PRECAST STAIR FLIGHT SLAB AND INTERMEDIATE LEVEL PRECAST LANDING SLAB. SEE SUGGESTED REPAIR PROCEDURE B ON S-401.
- B3 REPAIR, SEAL, OR OTHERWISE THROUGH THE STAIRWELL THROUGH PENETRATIONS IN THE INTERMEDIATE LEVEL PRECAST LANDING SLAB.
- B4 REMOVE CORROSION AT BEAM SPARING PLATE. REPAIR PROCEDURE B ON S-401.
- B12 REPAIR SOURCE LOCATION OF WATER INTRUSION INTO ELEVATOR PIT.
- B13 REPAIR TOPPING SLAB CRACKING AT CONNECTION BETWEEN PRECAST STAIR FLIGHT SLAB AND TOPPING SLAB. SEE SUGGESTED REPAIR PROCEDURE A ON S-401.
- B16 REPAIR PC CONCRETE STAIR FLIGHT AND TOPPING SLAB CRACKING AT CONNECTION BETWEEN PRECAST STAIR FLIGHT SLAB AND TOPPING SLAB. SEE SUGGESTED REPAIR PROCEDURE A ON S-401.



**D1 STAIR A - PLAN LEVEL 1**  
SCALE: 3/8"=1'-0"

**D4 STAIR A - PLAN LEVEL 2**  
SCALE: 3/8"=1'-0"

**D1 STAIR A - PLAN LEVEL 1**  
SCALE: 3/8"=1'-0"



**B7 BEAM BEARING PLATE - PLAN LEVEL 5**  
SCALE: 3/8"=1'-0"



**A4 STAIR A - PLAN LEVEL 5**  
SCALE: 3/8"=1'-0"

**A1 STAIR A - PLAN LEVEL 4**  
SCALE: 3/8"=1'-0"

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**LEGEND**

EXISTING CONCRETE  
REINFORCING BARS  
IN SECTION

SHEET KEYNOTE  
ABSOLUTE ELEVATION AT  
70.00 FEET

**GENERAL NOTES**

1. ALL EXISTING CONDITIONS AND STRUCTURAL MEMBERS SPECIFIED FOR RECORD DRAWINGS, PRECAST CONCRETE WALL PANELS AND JOINTS, PRECAST CONCRETE STAIR FLIGHT SLAB, GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION.
2. THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE INSTALLED. THE CONTRACTOR SHALL VERIFY ALL NECESSARY BRACING AND BRACKING IS REQUIRED TO ENSURE STABILITY DURING CONSTRUCTION.

**SHEET KEYNOTES**

S2 REPAIR CONCRETE CRACKING AND SPALLING AT FIBER CONNECTION OF PRECAST CONCRETE COLUMN AND SUGGESTED REPAIR PROCEDURE A ON S-401.

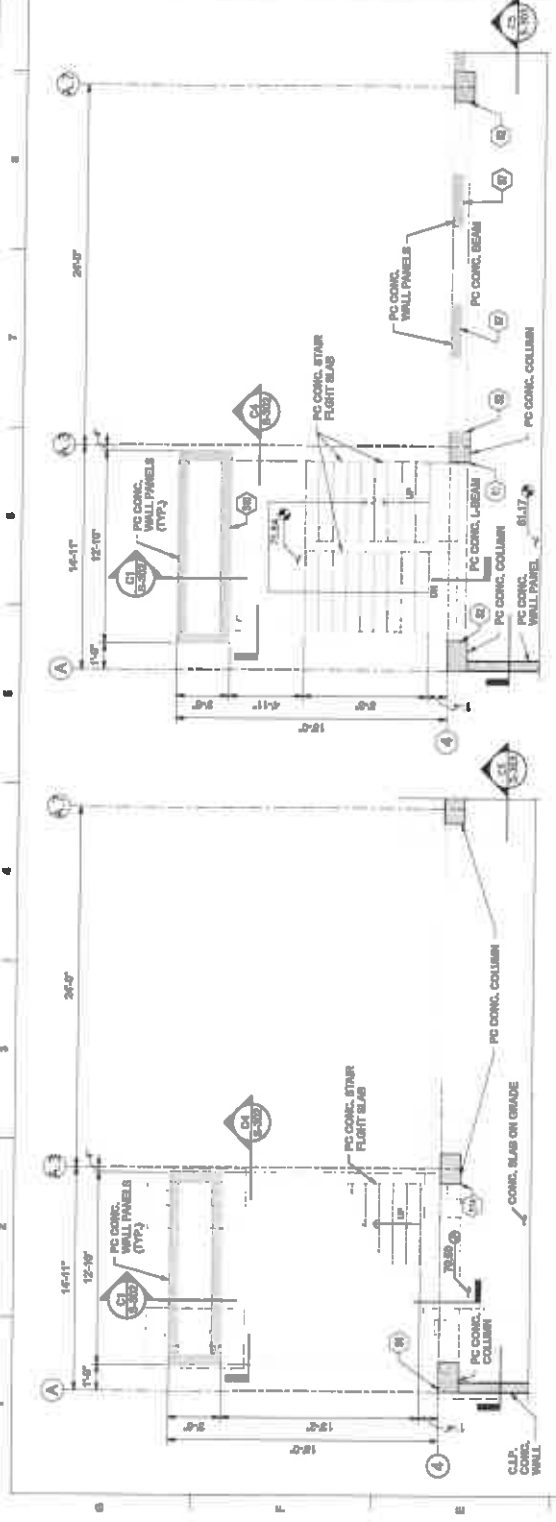
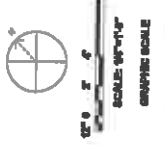
S4 REPAIR CONCRETE CRACKING AND SPALLING AT FIBER CONNECTION TO STAIR. SEE SUGGESTED REPAIR PROCEDURE A ON S-401.

S6 REPAIR CONCRETE SPALLING AT SLAB JOINTS OF PRECAST STAIR BEARING CORREL. SEE SUGGESTED REPAIR PROCEDURE A ON S-401.

S7 REPAIR CONCRETE GROUT PACK NEAR FIBER CONNECTION OF INTERIOR SUPPORTING PRECAST CONC. COLUMN. SEE SUGGESTED REPAIR PROCEDURE A ON S-401.

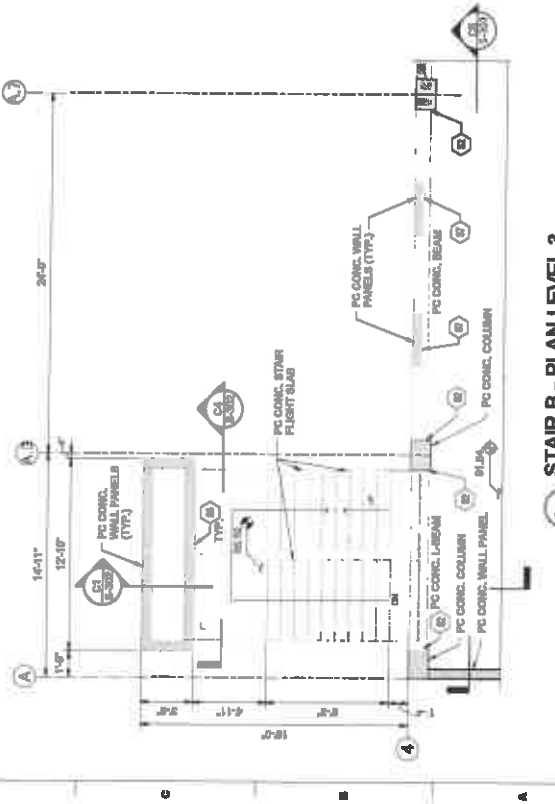
S10 REPAIR CONCRETE CRACKING AND SPALLING AT FIBER CONNECTION OF PRECAST WALL BEARING CORREL. SEE SUGGESTED REPAIR PROCEDURE A ON S-401.

S14 REPAIR SLAB ON GRADE CRACKING. SEE SUGGESTED REPAIR PROCEDURE C ON S-401.



**E1** STAIR B - PLAN LEVEL 1  
SCALE: 1/4\"/>

**E5** STAIR B - PLAN LEVEL 2  
SCALE: 1/4\"/>



**A1** STAIR B - PLAN LEVEL 3  
SCALE: 1/4\"/>



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# LEGEND

- EXISTING CONCRETE STRUCTURAL MEMBER IN SECTION
- SHEET KEYNOTE
- 7/16/20
- ABSOLUTE ELEVATION AT 70.00 FEET

# GENERAL NOTES

1. ALL EXISTING CONDITIONS AND STRUCTURAL MEMBERS SPECIFIED PER RECORD DRAWINGS. PRECAST CONCRETE SHALL BE INSTALLED PER GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION.
2. THE STRUCTURE IS DESIGNED AS A RIGID FRAME. ALL COMPONENTS SHALL BE INSTALLED PER THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BRACING AND SHORING AS REQUIRED TO ENSURE STABILITY DURING CONSTRUCTION.

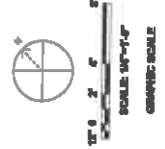
# SHEET KEYNOTES

82. REPAIR CONCRETE CRACKING AND SPALLS AT END CONNECTION OF PRECAST CONCRETE COLUMN. SEE SUGGESTED REPAIR PROCEDURE A ON 8-01.
85. REPAIR BRACING CONCRETE COVER OVER WALL PANELS TO MATCH CONNECTIONS. SEE SUGGESTED REPAIR PROCEDURE A ON 8-01. MAINTAIN JOINT BETWEEN PANELS.
88. REPAIR WALLS AT CONNECTIONS OF PRECAST CONCRETE FLIGHT SLAB TO PRECAST WALL BEARING CORNER. SEE SUGGESTED REPAIR PROCEDURE A ON 8-01.
87. REPAIR CONCRETE JOINTS AT WALLS AT CONNECTION OF PERIMETER PRECAST CONCRETE BEAM AT COLUMN AND FINISHING PRECAST CONCRETE COLUMN. SEE SUGGESTED REPAIR PROCEDURE A ON 8-01.
811. REPAIR TYPING SLAB CRACKING. SEE SUGGESTED REPAIR PROCEDURE C ON 8-01.



**STAIR B - PLAN LEVEL 4**  
 SCALE: 1/4"=1'-0"

**STAIR B - PLAN LEVEL 5**  
 SCALE: 1/4"=1'-0"



REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUE FOR PERMITS	07/2022
2	REVISIONS	

**J. J. WILSON**  
 PROJECT MANAGER  
**J. W. WILSON**  
 PROJECT MANAGER  
**E. WILSON**  
 PROJECT MANAGER  
**S. WILSON**  
 PROJECT MANAGER  
 07/2022  
 21000  
 S-103

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NO. 100	SECTION	

SCALE: 3/8"=1'-0"  
GRAPHIC SCALE

### LEGEND

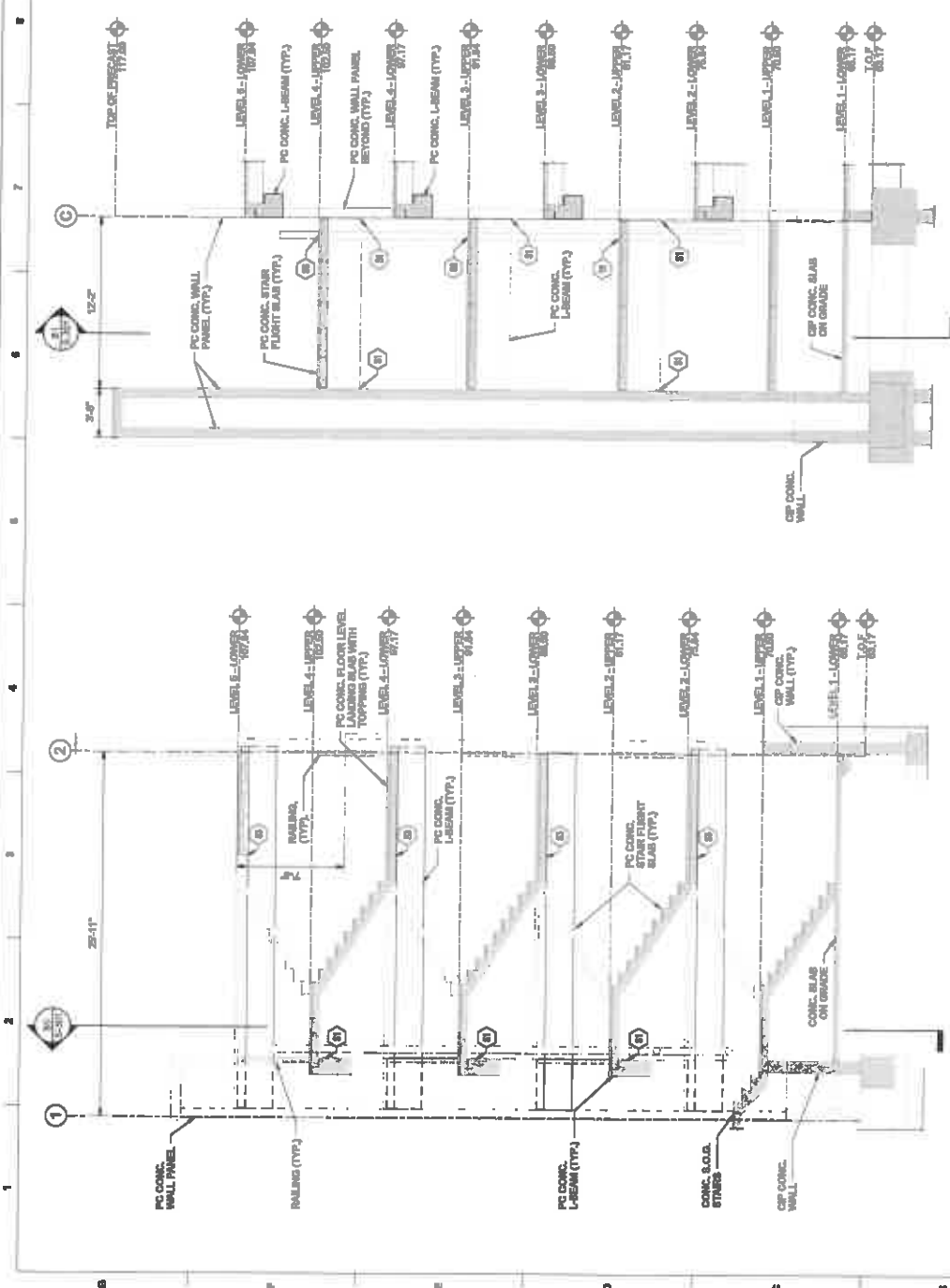
- STARTING CONCRETE STRUTTING MEMBER IN SECTION
- SHEET KEYNOTE
- ABSOLUTE ELEVATION AT 70.00 FEET

### GENERAL NOTES

- ALL EXISTING CONDITIONS AND STRUCTURAL MEMBERS SPECIFIED FOR RECORD DRAWINGS, PRECAST CONCRETE STAIRS AND RAILINGS SHALL BE MAINTAINED. GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION.
- THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE INSTALLED. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BRACING AND BRACKING AS REQUIRED TO ENSURE STABILITY DURING CONSTRUCTION.

### SHEET KEYNOTES

- REPAIR CONCRETE CRACKING AND SPALLING AT END CONNECTION OF PRECAST CONCRETE WALL PANELS TO PRECAST CONCRETE WALL BEAMS ON 8-00L.
- REMOVE CONCRETE ON UNDERSIDE OF PRECAST CONCRETE STAIR FLIGHT SLAB AND SUPPORTING MAIN LEVEL PRECAST LANDING SLAB. SEE SCHEDULED REPAIR PROCEDURE B ON 8-00L.
- REPAIR, SEAL OR OTHERWISE MINIMIZE RAINWATER BLAFT DRAINING THROUGH THE STAIRWELL PARTITION IN THE INTERMEDIATE LEVEL PRECAST LANDING SLAB.



**B5** STAIR A - SECTION  
SCALE: 3/8"=1'-0"

**B1** STAIR A - SECTION  
SCALE: 3/8"=1'-0"

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SUMMERVILLE  
PARKING GARAGE  
JOB TITLE

STAIR B -  
SECTIONS  
SHEET TITLE



REVISIONS	
NO.	DESCRIPTION
1	J.J.W.H. CORRECTION
2	J.J.W.H. CORRECTION
3	J.J.W.H. CORRECTION
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100	J.J.W.H. CORRECTION

210089  
S-302

**LEGEND**

EXISTING CONCRETE  
STRUCTURAL MEMBER  
IN SECTION

SHEET KEYNOTE

ABSOLUTE ELEVATION AT  
7.50 FEET

**GENERAL NOTES**

1. ALL EXISTING CONDITIONS AND STRUCTURAL MEMBERS SPECIFIED FOR REPAIR OR REPLACEMENT SHALL BE REPAIRED OR REPLACED IN ACCORDANCE WITH THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION.

2. THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE REPAIRED OR REPLACED. THE CONTRACTOR SHALL MAINTAIN ALL NECESSARY SHORING AND BRACKING AS REQUIRED TO ENSURE STABILITY DURING CONSTRUCTION.

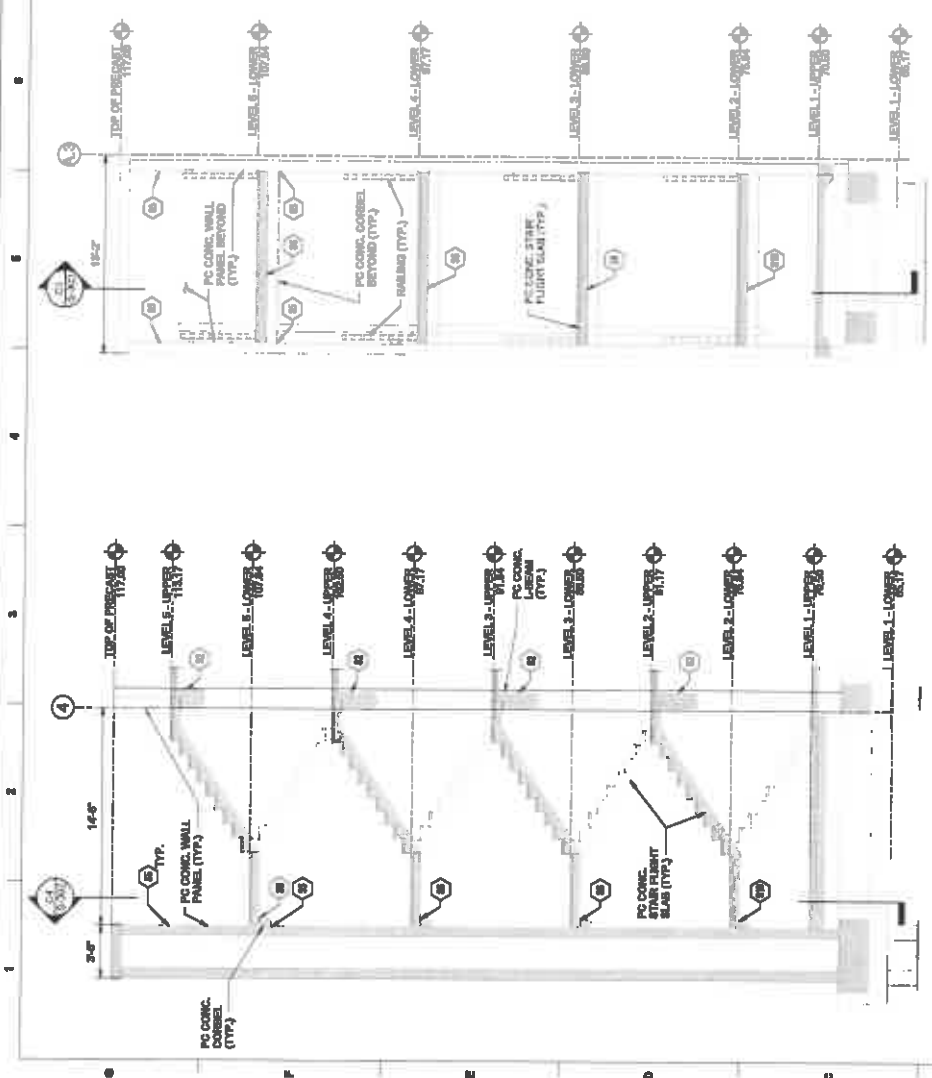
**SHEET KEYNOTES**

82 REPAIR CONCRETE CRACKING AND SPALLING AT END CONNECTION OF PRECAST CONCRETE COLUMN TO PRECAST CONCRETE COLUMN AS SUGGESTED REPAIR PROCEDURE A ON 8-001.

86 REPAIR SPALLING CONCRETE COVER ON PRECAST CONCRETE COLUMN CONNECTION. SEE SUGGESTED REPAIR PROCEDURE A ON 8-001. MAINTAIN JOINT BETWEEN PANELS.

88 REPAIR CONCRETE SPALLING AT CORNER CONNECTION OF PRECAST CONCRETE COLUMN TO PRECAST CONCRETE COLUMN AS SUGGESTED REPAIR PROCEDURE A ON 8-001.

89 REPAIR CONCRETE SPALLING AT CORNER CONNECTION OF PRECAST CONCRETE COLUMN TO PRECAST CONCRETE COLUMN AS SUGGESTED REPAIR PROCEDURE A ON 8-001.



**STAIR B - SECTION**  
SCALE: 1/4\"/>

**STAIR B - SECTION**  
SCALE: 1/4\"/>

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SUMMERVILLE  
PARKING GARAGE

STAR B -  
SECTION



REVISIONS
NO.
DESCRIPTION
DATE
BY
1-11/14-08/08
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**LEGEND**

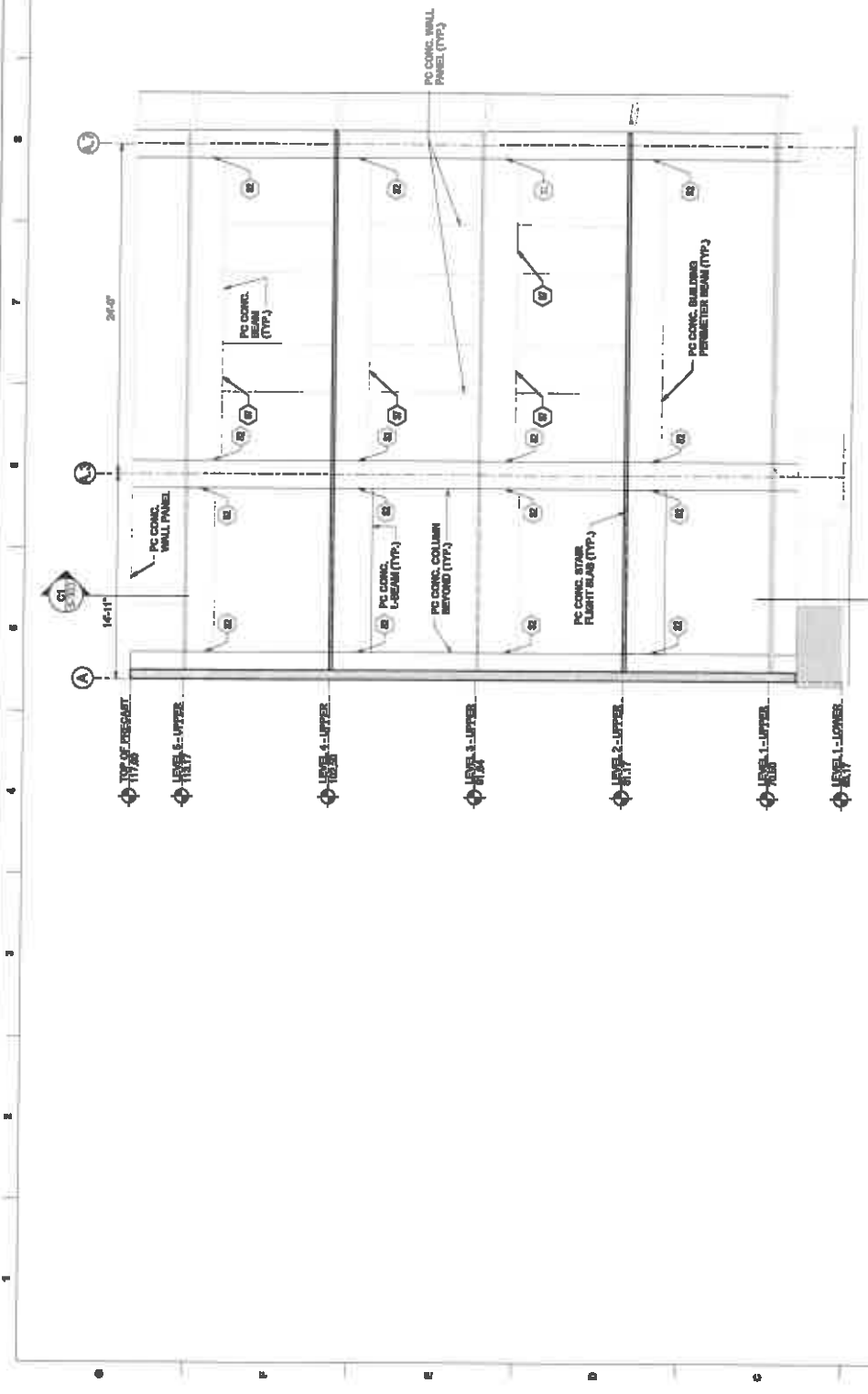
- EXISTING CONCRETE STRUCTURAL MEMBER IN SECTION
- SHEET KEYNOTE
- ABSOLUTE ELEVATION AT 70.00 FEET

**GENERAL NOTES**

- ALL EXISTING CONDITIONS AND STRUCTURAL MEMBERS SPECIFIED PER RECORD DRAWINGS, PRECAST CONCRETE SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL APPLICABLE CONTRACT DOCUMENTS. GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION.
- THIS STRUCTURE IS DESIGNATED AS A STABLE UNIT AFTER ALL COMPONENTS ARE INSTALLED AND THE STRUCTURE IS COMPLETE. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BRACING AND STABILIZATION AS REQUIRED TO ENSURE STABILITY DURING CONSTRUCTION.

**SHEET KEYNOTES**

- REPAIR CONCRETE CRACKING AND DISINTEGRATION IN EXISTING FLOOR SLAB AND PERIMETER PRECAST CONCRETE COLUMN. SEE SUGGESTED REPAIR PROCEDURE A ON S-001.
- REPAIR CONCRETE CRACK IN BACK WALLING AT COLUMN LOCATION OF PERIMETER PRECAST CONCRETE BEAM AT INTERIOR SUPPORTING PRECAST CONCRETE COLUMN. SEE SUGGESTED REPAIR PROCEDURE A ON S-001.



**STAR B - SECTION**  
SCALE: 1/4" = 1'-0"



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