MONTEREY ROAD UNDERPASS (Br. No. 37C0325)
CONCRETE SPALL & CRACK REPAIRS
MORGAN HILL, CALIFORNIA
PROJECT #SR5004

VICINITY MAP
NO SCALE

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LEGEND:

- B7-11 — Indicates Caltrans Standard Plan sheet No.
- U42 — Indicates Detail No.
- A — Indicates Section No.
- S5 — Indicates sheet No. shown on
- 1 — Indicates Detail No.
- S6 — Indicates sheet No. shown on

2023 CALTRANS STANDARD PLANS

A3A	ABBREVIATIONS (SHEET 1 OF 3)
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A10D	LEGEND - LINES AND SYMBOLS (SHEET 4 OF 5)
A10E	LEGEND - LINES AND SYMBOLS (SHEET 5 OF 5)

REGISTERED PROFESSIONAL ENGINEER JOHN A. ALCARAZ No. C68774 Exp. 6/30/25 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER SCOTT C. CREER No. 58879 CIVIL STATE OF CALIFORNIA

DESIGNED BY: KOV
DRAWN BY: SMH
CHECKED BY: YKS
SCALE: AS SHOWN

REV.	DATE	DESCRIPTION	BY

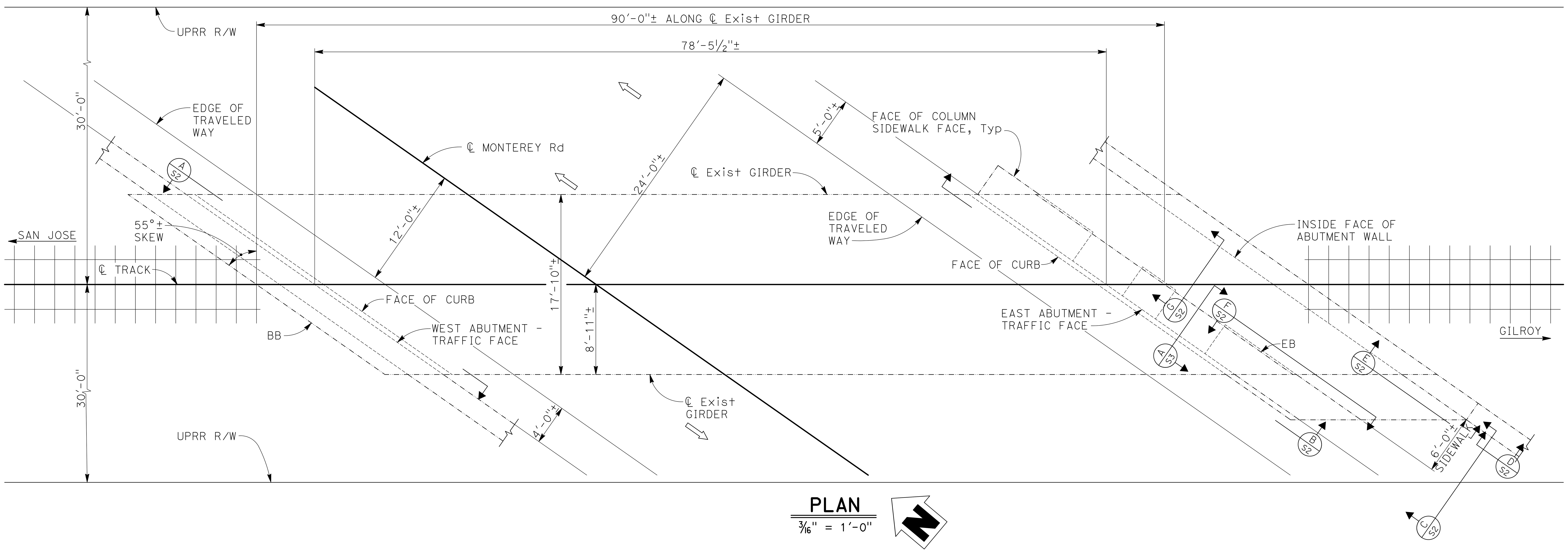
BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS
865 The Alameda
San Jose, California 95126
408-296-5515

TITLE SHEET

MONTEREY ROAD UNDERPASS
CONCRETE SPALL & CRACK REPAIRS
(Br No. 37C0325)

SHEET NUMBER
T1
1 OF 6 SHEETS
DRAWING NO.
2021250B-1

(2021250B-T1) 2021250B



PLAN

3/16" = 1'-0"

LEGEND:

- - - - - Indicates Existing Structure

⇨ Indicates Traffic Direction

NOTES:

1. For Concrete Spall Repair locations, see "STRUCTURAL DETAILS No. 1" sheet. Exact location will be determined by the Engineer.
2. For Concrete Crack Repair locations, see "STRUCTURAL DETAILS No. 1" and "STRUCTURAL DETAILS No. 2" sheet. Exact location will be determined by the Engineer.
3. A pre-construction meeting with UPRR and the Engineer is required prior to performing the work.

CONCRETE CRACK REPAIR SCHEDULE

Crack Location	Approximate Length	Repair Type
BB	13'-0"	Epoxy Injection/ Spall Repair
CC	5'-0"	Epoxy Injection
DD	9'-0"	Epoxy Injection
EE	4'-0"	Epoxy Injection
FF	4'-0"	Epoxy Injection
GG	7'-0"	Epoxy Injection

CONCRETE SPALL REPAIR SCHEDULE

SPALL LOCATION	APPROXIMATE SURFACE AREA DIMENSIONS	NUMBER OF ANODES
A	4'x3'	6
B	4'x3'	6
C	1'x10'	4
D	2'x2'	2
E	1'x2' (TOTAL 2)	N/A
F	1'x2'	N/A
G *	3'x4'	6
H	3'x4'	6
I	1'-6"x3'	2
J	2'x1'-6"	N/A
K	1'x1' (TOTAL 2)	N/A
L	1'x1', 2'x3'	0, 2
M *	4'x6'	10
N *	5'x10'	12
O	2'x2'	2
P	1'x1'	N/A
Q	1'x2' (TOTAL 3)	N/A
R	2'x1' (TOTAL 3)	N/A
S	1'x1' (TOTAL 2)	N/A
T	5'x2'	4
U	8'x1'	4
V	5'x2', 3'x1'-6"	4, 2
W	2'x3' (TOTAL 3)	4
X	1'x2'	N/A
Y	4'x1'	2
Z	1'x1' (TOTAL 2)	N/A
AA	8'x1'	4

* Indicates Spall Greater than 4 inches deep.

NOTE:
THE CONTRACTOR MUST VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL

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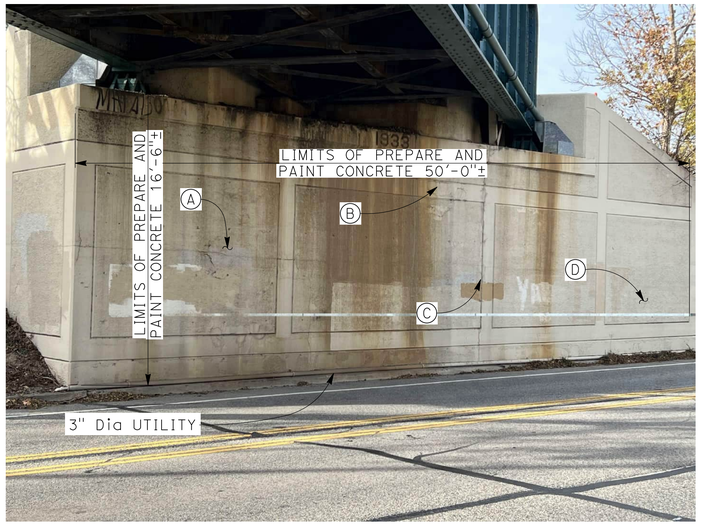
GENERAL PLAN

MONTEREY ROAD UNDERPASS
CONCRETE SPALL & CRACK REPAIRS
(Br No. 37C0326)

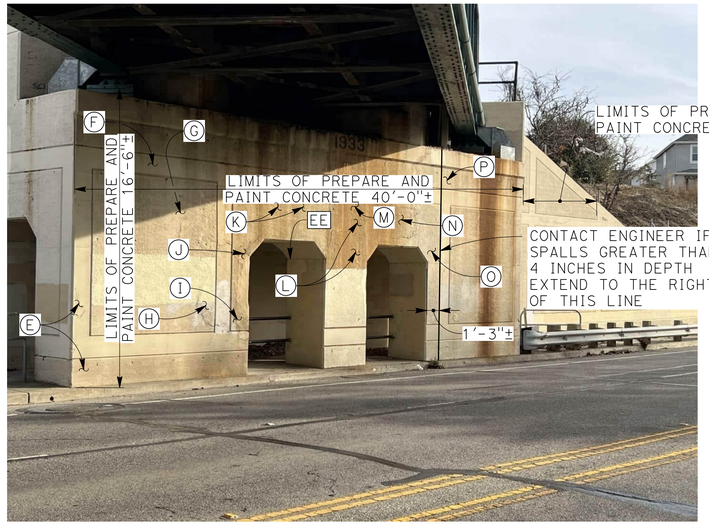
SHEET NUMBER
S1
2 OF 6 SHEETS
DRAWING NO.
2021250B-2

(2021250B-S1) 2021250B



ELEVATION - WEST ABUTMENT

VIEW A S2
NO SCALE



ELEVATION - EAST ABUTMENT

VIEW B S2
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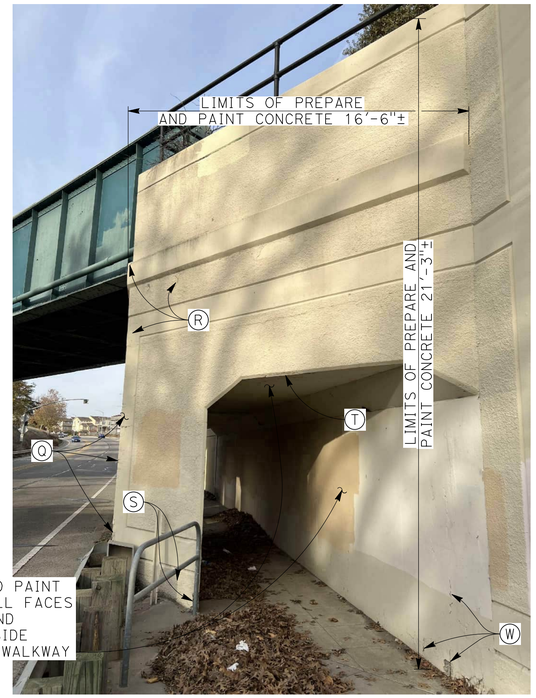
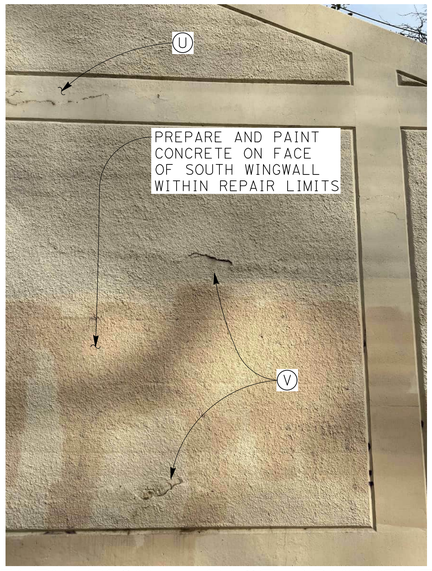


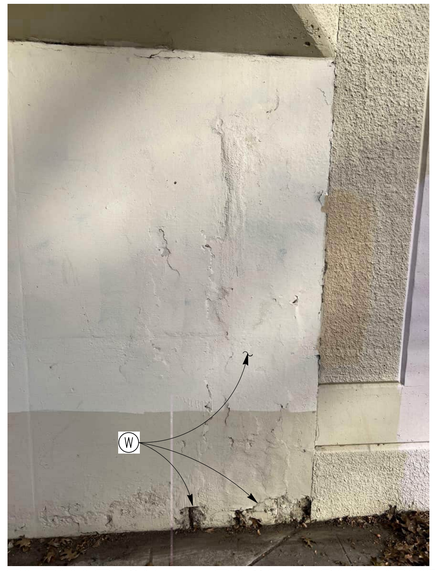
ELEVATION - EAST ABUTMENT (SOUTH CORNER)

VIEW C S2
NO SCALE



ELEVATION - EAST ABUTMENT (SOUTH WINGWALL)

VIEW D S2
NO SCALE



ELEVATION - EAST ABUTMENT (EAST WALL)

VIEW E S2
NO SCALE

ELEVATION - EAST ABUTMENT (WEST WALL PEDESTRIAN FACE)

VIEW F S2
NO SCALE

ELEVATION - EAST ABUTMENT (PEDESTRIAN WALKWAY)

VIEW G S2
NO SCALE

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BY	DESCRIPTION	REV.	DATE

BIGGS CARDOSA ASSOCIATES INC
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855 The Alameda
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408-296-5515

BCR

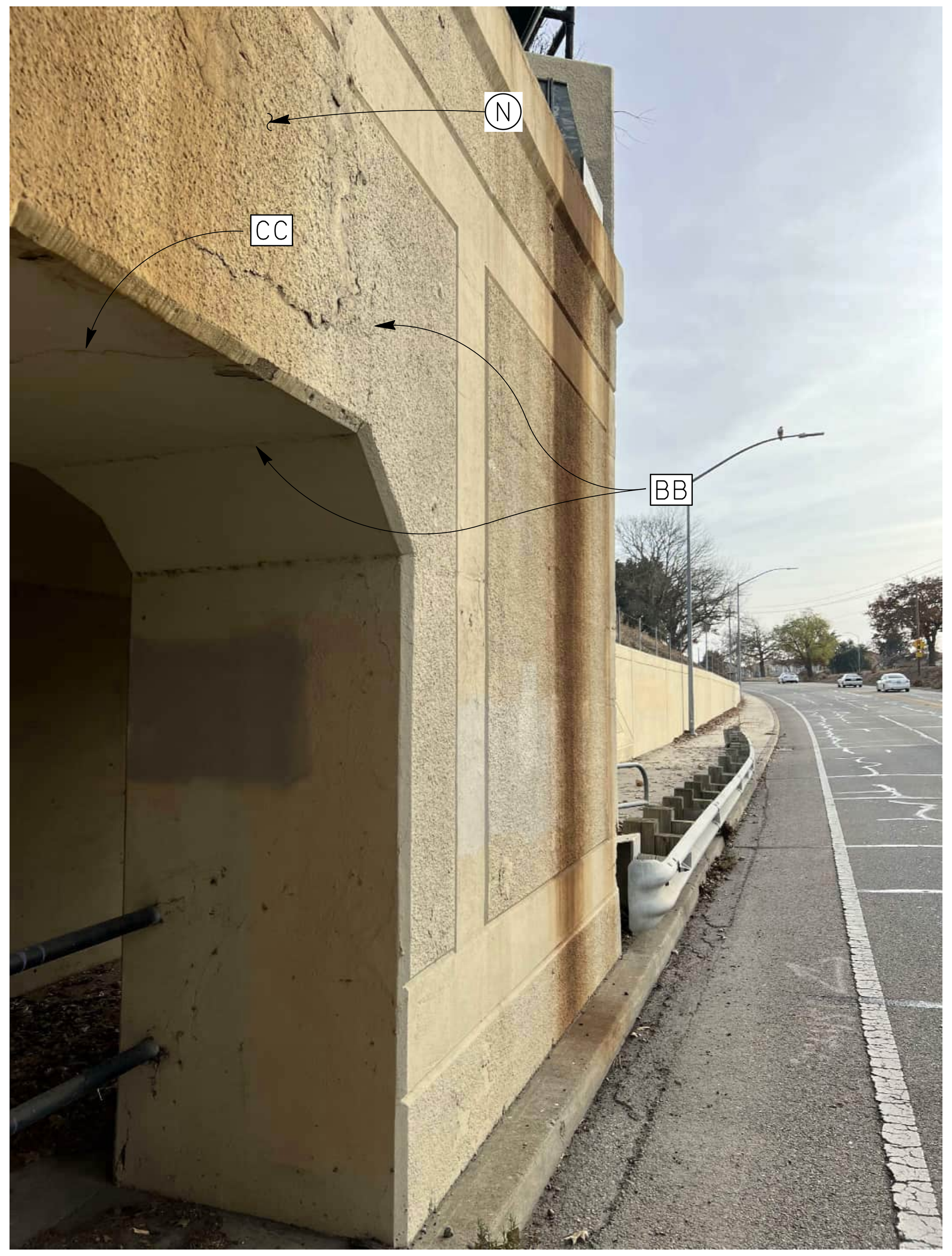
STRUCTURAL DETAILS No. 1

MONTEREY ROAD UNDERPASS
CONCRETE SPALL & CRACK REPAIRS
(Br No. 37C0325)

REGISTERED PROFESSIONAL ENGINEER
SCOTT C. CREER
No. 58879
CIVIL
STATE OF CALIFORNIA

SHEET NUMBER
S2
3 OF 6 SHEETS
DRAWING NO.
2021250B-3

(2021250B-S2) 2021250B



ELEVATION - EAST ABUTMENT (SOUTH COLUMN)

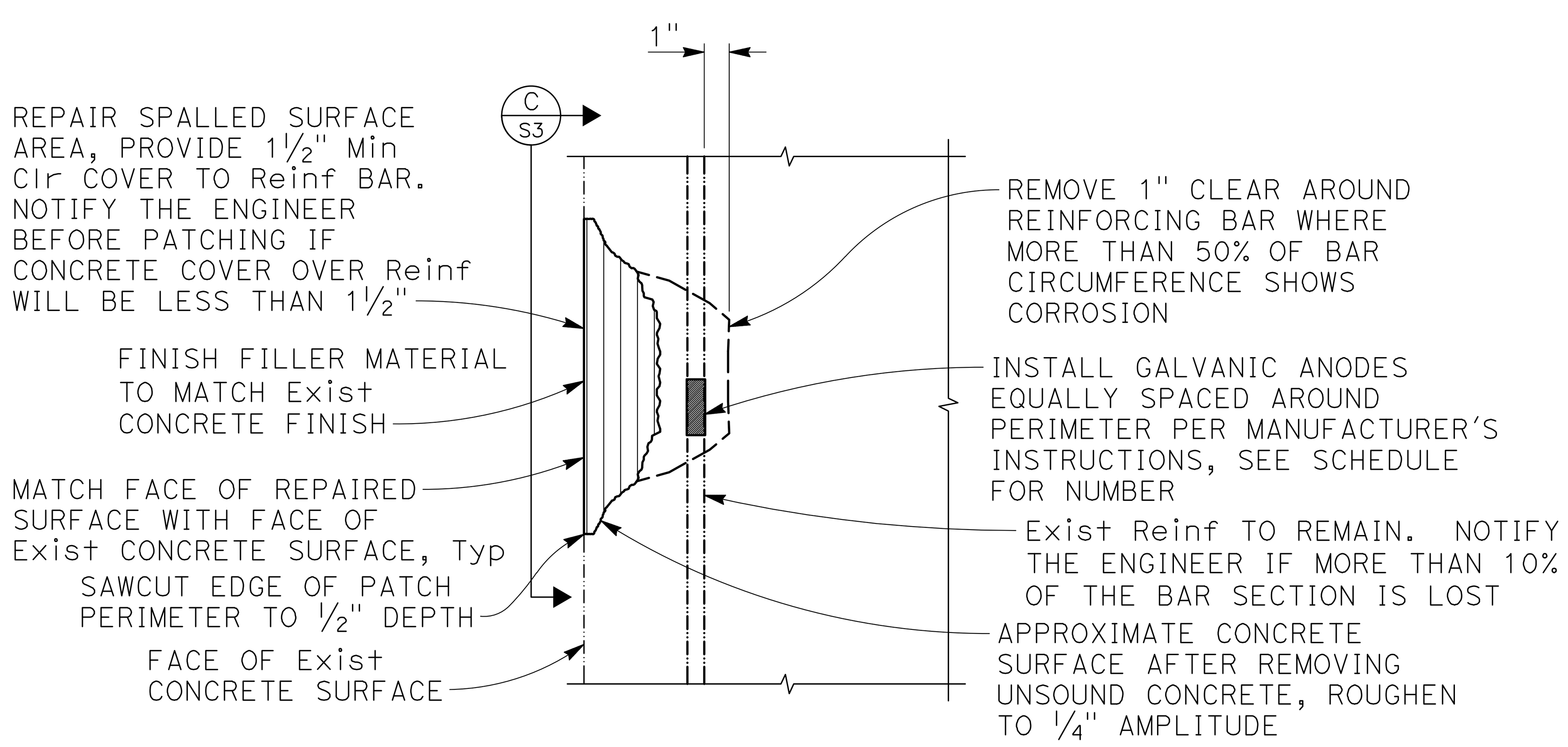
VIEW A / S3
NO SCALE

NOTE:
Exact location of repair will be determined and confirmed by the Engineer prior to performing the repair work.

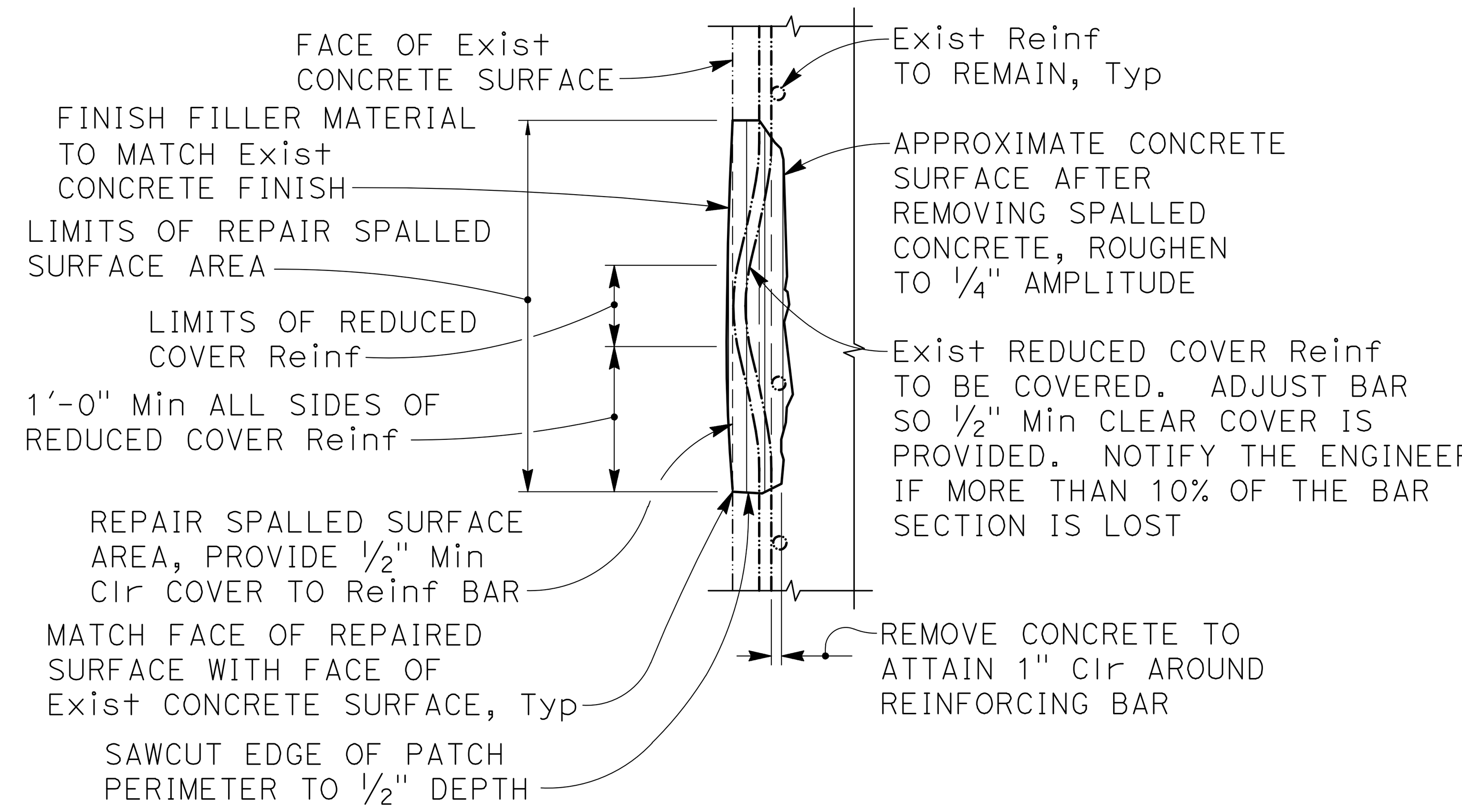
CONCRETE REPAIR NOTES:

1. Existing reinforcement shall be protected in place during unsound concrete removal and patching operations.
2. It is responsibility of the Contractor to repair any reinforcement damaged during construction as directed by Engineer.
3. The sawcut depth shall not exceed ½" or the concrete cover over the steel reinforcing bars whichever is less.
4. Remove unsound concrete until sound, hard concrete substrate is exposed. Roughen to ¼" amplitude and patch.
5. Approximate depth of roughened concrete surface is 3" depth, may vary.
6. Clean concrete surfaces and existing reinforcing steel by abrasive blasting before placing filler material.
7. All work must not impact rail operations and must be performed outside railroad right-of-way. All work must be performed in City right-of-way.

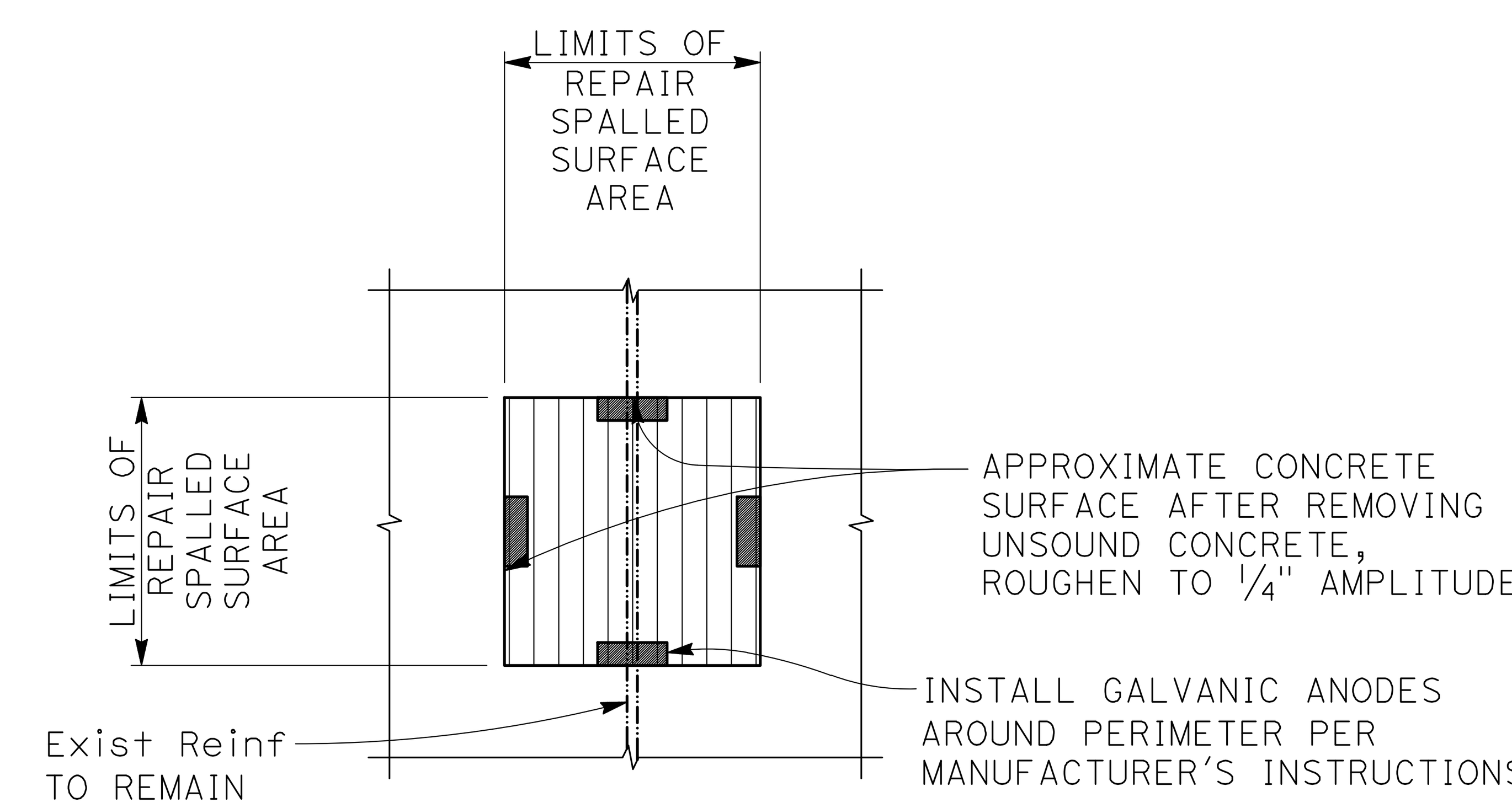
LEGEND:
Indicates unsound concrete to be removed and patched



TYPICAL SPALL REPAIR DETAIL 1 / S3
NO SCALE



SPALL REPAIR WHERE CONCRETE COVER OVER REINFORCEMENT IS LESS THAN 0.5 INCHES 2 / S3
NO SCALE



SECTION C / S3
NO SCALE

NOTE:
THE CONTRACTOR MUST VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL

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REGISTERED PROFESSIONAL ENGINEER JOHN A. ALCIATO No. 68774 Exp. 6/30/25 CIVIL STATE OF CALIFORNIA

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REV.	DATE	DESCRIPTION	BY

BCA

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STRUCTURAL ENGINEERS
865 The Alameda
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408-296-5515

STRUCTURAL DETAILS No. 2

MONTEREY ROAD UNDERPASS
CONCRETE SPALL & CRACK REPAIRS
(Br No. 37C0326)

SHEET NUMBER
S3
4 OF 6 SHEETS
DRAWING NO.
2021250B-4

(2021250B-S3) 2021250B

STRUCTURAL SPECIAL PROVISIONS

GENERAL

1. The work embraced herein must be done in accordance with the State of California Standard Specifications and Plans dated 2023, including all Revised Caltrans Standard Specifications and Revised Caltrans Standard Plans at the date of bid opening, and in accordance with the following special provisions.

2. The Caltrans Standard Specifications are available at the following website:
<https://dot.ca.gov/-/media/dot-media/programs/design/documents/2023_stdspecs-a11y.pdf>

3. The Caltrans Standard Plans are available at the following website:
<https://dot.ca.gov/-/media/dot-media/programs/design/documents/locked-2023-std-plans-dor-a11y.pdf>
Revised Standard Plans are available at the following website:
<https://dot.ca.gov/-/media/dot-media/programs/design/documents/locked_entire-2023-revised-standard-plans_130-sheets-a11y.pdf>

4. Construction inspection of all structure construction operations and materials testing shall be provided by the Engineer, except as provided in these special provisions or the Standard Specifications.

5. Where applicable, if a reference is made in these special provisions or the Standard Specifications to the "Department", or the "Engineer", the reference shall mean the City of Morgan Hill.

6. Where applicable, if a reference is made in these special provisions or the Standard Specifications to the "State," the reference shall mean the City of Morgan Hill.

7. When a reference is made in these special provisions or the Standard Specifications to the "Laboratory", the reference shall mean the established laboratory of the Materials and Research Department of the Department of Transportation of the State of California, or laboratories authorized by the City of Morgan Hill to test materials and work involved in the contract.

8. In case of conflict between the Standard Specifications and these special provisions, the special provisions shall take precedence over and be used in lieu of such confliction portions.

9. RECORD Drawings
Contractor must provide and maintain an up-to-date complete "RECORD DRAWING" record on a separate set of construction plans which must show every change from the original drawings and specifications. This set of drawings must be kept on the site and used only as a record set.

10. RAILROAD RELATIONS

Replace section 5-1.20C Railroad Relations with:

5-1.20C Railroad Relations

Perform all work and coordination with UPRR and comply with the requirements in the UPRR Maintenance Consent Letter Agreement.

You must obtain a "Contractor's Right of Entry Agreement" from Union Pacific Railroad prior to beginning construction. For more information and details, including on fees and processing time, refer to the Union Pacific Railroad Website at: www.up.com and Appendix C. Prior to beginning construction, contact Union Pacific Railroad Company to apply for and obtain the permits. You are responsible for all the required permits and associated fees and for conforming to all terms and conditions of the agreement and its exhibits.

Do not perform work within Railroad property or adjacent to Railroad tracks until the required permits have been issued. Consider the effect of the permit process on your work schedule. Contact UPRR to determine the length of the process for obtaining the permits prior to submitting bids. No additional payment shall be made for any delays, demobilization, or remobilization costs incurred because work cannot proceed without the required permits.

You are responsible for all costs and expenses incurred for performing and conforming to all regulations. Submit invoices/receipts for reimbursement under the allowance bid item ALLOWANCE RAILROAD RELATIONS.

11. TEMPORARY TRAFFIC CONTROL

Add to section 12-1.01:

Provide a detailed traffic control plan for review and approval by the City Traffic Engineer. Traffic control plan must include a schedule for each phase of work in accordance with the California Manual of Uniform Traffic Control Devices. Do not start any work until the traffic control plans have been reviewed and approved by the City Traffic Engineer. These plans must be prepared by qualified professionals (Traffic Engineers, Civil Engineers, or by Traffic Control Specialists). Allow at least ten (10) working days for the City Traffic Engineer to review the traffic control plan. Any revisions required must be resubmitted before commencing work. Allow at least ten (10) working days for the City Traffic Engineer to review any resubmittals. Delays in the project schedule or additional days to the duration of the contract due to the review and resubmittal process will not constitute a claim.

Traffic control requirements for the project must be consistent with the California Manual of Uniform Traffic Control Devices.

All work must be done in accordance with the approved traffic control plan. Traffic control plans must comply with the following requirements:

1. At least two 11 foot wide lanes (1 lane in each direction) must be provided during construction.
2. At least one sidewalk must be open to pedestrian traffic during construction. Detours for pedestrians on the sidewalk to be closed must be provided, and must be ADA COMPLIANT. Pedestrian access routes must conform to Caltrans Standard Plans T31, T33 and T34 or approved equal.
3. Exact staging limits must be submitted as part of the traffic control plan approved by the City Traffic Engineer. Pedestrian detours adjacent to traffic and/or construction must be separated by temporary barriers with traffic screens. Work zone speed limit reduction per Caltrans Standard Plans T19 and T21 for a 10 mph speed reduction.
4. No night work or weekend work is permitted.
5. Lanes drops and tapers designed for the posted speed limit of 35 mph.

Temporary traffic control must not impede existing drainage flow or temporary accommodations must be made to insure no flow is impeded and ponding does not occur.

Add to section 12-1.03:

At the completion of the project, or when no longer needed, remove all temporary traffic control devices, including signs, barriers, markings, cones, work zone speed reduction equipment, and temporary pavement.

Replace section 12-1.04 with:

All work and items related to temporary traffic control, including removal and replacement of signs, pavement delineation and pavement markings, is included in the contract lump sum price paid for Traffic Control System.

Add to section 12-4.01A:
Closures must comply with the approved traffic handling plan.

For any street closures, notify in writing each resident and business located at the street to be closed and any resident or business on adjacent streets that would be affected by the street closure 48 hours in advance.

Construction area signs must be furnished, installed and removed when no longer required. The contractor's attention is directed to Section 7-1.03, "Public Convenience", Section 7-1.04, "Public Safety", and Section 12, "Temporary Traffic Control", of the Caltrans Standard Specifications.

"No Parking" signs must be posted conspicuously in adequate quantities to sufficiently notify the public as directed by the Engineer. You will not be permitted to work on roadways that have not been adequately posted 48 hours before the beginning of work. Do not post "No Parking" signs on Fridays prior to a Monday "No Parking" request.

Provide at least 48 hours' notice for request to alter timing of signalized intersection.

The full width of the travelled way must be open for use by the public on weekends, holidays and when construction operations are not actively in progress.

Upon completion of each day's work, leave the work area free of hazards and provide all necessary temporary signs, warning devices and barricades. Provide access for all adjacent residences and businesses during non-construction hours. Ensure that all devices area maintained in the proper location during holidays, overnight and in weekends.

Add to the end of section 12-4.02C(1):

Keep the full width of the traveled way open to traffic when no active construction activities are occurring in the traveled way or within 6 feet of the traveled way and on:
1. Friday after 3:00 p.m.
2. Saturday
3. Sunday
4. Designated holidays
5. Special days

12. EXISTING FACILITIES

Replace section 15-1.03D with:

Upon completion of the project, the contractor must submit a set of record documents which accurately show the performed preventative maintenance. Final construction record drawings submitted to the Engineer must be in the form of redlined drawings clearly and neatly indicating all changes made with the approval of the Engineer and other field changes made which reflect the as-built condition of the Contract Work. During the construction period, redlined construction record drawings must be maintained by the Contractor. Record drawing sheets must be organized into a manageable set, bound with durable paper cover sheets, and printed with suitable titles, dates, and other identification on the cover.

13. EXISTING STRUCTURES
Add to section 60-1.02:

Organic zinc-rich primer must be on the Authorized Material List for organic zinc-rich primer.

Add to section 60-1.03:

Paint exposed ends of reinforcement with 2 coats of organic zinc-rich coating as specified for exposed ends of prestressing steel in section 50-1.03B(3)(a).

Add to section 60-3.05B(1)(c):
Submit certificates of compliance with material requirements detailed in section 60-3.05B(2) for the filler material.

Submit an unsound concrete removal work plan. Include details for the following:

1. Details showing how the removal of unsound concrete will be staged in order not to compromise the integrity of the existing structure.
2. All methods and equipment to be used to remove unsound concrete and clean repair areas before placing filler material.
3. Methods of placing filler material.
4. Description of debris containment, method of preventing materials, equipment and debris from entering roadway.

Submitted unsound concrete removal work plan must be signed by an engineer who is registered as a Civil Engineer in the State of California. No unsound concrete will be removed until after the Engineer has reviewed and approved the unsound concrete removal work plan.

The Engineer must be onsite periodically during unsound concrete removal and continuously during concrete patching operations. Provide the Engineer 48 hours notice.

Add to the end of section 60-3.02C(5):

If you damage existing reinforcement, replace with reinforcement of the same size at your expense. For reinforcement that will be replaced or repaired, submit shop drawings for review to the Engineer. Allow 20 days for the Engineer's review of the shop drawings.

Remove portions of unsound concrete on structures as shown on the Plans. The removed portions of unsound concrete becomes the property of the Contractor.

Provide access to allow Engineer to reach locations of unsound concrete to determine limits of removal. The Engineer will determine and confirm the limits of concrete repairs prior to performing the repair work.

All equipment use for concrete removal must weigh less than 30 pounds.

Provide protective covers to prevent debris from falling onto Monterey Road. Protective covers must comply with section 60-2.02C(2).

Add to the end of section 60-3.05B(3):

Patched concrete must emit a ringing sound similar to adjacent sound concrete when struck with a metal tool 14 days after placement.

Provide access to allow Engineer to reach repaired areas for testing by tapping and measurement.

Add to section 60-3.05B(2):

Repair spalled surface area (ID Label BB on the contract plans) must be repaired with an authorized alternative filler material and bonding agent on Caltrans Authorized Materials List for Precast Concrete Cementitious Based Repair Material Category 1 or 3 for an overhead application. Apply the authorized alternative filler material per the manufacturer's instructions.

Add to section 60-3.05C(1)(d):

Submit an inject crack (epoxy) work plan. Include details for the following:

1. All methods and equipment used to inject crack (epoxy).
2. Description of debris containment, and method of preventing materials, equipment and debris from hitting traffic.
3. The Engineer must be onsite continuously during epoxy injection operations. Provide the Engineer 48 hours notice.
4. Provide the Engineer access to determine limits of epoxy injection.

Replace the 9th paragraph of section 60-3.05C(3) with:
Clean excess epoxy from concrete surfaces after removing sealant.

Replace section 60-3.05E with:

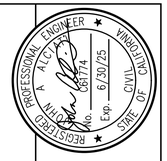
60-3.05E Galvanic Anodes

60-3.05E(1) General

60-3.05E(1)(a) Summary

Section 60-3.05E includes specifications for installing galvanic anodes for cathodic protection of reinforcement.

Anode Manufacturer Corrosion Technician



DESIGNED BY: KOV
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REV.	DATE	DESCRIPTION	BY

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San Jose, California 95126
408-296-5515

BCA

STRUCTURAL SPECIFICATIONS No. 1

MONTEREY ROAD UNDERPASS
CONCRETE SPALL & CRACK REPAIRS
(Br No. 37C0325)

SHEET NUMBER
S4
5 OF 6 SHEETS
DRAWING NO.
2021250B-5

(2021250B-S4) 2021250B

1. The contractor will enlist and pay for technical representative employed by the galvanic anode manufacturer to provide training and on-site technical assistance during the initial installation of the galvanic anodes. The technical representative shall be a NACE-qualified corrosion technician (NACE CP2 Cathodic Protection Technician or higher).
2. The qualified corrosion technician shall have verifiable experience in the installation and testing of embedded galvanic protection systems for reinforced concrete structures.
3. The contractor shall coordinate its work with the designated corrosion technician to allow for site support during project startup and initial anode installation. The corrosion technician shall provide contractor training and support for development of application procedures, verification of electrical continuity, and project documentation.

60-3.05E(1)(c) Submittals

Submit the galvanic anode manufacturer's product information and installation instructions.

Submit a work plan for galvanic anode installation that includes:

1. Sequence of work
2. Location and spacing of anodes
3. Reinforcement surface preparation methods
4. Resistivity of mortar
5. Rebar continuity verification method
6. Sound electrical connection verification method

Submit a certificate of compliance for each shipment of galvanic anodes. The certificate of compliance must include the manufacturing date.

60-3.05E(1)(d) Quality Assurance

Galvanic anodes must be installed within 12 months of the date of manufacture.

60-3.05E(2) Materials

Galvanic anodes must comply with ASTM B418, Type II and have a zinc mass of at least 100 grams.

Anodes must be one of the systems shown in the following table, or equal:

System	Manufacturer	Website
MasterProtect 8105 CP, 8160 CP Galvanic Anodes	BASF	www.master-builders-solutions.basf.com
Galvashield®XP2 Galvashield®XP4	Vector Technologies	www.vector-corrosion.com
Sentinel Silver Sentinel Gold	Euclid Chemical Company	www.euclidchemical.com
Sika® FerroGard 670, 675	Sika Corporation	www.usa.sika.com

Furnish galvanic anodes and mortar from the same manufacturer. Mortar must have a resistivity below 15,000 ohm-cm and be compatible with existing concrete.

Store anodes in airtight containers. Do not expose to moisture or allow to freeze.

60-3.05E(3) Construction

Immediately before installing anodes, clean the reinforcement to bright metal and remove all residue and foreign material at the attachment locations.

Install galvanic anodes under the manufacturer's instructions in compliance with the authorized installation work plan.

Encase galvanic anodes with manufacturer's recommended mortar.

60-3.05E(4) Payment

Payment for galvanic anodes is included in the payment for "REPAIR SPALLED SURFACE AREA" and "REPAIR SPALLED SURFACE AREA WITH DEPTH GREATER THAN 4 INCHES", respectively.

Replace section 60-3.06 Reserved with:

60-3.06 REPAIR CONCRETE SPALL WITH DEPTH GREATER THAN 4 INCHES

60-3.06A GENERAL

60-3.06A(1) Summary
Section 60-3.06 includes specifications for repairing concrete spalls with a depth greater than 4 inches.

60-3.06A(2) Submittals

Submit an unsound concrete removal work plan. Include details for the following:
1. Details showing how the removal of unsound concrete will be staged in order not to compromise the integrity of the existing structure.
2. All methods and equipment used to remove unsound concrete and clean repair areas before placing filler material.
3. Methods of placing filler material.
4. Description of debris containment, and method of preventing materials, equipment and debris from hitting traffic or falling into roadway.

Submitted unsound concrete removal work plan must be signed by an Engineer who is registered as a Civil Engineer in the State of California. No unsound concrete will be removed until after the Engineer has reviewed and approved the unsound concrete removal work plan.

Submit certificates of compliance for the filler material and bonding agents. Clearly indicate type of filler material and type of bonding agent to be used.

60-3.06B MATERIALS

Filler material must either be Portland cement concrete patch or structural shotcrete with a minimum 28 day compressive strength of 3600 psi.

Portland cement concrete used in patches must comply with section 90 and the following:
1. The combined aggregate must consist of approximately 52 percent fine aggregate and 48 percent gravel. The size of the gravel must be such that 100 percent passes the $\frac{1}{2}$-inch sieve and not more than 5 percent passes the No. 16 sieve, unless a larger size is ordered by the Engineer. The exact proportions of the aggregates will be determined by the Contractor and submitted to the Engineer for approval.
2. The minimum mortar strength of the fine aggregate must be 100 percent relative to Ottawa sand when tested with the California Test 515.
3. Water-reducing admixture complying with section 90-1.02F must be added at the dosage determined by the Engineer. The dosage for the water reducing admixture must not exceed the dosage recommended by the manufacturer of the admixture.
4. The penetration of concrete must not exceed one inch.
5. Concrete must contain a minimum of 675 pounds of cementitious material per cubic yard. The concrete may be proportioned by weight or by volume.

Structural shotcrete must comply with sections 53-1 and 53-2.

The spall repair material must comply with Section 51-1.02B.

Bonding agents must be epoxy adhesive complying with section 95-1.

Additional bar reinforcing steel must comply with section 52.

Curing compound must comply with Section 90-1.03B(3)(b).

60-3.06C CONSTRUCTION

All equipment used for concrete removal must weigh less than 30 pounds.

Provide protective covers to prevent debris from damaging roadway elements and hitting traffic.

Protective covers must comply with section 60-2.02C(2). Appropriate sediment control devices must be implemented to prevent the transport of sediment into waterways for the duration of construction. Sediment control devices must comply with section 13-10.

Remove unsound concrete under section 60-3.02C(5).

Equipment and tools that in the Engineer's opinion remove excess quantities of sound concrete are not allowed. Equipment used must be fitted with suitable traps, filters, drip pans, or other devices to prevent oil or other deleterious matter from being deposited into the roadway.

Roughen newly exposed surface after removing unsound concrete to an amplitude of $\frac{1}{4}$".

Abrasive blast clean the contact surfaces of existing concrete and reinforcing steel. Remove at least $\frac{1}{8}$ inch of concrete and all foreign material. Immediately before placing new concrete, reclean surfaces by sweeping and water pressure jetting or other authorized means to remove debris. Contain debris within the temporary dry work area and remove at the end of each work day.

After exposed reinforcing steel bars have been blasted clean, each bar must be visually inspected to determine if a 15 percent reduction in the bar cross sectional diameter has taken place. The 100 percent bar cross sectional diameter will be determined based on visual inspection taken at the full section of exposed reinforcing, and must be agreed upon by the Engineer. The Engineer will determine if additional reinforcing steel bars are required. Additional reinforcing steel bars of the same size and grade must be provided where existing reinforcing steel bars are corroded with a 15 percent reduction in bar cross sectional diameter. This is change order work.

Additional bars must be placed next to existing bars where the reduction in area is identified, and must extend 45 bar diameters beyond the point where the existing bar has returned to 100 percent cross-sectional diameter in both directions. Additional removal of sound concrete may be required to provide the 45 bar diameter lap length at each end of the additional bar. If lap splices are not feasible due to repair geometry, mechanical couplers must be used to splice new reinforcement with existing reinforcement with 100 percent cross-sectional diameter.

A bond coat of epoxy adhesive must be applied to the surfaces of concrete and reinforcing steel to be covered with Portland cement concrete patches or shotcrete patches after the unsound concrete within limits of patch has been removed and the contact surfaces have been cleaned. The epoxy adhesive must be applied immediately before placing Portland cement or shotcrete filling. The surface temperature of the existing concrete must be at least 40 degrees F and contact surfaces must be dry during placement of epoxy adhesive. The exact rate of applying the epoxy adhesive will be determined by the Engineer. The adhesive must be spread by brush, roller, or spray methods to ensure all contact surfaces are covered.

Portland cement concrete or shotcrete must be deposited on the epoxy bond coat before the epoxy adhesive begins to set, complying with the time limit specified for the type of epoxy used. Portland cement concrete must be thoroughly consolidated by vibration and then must be struck off to the required grade and given a wood float finish. A wood float finish must also be provided when shotcrete is used. Patches must be cured under section 90-1.03B(3).

Placing concrete must comply with Section 51-1.03D(1) and 51-1.03D(4).

Patched concrete must emit a ringing sound similar to adjacent sound concrete when struck with a metal tool 14 days after placement.

Provide access to allow Engineer to reach repaired areas for testing by tapping and measurement. The Engineer will determine and confirm the limits of concrete repairs prior to performing the repair work.

14. INCIDENTAL CONSTRUCTION

Add to section 78-4.03B

Apply a colored coating to the limits shown on the plans defined as Prepare and Paint Concrete. Prepare and Paint Concrete must be SikaGard 670W or approved equal. Color of the concrete surface texture must match the existing concrete color.

Delete the second paragraph of section 78-4.03B.

REGISTERED PROFESSIONAL ENGINEER SCOTT C. GREER No. 58879 CIVIL STATE OF CALIFORNIA

DESIGNED BY: KOV	DRAWN BY: SMH	CHECKED BY: YKS	SCALE: AS SHOWN

REV.	DATE	DESCRIPTION	BY

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STRUCTURAL SPECIFICATIONS No. 2

MONTEREY ROAD UNDERPASS
CONCRETE SPALL & CRACK REPAIRS
(Br No. 37C0325)

SHEET NUMBER
S5
6 OF 6 SHEETS
DRAWING NO.
2021250B-6

(2021250B-S5) 2021250B