LAKE HAVASU CITY, ARIZONA
LONDON BRIDGE MAINTENANCE
PHASE 2
LHC PROJECT #ST2620RB

LAKE HAVASU CITY

OCTOBER 2016

ARIZONA BLUE STAKE
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602-263-1100
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UTILITY CONTACTS

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LAKE HAVASU CITY (WATER)	(928) 855-2618
SUDDENLINK	(928) 855-9855
FRONTIER COMMUNICATIONS	(928) 453-0541
UNISOURCE ENERGY SERVICES (GAS)	(928) 505-7025
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DRAWING INDEX

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STRUCTURAL		
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CITY COUNCIL

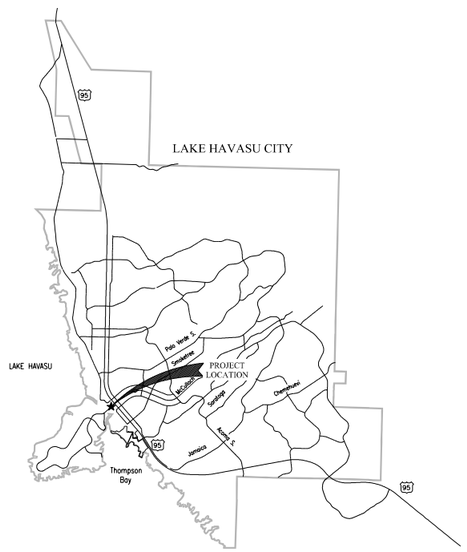
MARK S. NEXSEN	MAYOR
DON CALLAHAN	VICE MAYOR
DEAN BARLOW	COUNCIL MEMBER
DONNA BRISTER-McCOY	COUNCIL MEMBER
MICHELE LIN	COUNCIL MEMBER
CAL SHEEHY	COUNCIL MEMBER
JENI COKE	COUNCIL MEMBER

MAINTENANCE DIVISION

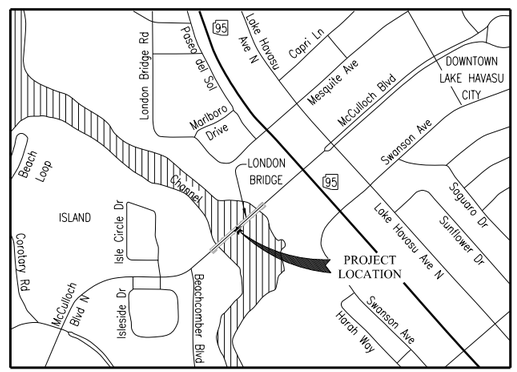
MARK CLARK, P.E., P.T.O.E

PROJECT MANAGER

JEREMY ABBOTT, P.E.



VICINITY MAP



LOCATION MAP

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

HDR

PROJECT NUMBER ST2620

LONDON BRIDGE MAINTENANCE 2

Designed by: JAC
Drawn by: TRK
Checked by: TWB
Date: 10/4/2016
Dwg. scale: NONE

LAKE HAVASU CITY

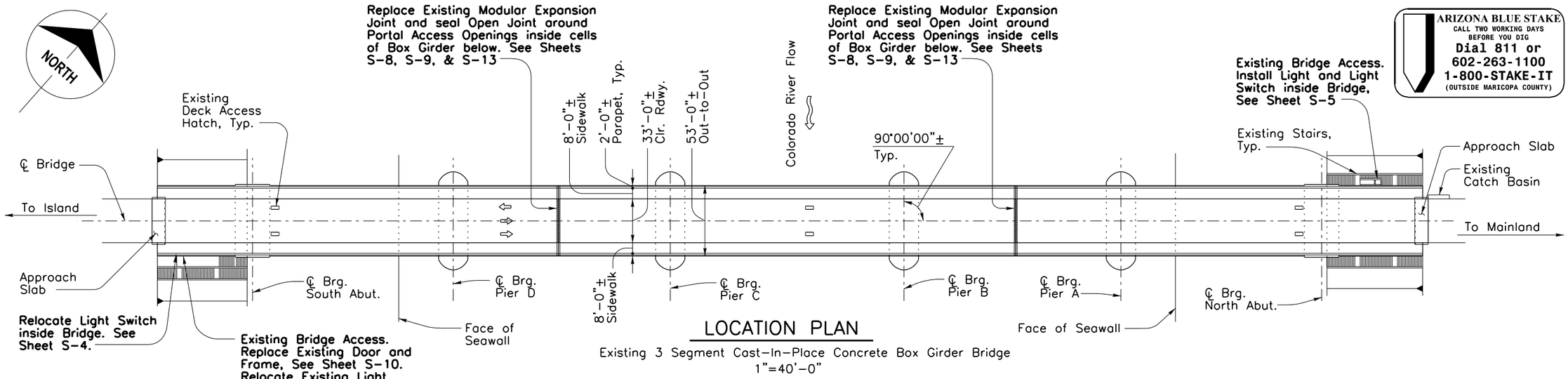
Registered Professional Engineer (Civil)
CERTIFICATE NO.
50678
JASON A. CARLAFTES
Date Signed 10/4/16
Arizona, U.S.A.

Expires 03-31-2019

Sheet Number:

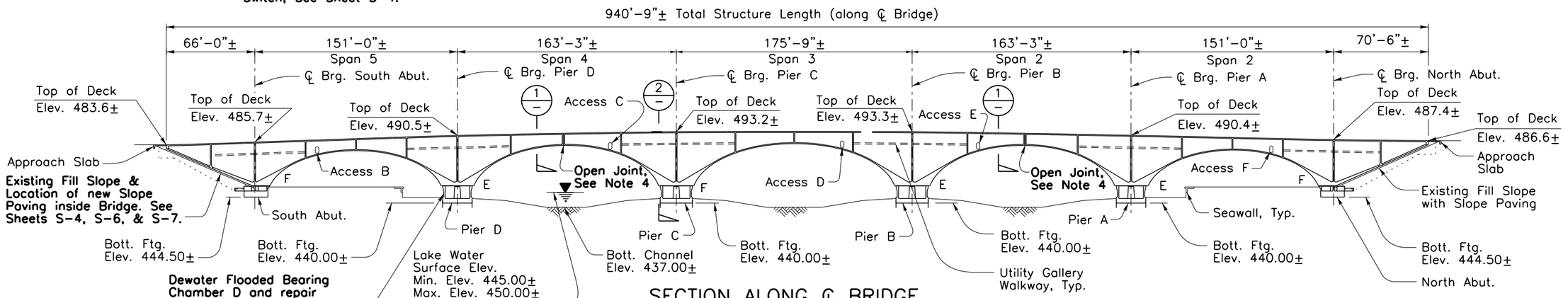
S-1

Sheet 1 of 13



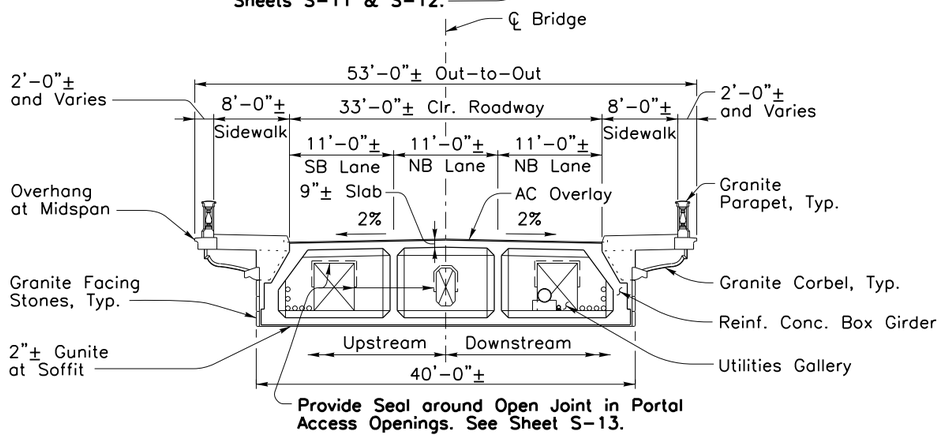
LOCATION PLAN

Existing 3 Segment Cast-In-Place Concrete Box Girder Bridge
1"=40'-0"



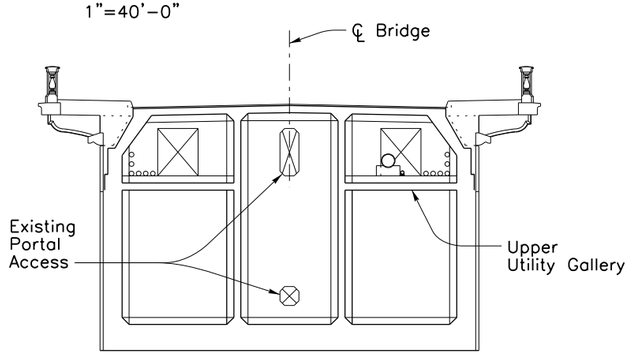
SECTION ALONG ℄ BRIDGE

1"=40'-0"



TYP. GIRDER SECTION (NEAR MIDSPAN) ①

⅛"=1'-0"



Note:

See Section 1 for additional information not shown.

TYP. GIRDER SECTION (NEAR PIERS) ②

⅛"=1'-0"

Notes:

1. E = Expansion Bearing
2. F = Fixed Bearing
3. Elevations and dimensions are based on As-Built information.
4. Open Joints around portal access openings within cells of box girder shall be sealed to prevent rain water infiltration into bridge, See Details on Sheet S-13.

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LONDON BRIDGE MAINTENANCE 2

Designed by: JAC
Drawn by: TRK
Checked by: TWB
Date: 10/4/2016
Dwg scale: AS NOTED

LAKE HAVASU CITY

Registered Professional Engineer (Structural) CERTIFICATE NO. 50678 JASON A. CARLAFTES Date Signed 10/04/16 State of Arizona, U.S.A.

Expires 03-31-2019

Sheet Number:

S-2

Sheet 2 of 13

PLAN, SECTION, & TYPICAL SECTION

Plan_Sect.dgn

GENERAL NOTES:

Design Specifications:
American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications, 6th Edition, 2012.

American Institute of Steel Construction (AISC) Steel Construction Manual, 14th Edition.

Construction Specifications:
Lake Havasu City (LHC) Technical Specifications (See www.lhcaz.gov/Community-Investment/Engineering/Engineering-Specifications and the Special Provisions, unless noted otherwise.

When there is conflicting requirements between contract documents, the most stringent standard shall apply.

Design Loads:
Live Load:
Loading Class: HL-93 (Deck Joint)

Geotechnical Information:
No formal geotechnical investigation report has been conducted as part of this project. The existing subgrade soils within the structure are generally composed of disturbed fill material comprised of gravelly sand with some to considerable cobbles and boulders along with lesser amounts of silt. The existing slope surface is generally loose and uncompacted to locally compacted and slightly undulating. The surface of the existing slopes can be categorized as locally unstable to sloughed with fragments of miscellaneous concrete, grout, and debris.

Concrete and Reinforcement:
All concrete shall conform to the Lake Havasu City Technical Specification 03300 - Concrete.

f'c = 4,000psi at 28 days - All Concrete

Reinforcing steel shall conform to the Lake Havasu City Technical Specification 03200 - Concrete Reinforcement and ASTM Specification A615, unless noted otherwise. All reinforcing shall be furnished as Grade 60, unless noted otherwise.

Fabrication of reinforcing steel shall be per Chapter 7 of the CRSI Manual of Standard Practice. Dimensions of bending details shall be out-to-out of bars.

All placement dimensions for reinforcing steel shall be to center of bars, unless noted otherwise.

Reinforcing steel is to be blocked to proper location and securely wire tied to prevent displacement. Tack welding of reinforcing steel is prohibited.

Minimum concrete cover not otherwise noted shall be 2".

All mechanical splices of reinforcing steel shall develop 125% of the yield of the reinforcing steel and shall be approved for use (product and location) in writing by the Engineer.

Adjacent lap splices shall be staggered a minimum of 40 bar diameters unless noted otherwise.

Concrete finish shall be as defined in the Lake Havasu City Technical Specification 03300. Finish on walkways shall be a broomed finish. All other surfaces shall be as specified in Part 3, paragraph 3.03.B.-Formed Surfaces.

Structural Steel:
All steel shall conform to the Lake Havasu City Technical Specifications Section 05120 - Miscellaneous Steel.

Steel Hollow Structural Sections (HSS) shall be ASTM A500, Grade B. Pipe shall be ASTM A53, Grade B. All other structural steel shapes and plates shall be ASTM A36, unless noted otherwise.

Bolts shall be ASTM A307, (Grade A) galvanized. Threaded rod and Anchor bolts shall be ASTM F1554, (Grade 36), galvanized. Nuts shall conform to ASTM A563A. Washers shall conform to ASTM F844.

Coordination:
The Contractor shall coordinate all existing conditions during construction of the project. Any utility information shown on the bridge drawings may not be complete or accurately depict the location of the facilities shown. The Contractor shall coordinate the location of all existing, new, relocated and abandoned utilities with the project plans and notify respective owners before commencing the work of excavation, including any temporary shoring. Conflicts shall be brought to the attention of the Engineer and resolved prior to proceeding with the work.

Existing Structure:
The existing structure shall not be damaged during construction work except as noted on the plans. Modifications to the existing structure are not allowed unless approved by the Engineer and the City.

The interior of the London Bridge is considered a permit-required confined space. All federal and local regulations shall be followed while working inside the structure.

An existing 4" gas line occupies the downstream utility gallery. The Contractor shall take all necessary precautions when working where the gas line is present including possible restrictions on welding, flame cutting, grinding, or any other activities that may cause sparks.

As-built plans are available from the City upon request.

Environmental Conditions and Stipulations:
The Contractor shall prevent debris and construction materials from entering the Colorado River Channel.

The Contractor shall take care not to disturb nests from cliff swallows on the exterior of the bridge once eggs or young are present in a nest. Nests within 100 feet of the work area should be removed prior to February and continue to be removed during construction to prevent birds nesting. Completed nests with eggs or young birds present shall not be disturbed.

The bridge is a roosting area for several bat species. The Contractor shall in no way remove, harm, or harass bats present in the project area. At least 7 days prior to the start of construction, the Contractor will arrange for a biologist experienced in bat surveys to conduct preconstruction surveys using visual methods, to look for day-roosting bats, and to assess the extent of the roosting and the potential for disturbance. If excessive disturbance to bats is likely, measures such as temporary exclusion in work areas may be needed. If bats are increasingly observed in the work areas during construction, the Biologist shall reassess the disturbance to bats and provide measures to minimize the disturbance. Work within the bridge shall not occur from May 1st to August 31st if maternity roosts are present.

Traffic Control:
The Contractor shall provide traffic control required for completion of the work. A minimum of two vehicle lanes and one pedestrian sidewalk shall remain open at all times. The Contractor shall be responsible for providing protection to the work area. Traffic Control shall conform to the latest edition of the Manual for Uniform Traffic Control Devices (MUTCD). The Contractor shall submit a traffic control plan to the Engineer for review and approval prior to construction.

Temporary Shoring and Falsework:
The Contractor shall be responsible for providing shoring and falsework needed to complete the work. Calculations for shoring and falsework shall be sealed by an Engineer registered in the State of Arizona and a copy of the plans and complete calculations shall be provided for review and approval by the Engineer prior to starting work.

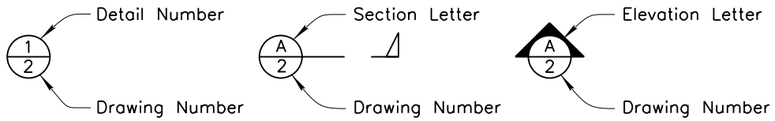
The cost of temporary shoring and falsework is considered incidental to the work requiring it. No separate payment will be made.

Dimensions:
Dimensions shall not be scaled from drawings. Vertical dimensions are measured plumb, unless noted otherwise. Horizontal dimensions are measured level.

The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

Construction Joints:
All construction joints shall be sandblasted prior to placement of concrete.

Chamfer:
All exposed corners shall be chamfered ¾" unless noted otherwise.

Legend:


Note: "-" indicates Section or Detail is located on same drawing.

Abbreviations:

Abut.	Abutment	Elev.	Elevation	o.c.	On Center
@	at	Exist.	Existing	P	Pinned
Brg.	Bearing	Eq.	Equal	R/W	Right of Way
Bott.	Bottom	E	Expansion	Sht.	Sheet
℄	Centerline	F	Fixed	Spa.	Space, Spaced
Clr.	Clear	FFE	Finished	Typ.	Typical
Conc.	Concrete		Floor Elev.	U.N.O.	Unless Noted
Constr.	Construction	Fin.	Finish		Otherwise
Cont.	Continuous	HW	Highwater	US	Upstream
Dtl.	Detail	lbs.	Pounds		
Diam.	Diameter	Max.	Maximum		
DS	Downstream	Min.	Minimum		

APPROXIMATE QUANTITIES

ITEM	UNIT	QUANTITY
Access Door	L.S.	1
Earthwork	L.S.	1
Slope Paving	SQ. YD.	275
Lighting System	L.S.	1
Chamber D Dewatering	L.S.	1
Chamber D Repairs	SQ. FT.	50
Deck Joint	L.F.	66
Concrete Repairs at Deck Joint	SQ. FT.	50
Joint Seal	L.F.	52

GENERAL NOTES

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#	-	-
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HDR

PROJECT NUMBER ST2620

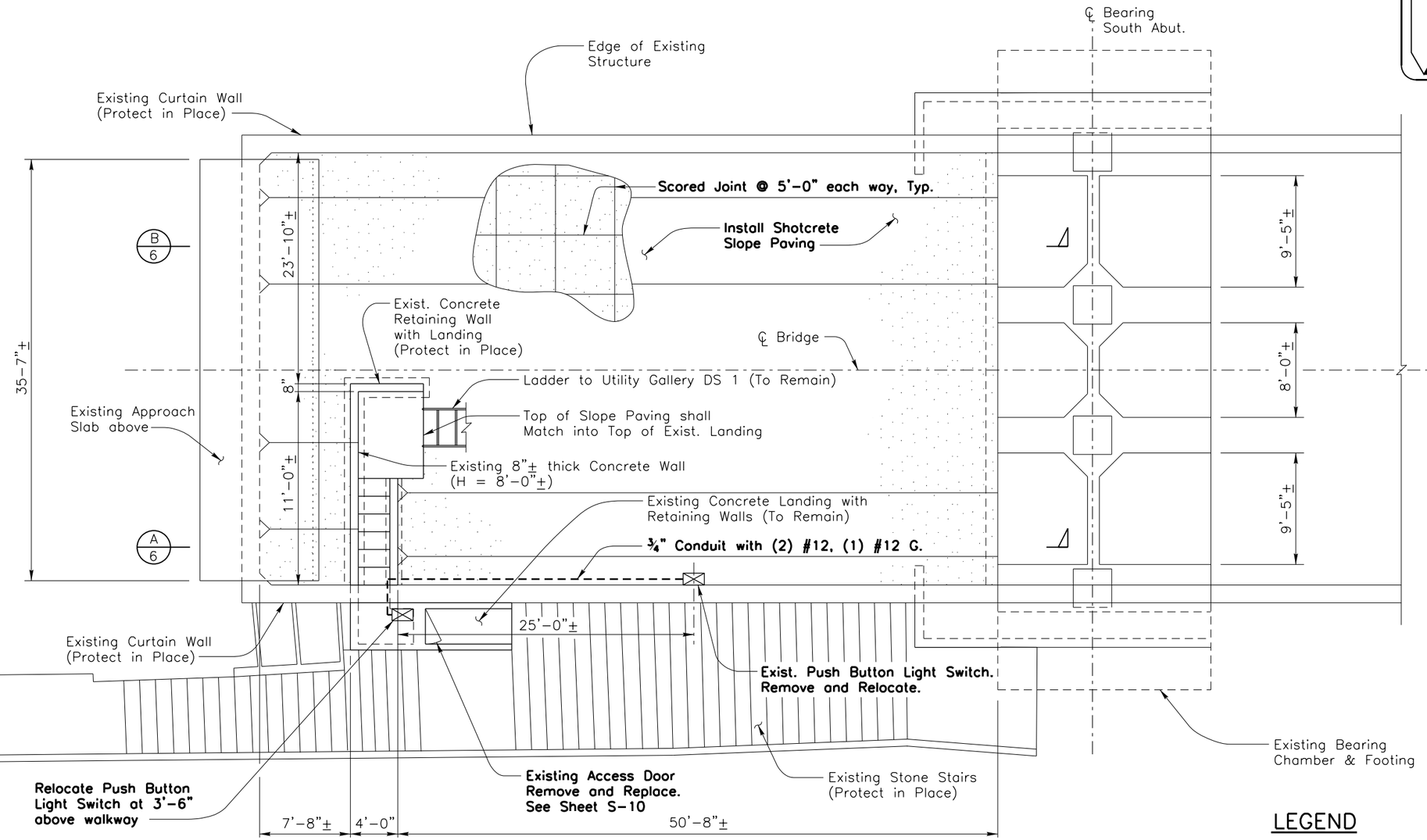
LONDON BRIDGE MAINTENANCE 2

Designed by: JAC
Drawn by: TRK
Checked by: TWB
Date: 10/4/2016
Dwg scale: AS NOTED

LAKE HAVASU CITY

Registered Professional Engineer
50678
JASON A CARLAFTES
Date Signed 10/04/16
Arizona, U.S.A.
EXPIRES 03-31-2019
Expires 03-31-2019

Sheet Number:
S-3
Sheet 3 of 13



PARTIAL PLAN – SOUTH ABUTMENT (ISLAND)

Scale: 1"=10'-0"

NORTH

LEGEND

- ⊠ Push Button Light Switch
- - - ¾" Conduit (Metal)

Notes:

1. See General Notes, Sheet S-3.
2. For section through slope paving, See Sheet S-6. For details, See Sheet S-7.
3. Slope paving is paid for by square yard under Item No. 1210.5.
4. Contractor shall coordinate work around existing utilities with respective owners.
5. Lighting System may be adjusted to fit field conditions. Work associated with the lighting system is paid for by lump sum under Item No. 1210.6.
6. All electrical items shall be installed in accordance with Project Specifications and local electric codes.
7. Contractor shall submit fixture, conduit and other lighting materials for review and approval prior to construction.
8. As part of the lighting system work, Contractor shall replace missing junction box covers and cover plates throughout the structure (approximatly 4 locations). The cost of this work shall be included under Item No. 1210.6.

SOUTH ABUTMENT MODIFICATIONS

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

HDR

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Date: 10/4/2016
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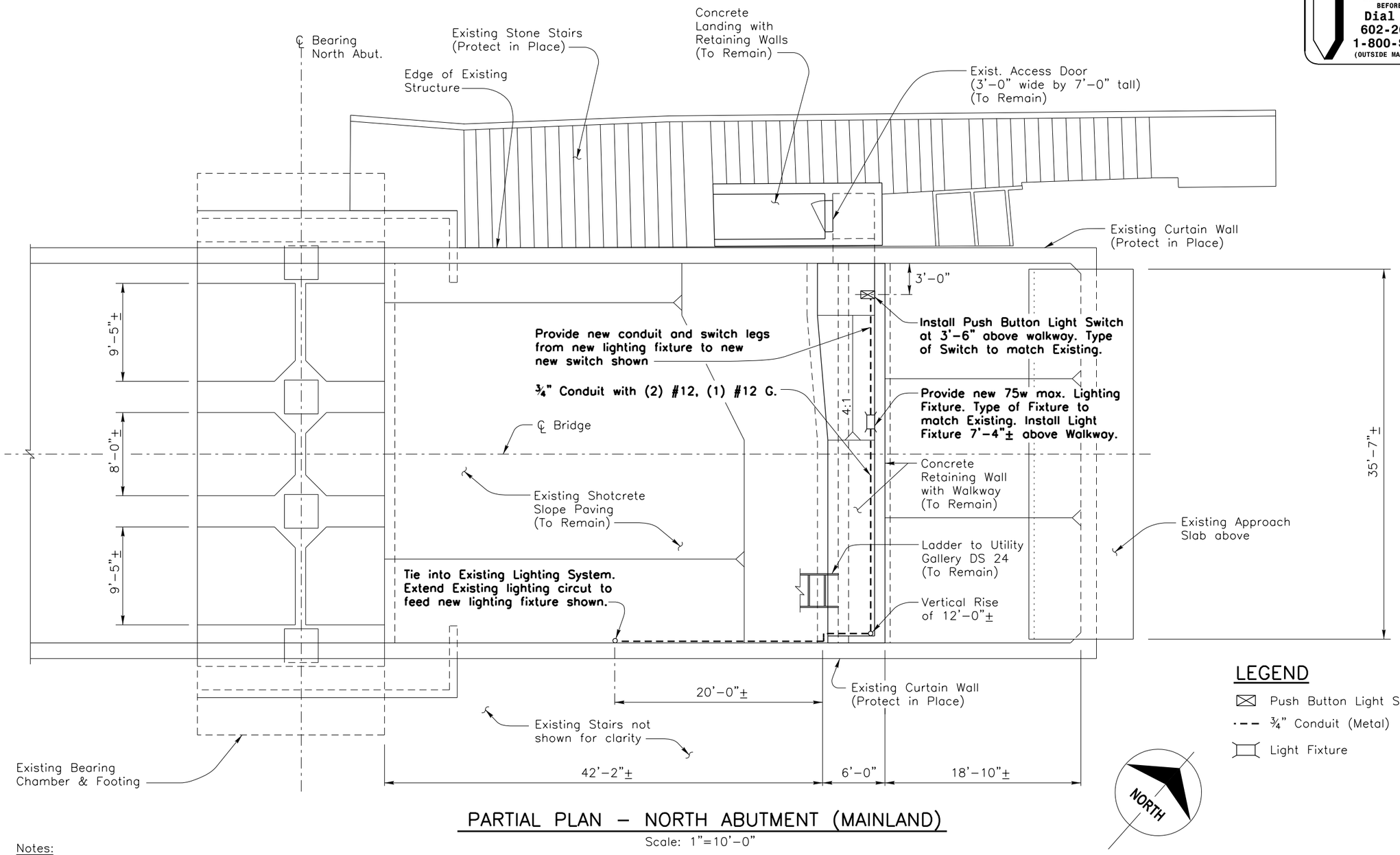
LAKE HAVASU CITY

Registered Professional Engineer
CERTIFICATE NO.
50678
JASON A
CARLAFTES
Date Signed
Arizona, U.S.A.

Expires 03-31-2019

Sheet Number:

S-4



PARTIAL PLAN – NORTH ABUTMENT (MAINLAND)

Scale: 1"=10'–0"

LEGEND

- Push Button Light Switch
- ¾" Conduit (Metal)
- Light Fixture

Notes:

1. Lighting System may be adjusted as required to fit field conditions. Work associated with the lighting system is paid for by lump sum under Item No. 1210.6.
2. All electrical items shall be installed in accordance with the Project Specifications and local electric codes.
3. Contractor shall submit light switch, fixture, conduit and other lighting materials for review and approval prior to installation.
4. As part of the lighting system work, Contractor shall replace missing junction box covers and cover plates throughout the structure (approximately 4 locations). The cost of this work shall be included under Item No. 1210.6

NORTH ABUTMENT MODIFICATIONS

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

HDR

PROJECT NUMBER ST2620

LONDON BRIDGE MAINTENANCE 2

Designed by: JAC
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Date: 10/4/2016
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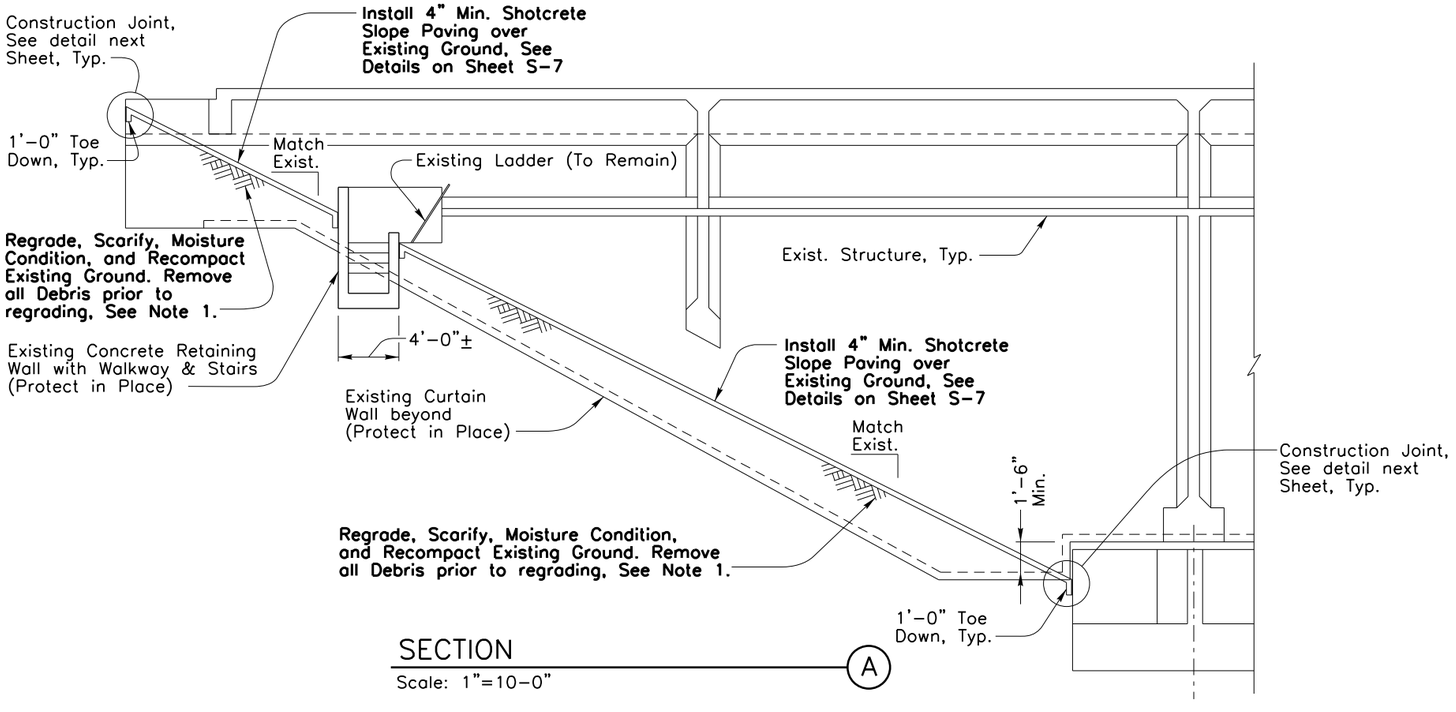
LAKE HAVASU CITY

Registered Professional Engineer – Structural
CERTIFICATE NO.
50678
JASON A
CARLAFTES
Date Signed 10/04/16
Arizona, U.S.A.
Expires 03-31-2019

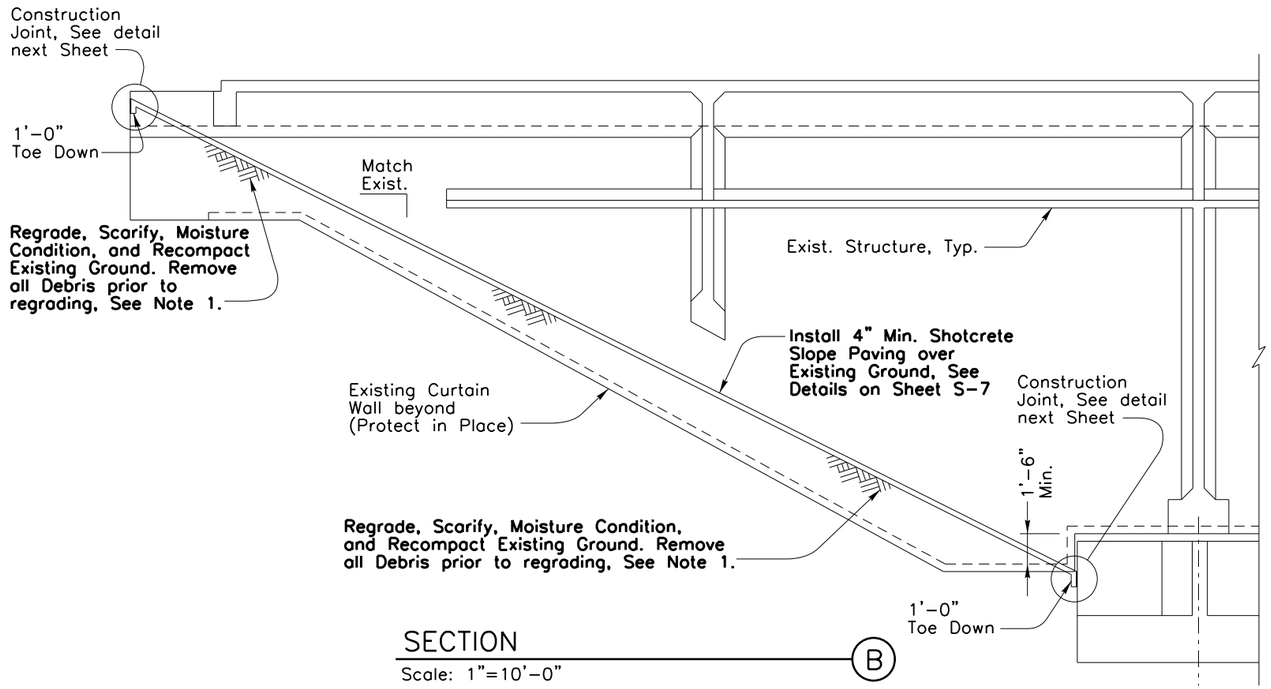
Sheet Number:

S-5



SECTION (A)

Scale: 1"=10'-0"



SECTION (B)

Scale: 1"=10'-0"

Notes:

1. Soil below slope paving shall be scarified 6" minimum, compacted to 95% of the maximum dry density as determined by ASTM D698, and the moisture content at the time of compaction shall be within the limits of ±2% of the optimum moisture content as determined by ASTM D698.
2. No survey of slope was made. Dimensions shown are approximate. Slope should not exceed 1.5H:1.0V. If existing conditions exceed this value, notify the Engineer prior to construction.
3. Removal of debris and re-grading of slope shall be paid for under Item No. 1210.4. Scarifying, moisture conditioning, recompaction of existing ground, and slope paving shall be paid for under Item No. 1210.5.

SOUTH ABUTMENT SECTIONS

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

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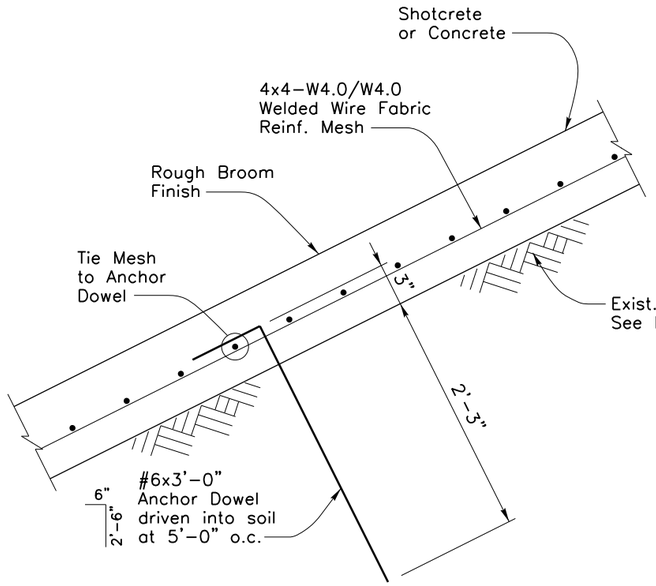
Date: 10/4/2016
Dwg. scale: AS NOTED

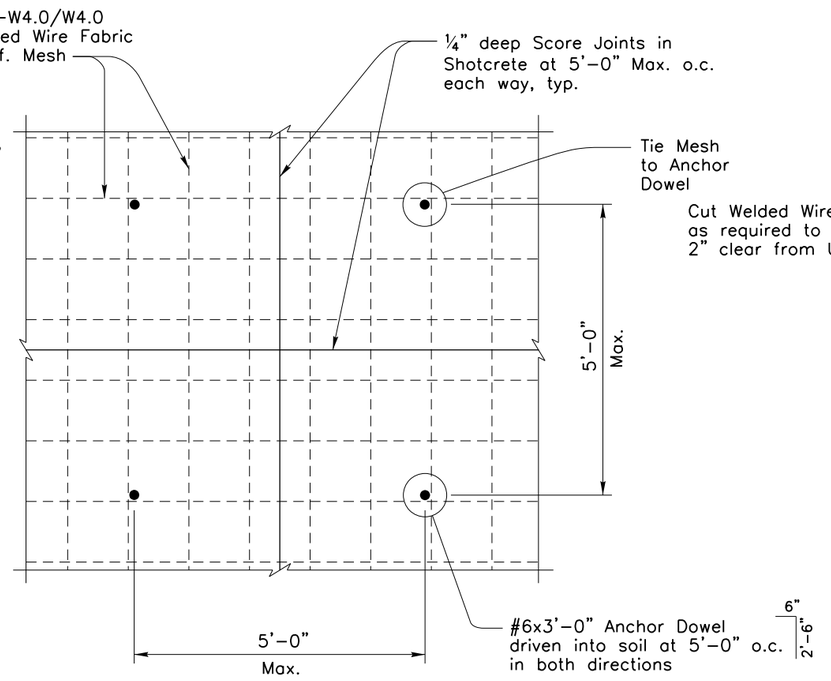
LAKE HAVASU CITY

Sheet Number:

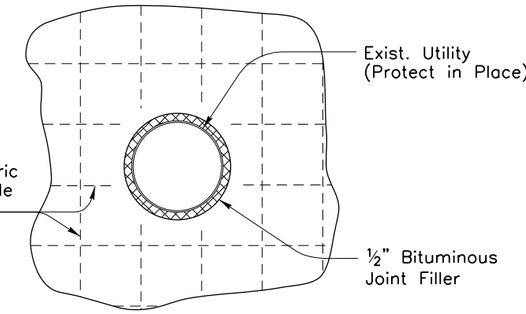
S-6



DETAIL – ANCHOR DOWEL

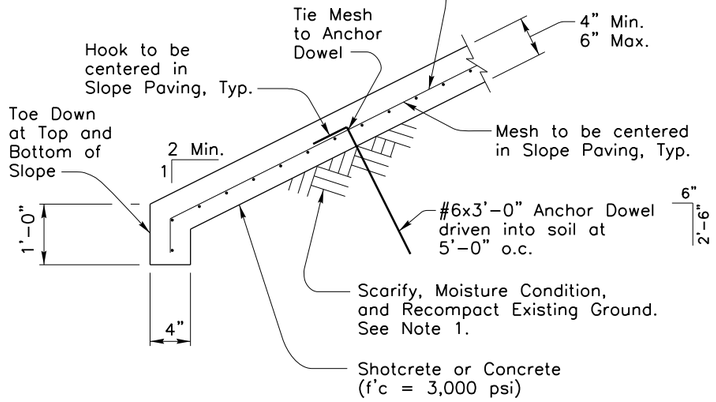


PLAN



PLAN

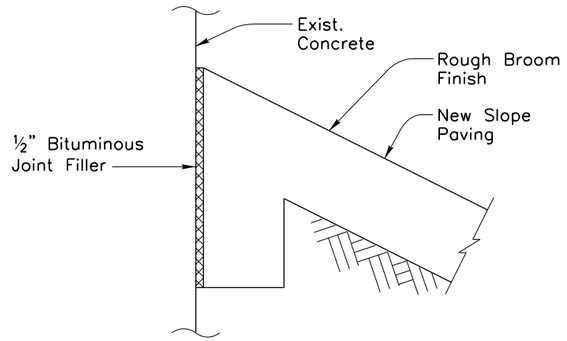
AROUND UTILITIES



SECTION

Note:

1. Soil below slope paving shall be scarified 6" minimum, compacted to 95% of the maximum dry density as determined by ASTM D698, and the moisture content at the time of compaction shall be within the limits of ±2% the optimum moisture content as determined by ASTM D698.



CONSTRUCTION JOINT

DETAIL – SLOPE PAVING

No Scale

(1)

SLOPE PAVING DETAILS

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

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LAKE HAVASU CITY

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JASON A. CARLAFTES
50678
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State of Arizona, U.S.A.

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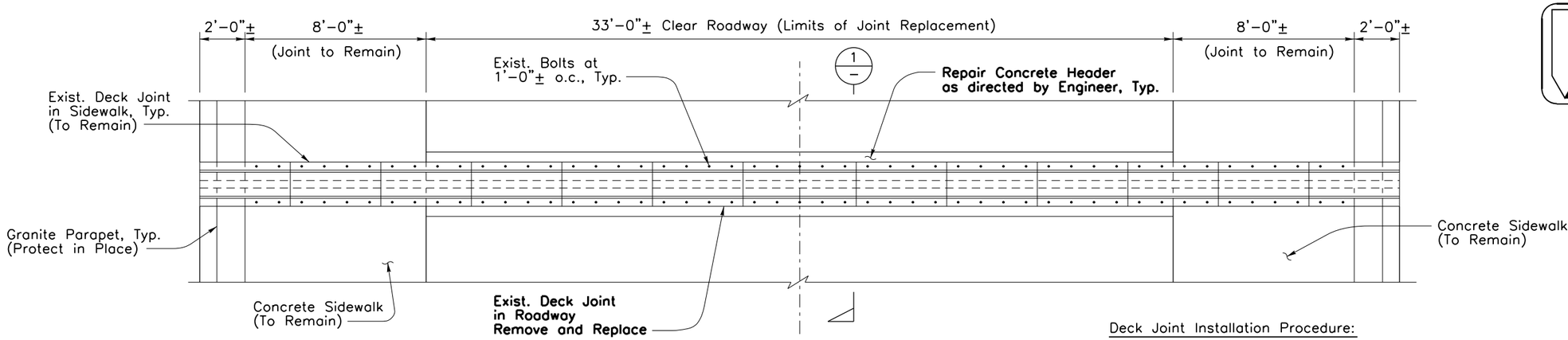
Sheet Number:

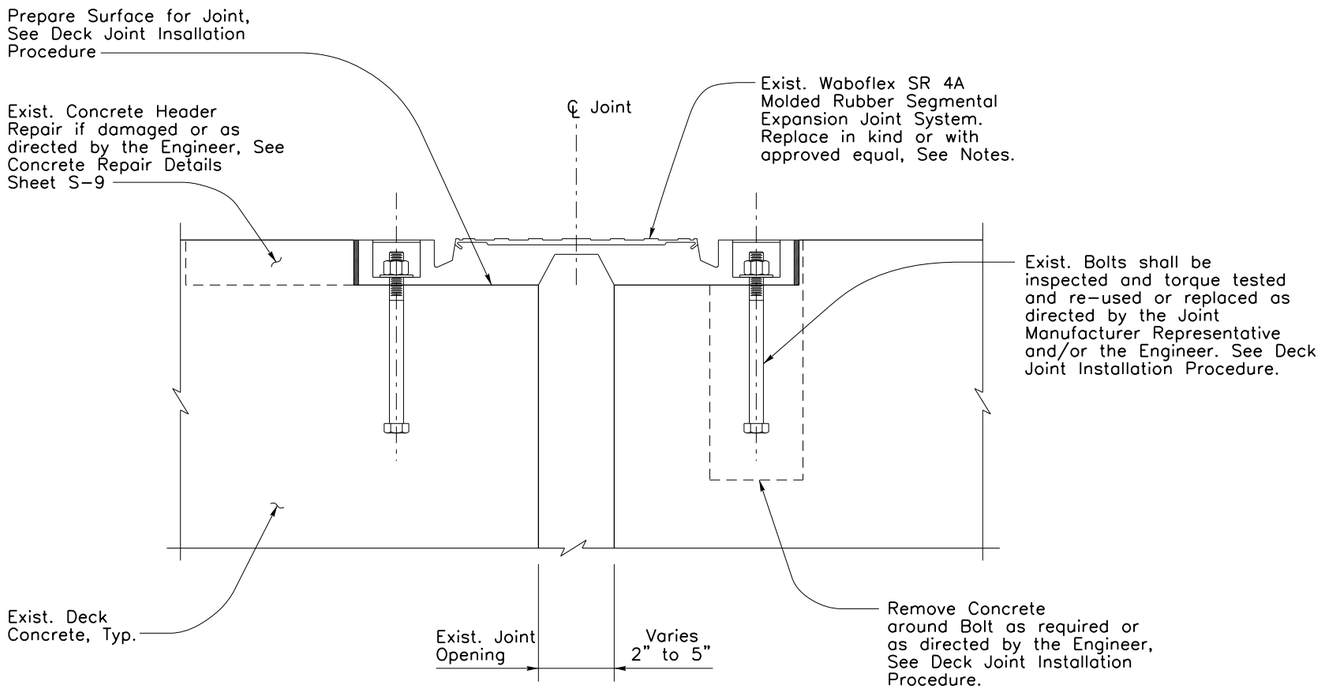
S-7

Sheet 7 of 13



PLAN VIEW – DECK JOINT

No Scale



TYPICAL SECTION – DECK JOINT SYSTEM

No Scale

(1)

Deck Joint Installation Procedure:

1. Contractor shall submit a traffic control plan and joint installation plan for review and approval prior to starting any work. Remove existing sections of joint per the installation plan.
2. Contractor shall inspect concrete below existing joint section and remove all unsound, cracked, spalled, or poor quality concrete. The prepared surface shall be rough but uniform and free from cracks, oils, dirt, and other foreign materials. Area should be cleaned by shot blast prior to placement of concrete patch material.
3. If existing bolts are intended for re–use, the Contractor shall measure the torque of bolt against the joint manufacurer's requirements. If torque achieved in the bolt is less than the joint manufacturer's requirements, the existing bolt shall be removed and replaced.
4. Install new bolts using epoxy or other method approved by the Engineer. The bolt shall meet the size and strength specifications recommended by the joint manufacturer.
5. Replace any concrete removed with a non–shrink concrete or grout with a minimum f'c = 5,000 psi at 28 days. Patch material shall be non–shrink concrete with f'c = 5,000 psi at 28 days. Place material in accordance with the manufacturer's recommendations. Submit material specifications for review and approval by the Engineer prior to starting any work or furnishing patch material.
6. Install joint and tighten bolts per the manufacturer's recommendations.
7. All bolts are required to be covered with a cap provided by the Joint Manufacturer.
8. Contractor may submit an alternate installation procedure for review and approval prior to start of work.

Notes:

1. See General Notes Sheet S–3.
2. A joint manufacturer field representative must be present for installation of the deck joint. See Supplemental Specifications 03360 for additional information.
3. The existing joint is a WABOFLEX SR 4A molded rubber Segmental expansion joint system. Replace in kind or with approved equal. Approved equal shall have an equivalent or better joint movement rating as the existing joint.
4. New joint shall be water tight.
5. Traffic control shall be paid for by Lump Sum under Item No. 1210.2. Deck joint replacement, which includes the joint, all hardware, and Manufacturer's Representative, shall be paid for by Linear Foot under Item No. 1210.9. Repairs to the concrete deck and replacement of bolts are paid for by Square Foot under Item No. 1210.10.

DECK JOINT DETAILS

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

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Drawn by: TRK
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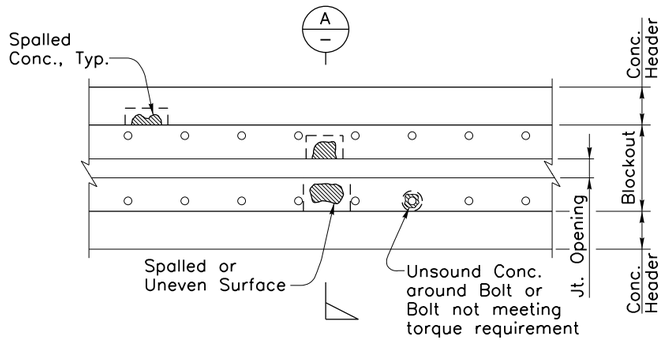
Dwg scale: AS NOTED

LAKE HAVASU CITY

Sheet Number:

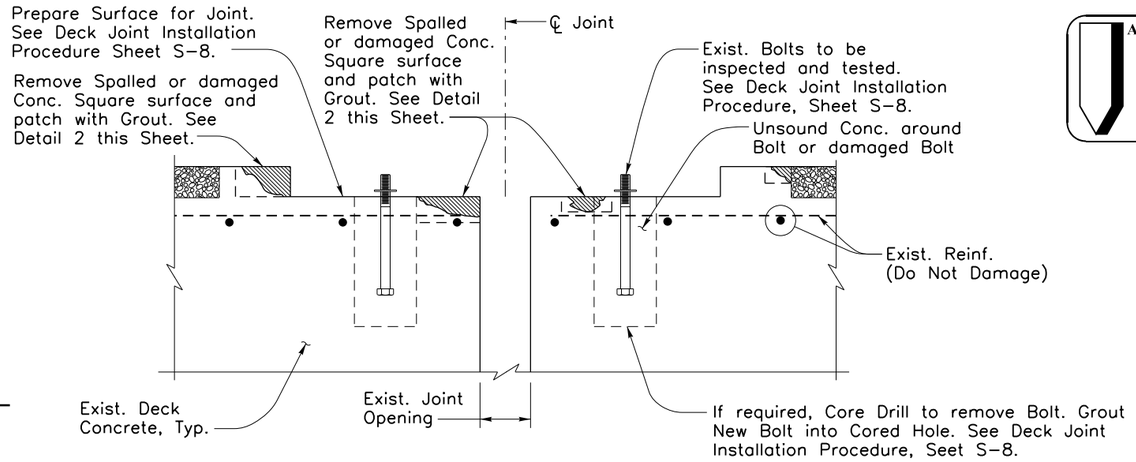
S-8

Sheet 8 of 13



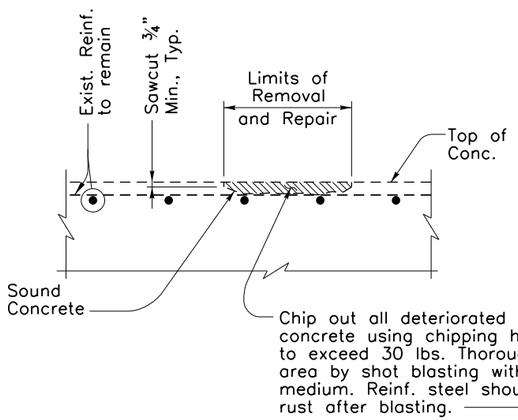
PLAN – POTENTIAL DAMAGED AREAS AT JOINT

No Scale

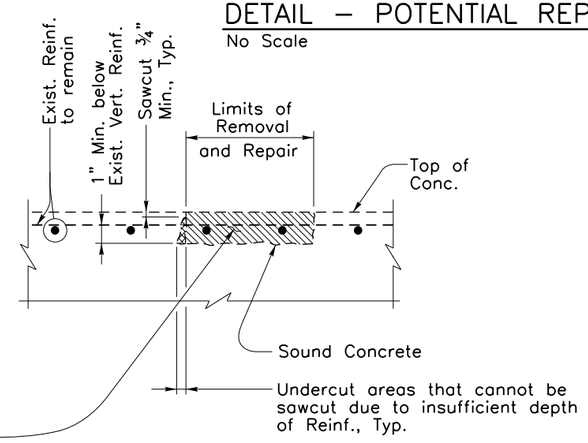


DETAIL – POTENTIAL REPAIRS AT DECK JOINT (1)

No Scale



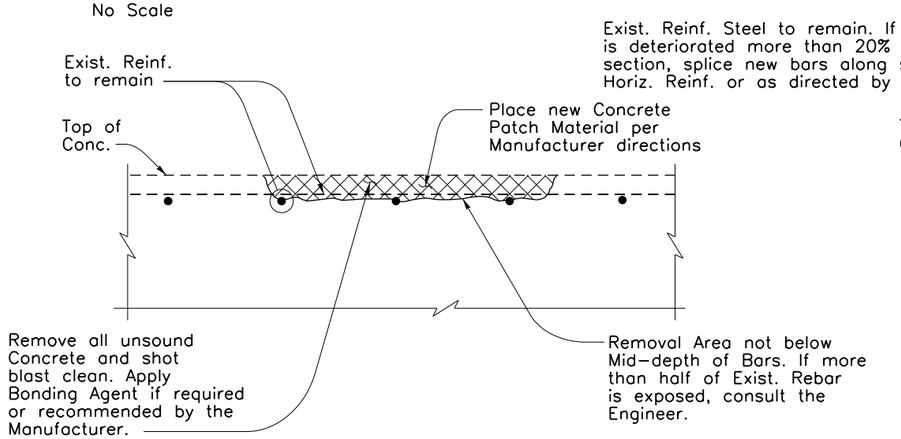
SECTION (A) (Class A)



SECTION (A) (Class B)

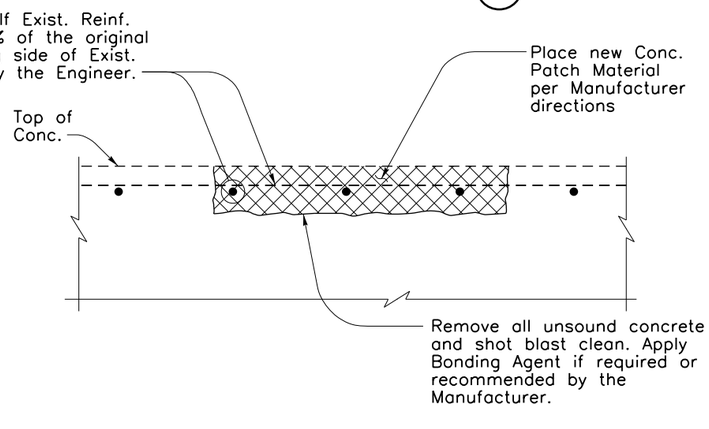
LIMITS OF CONCRETE REMOVAL (2)

No Scale



TYPICAL DETAIL – CLASS 'A' REPAIR (3)

Scale 1"=1'-0"



TYPICAL DETAIL – CLASS 'B' REPAIR (4)

Scale 1"=1'-0"

Notes:

1. See General Notes Sheet S-3.
2. Concrete repair areas that are not deeper than ½ depth of reinforcement are considered Class A. All other areas, or as directed by the Engineer are considered Class B. All repairs are paid by Square Foot under Item No. 1210.10.
3. The Contractor shall take great care not to damage existing reinforcing steel. Where reinforcing steel bars are damaged by the Contractor or where reinforcing steel has deteriorated more than 20% of its original section, new bars shall be spliced and lapped, as directed by the Engineer.
4. Prior to placement of concrete patch material, the Contractor shall ensure all unsound concrete has been removed. The prepared surface should be rough but uniform and free from cracks, oils, dirt, and other foreign materials. Area should be cleaned by shot blast prior to placement of concrete patch material.
5. Patch material shall be non-shrink concrete with f'c = 5,000 psi at 28 days. Place material in accordance with the manufacturer's recommendations. Submit material for review and approval by the Engineer prior to starting any work or furnishing patch material.

CONCRETE REPAIR DETAILS

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

HDR

PROJECT NUMBER ST2620

LONDON BRIDGE MAINTENANCE 2

Designed by: JAC
Drawn by: TRK
Checked by: TWB
Date: 10/4/2016
Dwg. scale: AS NOTED

LAKE HAVASU CITY

Sheet Number:

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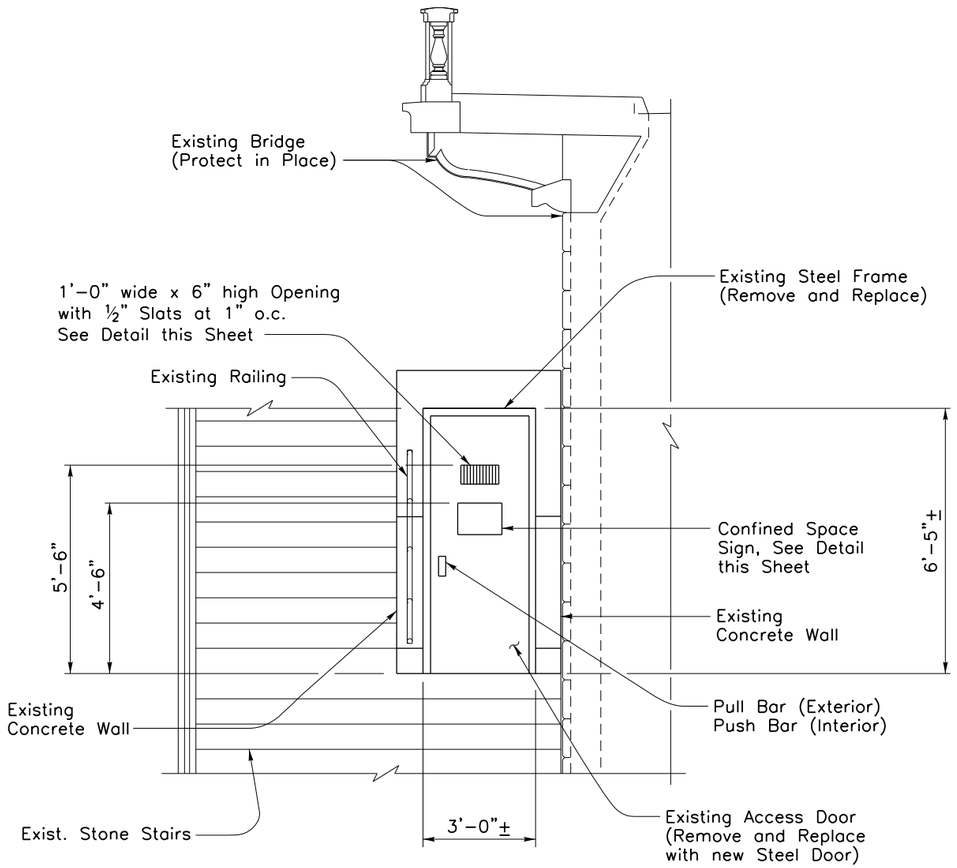
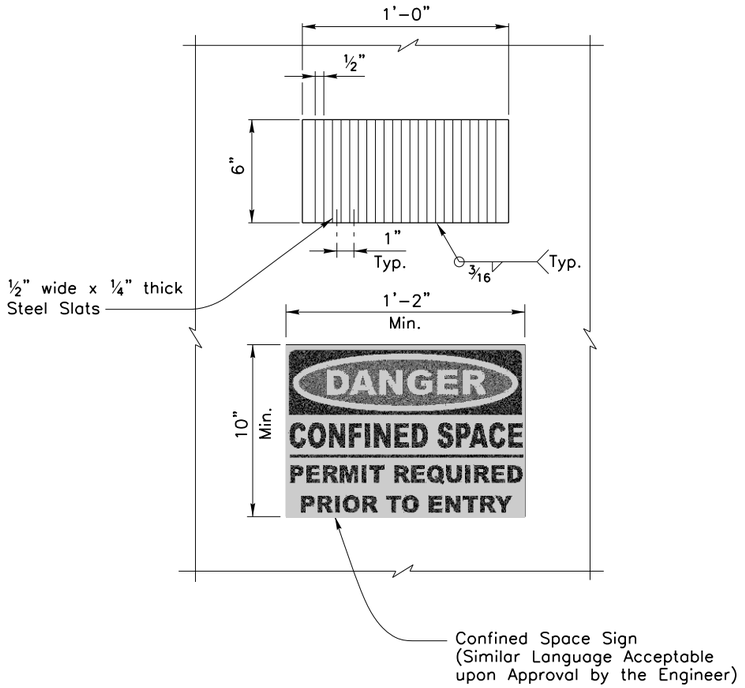
Sheet 9 of 13



ELEVATION
¼"=1'–0"
(A)



DETAIL – ENTRY DOOR
No Scale
(1)

Notes:

1. Remove existing door and frame. Cut existing anchor bolts flush with existing concrete and cover ends with epoxy.
2. Install new door and frame per Manufacturer's direction. Anchors shall be installed into existing concrete. See Supplemental Specifications 03330, 03340, and 03350 for additional information.
3. Removal of existing door and installation of new door, sign, and painting are paid for by lump sum under Item No. 1210.3.
4. Door shall be keyed to match existing lock on North abutment access door.

DOOR DETAILS

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

HDR

PROJECT NUMBER ST2620

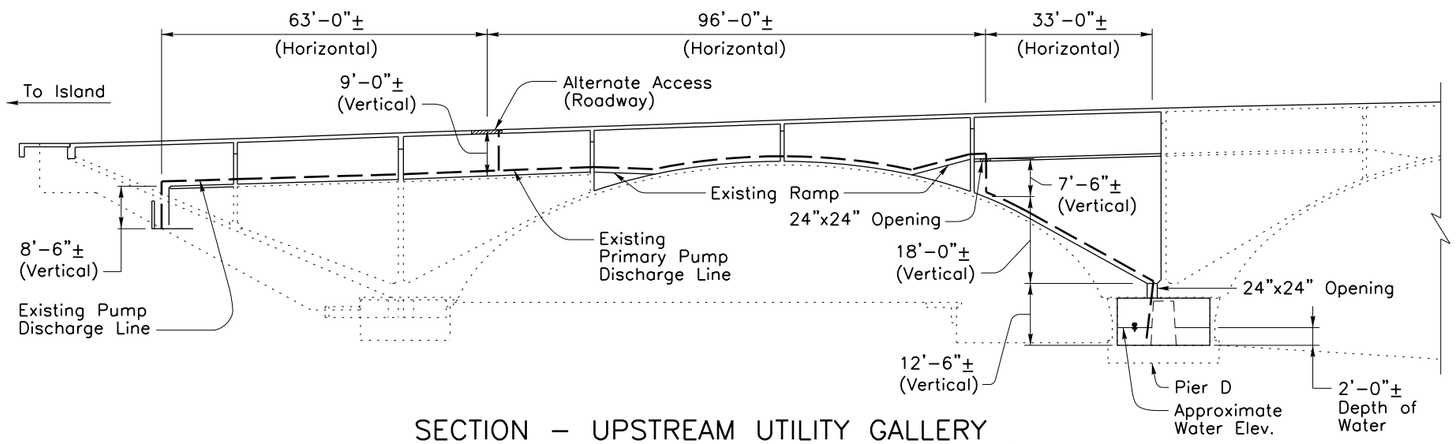
LONDON BRIDGE MAINTENANCE 2

Designed by: JAC
Drawn by: TRK
Checked by: TWB
Date: 10/4/2016
Dwg scale: AS NOTED

LAKE HAVASU CITY

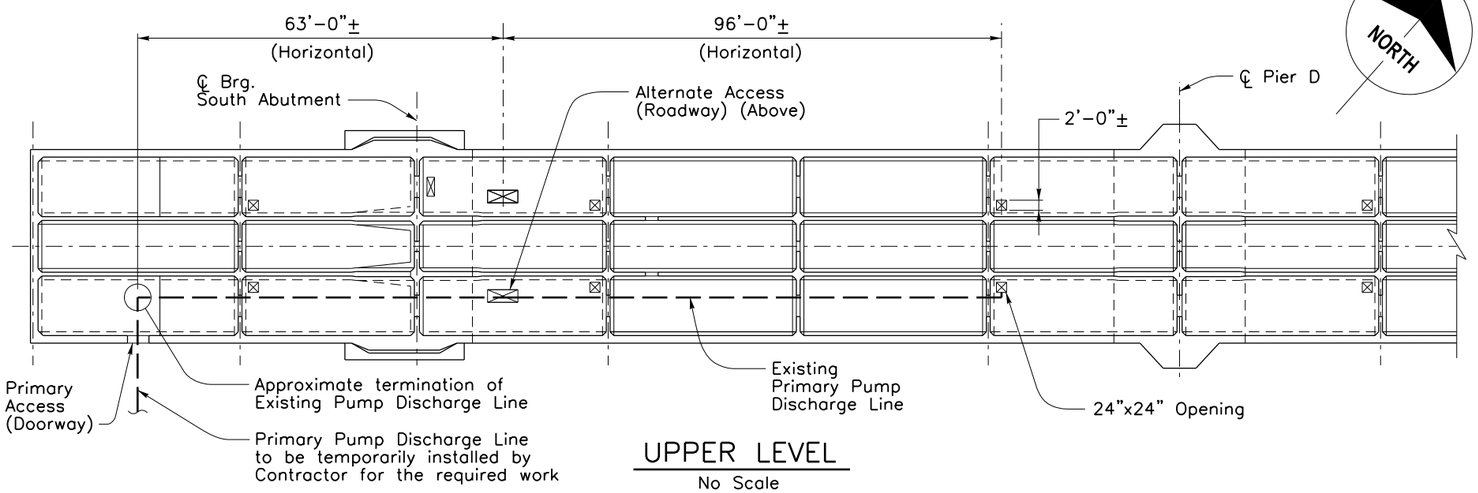
Registered Professional Engineer
Jason A. Carlaftes
50678
JASON A
CARLAFTES
Date Signed
Arizona, U.S.A.
Expires 03-31-2019

Sheet Number:
S-10
Sheet 10 of 13



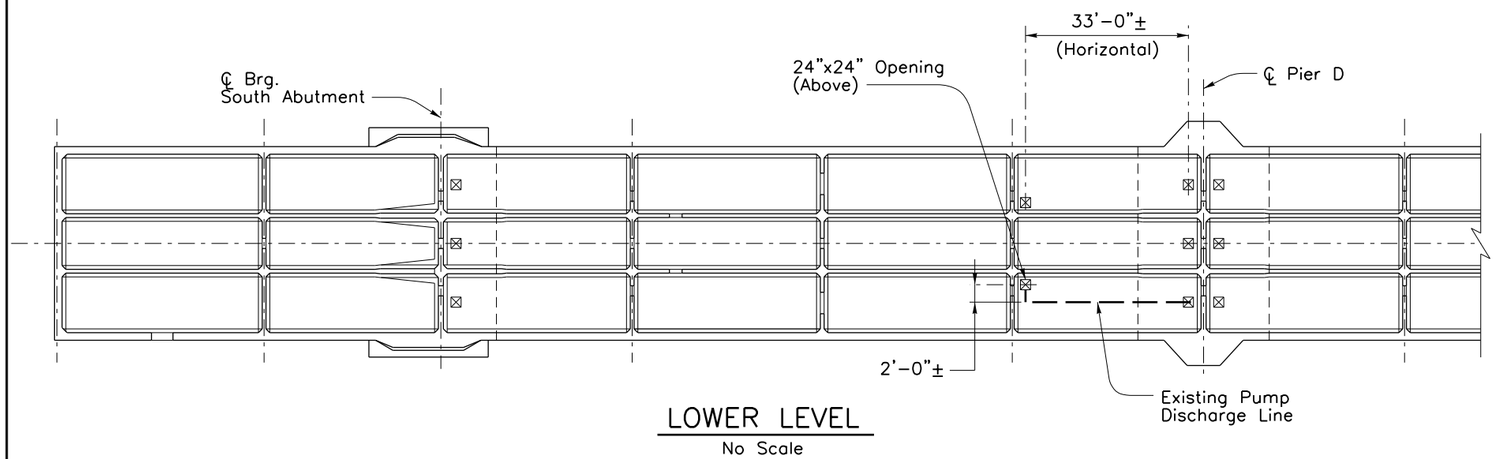
SECTION – UPSTREAM UTILITY GALLERY

No Scale



UPPER LEVEL

No Scale



LOWER LEVEL

No Scale

Notes:

1. The intent of this dewatering plan is to remove all water from bearing chamber D so that repairs can be made to the concrete walls within the bearing chamber. It is also intended to provide continuous dewatering from possible infiltration during repair work. This work is paid for by Lump Sum under Item NO. 1210.7. See the Special Provisions.
2. All dimensions shown are approximate and should be field verified.
3. There are two access options for discharge of the pump lines:

   Deck Access Hatch (Primary):
   Total Horizontal Run – 133 feet±
   Total Vertical Run – 47 feet±

   Existing Access Doorway (Alternate):
   Total Horizontal Run – 228 feet±
   Total Vertical Run – 56 feet±

   An existing discharge line from a previous project remains inside the bridge. This line may be used for dewatering.
4. If the Deck Access Hatch is used, traffic control will be required. Traffic control shall be limited to a single lane closure. Lane closures shall be coordinated with the City. The parking lot adjacent to the Existing Access Doorway is a private lot. Use of the parking lot shall be coordinated with the lot owner. See the General Notes and the Special Provisions.
5. The approximate volume of water in Bearing Chamber D is 2500 cf (18,900 gallons). This volume is based on measurements taken at the time of inspection on May 4, 2016 and may vary. The cause of water infiltration is currently unknown. The current rate of infiltration is unknown, but is anticipated to be minimal based on a previous project.
6. The water in the chamber is filled with waste and debris. Testing on the water was done in November, 2010. The water was analzyed for volatile organics, RCRA 8 List Metals, Mercury, and pH. Test results did not indicate any risk to human contact from chemical contaminants within the limitations of the analytical program. See the "London Bridge Evaluation & Stabilization Report" prepared by HDR and dated March 25, 2011 for additional information.
7. Water pumped from the bearing chamber may not be discharged into the Colorado River. Water shall be contained and transported to a receiving facility. Coordination with the receiving facility is the responsibility of the Contractor.
8. Pump equipment shall remain on–site to provide continuous water removal until the appropriate repairs can be made to bearing chamber.
9. Equipment size will be limited to existing hatch opening dimensions. No modifications may be made to these openings. Modifications to the existing ramps within the structure may be undertaken by the Contractor as necessary to accomodate proposed equipment and as approved by the Engineer.
10. A dewatering plan shall be submitted to the Engineer for review and approval prior to the start of work. The plan shall include equipment to be used, a traffic control plan, a general outline of work, including approaches to accessing the bridge, transporting and positioning the equipment, and a work schedule.
11. The Engineer shall be notified a minimum of one week prior to the scheduled dewatering so that an inspection can be made after the water is removed. This inspection is intended to verify the approaches outlined in the bearing chamber repair details.

BEARING CHAMBER DEWATERING PLAN

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

HDR

PROJECT NUMBER ST2620

LONDON BRIDGE MAINTENANCE 2

Designed by: JAC
Drawn by: TRK
Checked by: TWB
Date: 10/4/2016
Dwg scale: AS NOTED

LAKE HAVASU CITY

Registered Professional Engineer (Structural)
CERTIFICATE NO.
50678
JASON A CARLAFTES
Date Signed
Arizona, U.S.A.
Expires 03-31-2019

Sheet Number:

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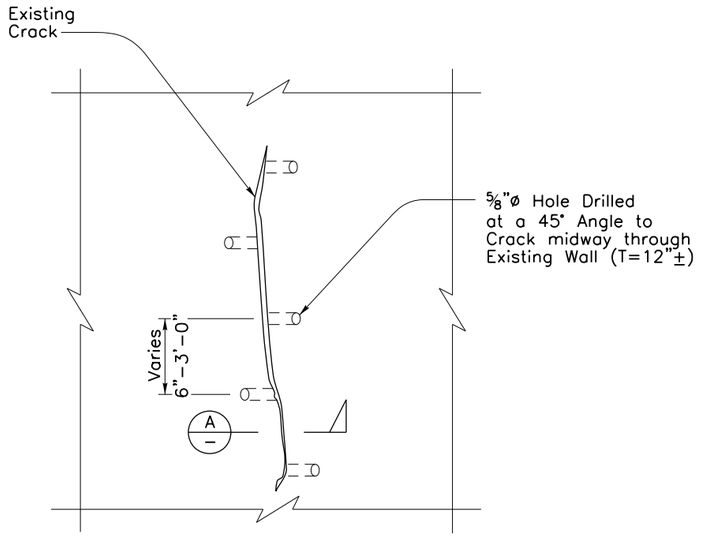

ELEVATION
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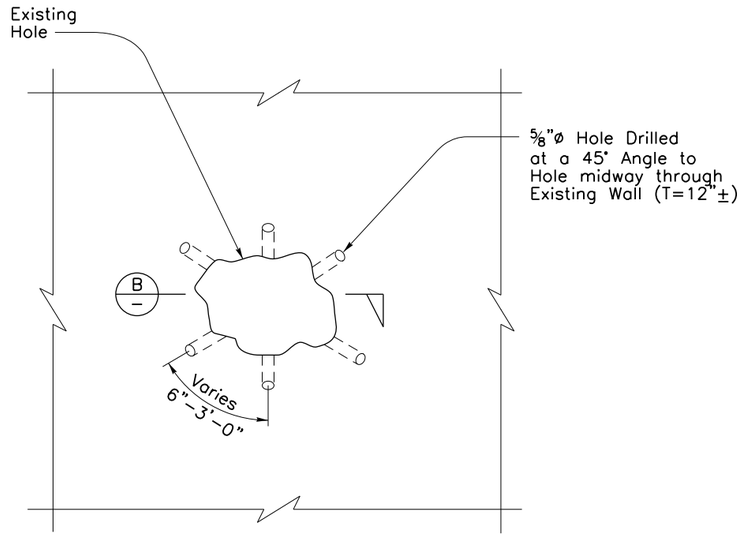

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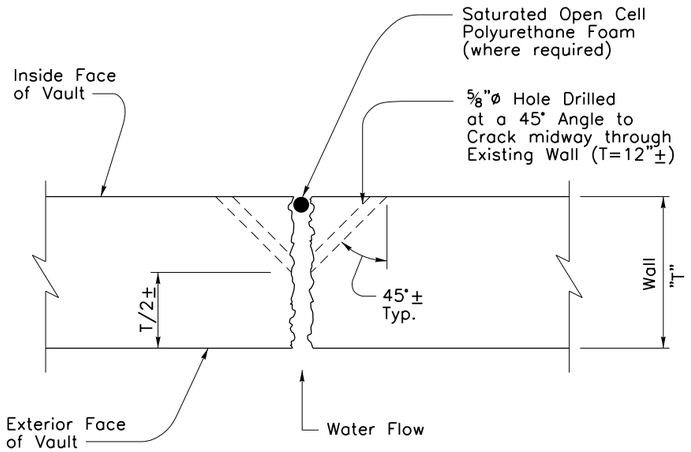
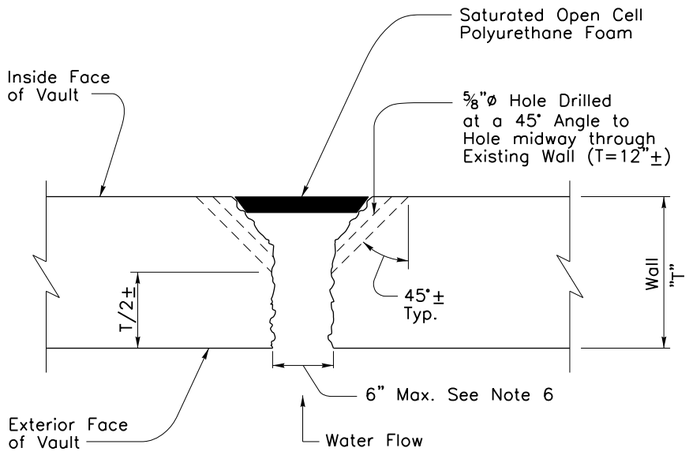


SECTION A
No Scale



SECTION B
No Scale

CRACK REPAIR PROCEDURE

The manufacturer's installation procedures shall be followed. The general procedure is as follows:

1. Clean and locate extents of crack allowing water infiltration.
2. Drill ⅝" diameter holes along the side of the crack along a 45° angle such that the hole intersects middepth of the wall. Stagger as shown.
3. Flush drilled holes with water to remove debris and dust.
4. If crack or joint width is greater than ½", pack open cell polyurethane foam saturated with polyurethane chemical grout into crack and activate to create a surface seal.
5. Inject polyurethane chemical grout into crack with a minimum pressure of 250 psi. For vertical or sloped cracks, begin at lowest drilled hole, working up.
6. After repair is complete and grout is set, re–inject each hole with a small amount of water. Cut packers or injection ports flush with concrete surface. Remove residual resin with a wire brush or hand grinder.

Notes:

1. The source of infiltration into the bearing chamber is currently unknown. A previous project removed water and no source of infiltration was observed. Walls should be inspected for cracks, holes, and deterioration. At a minimum, all cracks shall be sealed and the weep holes plugged. These details provide the anticipated method for crack repair. If the cause of infiltration significantly differs from the assumed cause of infiltration, repair methods may be re–evaluated by the Engineer and the Contractor. The Contractor shall anticipate using wet repair methods and equipment. This work is paid for by Square Foot under Item No. 1210.8. See the Special Provisions.
2. Cracks shall be repaired using a hydrophobic polyurethane chemical grout, such as Sika "SikaFix HH LV" or "SikaFix HH Plus" or approved equivalent. Hydrophillic grouts are not allowed. Material shall meet or exceed the performance criteria contained in the Special Provisions.
3. Work shall be completed by a Qualified Contractor with a minimum of 3 years experience in the field of concrete repair and protection. All personnel shall have received product training by the manufacturer. The Contractor shall arrange to have a manufacturer's and Engineer's representitive on–site during the grouting of the first repair.
4. Install materials in accordance with manufacturer's recommendations as modified by applicable rules and regulations of local, state, and federal authorities. The Contractor shall submit product data sheets, Safety Data Sheets, and installation procedures, along with a work history, to the Engineer for review and approval prior to commencing work.
5. The repaired surface shall be monitored for 48 hours to verify the infiltration has not migrated to nearby cracks or other defects in the existing chamber walls. If the infiltration has migrated, repairs shall be conducted on the new source of infiltration.
6. For openings larger than 6 inches, viability of proposed repair will need to be evaluated with the product supplier.
7. Alternative repair methods will be considered. The Contractor shall submit alternative repair plans, including methods, materials, and history of successful completion, to the Engineer for review and approval.
8. All work shall be paid for by Square Foot under Item No. 1210.8. See Supplemental Specification 03310 for additional information.

BEARING CHAMBER D REPAIRS

ARIZONA BLUE STAKE
CALL TWO WORKING DAYS BEFORE YOU DIG
Dial 811 or
602-263-1100
1-800-STAKE-IT
(OUTSIDE MARICOPA COUNTY)

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

HDR

PROJECT NUMBER ST2620

LONDON BRIDGE MAINTENANCE 2

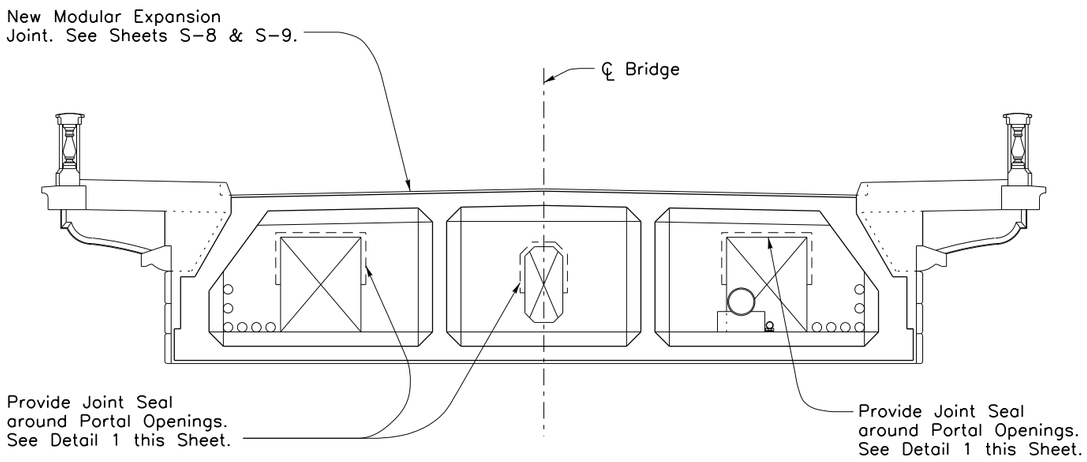
Designed by: JAC
Drawn by: TRK
Checked by: TWB
Date: 10/4/2016
Dwg. scale: AS NOTED

LAKE HAVASU CITY

Registered Professional Engineer (Civil) CERTIFICATE NO. 50678 JASON A CARLAFTES Date Signed 10/4/2016 Arizona, U.S.A.

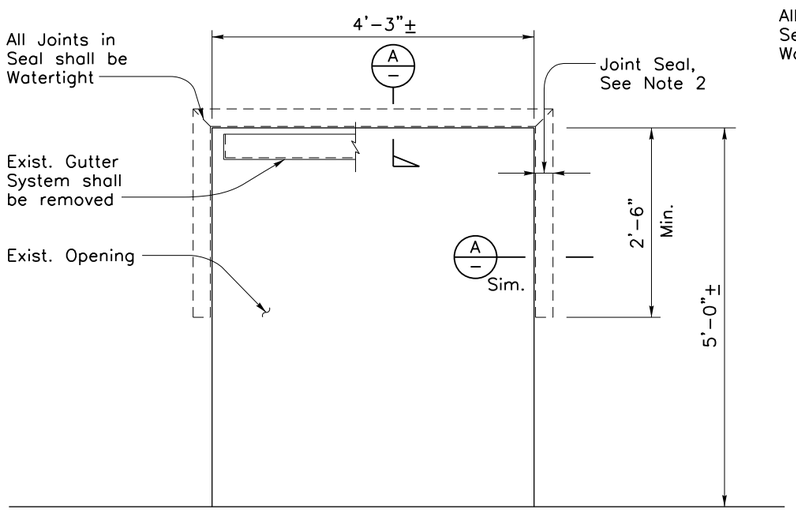
Expires 03-31-2019

Sheet Number:
S-12
Sheet 12 of 13

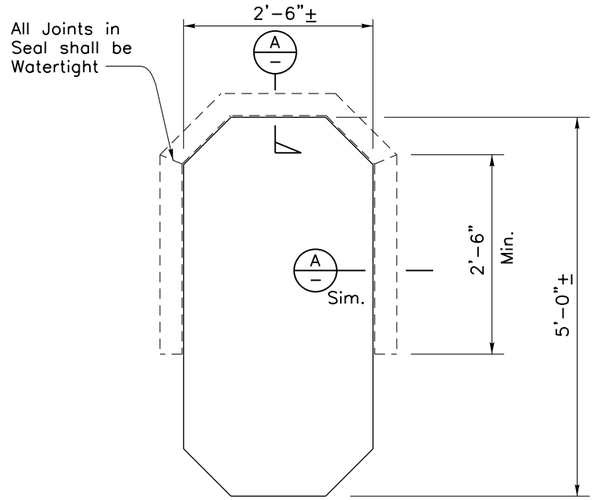


SECTION AT EXPANSION JOINT AND PORTAL ACCESS OPENINGS

No Scale



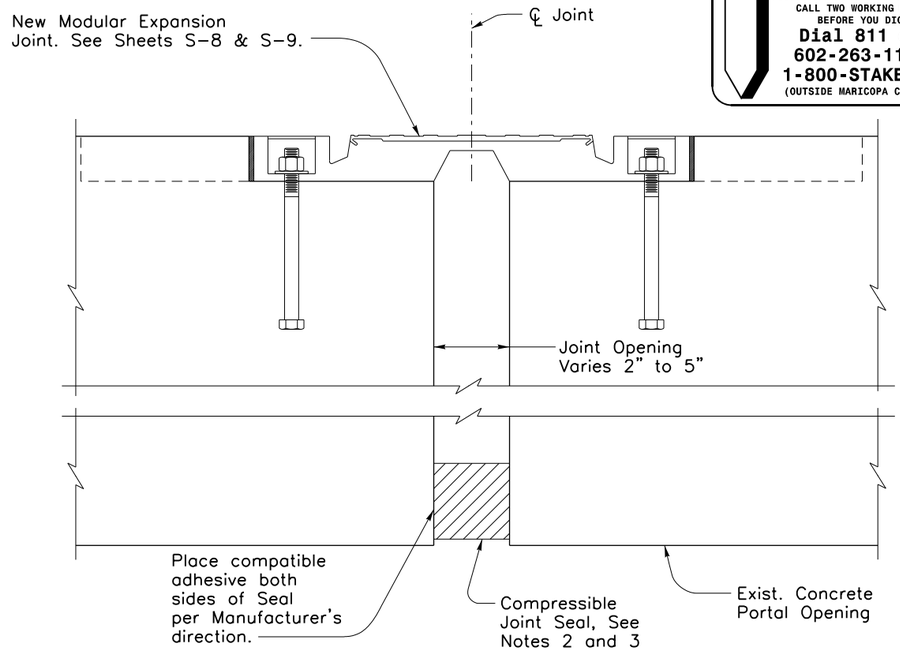
ELEVATION



ELEVATION

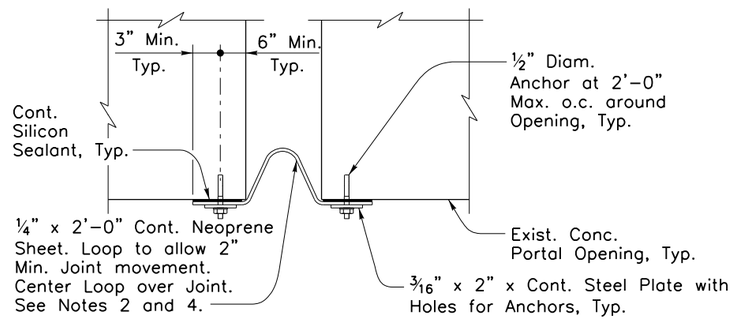
DETAIL – JOINT SEALANT AT PORTAL OPENINGS (1)

No Scale



SECTION – OPTION 1 (A)

No Scale



SECTION – OPTION 2 (A)

No Scale

Notes:

1. See General Notes Sheet S-3.
2. At Contractor's option, the joint seal shown in Option 1 or Option 2 may be used to seal around the portal access openings.
3. Option 1: Compressible Joint Seal shall be Wabo Evazote UV as manufactured by Watson Bowman ACME or approved equal. See Special Provisions and Supplemental Specification 03370 for additional information.
4. Option 2: The elastomer for the joint seal shall be polychloroprene rubber (Neoprene) and shall conform to ASTM D3242. The joint seal shall be compatible with concrete and shall be resistant to abrasion, oxidation aging and sunlight, and to oils, gasoline, salt and other materials that may be spilled on or applied to the surface. The joint seal shall be supplied in one continuous full-length piece without splices.
5. Contractor to verify Portal Opening dimensions prior to ordering Seal.
6. Joint Seal is paid for by the linear foot under Item No. 1210.11. See Special Provisions.

JOINT SEAL DETAILS

NO.	REVISIONS / SUBMISSIONS	DATE
#	-	-
#	-	-
#	-	-
#	-	-

HDR

PROJECT NUMBER ST2620

LONDON BRIDGE MAINTENANCE 2

Designed by: JAC	Drawn by: TRK	Checked by: TWB	Date: 10/4/2016	Dwg. scale: AS NOTED

LAKE HAVASU CITY

Registered Professional Engineer
Certificate No.
50678
JASON A.
CARLAFTES
Date Signed 10/4/16
Arizona, U.S.A.
Expires 03-31-2019

Sheet Number:

S-13

Sheet 13 of 13