GENERAL NOTES:

1. Traffic control plan is schematic. Not all required signage is shown. Contractor to submit detailed traffic and pedestrian control and safety plans to the university for review.
2. Coordinate excavation work, barricades, fencing, temporary closures, signage etc. with campus events schedules. Pedestrian traffic signs shall be orange background with minimum 4" high black lettering. Refer to example photo. Locate signs as required for safe routing of pedestrian traffic. Provide signage as required to clearly indicate travel path and access to buildings.
3. Vehicle parking is not allowed outside of construction fence area.

EXAMPLE PEDESTRIAN TRAFFIC SIGN

ALTERNATE ROUTE ADVISED

TUNNEL 7 STAGING AREA AND PEDESTRIAN TRAFFIC SITE PLAN

SCALE: 1" = 40'-0"
THE DESIGNS SHOWN HEREIN INCLUDING ALL TECHNICAL DRAWINGS, GRAPHIC REPRESENTATION & MODELS THEREOF, ARE PROPRIETARY & CANNOT BE COPIED, DUPLICATED, OR COMMERCIALLY EXPLOITED IN WHOLE OR IN PART WITHOUT THE SOLE AND EXPRESS WRITTEN PERMISSION FROM M. WITHWHILL, INC.
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N.I.C. (WORK IN THIS AREA OF TUNNEL BY OTHERS AS PART OF DISTRIBUTION FROM NEW UTILITY PLANT.)
EXISTING 1/2" COMPRESSED AIR LINE TO BE REPLACED WITH 2-1/2" LINE SIZE IN THIS SECTION OF TUNNEL.
1. GENERAL:

1A. ENGINEER: REFERENCES ON THE STRUCTURAL DRAWINGS TO EXISTING AND STRUCTURAL ENGINEERS OF RECORD OTHER THAN THE CONTRACTOR’S ENGINEER ARE NOT TO BE CONSIDERED AS PROVIDING A MECHANICAL ENGINEER, ETC.

2. EXISTING STRUCTURES:

2A. CONTRACT DOCUMENTS HAVE BEEN PREPARED USING SITE DATA COLLECTED AND DATA AVAILABLE TO THE CONTRACTOR AT THE TIME THE DRAWINGS WERE PREPARED. THE DRAWINGS MAY NOT CONFORM TO SIMILAR WORK ELSEWHERE ON THE PROJECT. 

3. USE OF DRAWINGS:

3A. DO NOT SCALE DRAWINGS.

3B. MAKE ALL REINFORCING BAR BENDS IN THE FABRICATOR’S SHOP UNLESS NOTED OTHERWISE.

4. STRUCTURAL CONCRETE MIX REQUIREMENTS:

4A. PROVIDE NORMAL WEIGHT CONCRETE WITH THE FOLLOWING REQUIREMENTS:

- CEMENT TYPE III (HIGH EARLY)
- AIR-ENTRAINING AND WATER REDUCING ADMIXTURES ALLOWED
- MINIMUM OF 564 LB/CY CEMENT MATERIAL (INCLUDING FLY ASH)
- PROVIDE ADDITIONAL BARS REQUIRED TO SECURE REINFORCING IN PLACE
- CONCRETE REINFORCING FABRICATION AND PLACING DRAWINGS AND/OR SEQUENCES.

5. PLACING REINFORCEMENT:

5A. SEE 'REINFORCING MATERIALS TABLE'

5B. PROVIDE ACCESSORIES NECESSARY TO PROPERLY SUPPORT REINFORCING AS SHOWN IN DETAILS.

6. SUBSTITUTIONS AND NON-COMPLIANCE:

6A. MODIFY STRENGTH DESIGN.

6B. MODIFY CONSTRUCTION.

7. STEEL NOTES:

7A. PROVIDE CORRECT CORRUGATIONS AS SHOWN IN DETAILS.

7B. MODIFY REQUIREMENTS.

7C. PROVIDE OTHER REQUIREMENTS.

GENERAL NOTES

1. GENERAL:

1A. ALL WORK SHALL CONFORM WITH ACI 318, LATEST EDITION, UNLESS NOTED OTHERWISE.

2. EXISTING CONDITIONS WHICH ARE NOT NOW KNOWN OR ARE AT CONSTRUCTION SITE.

3. USE OF DRAWINGS:

3A. DO NOT SCALE DRAWINGS.

3B. MAKE ALL REINFORCING BAR BENDS IN THE FABRICATOR’S SHOP UNLESS NOTED OTHERWISE.

4. STRUCTURAL CONCRETE MIX REQUIREMENTS:

4A. PROVIDE NORMAL WEIGHT CONCRETE WITH THE FOLLOWING REQUIREMENTS:

- CEMENT TYPE III (HIGH EARLY)
- AIR-ENTRAINING AND WATER REDUCING ADMIXTURES ALLOWED
- MINIMUM OF 564 LB/CY CEMENT MATERIAL (INCLUDING FLY ASH)
- PROVIDE ADDITIONAL BARS REQUIRED TO SECURE REINFORCING IN PLACE
- CONCRETE REINFORCING FABRICATION AND PLACING DRAWINGS AND/OR SEQUENCES.

5. PLACING REINFORCEMENT:

5A. SEE 'REINFORCING MATERIALS TABLE'

5B. PROVIDE ACCESSORIES NECESSARY TO PROPERLY SUPPORT REINFORCING AS SHOWN IN DETAILS.

6. SUBSTITUTIONS AND NON-COMPLIANCE:

6A. MODIFY STRENGTH DESIGN.

6B. MODIFY CONSTRUCTION.

6C. PROVIDE OTHER REQUIREMENTS.

CONCRETE NOTES

1. GENERAL:

1A. ALL WORK SHALL CONFORM WITH ACI 318, LATEST EDITION, UNLESS NOTED OTHERWISE.

2. EXISTING CONDITIONS WHICH ARE NOT NOW KNOWN OR ARE AT CONSTRUCTION SITE.

3. USE OF DRAWINGS:

3A. DO NOT SCALE DRAWINGS.

3B. MAKE ALL REINFORCING BAR BENDS IN THE FABRICATOR’S SHOP UNLESS NOTED OTHERWISE.

4. STRUCTURAL CONCRETE MIX REQUIREMENTS:

4A. PROVIDE NORMAL WEIGHT CONCRETE WITH THE FOLLOWING REQUIREMENTS:

- CEMENT TYPE III (HIGH EARLY)
- AIR-ENTRAINING AND WATER REDUCING ADMIXTURES ALLOWED
- MINIMUM OF 564 LB/CY CEMENT MATERIAL (INCLUDING FLY ASH)
- PROVIDE ADDITIONAL BARS REQUIRED TO SECURE REINFORCING IN PLACE
- CONCRETE REINFORCING FABRICATION AND PLACING DRAWINGS AND/OR SEQUENCES.

5. PLACING REINFORCEMENT:

5A. SEE 'REINFORCING MATERIALS TABLE'

5B. PROVIDE ACCESSORIES NECESSARY TO PROPERLY SUPPORT REINFORCING AS SHOWN IN DETAILS.

6. SUBSTITUTIONS AND NON-COMPLIANCE:

6A. MODIFY STRENGTH DESIGN.

6B. MODIFY CONSTRUCTION.

6C. PROVIDE OTHER REQUIREMENTS.

DESIGN CRITERIA

1. CODES AND STANDARDS:

1A. GENERAL DESIGN:

- UNIVERSITY OF COLORADO AT BOULDER

2. LOADS:

2A. ADDITIONAL LOADS FOR BUILDINGS AND OTHER STRUCTURAL CONSTRUCTION ARE NOT TO BE CONSIDERED AS PROVIDING A MECHANICAL ENGINEER, ETC.

3. CONCRETE:

3A. CONTRACTOR SHALL PROVIDE BEARING PLATES AS SHOWN UNLESS A GREATER SIZE IS REQUIRED.

4. GRAVITY LOADS:

4A. CONTRACTOR SHALL PROVIDE BEARING PLATES AS SHOWN UNLESS A GREATER SIZE IS REQUIRED.

STEEL NOTES

1. CONNECTIONS:

1A. PROVIDE CORRECT CORRUGATIONS AS SHOWN IN DETAILS.

1B. MODIFY REQUIREMENTS.

2. WELDING REQUIREMENTS:

2A. PROVIDE CURRENT EVIDENCE OF PASSING THE A.W.S. QUALIFICATION TESTS.

2B. MINIMUM WELODS.

2C. MODIFY REQUIREMENTS.

3. WELD SIZES AND LENGTHS:

3A. USE THE SHOP DRAWINGS.

3B. PROVIDE ACCESSORIES FOR USE IN WELDING.

4. FIELD WELDING SYMBOLS:

4A. PROVIDE CORRECT CORRUGATIONS AS SHOWN IN DETAILS.
ANCHOR STUD (HAS) AND ANCHOR STUD (HAS) AND
OF-NUT METHOD WITHOUT GROOVE WELD

CRITICAL JOINTS ERECTION

COST OF ADDITIONAL INSPECTION SHALL BE BORNE BY THE CONTRACTOR.

PROPERLY CALIBRATED TESTING TORQUE OR THE CONTRACTOR MAY REMOVE AND REPLACE ALL DEFICIENT BOLTS. ALL TESTING AGENCY SHALL DETERMINE THAT PROPER BOLT TENSION HAS BEEN ACHIEVED BY THE APPLICATION OF A ITEM FREQUENCY STANDARD

5/16"

100% VISUAL VERIFY TYPE, SIZE, SPACING, AND LOCATION

AWS D1.1 - SHEAR CONNECTOR, HEADED

AISC 360 /

VERIFY CONNECTED MATERIALS HAVE BEEN

RCSC SPECIFICATION

AISC 360 /

OF COMPLIANCE QUALIFICATIONS, AND REVIEW CERTIFICATES

DRAWN TOGETHER AND PROPERLY SNUGGED.

FAYING SURFACE CONDITION

CONNECTIONS. REPORT ANY OBSERVATION OF

- COMPRESSIVE STRENGTH EACH LIGHTWEIGHT CONCRETE

- UNIT WEIGHT FOR STRUCTURAL PLACEMENT, LOCATION OF CONCRETE BATCH IN WORK, DESIGN 28-DAY COMPRESSIVE STRENGTH, CONCRETE SUPPLIER AND REJECTION OF DEFICIENT CONCRETE.

1. NONDESTRUCTIVE TESTING MAY BE PERMITTED BY THE ENGINEER, BUT WILL NOT BE USED AS SOLE BASIS FOR APPROVAL OR REJECTION OF DEFICIENT CONCRETE.

2. REPORTS OF COMPRESSIVE STRENGTH TESTS SHALL CONTAIN THE FOLLOWING INFORMATION: DATE OF CONCRETE PLACEMENT OF CONCRETE

REINFORCING STEEL, BOLTS AND SCAFFOLDING

1B. PRIOR TO START OF WORK:

22132.S.69 BEN BROMIEL BEN BROMIEL DAN EAGAN BEN NELSON

STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS AND TESTING

QUALITY ASSURANCE GENERAL NOTES

1. GENERAL:

1A. STATE OF WORK:

THE CONTRACTOR SHALL ENHANCE THE QUALITY OF WORK PERFORMED TO THE SUFFICIENT EXTENT TO ENSURE COMPLIANCE WITH ALL REQUIREMENTS OF THESE DOCUMENTS.

SPECIAL INSPECTIONS AND TESTING ARE APPLICABLE TO ALL REVISIONS AND/FUTURE WORK ADDED BY AMENDMENTS TO THESE DOCUMENTS.

SPECIAL INSPECTORS ARE THE ONLY PERSONALITIES AUTHORIZED TO PERFORM SPECIAL INSPECTIONS AND TESTING FOR THE CONTRACTOR.

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SPECIAL INSPECTORS ARE THE ONLY PERSONALITIES AUTHOR
SOLID HATCHED AREA DENOTES APPROXIMATE EXTENT OF STRUCTURAL SLABS TO BE REMOVED, AIR-LOCKED, AND SEALED WITH A SILANE SEALER. SEE ENLARGED PLANS FOR MORE INFO.

PORTION OF TUNNEL CONTAINING SOIL AND SIDEWALK ABOVE WALKTOP LID.

ELECTRICAL HAUNCH BELOW WALKTOP LID.

STOP COILING SLAB OF TUNNEL.

PORTION OF TUNNEL CONTAINING SOIL AND SIDEWALK ABOVE WALKTOP LID.

TOP WALKING SURFACE PERIODICALLY VAPORIFIED.

VOLT AND SEAL CONTROL JOINTS ON TOP WALKING SURFACE PERIODICALLY VAPORIFIED.

PORTION OF TUNNEL CONTAINING SOIL AND SIDEWALK ABOVE WALKTOP LID.

ELECTRICAL HAUNCH BELOW WALKTOP LID.

PORTION OF TUNNEL CONTAINING SOIL AND SIDEWALK ABOVE WALKTOP LID.

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ELECTRICAL HAUNCH BELOW WALKTOP LID.

PORTION OF TUNNEL CONTAINING SOIL AND SIDEWALK ABOVE WALKTOP LID.

ELECTRICAL HAUNCH BELOW WALKTOP LID.
ANCHOR BRACING DURING THE SCHEDULE.

NEW STEAM LINE INSTALLATION REGARDING BRACING FORCES AND CONTRACTOR FOR CP #144260

COORDINATE WITH UNIVERSITY CONSTRUCTION DURATION OF THIS PROVIDE TEMPORARY STEAM

NOTE #4 NOTE #4 NOTE #4 NOTE #4

(E) CAMPUS UTILITES TO (E) CAMPUS UTILITES TO (E) CAMPUS UTILITES TO (E) CAMPUS UTILITES TO

ON THE SURFACE, SEE RECONSTRUCTION OF FOR REUSE DURING THE TUNNEL TO ALIGN WITH AN

BILCO HATCH.  SALVAGE SIDEWALK ABOVE THE DEMO THE EXTENTS OF THE EXISTING BOLLARD EXISTING BOLLARD EXISTING BOLLARD EXISTING BOLLARD

STRUCT LID DEMO 3' - 6" APPROX

ELEC ELEC ELEC ELEC

9 9 9 9

8' - 0" ±

~~ ~~ ~~ ~~

1/4" = 1'-0"

S2.2 S2.2 S2.2 S2.2

10' - 7 1/2" 10' - 7 1/2" 10' - 7 1/2" 10' - 7 1/2"

3' - 11 1/2" 3' - 11 1/2" 3' - 11 1/2" 3' - 11 1/2"

EXISTING WALLS BELOW TO REMAIN EXISTING WALLS BELOW TO REMAIN EXISTING WALLS BELOW TO REMAIN EXISTING WALLS BELOW TO REMAIN

EXISTING WALLS EXISTING WALLS EXISTING WALLS EXISTING WALLS

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TO REMAIN TO REMAIN TO REMAIN TO REMAIN

EXISTING WALLS EXISTING WALLS EXISTING WALLS EXISTING WALLS

NORTH

DENOTES APPROXIMATE AREA OF (E) SLAB ON GRADE TO BE REMOVED.

DENOTES AREA OF (E) 8" VAULT WALLS TO BE DEMOLISHED.

ENLARGED VAULT FOUNDATION DEMO PLAN

ENLARGED VAULT ROOF DEMO PLAN

ENLARGED VAULT WALL DEMO PLAN

DEMO PERSPECTIVE

DEMO NOTES:

1. HIGH VOLTAGE HAUNCHES EXIST ON THE EXTERIOR FACE OF ONE OR BOTH TUNNEL WALLS. KNOWN LOCATIONS HAVE BEEN SHOWN AS HAZARDS. CONTRACTOR SHALL COORDINATE LOCATIONS OF HIGH VOLTAGE HAUNCHES WITH UTILITIES LOCATED PRIOR TO BEGINNING REPAIR WORK. CONTRACTOR SHALL PROVIDE ACCESS TO HIGH VOLTAGE HAUNCHES IN THE VICINITY OF THE VAULT WALLS AND SAVE ALL CUT OUTS PRIOR TO COMPLETING THE DEMOLITION. USE EXTREME CAUTION IN REMOVING THE TUNNEL LID IN THE VICINITY OF EXISTING ELECTRICAL CONDUIT.

2. TEMPORARILY REMOVE ALL EXISTING STEEL STANDARDS OR WROUGHT IRON PLATFORMS AND RAILING IN THE VICINITY OF THE PLACEMENT OF ELECTRICAL CONDUIT, TO BE REMOVED PRIOR TO DEMOLITION. USE EXTREME CAUTION IN REMOVING THE TUNNEL LID IN THE VICINITY OF EXISTING ELECTRICAL CONDUIT.

3. ELECTRICAL CONDUIT MAY BE EMERGED IN THE EXISTING CONCRETE LIDS OF THE TUNNEL SYSTEM. CONTRACTOR SHALL LOCATE THE EXISTING ELECTRICAL CONDUIT AND LOCATE ANY LIVE WIRE CONDUIT PRIOR TO DEMOLITION.

4. MAIN EXISTING UTILITIES WITHIN THE TUNNEL SYSTEM ARE TO REMAIN UNALTERED DURING THIS PROJECT, INCLUDING STEAM LINES, CONDUIT LINES, COMPRESSED AIR LINES, I.T. CONDUIT, ETC. CONTRACTOR SHALL USE MEANS NECESSARY TO PROTECT THESE UTILITIES FROM DAMAGE. CONTRACTOR SHALL PROVIDE FOR ADDITIONAL REQUIREMENTS.

5. CONTRACTOR SHALL DEVELOP A WRITTEN PLAN TO OUTLINE THE DEMOLITION SEQUENCE AND SUBMIT TO THE UNIVERSITY FOR REVIEW AND COMMENT. IN ADDITION, THE CONTRACTOR SHALL ENGAGE A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF COLORADO TO DESIGN ALL BRACING AND SHORING REQUIRED DURING THE DEMOLITION AND RECONSTRUCTION OF THE VAULT WALLS AND TO SUBMIT TO THE UNIVERSITY FOR APPROVAL PRIOR TO BEGINNING DEMOLITION.
ENLARGED RECONSTRUCTION VAULT FOUNDATION PLAN

1. Reinforce the new tunnel lid in this area according to shop drawings.

ENLARGED RECONSTRUCTION VAULT PLATFORM PLAN

2. Reinforce the new tunnel lid in this area according to shop drawings.

ENLARGED RECONSTRUCTION VAULT ROOF PLAN

3. Reinforce the new tunnel lid in this area according to shop drawings.

NEW CONSTRUCTION PERSPECTIVE

4. Reinforce the new tunnel lid in this area according to shop drawings.
LAP SPICE Notes:
1. ALL SPLICES SHALL BE MADE TO FULL BAR DIAMETER AND STACKED VERTICALLY.
2. ALL SPLICES ARE "LTS" UNLESS NOTED OTHERWISE.
3. CONCRETE IS CAST BELOW THE BAR.
4. SMOOTHED LENGTHS SHOWN THAT WERE SHORTER THAN 5X OF FRESH CONCRETE IS CAST BELOW THE BAR.
5. ALL SPLICES THAT TESTING SHOWED TO BE IN误差 ERRORS.

Adjustments to given Lap Lengths:
1. SCHEDULED LAP LENGTHS ASSUME:
   - ALL SPLICES SHALL BE WIRED IN CONTACT AND STACKED VERTICALLY.
   - "LCE" = COMPRESSION EMBEDMENT LENGTH, BAR SIZE
   - CONCRETE REINFORCING EPOXY ADHESIVE
   - DOWELS @ 12" OC, TYP
   - SLAB ON GRADE W/ #4 DOWEL (N) FTG INTO (E)
   - (5) #5x CONT T&B SPLICE AND DEVELOPMENT

   1. INSTALL PER MFR'S RECOMMENDATIONS
   2. CLEAR SPACING BETWEEN BARS IS GREATER THAN 2 BAR DIAMETERS
   3. CLEAR COVER IS GREATER THAN BAR DIAMETER, BUT NOT LESS THAN 3/4"
   4. IF EITHER CONDITION A OR B IS NOT MET FOR A GIVEN BAR, INCREASE LENGTHS BY 50%

   1. MIN CONCRETE f'c = 2000 PSI

   1. 'LCE' = COMPRESSION EMBEDMENT LENGTH, BAR SIZE
   - CONCRETE REINFORCING EPOXY ADHESIVE
   - DOWELS @ 12" OC, TYP
   - SLAB ON GRADE W/ #4 DOWEL (N) FTG INTO (E)
   - (8) #5x CONT T&B SPLICE AND DEVELOPMENT

   1. INSTALL PER MFR'S RECOMMENDATIONS
   2. CLEAR SPACING BETWEEN BARS IS GREATER THAN 2 BAR DIAMETERS
   3. CLEAR COVER IS GREATER THAN BAR DIAMETER, BUT NOT LESS THAN 3/4"
   4. IF EITHER CONDITION A OR B IS NOT MET FOR A GIVEN BAR, INCREASE LENGTHS BY 50%
REMOVE AND REPLACE (E) STAIR LANDING AND FRAMING. INSTALL NEW STAIR TREAD TO EXTEND STAIR LENGTH AND ACHIEVE A NEW LANDING ELEVATION SHOWN ON CIVIL PLANS.

REMIND AND REPLACE (E) WALLS BELOW.

N) SLAB SUPPORTS

SPAN

NORTH
Epoxy inject a total of 250 linear feet of wall cracks on both walls between the racks shown, see after epoxy reaches full strength, remove the existing wide flange lateral wall supports (I-sections).

Seal the surface of the main top tunnel (roughly 40 square feet) with a hydrozo silane sealer by BASF or approved equal. Refer to manufacturer’s specifications for application rates and procedures. For bidding purposes, assume 295’-0 linear feet and an average width of 8’-0 on this sheet. For more info, see specs.

Approximate new steam anchor.

Seal the surface of the walk top tunnel lid with DOW Syl X-250 joint sealant or equivalent. Refer to manufacturer’s specifications for application rates and procedures. For more info, see specs.

Installing sandstone veneer and lid onto existing ventilation bench to match CU standards. See after. For more info, see specs.
Seal the surfaces of the walk top tunnel lid with a hydrophilic sealer designed for use in approved areas. Refer to manufacturers' specifications for application rates and procedures. For bidding purposes, assume 310'-0 linear feet and an average width of 8'-0 on this sheet.

Perform vertical surface spall repair per S5.0 on deteriorated walls in this area (unmodified or not), take caution around electrical conduits and non-machined electrical conduits present in the work area.

Install sandstone veneer and lid onto existing ventilation bench to match CU standards, for additional information see S8.0.

Remove the (E) sidewalk above the tunnel between control joints. Install a new pedestrian bollard per S7.0.

Perform vertical surface spall repair per S6.0 on deteriorated walls in this area (unmodified or not), take caution around electrical conduits and non-machined electrical conduits present in the work area.

Electrical handout and materials list.

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REPAIR VERTICAL SURFACE SPALL REPAIR PER
(APPROX 6 SQ FT)

INJECT CHEMICAL GROUT INTO OVERHEAD CRACKS
ON TUNNEL CEILING THIS AREA. FOR MORE INFO SEE

PERFORM VERTICAL SURFACE SPALL REPAIR PER
(APPROX 8 SQ FT)

OVERHEAD PATCH ON TUNNEL CEILING PER
(APPROX 6 SQ FT)

CLEAN EFFLORESCENCE OFF OF THE WALL
BELOW THE ABANDONED UTILITY PIPE

SEAL THE END OF EACH PIPE WITH A STEEL PIPE
END OR WELD ON A CAP PLATE TO PREVENT
WATER FROM ENTERING THE TUNNEL THROUGH
THE PIPES. FOR EXISTING CONDITIONS, SEE

REPAIR VERTICAL SURFACE SPALL REPAIR PER
(APPROX 2 SQ FT)

INJECT CHEMICAL GROUT INTO OVERHEAD CRACKS
ON TUNNEL CEILING THIS AREA. FOR MORE INFO SEE

DENOTES APPROXIMATE LOCATIONS OF CRACKS IN CEILING
OF TUNNEL TO RECEIVE CHEMICAL
GROUT INJECTION (TYP)

DESIGNERS: DATE PRINTED:

THE DESIGNS SHOWN HEREIN INCLUDING ALL TECHNICAL
DRAWINGS, GRAPHIC REPRESENTATION & MODELS THEREOF, ARE
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ENHANCEMENTS

CP 162311 - TNL7 - D.E. - VAULT & BOLLARDS
ENLARGED TUNNEL PLAN

North

ORIGINAL REMOVABLE CONCRETE HATCH
CONTRACTOR TO INVESTIGATE & REPORT IF REMOVABLE HATCH COVER IS NOT FOUND. A REMOVABLE HATCH COVER USING A SOUNDING HAMMER OR OTHER MEANS TO DETERMINE IF AN OVERHEAD PATCH IS FEASIBLE.  CAUTION SHOULD BE TAKEN, AS THE ORIGINAL LID MAY ONLY BE 2" THICK.  CONTACT ENGINEER AND UNIVERSITY PROJECT MANAGER WITH DISCOVERED CONDITIONS.

PRIOR TO INSTALLING NEW DECK AND SUPPORTS, CAREFULLY CLEAN CONCRETE AND STEEL TO REMOVE ALL LOOSE DEBRIS, EFFLORESCENCE AND CORROSION BYPRODUCT FROM THE EXPOSED SURFACES.  CONTACT ENGINEER AND UNIVERSITY PROJECT MANAGER FOR OBSERVATION AND DOCUMENTATION OF CONDITIONS.

SIDEWALK OR LANDSCAPE SURFACE ABOVE

SECTION ON UNDERSIDE OF CONCRETE BEAM PER APPROX. (10 SQ FT).

PRIOR TO EXCAVATING THE TUNNEL LID, TEMPORARILY SUPPORT AND INSTALL NEW DECK AND SUPPORTS.  FOR FINAL CONDITION, THEY MAY BE MOUNTED TO THE UNDERSIDE OF THE NEW CHANNELS SEE SECTION "A" FOR CONNECTION INFO.

TUNNEL WALL BEYOND

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SECTION A

ENLARGED TUNNEL PLAN

NORTH

1.5 x 1/4 x 3/4 x 3/4 GALV DECK
TACK WELD DECK TO CHANNELS.
INSTALLED BELOW (E) CONCRETE AND STEEL (E) CHANNELS TO BE INSTALLED BELOW (E) CONCRETE AND STEEL.

CLEAN STEEL SUPPORTS USING A WIRE WHEEL GRINDER, ABRASIVE BLASTING, OR OTHER MEANS NECESSARY TO REMOVE CORROSION. PAINT STEEL WITH A ZINC BASED PRIMER.

ORIGINAL REMOVEABLE CONCRETE HATCH.
CONTRACTOR TO INVESTIGATE & REPORT IF REMOVABLE HATCH COVER IS NOT FOUND. A REMOVABLE HATCH COVER USING A SOUNDING HAMMER OR OTHER MEANS TO DETERMINE IF AN OVERHEAD PATCH IS FEASIBLE.  CAUTION SHOULD BE TAKEN, AS THE ORIGINAL LID MAY ONLY BE 2" THICK.  CONTACT ENGINEER AND UNIVERSITY PROJECT MANAGER WITH DISCOVERED CONDITIONS.

BEN BROMIEL
BEN NELSON

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ENLARGED TUNNEL PLAN

NORTH

1/4" = 1'-0"

ENLARGED TUNNEL PLAN

NORTH

1/4" = 1'-0"

ENLARGED TUNNEL PLAN

3/4" = 1'-0"

TUNNEL LID SHORING

1/4" = 1'-0"
VERTICAL SPALL REPAIR

1. LOCATE ALL EXISTING REINFORCING, CONDUIT, ETC. IN AREA TO BE REPLACED USING PACOMETER OR OTHER ACCEPTABLE MEANS. THAT DEPTH OF ALL EXISTING REINFORCING, CONDUIT, ETC. IS GREATER THAN 3/4" BELOW EXISTING SURFACE OF CONCRETE. REMOVE ALL UNBONDED REINFORCING AREA TO A MAXIMUM DEPTH OF 1/4" UNDERFLY 3/4" MINIMUM UNDEREXISTING REINFORCING BARS WHICH HAVE MORE THAN 1/2 THEIR DIAMETER EXPOSED.

2. USING AN ELECTRIC GRINDER WITH A GRINDING DISK OR WIRE WHEEL, CHOP OUT ENTIRE REPAIR AREA TO A MINIMUM DEPTH OF 1/4" UNDERFLY 3/4" MINIMUM UNDEREXISTING REINFORCING BARS WHICH HAVE MORE THAN 1/2 THEIR DIAMETER EXPOSED.

3. SAW CUT PERIMETER OF REPAIR AREA TO 1/4" MINIMUM DEPTH. REPAIR AREA TO BE RECTANGULAR OR SQUARE IN SHAPE. DO NOT CUT REINFORCING, CONDUIT, ETC. HAND CHIP AROUND SUCH ITEMS.

4. CHIP OUT ENTIRE REPAIR AREA TO A MINIMUM DEPTH OF 1/4”. UNDERFLY 3/4" MINIMUM ALL REINFORCING BARS WHICH HAVE MORE THAN 1/2 THEIR DIAMETER EXPOSED.

5. ALLOW ENGINEER TO INSPECT REINFORCING. IF MORE THAN 10% OF BARS CROSS-SECTIONAL AREA IS LOST AT ANY LOCATION SPLICE IN NEW REINFORCING USING MECHANICAL OR WELD BONDED. PLUS THREE TIMES THE DEPTH OF THE SPALLED AREA THE NEW REINFORCING.

6. ALLOW ENGINEER TO INSPECT MATCHING (E) CONCRETE (E) CONCRETE (E) CONCRETE (E) CONCRETE (E) CONCRETE. IF MORE THAN HALF OF (E) CONCRETE (E) CONCRETE (E) CONCRETE (E) CONCRETE (E) CONCRETE HAS BEEN EXPOSED AND DAMAGED, THEN REMOVE ALL UNSOUND SURFACE MATERIAL (©) CONCRETE (©) CONCRETE (©) CONCRETE (©) CONCRETE (©) CONCRETE PRIOR TO REPAIRING CONCRETE.

7. ALLOW THE REPAIR AREA TO DRY OUT PRIOR TO APPLYING REPAIR MORTAR. REPAIR MORTAR SHALL BE APPLIED TO MATCH ADJACENT TUNNEL PROFILE AMPLITUDE PRIOR TO PLACING CONCRETE.

8. using an electric grinder with a grinding disk or wire wheel, chop out entire repair area to a minimum depth of 1/4". undercut by 3/4" minimum all reinforcing bars which have more than 1/2 their diameter exposed.

9. Locating all existing reinforcing, conduit, etc. in area to be replaced using pacometer or other acceptable means. that depth of all existing reinforcing, conduit, etc. is greater than 3/4" below existing surface of concrete. remove all unbonded reinforcing area to a maximum depth of 1/4" underfly 3/4" minimum under existing reinforcing bars which have more than 1/2 their diameter exposed.

10. using an electric grinder with a grinding disk or wire wheel, chop out entire repair area to a minimum depth of 1/4" underfly 3/4" minimum under existing reinforcing bars which have more than 1/2 their diameter exposed.

11. Saw cut perimeter of repair area to 1/4" minimum depth. repair area to be rectangular or square in shape. do not cut reinforcing, conduit, etc. hand chip around such items.

12. Chip out entire repair area to a minimum depth of 1/4". undercut by 3/4" minimum all reinforcing bars which have more than 1/2 their diameter exposed.

13. Remove all unbounded reinforcing area to a maximum depth of 1/4" underfly 3/4" minimum under existing reinforcing bars which have more than 1/2 their diameter exposed.

14. Chip out entire repair area to a minimum depth of 1/4". undercut by 3/4" minimum all reinforcing bars which have more than 1/2 their diameter exposed.

15. Allow engineer to inspect reinforcing. if more than 10% of bars cross-sectional area is lost at any location splice in new reinforcing using mechanical or weld bonded. plus three times the depth of the spalled area the new reinforcing.

16. Allow the repair area to dry out prior to applying repair mortar. repair mortar shall be applied to match adjacent tunnel profile amplitude prior to placing concrete.

17. Using an electric grinder with a grinding disk or wire wheel, chop out entire repair area to a minimum depth of 1/4" underfly 3/4" minimum under existing reinforcing bars which have more than 1/2 their diameter exposed.

18. Saw cut perimeter of repair area to 1/4" minimum depth. repair area to be rectangular or square in shape. do not cut reinforcing, conduit, etc. hand chip around such items.

19. Chip out entire repair area to a minimum depth of 1/4". undercut by 3/4" minimum all reinforcing bars which have more than 1/2 their diameter exposed.

20. Allow engineer to inspect reinforcing. if more than 10% of bars cross-sectional area is lost at any location splice in new reinforcing using mechanical or weld bonded. plus three times the depth of the spalled area the new reinforcing.

21. Allow the repair area to dry out prior to applying repair mortar. repair mortar shall be applied to match adjacent tunnel profile amplitude prior to placing concrete.

22. Saw cut perimeter of repair area to 1/4" minimum depth. repair area to be rectangular or square in shape. do not cut reinforcing, conduit, etc. hand chip around such items.

23. Chip out entire repair area to a minimum depth of 1/4". undercut by 3/4" minimum all reinforcing bars which have more than 1/2 their diameter exposed.

24. Allow engineer to inspect reinforcing. if more than 10% of bars cross-sectional area is lost at any location splice in new reinforcing using mechanical or weld bonded. plus three times the depth of the spalled area the new reinforcing.

25. Allow the repair area to dry out prior to applying repair mortar. repair mortar shall be applied to match adjacent tunnel profile amplitude prior to placing concrete.

26. Saw cut perimeter of repair area to 1/4" minimum depth. repair area to be rectangular or square in shape. do not cut reinforcing, conduit, etc. hand chip around such items.

27. Chip out entire repair area to a minimum depth of 1/4". undercut by 3/4" minimum all reinforcing bars which have more than 1/2 their diameter exposed.

28. Allow engineer to inspect reinforcing. if more than 10% of bars cross-sectional area is lost at any location splice in new reinforcing using mechanical or weld bonded. plus three times the depth of the spalled area the new reinforcing.

29. Allow the repair area to dry out prior to applying repair mortar. repair mortar shall be applied to match adjacent tunnel profile amplitude prior to placing concrete.
**Top of the Tunnel**

Does not bond to the concrete in bollard base of bollard so welded seal plate at top of foundation.

**New Bollard in Site Paving**

Around bollard a min of 16"Ø compacted soil 3/4" = 1'-0".

Sealant at base of bollard.

**Top of Engineering Building Windows**

1. Route surface crack as required to achieve the dimensions shown.
2. Remove all existing materials: loose concrete, etc. from joint (full depth).
3. Install bond breaker tape oracker resin in strict accordance with sealant manufacturer’s written recommendations.
4. Clean and prime joint per sealant manufacturer’s recommendations.
5. Install board 1.5 lb polyurethane sealant as manufactured by Sika or approved equal, in strict accordance with manufacturer’s written recommendations.

Manufacturer’s representative to provide contractor with on-site assistance and recommendations.

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**New Flashing at Engineering CTR**

Metal scheduling system with exist roof flashing membranes manufactured by grace to the top of the new tunnel lid in accordance with the manufacturer’s recommendations.

**Waterproofing Tunnel Near Engineering CTR**

Attach in-situ bollard cap to (E) concrete wall in accordance with US standards.

Exposed aggregate design due to too much movement for existing pavement. Install 1"x1" core bed of 1art polyurethane sealant at base of bollard.

**Flush Bead**

1. Rout surface crack as required to achieve the dimensions shown.
2. Remove all existing materials: loose concrete, etc. from joint (full depth).
3. Install bond breaker tape oracker resin in strict accordance with sealant manufacturer’s written recommendations.
4. Clean and prime joint per sealant manufacturer’s recommendations.
5. Install board 1.5 lb polyurethane sealant as manufactured by Sika or approved equal, in strict accordance with manufacturer’s written recommendations.

Manufacturer’s representative to provide contractor with on-site assistance and recommendations.

**Site Details**

Bolts and concrete bond. Install a 15 solid sandstone cap meeting US standards.

**Necessary Sandstone to (E) concrete wall in accordance with US standards for sandstone veneer.**

Lay-up sandstone in accordance with US standards for sandstone veneer.

**New Flashing at Engineering Building Windows**

1. Route surface crack as required to achieve the dimensions shown.
2. Remove all existing materials: loose concrete, etc. from joint (full depth).
3. Install bond breaker tape oracker resin in strict accordance with sealant manufacturer’s written recommendations.
4. Strikesealflush with adjacent concrete surfaces.

Manufacturer’s representative to provide contractor with on-site assistance and recommendations.

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**Bollard in Sidewalk Over Tunnel**

Welded seal plate at base of bollard or concrete in bollard does not bond to the top of the tunnel.

**New Flashing at Engineering Building Windows**

1. Route surface crack as required to achieve the dimensions shown.
2. Remove all existing materials: loose concrete, etc. from joint (full depth).
3. Install bond breaker tape oracker resin in strict accordance with sealant manufacturer’s written recommendations.
4. Clean and prime joint per sealant manufacturer’s recommendations.
5. Install board 1.5 lb polyurethane sealant as manufactured by Sika or approved equal, in strict accordance with manufacturer’s written recommendations.

Manufacturer’s representative to provide contractor with on-site assistance and recommendations.

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**Repair at Abandoned Utility Pipe**

4" solid grouted concrete unit masonry (CMU).