UNIVERSITY OF COLORADO
BOULDER, COLORADO

CAMPUS DISTRIBUTION ENHANCEMENTS

18TH AND COLORADO IMPROVEMENTS
CP-136647-CAMP
ADDENDUM #2

FACILITIES MANAGEMENT DEPARTMENT
UNIVERSITY OF COLORADO
BUILDING RL-2
BOULDER, COLORADO 80309-0180
DEPARTMENT PROJECT MANAGER (UNIV. OF CO) 303-735-5410

MECHANICAL CONSULTING ENGINEER
CATOR, RUMA & ASSOCIATES
396 TABOR STREET
LAKewood, COLORADO 80401
TELEPHONE: 303-232-8200

STRUCTURAL/CIVIL CONSULTING ENGINEER
MARTIN / MARTIN
12499 W. COLFAX AVE.
LAKewood, COLORADO 80415
TELEPHONE: 303-431-0100
Key Notes:
1. The contractor shall coordinate location of drain holes with the University. The concrete under the covers shall be sloped 2% to the drain holes.

UNIVERSITY OF COLORADO AT BOULDER
CAMPUS DISTRIBUTION ENHANCEMENTS
CP 136647 - CAMP - 18TH AND COLORADO IMPROVEMENTS
MARTIN / MARTIN
DETAILS

EAST-WEST Cross-Section

North-South Cross-Section

CROSSWALK TABLE

UNIVERSITY OF COLORADO AT BOULDER
CORA BIKE RACK INSTALLATION STANDARDS

University of Colorado at Boulder
1 of 2
Department of Parking and Transportation Services
Date: May 2008

University of Colorado
STANDARD DROP SEWER MANHOLE
C 14

University of Colorado
STORM SEWER MANHOLE
C 19

University of Colorado
STORM SEWER MANHOLE BASE
C 20

GENERAL NOTES:

1. This project shall be designed and constructed in accordance with the requirements of the University of Colorado at Boulder, Campus Distribution Enhancements, CP 136647 - CAMP - 18th and Colorado Improvements.

2. All materials and methods shall be in accordance with the latest edition of the Standard Specifications for State Roads and Buildings of the American Association of State Highway and Transportation Officials (AASHTO) and the American Society of Civil Engineers (ASCE).

3. The contractor shall coordinate location of drain holes with the University. The concrete under the covers shall be sloped 2% to the drain holes.

4. All work shall be performed in accordance with the Specifications and Plans. Any deviation from these documents shall be approved in writing by the Architect and the University of Colorado at Boulder.

5. The contractor shall be responsible for obtaining all necessary permits and licenses required by the City of Boulder, County of Boulder, or any other governmental agencies as required.

6. The contractor shall be responsible for all costs associated with the removal and replacement of existing utilities, as required by the Architect and the University of Colorado at Boulder.

7. The contractor shall be responsible for the protection of all existing utilities and structures, as required by the Architect and the University of Colorado at Boulder.

8. The contractor shall be responsible for all costs associated with the removal and replacement of existing utilities, as required by the Architect and the University of Colorado at Boulder.

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EROSION CONTROL DETAILS

10" MIN.
1-1/2" CRUSHED ROCK ENCLOSED IN WIRE MESH

1" CHICKEN WIRE
(10 GAUGE WIRE)

ANY GAP AT JOINT SHALL BE FILLED WITH 1 1/2" CRUSHED ROCK AND DOUBLE WRAPPED WITH ADDITIONAL WIRE MESH SECURED TO ENDS OF ROCK REINFORCED BERM.

DETAIL A
NOT TO SCALE

SECTION D-D
NOT TO SCALE

JOINT DETAIL

SEE PLAN VIEW FOR:
- LOCATIONS OF ROCK SOCKS.
- LENGTH, "L", AND DEPTH, "D" DIMENSIONS.

ROCK SOCK SECTION APPLIES TO CULVERT INLET FILTER AND INLET PROTECTION.
CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON DETAIL E-A02 (1-1/2" MINUS). RECYCLED CONCRETE MEETING THIS GRADATION MAY BE USED.

WIRE MESH SHALL BE FABRICATED OF 10 GAUGE WIRE TWISTED INTO A MESH WITH A MAXIMUM OPENING OF 1.0 INCH (COMMONLY TERMED "CHICKEN WIRE"). ROLL WIDTH SHALL BE 48-INCHES.

WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6-INCH CENTERS ALONG ALL JOINTS AND AT 2-INCH CENTERS ON ENDS OF BERM.

FOR CONCENTRATED FLOW AREAS THE ENDS OF THE ROCK SOCK SHALL BE 12" HIGHER THAN THE CENTER OF THE BERM.

ROCK SOCK INSTALLATION NOTES

ROCK SOCK MAINTENANCE NOTES

1. THE GEC OPERATOR SHALL INSPECT ROCK SOCK BI-WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.

2. SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCK SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF FILTER IS WITHIN 5 INCHES OF THE CREST.

3. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED.

4. WHEN ROCK SOCKS ARE REMOVED, ANY DISTURBED AREA SHALL BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

D. The term "bi-weekly" refers to every two weeks, not necessarily every two calendar weeks. The purpose of this inspection is to ensure that the rock socks remain effective in preventing erosion and sedimentation.

E. Any sediment accumulation in the rock sock intake area shall be removed to maintain proper flow through the sock. This is to ensure that the sock remains effective in preventing erosion and sedimentation.

F. The gec operator shall perform these inspections bi-weekly and any corrective action shall be taken immediately.

G. Any sediment accumulation in the rock sock intake area shall be removed to maintain proper flow through the sock. This is to ensure that the sock remains effective in preventing erosion and sedimentation.

H. The gec operator shall perform these inspections bi-weekly and any corrective action shall be taken immediately.

I. The gec operator shall perform these inspections bi-weekly and any corrective action shall be taken immediately.

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V. The gec operator shall perform these inspections bi-weekly and any corrective action shall be taken immediately.

W. The gec operator shall perform these inspections bi-weekly and any corrective action shall be taken immediately.

X. The gec operator shall perform these inspections bi-weekly and any corrective action shall be taken immediately.

Y. The gec operator shall perform these inspections bi-weekly and any corrective action shall be taken immediately.

Z. The gec operator shall perform these inspections bi-weekly and any corrective action shall be taken immediately.
### Mechanical Utility Trench

#### Piping Detail - Chilled Water

- **Curb and Stop Box Detail**
- **Chilled Water Tunnel**
- **Entry Detail**

### General Legend

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<tr>
<th>Legend Code</th>
<th>Description</th>
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<tr>
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<td>Underground Service Stack Pipe for Service Connections</td>
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<tr>
<td>B</td>
<td>Chilled Water Service Stack Pipe for Service Connections</td>
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<tr>
<td>C</td>
<td>Chilled Water Service Stack Pipe for Branch Connections</td>
</tr>
<tr>
<td>D</td>
<td>Chilled Water Service Stack Pipe for Vertical Connections</td>
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<tr>
<td>E</td>
<td>Chilled Water Service Stack Pipe for Horizontal Connections</td>
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<tr>
<td>F</td>
<td>Chilled Water Service Stack Pipe for Diagonal Connections</td>
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<tr>
<td>G</td>
<td>Chilled Water Service Stack Pipe for Special Connections</td>
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<tr>
<td>H</td>
<td>Chilled Water Service Stack Pipe for Special Conditions</td>
</tr>
<tr>
<td>I</td>
<td>Chilled Water Service Stack Pipe for Environmental Conditions</td>
</tr>
</tbody>
</table>

### HVAC Legend

- **Legend Code**
- **Description**
1. VERIFY GRADE, FINISH, SIZE, BAR QUANTITY, VERIFY ASTM A706 REINFORCING STEEL.
2. PROVIDE ADDITIONAL BARS REQUIRED TO SECURE REINFORCING IN PLACE DURING CONCRETE PLACEMENT.
3. AIR-ENTRAINING AND WATER REDUCING ADMIXTURES ARE ALLOWED PROVIDED THEY ARE SUBMITTED FOR MAXIMUM WATER/CEMENT RATIO OF 0.40 ACI 318-05 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"
4. FOR BEAMS AND STRUCTURAL SLABS ENGINEERED EXCAVATION AND SHORING DESIGNS (STAMPED AND SIGNED)
5. JOB #: PRINCIPAL: EOR: PROJECT MANAGER: 22132.S.33
6. 4/6/2012 5:18:06 PM BENE NELSON E-W EQ EL EF DWG(S) DT DL DIM CTR(D) COORD CONTR CLG CL CJP CC BLKG APA APPROX ADDNL (E) or EXIST
7. CENTERLINE CENTER OF GRAVITY CENTER TO CENTER BETWEEN BUILDING BALANCE BOTTOM OF EPOXY COATED EACH EXISTING
8. 1A. GENERAL
9. 1A. ENGINEER REFERENCES ON STRUCTURAL DRAWINGS TO ENGINEER NEAR THE STRUCTURAL ENGINEER OF RECORD. OTHER INFORMATION SPECIFICALLY NOTED AS "ENGINEER" TO "GENERAL ENGINEER" TECHNICAL ENGINEER, ETC.
10. 1B. STRUCTURAL ELEMENTS ARE CENTERED ON OR SKI LINE AND GRID LINE INTERSECTIONS UNLESS DIMENSIONED OTHERWISE.
11. 2. DRAWING REQUIREMENTS
12. 2A. CONTRACT DOCUMENTS HAVE BEEN PREPARED USING SITE OBSERVATION AS PERMITTED BY ACCESS RESTRICTIONS DURING DESIGN.
13. 2B. DURING CONSTRUCTION, THE CONTRACTOR MAY ENCOUNTER EXISTING CONDITIONS WHICH ARE NOT ADEQUATELY DESCRIBED. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL CONDITIONS NOT PER THE CONTRACT DOCUMENTS. CHANGES IN DESIGN REQUIREMENTS CAUSED BY ENCOUNTERED EXISTING CONDITIONS ARE SUBJECT TO PAYMENT AS PERMITTED BY ACCESS RESTRICTIONS DURING DESIGN.
14. 3. CONCRETE
15. 3A. ADVICE SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING" TO "REINFORCING STEEL REQUIREMENTS FOR STRUCTURAL CONCRETE" IN GSMP 2005-01.
16. 3B. CONCRETE SHALL BE FIELD VERIFIED TO COMPLY WITH ALL EXISTING STRUCTURAL CONDITIONS PRIOR TO SUBMITTING SHOP DRAWINGS.
17. 3C. CONTRACTOR SHALL MAINTAIN ALL DOCUMENTATION OF SUCH INSPECTIONS IN THE CONSTRUCTION RECORDS.
18. 3D. USE OF DRAWINGS
19. 3E. DRAWING SCALE DRAWINGS
20. 3F. HANDS ON INSPECTIONS OCCUR BETWEEN, DETAILED, AND GENERAL. NOTE THE NAVIGATION STRATEGIES REQUIREMENTS SHALL GOVERN. DETAILS ON DRAWING TIMES FREQUENCY AS GENERAL, NOTES AND TECHNICAL NOTICES. DETAILS NOTED TYPICALLY APPLY TO ALL ABOVE CONDITIONS. DETAILS OF SPECIFIC DETAILS SHOULD BE CONSULTED TO USE WORKING DRAWINGS ON THE PROJECT.
21. 4. TENSIONING CONDITIONS
22. 4A. THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL TENSIONED BARS AND ANCHORING SUPPORT THAT MAY BE REQUIRED AS A RESULT OF THE CONTRACTOR'S CONSTRUCTION METHODS AND SEQUENCES.
23. 5. SUBSTITUTIONS, MODIFICATIONS, AND NONCOMPLIANCE
24. 5A. SUBMITTING THE FOLLOWING SPECIFICATION:
25. 5B. CONCRETE CONCRETE REINFORCING FABRICATION AND PLACEMENT DRAWINGS
26. 5C. SUBMIT THE FOLLOWING PER CONSTRUCTION REINFORCING REQUIREMENTS.
27. 5D. NONCOMPLIANCE: NOTIFY ENGINEER OF CONDITIONS NOT CONSTRUCTED PER CONTRACT DOCUMENTS PRIOR TO PROCEEDING WITH CONSTRUCTION. WORK PERMITTED PRIOR TO THE ENHANCED FOR ENGINEERED REQUIREMENTS. CONTRACTOR SHALL CONFORM TO THE CONTRACT DOCUMENTS PER CONSTRUCTION.
28. 6. SUBMITTED DRAWINGS: THE FOLLOWING PORTIONS OF THE STRUCTURAL DRAWING WILL NOT BE SUBMITTED AT THE TIME OF EMBARK APPLICATION, INSPECTED, AND REVIEWED. THESE DRAWN SUBMITTED ITEMS SHALL BE SUBMITTED TO THE CONSTRUCTION OFFICIAL BY THE CONTRACTOR.
29. 7. BUILDING CODES
30. 7A. REINFORCING STEEL, BOLTS, AND CONNECTORS
31. 7B. STRUCTURAL CONCRETE TESTING
32. 7C. STRUCTURAL CONCRETE SPECIAL INSPECTIONS
33. 7D. CONCRETE CEMENT AND AGGREGATE
34. 7E. HANDLER AND EARTHWORK
35. 7F. SHOP DRAWINGS
36. 7G. PLACING AND PLACEMENT
37. 7H. SAWCUTTING AND SAWCUTTING: PLACE RINING TO ACHIEVE THE CODE REQUIREMENTS SHOWN IN THE DETAIL. SAWCUTTING AND SAWCUTTING PILOT PLANE PLACING AND PLACEMENT ARE PROVIDED FOR ADDITIONAL REQUIREMENTS
NOTE:
RIVED TO DIAL PLANS FOR
EXACT LOCATION OF NEU SITE
WALLS, BENCHES, PLANTERS.

NEW CHILLED WATERLINES
RE: MEP

HATCHED AREA
DENOTES EXTENT OF
TUNNEL LID TO BE
REMOVED & REPLACED

ALTERNATE #2
STRUCTURAL PLAN

1 " = 1'-0"

18TH STREET

KETCHUM

APPROXIMATE LOCATION OF
HELICAL PIER

TUNNEL 3
CONTINUES

BID DOCUMENTS 03/19/12 BJB

ADD ALTERNATE #2
STRUCTURAL PLAN

NOTE:
KEEP AN ON-DAE PROJECT MANAGER
FOR ADDITIONAL DETAILS.

MARTIN/MARTIN ASSUMES NO RESPONSIBILITY FOR UTILITY
LOCATIONS THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN
PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS THE
CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE SIZE,
MATERIAL, HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES
PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

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CALL: 811 DIGGERS DAY IN ADVANCE BEFORE YOU DIG,
GROSSLY LOCATE FOR MARKING OF UNDERGROUND
MEMBER UTILITIES

IMPLEMENTING RESPONSIBILITY FOR UTILITY
LOCATIONS THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN
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CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE SIZE,
MATERIAL, HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES
PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
ANCHOR SANDSTONE TO CMU BACKUP IN ACCORDANCE WITH MINIMUM SOIL BEARING PRESSURE. SUBGRADE AS REQ'D TO PROVIDE 1500 PSF ON CENTER.

SPLICE CONTINUOUS BARS 36" (MINIMUM).

PROVIDE (5) #5 x CONTINUOUS FOOTING BARS. LAP 6" SOLID (OR SOLID GROUTED) MASONRY Laid IN TIE TOGETHER 6" AND 12" MASONRY USING STANDARD GAUGE REINFORCING. GROUT SOLID ALL MASONRY CELLS. SPACED 24" ON CENTER WITH 12" HOOK AT TOP AND BOTTOM BARS. LAP SPLICE

PROVIDE (4) #7 x CONTINUOUS BARS 36" (MINIMUM).

#4 @ 12"OC

#4 HORIZ @ 12"OC

#4 STIRRUP @ 12"OC

GENERAL NOTES:

1. SQUARELY APPLIED AS ASSEMBLIES
2. ALL SPLICES SHALL BE WIRED IN CONTACT AND STACKED VERTICALLY
3. ALL SPLICES SHALL BE MADE WITH BAR GROOFS OR THRUST GROOVES
4. ALL SPLICES SHALL BE MADE WITH BAR GROOFS OR THRUST GROOVES

LAP SPLICE MIRORS:

1. ALL SPLICES SHALL BE MADE WITH BAR GROOFS OR THRUST GROOVES
2. ALL SPLICES SHALL BE MADE WITH BAR GROOFS OR THRUST GROOVES
3. ALL SPLICES SHALL BE MADE WITH BAR GROOFS OR THRUST GROOVES

ADJUSTMENT FOR BAR LENGTHS IN THE FOLLOWING SITUATIONS:

A. CIVIL OR OTHER CONSTRUCTION SHORING

B. CONCRETE IS CAST BELOW THE TOP OF REINFORCING

C. TENSION EMBEDMENT LENGTH, TYP 12" (MIN)

NOTE:

1. SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION

2. SPLICE #4 BARS AS NEEDED

3. ALL SPLICES ARE 'LTS' UNLESS NOTED OTHERWISE

ALL SPLICES SHALL BE WIRED IN CONTACT AND STACKED VERTICALLY

IF EITHER CONDITION A OR B IS NOT MET FOR A GIVEN BAR, INCREASE LENGTHS BY 50%

CLEAR SPACING BETWEEN BARS IS GREATER THAN 2 BAR DIAMETERS

3/4" = 1'-0"
NOTES:
1. ROUT AND SEAL AS REQUIRED TO ACHIEVE THE DIMENSIONS SHOWN.
2. REMOVE ALL EXISTING MATERIALS, LOOSE CONCRETE, ETC. FROM JOINT (FULL DEPTH).
3. INSTALL, BONE AND SEAL JOINTS AS MANUFACTURER'S WRITTEN RECOMMENDATIONS.
4. CLEAN AND FILL JOINT WITH SEALANT MANUFACTURER'S RECOMMENDATIONS.
5. INSTALL, BONE, AND SEAL EXISTING WALL SEALS AS MANUFACTURER'S WRITTEN RECOMMENDATIONS.
6. STRING SEALS FLUSH WITH ADJACENT CONCRETE SURFACES.
7. MANUFACTURER'S REPRESENTATIVE TO PROVIDE CONTRACTOR WITH ON SITE ADVICE AND RECOMMENDATIONS.

ROUT & SEAL JOINTS AS REQUIRED TO ACHIEVE THE DIMENSIONS SHOWN.

NEW TUNNEL LID
ROUGHNESS FLUSH WITH EXISTING CONCRETE PRIOR TO PLACING NEW CONCRETE LID
ROUGHNESS SURFACE TO 1/4" AMPLITUDE AND REMOVE ALL LOOSE DEBRIS PRIOR TO PLACING NEW CONCRETE LID
INSTALL, BONE, AND SEAL JOINTS AS MANUFACTURER'S WRITTEN RECOMMENDATIONS.

NOTES:
1/2" = 1'-0"