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<td>CURB SOCK INLET PROTECTION</td>
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<td>CONCRETE WASHOUT AREA</td>
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<td>DIVERSION DITCH AND DIKE, TEMPORARY</td>
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<td>VEHICLE TRACKING CONTROL</td>
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<td>VEHICLE TRACKING CONTROL WITH WASH RACK</td>
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NOTE: EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES AS DIRECTED BY THE CITY

EROSION LOG AND BLANKET BARRIER
RESIDENTIAL INSTALLATION
INLET PROTECTION INSTALLATION NOTES:
1. INLET PROTECTION SHALL BE INSTALLED WITHIN 48 HOURS OF CONSTRUCTING THE INLET.
2. SEE ROCK Sock DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
3. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
4. GRAVEL SOCKS SHALL BE PLACED AROUND THE CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED IN ACCORDANCE WITH THE ROCK Sock DESIGN DETAIL.
1) SOCKS WILL BE USED UPGRADE OF THE INLET AND FLUSH WITH THE CURB.

2) NO LESS THAN TWO 10 INCH DIAMETER SOCKS MUST BE USED IN SEQUENCE, SPACED NO MORE THAN FIVE FEET APART. NO LESS THAN SIX SOCKS SHALL BE USED IF THE 4 INCH SOCK IS USED, ALSO SPACED AT NO MORE THAN 5 FEET APART.

3) ALIGN AT 30 DEGREES FROM PERPENDICULAR, OPPOSITE THE DIRECTION OF FLOW (SEE DETAIL 2.

4) EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES AS DIRECTED BY THE CITY.
AREA INLET PROTECTION INSTALLATION NOTES:

1. INLET PROTECTION AFTER INLET CONSTRUCTION OF AFTER PAVEMENT SHALL BE INSTALLED WITHIN 48 HOUR AFTER INLET CONSTRUCTION OR PAVING IS COMPLETED.

2. STRAW WATTLE/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

AREA INLET PROTECTION MAINTENANCE NOTES:

1. THE SWMP MANAGER SHALL INSPECT INLET PROTECTION WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY. INSPECT MORE FREQUENTLY DURING WINTER CONDITIONS DUE TO FREEZE/THAW PROBLEMS. REPAIRS AS NEEDED.

2. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF ROCK BERM IS WITHIN 2-1/2 INCHES OF THE CREST.

3. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED, UNLESS THE CITY APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.

4. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.
PUBLIC ROADWAY

SIDEWALK

6-" MINIMUM DEPTH

4-" BALLAST
CRUSHED CONCRETE NOT ALLOWED

EROSION CONTROL MEASURES SHALL
BE MAINTAINED AT ALL TIMES AS
DIRECTED BY THE CITY ENGINEER

SECTION A-A

NOTES
1. ALL ROCK TO BE REMOVED
   UPON COMPLETION OF
   CONSTRUCTION.
2. PUBLIC ROADWAY TO BE
   KEPT CLEAN AND FREE OF
   MUD, DIRT AND DEBRIS AT
   ALL TIMES.

DATE: 8/15/14
CONCRETE WASHOUT AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATIONS OF CONCRETE WASHOUT AREA.

2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.

3. VEHICLE TRACKING CONTROL IS REQUIRED AT THE ACCESS POINT.

4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREAS TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

CONCRETE WASHOUT AREA MAINTENANCE NOTES

1. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.

2. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AND APPROVED WASTE SITE.

3. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, DRILL SEED AND CRIMP MULCH, OR OTHERWISE STABILIZE IN A MANNER APPROVED BY THE CITY.

4. INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.

5. PORTABLE ROLLOFF TYPE OF CONCRETE WASHOUT FACILITIES WILL ALSO BE ALLOWED.
REINFORCED CHECK DAM INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATIONS OF CHECK DAMS.
   - CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
   - LENGTH, "L", CREST LENGTH, "CL", AND DEPTH, "D".

2. CHECK DAMS INDICATED ON THE INITIAL SWMP SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.

3. REINFORCED CHECK DAMS, GABIONS SHALL HAVE GALVANIZED TWISTED WIRE NETTING WITH A MAXIMUM OPENING DIMENSION OF 4-1/2" AND A MINIMUM WIRE THICKNESS OF 0.10". WIRE "HOG RINGS" AT 4" SPACING OR OTHER APPROVED MEANS SHALL BE USED AT ALL GABION SEAMS AND TO SECURE THE GABION TO THE ADJACENT GABION.

4. THE CHECK DAM SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'-6".

5. EROSION BLANKET SHALL BE PLACED IN THE REINFORCED CHECK DAM TRENCH EXTENDING A MINIMUM OF 1'-6" ON BOTH THE UPSTREAM AND DOWNSTREAM SIDES OF THE REINFORCED CHECK DAM.

REINFORCED CHECK DAM MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT CHECK DAMS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.

2. SEDIMENT ACCUMULATED UPSTREAM OF CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF CHECK DAM IS WITHIN 1/2 OF THE HEIGHT OF THE CREST.

3. CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED BY THE CITY.

4. WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL. ANY DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED AND COVERED WITH EROSION CONTROL BLANKET OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.
### SIZING INFORMATION FOR STANDARD SEDIMENT BASIN

<table>
<thead>
<tr>
<th>Upstream Drainage Area (rounded to nearest acre), (ac)</th>
<th>Basin Bottom Width (W), (ft)</th>
<th>Spillway Crest Length (CL), (ft)</th>
<th>Hole Diameter (HD), (in)</th>
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<td>2</td>
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<tr>
<td>15</td>
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<td>1 3/16</td>
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Minimum Bottom Width and diameter of outlet plate holes based on 2,700 cu. ft. / acre of tributary area and 72 hour drain time.

### SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW AND SECTIONS FOR:
   - LOCATION OF SEDIMENT BASIN.
   - TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   - FOR STANDARD BASIN, BOTTOM WIDTH, "W", CREST LENGTH, "CL", AND HOLE DIAMETER, "HD".
   - FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT, "H", NUMBER OF COLUMNS, "N", HOLE DIAMETER, "HD", AND PIPE DIAMETER "D".

2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.

3. SEDIMENT BASINS INDICATED ON INITIAL SWMP PLAN SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY.

4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.

5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D 698.

6. PIPE SCH 40 OR GREATER SHALL BE USED.

7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) IDENTIFIED ON THE SWMP PLAN VIEW DRAWINGS USED FOR DRAINAGE AREAS LESS THAN 15 ACRES, SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

### SEDIMENT BASIN MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT SEDIMENT BASIN WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.

2. SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED WHEN SEDIMENT DEPTH IS ONE FOOT (I.E., 2 FEET BELOW THE SPILLWAY CREST).

3. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE CITY.

4. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY THE CITY.

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**City of Fort Lupton**

**SEDIMENT BASIN SIZING & NOTES**

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<thead>
<tr>
<th>DESIGN STANDARDS</th>
<th>STANDARD DRAWING</th>
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**DATE:** 8/15/14
SEDIMENT TRAP INSTALLATION NOTES

1. SEE PLAN VIEW FOR: LOCATION, LENGTH AND WIDTH OF SEDIMENT TRAP.

2. SEDIMENT TRAPS INDICATED ON INITIAL EROSION CONTROL PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.

3. SEDIMENT TRAP BERM SHALL BE CONSTRUCTED FROM MATERIAL FROM EXCAVATION. THE BERM SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.

4. RIPRAP OUTLET SHALL BE CONSTRUCTED WITH D_{50}=12" RIPRAP (TYPE M, SEE TABLE MD-7, MAJOR DRAINAGE, VOL. 1, URBAN DRAINAGE AND FLOOD CONTROL DISTRICT CRITERIA MANUAL).

5. THE TOP OF THE EARTHEEN BERM SHALL BE A MINIMUM OF 6" HIGHER THAN THE TOP OF THE RIPRAP OUTLET STRUCTURE.

6. THE ENDS OF THE RIPRAP OUTLET STRUCTURE SHALL BE MINIMUM OF 6" HIGHER THAN THE CENTER OF THE OUTLET STRUCTURE.

SEDIMENT TRAP MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT SEDIMENT TRAPS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.

2. SEDIMENT ACCUMULATED UPSTREAM OF RIPRAP SHALL BE REMOVED WHEN THE UPSTREAM DEPTH IS WITHIN ½ THE HEIGHT OF THE RIPRAP OUTLET STRUCTURE.

3. SEDIMENT TRAPS SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVERAGE IS APPROVED BY THE CITY.

4. WHEN SEDIMENT TRAPS ARE REMOVED THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, DRILLED SEEDED AND CRIMP MULCHED OR STABILIZED IN A MANNER APPROVED BY THE CITY.
SLOPE DRAIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION AND LENGTH OF SLOPE DRAIN.
   - PIPE DIAMETER, "D", AND RIPRAPP SIZE, "D50".

2. SLOPE DRAIN DIMENSIONS SHALL BE CONSIDERED MINIMUM DIMENSIONS; CONTRACTOR MAY ELECT TO INSTALL LARGER FACILITIES. ANY DAMAGE TO SLOPE OR SLOPE DRAIN DURING RUNOFF EVENTS SHALL BE THE DEVELOPER'S RESPONSIBILITY.

3. SLOPE DRAINS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.

4. FOR TEMPORARY SLOPE DRAINS, PIPE MAY BE INSTALLED ON TOP OF SLOPE; HOWEVER, 12" MIN. COVER AT TOP OF SLOPE SHALL BE PROVIDED. PLASTIC-LINED OR RIPRAPP-LINED TRENCHES MAY BE USED INSTEAD OF PIPE.

5. A RIPRAPP PAD SHALL BE PLACED AT THE OUTFALL OF THE SLOPE DRAIN.

SLOPE DRAIN MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT SLOPE DRAINS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS AS NECESSARY.

2. TEMPORARY SLOPE DRAINS ARE TO REMAIN IN PLACE UNTIL NO LONGER NEEDED. BUT SHALL BE REMOVED PRIOR TO THE END OF CONSTRUCTION. WHEN SLOPE DRAINS ARE REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

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**DESIGN STANDARDS**

**STANDARD DRAWING**

**TEMPORARY SLOPE DRAIN**

**DATE:** 8/15/14
SILT FENCE INSTALLATION

NOTE: EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL LANDSCAPING IS COMPLETED, OR AS DIRECTED BY THE CITY

POST ANCHORED TO FABRIC

FABRIC MATERIAL (ANCHORED IN TRENCH)

4"x4" TRENCH

COMPACTED BACKFILL

FLOW

SECTION

1/2H (12" MIN)

DESIGN STANDARDS

SILT FENCE

EC 15

DATE: 8/15/14
SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION AND LENGTH OF SEDIMENT CONTROL LOG.

2. SEDIMENT CONTROL LOGS INDICATED ON INITIAL SWMP PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.

3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR, OR COCONUT FIBER.

4. NOT FOR USE IN CONCENTRATED FLOW AREAS.

5. THE SEDIMENT CONTROL LOG SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 2".

SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT SEDIMENT CONTROL LOGS DAILY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.

2. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOGS SHALL BE REMOVED WHEN THE UPSTREAM SEDIMENT DEPTH IS WITHIN 1/2 THE HEIGHT OF THE CREST OF LOG.

3. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION. IF ANY DISTURBED AREA EXISTS AFTER REMOVAL, IT SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.
PERIMETER ANCHOR TRENCH, TYP.

ANCHOR DETAILS

Erosion Control Blanket (TYP.)

3" MIN. (TYP.)

6" MIN. (TYP.)

SINGLE EDGE

STAKE (TYP.)

COMPACTED BACKFILL (TYP.)

PERIMETER ANCHOR TRENCH

TYPE OF BLANKET AS INDICATED IN PLAN VIEW. IN ALL DISTURBED AREAS OF STREAMS AND DRAINAGE CHANNELS TO DEPTH "D" ABOVE CHANNEL INVERT. BLANKET SHALL GENERALLY BE ORIENTED PARALLEL TO FLOW DIRECTION. STAKING PATTERN SHALL MATCH BLANKET TYPE.

AT PIPE OUTLET AREAS OF STREAMS AND DRAINAGE CHANNELS - DETAIL A

IN DIVERSION DITCH OR SMALL DITCH DRAINAGE WAY - DETAIL B

OUTSIDE OF STREAMS AND DRAINAGE CHANNELS - DETAIL C

CITY OF FORT LAYTON

DESIGN STANDARDS

EROSION BLANKET DETAILS

STANDARD DRAWING

DATE: 8/15/14
EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION OF PERIMETER OF EROSION CONTROL BLANKET.
   - TYPE OF BLANKET (STRAW, STRAW-COCONUT, COCONUT, OR EXCELSIOR).
   - AREA "A" IN SQUARE YARDS OF EACH TYPE OF BLANKET.

2. ALL EROSION CONTROL BLANKETS AND NETTING SHALL BE MADE OF 100% NATURAL AND BIODEGRADABLE MATERIAL; NO PLASTIC OR OTHER SYNTHETIC MATERIAL, EVEN IF PHOTO DEGRADABLE, SHALL BE ALLOWED.

3. IN AREAS WHERE EROSION CONTROL BLANKET IS SHOWN ON THE PLANS, THE DEVELOPER SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING BELOW THE SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND DRY PRIOR TO BLANKET INSTALLATION AND THE BLANKET SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.

4. PERIMETER ANCHOR TRENCH SHALL BE USED AT OUTSIDE PERIMETER OF ALL BLANKET AREAS.

5. JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL BLANKETS EXCEPT STRAW, WHICH MAY USE AN OVERLAPPING JOINT.

6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE-HALF THE ROLL LENGTH FOR COCONUT AND EXCELSIOR BLANKETS.

7. THE OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER FOR BLANKETS ON SLOPES.

8. MATERIAL SPECIFICATIONS OF EROSION CONTROL BLANKET SHALL CONFORM TO TABLE 7.1.

9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING EROSION CONTROL BLANKET SHALL BE RESEEDED AND MULCHED.

10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM ONES SHOWN HERE

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</tr>
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* FOR OUTSIDE OF STREAMS AND DRAINAGE CHANNELS

EROSION CONTROL BLANKET MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT EROSION CONTROL BLANKETS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS AS NECESSARY.

2. EROSION CONTROL BLANKET IS TO BE LEFT IN PLACE UNLESS DIRECTED TO BE REMOVED BY THE CITY.

3. ANY EROSION CONTROL BLANKET PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE RE-INSTALLED. ANY SUBGRADE AREAS BELOW THE BLANKET THAT HAVE ERODED TO CREATE A VOID UNDER THE BLANKET, OR THAT REMAIN DEVOID OF GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE EROSION CONTROL BLANKET REINSTALLED.
1 1/2" (MINUS) CRUSHED ROCK ENCLOSSED IN WIRE MESH

WIRE TIE ENDS

GROUND SURFACE

0" ON BEDROCK OR HARD SURFACE, 2" IN SOIL

ROCK SOCK SECTION

4" TO 6" MAX. AT CURBS, OTHERWISE 6" - 10" DEPENDING ON EXPECTED SEDIMENT LOADS

ROCK SOCK PLAN

ANY GAP AT JOINT SHALL BE FILLED WITH AN ADEQUATE AMOUNT OF 1 1/2" (MINUS) CRUSHED ROCK AND WRAPPED WITH ADDITIONAL WIRE MESH SECURED TO THE ENDS OF THE ROCK REINFORCED SOCK. AS AN ALTERNATIVE TO FILLING JOINTS BETWEEN ADJOINING ROCK SOCKS WITH CRUSHED ROCK AND ADDITIONAL WIRE WRAPPING, ROCK SOCKS CAN BE OVERLAPPED (TYPICALLY 12 - INCH OVERLAP) TO AVOID GAPS.

ROCK SOCK JOINTING

GRADATION TABLE

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>MASS PERCENT PASSING SQUARE MESH SIEVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>90 - 100</td>
</tr>
<tr>
<td>1&quot;</td>
<td>20 - 55</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>0 - 15</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.

ROCK SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION OF ROCK SOCKS.

2. CRUSHED ROCK SHALL BE 11/2 " (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (11/2" MINUS).

3. WIRE MESH SHALL BE FABRICATED OD 10 GAGE POULTRY MESH OR EQUIVALENT WITH A MAXIMUM OPENING OF 1/2", RECOMMENDED MINIMUM ROLL WIDTH OF 48".

4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.
100' BUILDING FACE TO BUILDING FACE SETBACK

- Parking allowed on both sides of street
- Utilized in single family residential areas

**LOCAL W/ ATTACHED WALK**

To be used only with written permission from the City Engineer

101' BUILDING FACE TO BUILDING FACE SETBACK

- Parking allowed on both sides of street
- Utilized in single family residential areas
• PROVIDE WIDENING AT INTERSECTIONS FOR LEFT TURN LANES AND ACCEL/DECEL LANES RIGHT-OF-WAY WIDTH TO BE INCREASED TO 105' IN THESE AREAS.

• NO PARKING ALLOWED

• UTILIZED IN AREAS WHERE THERE IS LIMITED ACCESS AND PROJECTED TRAFFIC VOLUMES ARE GREATER THAN 10,000 VEHICLES PER DAY.

MAJOR COLLECTOR

• PARKING ALLOWED

• UTILIZED IN INDUSTRIAL, COMMERCIAL, MULTI-FAMILY, AND SINGLE-FAMILY RESIDENTIAL AREA'S WHERE ON-STREET PARKING IS REQUIRED.

• 80' AVERAGE RIGHT-OF-WAY (ROW) IS EXTENDED TO PROVIDE VARYING FENCE ALIGNMENTS ALONG ROW LINE.

MINOR COLLECTOR
MAJOR ARTERIAL (6-LANE)

- No parking allowed.
- Provide accel/decel lanes at intersections.
- Provide accel/decel lanes and double turn lanes at major intersections as necessary.
- At major intersections the R.O.W. width shall be 188'.

MAJOR ARTERIAL (4-LANE)

- No parking allowed.
- Provide accel/decel lanes at intersections.
- Provide accel/decel lanes and double left turn lanes at major intersections as necessary.
- At major intersections the R.O.W. width shall be 163'.

MINOR ARTERIAL

- No parking allowed.
- Median may be painted or curbed.
- At major intersections the R.O.W. width shall be 163'.
<table>
<thead>
<tr>
<th>CURVE 1</th>
<th>CURVE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>△</td>
<td>△</td>
</tr>
<tr>
<td></td>
<td>CURB</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>L</td>
</tr>
<tr>
<td>20'00'00&quot;</td>
<td>60.0'</td>
</tr>
<tr>
<td>STREET WIDTH</td>
<td>D1</td>
</tr>
<tr>
<td>34</td>
<td>64.28'</td>
</tr>
</tbody>
</table>

**CURVE 1**
- R = 52'
- R = 40'
- 10.0'
- 34'
- 53'-57'

**CURVE 2**
- FLOW LINE
- CURB & GUTTER
- D1, D2, D3

*VARIES*
**NO ON-STREET PARKING ALLOWED WHEN MEDIAN ISLAND IS USED.**

<table>
<thead>
<tr>
<th>STREET WIDTH</th>
<th>CURVE 1</th>
<th>CURVE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>△</td>
<td>△</td>
</tr>
<tr>
<td></td>
<td>CURB</td>
<td>CURB</td>
</tr>
<tr>
<td></td>
<td>R</td>
<td>L</td>
</tr>
<tr>
<td>34</td>
<td>39°26'57&quot;</td>
<td>40.0'</td>
</tr>
<tr>
<td>D1</td>
<td>D2</td>
<td>D3</td>
</tr>
<tr>
<td>57.39'</td>
<td>43.72'</td>
<td>84.59'</td>
</tr>
</tbody>
</table>

**CUL-DE-SAC DETAIL**

**DATE:** 8/15/14
A) If farside of intersection, distance should be a minimum of 50'-0" from curb line of cross street.
B) If nearside of intersection, distance should be a minimum of 50'-0" from curb line of cross street.

- Bus stop sign
- Shelter site/waiting area
- Concrete bus pad
- 12'-0"
- Sidewalk/bike path detached as per typical sections

* See Table 6.24.01 for lengths
NOTE:
* COARSE BROOM FINISH ON RAMP
** FOR 4" ROLLOVER CURB - TRANSITION RAMP IS 4- FEET

CURB RAMP DETAIL

SCALE: 1"=4'

DESIGN STANDARDS

CURB RAMP

STANDARD DRAWING

R9

DATE: 2/28/17
SECTION X-X

NOTE:
MIDBLOCK RAMP IS SAME AS ABOVE WITH 10 FOOT TRANSITIONS TO SIDEWALKS OF A DIFFERING DIMENSION OR A DETACHED WALK.
NOTE:
CONTRACTION JOINTS ARE REQUIRED AT EACH 2'-0" LENGTH OF WALKED SECTION AND EVERY 10'-0" (MAX) ALONG THE DRIVEWAY.

SECTION A-A

RAMP DRIVE FOR VERTICAL CURB / ATTACHED WALK

DATE: 2/28/17
**SECTION B-B**

**SECTION C-C**

**DETAIL D**

1/4" STEEL PLATE
NON SLIP RAISED PATTERN

PLATE FLUSH WITH TOP OF WALK

3/16" CLEARANCE

1/2" CLEARANCE

1/4" x 3/4" F.H. MACHINE SCREWS @ 2" O.C. COUNTER SINK FLUSH WITH PLATE

11/2" x 11/2" x 1/4" ANGLE IRON DRILLED & TAPPED FOR 1/4" MACHINE SCREWS

3 REBAR 6" LONG WELD TO ANGLE 18" O.C.

**MULTIPLE CHASE**

SEE SECT. C-C 12" SEE SECT. C-C
PAY LIMITS (SQ. FT.)
MEDIAN COVER MATERIAL (PATTERNED CONCRETE)
VARIES (SEE ROADWAY PLANS)

CURVED TRANSITION 4"
12 : 1-1/2 SLOPE

COMPACTED SUBGRADE

CURB & GUTTER TYPE 2
(SECTION 1-B)

CURB & GUTTER TYPE 2
(SECTION 1-B)

SECTION VIEW

PLACE JOINT SEALER IN JOINT BETWEEN PATTERNED CONCRETE
ABUTTING CONCRETE (TYP). JOINT
SEALER TO BE PEARL WHITE
SIKAFLEX-2C OR APPROVED
EQUAL COST OF JOINT SEALER
TO BE INCLUDED IN ITEM 610 –
PATTERNED CONCRETE.

PLAN VIEW

PATTERNED CONCRETE - RUNNING BOND
BRICK PATTERN DAVIS "SPANISH GOLD"
COLOR FINISH WITH CLEAR CURING
COMPOUND. CONTROL JOINT SPACED EVERY
10'. MINIMUM DEPTH 1". REFER TO
PERSPECTIVE DETAIL SHOWING PATTERNED
CONCRETE MEDIAN AT RAISED MEDIAN.
WEEP HOLE WITH 3/4" PVC PIPE
CONSTRUCTED AT 20' SPACING
CENTERS WITH 1/2 CU. FT. GRAVEL PACK,
COST OF ALL MATERIALS TO BE INCLUDED
IN MEDIAN EDGING (PATTERNED CONCRETE)
PLACE WEEP HOLES UNDER ALL RAISED
MEDIAN EDGING THAT ABUTS CURBLING.

1/2 CU. FT. = 3/4"
GRAVEL AT PIPE END
CONTAINED BY FILTER
CLOTH (TYP.)

PLACE JOINT SEALER IN JOINTS
BETWEEN PATTERNED CONCRETE

COMPACTED SUBGRADE

TOPSOIL, 4" MINIMUM DEPTH
TO WITHIN 3" OF TOP OF
MEDIAN EDGE

MEDIAN EDGING (PATTERNED CONCRETE)

RAISED MEDIAN EDGING
CONTINUOUS AROUND
FULL WIDTH MEDIAN.

COMPACTED SUBGRADE

MEDIAN EDGING (PATTERNED CONCRETE)

PAY LIMITS (LIN. FT.)

MEDIAN EDGING
(PATTERNED CONCRETE)

CURB & GUTTER

JOINT SEALER
USE SLEEVE WHERE TRAFFIC SIGN POST IS TO BE PLACED IN MEDIAN ISLAND WITH PATTERNED CONCRETE. INCLUDE COST IN ITEM 614—STEEL SIGN POST. (LOCATION AS DIRECTED BY ENGINEER.)

EXPANSION JOINT ALL AROUND PIPE W/ JOINT SEALER

1/2"

PATTERNED CONCRETE JOINT SEALER (TYPICAL)

4"

6" DIA. P.V.C. PIPE

COMPACTED SUBGRADE

CURB & GUTTER TYPE 2 (SECTION I-B)

SLEEVE DETAIL

N.T.S.

CURB & GUTTER TYPE 2 (SECTION I-B)
24" 400# C.I. MH FRAME AND COVER AS PER SPECIFICATIONS

FINISH GRADE

24" MAX. TO FIRST STEP

CONCRETE RINGS TO GRADE MAXIMUM OF 3 RINGS

PRECAST CONCRETE

STEPS 12" MIN.
16" O.C. MAX.

SEAL ALL JOINTS WITH RAMNEK OR APPROVED EQUAL AS DETERMINED BY THE CITY ENGINEER, AND GROUT INSIDE AND OUTSIDE (TYP.) MAC WRAP OUTSIDE JOINT SEALER TO BE PLACED AT ALL JOINTS

BRUSHED BENCHES

FORMED CONCRETE BASE

NOTES:
1. MANHOLE INVERTS WILL BE FORMED AS INDICATED BELOW TO ENSURE SMOOTH FLOW THROUGH MANHOLE.
2. ALL MANHOLE BASES TO BE PLACED ON 2" MINIMUM 3/4" CRUSHED ROCK.

SMOOTH FINISH ON INVERTS

BRUSHED BENCHES

BRUSHED BENCHES
NOTES:
1. All joints to be set in flexible butyl resin sealing compound and plastered with mortar.
   5/8" thick and extending 4" each side of joint inside and outside.
2. Mortar on riser rings is acceptable.
3. Manholes installed outside of street right-of-way shall have locking covers.
4. "SEWER" to be imprinted on cover.

**Typical Manhole Section with Eccentric Cone**

**Plan**

- 11 - #5 bars hooked at each end.
- Precast manhole risers.
- Do not place steps over pipe.
- Aluminum steps or plastic covered steps (M.A. Inc. Inc. PS-2-PF-S) cast into sections at 12"-16" vertical spacing and aligned.
- 4 wire hoops cast into each section as shown.
- Denver standard pattern.
- 4 wire hoops cast into each section as shown.
- 4"-0" Dia.
- 5"-0" Dia. (Pipe 18" through 27")
- 6"-0" (Pipe 30" & larger)

**Alternate Flat Top**

City of Fort Lupton

**Design Standards**

MANHOLE BARRELS AND ALTERNATE TOPS

**Standard Drawing**

SS2

**Date:** 8/15/14
NOTES:
1. BASES SHALL BE REINFORCED WHEN THE DISTANCE FROM INVERT TO TOP OF COVER WILL EXCEED 15 FT., AND IN ANY CASE WHEN INTERIOR DIA. OF MANHOLE IS 5' AND LARGER.

2. SQUARE BASES ARE ACCEPTABLE.
SECTION A-A

NOTES:

1. THIS MANHOLE IS REQUIRED WHEN A SEWER ENTERS A MANHOLE AT AN INVERT ELEVATION OF 24" OR MORE ABOVE THE INVERT OF THE MANHOLE (SEE DESIGN STDS. 4.33.02).

2. JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND GROUTED WITH MORTAR INSIDE AND OUTSIDE.

SECTION B-B

FLOW

CITY OF
FORT LAUDERDALE
COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS

DROP MANHOLE DETAIL

STANDARD DRAWING

SS4

DATE: 8/15/14
ATTACH HINGE TO GRATING WITH (2) 3/8" DIA. BOLTS x 1" O.C. W/HEX NUTS. ATTACH HINGE TO PLATFORM WITH (2) 3/8 DIA. x 3" LG. RED HEADS OR EQUAL.

ALIGN STEPS ABOVE & OPPOSITE PLATFORM OPENING AS SHOWN TO TOP OF MANHOLE

NOTE:
1. ALL JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND PLASTERED WITH MORTAR 5/8" THICK AND EXTENDING 4" EACH SIDE OF JOINT INSIDE AND OUTSIDE.

SAFETY HANDHOLD TO PLATFORM

STANDARD PRECAST FLAT TOP WITH 4X4, 4/4 MESH

TO BE USED WHEN THE DISTANCE FROM INVERT TO TOP OF COVER EXCEEDS 17 FT.

CITY OF FORT LEEPTON

DESIGN STANDARDS SS5

INTERMEDIATE PLATFORM FOR MANHOLES 17' IN DEPTH

DATE: 8/15/14
1. THIS DETAIL IS TO BE USED UNDER NORMAL CONDITIONS. WHERE EXCESSIVE GROUND WATER IS PRESENT AN ALTERNATE DESIGN WILL BE REQUIRED.
CENTER OF WYE BRANCH TO BE PLACED IN UPPER THIRD OF MAIN

MINIMUM GRADE 1/4" / 1'

1/8 BEND

CENTER OF WYE BRANCH TO BE PLACED IN UPPER THIRD OF MAIN

MINIMUM GRADE 1/4" / 1'

1/8 BEND

CONCRETE COLLAR

TAP TO BE MACHINE DRILLED

1/8 BEND CONNECTION TO TEE

1/8 BEND & SADDLE CONNECTION

FACTORY PREPARED A.S.T.M. C-425 COMPRESSION TYPE JOINTS ONLY OR APPROVED EQUIVALENT.

BELL SHOULD NOT TOUCH SIDES OR BOTTOM OF BELL HOLE.

4" MINIMUM BEDDING ABOVE AND BELOW PIPE.

ACCEPTABLE BEDDING

PROPERTY LINE

SEWER MAIN

H₂O

SIDEWALK

MARKED CURB WITH "X"

SEWER STUB TO PROPERTY LINE

TYPICAL WATER METER LOCATION

H₂O

MIN.

DATE: 8/15/14
CONCRETE COLLAR TO BE USED IN UNPAVED AREAS ONLY

PLAN VIEW

CONCRETE COLLAR
CLEAN OUT SHALL BE AN IRON BODY FERRULE WITH BRASS SCREW PLUG

NOTE:
ENTIRE WYE SECTION TO BE ENCASED IN CONCRETE

CONCRETE ENCASEMENT TRENCH WIDTH

SERVICE LINE

BEDDING MATERIAL

ELEVATION

SECTION A–A

DESIGN STANDARDS

STANDARD CLEAN-OUT DETAIL

SS8

DATE: 8/15/14
6 RUNNERS PER SPACER

SECTION VIEW

SPACER OR APPROVED EQUAL A.P.S. OR R.A.C.I.

CARRIER PIPE

STEEL CASING PIPE

STEEL CASING

EACH END OF JOINT

1' 1'

8' MAX. BETWEEN SPACERS

DOUBLE SPACERS AT EACH END OF CASING

A.P.S. OR R.A.C.I. HIGH DENSITY POLYETHYLENE SPACER OR APPROVED EQUAL

APPROVED JOINT RESTRAINTS

SIDE VIEW

DESIGN STANDARDS

JACKING DETAIL

SS9

DATE: 8/15/14
STORM OR SANITARY SEWER CROSSING UNDER WATER MAIN

IF \( d_3 > 18" \), ENCASEMENT NOT REQUIRED

NOTES:
1. CONCRETE COLLAR AROUND STORM SEWER JOINTS MAY BE ACCEPTED WITH WRITTEN APPROVAL BY THE CITY ENGINEER AND ONLY FOR PIPE 30" OR LARGER.
2. CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING.
3. LENGTH OF ENCASEMENT SHALL EXTEND AT LEAST 10-FEET EACH SIDE OF WATER MAIN.
4. UNLESS OTHERWISE NOTED ON PLAN/PROFILE DRAWINGS, ENCAMEMENTS NEED NOT BE REINFORCED.
5. FILLER MATERIAL BETWEEN CONDUITS TO BE:
   a) APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF \( d_4 \leq 6" \).
   b) COMPACTED BACKFILL, IF \( d_4 > 6" \).
6. SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASEMENT

STORM OR SANITARY SEWER CROSSING OVER TOP OF WATER MAIN

ENCASEMENT REQUIRED REGARDLESS OF DIMENSION \( d_3 \)
(SEE NOTE 1 FOR SPECIAL CASES)
2400A Cover

Product Number
00240023

Design Features
- Materials: Gray Iron (CL35B)
- Design Load: Heavy Duty
- Coating: Undipped
- Designates Machined Surface

Certification
- ASTM A48
- Country of Origin: USA
C.I. FRAME NEENAH R-7514
WITH "S" CAST IN LID

ASPHALT THICKNESS VARIES

FINISH GRADE

4" CLEANOUT ADAPTER
FITTINGS WITH THREADED
PLUG

TRACER WIRE
(COIL 2' IN BOX)

8" MIN
CONCRETE

BEDDING MATERIAL

8" OPENING

30" MIN ROUND OR SQUARE

4" CLEANOUT

DESIGN STANDARDS

UNDERDRAIN CLEANOUT COVER

STANDARD DRAWING

SS13

DATE: 8/15/14
NOTE:

1. JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND GROUTED WITH MORTAR INSIDE AND OUTSIDE.

2. BASES SHALL BE REINFORCED WHEN THE DISTANCE FROM INVERT TO TOP OF COVER WILL EXCEED 15 FT. REINFORCING TO BE APPROVED BY CITY ENGINEER.

3. SQUARE BASES ARE ACCEPTABLE.

4. FOR PIPE 36" AND LARGER, OR WHERE CONDITIONS SUCH AS MULTIPLE PIPES WARRANT, A CONCRETE BOX BASE WILL BE REQUIRED. (SEE CDOT STANDARD DRAWING M-604-20)
NOTES:
1. ALL JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND PLASTERED WITH MORTAR 5/8" THICK AND EXTENDING 4" EACH SIDE OF JOINT INSIDE AND OUTSIDE.
2. MORTAR ON RISER RINGS IS ACCEPTABLE.
3. MANHOLES INSTALLED OUTSIDE OF STREET RIGHT-OF-WAY SHALL HAVE LOCKING COVERS.
4. "SEWER" TO BE IMPRINTED ON COVER.
5. FOR PIPE 36" AND LARGER, OR WHERE CONDITIONS SUCH AS MULTIPLE PIPES WARRANT, A CONCRETE BOX BASE WILL BE REQUIRED.
(SEE CDOT STANDARD DRAWING M-604-20)

PLAN

ALUMINUM STEPS OR PLASTIC COVERED STEPS (M.A. INC. INC. PS-2-PF-S) CAST INTO SECTIONS AT 12"-16" VERTICAL SPACING AND ALIGNED

CEMENT MORTAR

DENVER STANDARD PATTERN

4 WIRE HOOPS CAST INTO EACH SECTION AS SHOWN

18" MAX.

10" MAX. 1/2" 4" 6"

VARIABLE

5"

4" - 0" DIA. (PIPE 15" & SMALLER)
5" - 0" DIA. (PIPE 18" THROUGH 27")
6" - 0" DIA. (PIPE 30" THROUGH 36")

4 WIRE HOOPS CAST INTO EACH SECTION AS SHOWN

6" MIN.

4" - 0" DIA.
5" - 0" DIA. OR
6" - 0" DIA. M.H.

4" - 0" DIA.
5" - 0" DIA. OR
6" - 0" DIA. M.H.

3" MIN.

1 1/2" 24" OR 30" DIA.

48" MAX.

24" MAX.

18" MAX.

4" MIN.

5"

5"

11 - #5 BARS HOOKED AT EACH END

TYPICAL MANHOLE SECTION WITH ECCENTRIC CONE

ALTERNATE FLAT TOP

CITY OF FORT LIVTON
COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS
MANHOLE BARRELS AND ALTERNATE TOPS
ST2
DATE: 8/15/14
ATTACH HINGE TO GRATING WITH (2) 3/8" DIA. BOLTS x 1" O.C. W/HEX NUTS. ATTACH HINGE TO PLATFORM WITH (2) 3/8 DIA. x 3" LG. RED HEADS OR EQUAL.

ALUMINUM GRATING, 3/16" x 1 1/4" BEARING BARS.

NOTE:
1. ALL JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND PLASTERED WITH MORTAR 5/8" THICK AND EXTENDING 4" EACH SIDE OF JOINT INSIDE AND OUTSIDE.

SAFETY HANDHOLD TO PLATFORM

STANDARD PRECAST FLAT TOP WITH 4X4, 4/4 MESH

TO BE USED WHEN THE DISTANCE FROM INVERT TO TOP OF COVER EXCEEDS 17 FT.
NOTES:

1. THIS DETAIL IS TO BE USED UNDER NORMAL CONDITIONS. WHERE EXCESSIVE GROUND WATER IS PRESENT AN ALTERNATE DESIGN WILL BE REQUIRED.
TRANSITION CURB

MEET SHAPE OF NORMAL BARRIER

See Channel Layout on Sheet 2.

CURB FACE ASSEMBLY,
PLACE ENTIRE ASSEMBLY BEFORE POURING CONCRETE

A 2" DIAMETER TEMPORARY HOLE FOR DRAINAGE SHALL BE PLACED AT SUBGRADE ELEVATION OR A MINIMUM 3" BELOW ROAD BASE. THE HOLE SHALL BE PLUGGED WITH CONCRETE BEFORE ACCEPTANCE OF THE INLET.

SECTION B-B
TYPICAL END VIEW

NOTE: MANHOLE RING & COVER, STATION POINT AND OUTFLOW PIPE SHALL BE LOCATED AT THE SAME END OF THE INLET.

(DOTTED BARS ARE IN SECTION d-d)
SECTIONS c-c & d-d

(2 OF 4)
### TABLE ONE ~ BAR LIST FOR CURB INLETS, TYPE "R"

<table>
<thead>
<tr>
<th>MARK</th>
<th>Dia (in)</th>
<th>O.C. Spacing (in)</th>
<th>TYPE</th>
<th>ALL INLETS</th>
<th>INLETS, H &lt; 5'</th>
<th>INLETS, H &gt; 5'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NO. REQ'D</td>
<td>LENGTH (ft-in)</td>
<td>NO. REQ'D</td>
</tr>
<tr>
<td>401</td>
<td></td>
<td>11'</td>
<td>II</td>
<td>15</td>
<td>7</td>
<td>21</td>
</tr>
<tr>
<td>402</td>
<td></td>
<td>11'</td>
<td>II</td>
<td>7</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>403</td>
<td></td>
<td>9'</td>
<td>II</td>
<td>4-0'</td>
<td>4-0'</td>
<td>4-0'</td>
</tr>
<tr>
<td>405</td>
<td></td>
<td>6'</td>
<td>I</td>
<td>11</td>
<td>6-10'</td>
<td>21</td>
</tr>
<tr>
<td>406</td>
<td></td>
<td>6'</td>
<td>III</td>
<td>21</td>
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<td>21</td>
</tr>
<tr>
<td>407</td>
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<td>6'</td>
<td>II</td>
<td>13-10'</td>
<td>13-10'</td>
<td>7</td>
</tr>
<tr>
<td>408</td>
<td></td>
<td>6'</td>
<td>II</td>
<td>10-10'</td>
<td>10-10'</td>
<td>7</td>
</tr>
<tr>
<td>409</td>
<td></td>
<td>6'</td>
<td>II</td>
<td>3-0'</td>
<td>3-0'</td>
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<td>6'</td>
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<td>6-10'</td>
<td>6-10'</td>
<td>6</td>
</tr>
<tr>
<td>411</td>
<td></td>
<td>6'</td>
<td>II</td>
<td>2-9'</td>
<td>2-9'</td>
<td>2</td>
</tr>
<tr>
<td>412</td>
<td></td>
<td>6'</td>
<td>II</td>
<td>7</td>
<td>7</td>
<td>12-10'</td>
</tr>
<tr>
<td>501</td>
<td></td>
<td>6'</td>
<td>I</td>
<td>5-1/2'</td>
<td>5-1/2'</td>
<td>22</td>
</tr>
<tr>
<td>503</td>
<td></td>
<td>5-1/2'</td>
<td>I</td>
<td>5</td>
<td>5-1/2'</td>
<td>16</td>
</tr>
<tr>
<td>504</td>
<td></td>
<td>5-1/2'</td>
<td>I</td>
<td>5</td>
<td>5-1/2'</td>
<td>16</td>
</tr>
<tr>
<td>601</td>
<td></td>
<td>3-1/2'</td>
<td>II</td>
<td>2</td>
<td>10-10'</td>
<td>2</td>
</tr>
</tbody>
</table>

**TABLE TWO ~ BARS AND QUANTITIES VARIABLE WITH "H"**

<table>
<thead>
<tr>
<th>&quot;H&quot; (ft-in)</th>
<th>LENGTH (ft-in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO. REQ'D</td>
</tr>
<tr>
<td></td>
<td>CONC STEEL</td>
</tr>
<tr>
<td>1-0'</td>
<td>3-0'</td>
</tr>
<tr>
<td>2-0'</td>
<td>3-0'</td>
</tr>
<tr>
<td>3-0'</td>
<td>3-0'</td>
</tr>
<tr>
<td>4-0'</td>
<td>3-0'</td>
</tr>
<tr>
<td>5-0'</td>
<td>3-0'</td>
</tr>
<tr>
<td>6-0'</td>
<td>3-0'</td>
</tr>
<tr>
<td>7-0'</td>
<td>3-0'</td>
</tr>
<tr>
<td>8-0'</td>
<td>3-0'</td>
</tr>
<tr>
<td>9-0'</td>
<td>3-0'</td>
</tr>
<tr>
<td>10-0'</td>
<td>3-0'</td>
</tr>
</tbody>
</table>

**NOTE:** FOR L = 5', L = 10', AND L = 15'

**STEEL WEIGHTS DO NOT INCLUDE STRUCTURAL STEEL.

---

**BAR BENDING DIAGRAMS ~ (Dimensions are Out-to-Out of bar)**

**TYPE II**

**TYPE III**

**TYPE IV**

**TYPE V**

**TYPE VI**

**TYPE VII**

**TYPE VIII**

**TYPE IX**

---

**DESIGN STANDARDS**

**CURB INLET TYPE R**

**STANDARD DRAWING**

**CITY OF FORT Lupton**

**DATE: 8/15/14**
2408A Cover

Product Number
00240858

Design Features
- Materials
  - Gray Iron (CL35B)
- Design Load
  - Heavy Duty
- Coating
  - Undipped

- / / Designates Machined Surface

Certification
- ASTM A48
- Country of Origin: USA

SECTION OF COVER

OPEN PUCKHOLE

DESIGN STANDARDS
ST8

STANDARD DRAWING
DATE: 5/04/2017
STORM OR SANITARY SEWER CROSSING UNDER WATER MAIN
IF \( d_3 > 18" \), ENCASEMENT NOT REQUIRED

NOTES:

1. CONCRETE COLLAR AROUND STORM SEWER JOINTS MAY BE ACCEPTED WITH WRITTEN APPROVAL BY THE CITY ENGINEER AND ONLY FOR PIPE 30" OR LARGER.

2. CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING.

3. LENGTH OF ENCASEMENT SHALL EXTEND AT LEAST 10- FEET EACH SIDE OF WATER MAIN.

4. UNLESS OTHERWISE NOTED ON PLAN/PROFILE DRAWINGS, ENCASEMENTS NEED NOT BE REINFORCED.

5. FILLER MATERIAL BETWEEN CONDUITS TO BE:
   a) APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF \( d_s \leq 6" \).
   b) COMPACTED BACKFILL, IF \( d_s > 6" \).

6. SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASEMENT

STORM OR SANITARY SEWER CROSSING OVER TOP OF WATER MAIN
ENCASEMENT REQUIRED REGARDLESS OF DIMENSION \( d_3 \)
(SEE NOTE 1 FOR SPECIAL CASES)
NOTES
PARKING DIMENSIONS ARE NOTED IN SECTION 8.13.00 "PARKING"
2"x2" GALVANIZED TUBE

1"

3/8"

1/2"

10"

24"

WEDGE (STEEL)

VLOC (STEEL)
12 GUAGE 0.105 IN.
8" NOMINAL STRAIGHT SECTION REFORMED TO 2.38" O.D.

"R"

6"

DETAIL 2

DETAIL 1

DETAIL 3

DETAIL 5

DETAIL 4

REMOVABLE CAP WITH THRU BOLT

END OF ARM SLOPE TO BE A MINIMUM OF 1 DEGREE AFTER LOADS HAVE BEEN APPLIED.

FOR THIS INFORMATION  | SEE TABLE
--- | ---
Pole and Signal Arm Data | 1
Material Data | 2
Luminaire Arm Data | 3
Pole Lengths | 4

COLORADO POLE SERIES

DATE: 8/15/14
### TABLE 1: POLE AND SIGNAL ARM DATA

<table>
<thead>
<tr>
<th>POLE SERIES</th>
<th>POLE TYPE</th>
<th>SIGNAL ARM SPAN (FT)</th>
<th>LUMINAIRE ARM SPAN (FT)</th>
<th>POLE TUBE</th>
<th>POLE BASE</th>
<th>ANCHOR BOLT</th>
<th>SIGNAL ARM TUBE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WESTMINSTER</td>
<td>OR 1</td>
<td>20.0</td>
<td>6 THRU 15</td>
<td>13.0</td>
<td>3</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>WESTMINSTER</td>
<td>OR 2</td>
<td>25.0</td>
<td>6 THRU 15</td>
<td>13.0</td>
<td>3</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>WESTMINSTER</td>
<td>OR 1</td>
<td>30.0</td>
<td>6 THRU 15</td>
<td>13.0</td>
<td>3</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>WESTMINSTER</td>
<td>OR 2</td>
<td>35.0</td>
<td>6 THRU 15</td>
<td>13.0</td>
<td>3</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>WESTMINSTER</td>
<td>OR 1</td>
<td>40.0</td>
<td>6 THRU 15</td>
<td>15.5</td>
<td>0.25</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>WESTMINSTER</td>
<td>OR 2</td>
<td>45.0</td>
<td>6 THRU 15</td>
<td>15.5</td>
<td>0.25</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>WESTMINSTER</td>
<td>OR 1</td>
<td>50.0</td>
<td>6 THRU 15</td>
<td>15.5</td>
<td>0.25</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>WESTMINSTER</td>
<td>OR 2</td>
<td>55.0</td>
<td>6 THRU 15</td>
<td>16.0</td>
<td>0.25</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>WESTMINSTER</td>
<td>OR 2</td>
<td>60.0</td>
<td>6 THRU 15</td>
<td>16.0</td>
<td>0.25</td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>

**SEE TABLE 4**

---

**LUMINAIRE ARM SPAN (0, 6', 8', 10', 12', 15')**
**SIGNAL ARM SPAN (20', 25', 30', 35', 40', 45', 50', 55', 60')**
**POLE TYPE (1=21'-0” POLE LENGTH, 2=32'-6” POLE LENGTH)**

**WESTMINSTER, COLORADO POLE SERIES**

**DESIGNATION EXAMPLE**

```
WM - 2 - 30 - 15
```

---
### Table 2: Material Data

<table>
<thead>
<tr>
<th>Component</th>
<th>ASTM Designation</th>
<th>Min. Yield (ksi)</th>
<th>Component</th>
<th>ASTM Designation</th>
<th>Min. Yield (ksi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 GAUGE-POLE SHAFT</td>
<td>A595 GR. A</td>
<td>55</td>
<td>MAST ARM ATTACHMENT</td>
<td>A36</td>
<td>36</td>
</tr>
<tr>
<td>3 GAUGE-POLE BASE</td>
<td>A36</td>
<td>36</td>
<td>MAST ARM CONN. BOLT</td>
<td>A325</td>
<td>—</td>
</tr>
<tr>
<td>0.25&quot; WALL-POLE SHAFT</td>
<td>A572 GR. 65</td>
<td>65</td>
<td>LUMINAIRE ARM ATTACH</td>
<td>A36</td>
<td>36</td>
</tr>
<tr>
<td>0.25&quot; WALL-POLE BASE</td>
<td>A572 GR. 42</td>
<td>42</td>
<td>LUM. CONNECTION BOLT</td>
<td>SAE GR.5</td>
<td>—</td>
</tr>
<tr>
<td>MAST ARM SHAFT</td>
<td>A595 GR. A</td>
<td>55</td>
<td>GALVANIZING HARDWARE</td>
<td>A153</td>
<td>—</td>
</tr>
<tr>
<td>LUMINAIRE ARM</td>
<td>A595 GR. A</td>
<td>55</td>
<td>ANCHOR BOLTS AASHTO M314 GR. 55</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Finish Notes:**
- Finish Coat: TGIC or Urethane Polyester Powder
- Valmont Spec: F-264T
- Color: Federal Green #14056

### Table 3: Luminaire Arm Data

<table>
<thead>
<tr>
<th>Arm Span (ft)</th>
<th>Fixed End Dia. (in)</th>
<th>Free End Dia. (in)</th>
<th>GA.</th>
<th>Rise Height (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3.39</td>
<td>2.38</td>
<td>11</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>8</td>
<td>3.63</td>
<td>2.38</td>
<td>11</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>10</td>
<td>3.89</td>
<td>2.38</td>
<td>11</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>12</td>
<td>4.16</td>
<td>2.38</td>
<td>11</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>15</td>
<td>4.58</td>
<td>2.38</td>
<td>11</td>
<td>3'-0&quot;</td>
</tr>
</tbody>
</table>

### Table 4: Pole Lengths

<table>
<thead>
<tr>
<th>Pole Type</th>
<th>Pole Length</th>
<th>Mounting Height</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21'-0&quot;</td>
<td>NONE</td>
<td>32'-6&quot;</td>
</tr>
<tr>
<td>2</td>
<td>35'-0&quot;</td>
<td>NONE</td>
<td></td>
</tr>
</tbody>
</table>

---

**Design Standards**
CPS Tables 2, 3, $4

**Standard Drawing**
T5

**Date:** 8/15/14
MAX. LOADING INFORMATION

<table>
<thead>
<tr>
<th>DEVICE</th>
<th>DESCRIPTION</th>
<th>PROJ. AREA (FT$^2$)</th>
<th>WEIGHT (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>SIGNAL 12&quot;-5 SECTION WITH BACKPLATE</td>
<td>12.40</td>
<td>105</td>
</tr>
<tr>
<td>B</td>
<td>SIGN REGULATORY 3.0' x 3.0'</td>
<td>9.00</td>
<td>20</td>
</tr>
<tr>
<td>C</td>
<td>SIGNAL 12&quot;-3 SECTION WITH BACKPLATE</td>
<td>8.67</td>
<td>75</td>
</tr>
<tr>
<td>D</td>
<td>SIGN STREET NAME 2.0' x 6.0'</td>
<td>12.00</td>
<td>40</td>
</tr>
<tr>
<td>E</td>
<td>SIGNAL DUAL 12&quot;-3 SECTION</td>
<td>8.90</td>
<td>130</td>
</tr>
<tr>
<td>F</td>
<td>SIGNAL DUAL-PEDESTRIAN SIGNAL</td>
<td>3.56</td>
<td>40</td>
</tr>
</tbody>
</table>

NOTES:
ALL STRUCTURES ARE DESIGNED TO THE 1985 (90 MPH) AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.

MAST ARMS 50 FEET OR LESS IN LENGTH SHALL BE ONE PIECE CONSTRUCTION; BUTT-END WELDS SHALL NOT BE ACCEPTED.
DETAIL 1
POLE TOP

DETAIL 2
LUMINAIRE ARM ATTACHMENT

DETAIL 3
SIGNAL ARM ATTACHMENT

DETAIL 4
SIGNAL ARM SLIP JOINT

CITY OF
Fort Lupton
COME PAINT YOUR FUTURE WITH US

TRAFFIC SIGNAL CPS DETAILS

DESIGN STANDARDS

STANDARD DRAWING

T7

DATE: 8/15/14
POLE SHAFT WALL

HANDHOLE RIMS FOR 3 GA. POLES FORMED FROM 6" BLACK PIPE, ALL OTHER RIMS FORMED FROM 0.75" O.D. X 0.50" WALL (70 KSI MIN.) B.O.M. TUBING.

COVER MOUNTING CLIP

SECTION A-A

0.50" NUT HOLDER WITH FASTENERS FOR GROUNDING NOT REQUIRED ON UPPER HANDHOLES.

POLE WALL | A | B | C
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 GAUGE</td>
<td>7.56&quot;</td>
<td>5.19&quot;</td>
<td>0.280&quot;</td>
</tr>
<tr>
<td>0.25&quot;</td>
<td>7.56&quot;</td>
<td>5.50&quot;</td>
<td>0.500&quot;</td>
</tr>
</tbody>
</table>

DETAL 5 HANDHOLE

0.25" X 1.50" STAINLESS STEEL HEX BOLT

0.25" THREADED INSERT

BASE PLATE

NUT COVER

INSTALLATION INSTRUCTIONS:

1. ANCHOR BOLT PROJECTION ABOVE TOP OF BASE PLATE MUST BE BETWEEN 3" MIN. AND 4" MAX.
2. PLACE COVER OVER ANCHOR BOLT AND SECURE IN PLACE WITH THE 1/4"-20 UNC X 1 1/2" LONG STAINLESS STEEL HEX HEAD BOLT.

REQUIRED ON 16.00" DIAMETER POLES ONLY.

DETAIL 6 NUT COVER

DETAL 7 NUT COVER

DETAL 8 POLE BASE

DETAL 9 ANCHOR BOLT

TRAFFIC SIGNALS CPS DETAILS

DESIGN STANDARDS

STANDARD DRAWING

T8

DATE: 8/15/14
TYPICAL TRAFFIC SIGNAL POLE FOOTING
FOR MAST ARM POLES GREATER THAN 50 FEET

NOTES

1. CONCRETE F.1 = CLASS A OR B
   REINFORCED STEEL PER AASHO M31 SPECIFICATION, GRADE 60 FOR #9 & #4 BARS, AND GRADE 40 FOR #3 BARS.

2. SHAFT FOR CONCRETE FOUNDATION TO BE DRILLED BY MECHANICAL AUGER. CASING IF USED IN PLACING CONCRETE SHALL BE REMOVED UPON COMPLETING POUR.

3. FOUNDATION DESIGN REQUIREDS THAT THE SHAFT BE FOUNDATION IN COMPACT SAND, CLAY, OR SANDY CLAY. THE ALLOWABLE SAFE LATERNARY BEARING CAPACITY OF SOIL (AROUND SHAFT) TO BE 1,300 LBS./SQ. FT. MINIMUM AT DEPTH OF 4.0 FT. BELOW TOP OF FOUNDATION. THE AVERAGE FRICTIONAL RESISTANCE OF THE SOIL (AROUND THE SHAFT) TO BE 460 LBS./SQ. FT. MINIMUM ALLOWABLE UNDER WIND LOADING (TORSION). IF THE SOIL INVESTIGATION (CONDUCTED PRIOR TO CONSTRUCTION) INDICATES THE ABOVE NOTED REQUIREMENTS CANNOT BE MET, OR IF "EXPANSIVE" SOIL IS AN EXISTING PROBLEM, THEN THE FOUNDATION DESIGN SHOWN WILL HAVE TO BE MODIFIED AND APPROVED BY THE ENGINEER.

4. SHOULD ROCK BE ENCOUNTERED, THE SHAFT SHOULD EXTEND 6 FT. MINIMUM INTO ROCK. THE ALLOWABLE SAFE LATERNARY BEARING CAPACITY OF ROCK TO BE 4,300 LBS./SQ. FT. THE SOIL (INCLUDING ROCK) SURROUNDING THE SHAFT SHOULD BE INVESTIGATED TO ENSURE IT WILL RESIST THE TORSIONAL MOMENT OF 93,435 FT. LBS.

5. CONCRETE SHALL BE POURED IN LIFTS NOT EXCEEDING 3 FEET IN DEPTH. AT THE POURING OF EACH LIFT, CONCRETE SHALL BE MECHANICALLY VIBRATED TO REMOVE AIR POCKETS.

<table>
<thead>
<tr>
<th>DESIGN STANDARDS</th>
<th>STANDARD DRAWING</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAST ARM POLE FOUNDATION DETAILS</td>
<td>T9</td>
</tr>
<tr>
<td>DATE: 8/15/14</td>
<td></td>
</tr>
</tbody>
</table>
TYPICAL TRAFFIC SIGNAL POLE FOOTING
FOR MAST ARM POLES LESS THAN OR EQUAL TO 50 FEET

NOTES:

1. CONCRETE: $f' =$ CLASS A OR CLASS B
   REINFORCED STEEL: PER AASHTO M31 SPEC., GRADE 60 FOR #9 & #4 BARS, AND GRADE 40 FOR #3 BARS.

2. SHAFT FOR CONCRETE FOUNDATION TO BE DRILLED BY MECHANICAL AUGER. CASING, IF USED IN PLACE OF CONCRETE, SHALL BE REMOVED UPON COMPLETING POUR.

3. FOUNDATION DESIGN REQUIRES THAT THE SHAFT BE FOUND IN COMPACT SAND, CLAY, OR SANDY CLAY. THE ALLOWABLE SAFE LATERAL BEARING CAPACITY OF SOIL (AROUND THE SHAFT) TO BE 1,300 LBS./SQ. FT. MINIMUM AT DEPTH OF 4.0’ BELOW TOP OF FOUNDATION. THE AVERAGE FRICTIONAL RESISTANCE OF THE SOIL (AROUND THE SHAFT) TO BE 460 LBS./SQ. FT. MINIMUM ALLOWABLE, UNDER WIND LOADING (TORSION). IF THE SOIL INVESTIGATION (CONDUCTED PRIOR TO CONSTRUCTION) INDICATES THE ABOVE NOTED REQUIREMENTS CANNOT BE MET, OR IF “EXPANSIVE” SOIL IS AN EXISTING PROBLEM, THEN THE FOUNDATION DESIGN SHOWN WILL HAVE TO BE MODIFIED AND APPROVED BY THE ENGINEER.

4. SHOULD ROCK BE ENCOUNTERED, THE SHAFT SHOULD EXTEND 6 FT. MINIMUM INTO ROCK. THE ALLOWABLE SAFE LATERAL BEARING CAPACITY SURROUNDING THE SHAFT SHOULD BE INVESTIGATED TO ENSURE IT WILL RESIST THE TORSIONAL MOMENT OF 93,435 FT. LBS.
PUSH BUTTON FOR

R10-4b
9"x12"
SIGN SHALL BE LABEL (STICK-ON) TYPE

PUSH BUTTON WITH 2-1/2"
POLE TOP MOUNTING FOR
5" X 7" SIGN

2-1/2" STD. GALV.
STEEL PIPE

3/8" X 12" ANCHOR
BOLTS, TOT. 4

ELEVATION

1/4"
3/8"

NOTE:
CONDUIT SHALL PROTRUDE 2" MAX ABOVE
FINISHED SURFACE FOUNDATION.

CUT HOLE TO FIT PIPE

3/4" DIA. HOLES

4-1/2" BC

BASE PLATE

5"

DESIGN STANDARDS

PEDESTRIAN PUSH BUTTON
POST & SIGN

T11

DATE: 8/15/14
B-1 FOR WOOD POLES
B-2 FOR STEEL POLES
B-2 FOR ALUMINUM POLES
B-4 (ALTERNATIVE)

KEY
C – 2 INCH PIPE COUPLING
D – CABLE GUIDE, 2 INCH PIPE
SHOWN. REMOVE ALL BURRS
AND SHARP EDGES.

CABLE GUIDE NEEDED
ON ENTRANCE BRACKET ONLY

WIRING
INSPECTION PLATE

WIRING DIAGRAM

DESIGN STANDARDS
S.P. & MAST ARM MOUNTING
DETAILS

STANDARD DRAWING
T12

DATE: 8/15/14
GENERAL NOTES:

1. PIPE COUPLINGS FOR SIGNAL BRACKETS SHALL BE EITHER 1-1/2 OR 2 INCH DEPENDING UPON THE SIGNAL HEAD TO BE INSTALLED. SIGNAL BRACKETS SHALL BE FURNISHED BY THE MANUFACTURER OF THE SIGNAL HEADS.

2. UNLESS OTHERWISE SPECIFIED, ALL TRAFFIC SIGNALS MOUNTED ABOVE THE ROADWAY SHALL HAVE A HEIGHT OF 17'-6"., ALL SIDE MOUNTED TRAFFIC SIGNALS SHALL HAVE A HEIGHT OF 10', AND PEDESTRIAN SIGNALS AT A HEIGHT OF 8' AS MEASURED TO THE BOTTOM OF THE SIGNAL HEAD HOUSING OR BRACKET.

3. ALL SIGNAL HEADS SHALL BE MOUNTED IN SUCH A MANNER AS TO BE EASILY REMOVED FROM THEIR SUPPORTING STRUCTURE.

4. GASKET SEALING COMPOUND SHALL BE USED IN ADDITION TO ANY LEAD WASHERS REQUIRED FOR CREATING A WATER-TIGHT CONNECTION BETWEEN THE SIGNAL HEAD AND MOUNTING BRACKET.

5. SIGNAL HEADS SHALL BE SECURELY AFFIXED BY THE USE OF A SERRATED COUPLING OR OTHER ACCESSORIES RECOMMENDED BY THE SIGNAL MANUFACTURER.

6. WIRING FROM INSIDE MAST ARM THROUGH 1" FIELD DRILLED HOLE IN ARM, SHALL BE BROUGHT THROUGH THE MOUNTING SUPPORT TUBE AND LOWER ARM (AS SHOWN). FIELD DRILLED HOLES SHALL HAVE RUBBER GROMMETS INSTALLED.

<table>
<thead>
<tr>
<th>MA 5-1 MOUNTING HARDWARE</th>
<th>MA 5 ADJUSTABLE MAST ARM MOUNTING HORIZONTAL OR VERTICAL INSTALLATION</th>
</tr>
</thead>
</table>

CITY OF Fort Lupton
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DESIGN STANDARDS

S.P. & MAST ARM MOUNTING DETAILS

STANDARD DRAWING: T13

DATE: 8/15/14
NOTES ON PULL BOX INSTALLATION:

1. PULL BOX WILL HAVE AT LEAST TWO 1" DIA. HOLES DRILLED OR TORCHED 3" FROM TOP TO ACCEPT 6" OF 1" GALVANIZED RIGID CONDUIT.

2. 4" MIN. SLACK IS TO BE PROVIDED SO THAT ALL TESTING AND SPLICING CAN BE DONE OUTSIDE OF THE PULL BOX.

3. PULL BOX LID IS TO BE SEALED WATER TIGHT BY CAULKING.

4. PULL BOX IS TO BE LOCATED IN AN AREA OF THE STREET NOT HEAVILY TRAVELED, IF POSSIBLE, AND CENTERED A MINIMUM OF 12" FROM THE CONCRETE GUTTER PAN.

5. COST OF THE PORTLAND CEMENT CONCRETE SHALL BE INCLUDED IN THE INSTALLATION OF THE PULL BOXES.

6. THE PULL BOX LID SHALL HAVE THE WORD "TRAFFIC" CAST INTO THEM.
LEAD-IN FROM LOOP DETECTOR PULL-BOX TO CONTROLLER CABINET SHALL BE CANDOGA 30003 43 #18 AWG OR APPROVED EQUAL.

SECTION A-A

NOTE: FINISHED LOOP MUST SHOW NO SHORTED TURNS, NO BROKEN WIRE AND 15 MEGOHMS (MINIMUM) TO GROUND, MEASURED WITH A QUALITY MEGOHM METER (SEE GENERAL NOTES).

GENERAL NOTES FOR TD-5 DETECTORS:

1. LOOP SIZE AND LOCATION SHALL BE AS SHOWN IN THE PLANS.

2. THE NUMBER OF TURNS OF WIRE SHALL BE AS INDICATED IN THE PLANS OF THE SPECIFIC INSTALLATION OR AS OTHERWISE SPECIFIED BY THE EQUIPMENT MANUFACTURER SUPPLYING THE LOOP DETECTOR AMPLIFIERS AND APPROVED BY THE TRAFFIC ENGINEERING DIVISION. ALL LOOP WIRE IN ADJACENT LOOPS SHALL BE Laid EITHER IN A CLOCKWISE OR COUNTER-CLOCKWISE DIRECTION AND THE LEADS TAGGED AT THE TIME OF INSTALLATION TO CLEARLY IDENTIFY THEIR DIRECTION.

3. IMMEDIATELY BEFORE LAYING THE LOOP CABLE, THE SAW CUT SHALL BE THERMALLY CLEANED AND DRIED WITH HIGH PRESSURE COMPRESSED AIR.

4. THE WIRE SHALL BE POSITIONED BY USE OF A BLUNT INSTRUMENT SO AS TO MINIMIZE THE CHANCE OF DAMAGE TO THE CABLE INSULATION. (THE USE OF A SCREWDRIVER, SAW BLADE, ETC. WILL NOT BE PERMITTED.)

5. LOOP WIRE SHALL BE CONTINUOUS (NO SPLICED PERMITTED) FROM THE PULL BOX OR FOUNDATION THROUGHOUT THE LOOP CONFIGURATION.

6. AFTER THE LOOP WIRE IS INSTALLED, 3M OR APPROVED EQUAL SAW-CUT SEALER SHALL BE USED TO FILL THE SAW CUTS TO PREVENT MOISTURE OR DIRT FROM ACCUMULATING. LOOP INSTALLATION MAY BE RESTRICTED DUE TO ADVERSE CLIMATICAL CONDITIONS (DAMPNESS, DUST, ETC.)

7. SPLICING TO THE LOOP LEAD-IN CABLE SHALL BE WATERPROOFED WITH 3M SPLICE KITS OR APPROVED EQUIVALENT.

8. ELECTRICAL CONTINUITY TESTS SHALL BE PERFORMED ON EACH LOOP:
   a. BEFORE ANY LOOP SEALS IS INSTALLED.
   b. AFTER LOOP SEALER IS PLACED BUT PRIOR TO CONNECTION TO LEAD-IN CABLE.
   c. AFTER LEAD-IN CABLE IS SPLICED AND TRAINED TO THE CONTROLLER.

IN ADDITION, "RESISTANCE-TO-GROUND" AND "INDUCTANCE" OF EACH LOOP SHALL BE MEASURED AND RECORDED FOR EACH OF THE THREE TESTS PERFORMED TO THE LOOP DETECTOR.
TYPICAL PULL BOX

PLASTIC PULL BOX DETAIL
FOR USE IN GRASS/GROUND AREAS

FIBERGLASS REINFORCED POLYMERS CONCRETE DESIGNED FOR FULL VEHICULAR TRAFFIC (REG LOADING)

TWO BOXES
AND EXTENSION

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>DIMENSIONS (IN.)</th>
<th>TO BE USED AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDIUM 12X18 2 BOXES &amp; EXT</td>
<td>A 11 1/2 B 18 1/2 C 3 1/2 D 20 1/2 E 13 1/2 F 12 G 10 1/4 H 17 1/4 J 3/8 K 11 1/4</td>
<td>TRAFFIC SIGNAL HOLE</td>
</tr>
<tr>
<td>SMALL 12X12 SINGLE BOX</td>
<td>A 12 7/8 B 12 7/8 C 5/8 D 14 E 14 F 12 3/4 G 10 1/2 H 10 1/2 J 1/2 K 12</td>
<td>UPSTREAM DETECTOR SPACES, INTERCONNECT</td>
</tr>
</tbody>
</table>

PRECAST PULL BOX FOR USE IN CONCRETE/ASPHALT/
SIDEWALK AREAS BEHIND CURB
SEE CONTRACT DOCUMENTS FOR MATERIAL SPECIFICATIONS.

T16
DATE: 8/15/14
TRAFFIC SIGNAL PLAN: GENERAL INSTALLATION NOTES

1. ALL CABINET DIMENSIONS ARE NOMINAL.

2. CABINET SHALL BE BONDED TO THE GROUND ROD.

3. CABINETS SHALL BE FIBERGLASS.

4. IF TELEPHONE INTERCONNECT IS SPECIFIED, A MINIMUM OF 5 INCHES CLEAR VERTICAL SPACE SHALL BE LEFT BENEATH ALL OTHER EQUIPMENT INSIDE THE CABINET.

5. ALL STRANDED WIRES TERMINATED IN THE CABINET UNDER A BINDER HEAD SCREW SHALL BE EQUIPPED WITH A SOLDERLESS, PRESSURE TYPE SPADE CONNECTOR WITH A PRE-INSULATED SHANK. ONLY ONE WIRE SHALL BE USED WITH EACH SPADE CONNECTOR. NO MORE THAN THREE CONDUCTORS SHALL BE CONNECTED TO ANY ONE TERMINAL ON THE TERMINAL BOARD PROVIDED IN THE CABINET.

6. CONTROLLERS AND RELAYS SHALL BE LOCATED TO PERMIT SAFE AND EASY REMOVAL.

7. IF THE CABINET IS LOCATED IN AN UNPAVED AREA, A RAISED CONCRETE PAD SHALL BE PROVIDED.

8. ALL CONCRETE SHALL BE PER CITY OF WESTMINSTER STANDARD SPECIFICATIONS FOR DESIGN AND CONSTRUCTION.

9. THE ENDS OF THE SPARE CONDUCTORS SHALL NOT BE CUT BACK. SPARE CONDUCTORS SHALL BE NEATLY COILED AND TAPE FOR POSSIBLE FUTURE USE. ALL CABLES SHALL BE CLEARLY IDENTIFIED IN THE CABINET BY MEANS OF METAL OR DURABLE PLASTIC TAGS.

10. WORK SHALL BE NEAT, UNCLUTTERED "FIRST-CLASS" WORKMANSHIP AND SHALL CONFORM TO APPLICABLE SECTIONS OF THE NATIONAL ELECTRIC CODE, CURRENT EDITION, AND ANY LOCAL REGULATIONS.

11. ALUMINISTIC OR CAULKING COMPOUND SHALL BE USED WHEREVER THE CABINET COMES IN CONTACT WITH THE BASE TO INSURE WEATHER TIGHTNESS. ALUMINISTIC COMPOUND WILL BE REQUIRED IF THE CABINET IS CONSTRUCTED FROM ALUMINUM.


13. ALL REINFORCING STEEL SHALL BE CITY OF WESTMINSTER STANDARD SPECIFICATIONS FOR DESIGN AND CONSTRUCTION.

---

CITY OF
Fort Lupton
EST 1886
COME PAINT YOUR FUTURE WITH US

<table>
<thead>
<tr>
<th>DESIGN STANDARDS</th>
<th>STANDARD DRAWING</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL INSTALLATION NOTES</td>
<td>T17</td>
</tr>
</tbody>
</table>

DATE: 8/15/14
CABINET REQUIREMENTS

1. The cabinet shall be constructed of 0.125 minimum thickness bare aluminum. Cabinets shall be braced internally or by folded seams in order to provide sufficient rigidity to withstand normal handling and transport to the field location without deforming.

2. The main door shall have a self-locking, keyed, tumbler lock with two keys. Hinges shall be mounted on the cabinet in such a way that interchangeability of doors is possible between cabinets of like size and manufacturer. Hinge pins shall be stainless steel. Doors shall have neoprene gaskets of sufficient thickness to prove a rain-tight and dust-tight seal.

3. In addition to the main door, and auxiliary door shall be provided equipped with a lock and pull key. This auxiliary door shall provide access to the panel which shall contain:
   A. A switch to change from normal to flash operation.
   B. A signal on/off switch which will not affect controller operation.
   C. Any additional equipment which may be required by the special provisions.

4. All cabinets shall have a suitable designed vent to allow any explosive atmosphere to escape from the cabinet interior.

5. The cabinet shall be furnished complete including two mounting tails, capable of supporting 75 pounds each.

6. A lamp receptacle and convenience outlet, wired for 120 volt, 60 Hz, shall be provided in all cabinets.

7. The cabinet shall be provided with all necessary openings for mounting and connections of equipment specified for the particular job.

8. All connections of incoming conductors shall be neat and firm and made to a terminal board provided in the cabinet. The terminal board shall be located at least three inches from the bottom of the cabinet and arranged for adequate electrical clearance between the terminals and side walls. This board shall provide at least:
   A. A terminal for circuit breaker for power supply line.
   B. A terminal (unfused), for the neutral side of supply line.
   C. Terminals for detector cables.
   D. Terminals for signal light cables, at least one for each signal circuit and associated common conductors.

9. Connections between the terminal board and the controller (including all associated equipment) shall be made by using multi-terminal plug receptacle incorporated with the controller, as specified by the manufacturer.

10. The same polarity shall be maintained with the traffic signal circuits as the power supply leads. Provision for grounding the cabinet to the ground side of the power supply shall be made.

11. A radio interference suppressor consisting of choke coils and/or condensers shall be provided with all flasher contacts.

12. Mounting brackets and hardware shall be placed so as to locate all equipment within easy access of the cabinet door opening.

FIBERGLASS CABINET BASE

NO SCALE

MATERIALS

REINFORCED TO BE A VIRGIN AND NOT A DISTRESSED POLYESTER THERMOSTETTING RESIN.

THE MATERIAL SHALL BE TESTED FOR FLAMMABILITY UNDER ASTM-D635 WITH A RATING TO BE SELF-EXTINGUISHING AND WITH AN EXTENT OF BURNING NOT TO BE OVER 12MM NOR AVERAGE TIME BURN NOT TO BE OVER 45 SECONDS ON TEST. SHALL ALSO MEET UL-90 CLASSIFICATION AND SHALL HAVE A V-0 RATING.

FIBERGLASS

FIBERGLASS SHALL BE A COMBINATION OF CHOPPED GLASS WITH A MINIMUM OF ONE LAYER THROUGHOUT OF 18 OUNCE WOVEN ROVING SO AS TO FORM A CONTINUOUS FILAMENT FROM TOP TO BOTTOM AND FROM ONE SIDE TO THE OTHER FOR MAXIMUM STRENGTH. THE OVERALL LAMINATE SHALL BE A MINIMUM OF 1/4 INCH.

SELCAT

THE EXTERIOR SURFACE SHALL BE COATED WITH A POLYESTER BASE SELCAT OR A SURFACE COAT THAT WILL PROVIDE MAXIMUM PROTECTION FROM UV LIGHT AND WEATHERING. TEST DATA RESULTS FROM DURAT LABORATORIES USING THE CANADIAN TEST METHOD WITH THE RESULTS OF THE EQUIVALENT OF TWO STANDARD ULTRA-VIOLET LIGHT YEARS SHOWING NO CHANGE IN FIBER SHOW OR FIBER BLOOM AND NO WORSE THAN A "GOOD" RATING ON GENERAL APPEARANCE AND COLOR CHANGE.

AN ALTERNATE TEST FOR UV RESISTANCE CAN BE THE ASTM-D-70 TEST METHOD WITH A MAXIMUM OF CHANGE OF 2.5 MACADAM UNITS AFTER ONE THOUSAND HOURS OF EXPOSURE IN A MODEL 65WR ATLAS WEATHEROMETER.

DESIGN STANDARDS

CABINET REQUIREMENTS

T18

DATE: 8/15/14

STANDARD DRAWING
4" Dia. Galvanized Steel Post (Wt.: 10.8 lbs/ft²)

6" Dia. Backfill, Completed After Electrical Inspection

4" Anchor Bolts Min. 3/4" Dia. X 18" Long.

20"x20" Class "A" Concrete Foundation

3" Crushed Rock

For Overhead Service Only

18" Radius

1-1/2" PVC

8"x5/8" Copper Weld Ground Rod

6" School Speed Limit 20 When Flashing

SEE DETAIL "A"

SEE DETAIL "B"

SEE DETAIL "C"

DETAIL "A"

3/4" Banging Strap

CAST OR POLISHED ALUMINUM CABINET WITH BUILT-IN LOCK, HOUSES FLASHERS AND TIME SWITCH (SEE CONTRACT DOCUMENT)

LB CONDUIT

SIGN MOUNTING BRACKET-DRILL CABINET FOR BOLT ATTACHMENT

12" Yellow Beacon with Tunnel Visor, Black Housing, and Alternating Flashing (See Contract Document)

DETAIL "B"

OPPOSITE DIRECTION 8" Flasher

8" Yellow Beacon with Black Housing and Simultaneous Flashing W/ Front Side Beacon.

NOTES

1. Watertight Galvanized Steel Pole Cap

2. Leave 8" Coiled Wire for Utility Company Connection

3. Provide Conduit and Type II Pull Box for Underground Service Only

4. Bonding Strap in Backfill

5. Sign Supplied and Installed by City

DETAIL "C"

OCTAGON ALUMINUM BASE 20 TO 30 DEG. WITH ACCESS DOOR

16" Dia.

BOLT CIRCLE
FRONT VIEW
40"x60" SIGN TO BE
SUPPLIED BY THE CITY
AND INSTALLED BY CONTRACTOR

TYPICAL 12" YELLOW SIGNAL
HEAD SECTION- POLYCARBONATE
WITH TUNNEL VISOR
AND BLACK HOUSING

STANDARD SIGNAL
MAST ARM- SEE
MAST ARM
DETAL SHEET

MOUNTING BOLT

SCHOOL

SPEED
LIMIT
20
WHEN
FLASHING

60°

40°

FLASHING SEQUENCE SHALL BE:

PLACEMENT NOTES:

1. ROADWAY WITH ONE THROUGH LANE: SIGN AND FLASHER
   ASSEMBLY CENTERED ON THROUGH LANE.

2. ROADWAY WITH TWO THROUGH LANES: SIGN AND FLASHER
   ASSEMBLY CENTERED ON LANE LINE BETWEEN THROUGH LANES.

3. ROADWAY WITH THREE THROUGH LANES: SIGN AND FLASHER
   ASSEMBLY CENTERED ON CENTER THROUGH LANE.
## TYPICAL TRENCH SECTION

### TRENCH WIDTH

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>MINIMUM WIDTH</th>
<th>MAXIMUM WIDTH</th>
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<tbody>
<tr>
<td>4”</td>
<td>1’-4”</td>
<td>2’-4”</td>
</tr>
<tr>
<td>6”</td>
<td>1’-6”</td>
<td>2’-6”</td>
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<tr>
<td>8”</td>
<td>1’-8”</td>
<td>2’-8”</td>
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<tr>
<td>12”</td>
<td>2’-0”</td>
<td>3’-0”</td>
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<tr>
<td>16”</td>
<td>2’-4”</td>
<td>3’-4”</td>
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<tr>
<td>20”</td>
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<td>3’-8”</td>
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<tr>
<td>24”</td>
<td>4’-0”</td>
<td>5’-0”</td>
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</table>

### NOTES:

1. TRENCHES 5 FT DEEP OR GREATER REQUIRE A "PROTECTIVE SYSTEM" AS DEFINED BY OSHA. TRENCHES 20 FT DEEP OR GREATER REQUIRE THAT THE PROTECTIVE SYSTEM BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER.

2. OSHA’S STANDARDS REQUIRE THAT TRENCHES BE INSPECTED DAILY AND AS CONDITIONS CHANGE BY A “COMPETENT PERSON” (AS DEFINED BY OSHA) PRIOR TO WORKER ENTRY TO ENSURE ELIMINATION OF EXCAVATION HAZARDS. FOR ADDITIONAL INFORMATION REGARDING OSHA REQUIREMENTS CALL 1-800-321-OSHA.

3. MINIMUM COVER OVER PIPE TO BE BELOW OFFICIAL STREET GRADE.

4. FOR PIPE BEDDING REQUIREMENTS REFER TO CHAPTER 9 OF THE STANDARDS AND SPECIFICATIONS.

5. PIPE BEDDING SHALL BE PLACED AGAINST UNDISTURBED SOIL IN THE TRENCH BOTTOM, HOWEVER, WHERE ADVERSE SOIL IS ENCOUNTERED IN THE TRENCH BOTTOM, SOIL SHALL BE REMOVED AND TRENCH STABILIZATION MATERIAL SHALL BE PLACED IN ACCORDANCE WITH THE RECOMMENDATIONS OF A GEOTECHNICAL ENGINEER.
1. ALL FITTINGS, DI PIPE, AND HYDRANT BARREL SHALL BE POLYETHYLENE WRAPPED PER AWWA C-105. PROVIDE PERFORATION AT HYDRANT DRAIN HOLES.

2. PRIOR TO PUTTING INTO SERVICE THE FOLLOWING SHALL BE PERFORMED: NOZZLE THREADS SHALL BE GREASED, OIL RESERVOIR SHALL BE FILLED, AND HYDRANTS SHALL BE BRUSH PAINTED FIRE ENGINE RED (#7407).

3. THE ENTIRE PIPING ASSEMBLY (HYDRANT SHOE TO CONNECTION AT MAIN) SHALL BE FULLY RESTRAINED.
**NOTES:**
1. BEARING SURFACES SHOWN IN CHART ARE MINIMUM.
2. BEARING SURFACES ARE BASED ON 150 PSI INTERNAL PIPE PRESS PLUS WATER HAMMER. 
   - 4", 6", 8" AND 12" WATER HAMMER = 110 PSI 
   - 16", 20" AND 24" WATER HAMMER = 70 PSI
3. BEARING SURFACE CALCULATIONS ARE BASED ON 900 PSF SOIL BEARING CAPACITY.
4. ALL DUCTILE IRON AND CAST IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE AND SECURELY TAPE PRIOR TO PLACING BLOCKS.
5. NO COMPACTION SHALL BE ALLOWED ABOVE THRUST BLOCKS FOR A MINIMUM OF 24 HOURS AFTER PLACEMENT. CONCRETE MUST CURE A MIN. OF 48 HOURS PRIOR TO FILLING LINES.
### Minimum Dimensions for Thrust Blocks

<table>
<thead>
<tr>
<th>Fitting Size</th>
<th>Tees &amp; Plugs</th>
<th>90° Bend</th>
<th>45° Bends &amp; Wyes</th>
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<tbody>
<tr>
<td></td>
<td>A  B</td>
<td>A  B</td>
<td>A  B</td>
</tr>
<tr>
<td>4”</td>
<td>1'–7” 1'–2”</td>
<td>1'–9” 1'–6”</td>
<td>1'–8” 0’–10”</td>
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<tr>
<td>6”</td>
<td>2’–0” 2’–1”</td>
<td>2’–5” 2’–2”</td>
<td>1’–10” 1’–7”</td>
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<tr>
<td>8”</td>
<td>2’–8” 2’–6”</td>
<td>3’–2” 3’–0”</td>
<td>2’–5” 2’–1”</td>
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<td>10”</td>
<td>3’–4” 3’–3”</td>
<td>4’–0” 3’–10”</td>
<td>3’–0” 2’–9”</td>
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<td>12”</td>
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<tr>
<td>14”</td>
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<tr>
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<tr>
<td>30”</td>
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<td>8’–0” 8’–0”</td>
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<thead>
<tr>
<th>Fitting Size</th>
<th>Reducers &amp; 22 1/2° Bends</th>
<th>11 1/4° Bends</th>
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<tbody>
<tr>
<td></td>
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<td>1’–7” 0’–6”</td>
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<td>4’–9” 4’–6”</td>
<td>3’–3” 3’–3”</td>
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**General Notes:**

1. Bearing surface areas shown in chart are minimum.
2. Based on 150 P.S.I. internal pipe pressure.
4. All fittings to be wrapped with polyethylene (minimum 8 mil.).

---

**City of Fort Lupton**

**Design Standards**

**Typical Trench Block Dimensions**

**Standard Drawing** W4

**Date:** 8/15/14
NOTES:
1. SIZE OF BLOCK TO BE A MINIMUM OF 18” THICK.
2. ALL BLOCKING TO BE ON UNDISTURBED MATERIAL.
**FIELD INSTALLATION—POLYETHYLENE WRAP**

**STEP-1**
PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

**STEP-2**
PULL THE TUBE OVER THE LENGTH OF THE PIPE, TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.

**STEP-3**
OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF THE PIPE AND TAPED IN PLACE.

**NOTE:** POLYETHYLENE SHALL BE MINIMUM 8-MIL THICKNESS
TEST STATION BOX SHALL BE LOCATED BEHIND EACH FIRE HYDRANT.
(NON-LOCKING COVER 6" ID x 18" SHAFT LENGTH)
PROVIDE AMPLE TRACER WIRE AT TEST STATION FOR REMOVING COVER AND TESTING

6" FIRE HYDRANT LATERAL (TYP)

RUN DOUBLE TRACER WIRES FROM MAIN AND ALONG HYDRANT BRANCH TO TEST STATION BOX

GATE VALVE

TAPE TRACER WIRE TO PVC PIPE W/ 2" WIDE PVC TAPE (TYPICAL 4 PLACES PER 20' OF PIPE)

SWIVEL TEE OR TAPPING SLEEVE

SPlice TRACER WIRES W/ "3M" TYPE DBY-6 LOW VOLTAGE DIRECT BURY SPLICE, OR EQUAL, INSTALL PER MANUFACTURER INSTRUCTIONS.

---

CITY OF FORT LAYTON
COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS
TRACER WIRE

STANDARD DRAWING
W7

DATE: 8/15/14
NOTES:
1. UPSIZING OF SERVICE PIPES AFTER THE METER REQUIRES THE APPROVAL OF THE BUILDING DEPARTMENT. FOR SERVICE PIPES UPSIZED FROM 3/4" TO 1", A REDUCER SHALL BE INSTALLED AS SHOWN ON THIS DETAIL.
2. ONLY COMPRESSION FITTINGS WILL BE ALLOWED ON COPPER SERVICE PIPES. FOR APPROVED MANUFACTURERS AND MODEL NUMBERS OF FITTINGS, REFER TO CHAPTER 3 OF THE CITY STANDARDS.
3. THIS DETAIL IS NOT INTENDED FOR INSTALLATION IN STREETS, DRIVEWAYS, OR CONCRETE AREAS.
4. METER PIT SHALL BE LOCATED IN A SOD OR MULCH AREA WITH A 10' MIN. WIDTH UTILITY EASEMENT. NO TREES, SHRUBS, OR STRUCTURES SHALL BE LOCATED IN THE EASEMENT.
5. SERVICE LINES TO THE METER PIT SHALL BE INSTALLED PERPENDICULAR TO THE WATER MAIN.
6. FOR 3/4" RESIDENTIAL METER INSTALLATIONS, NEWLY INSTALLED SERVICE LINES FROM MAIN SHALL BE 1". EXISTING 3/4" SERVICE LINES MUST BE REVIEWED AND APPROVED FOR CONFORMANCE WITH RESIDENTIAL FIRE SPRINKLER SYSTEM REQUIREMENTS.
7. PROPER METER SETTERS SHALL BE INSTALLED TO ACCOMMODATE SERVICE LINE SIZES FROM MAIN AND TO CUSTOMER. REFER TO SECTION 3.63.08 OF THE CITY WATER SYSTEM STANDARDS FOR ACCEPTABLE SETTER MODEL NUMBERS.
GENERAL NOTES

1. NOT FOR INSTALLATION IN ROADWAYS, DRIVEWAYS, PARKING AREAS, SIDEWALKS, OR CONCRETE. EDGE OF METER PIT LID SHALL NOT BE CLOSER THAN 4' FROM EDGE OF DRIVEWAY.

2. IF SURFACE IS NOT TO OFFICIAL GRADE WHEN THE METER IS INSTALLED, THE OWNER MUST RAISE OR LOWER THE PIT, METER SETTER AND ALL OTHER APPURTEANCES TO THE FINAL APPROVED GRADE.

3. METER SHALL BE SET WITHIN PUBLIC R.O.W OR PUBLIC EASEMENT.

4. NO CONCRETE FLOOR TO BE LAID IN METER PIT.

5. METER PIT SHALL BE CONSTRUCTED OF MODIFIED HI-DENSITY POLYETHELENE.

6. ADJUSTMENT RINGS SHALL BE 2", 3", 4" OR 6" IN HEIGHT AND SHALL BE INSERTED ABOVE THE POLYETHYLENE METER PIT.

7. FOR WATER SERVICE LINES 1" AND LARGER: IF THE METER PIT IS NOT INSTALLED WITHIN THE PUBLIC R.O.W. THEN A CURB STOP AND BOX SHALL BE INSTALLED WITHIN THE PUBLIC R.O.W.
NOTES:
1. UPSIZING OF SERVICE PIPES AFTER THE METER REQUIRES THE APPROVAL OF THE BUILDING DEPT. FOR SERVICE PIPES.
   UPSIZED FROM 1" TO 1 1/2", 1 1/2" TO 2" OR 2" TO 3" A REDUCER SHALL BE INSTALLED AS SHOWN ON THIS DETAIL.
2. FOR APPROVED MANUFACTURERS AND MODEL NUMBERS OF FITTINGS, REFER TO CHAPTER 3 OF THE CITY STANDARDS.
3. METER MANHOLE SHALL BE SURVEYED SO THAT THE COVER CAN BE PROPERLY LOCATED 2" ABOVE FINISHED GRADE PRIOR
   TO BACKFILLING.
4. A BYPASS IS REQUIRED TO BE INSTALLED ON POTABLE WATER SETTINGS.
5. ONLY COMPRESSION FITTINGS WILL BE ALLOWED ON COPPER SERVICE PIPES.
6. MANHOLE STEPS SHALL BE PLACED 12" ON CENTER AND 18" MAX. FROM THE TOP OF THE FRAME TO THE FIRST STEP.
7. METER MANHOLE AND CURB STOP SHALL BE LOCATED IN A SOD OR MULCH AREA WITH A 10" MIN. WIDTH UTILITY
   EASEMENT. NO TREES, SHRUBS OR STRUCTURES SHALL BE LOCATED IN THE EASEMENT.
8. THIS MANHOLE IS NOT INTENDED FOR INSTALLATION IN STREETS, DRIVEWAYS OR CONCRETE AREAS.
9. SERVICE LINES SHALL BE INSTALLED PERPENDICULAR TO THE WATER MAIN.

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<thead>
<tr>
<th>DESIGN STANDARDS</th>
<th>STANDARD DRAWING</th>
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<tr>
<td>1-1/2&quot; AND 2&quot; DOMESTIC METER SETS (ALSO FOR SERVICE PIPES UPSIZED FROM 1&quot; TO 1-1/2&quot; AND 2&quot; TO 3&quot;)</td>
<td>W10</td>
</tr>
<tr>
<td>DATE: 8/15/14</td>
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</table>
NOTES:
1. FOR ALL 3" AND 4" METER SETTINGS, 4" PVC SERVICE PIPE SHALL BE REQUIRED FROM THE MAIN TO THE VAULT AS SHOWN ON THIS DETAIL. FOR 3" METER SETTINGS, A REDUCER SHALL BE REQUIRED BEFORE THE METER AND ALSO ON THE BYPASS AS SHOWN (SEE NOTE 2 FOR EXCEPTION).
2. UPSIZING OF THE SERVICE PIPE AFTER THE METER REQUIRES THE APPROVAL OF THE BUILDING DEPT. FOR A SERVICE PIPE UPSIZED FROM 3" TO 4", A REDUCER SHALL BE INSTALLED AFTER THE METER AS SHOWN (REDUCER IS NOT REQUIRED ON BYPASS IN THIS CASE).
4. FOR APPROVED MANUFACTURERS AND MODEL NUMBERS OF FITTINGS, REFER TO CHAPTER 3 OF THESE STANDARDS AND SPECIFICATIONS.
5. VALVE BOXES SHALL BE SURVEYED SO THAT THE COVER CAN BE PROPERLY LOCATED 2" ABOVE FINISHED GRADE PRIOR TO BACKFILLING.
6. A BYPASS IS REQUIRED TO BE INSTALLED ON ALL POTABLE WATER SETTINGS.
7. MANHOLE STEPS SHALL BE PLACED 12" ON CENTER AND 18" MAX. FROM FINISHED GRADE TO THE FIRST STEP.
8. SERVICE PIPES LARGER THAN 4" WILL REQUIRE SHOP DRAWING SUBMITTAL AND APPROVAL BY UTILITY OPERATIONS.
9. COMPOUND METERS SHALL HAVE STRAINERS UPSTREAM OF THE 15" PIPE SEGMENT. TURBO METERS SHALL HAVE INTEGRAL STRAINERS.
10. STEEL PIPE STANDS SHALL BE REQUIRED: 3 FOR MAIN LINE AND 2 FOR BYPASS LINE (MINIMUM).
11. METER VAULT AND CURB STOP SHALL BE LOCATED IN A 500 OR MULCH AREA WITH A 10' MIN. WIDTH UTILITY EASEMENT. NO TREES, SHRUBS OR STRUCTURES SHALL BE LOCATED IN THE EASEMENT.
12. THIS VAULT IS NOT INTENDED FOR INSTALLATION IN STREETS, DRIVEWAYS OR CONCRETE AREAS.
13. SERVICE LINES SHALL BE INSTALLED PERPENDICULAR TO THE WATER MAIN.
14. NOTE: VAULT ROOFS, NUTS AND WALL PLATES MUST BE STAINLESS STEEL.
15. ALL SERVICE PIPE AND FITTINGS OUTSIDE OF THE VAULT SHALL BE RESTRAINED FOR A MIN. DISTANCE OF 20' UPSTREAM AND DOWNSTREAM OF THE BYPASS TEES.
36” MANHOLE RING WITH DOUBLE COVER (36” & 24”)

SECTION A–A

SECTION B–B

METER VAULT—INSIDE DIMENSION SCHEDULE

<table>
<thead>
<tr>
<th>METER SIZE</th>
<th>LENGTH</th>
<th>WIDTH</th>
<th>HEIGHT</th>
<th>WALL THICKNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3”</td>
<td>8’–0”</td>
<td>7’–0”</td>
<td>7’–0”</td>
<td>8”</td>
</tr>
<tr>
<td>4”</td>
<td>10’–0”</td>
<td>7’–0”</td>
<td>7’–0”</td>
<td>8”</td>
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<td>6”</td>
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</tr>
<tr>
<td>12”</td>
<td>12’–0”</td>
<td>10’–0”</td>
<td>8’–0”</td>
<td>8”</td>
</tr>
</tbody>
</table>

DESIGN STANDARDS

TYPICAL METER VAULT

STANDARD DRAWING

W12

DATE: 8/15/14
TYPICAL CONC. METER SUPPORTS
FOR 3", 4", 6", 8", & 10" METERS

TYPICAL CONC. METER SUPPORT
FOR F.M.—M.C.T. OR TURBINE

NOTES:
1. SOLID CONCRETE BASE
   EXTENDS UNDER THE
   F.M.—C.T. METER BYPASS
   FOR 6", 8" & 10".

2. SOLID CONCRETE BASE
   MAY BE PRECAST.

SIZE OF CONCRETE SUPPORT
6" F.M.—C.T. W=3’-9" L=3’-0"
8" F.M.—C.T. W=4’-5" L=3’-8"
10" F.M.—C.T. W=5’-8" L=4’-8"

DESIGN STANDARDS

STANDARD CONCRETE METER SUPPORTS

STANDARD DRAWING
W13

DATE: 8/15/14
NOTES:

1. CARE SHALL BE TAKEN WHEN INSTALLING VALVES TO ASSURE PROPER SUPPORT OF THE VALVE. THE CITY ENGINEER MAY REQUIRE 3/4" CRUSHED ROCK TO BE INSTALLED UNDER THE VALVE TO PROVIDE PROPER SUPPORT.

2. VALVES SHALL NOT BE PLACED IN CONCRETE SIDEWALKS, CROSS PANS, CUTTERS, OR OTHER DRAINAGE WAYS.


4. GATE VALVE SHALL BE POLYETHYLENE WRAPPED (8 MIL).

5. CONCRETE COLLARS & MARKER POSTS ARE REQUIRED WHEN VALVE IS LOCATED IN AN UNPAVED AREA.

6. VALVE BOXES ARE TO BE BROUGHT UP TO GRADE AT THE TIME OF PAVEMENT PLACEMENT OR OVERLAY. VALVE BOX ADJUSTING RINGS ARE NOT ALLOWED.
1/2" ASPHALTIC JOINT FILLER
AROUND PIPE AT WALL

1/2" x 4" x 9"
2-EA. END OF VAULT

SECTION

5/8" Ø RODS THD'D. EA. END 5"
LENGTH TO BE DETERMINED IN FIELD

WALL PLATE
NOTES:

1. MJ TAPPED TEE CAN BE SUBSTITUTED WITH A 2" TAPPING SADDLE, PROVIDE A MINIMUM OF 24" BETWEEN THE TAP LOCATION AND THE HOST PIPE PLUG. A RESTRAINED MJ PLUG IS REQUIRED ON THE HOST PIPE.

2. ALL 2" FITTINGS AND PIPE SHALL BE BRASS.

3. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE AND SECURELY TAPED PRIOR TO PLACING THRUST BLOCKS.
CASE 1

D.I.P. or P.V.C. BELL FITTING
MJ-B ADAPTER
A.C. PIPE

CASE 2

D.I.P. OR P.V.C. MECHANICAL JOINT BELL FITTING
MJ-B ADAPTER
A.C. PIPE

CASE 3

PLANE END PIPE
TRANSITION MECH. COUPLING
A.C. PIPE

TYPES OF COUPLINGS

1 - ROUGH BARREL TO D.I.
2 - MOA TO D.I.
3 - ROUGH BARREL TO ROUGH BARREL.
4 - MEE TO ROUGH BARREL.

NOTE:
THE CONTRACTOR SHALL
POTHOLE THE HOST PIPE AND
MEASURE THE OUTSIDE DIAMETER PRIOR TO
ORDERING PARTS OR CUTTING THE PIPE.

MOA = MACHINED OVER ALL.
MEE = MACHINED EACH END.
MJ = MECHANICAL JOINT.
MJ-B = MECHANICAL JOINT-BELL ADAPTER.
NOTES:

1. SEWER LINES CROSSING ABOVE WATER MAINS SHALL BE PVC C900 PRESSURE PIPE AND EXTEND 9’ EACH SIDE OF CROSSING (MIN.).

2. MECHANICAL JOINT RESTRAINTS SHALL BE PROVIDED AT ALL JOINTS IN THE LOWERING AND FOR THE SPECIFIED DISTANCE BACK FROM THE LOWERING AS DESIGNED BY THE ENGINEER OF RECORD.

3. WATER MAINS CROSSING CULVERTS THAT ARE EXPOSED TO THE ELEMENTS SHOULD BE EVALUATED FOR FREEZE POTENTIAL.

4. A BORED CROSSING MAY BE REQUIRED FOR THE WATERMAIN.

5. CATHODIC PROTECTION MAY BE REQUIRED FOR THE DUCTILE IRON WATER MAINS AS SPECIFIED BY THE ENGINEER.
CONCRETE COLLAR TO BE INSTALLED WHEN MANHOLE IS USED IN FIELD CONDITIONS.

FINISHED GRADE

CONCRETE EXTENSION RINGS (1-5 RINGS)

24" CAST IRON MANHOLE RING AND COVER (PROVIDE 24"x36" ADAPTER RING, AS REQUIRED)

12" MIN, 18" MAX

6" SCHEDULE 40 OR SDR 35 PVC PIPE AND FITTINGS

COMBINATION AIR VALVE WITH INFLOW PREVENTER, (TYP.)

ISOLATION VALVE, TYP. (NOTE 4)

TAPPING SADDLE (DI OR PVC PIPE) OR WELDED TAPPING OUTLET (STEEL PIPE), TYP.

HOST PIPE SIZE | MH ID
---------|-------
12" AND SMALLER | 4'    
14" TO 24"   | 5'    
30" TO 36"   | 6'    
42" TO 48"   | 7'    
54" AND LARGER | AS APPROVED BY CITY

REINFORCED CONCRETE BEAM

HOST PIPE

ELEVATION

5' MIN (NOTE 6)

PRECAST CONC. FLAT TOP M.H.-COVER

PRECAST CONC. MANHOLE BARRELL SECTIONS W/LADDER RUNGS SPACED 12" OC

12" MIN (TYP)

18" MIN (TYP)

12" MIN (TYP)

PLAN

A

A

2" COMBINATION AIR VALVES

CONC. BEAM (TYP.)

PIECE BEDDING MATERIAL (TYP)

CONC BEAM (TYP.)

MAY ORNIHOLE ACCESS

SECTION A-A

NOTES:
1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF VAULT LAYOUT AND FITTINGS FOR APPROVAL BY THE CITY ENGINEER.
2. AIR VALVES SHALL BE SIZED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. FOR APPROVED MANUFACTURER'S AND MODEL NUMBERS OF FITTINGS, REFER TO CHAPTER 3 OF THE ENGINEERING STANDARDS.
4. ISOLATION VALVES SHALL BE FULL PORT BRONZE BALL STYLE WITH HAND LEVER. TWO INCH VALVES SHALL BE CORPORATION TYPE AND THREE INCH AND LARGER VALVES SHALL INCORPORATE FLANGE FITTINGS TO MATE WITH FLANGED AIR VALVES.
5. ALL COMPONENTS OF MANHOLE STRUCTURE SHALL MEET AASHTO H20 LOAD RATING.
6. CHECK HEIGHT OF AIR VALVE AND ASSOC. PLUMBING AND ENSURE PROPER CLEARANCES FROM VAULT PRIOR TO ESTABLISHING HOST PIPE DEPTH.

DESIGN STANDARDS

COMBINATION AIR VALVE INSTALLATION

W19

DATE: 8/15/14
NOTES:
1. CONTRACTOR SHALL SUBMIT PIPE LAYOUT DRAWINGS AND DIMENSIONING IN VAULT FOR APPROVAL BY THE CITY ENGINEER. FOR DIP ALTERNATIVE, BFV SHALL BE FLANGED WITH A DISMANTLING JOINT OR SHALE WITH A SOLID SLEEVE AND PIPE STUB. FOR STEEL PIPE THE BFV AND DISMANTLING JOINT SHALL BE FLANGED.

2. THE VAULT STRUCTURE SHALL BE DESIGNED FOR HS20 LOADING CRITERIA.

3. PIPE PENETRATIONS SHALL BE SEALED WITH LINK SEAL AND JOINTS SHALL BE SEALED WITH RAM-NEK RN101 OR APPROVED EQUAL.

4. ALL AIR VALVE PIPING AND FITTINGS SHALL BE BRASS.

5. PIPING SHALL BE FULLY RESTRAINED THROUGH THE VAULT AND ON BOTH SIDES OF THE VALVE FOR THE DISTANCE SPECIFIED BY THE DESIGN ENGINEER.

6. COAT THE EXTERIOR OF THE VAULT WITH BITUMASTIC 300M DAMP PROOFING OR APPROVED EQUAL.

7. FOR VALVES BURIED GREATER THAN 7 FEET DEEP AT THE OPERATING NUT ADD AN EXTENSION AND SUPPORT AS SHOWN. PIN THE EXTENSION THROUGH THE VALVE NUT.

8. ISOLATION VALVES SHALL BE FULL PORT BRONZE BALL STYLE WITH HAND LEVER. TWO INCH VALVES SHALL BE CORPORATION TYPE AND THREE INCH AND LARGER VALVES SHALL HAVE A FLANGE ADAPTOR ON THE OUTLET SIDE TO MATE WITH FLANGED AIR VALVES.

DESIGN STANDARDS

BUTTERFLY VALVE INSTALLATION IN WATERLINES LARGER THAN 16"

STANDARD DRAWING

W20

DATE: 8/15/14
"A" - STRAIGHT LINE CUL-DE-SAC:
LAY PIPE TO 32' BEYOND THE CENTER (RADIUS POINT) OF CUL-DE-SAC.

"B" - OFFSET CUL-DE-SAC:
LAY PIPE TO 5' BEYOND CENTER (RADIUS POINT) OF CUL-DE-SAC.

PROPERTY LINE
ROAD CENTERLINE
FLOWLINE
PROPERTY LINE
ROAD CENTERLINE
FLOWLINE
PROPERTY LINE
ROAD CENTERLINE
FLOWLINE
PROPERTY LINE
ROAD CENTERLINE
FLOWLINE
The number of runners on each spacer depends on the pipe diameter. The gap on the top spacers shall not exceed 3/4".

Neoprene, EPDM rubber or PVC spacers shall be electrically isolated from the casing pipe.

Section View

Steel casing pipe (see table for wall thickness)

Watertight Type C pull-on or Type W wrap around end seal (typ.)

Tracer wire

Each end of joint

1" 1"

6' max. between spacers (3 per pipe min)

Stainless steel clamps, or approved equal

Double spacers at each end of casing

Carrier pipe shall be restrained through the casing pipe using bell restraint harnesses, locking joint di pipe, or fuseable PVC pipe, as approved

Side View

<table>
<thead>
<tr>
<th>Carrier Pipe Nominal</th>
<th>Casings Pipe</th>
<th>Min OD</th>
<th>Min Wall Thickness</th>
</tr>
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<tr>
<td>4&quot;</td>
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<td>6&quot;</td>
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<td>16&quot;</td>
<td>28&quot;</td>
<td>0.406&quot;</td>
<td></td>
</tr>
<tr>
<td>20&quot;</td>
<td>32&quot;</td>
<td>0.469&quot;</td>
<td></td>
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</tbody>
</table>

Note: The annular space between the casing and carrier pipes shall not be filled with any material.

City of Fort Lupton

Design Standards

Boring Detail

Standard Drawing

W22

Date: 8/15/14
NOTES:
1. ALL COMPONENTS OF THE MANHOLE STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING.

2. PIPE PENETRATIONS SHALL BE SEALED WITH LINK SEAL AND MANHOLE JOINTS SHALL BE SEALED WITH RAM-NEK RN101 OR APPROVED EQUAL.

3. COAT THE EXTERIOR OF THE STRUCTURE WITH BITUMASTIC 300M DAMP PROOFING OR APPROVED EQUAL.

4. THIS BLOW-OFF INSTALLATION SHALL BE REPLACED WITH A FIRE HYDRANT WHEN DIRECTED BY THE CITY ENGINEER, SUCH AS IN AREAS OF HIGH GROUNDWATER.

5. FOR VALVES DEEPER THAN 7' AN EXTENSION AND SUPPORT SHALL BE INSTALLED AND PINNED TO THE OPERATING NUT.

6. CLAY CUTOFF WALLS SHALL BE INSTALLED ON BOTH SIDES OF THE MAINLINE TEE TO PREVENT INFILTRATION INTO THE VAULT.
2" DIAMETER RECESSED HOLE IN CENTER FOR TRANSPONDER.

1 1/2" (38mm) LETTERING (RECESSED FLUSH)

COVER TOP

COVER BOTTOM

PICKSLOT DETAIL

COVER: GRAY IRON ASTM A48 CL35 B
LOAD RATING: HS=20
COVER: 135 LBS 61kg
√ MACHINED SURFACE

WATER VAULT LID

W24

DATE: 8/15/14
NOTES:
1. THE CITY SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO TAPPING. THE CITY'S REPRESENTATIVE SHALL BE ON SITE DURING TAPPING.
2. ALL CAST IRON / DUCTILE IRON FITTINGS TO RECEIVE DOUBLE POLY WRAP PRIOR TO BACKFILL OR POURING OF CONCRETE KICKERS.
STORM OR SANITARY SEWER CROSSING UNDER WATER MAIN
IF \( d_6 > 18" \) AN ENCASEMENT IS NOT REQUIRED

NOTES:
1. CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING.
2. LENGTH OF ENCASEMENT SHALL EXTEND AT LEAST 9- FEET EACH SIDE OF WATER MAIN.
3. FILLER MATERIAL BETWEEN CONDUITS TO BE APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF \( d_4 \leq 6" \), COMPACTED BACKFILL, IF \( d_4 > 6" \).
4. SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASEMENT.
5. A REINFORCED ENCASEMENT IS REQUIRED FOR ALL CONDUITS CROSSING OVER WATER MAINS BUT ENCASEMENTS ARE NOT REQUIRED TO BE REINFORCED IF CROSSING UNDER WATER MAINS.

STORM OR SANITARY SEWER CROSSING OVER TOP OF WATER MAIN
REINFORCED ENCASEMENT REQUIRED REGARDLESS OF DIMENSION \( d_3 \)
PIPE I.D. | NO. OF LONGITUDINAL BARS & LOCATION
---|---
6" TO 8" | 4 - #4 BARS 1 EACH CORNER
10" TO 18" | 8 - #4 BARS 3 EACH SIDE
21" TO 33" | 12 - #4 BARS 4 EACH SIDE
36" | 16 - #4 BARS 5 EACH SIDE

2" CLEARANCE MIN - TYP
PIPE O.D. + 4" (TYP. EACH LEG)

SECTION A - A

#4 @ 12" (TYP)
NOTE:

1. LOCATE VENT OUT OF TRAFFIC AREAS AND AS APPROVED BY THE CITY.

2. FOR VENTS LOCATED IN A FIELD CONDITION OR AREAS THAT MAY REQUIRE A MORE VISIBLE INSTALLATION, REFER TO DETAIL W19B.

3. VENTS SHALL HAVE FINE MESH SCREEN INSTALLED IN INTERIOR TO PREVENT INSECTS ENTERING THE VENT PIPE.
NEW CONSTRUCTION RESIDENTIAL
FIRE SPRINKLER PROTECTION SYSTEM

NOTES:
1. WATER TAP TO BE 1" WITH 1" CURB STOP & BOX
2. TEE OFF 1" PIPE FOR FIRE PROTECTION LINE.
3. REDUCE TO 3/4" LINE WITH 3/4" METER FOR DOMESTIC SERVICE.