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N.T.S.
Rev. July, 2010

DR: EO
CK:  
DEPARTMENT OF PUBLIC WORKS  CITY OF MIAMI, FLORIDA
MISC.  SD-1
STORM DRAINAGE LEGEND

PROPOSED

- MANHOLE
- TYPE "F-3" CATCH BASIN
- TYPE "D" CATCH BASIN
- PIPE SEWER (STORM)
- TERMINAL MANHOLE

PROFILE GRADE
PROP. 12" C.P. @ 32%
PROP. 18" C.P. - PROP. 12" C.P.
SPECIAL INLET CONNECTION

PROP. 12" CONC. PIPE
POINT A INV. EL. + 3.3
POINT B INV. EL. + 3.2

THE ABOVE NOTE IS USED FOR PROPOSED CONNECTIONS BETWEEN CATCH BASIN AND MANHOLES. POINT A INVERT INDICATES PROPOSED INVERT AT CATCH BASIN. POINT B INVERT INDICATES PROPOSED AT CATCH BASIN WHERE CONNECTION EXISTS BETWEEN CATCH BASINS, INVERT A INDICATES THE FARTHEST INVERT FROM THE MANHOLE.

EXISTING

- SANITARY OR STORM SEWER
- TYPE "F-3" CATCH BASIN
- TYPE "D" CATCH BASIN
- U.P. (UTILITY CABLE & POLE)
- WATER MAIN WITH VALVE & FIRE HYDRANT
- GAS MAIN
- SIDEWALK
- STREET GRADE

MONUMENT LINE OF STREET

N.T.S. JAN, 1954

DR: EO
CK:
DEPARTMENT OF PUBLIC WORKS CITY OF MIAMI, FLORIDA MISC. 35–86–1 SD–2
INLET

Section "A-A"

Type "D-1" Catch Basin

NOTE: All concrete min. 4,000 p.s.i. @ 28 days

NOTE: All pipes into types "D" C.B. from French drains shall be a minimum of 24" from bottom.

NOTE: All pipes into types "D" C.B. for storm sewer districts shall be a minimum of 24" from bottom.

Hinged Type "D" C.B. Frame and Cover.

1" Dia. hole for 3/4" x 6 anchor bolts

Brick to grade

Exfiltration pipe

Wires

Std. hooks tied under base steel at 12" C-C

16" Dia. weep hole

N.T.S.

JAN. 1954

DR: EO

DEPARTMENT OF PUBLIC WORKS

CITY OF MIAMI, FLORIDA

CK:

MISC. 35-86-2

SD-3a
HINGED
TYPE "D" CATCH BASIN FRAME & COVER

NOTES:
1. MATERIAL: ASTM-A48 CLASS 30B GREY IRON.
2. GRATE WT. APP. 155 LBS.
3. FRAME WT. APP. 210 LBS.

N.T.S. 2008
TYPE "D" CATCH BASIN FRAME & COVER

(NOT TO BE USED, FOR REFERENCE ONLY)

DIRECTOR OF PUBLIC WORKS
CITY OF MIAMI, FLORIDA

JAN. 1954
SECTION A-A

TYPE "D" CATCH BASIN PAVING DETAILS

N.T.S.

JAN. 1958

DR: EO

DEPARTMENT OF PUBLIC WORKS

CK:

CITY OF MIAMI, FLORIDA

MISC. 35-86-2

SD-3d
VALLEY GUTTER TYPE "V"
CATCH BASIN FRAME & GRATE
NOTE: COVER NOT SHOWN ON THIS SHEET

FOR FRAME & COVER DIMENSION, REFER TO STANDARD DETAIL MISC. 35-86-4

7/8" SEAT

OUTSIDE WALL
INSIDE WALL

NOTE: FILL BETWEEN RIBS WITH 1:3 CEMENT MORTAR AND FINISH SURFACE IN ACCORD WITH CITY STANDARD SPEC'S FOR CEMENT SIDEWALKS.

3/4"-8" ANCHOR BOLT

NOTE: WHERE CURB ONLY EXISTS, WARPED SECTION OF GUTTER TO BE CONSTRUCTED AS SHOWN.

1'-6"

SLOPE 3"

NOTE: PLATE TO BE SET TO CONFORM WITH SLOPE AT SIDEWALK OR AS DIRECTED BY THE ENGINEER.

NOTE: GROUT TO BE USED FOR LEVELING WHEN NECESSARY.

#4 REBAR 12" O.C.E.W. 3,000 P.S.I. CONC.

#4 REBAR 12" O.C.E.W.

OUTLET PIPE

STD. HOOKS TIED UNDER BASE STEEL

3" CL

16# HOLE

SECTION "A-A"

TYPE F-3 CATCH BASIN

N.T.S.

JAN. 1954

DR: EO

DEPARTMENT OF PUBLIC WORKS

MISC. 35-86-4

CK: CITY OF MIAMI, FLORIDA

SD-5a
SECTION "A-A"

TYPE "A" MANHOLE
(For Storm Water Drainage Systems)

NOTE: MANHOLE USED FOR SANITARY SEWER SYSTEMS SHALL CONFORM WITH MIAMI-DADE COUNTY WATER & SEWER DEPT. STANDARDS.

NOTE: FOR STRAIGHT PIPE UP TO 30" DIA. AND ANGLE PIPE UP TO 27" DIA.

NOTE: 1. ALL CONCRETE SHALL BE MIN. 4,000 PSI @ 28 DAYS.
2. THIS STANDARD FOR MANHOLES FROM 4" TO 12" IN DEPTH.

ADD #4 REINF. BARS WHEN 16" DIA. WEEP HOLE IS SPECIFIED.

SEE DETAIL FOR TYPE "A" MANHOLE FRAME AND COVER.

3/4" X 8" HOOKED ANCHOR BOLTS & NUTS

NOTE:
1. STANDARD PEDESTRIAN COVERS SHALL BE USED ON ALL MANHOLE OPENING IN SIDEWALK.
2. RIMS SHALL BE SET TO MEET EXISTING GROUND OR PAVEMENT SURFACE UNLESS OTHERWISE SPECIFIED.
3. PRECAST MANHOLE SHALL BE ADDITIONAL REINFORCED TO WITHSTAND TRANSPORTATION AND INSTALLATION LOADS. SHOP DRAWINGS ARE REQUIRED FOR APPROVAL.

#4@12"C.C.E.W.
OR 1 CAGE W.W. MESH EQUAL TO 0.20 SQ. IN./FT.

STD. HOOKS TIED UNDER BASE STEEL AT 12" C-C

#4@12"C.C.E.W.

16" DIA. WEEP HOLE WHEN SPECIFIED

N.T.S. JAN. 1954

DR: EO DEPARTMENT OF PUBLIC WORKS MISC. 35-86-8
CK: CITY OF MIAMI, FLORIDA SD-6a
NOTE: LETTERS DESIGNATING TYPE OF SEWER, SANITARY OR STORM, TO BE ARRANGED ON AN ARC OF 8-1/2" RADIUS TO CENTER OF LETTERS. EACH LETTER TO BE 2" HIGH, 3/8" DEEP, 1/4" TO 5/16" THICK & FLUSH WITH TOP OF BEADS. BEADS TO BE 3/8" HIGH WITH A RADIUS OF 1/2" AT THE BOTTOM & 3/8" AT TOP. PROVIDE 2 HOLES IN FLANGE OF FRAME AS SHOWN.

NOTE: ALL SEATING SURFACES OF MANHOLE CASTING ARE TO BE MACHINED WHERE SHOWN.
APPROX. WT. OF COVER = 165 LBS.
APPROX. WT. OF RING = 366 LBS.

SECTION "A-A"

NOTE: NO CHANGES WILL BE PERMITTED IN THE TYPICAL CROSS SECTION SHOWN UNLESS APPROVED IN WRITING BY THE ENGINEER.

TYPE "A" MANHOLE FRAME & COVER

N.T.S. JAN. 1954

DEPARTMENT OF PUBLIC WORKS
CITY OF MIAMI, FLORIDA

MISC. 35-86-8 SD-6b
FOR STORM WATER DRAINAGE SYSTEMS

D-4 THRU D-8 MANHOLE

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<th>7-6</th>
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SECTION A-A

PLAN

REINFORCING BARS

ADDITIONAL #5

Top Slab

All other pipes shall be a minimum 12" from bottom.

DRAINING SHALL BE A MINIMUM OF 18" FROM BOTTOM.

NOT: ALL PIPES INTO D-4 THROUGH D-8 MUST BE TRENCH

THIS STANDARD FOR MANHOLES TO A 12" MAX. DEPTH.

INSTALL LIFT HOEKS AS REQUIRED.

AT BOTTOM WITH EXTA #5 AT OPENING.

FOR STORM SWMERS CONSTRUCT 20" # WEEP HOLE

NOTE: CONC. STRENGTH SHALL BE 4000 PSI @ 28 DAYS
NOTES: SEAT FOR FRAME CASTING TO BE 2-1/2" BELOW STREET GRADE. ALL SPECIFICATIONS REGARDING MANHOLE DETAILS ARE THE SAME AS FOR STANDARD TYPE "A" MANHOLE. WHEN "A" IS GREATER THAN 4'-0" USE STANDARD TYPE "A" MANHOLE. A SUMP IS NOT REQUIRED UNLESS OTHERWISE SPECIFIED. WEEP HOLE, WHEN SPECIFIED, SHALL BE 16" DIA WITH EXTRA #4 REINF. BARS AROUND OPENING.

SECTION

FRAME

FRAME ENLARGED

DETAILS - STANDARD SHALLOW MANHOLE (FOR STORM WATER DRAINAGE SYSTEMS)

N.T.S. JAN. 1954

DR: EO DEPARTMENT OF PUBLIC WORKS CITY OF MIAMI, FLORIDA

CK: MISC. 35-86-11 SD-8
(FOR STORM WATER DRAINAGE SYSTEMS)

BOX TYPE MANHOLE

TOP SLAB PLAN VIEW

ADDITIONAL #8, #10, #12 TO SLAB STEEL AS SHOWN.

NOTE:
1. ALL REINFORCING BARS TIES AND CHAINS SHALL BE 1/2 IN. DIAMETER.
2. CONCRETE SLAB FOR MANHOLE FOUNDATION SHALL BE 4000 PSI 28 DAYS.
3. PROVIDE 2 CONCRETE COVER OVER ALL REINFORCING STEEL.
4. PRODUCTION PLANS shall SHOW ELEVATION OF STRUCTURE.

ELEVATION

12 OIL VENT HOLE
SUMP INLET DETAILS

1. Filter fabric each side overlapped on top shall be used in sandy areas as noted on plans.

NOTES

END SECTION

SIDE ELEVATION

TRENCH BOTTOM

BULKheads

(See note 4, p. 6)

TRENCH BOTTOM

BULKheads

(See note 4, p. 6)

TRENCH BOTTOM

BULKheads

(See note 4, p. 6)

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BULKheads

(See note 4, p. 6)

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BULKheads

(See note 4, p. 6)

TRENCH BOTTOM

BULKheads

(See note 4, p. 6)

TRENCH BOTTOM

BULKheads

(See note 4, p. 6)
Typical French Drain Cross Section

- Min. Trench Width = Pipe Dia. + 2'
- Diameter to Soil Conditions and Pipe Width of Ditch Varies Due
- No Plans as Show
- Elevation as Shown
- Bottom of Trench

1. 42" Min. Cover over Pipe
2. Filter Fabric Shall
3. Encase Entire Washed
4. Washed Rock to Extend
5. Perforated Pipe to Be
6. To Bottom of Trench
7. Not Shown on Plans
8. Rock Excavated
9. Elevation Shown On Plans
10. Unless Otherwise Shown

NOTES:

- Pavilion or Natural Ground
- Pea Rock
- 9" Filter over 12" Felt
SLOTTED CONCRETE PIPE FRENCH DRAIN

1. Concrete pipes shall meet the requirements of ASTM C76-70.
2. Concrete pipes shall be cast in accordance with the slots positioned on the side.
3. Alignment joints are standard.
4. The contractor may submit optional for 0" diameter and below.
5. Filter fabric material is required.
6. The typical French Drain cross section and profile shall apply to the ditch bottom.
7. Filter fabric shall not be placed on joints shall Lap a minimum of 1 foot.

NOTES

SECTION "BB"
SECTION "AA"
SIDE VIEW

"sr" 47", 48"
"sr" 47", 48"
"sr" 47", 48"
"sr" 47", 48"
"sr" 47", 48"
SLOTTED CONCRETE PIPE FRENCH DRAIN

SIDE VIEW

SECTION "A-A"

TOP VIEW

SAW CUT SLOT "B"

OPTION "B"

STANDARD CONCRETE PIPE 36" 16" 12"

PIPE SIZE MIN. MAX.

SLIT CUT OPENING C

(SEE SHEET NO. 1)

GENERAL NOTES

24" 22" 48"

42" 22" 42"

24" 22" 36"

18" 16" 30"

24" 16" 24"

18" 12" 18"

14"

MAX.
Typical French Drain Profile

Notes:

1. Plastic filter (at EA side, bottom) shall be used in sunny areas as noted on plans and as directed by the engineer.

2. The bottom of the extraction trench shall be 15'-0" below existing ground elevation. Unless noted, condition water at surface.

3. A vertical slot excavation trench shall be 15'-0" below existing ground elevation. Unless noted, condition water at surface.

4. Avert the ballast rock has been placed to the proper elevation it shall be certain to require washing down with clean water in order to prevent the ballast rock from being removed.

5. Allow initial settlement from 15'-0" and 12.5'-0" below to 12.5'-0" and 10'-0" below ground surface.

6. Avert the ballast rock has been placed to the proper elevation it shall be certain to require washing down with clean water in order to prevent the ballast rock from being removed.

7. Avert the ballast rock has been placed to the proper elevation it shall be certain to require washing down with clean water in order to prevent the ballast rock from being removed.

8. Avert the ballast rock has been placed to the proper elevation it shall be certain to require washing down with clean water in order to prevent the ballast rock from being removed.
SLAB OPENING FOR TYPE "A" M.H.

1. MANHOLE OR CATCH BASIN OPENING SHALL BE CENTERED OVER STORM LINES ENTERING DITCH.
2. CONCRETE SLABS ARE TO BE CONSTRUCTED OF HIGH EARLY STRENGTH CONCRETE (3000 P.S.I. IN 7 DAYS).
3. ALL DITCHES WILL HAVE A MANHOLE OR CATCH BASIN, BOTTOM SLAB AND TRASH BARRIER AT BOTH ENDS.
4. MAXIMUM LENGTH OF SLABS SHALL BE 20'-0" & 1/2" EXPANSION MATERIAL IS TO BE PLACED BETWEEN SLABS.

SLAB OPENING FOR TYPE "D" C.B.

1. CONTRACTOR SHALL POUR SLAB IN PLACE. IN THE EVENT PRECAST SLABS ARE PERMITTED, SLABS SHALL NOT BE POURED UNTIL CONTRACTOR HAS ASCERTAINED IF ENTIRE TRENCH IS SUITABLE FOR DITCH.
2. WHEN MATERIAL AT DITCH EDGE IS UNSUITABLE, VOIDS SHALL BE FILLED WITH CONCRETE TO SLAB GRADE OR BUILT UP BY USE OF "BLOCK HEADWALL" AS REQUIRED BY ENGINEER.
3. END WALL AND SIDE WALLS REQUIRED ONLY WHEN SPECIFIED OR WHEN LATERAL ENTERS DITCH.

TWO FT. WIDE COVERED DITCH
FOR REFERENCE ONLY

N.T.S.
APRIL, 1965

DR: EO
DEPARTMENT OF PUBLIC WORKS
MISC. 35-86-28
CK:
CITY OF MIAMI, FLORIDA
SD-12a
SLAB OPENING FOR TYPE "A" M.H.

NOTES

1. MANHOLE OR CATCH BASIN OPENING SHALL BE CENTERED OVER STORM LINES ENTERING DITCH
2. CONCRETE SLABS ARE TO BE CONSTRUCTED OF HIGH EARLY STRENGTH CONCRETE (3000 P.S.I. IN 7 DAYS).
3. ALL DITCHES WILL HAVE A MANHOLE OR CATCH BASIN, BOTTOM SLAB AND TRASH BARRIER AT BOTH ENDS.
4. MAXIMUM LENGTH OF SLABS SHALL BE 20'-0" & 1/2" EXPANSION MATERIAL IS TO BE PLACED BETWEEN SLABS.
5. CONTRACTOR SHALL POUR SLAB IN PLACE. IN THE EVENT PRECAST SLABS ARE PERMITTED, SLABS SHALL NOT BE POURED UNTIL CONTRACTOR HAS ASCERTAINED IF ENTIRE TRENCH IS SUITABLE FOR DITCH.
6. WHEN MATERIAL AT DITCH EDGE IS UNSUITABLE, VOIDS SHALL BE FILLED WITH CONCRETE TO SLAB GRADE OR BUILT UP BY USE OF "BLOCK HEADWALL" AS REQUIRED BY ENGINEER.
7. END WALL AND SIDE WALLS REQUIRED ONLY WHEN SPECIFIED OR WHEN LATERAL ENTERS DITCH.

THREE FT. WIDE COVERED DITCH
FOR REFERENCE ONLY

N.T.S.

JUNE, 1968

DR: EO

DEPARTMENT OF PUBLIC WORKS

CK:

MISC. 35–86–28

CITY OF MIAMI, FLORIDA

SD–12b
ADDITIONAL REINFORCING AREA EQUAL TO ONE HALF (MINIMUM) OF INTERRUPTED MAIN STEEL EACH SIDE OF OPENING

SLAB REINFORCEMENT

SECTION "A-A"

REINFORCING SCHEDULE

<table>
<thead>
<tr>
<th>SPAN</th>
<th>MAIN</th>
<th>DISTRIBUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 24&quot;</td>
<td>#5 @ 12&quot;</td>
<td>#3 @ 12&quot;</td>
</tr>
<tr>
<td>36&quot;</td>
<td>#5 @ 12&quot;</td>
<td>#4 @ 12&quot;</td>
</tr>
<tr>
<td>60&quot;</td>
<td>#7 @ 9&quot;</td>
<td>#5 @ 9&quot;</td>
</tr>
</tbody>
</table>

NOTES:
1.) WHERE AN OPENING IS TO BE PROVIDED IN THE SLAB, #5 DIAGONAL STEEL SHALL BE PLACED ON TOP OF DISTRIBUTION REINFORCEMENT, AS SHOWN.
2.) LAPS FOR DISTRIBUTION STEEL SHALL BE 1'-0"
3.) REINFORCING BARS TO BE GRADE 60 STEEL ASTM A615-68. CONCRETE TO BE A MINIMUM OF 4000 P.S.I. AT 28 DAYS.
4.) PROVIDE HIGH CHAIRS TO MAINTAIN A 2-INCH COVER OVER REINFORCEMENT.

OPTIONAL COVERED DITCH SLAB DETAIL
FOR REFERENCE ONLY

N.T.S.

FEB. 1987
DROP INLET DETAIL

SECTION "A-A"

- 2" CLASS 32 DL PIPE
- TYPE A FRAME AND GRATE
- VARIES
- CHANNEL FOR SMOOTH FLOW
- CONC. SLAB
- VARIES
- RIN 3 BAR. EACH WAY
- BOTTOM SLAB TO HAVE
- NOTE

WALL MAY BE CONC. OR BRICK

OR CONC.
BOTTOM OF ROADWAY BASE OR EXISTING GROUND

FOR PAVEMENT RESTORATION
REFER TO APPLICABLE STANDARDS

FINAL BACKFILL
- VARIES -

1'-6''

6''

PIPE ZONE

SPRING LINE OF PIPE

BEDDING
6'' MIN.

EXCAVATED TRENCH WIDTH

PIPE O.D. PLUS 24''

PIECE WIDTH

SUITABLE BACKFILL PLACED AND
COMPACTED TO AT LEAST 98% OF
MAXIMUM DENSITY, 6'' MAX. SIZE 9''
LIFTS, PER AASHTO SPEC. No T-180
(FOR D.O.T MAINTAINED ROAD CHECK
SPECIFIC REQUIREMENTS)

SELECT BACKFILL PLACED AND
COMPACTED TO AT LEAST 90% OF
MAXIMUM DENSITY, 2'' MAXIMUM
SIZE, 6'' LIFTS, PER AASHTO SPEC.
No. T-180

INITIAL BACKFILL

HAUNCHING

FOUNDATION
(MAY NOT BE
REQUIRED)

PIPE EMBEDMENT
Carefully placed and hand
compacted CLASS I
material (SEE Note 2)

NOTES:
1. FOR EXCAVATION AND BACKFILL AROUND MANHOLE, APPURtenANCES, OR IN WATER, REFER TO PROVISIONS
WITHIN THE SPECIFICATIONS.
2. CLASS I MATERIALS ARE ANGULAR, $\frac{1}{2}$ TO $\frac{3}{4}$ INCH WELL GRADED STONE INCLUDING WASHED AND GRADED
LIMEROCK.
3. WHERE REQUIRED, SHEETING AND SHORING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS.
4. WHERE UNSTABLE SOILS ARE ENCOUNTERED, INCLUDING PEAT, MUCK OR OTHER ORGANIC SOILS, ELASTIC
SILT AND CLAYS BELOW THE WATER TABLE, AND FINE SANDS BELOW THE WATER TABLE, TRENCH
CONSTRUCTION SHALL CONFORM TO STANDARD DETAIL ON 35-86-38-2.

P.V.C. PIPE EMBEDMENT DETAIL

N.T.S.  
SEPT. 1989

DR: EO  
DEPARTMENT OF PUBLIC WORKS

CK:  
CITY OF MIAMI, FLORIDA

MISC. 35-86-38  
SD-14
ELEVATION VIEW

PLAN VIEW

SIDE ELEVATION VIEW

TABLE OF DIMENSIONS

<table>
<thead>
<tr>
<th>PIPE DIA.</th>
<th>H</th>
<th>W</th>
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<tbody>
<tr>
<td>15&quot;</td>
<td>10&quot;</td>
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STANDARD BAFFLE DETAILS
ACCESS HATCH DETAIL

BAFFLE INSTALLATION DETAIL

1/8" THICK NEOPRENE GASKET
FLUME CROSS-SECTIONAL AREA
EQUIVALENT TO PIPE SIZES

<table>
<thead>
<tr>
<th>DIAMETER OF PIPE</th>
<th>AREA IN SQUARE INCHES</th>
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<tbody>
<tr>
<td>2&quot;</td>
<td>3.141</td>
</tr>
<tr>
<td>3&quot;</td>
<td>7.068</td>
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<tr>
<td>4&quot;</td>
<td>12.566</td>
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<tr>
<td>5&quot;</td>
<td>19.635</td>
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<tr>
<td>6&quot;</td>
<td>28.269</td>
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<tr>
<td>8&quot;</td>
<td>50.265</td>
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<td>10&quot;</td>
<td>78.54</td>
</tr>
<tr>
<td>12&quot;</td>
<td>113.09</td>
</tr>
<tr>
<td>14&quot;</td>
<td>153.93 (NOT MADE IN C.I. OR T.C.)</td>
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</tbody>
</table>

RAINWATER DISCHARGE FLUME DETAIL

N.T.S.

JAN 1954

DR: EO
DEPARTMENT OF ENGINEERING
CITY OF MIAMI, FLORIDA

CK: MISC. 35-86-44
SD-16a
SWALE TRENCH DETAIL

1. Swale trench shall be constructed when width of driveway approach exceeds 10.0'.

2. Swale trench construction shall cover remaining undamaged swale area adjacent to property.

3. Filter fabric shall be installed in swale area with final gravel layer.

4. Contractor is responsible to locate and protect all existing utilities.

NOTE:

- 3/4" Gravel
- Filter Fabric
- Profile Grade
- 1.0' SOD
- 6.0' Width of Swale Area
- Edge of Pavement