APPENDIX K

CULVERT DESIGN DIAGRAMS
CULVERT MAINTENANCE HEADWALL AND LINER UPGRADE

DETAILED INFORMATION:

1. PRO-ECD-LITE PRE-FAB FRP HEADWALL OR APPROVED EQUAL.
2. EXISTING CULVERT, DIAMETER AND INVERT ELEV. VARIES. USE EXISTING CULVERT WITH ISCO "SNAP-TITE" OR APPROVED EQUAL. INCLUDE ENERGY DISSIPATION (SEE DETAIL A) AND EXTEND CULVERTS (AS NECESSARY) DOWNSTREAM TO MINIMIZE DISCHARGE SCOUR.
3. 4" DIA. PERFORATED PIPE LATERALS, MIN. DEPTH OF COVERAGE OF PERRF. PIPE WITHIN MEDIA SHALL BE 2'. INCLUDE FILTER FABRIC AROUND THE PIPE (AS NECESSARY) TO REDUCE ROOT INTRUSION.
4. FILTER SOIL PLACED OVER PERFORATED LATERALS TO A DEPTH OF 2 M, REPLANT VEGETATION (PLANTING PLAN TDB).
5. UNITS OF DISTURBANCE (LOD). STABILIZE DISTURBED SLOPES WITH 3/4" MINS OR APPROVED EQUAL REPLANT VEGETATION (AS NECESSARY).
6. EXISTING ROADWAY SURFACE AND BASE TO REMAIN OUTSIDE LOD.
7. COUPLER FLANGE, BOOT, GASKETED JOINT AS NEEDED BASED ON EXISTING CULVERT SIZE AND MATERIAL. EXPOSE EXIST PIPE TO THE EXTENT NEEDED.
8. CULVERTS NOT SHOWN ON THIS CONCEPTUAL PLAN SET MAY ALSO BE CANDIDATES FOR MAINTENANCE AND WILL BE INCLUDED (AS NECESSARY) IN FUTURE DESIGN SUBMITTALS.

SECTION A-A'

CM-1,2,3,4,5,6,7,8,9,10,11,12

A'

PLAN

REMOVABLE WEIR BOARDS

GRAVEL BEDDING AND BACKFILL

EXISTING ROAD EMBANKMENT

BULKHEAD FITTING FOR PERFORATED DRAIN PIPE (PROJECTED)

NOTES:

REV: 1.0 080308

BOEING SSFL - WATERSHEDS 008 AND 009

SWMA - FINAL CONCEPTUAL DESIGNS

DESIGN BY: ARP

DRAFTED BY: ED

INCH May 2009

DRAWN BY: WD

APPROVED BY: RS

SMALL NO.: 580235A

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Geosyntec
NOTES:

1. PRO-ECO-LITE PRE-FAB FRP HEADWALL OR APPROVED EQUAL.

2. EXISTING CULVERT DIAMETER AND INVERT ELEV. VARIES. LINE
EXISTING CULVERT WITH ISO "SNAP-TITE" OR APPROVED EQUAL.
INCLUDE ENERGY DISSIPATION (SEE DETAIL D9) AND EXTEND
CULVERTS (AS NECESSARY) DOWNSTREAM TO MINIMIZE
DISCHARGE SCOUR.

3. 4" DIA. PERFORATED PIPE LATERALS, MIN. DEPTH OF
COVERAGE OF PERF. PIPE WITHIN MEDIA SHALL BE 2'. INCLUDE
FILTER FABRIC AROUND THE PIPE (AS NECESSARY) TO REDUCE
ROOT INTRUSION.

4. FILTER SOIL PLACED OVER PERFORATED LATERALS TO A
DEPTH OF 2' MIN. REPLANT VEGETATION (PLANTING PLAN TBD).

5. LIMITS OF DISTURBANCE (LOD). STABILIZE DISTURBED SLOPES
WITH 3/4" MINUS OR APPROVED EQUAL. REPLANT VEGETATION
(AS NECESSARY).

6. EXISTING ROADWAY SURFACE AND BASE TO REMAIN OUTSIDE LOD.

7. COWLER FLANGE, BOOM, GASKETED JOINT AS NEEDED BASED ON
EXISTING CULVERT SIZE AND MATERIAL. EXPOSE PIPE TO
THE EXTENT NEEDED.

DETAIL – SCHEMATIC

D7

CULVERT MAINTENANCE HEADWALL
AND LINER UPGRADE

NTS

BOEING SSFL – WATERSHEDS 008 AND 009
SWMA – FINAL CONCEPTUAL DESIGNS

REVIEWED BY: 
APPROVED BY: 
REVISION NO. D8

CULVERT MAINTENANCE DETAIL

REV - 10

CULVERT MAINTENANCE OBlique VIEW

EXISTING CULVERT OBlique VIEW

EXISTING ROAD SURFACE

EXISTING ROAD SURFACE

REMOVABLE WEIR BOARDS
NOTES:
1. LENGTH OF APRON SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY AND DESIGNED TO MINIMIZE CONCENTRATED FLOWS.
2. APRON SHALL BE SET AT A ZERO GRADE AND ALIGNED STRAIGHT.
3. FILTER MATERIAL SHALL BE FILTER FABRIC OR 6" THICK MINIMUM GRADED GRAVEL LAYER.
4. SPECIFIC DIMENSIONS WILL BE PROVIDED DURING DETAILED DESIGN.

CM.1,2,3,4,5,6,7,8,9,10,11,12

SECTION A-A'

ENERGY DISSIPATION

SCALE: 1" = 2'

DISCHARGE PIPE 10

FILTRATION GEOTEXILE

PREPARED SUBGRADE

A

0.5 X D MIN.

4.5 X D MIN.

4.0 X D MIN.

PLAN

ROCK d50
50% SHALL BE LARGER THAN 6" MIN. DIA.

SECTION

A

A'

D9