DGN $REF001 $REF002 $REF003 $REF004 $REF005 $REF006
$DGNLEV $LEV001 $LEV002 $LEV003 $LEV004 $LEV005 $LEV006

SURVEYED BY _____
SUPERVISED BY _____
DESIGNED BY Dewberry (703) 849-0607

DRAINAGE DESCRIPTIONS

Sheet 3

3-1
1 - St'd. DI-3B Req'd.
L = 4'; H = 5.1'; Inv.= 254.4'

3-1 — 3-3
273' - 24" Conc. Pipe Req'd.(5.1' Cover)
Inv.(In) = 254.4'; Inv. (out) =253.0'

3-2
4.2 LF St'd. MH-1 or 2 Req'd.
1 - St'd. MH-1 Frame and Cover Req'd.
Inv.= 254.9'

3-2 — 3-1
40' - 24" Conc. Pipe Req'd.(4.8' Cover)
Inv.(In) = 254.9'; Inv. (out) =254.7'

3-3
1 - St'd. DI-3E Req'd.
L = 8'; H = 5.1'; Inv.= 252.7'
(Connect 1 - St'd. UD-4 To Structure)

3-3 — 3(1)-4
278' - 24" Conc. Pipe Req'd.(5.1' Cover)
Inv.(In) = 252.7'; Inv. (out) =251.0'

3-4
1 - St'd.DI-3B Req'd.
L = 8'; H = 3.9'; Inv.= 255.3'

3-4 — 3-5
150' - 15" Conc. Pipe Req'd.(2.5' Cover)
Inv.(In) = 255.3'; Inv. (out) =254.4'

3-5
1 - St'd.DI-3B Req'd.
L = 6'; H = 4.2'; Inv.= 254.1'

3-5 — 3-6
150' - 15" Conc. Pipe Req'd.(2.8' Cover)
Inv.(In)= 254.1'; Inv. (out) = 253.3'

3-6
1 - St'd.DI-3B Req'd.
L = 6'; H = 4.2'; Inv.= 253.0'

3-6 — 3(1)-7
150' - 15" Conc. Pipe Req'd.(2.8' Cover)
Inv.(In) = 253.0'; Inv. (out) = 252.2'

Sheet 3(1)

3(1)-1
1 - St'd. DI-3E Req'd.
L = 8'; H = 5.0'; Inv.= 248.7'
(Connect 1 - St'd. UD-4 To Structure)

3(1)-1 — 3(1)-2
172' - 24" Conc. Pipe Req'd.(2.9' Cover)
Inv.(In) = 248.7'; Inv. (out) = 247.8'

3(1)-2
1 - St'd.DI-3B Req'd.
L = 6'; H = 5.5'; Inv.= 247.5'
(Connect 1-St'd. UD-4 To Structure)

3(1)-2 — 3(1)-3
161' - 24" Conc. Pipe Req'd.(3.2' Cover)
Inv.(In)= 247.5'; Inv. (out) = 246.7'

3(1)-3
1 - St'd.DI-3B Req'd.
L = 6'; H = 5.4'; Inv.= 246.4'

3(1)-3 — 4-1
152' - 24" Conc. Pipe Req'd.(3.1' Cover)
Inv.(In) = 246.4'; Inv. (out) = 245.6'

3(1)-4
1 - St'd.DI-3E Req'd.
L = 8'; H = 5.1'; Inv.= 250.7'
(Connect 1-St'd. UD-4 To Structure)

3(1)-4 — 3(1)-1
290' - 24" Conc. Pipe Req'd.(2.8' Cover)
Inv.(In) = 250.7'; Inv. (out) =249.0'

3(1)-5
142' - 24" Pipe Req'd.(2' Cover)
Inv.(In) = 250.6'; Inv. (out) = 249.7'
2 St'd. 24" ES-1 or 2 Req'd.
6.67 Sq.Yds.Standard EC-3 Type B Culvert Outlet Protection Required

3(1)-6
1 - St'd.DI-3B Req'd.
L = 6'; H = 4.5'; Inv.= 250.9'

3(1)-6 — 3(1)-9
148' - 18" Conc. Pipe Req'd.(2.5' Cover)
Inv.(In) = 250.9'; Inv. (out) =250.0'

3(1)-7
1 - St'd.DI-3B Req'd.
L = 6'; H = 4.4'; Inv.= 251.9'

3(1)-7 — 3(1)-6
148' - 18" Conc. Pipe Req'd.(2.7' Cover)
Inv.(In)= 251.9'; Inv. (out) = 251.2'

3(1)-8
1 St'd.18" ES-1 or 2 Req'd.
Inv.(In) = 249.6'
3.75 Sq.Yds.Standard EC-3 Type B Culvert Outlet Protection Required

3(1)-9 — 3(1)-8
16' - 18" Conc. Pipe Req'd.(2.8' Cover)
Inv.(In) = 249.7'; Inv. (out) = 249.6'

3(1)-9
1 - St'd.DI-3B Req'd.
L = 6'; H = 4.5'; Inv.= 249.7'

3(1)-10
172' - 45"x 29" Conc. Pipe Req'd.(3' Cover X12' Skew)
(Double Line - 88' Line and 84' Line)
Inv.(In) = 250.14'; Inv. (out) = 249.70'
(Set Inverts 0.5' Below Stream Grade)
1- St'd. EW-6 Req'd.and 1- St'd.EW-6S Req'd.
15.13 Sq.Yds.Standard EC-1 Class I Required Type B Installation

Sheet 3(2)

3(2)-1
Modify Existing Inlet
1 - St'd.DI-3C Top Req'd.
L = 18';

Sheet 4

4-1
1 - St'd. DI-3B Req'd.
L = 6'; H = 5.3'; Inv.= 245.3'
(Connect 1-St'd. UD-4 To Structure)

4-1 — 4-2
152' - 24" Conc. Pipe Req'd.(3.1' Cover)
Inv.(In) = 245.3'; Inv. (out) = 244.5'

4-2
1 - St'd. DI-3B Req'd.
L = 6'; H = 5.3'; Inv.= 244.2'

4-2 — 4-4
130' - 24" Conc. Pipe Req'd.(3.0' Cover)
Inv.(In) = 244.2'; Inv. (out) = 243.5'

4-4
1 - St'd.DI-3B Req'd.
L = 6'; H = 5.3'; Inv.= 243.2'
(Connect 1-St'd. UD-4 To Structure)

4-4 — 4-18
64' - 24" Conc.Pipe Req'd.(3.1' Cover)
Inv.(In) = 243.2'; Inv. (out) = 242.8'

4-5
Remove Existing Endwall
Connect Proposed 30" Conc.Pipes To Existing Conc.Pipes
Inv. = 242.4'
Inv. = 242.4'

4-5 — 4-6
57' - 30" Conc.Pipe Req'd.(2.3' Cover)
(Double Line - 28' Line and 29' Line)
Inv. (In) = 242.4'; Inv.(Out) = 242.1'
Inv. (In) = 242.4'; Inv.(Out) = 242.1'

4-6
1- St'd. 30" EW-6S Req'd.
20.8 Sq.Yds.Standard EC-1 Class I Required
Type B Installation

4-7
1 - St'd.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 247.7'

4-7 — 4-8
14' - 15" Conc. Pipe Req'd.(2.5' Cover)
Inv. (In) = 247.7'; Inv.(Out) = 247.6'

4-8
1- St'd. 15" ES-1 or 2 Req'd.

4-9
St'd. DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 246.8'
(Connect 1-St'd. UD-4 To Structure)

4-9 — 4-10
19 ' - 15" Conc. Pipe Req'd.(2.5' Cover)
Inv. (In) = 246.8'; Inv. (Out) = 246.7'

4-10
1- St'd. 15" ES-1 or 2 Req'd.

4-11
St'd. DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 246.0'

4-11 — 4-12
21' - 15" Conc.Pipe Req'd. (2.5' Cover)
Inv. (In) = 246.0'; Inv.(Out) =245.8'

4-12
1- St'd. 15" ES-1 or 2 Req'd.

4-13
St'd. DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 245.1'
(Connect 1-St'd. UD-4 To Structure)

4-13 — 4-14
19' - 15" Conc. Pipe Req'd.(2.5' Cover)
Inv. (In) = 245.1'; Inv. (Out) = 245.0'

4-14
1- St'd. 15" ES-1 or 2 Req'd.

4-15
1 - Modified 24" EW-6 Req'd.
Modification Due to Varying Dimension "S"

4-15 — 4-16
78' - 24" Conc.Pipe Req'd.(2.0' Cover)
(Double Line - 39' Each Line)
Inv. (In) = 244.3'; Inv.(Out) =244.1'
Inv. (In) = 244.2'; Inv.(Out) =244.0'

4-15 — 4-22
184' - 24" Conc.Pipe Req'd.(2.0' Cover)
(Double Line - 92' Each Line)
Inv. (In) = 244.3'; Inv.(Out) 243.8'
13.3 Sq.Tds.Standard EC-3 Type B Culvert Outlet Protection Required

4-16
Remove Existing Endwall
Remove 20' of Existing 36" Pipes (10' Each Pipe)
Retrofit Existing 36" CMP with 104' -30" HDPE(52' Each Line)
Connect Retrofit Pipe To Concrete Pipe (See Sheet 2.1(3) for Detail)

4-17
1 - St'd.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 243.8'

4-17 — 5(1)-7
59' - 15" Conc. Pipe Req'd.(2.5' Cover)
Inv. (In) = 243.8'; Inv.(Out) 243.5'

4-18
1- St'd. 24" ES-1 or 2 Req'd.
4 Sq.Yds.Standard EC-1 Class A1,Type A Installation

4-19
1 - St'd.DI-3B Req'd
L = 8'; H = 3.9'; Inv.= 243.3'
(Connect 1-St'd. UD-4 To Structure)

4-19 — 4-20
20' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv. (In) = 243.3'; Inv.(Out) 243.2'

4-20
1- St'd. 15" ES-1 or 2 Req'd.
2.6 Sq.Tds.Standard EC-3 Type B Culvert Outlet Protection Required

4-21
1 - Mod.EW-2 Req'd.
(See Sheet 2.1(3) for Weir Detail)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

4-21 — 5(1)-15
287' - 76" x 48" Elliptical Conc.Pipe Req'd.(2.0' Cover)
Inv. (In) = 241.8'; Inv.(Out) 239.6'
4" Bedding Material Aggregate No.25 or 26 Req'd. Above
8" Bedding Material Aggregate No.57 Wrapped In
Geotextile Drainage Fabric

Sheet 5(1)

5(1)-1
1 - St'd.DI-3B Req'd.
L = 14'; H = 4.2'; Inv.= 258.4'
(Connect 1-St'd. UD-4 To Structure)

5(1)-1 — 5(1)-2
190' - 15" Conc.Pipe Req'd.(2.7' Cover)
Inv.(In) = 258.4'; Inv. (out) = 251.4'
(145' -15" Conc.Pipe Req'd.(448' Radius
With Open Joint-using 8' Pipe Joint Lengths)).
Joints Are To Be Opened A Maximum of 25% of The
Spigot or Tongue Length.

5(1)-2
1 - St'd.DI-3B Req'd.
L = 18'; H = 4.2'; Inv.= 251.1'
(Connect 1-St'd. UD-4 To Structure)

5(1)-2 — 5(1)-3
33' - 15" Conc.Pipe Req'd.(3.2' Cover)
Inv.(In) = 251.1'; Inv. (out) = 250.8'

5(1)-3
1 - St'd.DI-3BB Req'd.
L = 8'; H = 10.6'; Inv.= 244.9'

5(1)-3 — 5(1)-4
46' - 24" Conc. Pipe Req'd.(8.3' Cover)
Inv.(In) = 244.9'; Inv. (out) = 244.7'

5(1)-4
1 - St'd.24" ES-1 or 2 Req'd.
6.66 Sq.Yds.Standard EC-3 Type B Culvert Outlet
Protection Required

5(1)-5
1 - St'd.DI-3B Req'd.
L = 8'; H = 3.9'; Inv.= 245.7'

5(1)-5 — 5(1)-3
170' - 15" Conc. Pipe Req'd.(9.1' Cover)
Inv.(In) = 245.7'; Inv. (out) = 244.9'

5(1)-6
1 - St'd.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 243.8'
(Connect 1-St'd. UD-4 To Structure)

5(1)-6 — 5(1)-7
62' - 15" Conc. Pipe Req'd.(2.6' Cover)
Inv.(In) = 243.8'; Inv. (out) = 243.4'

5(1)-7
1 - St'd.DI-3C Req'd.
L = 6'; H = 4.0'; Inv.= 243.4'
(Connect 1-St'd. CD-2 and 1-St'd. UD-4 To Structure)

5(1)-7 — 5(1)-8
50' - 15" Conc. Pipe Req'd.(3.7' Cover)
Inv.(In) = 243.4'; Inv. (out) = 242.9'

5(1)-8
1 - St'd.DI-3B Req'd.
L = 6'; H = 5.2'; Inv.= 242.9'

5(1)-8 — 5(1)-9
123' - 15" Conc. Pipe Req'd.(3.7' Cover)
Inv.(In) = 242.9'; Inv. (out) = 242.3'

5(1)-9
1 - St'd.DI-3B Req'd.
L = 6'; H = 5.4'; Inv.= 241.9'

5(1)-9 — 5(1)-15
95' - 15" Conc.Pipe Req'd.(6.0' Cover)
Inv.(In) = 241.9'; Inv. (out) = 240.9'

5(1)-10
1 - St'd.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 242.5'

5(1)-10 — 5(1)-9
108' - 15" Conc. Pipe Req'd.(5.4' Cover)
Inv.(In) = 242.5'; Inv. (out) = 241.9'

5(1)-11
1 - St'd.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 241.7'

5(1)-11 — 5(1)-12
98' - 15" Conc. Pipe Req'd.(2.5' Cover)
Inv.(In) = 241.7'; Inv. (out) = 241.1'

5(1)-12
1 - St'd.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 241.1'

5(1)-12 — 5(1)-13
88' - 15" Conc. Pipe Req'd.(2.5' Cover)
Inv.(In) = 241.1'; Inv. (out) = 240.5'

5(1)-13
1 - St'd.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 240.5'

5(1)-13 — 6-21
108' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 240.5'; Inv.(out) = 239.8'

REVISED	FHWA REGION	STATE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
7/17/08	3	VA.		7		2.1(1)

IN PROGRESS 10/15/08
NOT FOR CONSTRUCTION

5(1)-15
5.4 LF St'd.MH 1 or 2 Req'd
1 - St'd MH-1 Frame and Cover Req'd
Inv.= 239.6'

5(1)-15 — 5(1)-16
77' - 76" x 48" Elliptical Conc.Pipe Req'd.(3.1' Cover)
Inv.(In) = 239.6'; Inv. (out) = 239.0'
4" Bedding Material Aggregate No.25 or 26 Req'd. Above
8" Bedding Material Aggregate No.57 Wrapped In
Geotextile Drainage Fabric

5(1)-16
Special Design Endwall, See Sheet 2.1(1).
42.22 Sq.Yds.Standard EC-1 Class I,Type B Installation

5(1)-16 — 5(1)-17
434' - 48" Conc.Pipe Req'd.(2 Lines of 217' Each) (48' Skew)
Inv.(In) = 238.3'; Inv. (out) = 237.2'
Inv.(In) = 238.3'; Inv. (out) = 237.2'
4" Bedding Material Aggregate No.25 or 26 Req'd. Above
12" Bedding Material Aggregate No.57 Wrapped In
Geotextile Drainage Fabric
268' - 42" Conc.Pipe Req'd.(2 Lines of 134' Each)
Inv.(In) = 240.2'; Inv. (out) = 239.5'
Inv.(In) = 240.2'; Inv. (out) = 239.5'
4" Bedding Material Aggregate No.25 or 26 Req'd. Above
12" Bedding Material Aggregate No.57 Wrapped In
Geotextile Drainage Fabric
Retrofit Existing 48" Corrugated Metal Pipes With
166'-42" HDPE (83' Each Line)
Remove Existing Endwall
Connect Retrofit Pipe to Concrete Pipe (See Sheet 2.1(3) for Detail)

5(1)-17
Special Design Endwall, See Sheet 2.1(1)
Remove Existing Endwall
100 Sq.Tds.Standard EC-3 Type B Culvert Outlet Protection Required

Sheet 5(2)

5(2)-1
1 - St'd.DI-3B Req'd.
L = 14'; H = 3.9'; Inv.= 257.4'
(Connect 1-St'd. UD-4 To Structure)

5(2)-1 — 5(2)-2
41' - 15" Conc.Pipe Req'd.(3.1' Cover)
Inv.(In) = 257.4'; Inv. (out) = 257.0'

5(2)-2
1 - St'd.DI-3B Req'd.
L = 8'; H = 4.8'; Inv.= 256.7'
(Connect 1-St'd. UD-4 To Structure)

5(2)-2 — 5(2)-14
232' - 15" Conc.Pipe Req'd.(3.4' Cover)
Inv.(In) = 256.7'; Inv. (out) = 251.5'

5(2)-3
1 - St'd.DI-3BB Req'd.
L = 12'; H = 11.0'; Inv.= 239.1'
(Connect 1-St'd. UD-4 To Structure)

5(2)-3 — 5(2)-14
123' - 18".Conc.Pipe Req'd.(15.5' Cover)
Inv.(In) = 239.1'; Inv. (out) = 238.5'
(650' Radius With Open Joint-Using 8' Pipe Joint Lengths).
Joints Are To Be Opened A Maximum of 25% of The
Spigot or Tongue Length.

5(2)-4
1 - St'd.DI-3B Req'd.
L = 8'; H = 7.2' ; Inv.= 239.7'

5(2)-4 — 5(2)-3
124' - 15" Conc.Pipe Req'd.(9.6' Cover)
Inv.(In) = 239.7'; Inv.(out) = 239.1'

5(2)-5
1 - St'd.DI-3B Req'd.
L = 4'; H = 5.2' ; Inv.= 240.6'

5(2)-5 — 5(2)-4
87' - 15" Conc.Pipe Req'd.(5.8' Cover)
Inv.(In) = 240.6'; Inv.(out) = 239.7'

5(2)-6
1 - St'd.DI-3C Req'd.
L = 6'; H = 4.4' ; Inv.= 241.2'
(Connect 1-St'd. CD-2 and 2-St'd. UD-4 To Structure)

5(2)-6 — 5(2)-5
61' - 15" Conc.Pipe Req'd.(3.8' Cover)
Inv.(In) = 241.2'; Inv. (out) = 240.6'

5(2)-7
1 - St'd.DI-3B Req'd.
L = 6'; H = 3.9' ; Inv.= 241.8'

5(2)-7 — 5(2)-6
60' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 241.8'; Inv. (out) = 241.2'

5(2)-8
1 - St'd.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 239.6'

5(2)-8 — 5(2)-9
73' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 239.6'; Inv. (out) = 239.3'

COMMONWEALTH OF VIRGINIA
DAVID JOHN MAHONEY
Lic. No. 020798
PROFESSIONAL ENGINEER

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A			2.1(1)

$TIME$STAMP$