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 5(2) (Continued)

5(2)-9
1 - Std.DI-3B Req'd.
L = 6'; H = 4.0'; Inv.= 239.3'

5(2)-9 — 6-9
68' - 15" Conc.Pipe Req'd.(2.6' Cover)
Inv.(In) = 239.3'; Inv. (out) = 238.9'

5(2)-10
1 - Std.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 242.5'
(Connect 1-Std. UD-4 To Structure)

5(2)-10 — 5(2)-11
148' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 242.5'; Inv. (out) = 241.4'

5(2)-11
1 - Std.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 241.4'
(Connect 1-Std. UD-4 To Structure)

5(2)-11 — 5(2)-12
97' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 241.4'; Inv. (out) = 240.8'

5(2)-12
1 - Std.DI-3B Req'd.
L = 6'; H = 4.2'; Inv.= 240.8'

5(2)-12 — EX.5(2)-13
92' - 15" Conc.Pipe Req'd.(3.9' Cover)
Inv.(In) = 240.8'; Inv. (out) = 239.1'

EX.5(2)-13
Modify Existing Drop Inlet to
Accept Proposed 15" Conc.Pipes
Remove Existing 15" Pipe

EX.5(2)-13 — 5(2)-14
127' - 15" Conc.Pipe Req'd.(15.5' Cover)
Inv.(In) = 239.1'; Inv. (out) = 238.5'

5(2)-14
1 - Std.DI-3BB Req'd.
L = 6'; H = 16.9'; Inv.= 238.5'
1-Std.SL-1 Safety Slab Req'd.

5(2)-14 — 5(2)-15
54' - 24" Conc.Pipe Req'd.(14.7' Cover)
Inv.(In) = 238.5'; Inv. (out) = 238.2'

5(2)-15
1-Std. 24" ES-1 or 2 Req'd.
6.66 Sq.Yds.Standard EC-3 Type B Culvert Outlet
Protection Required

5(2)-16
Special Design Endwall.See Sheet 2J(2)
Remove Existing Endwall

5(2)-16 — 5(2)-17
658' - 48" Conc.Pipe Req'd.(2 Lines of 329' Each) (47° Skew)
Inv.(In) = 236.9'; Inv. (out) = 235.3'
Inv.(In) = 236.9'; Inv. (out) = 235.3'
4" Bedding Material Aggregate No.25 or 26 Req'd. Above
12" Bedding Material Aggregate No.57 Wrapped In
Geotextile Drainage Fabric
450' - 42" Conc.Pipe Req'd.(2 Lines of 225' Each)
Inv.(In) = 237.5'; Inv. (out) = 235.8'
Inv.(In) = 237.4'; Inv. (out) = 235.8'
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
208'-42" HDPE (104' Each Line)
Remove Existing Endwall
Connect Retrofit Pipe to Concrete Pipe (See Sheet 2J(3) For Details)

5(2)-17
Special Design Endwall.See Sheet 2J(2)
100 Sq.Yds.Standard EC-1 Class A1 Required
Type B Installation

Sheet 6

6-2
1 - Std.DI-3B Req'd.
L = 14'; H = 3.9'; Inv.= 261.1'

6-2 — 6-3
102' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 261.1'; Inv. (out) = 260.6'

6-3
1 - Std.DI-7 Req'd.
Grate A ,Type III Req'd.
H = 4.0' ; Inv.= 260.3'

6-3 — 6-8
79' - 15" Conc.Pipe Req'd.(5.6' Cover)
Inv.(In) = 260.3'; Inv. (out) = 259.5'

6-4
1 - Std.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 260.7'
(Connect 1-Std.UD-4 to Structure)

6-4 — 6-8
107' - 15" Conc.Pipe Req'd.(5.5' Cover)
Inv.(In) = 260.7'; Inv. (out) = 259.6'

6-5
1 - Std.DI-3BB Req'd.
L = 14'; H = 8.6'; Inv.= 256.0'

6-5 — 7(2)-1
108' - 18" Conc.Pipe Req'd.(5.2' Cover)
Inv.(In) = 256.0'; Inv. (out) = 254.8'
(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.

6-6
1 - Std.DI-7 Req'd.
Grate A ,Type III Req'd.
H = 5.8' ; Inv.= 257.2'

6-6 — 6-5
95' - 18" Conc.Pipe Req'd.(4.9' Cover)
Inv.(In) = 257.2'; Inv. (out) = 256.3'

6-7
1 - Std.DI-3B Req'd.
L = 14' ; H = 7.9' ; Inv.= 258.0'
(Connect 1-Std.UD-4 to Structure)

6-7 — 6-6
43' - 18" Conc.Pipe Req'd.(6.5' Cover)
Inv.(In) = 258.0'; Inv. (out) = 257.5'

6-8
1 - Std.DI-3B Req'd.
L = 16' ; H = 7.3' ; Inv.= 259.2'
(Connect 1-Std.UD-4 to Structure)

6-8 — 6-7
92' - 15" Conc.Pipe Req'd.(6.2' Cover)
Inv.(In) = 259.2'; Inv. (out) = 258.3'

6-9
1 - Std.DI-3B Req'd.
L = 6' ; H = 4.1' ; Inv.= 238.9'

6-9 — 6-10
67' - 15" Conc.Pipe Req'd.(2.6' Cover)
Inv.(In) = 238.9'; Inv. (out) = 238.6'

6-10
1 - Std.DI-3B Req'd.
L = 6'; H = 4.1'; Inv.= 238.6'

6-10 — 6-11
63' - 15" Conc.Pipe Req'd.(2.6' Cover)
Inv.(In) = 238.6'; Inv. (out) = 238.3'

6-11
1 - Std.DI-3B Req'd.
L = 4'; H = 4.2'; Inv.= 238.2'

6-11 — 7(2)-4
282' - 18" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 238.2'; Inv. (out) = 236.7'

6-13
1 - Std.DI-7 Req'd.
Grate A ,Type III Req'd.
H = 3.1' ; Inv.= 260.9'

6-13 — 5(1)-1
150' - 15" Conc.Pipe Req'd.(4.1' Cover)
Inv.(In) = 260.9'; Inv. (out) = 258.7'

6-14
1 - Std.DI-3B Req'd.
L = 14'; H = 3.9'; Inv.= 262.6'
(Connect 1-Std.UD-4 to Structure)

6-14 — 6-13
56' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 262.6'; Inv. (out) = 261.2'

6-15
1 - Std.DI-3B Req'd.
L = 12'; H = 3.9'; Inv.= 263.8'
(Connect 1-Std.UD-4 to Structure)

6-15 — 6-16
62' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 263.8'; Inv. (out) = 261.6'

6-16
1 - Std.DI-7 Req'd.
Grate A ,Type III Req'd.
H = 3.1'; Inv.= 261.3'

6-16 — 6-17
49' - 15" Conc.Pipe Req'd.(4.1' Cover)
Inv.(In) = 261.3'; Inv. (out) = 261.0'

6-17
1 - Std.DI-3B Req'd.
L = 6'; H = 5.8'; Inv.= 260.5'
(Connect 1-Std. UD-4 To Structure)

6-17 — 7(1)-2
203' - 15" Conc.Pipe Req'd.(4.4' Cover)
Inv.(In) = 260.5'; Inv. (out) = 253.7'

6-18
1 - Std.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 263.2'

6-18 — 6-17
125' - 15" Conc.Radial Pipe Req'd.(2.7' Cover)
(146' Radius Using 8' Joint Lengths With Full Bevel).
Inv.(In) = 263.2'; Inv. (out) = 262.5'

6-19
1 - Std.DI-3B Req'd.
L = 14'; H = 3.9'; Inv.=261.2'

6-19 — 7(1)-1
123' - 15" Conc.Radial Pipe Req'd.(2.5' Cover)
(148' Radius Using 8' Joint Lengths With Full Bevel).
Inv.(In) = 261.2'; Inv. (out) = 253.8'

6-21
1 - Std.DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 239.8'

6-21 — 6-22
117' - 23" x 14" Conc.Ellip. Pipe Req'd.(2.5' Cover)
Inv.(In) = 239.8'; Inv. (out) = 239.0'

6-22
1 - Std.DI-3B Req'd.
L = 6'; H = 3.8'; Inv.= 239.0'

6-22 — 6-23
226' - 23" x 14" Conc.Ellip. Pipe Req'd.(2.5' Cover)
Inv.(In) = 239.0'; Inv. (out) = 238.1'

6-23
1 - Modified DI-3B Req'd.
L = 4'; H = 3.2'; Inv.= 238.1'
(Modification Due To Less Than Minimum Structure Height)

6-23 — 7(1)-7
76' - 23" x 14" Conc.Ellip. Pipe Req'd.(1.8' Cover)
Inv.(In) = 238.1'; Inv. (out) = 237.8'

6-25
1 - Std.DI-7 Req'd.
Grate A,Type III Req'd.
H = 7.6'; Inv.= 238.4'

6-25 — 7(1)-18
271' - 18" Conc.Pipe Req'd.(6.5' Cover)
Inv.(In) = 238.4'; Inv. (out) = 237.1'

Sheet 7(1)

7(1)-1
1 - Std.DI-3B Req'd.
L = 18'; H = 4.2'; Inv.= 253.5'
(Connect 1-Std. UD-4 To Structure)

7(1)-1 — 7(1)-2
40' - 15" Conc.Pipe Req'd.(2.8' Cover)
Inv.(In) = 253.5'; Inv. (out) = 253.3'

7(1)-2
1 - Std.DI-3B Req'd.
L = 10'; H = 4.6'; Inv.= 253.0'
(Connect 1-Std. UD-4 To Structure)

7(1)-2 — 7(1)-15
71' - 15" Conc.Pipe Req'd.(3.1' Cover)
Inv.(In) = 253.0'; Inv. (out) = 248.9'

7(1)-3
1 - Std.DI-3B Req'd.
L = 12'; H = 3.9'; Inv.= 240.1'
(Connect 1-Std. UD-4 To Structure)

7(1)-3 — 7(1)-4
170' - 15" Conc.Pipe Req'd.(2.5' Cover)
Inv.(In) = 240.1'; Inv. (out) = 237.0'

7(1)-4
1 - Std.DI-3B Req'd.
L = 6'; H = 4.2'; Inv.= 237.0'

7(1)-4 — 7(1)-5
58' - 15" Conc.Pipe Req'd.(2.8' Cover)
Inv.(In) = 237.0'; Inv. (out) = 236.8'

7(1)-5
1 - Std.DI-3C Req'd.
L = 6'; H = 4.6'; Inv.= 236.8'
(Connect 1-Std. CD-2 and 2-Std. UD-4 To Structure)

7(1)-5 — 7(1)-6
58' - 15" Conc. Pipe Req'd.(3.3' Cover)
Inv.(In) = 236.8'; Inv. (out) = 236.5'

7(1)-6
1 - Std.DI-3B Req'd.
L = 4'; H = 5.4'; Inv.= 235.5'

7(1)-6 — 8-12
88' - 18" Conc. Pipe Req'd. (3.0' Cover)
Inv.(In) = 236.5'; Inv. (out) = 236.0'

7(1)-7
1 - Modified DI-3C Req'd.
L = 10'; H = 3.4'; Inv.= 237.6'
Std.IS-1 Inlet Shaping Req'd.
(Modification Due To Less Than Minimum Structure Height)

7(1)-7 — 7(1)-9
144' - 30" x 19" Conc.Ellip. Pipe Req'd.(2.1' Cover)
Inv.(In) = 237.6'; Inv. (out) = 237.0'

7(1)-9
1 - Modified DI-3B Req'd.
L = 6'; H = 3.9'; Inv.= 237.0'
(Modification Due To Less Than Minimum Structure Height)
Std. IS-1 Inlet Shaping Req'd.

7(1)-9 — 7(1)-10
51' - 30" x 19" Conc.Ellip. Pipe Req'd.(2.1' Cover)
Inv.(In) = 237.0'; Inv. (out) = 236.8'

7(1)-10
1 - Modified DI-3C Req'd.
L = 6'; H = 3.9'; Inv.= 236.8'
(Modification Due To Less Than Minimum Structure Height)
Std. IS-1 Inlet Shaping Req'd.

7(1)-10 — 7(1)-11
44' - 30" x 19" Conc.Ellip. Pipe Req'd.(2.3' Cover)
Inv.(In) = 236.8'; Inv. (out) = 236.6'

7(1)-11
1 - Modified DI-3B Req'd.
L = 4'; H = 4.2'; Inv.= 236.6'
(Modification Due To Less Than Minimum Structure Height)
Std. IS-1 Inlet Shaping Req'd.

7(1)-11 — 7(1)-12
87' - 30" x 19" Conc.Ellip. Pipe Req'd.(2.9' Cover)
Inv.(In) = 236.6'; Inv. (out) = 236.3'

7(1)-12
1 - Std.DI-3B Req'd.
L = 4'; H = 4.8'; Inv.= 236.3
Std. IS-1 Inlet Shaping Req'd.

7(1)-12 — 7(1)-13
97' - 24" Conc.Pipe Req'd.(3.1' Cover)
Inv.(In) = 236.3'; Inv. (out) = 235.9'

7(1)-13
1 - Std.DI-3B Req'd.
L = 6'; H = 5.4'; Inv.= 235.9'
Std. IS-1 Inlet Shaping Req'd.

7(1)-13 — 7(1)-14
138' - 24" Conc. Pipe Req'd.(4.2' Cover)
Inv.(In) = 235.9'; Inv. (out) = 235.3'

7(1)-14
1 - Std.DI-3B Req'd.
L = 6'; H = 6.4'; Inv.= 235.3'
Std. IS-1 Inlet Shaping Req'd.

7(1)-14 — 8-23
271' - 30" Conc. Pipe Req'd.(5.5' Cover)
Inv.(In) = 235.3'; Inv. (out) = 234.3'
See Detail Sheet 2J (3)
For Culvert Attachment Detail.

7(1)-15
1 - Std.DI-3BB Req'd.
L = 6'; H = 15.5'; Inv.= 237.4'
1 - Std SL-1 Safety Slab Req'd.

7(1)-15 — 7(1)-18
33' - 18" Conc.Pipe Req'd.(13.8' Cover)
Inv.(In) = 237.4'; Inv.(out) = 237.1'

7(1)-16
8.0 LF Std MH-1 or 2 Req'd.
1-Std.MH-1 Frame and Cover Req'd.
Inv.= 236.1'
Std.IS-1 Inlet Shaping Req'd.

7(1)-16 — EX.7(1)-17
130' - 24" Conc.Pipe Req'd.(6.5' Cover)
Inv.(In) = 236.1'; Inv.(out) = 235.5'

EX.7(1)-17
Modify Existing Structure
Modify to Accept 24" Conc.Pipe
Inv.=235.5'

7(1)-18
7.8 LF Std MH-1 or 2 Req'd.
1-Std.MH-1 Frame and Cover Req'd.
Inv.= 236.8'
Std.IS-1 Inlet Shaping Req'd.

7(1)-18 — 7(1)-16
67' - 24" Conc.Pipe Req'd.(6.3' Cover)
Inv.(In) = 236.8'; Inv.(out) = 236.4'

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

REVISED	FHWA REGION	STATE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
7/17/08	3	VA.		7		2I(2)

IN PROGRESS 102208
NOT FOR CONSTRUCTION

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

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A			2I(2)

$TIME$STAMP$