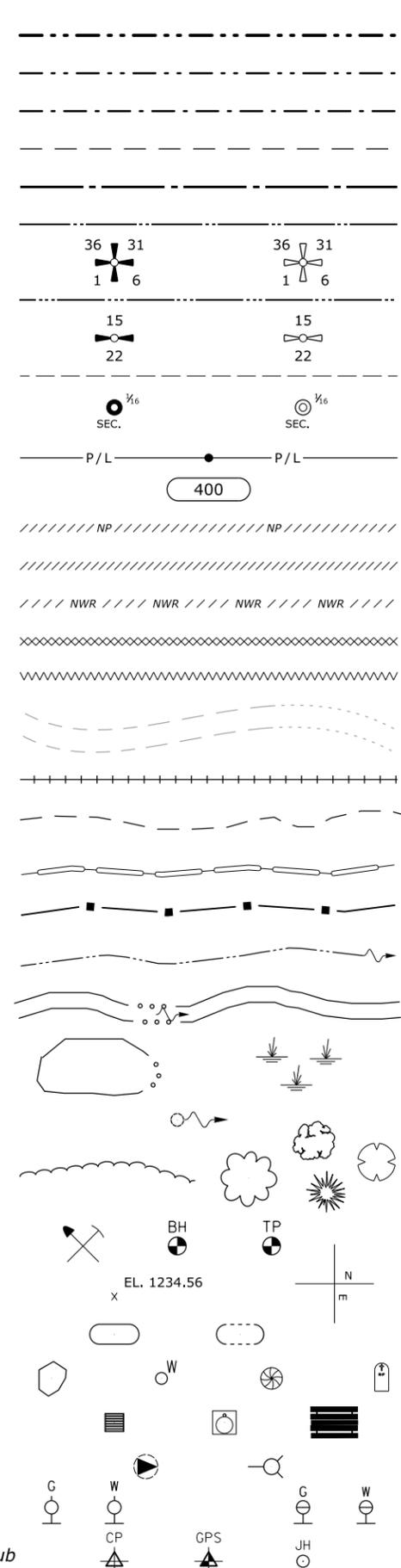


24 August 2011 8:06 AM c:\myfiles\pw\_production\dms18765\F\H\dgnlib [Detail].dgn

$\Delta$	total central angle
$\Delta c$	curve central angle
$\emptyset$	diameter
$\theta_s$	spiral central angle
abut.	abutment
ADT	average daily traffic
AH	ahead
appr.	approach
BK	back
BM	bench mark
BP	balance point
br.	bridge
brg.	bearing
cc or c. to c.	center to center
$\text{€}$	centerline
clr.	clear
CMP	corrugated metal pipe
col.	column
conc.	concrete
conn.	connection
constr. jt.	construction joint
cont.	continuous
CS	point of curve to spiral
ctrs.	centers
CUFT	cubic foot (feet)
culv.	culvert
CUYD	cubic yard(s)
D	diameter
DHV	design hourly volume
dia.	diameter
diag.	diagonal
diaph.	diaphragm
dist.	distance
drwg(s).	drawing(s)
E	east
e	superelevation rate
El. 94.16 ft	elevation with number
elev.	elevation
emb.	embankment
EP	edge of pavement
EQ or eq.	equation
ER	edge of road
EW	edge of water
exc.	excavation
exp. jt.	expansion joint
fin.	finish
flg.	flange
ft2	square foot
ft3	cubic foot (feet)
ftg.	footing
ga.	gage (gauge)
galv.	galvanized
hdl.	headwall
hex.	hexagon
HW	high water
ID	inside diameter
jt.	joint
L	length of curve
lam.	lamination
lat.	latitude
LNFT	linear foot (feet)
long.	longitudinal
LPSM	lump sum
Ls	length of spiral
lt. or LT	left
LW	low water

M.L.	main line
M.P.	mile post
matl.	material
max.	maximum
MGAL	thousand gallon
min.	minimum
mon.	monument
N	north
NC	normal crown
o. c.	on center
o. to o.	out to out
OD	outside diameter
OG	original ground
PC	point of curve
PCC	point of compound curve
PCS	point of curve to spiral
PI	point of intersection
pl.	plate
POC	point on curve
POS	point on spiral
POT	point on tangent
PS	point of tangent to spiral
PSC	point of spiral to curve
PST	point of spiral to tangent
PT	point of tangent
pvmnt.	pavement
R	radius
R.	range
R/W	right-of-way
rdwy.	roadway
reinf.	reinforcement
reqd.	required
rt. or RT	right
rte.	route
S	south
SADT	seasonal average daily traffic
SC	point of spiral to curve
sec.	section
shldr.	shoulder
SLRY	slurry unit
spa.	spacing, spaces or spaced
SQFT	square foot
SQYD	square yard
SRS	point of spiral to reverse spiral
SS	point of spiral to spiral (no curve)
ST	point of spiral to tangent
STA, Sta.	station
std.	standard
stgr.	stringer
stiff.	stiffener
struc.	structural
STS	point of spiral to tangent spiral
sym.	symmetrical
T	tangent distance
T.	township
TBM	temporary bench mark
thd.	thread
TS	point of tangent to spiral
Ts	tangent distance (spiraled curve)
typ.	typical
V	design speed
vph	vehicles per hour
VPI	vertical point of intersection
W	west
yd2	square yard
yd3	cubic yard(s)

National Boundary	
State Boundary	
County Boundary	
City Boundary	
Township or Range Line	
Section Line	
Section Corner (Found, Projected)	
1/4 Section Line	
1/4 Section Corner (Found, Projected)	
1/16 Section Line	
1/16 Section Corner (Found, Projected)	
Property Line w/Found Property Corner	
Parcel Number	
National Park Boundary	
National Forest Boundary	
National Wildlife Refuge Boundary	
BLM Lands Boundary	
Indian Reservation Boundary	
Existing Roadway (Road, Paved, Gravel)	
Railroad	
Trail	
Fiber Roll or Wattle	
Silt Fence	
Intermittent Drainage or Small Creek	
Large Creek or River	
Lake, Pond or Reservoir; Marshland	
Spring or Seep	
Treeline; Individual Trees	
Material Source; Bore Hole; Test Pit	
Spot Elevation; Coordinate Grid Tick	
Above Ground Tank; Underground Tank	
Boulder; Well; Satellite Dish; Grave	
Cooking Grate; Garbage Can; Picnic Table	
Flagpole; Fire Hydrant	
Gas & Water Meter; Gas & Water Valve	
Control Point (Terrestrial and GPS); Jump Hub	



North Arrow	
Slope Stake Limits	
Fence	
Gate with Fence	
Cattleguard	
Guardrail	
Concrete Barrier	
Retaining Wall	
Signs (single, double post; portable)	
Delineators	
Pipe Culvert (arrow shows flow)	
Pipe Culvert with End Section	
Pipe Culvert with Headwall	
Pipe Culvert with Drop Inlet	
Box Culvert	
Underdrain	
Overhead/Above Ground Utilities	
Underground Utilities	
Poles (Power, Telephone, Joint Use, Light, Support w/Anchor)	
Miscellaneous Utility Features	
Building	
Right-of-Way Line with Monument	
Permanent Easement	
Construction Easement	
Riprap	

U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 WESTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

**PLAN SYMBOLS AND ABBREVIATIONS**

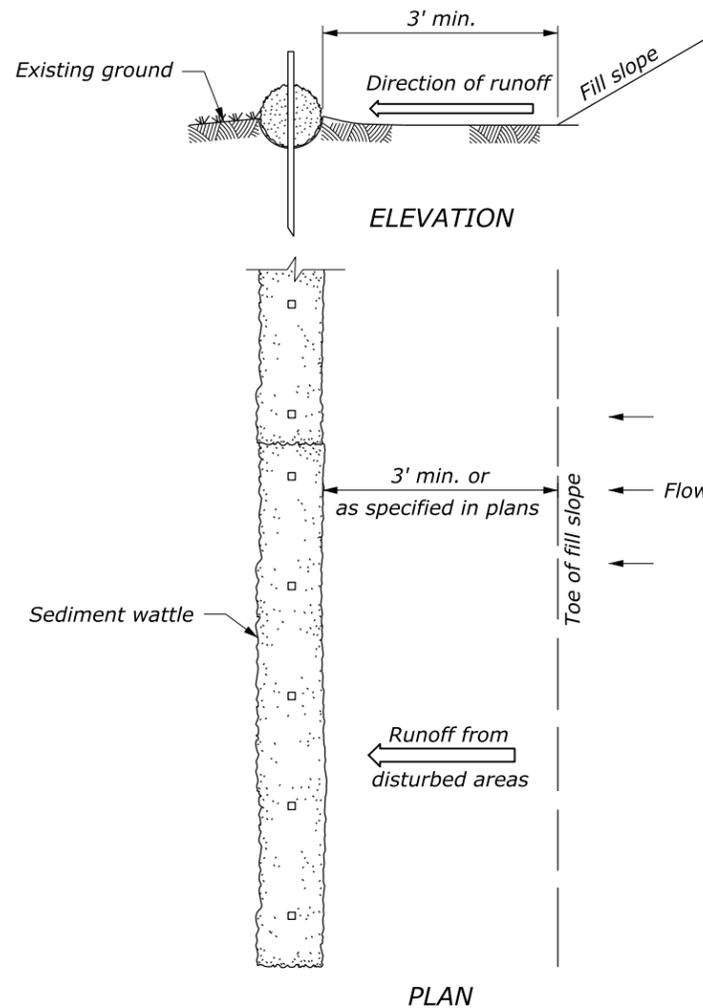
DETAIL APPROVED FOR USE 11/2001  
 REVISSED: 9/2005 1/2007 10/2009 10/2014

DETAIL W101-1

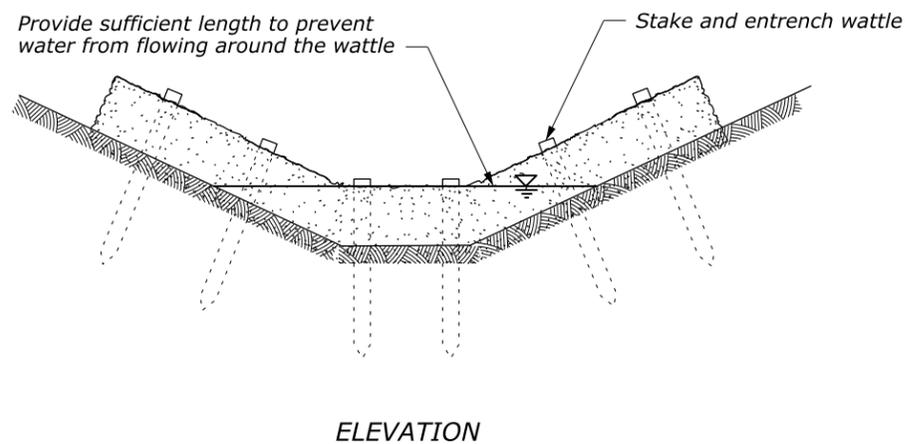
**NOTE:**  
 1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.

NO SCALE



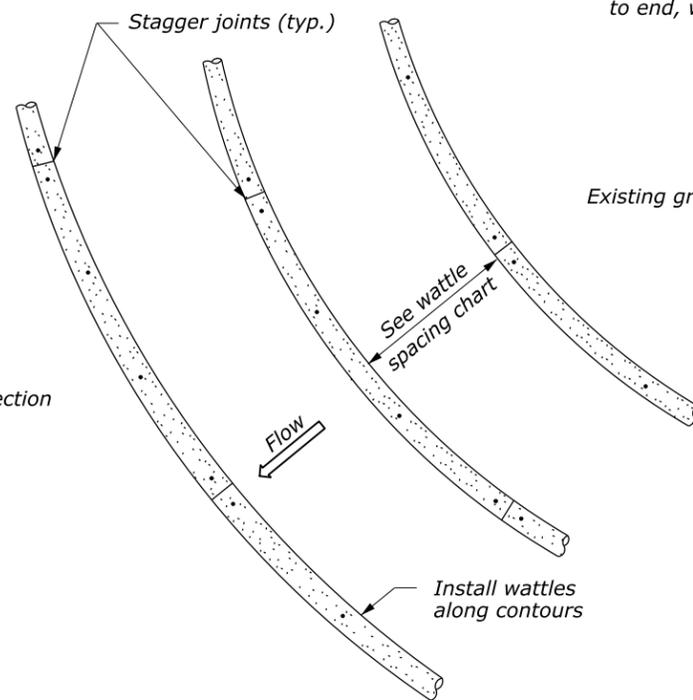


**INSTALLATION BEYOND TOE OF SLOPE**

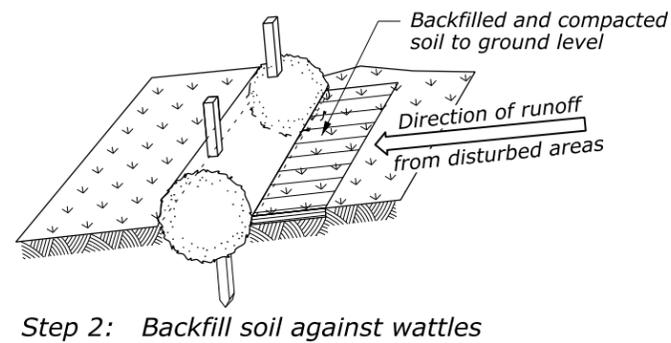
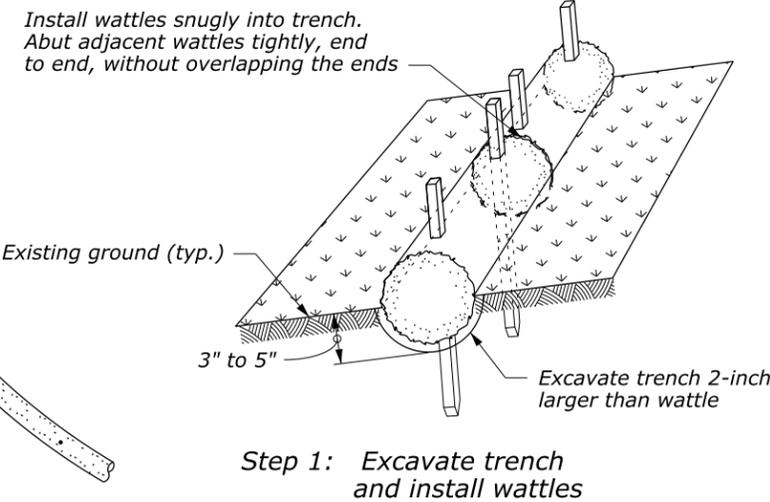
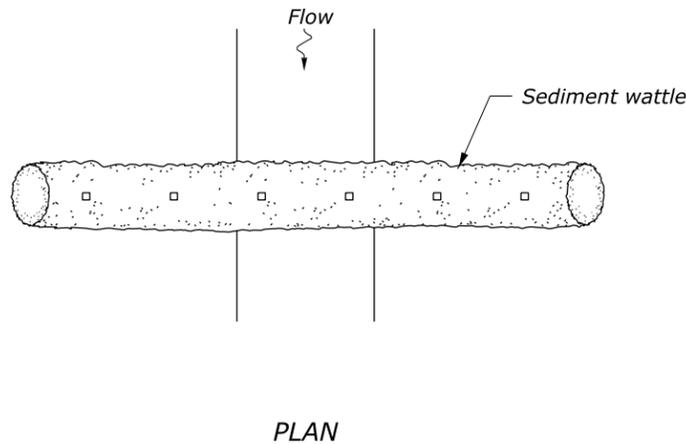


**DRAINAGE DITCH INSTALLATION**

**INSTALLATION ALONG SLOPES**



**PROPERLY STAKED AND ENTRENCHED WATTLE**

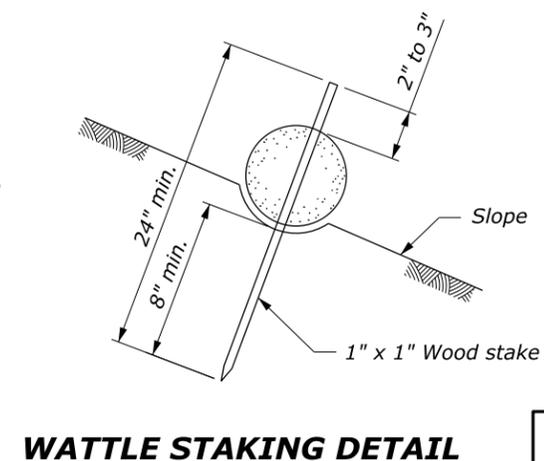


**NOTE:**

1. Drive stakes at each end and at 4-foot spacing until wattle is secure to slope. Do not crush wattle while staking. Live stakes may be used for permanent installations.
2. Use drainage ditch installation only in low flow conditions.

STAKES REQUIRED	
Wattle length (ft)	Stakes required for each wattle
25	8
20	6
12	4

WATTLE SPACING	
Slope	Spacing (ft)
1:4 or flatter	40
1:3	30
1:2	20
1:1	10



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

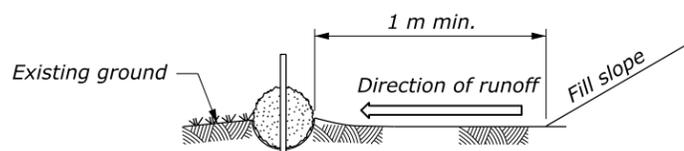
**SEDIMENT WATTLE**

DETAIL APPROVED FOR USE 9/2007

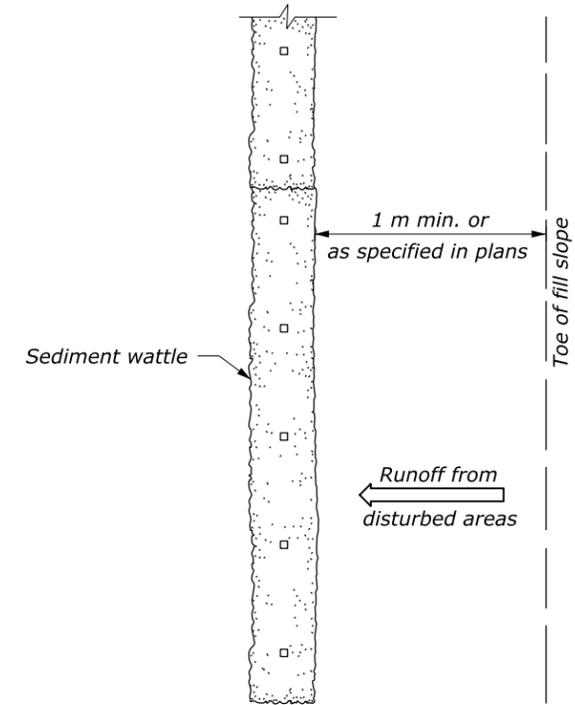
REVISID:

DETAIL  
W157-20

NO SCALE

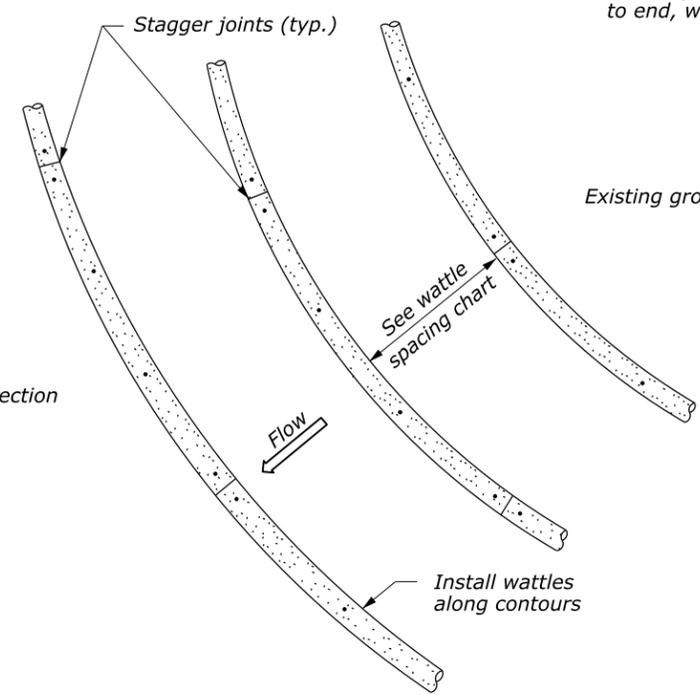


ELEVATION

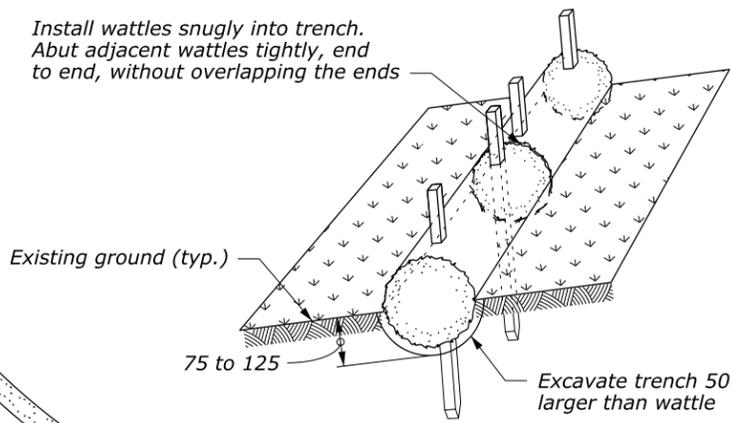


PLAN

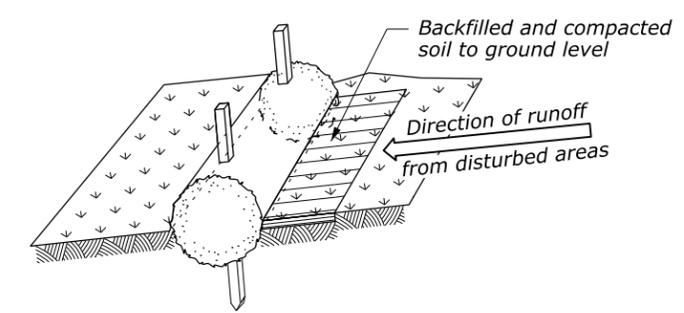
**INSTALLATION BEYOND TOE OF SLOPE**



**INSTALLATION ALONG SLOPES**

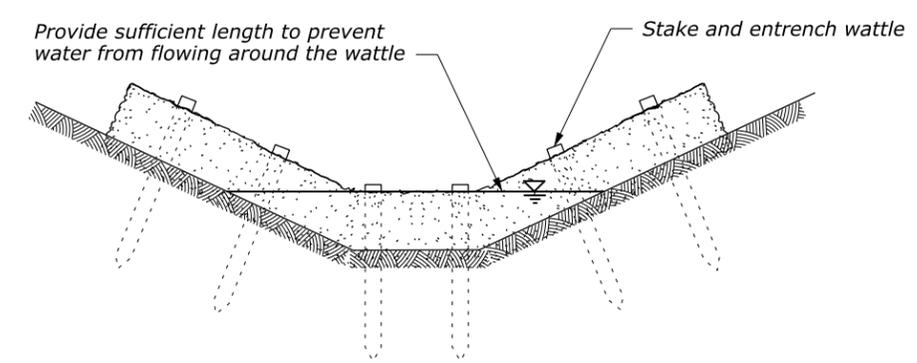


Step 1: Excavate trench and install wattles



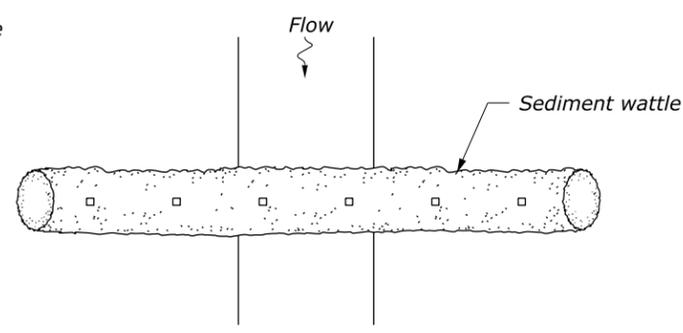
Step 2: Backfill soil against wattles

**PROPERLY STAKED AND ENTRENCHED WATTLE**

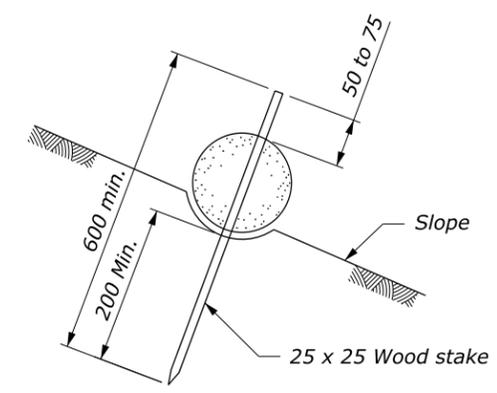


ELEVATION

**DRAINAGE DITCH INSTALLATION**



PLAN



**WATTLE STAKING DETAIL**

**NOTE:**

1. Drive stakes at each end and at 1.2 m spacing until wattle is secure to slope. Do not crush wattle while staking. Live stakes may be used for permanent installations.
2. Use drainage ditch installation only in low flow conditions.
3. Dimensions without units are millimeters.

STAKES REQUIRED	
Wattle length (m)	Stakes required for each wattle
7.5	8
6.0	6
3.5	4

WATTLE SPACING	
Slope	Spacing (m)
1:4 or flatter	12
1:3	9
1:2	6
1:1	3

U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 WESTERN FEDERAL LANDS HIGHWAY DIVISION

METRIC DETAIL

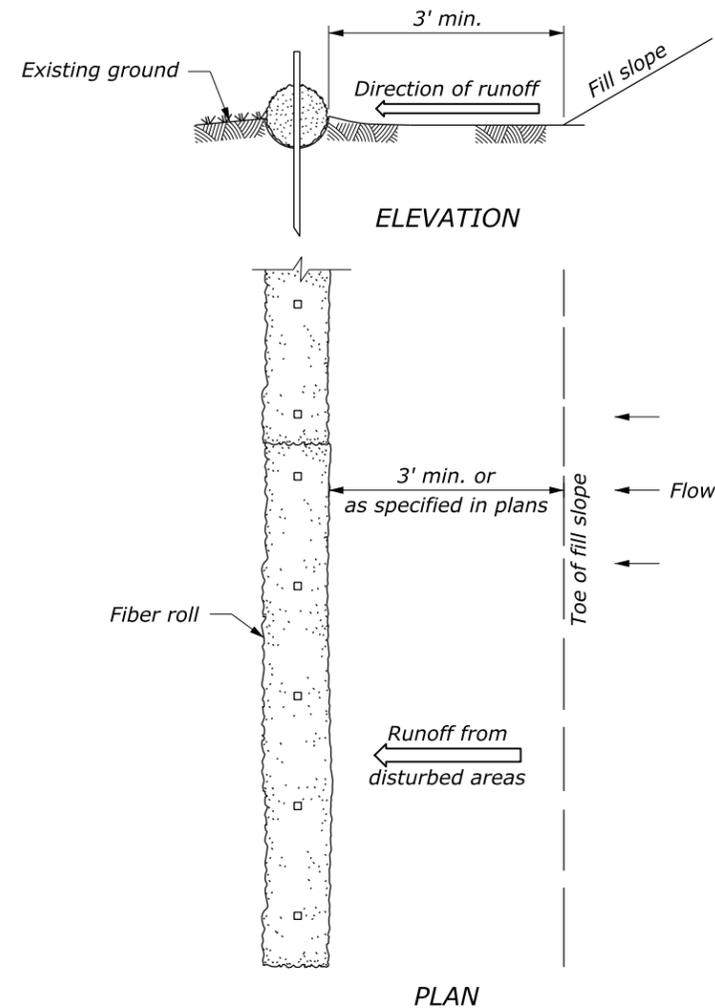
**SEDIMENT WATTLE**

DETAIL APPROVED FOR USE 9/2007

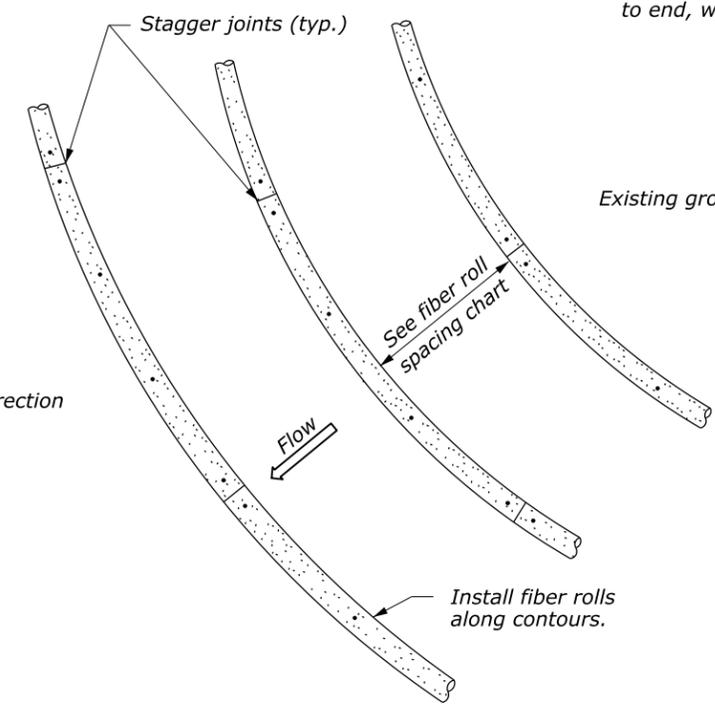
REVISID: \_\_\_\_\_

DETAIL WM157-20

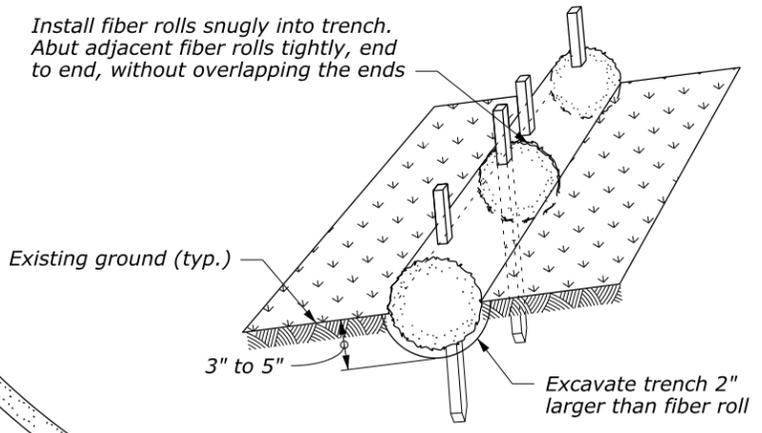
NO SCALE



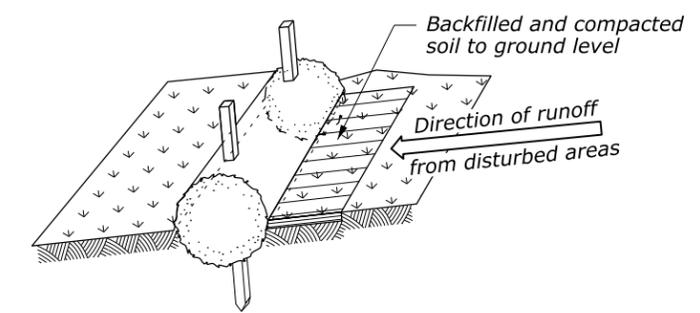
**INSTALLATION BEYOND TOE OF SLOPE**



**INSTALLATION ALONG SLOPES**



**Step 1: Excavate trench and install fiber rolls**



**Step 2: Backfill soil against fiber rolls**

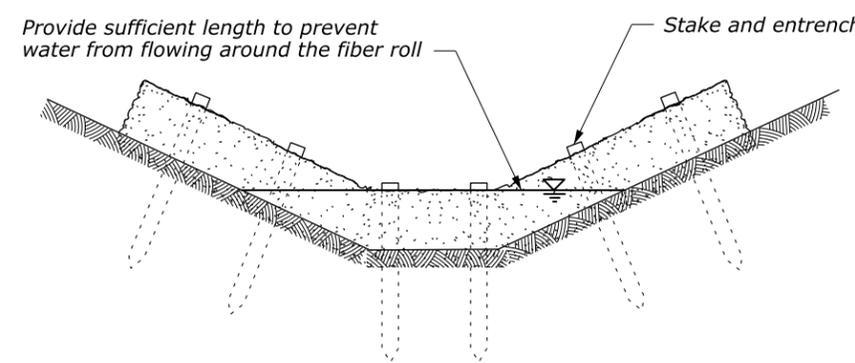
**NOTE:**

1. Drive stakes at each end and at 4' spacing until fiber roll is secure to slope. Do not crush roll while staking. Live stakes may be used for permanent installations.
2. Use drainage ditch installation only in low flow conditions.

STAKES REQUIRED	
Fiber roll length (ft)	Stakes required for each roll
25	8
20	6
12	4

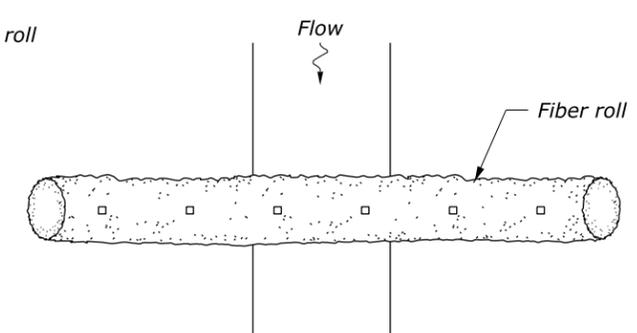
FIBER ROLL SPACING	
Slope	Spacing (ft)
1:4 or flatter	40
1:3	30
1:2	20
1:1	10

**PROPERLY STAKED AND ENTRENCHED FIBER ROLL**

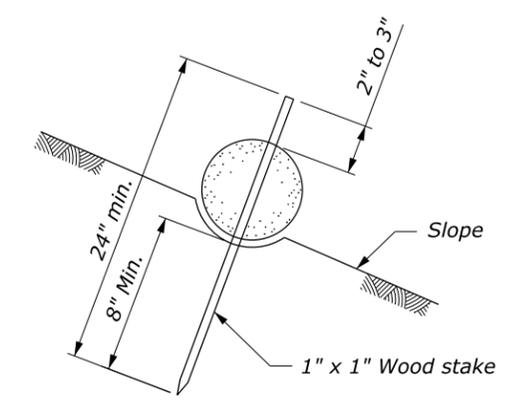


**ELEVATION**

**DRAINAGE DITCH INSTALLATION**



**PLAN**



**FIBER ROLL STAKING DETAIL**

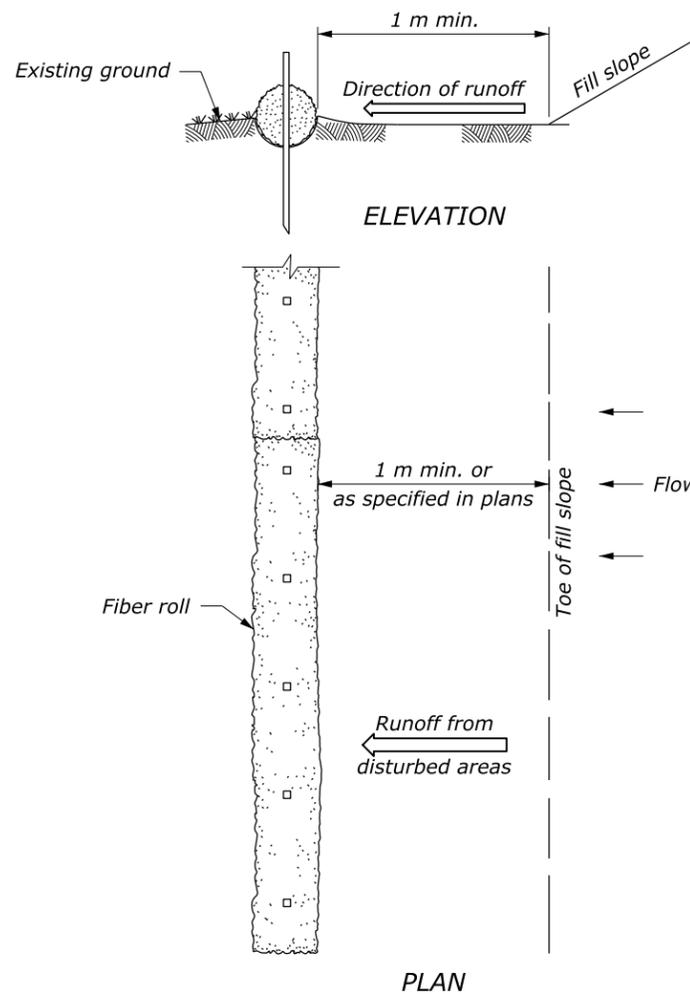
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 WESTERN FEDERAL LANDS HIGHWAY DIVISION

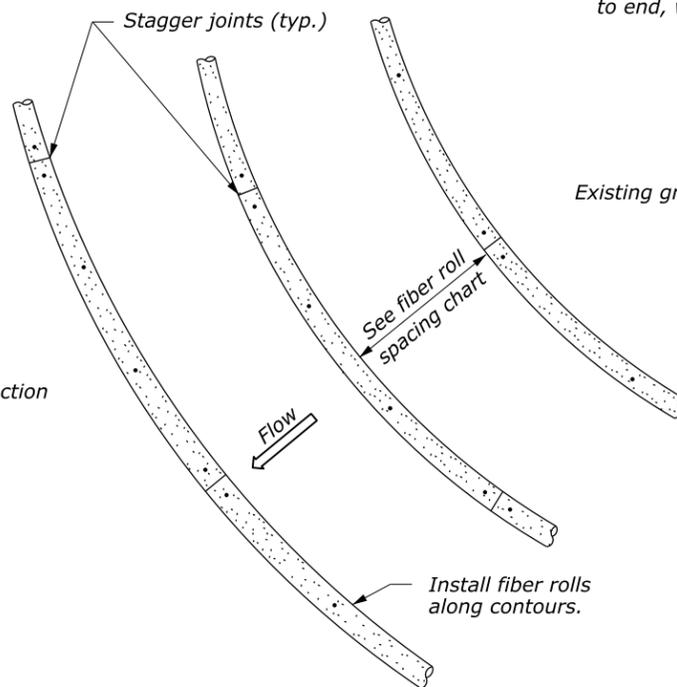
U.S. CUSTOMARY DETAIL

**FIBER ROLL**

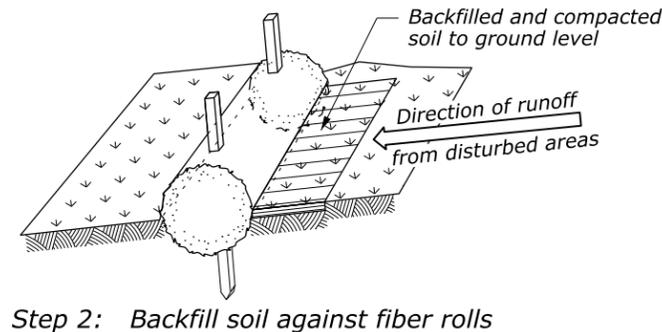
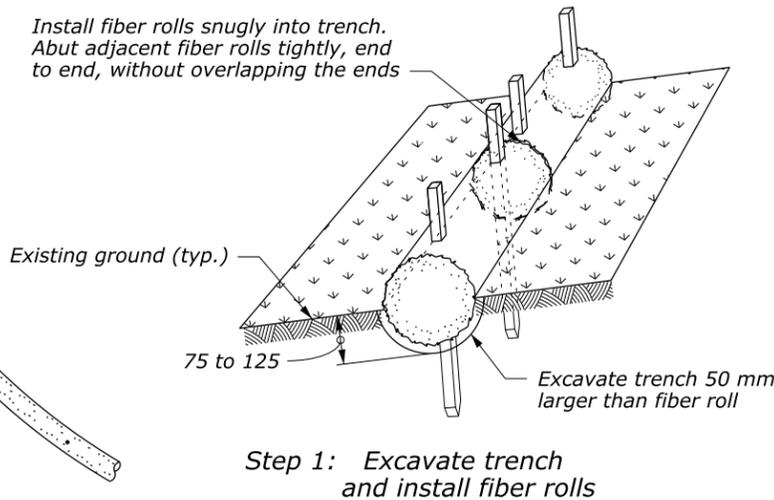
DETAIL APPROVED FOR USE 10/2014	DETAIL
REVISED:	W157-21



**INSTALLATION BEYOND TOE OF SLOPE**



**INSTALLATION ALONG SLOPES**



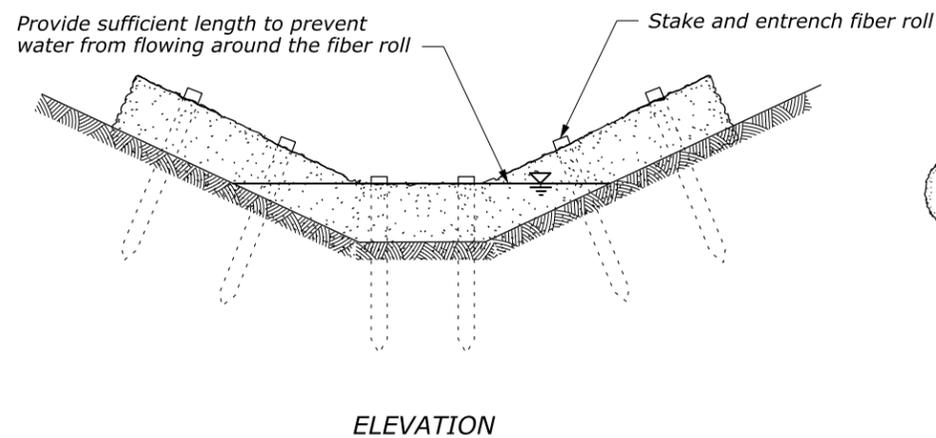
**PROPERLY STAKED AND ENTRENCHED FIBER ROLL**

**NOTE:**

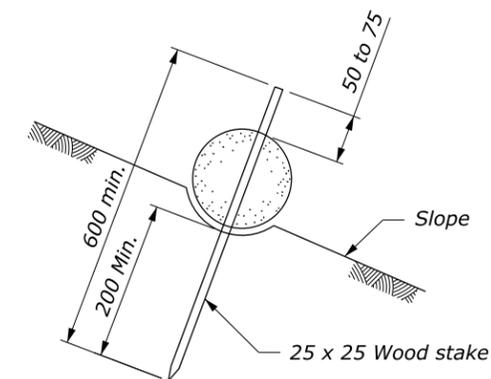
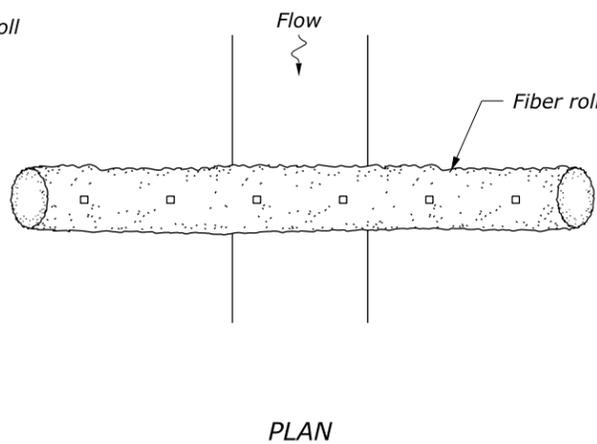
1. Drive stakes at each end and at 1.2 m spacing until fiber roll is secure to slope. Do not crush roll while staking. Live stakes may be used for permanent installations.
2. Use drainage ditch installation only in low flow conditions.
3. Dimensions without units are millimeters.

STAKES REQUIRED	
Fiber roll length (m)	Stakes required for each roll
7.5	8
6.0	6
3.5	4

FIBER ROLL SPACING	
Slope	Spacing (m)
1:4 or flatter	12
1:3	9
1:2	6
1:1	3



**DRAINAGE DITCH INSTALLATION**



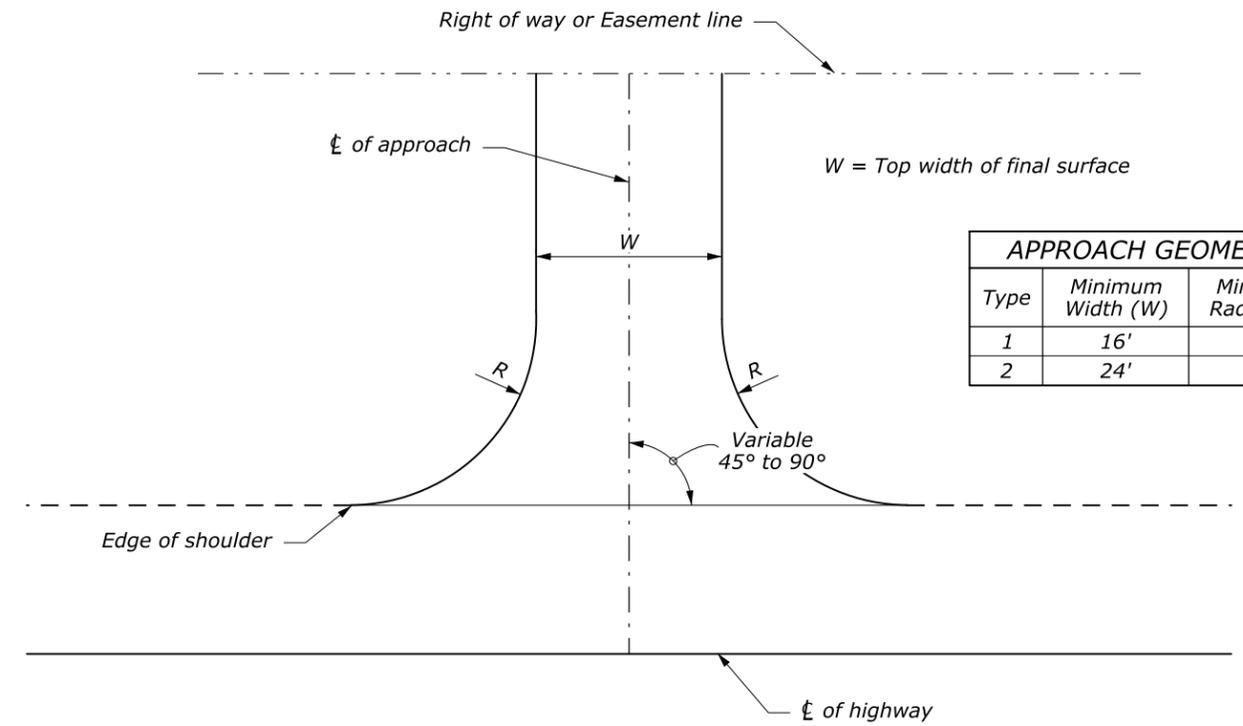
**FIBER ROLL STAKING DETAIL**

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION WESTERN FEDERAL LANDS HIGHWAY DIVISION	
METRIC DETAIL	
<b>FIBER ROLL</b>	
DETAIL APPROVED FOR USE 10/2014	DETAIL
REVISED:	WM157-21

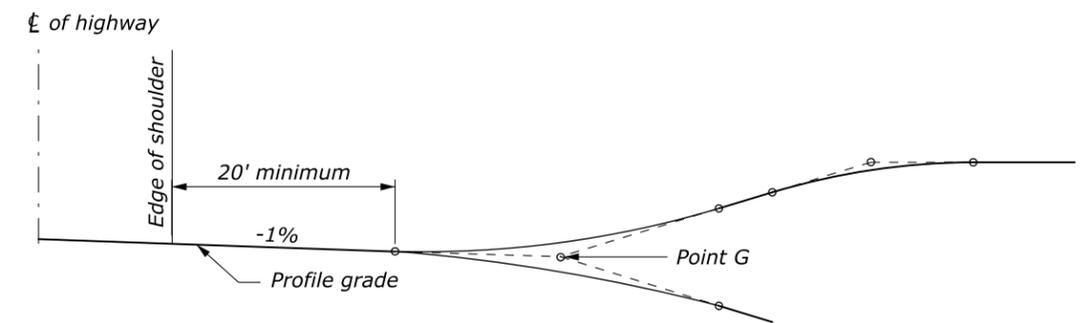
**NOTE:**

1. **GRADING REQUIREMENTS:** Construct side slopes of finish approaches compatible with adjacent roadway construction.
2. **PAVEMENT STRUCTURE REQUIREMENTS:** Extend the surface course to the right-of-way or easement line unless otherwise shown on the plans.
3. Finish approaches to commercial use public roads with same treatment as shown for the adjacent roadbed.
4. Finish other approaches with aggregate base. Provide a surface course of the same treatment as shown for the adjacent roadbed, but do not exceed 1½ inches depth.

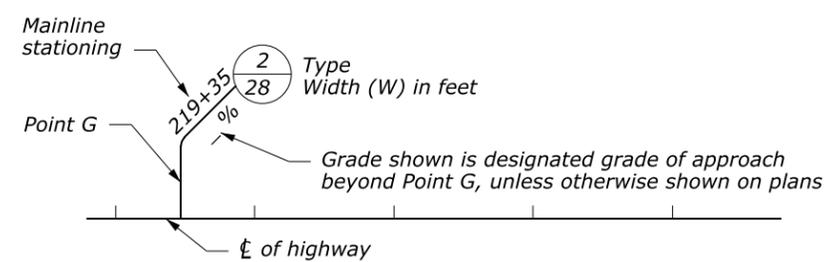


APPROACH GEOMETRY		
Type	Minimum Width (W)	Minimum Radius (R)
1	16'	20'
2	24'	30'

**APPROACHES FOR UNCURBED HIGHWAYS**  
TYPE 1 AND TYPE 2



**APPROACH PROFILE**



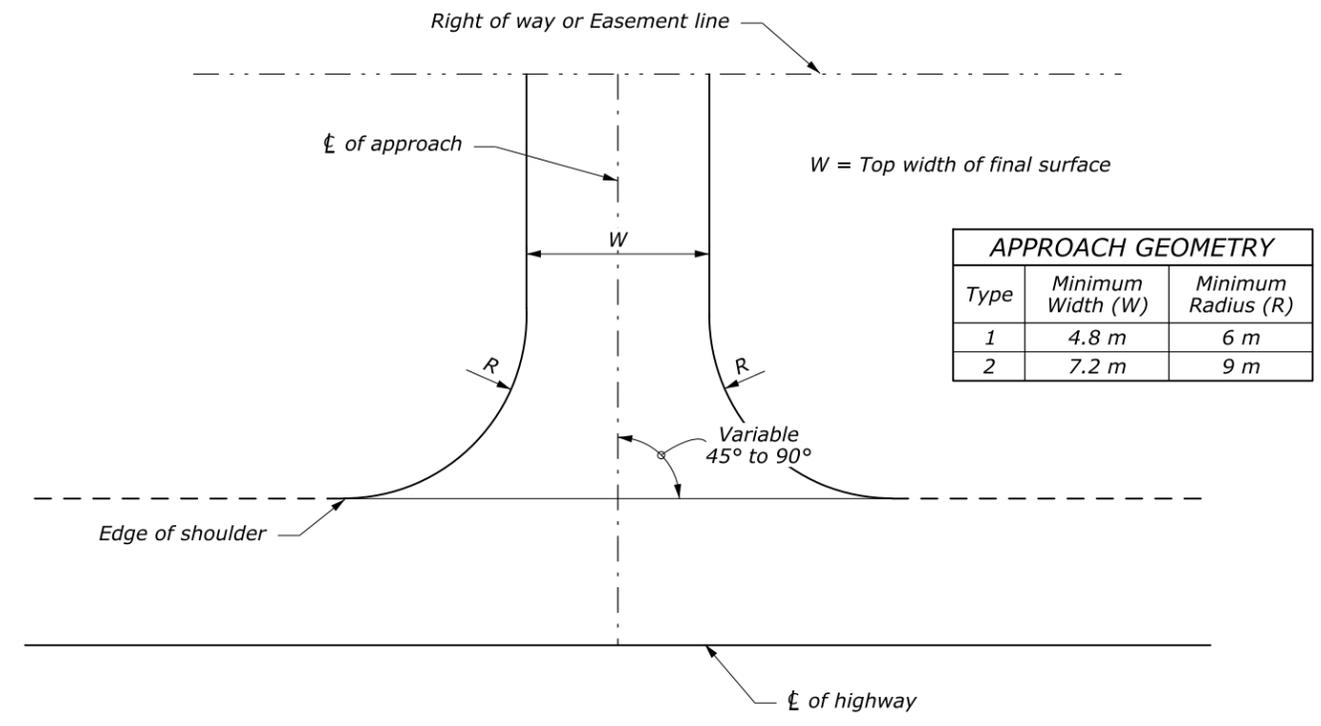
**ROAD APPROACH LOCATIONS ON PLAN SHEETS**

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION WESTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
<b>IDAHO ROAD APPROACH</b>	
DETAIL APPROVED FOR USE 3/2003	DETAIL
REVISED: DRAFT: 11/2014	W200-50

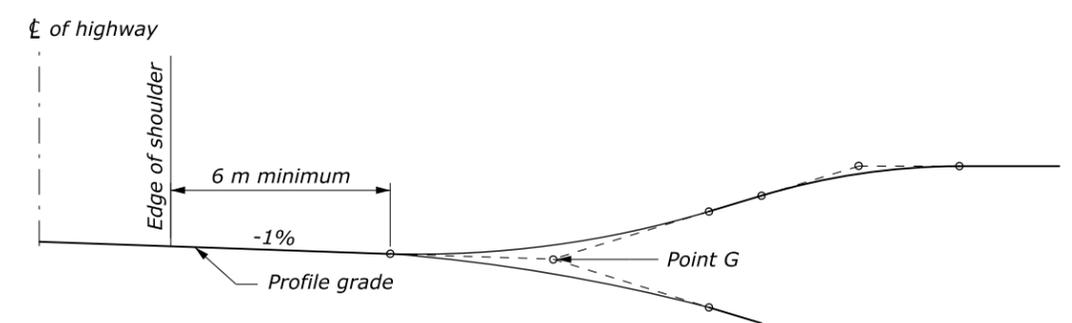
**NOTE:**

1. **GRADING REQUIREMENTS:** Construct side slopes of finish approaches compatible with adjacent roadway construction.
2. **PAVEMENT STRUCTURE REQUIREMENTS:** Extend the surface course to the right-of-way or easement line unless otherwise shown on the plans.
3. Finish approaches to commercial use public roads with same treatment as shown for the adjacent roadbed.
4. Finish other approaches with aggregate base. Provide a surface course of the same treatment as shown for the adjacent roadbed, but do not exceed 40 mm depth.
5. Dimensions without units are millimeters.

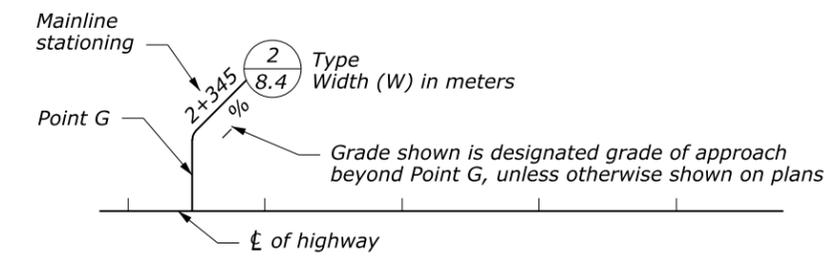


APPROACH GEOMETRY		
Type	Minimum Width (W)	Minimum Radius (R)
1	4.8 m	6 m
2	7.2 m	9 m

**APPROACHES FOR UNCURBED HIGHWAYS**  
TYPE 1 AND TYPE 2



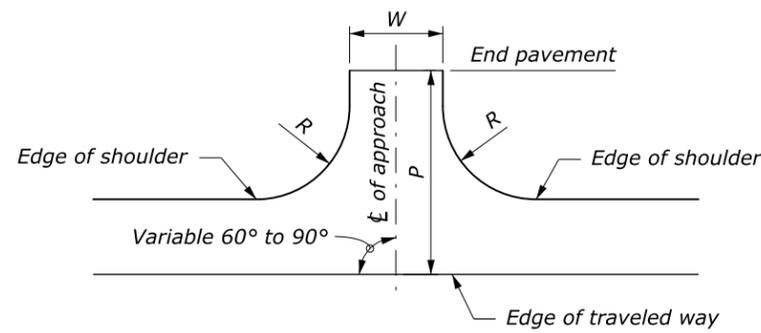
**APPROACH PROFILE**



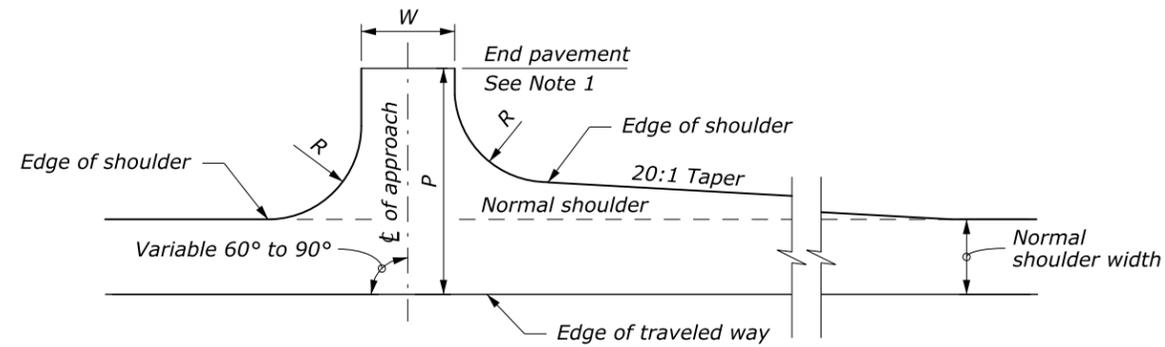
**ROAD APPROACH LOCATIONS ON PLAN SHEETS**

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION WESTERN FEDERAL LANDS HIGHWAY DIVISION	
METRIC DETAIL	
<b>IDAHO</b> <b>ROAD APPROACH</b>	
DETAIL APPROVED FOR USE 3/2003	DETAIL
REVISED: DRAFT: 11/2014	WM200-50



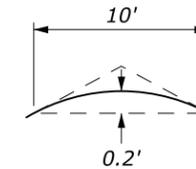
**TYPES 1 & 2**



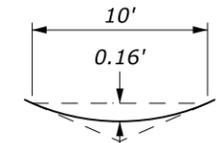
**TYPE 3**

**NOTE:**

1. Finish Type 3 approaches to public roads (county, state and municipalities) and commercial use public or private roads with the same pavement structure as shown for the adjacent roadbed.
2. Finish other approaches with untreated base. Provide a wearing surface of the same treatment as shown for the adjacent roadbed, but limit the depth to 1½" maximum.
3. Construct side slope ratio and degree of finish of approaches compatible with adjacent roadway construction.

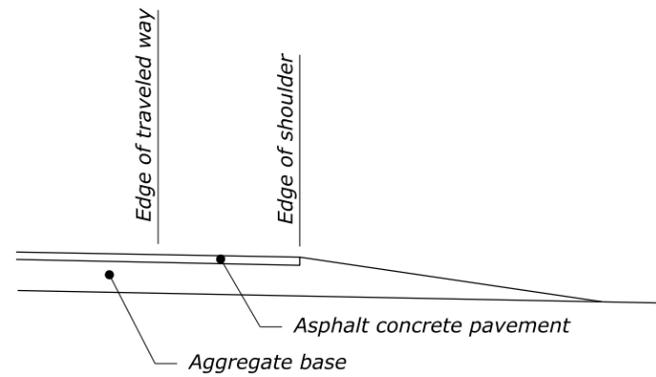


**MAXIMUM CREST**

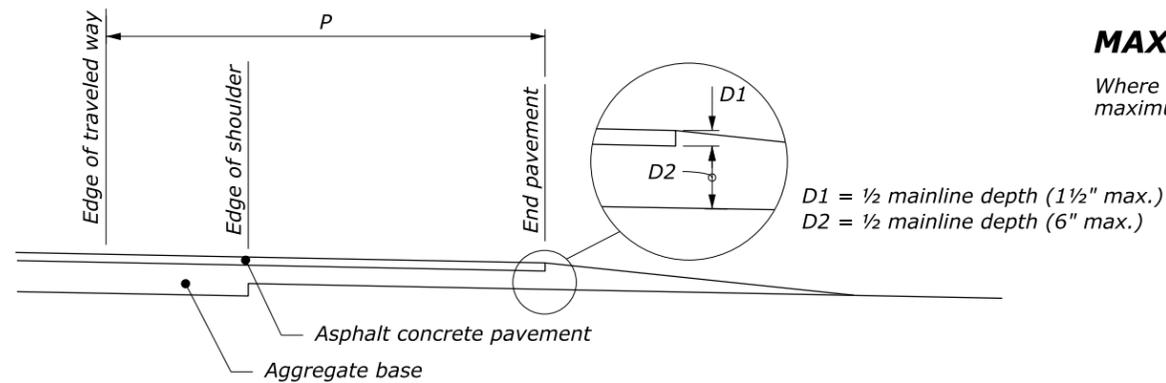


**MAXIMUM SAG**

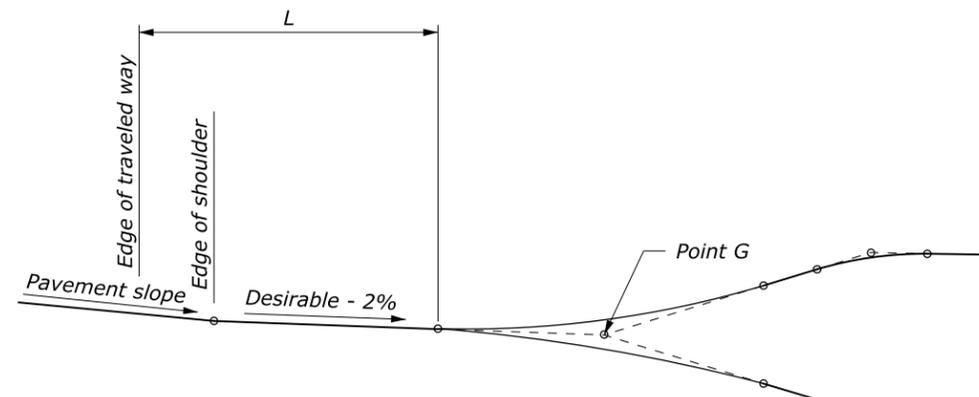
Where approach grades meet without vertical curves, limit the maximum algebraic difference to 8% on crests and 12% on sags.



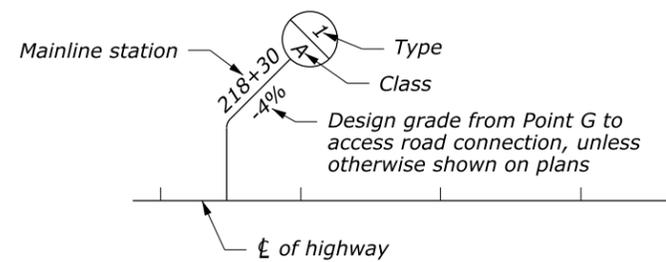
**TYPE 1 APPROACH (UNPAVED)**



**TYPE 2 APPROACH**



**APPROACH PROFILE**



**ROAD APPROACH SYMBOL**

ROAD APPROACHES					
TYPE	CLASS	W	R	L (min.)	P
Single Owner Use					
1	A	16	16	16	N/A
2 or 3	A	16	16	16	16
2 or 3	B	20	16	16	16
Two-Way Multiple Use					
2 or 3	C	26	16	to R/W	to R/W
2 or 3	D	32	30	to R/W	to R/W
Public Road Approach					
3	E	32	55	55	55

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

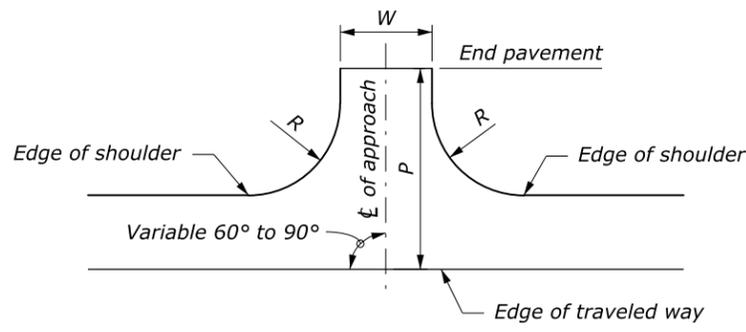
**OREGON  
ROAD APPROACH**

DETAIL APPROVED FOR USE 12/2002	DETAIL
REVISED: DRAFT: 11/2014	W200-70

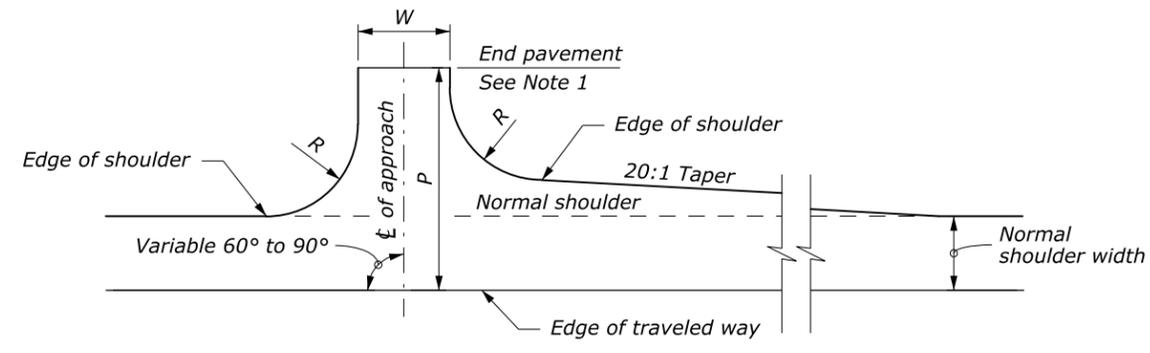
NO SCALE

**NOTE:**

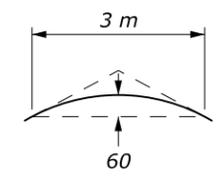
1. Finish Type 3 approaches to public roads (county, state and municipalities) and commercial use public or private roads with the same pavement structure as shown for the adjacent roadbed.
2. Finish other approaches with untreated base. Provide a wearing surface of the same treatment as shown for the adjacent roadbed, but limit the depth to 38 mm maximum.
3. Construct side slope ratio and degree of finish of approaches compatible with adjacent roadway construction.
4. Dimensions without units are millimeters.



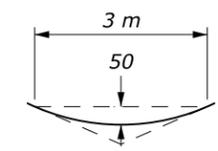
**TYPES 1 & 2**



**TYPE 3**

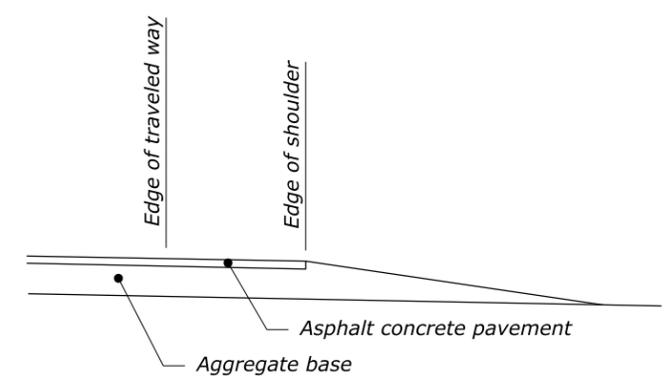


**MAXIMUM CREST**

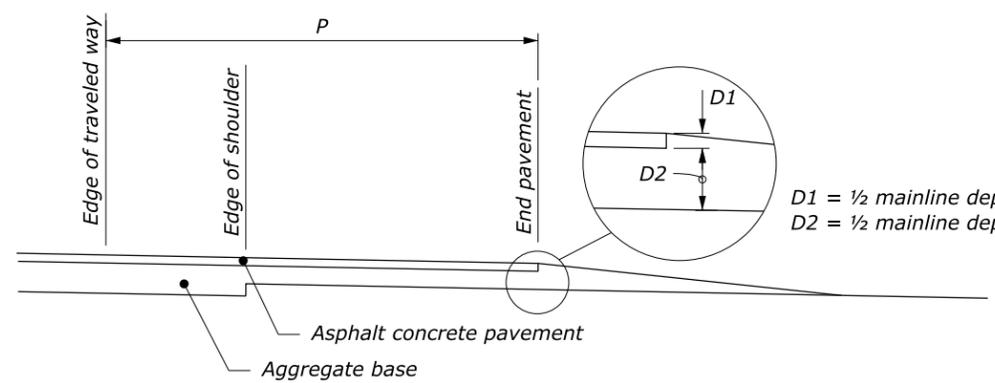


**MAXIMUM SAG**

Where approach grades meet without vertical curves, limit the maximum algebraic difference to 8% on crests and 12% on sags.

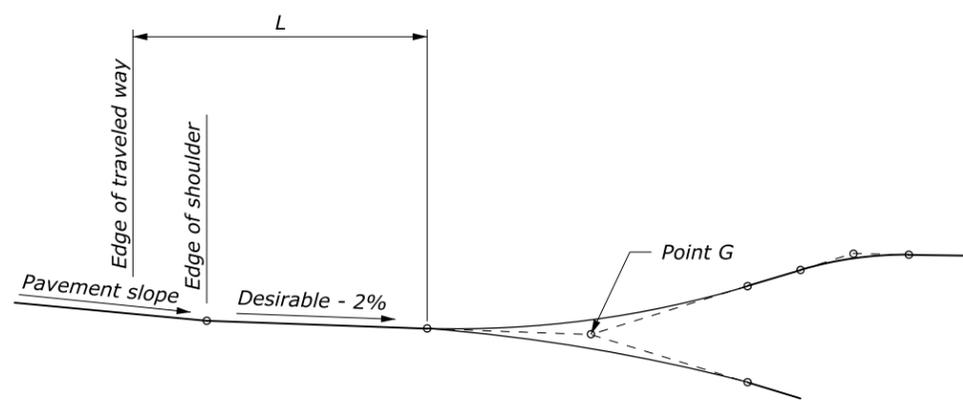


**TYPE 1 APPROACH (UNPAVED)**

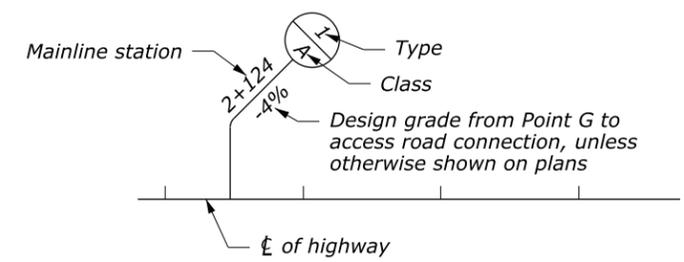


**TYPE 2 APPROACH**

D1 = 1/2 mainline depth (38 mm max.)  
D2 = 1/2 mainline depth (150 mm max.)



**APPROACH PROFILE**



**ROAD APPROACH SYMBOL**

ROAD APPROACHES					
TYPE	CLASS	W	R	L (min.)	P
		Dimensions in Meters			
Single Owner Use					
1	A	4.8	4.8	4.8	N/A
2 or 3	A	4.8	4.8	4.8	4.8
2 or 3	B	6.0	4.8	4.8	4.8
Two-Way Multiple Use					
2 or 3	C	7.8	4.8	to R/W	to R/W
2 or 3	D	9.6	9.0	to R/W	to R/W
Public Road Approach					
3	E	9.6	16.5	16.5	16.5

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

METRIC DETAIL

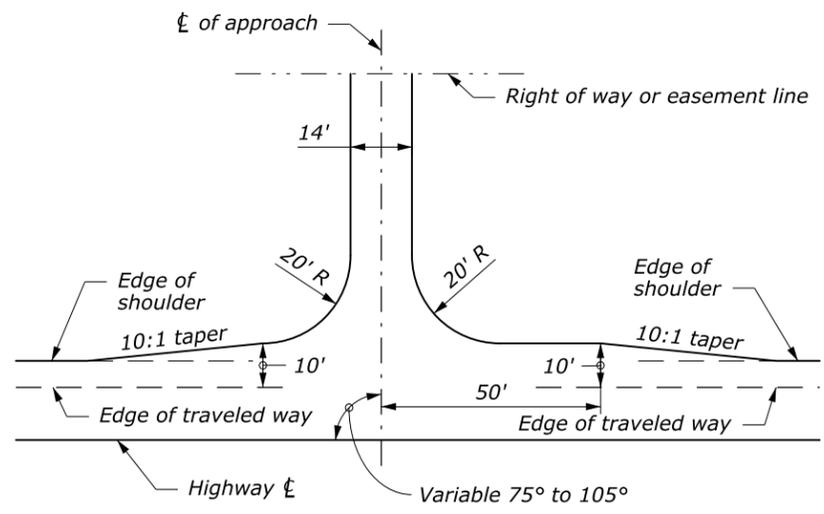
**OREGON**  
**ROAD APPROACH**

DETAIL APPROVED FOR USE 12/2002

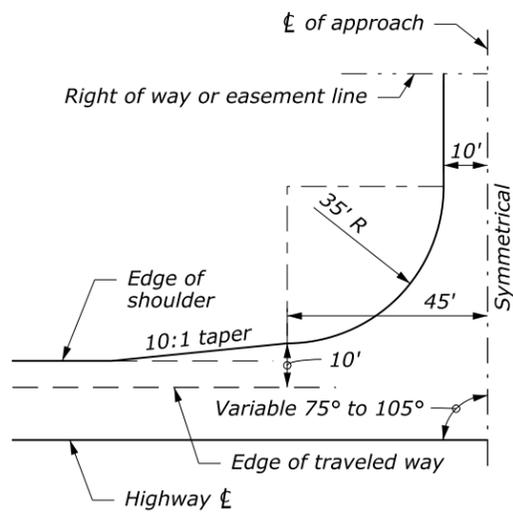
REVISID: 11/2014

DETAIL  
WM200-70

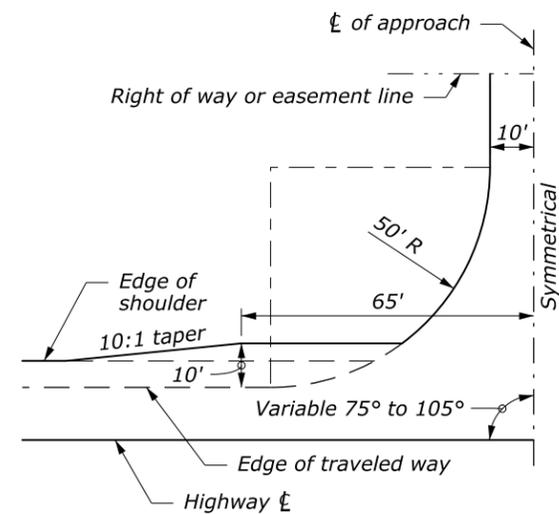
NO SCALE



**PLAN OF TYPE A APPROACH**



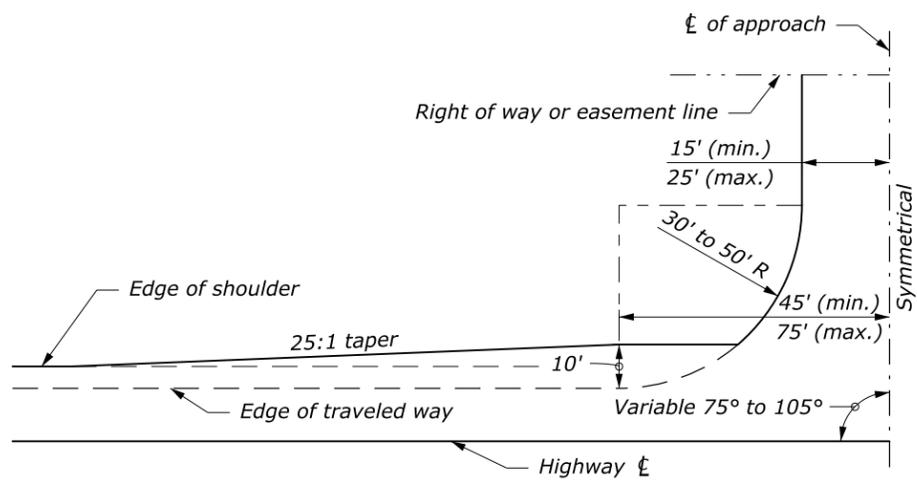
**PLAN OF TYPE B APPROACH**



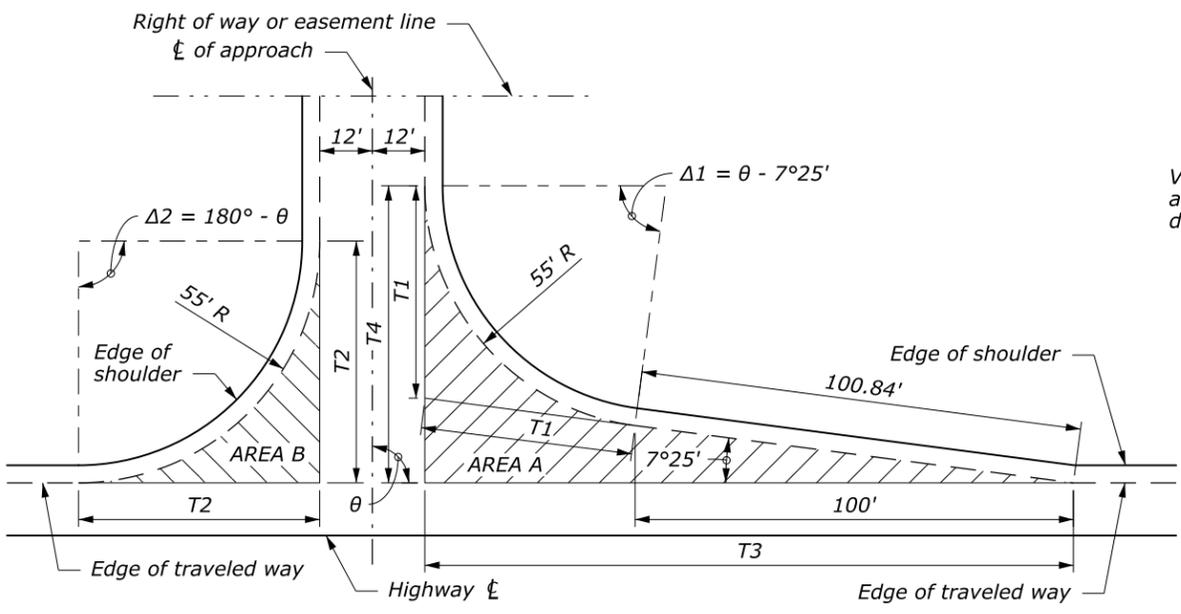
**PLAN OF TYPE C APPROACH**

- NOTE:**
1. Continue approach radius as required if connection to existing alignment of new approach is at an angle.
  2. Finish type D and M approaches with the same treatment as shown for the adjacent roadbed.
  3. Finish other approaches with the same treatment as shown on the adjacent roadbed, except that the surface course shall not exceed 1½ inch depth.
  4. Extend paving to the right-of-way or easement line unless otherwise shown on the plans.
  5. Construct side slope ratios and finish approaches compatible with the adjacent roadway construction.

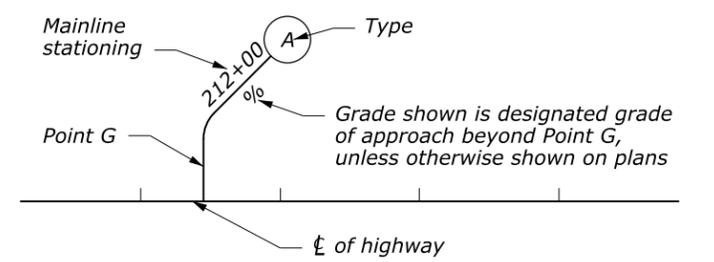
TYPE M INTERSECTION DATA								
SKEW θ	Δ1	Δ2	T1 ft	T2 ft	T3 ft	T4 ft	Area A sqyd	Area B sqyd
75°	67°35"	105°	36.81	71.68	131.74	55.20	157	130
76°	68°35"	104°	37.51	70.40	132.74	55.91	160	125
77°	69°35"	103°	38.21	69.14	133.75	56.64	163	120
78°	70°35"	102°	38.93	67.92	134.77	57.38	166	116
79°	71°35"	101°	39.66	66.72	135.80	58.13	169	111
80°	72°35"	100°	40.39	65.55	136.84	58.90	173	107
81°	73°35"	99°	41.13	64.40	137.89	59.69	176	103
82°	74°35"	98°	41.89	63.27	138.95	60.49	179	99
83°	75°35"	97°	42.65	62.17	140.02	61.31	183	95
84°	76°35"	96°	43.42	61.08	141.10	62.15	187	92
85°	77°35"	95°	44.21	60.02	142.20	63.00	191	88
86°	78°35"	94°	45.00	58.98	143.31	63.88	194	85
87°	79°35"	93°	45.81	57.96	144.44	64.77	198	81
88°	80°35"	92°	46.63	56.95	145.57	65.68	203	78
89°	81°35"	91°	47.46	55.97	146.73	66.61	207	75
90°	82°35"	90°	48.30	55.00	147.90	67.56	211	72
91°	83°35"	89°	49.16	54.05	149.09	68.53	216	69
92°	84°35"	88°	50.03	53.11	150.29	69.52	220	66
93°	85°35"	87°	50.92	52.19	151.52	70.53	225	64
94°	86°35"	86°	51.81	51.29	152.76	71.57	230	61
95°	87°35"	85°	52.73	50.40	154.02	72.63	235	59
96°	88°35"	84°	53.66	49.52	155.30	73.71	240	56
97°	89°35"	83°	54.60	48.66	156.61	74.82	245	54
98°	90°35"	82°	55.56	47.81	157.94	75.95	251	52
99°	91°35"	81°	56.54	46.97	159.29	77.11	257	49
100°	92°35"	80°	57.54	46.15	160.66	78.30	263	47
101°	93°35"	79°	58.55	45.34	162.06	79.51	269	45
102°	94°35"	78°	59.59	44.54	163.49	80.76	275	43
103°	95°35"	77°	60.64	43.75	164.94	82.03	281	42
104°	96°35"	76°	61.71	42.97	166.43	83.34	288	40
105°	97°35"	75°	62.81	42.20	167.94	84.68	295	38



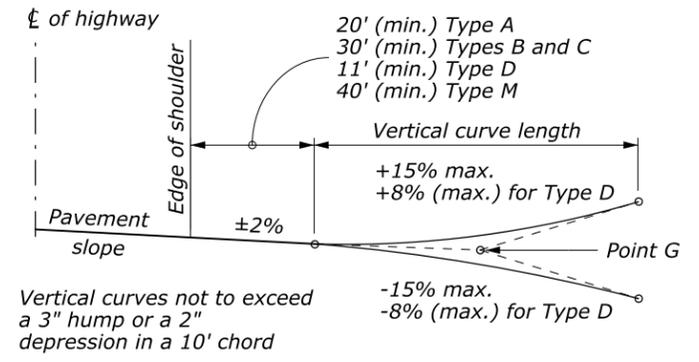
**PLAN OF TYPE D APPROACH**



**PLAN OF TYPE M APPROACH**



**ROAD APPROACH LOCATIONS ON PLAN SHEETS**



**PROFILE OF TYPE A, B, C, D, M APPROACHES**

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 WESTERN FEDERAL LANDS HIGHWAY DIVISION

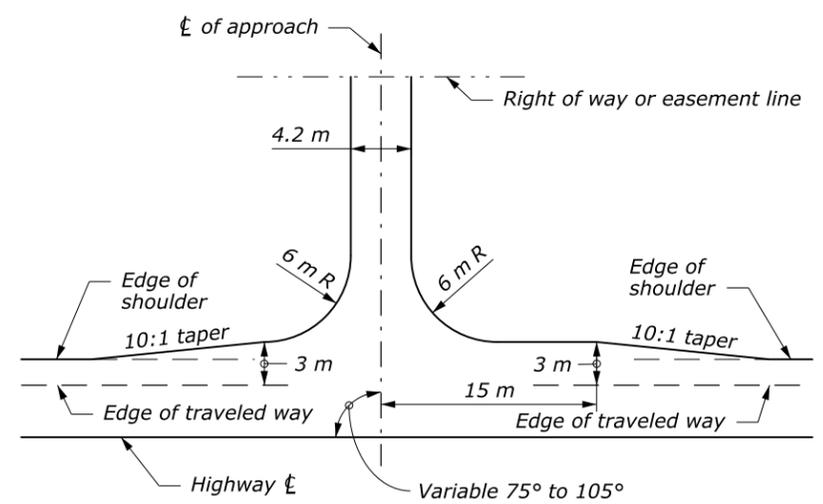
U.S. CUSTOMARY DETAIL

**WASHINGTON ROAD APPROACHES**

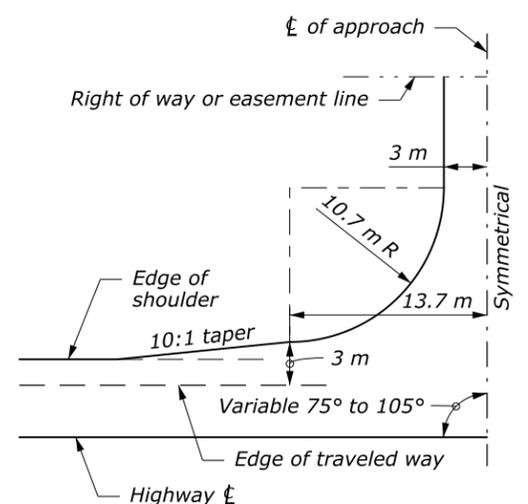
DETAIL APPROVED FOR USE 2/2004

REVISOR: DRAFT: 11/2014

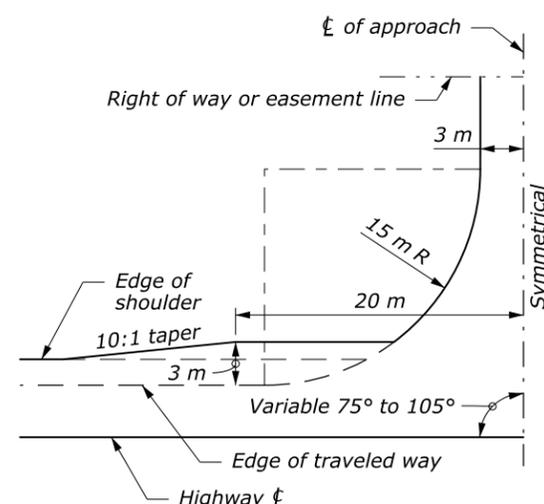
DETAIL W200-80



**PLAN OF TYPE A APPROACH**



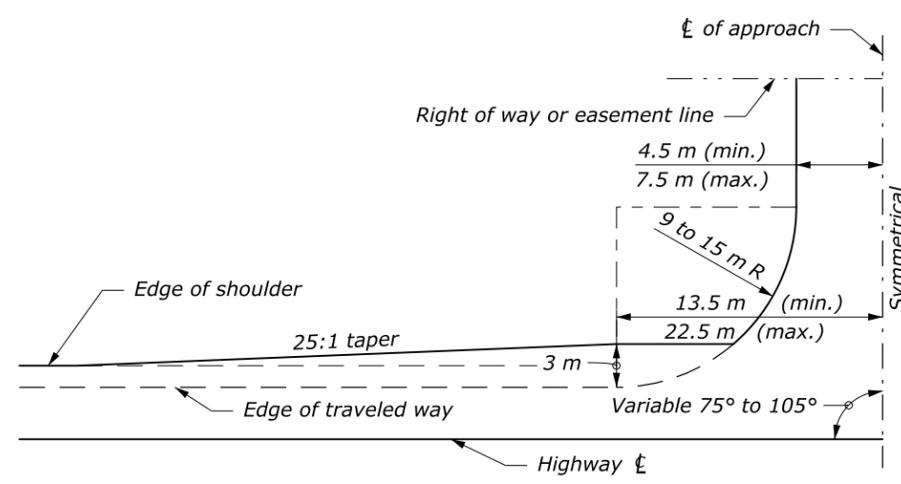
**PLAN OF TYPE B APPROACH**



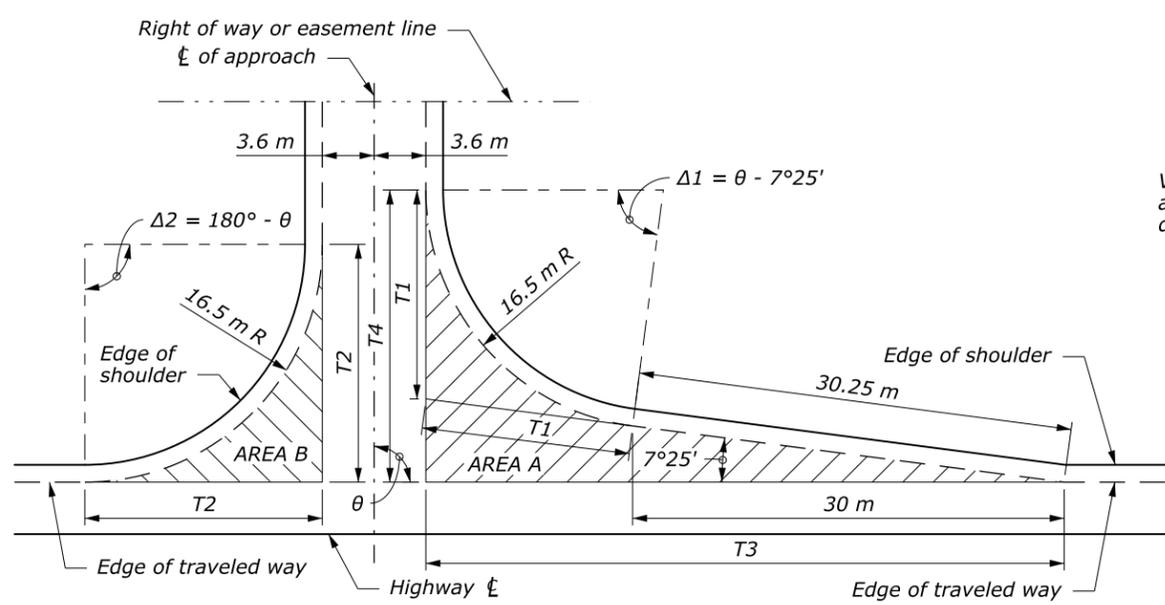
**PLAN OF TYPE C APPROACH**

- NOTE:**
1. Continue approach radius as required if connection to existing alignment of new approach is at an angle.
  2. Finish type D and M approaches with the same treatment as shown for the adjacent roadbed.
  3. Finish other approaches with the same treatment as shown on the adjacent roadbed, except that the surface course shall not exceed 40 mm in depth.
  4. Extend paving to the right-of-way or easement line unless otherwise shown on the plans.
  5. Construct side slope ratios and finish approaches compatible with the adjacent roadway construction.
  6. Dimensions without units are millimeters.

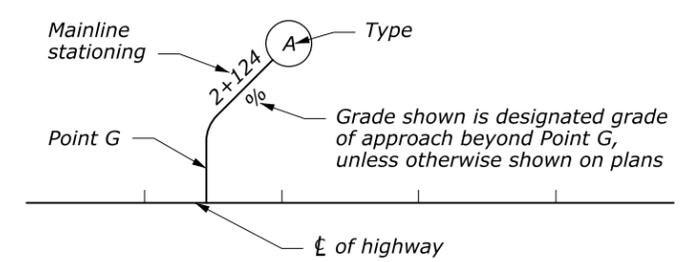
TYPE M INTERSECTION DATA								
SKEW $\theta$	$\Delta 1$	$\Delta 2$	T1 m	T2 m	T3 m	T4 m	Area A m <sup>2</sup>	Area B m <sup>2</sup>
75°	67°35"	105°	11.04	21.50	39.52	16.56	127	105
76°	68°35"	104°	11.25	21.12	39.82	16.77	129	101
77°	69°35"	103°	11.46	20.74	40.13	16.99	132	98
78°	70°35"	102°	11.68	20.38	40.43	17.21	134	94
79°	71°35"	101°	11.90	20.02	40.74	17.44	137	90
80°	72°35"	100°	12.12	19.66	41.05	17.67	140	87
81°	73°35"	99°	12.34	19.32	41.37	17.91	143	84
82°	74°35"	98°	12.57	18.98	41.68	18.15	145	80
83°	75°35"	97°	12.79	18.65	42.01	18.39	148	77
84°	76°35"	96°	13.03	18.33	42.33	18.64	151	74
85°	77°35"	95°	13.26	18.01	42.66	18.90	154	71
86°	78°35"	94°	13.50	17.69	42.99	19.16	157	69
87°	79°35"	93°	13.74	17.39	43.33	19.43	161	66
88°	80°35"	92°	13.99	17.09	43.67	19.70	164	63
89°	81°35"	91°	14.24	16.79	44.02	19.98	168	61
90°	82°35"	90°	14.49	16.50	44.37	20.27	171	58
91°	83°35"	89°	14.75	16.21	44.73	20.56	175	56
92°	84°35"	88°	15.01	15.93	45.09	20.86	178	54
93°	85°35"	87°	15.27	15.66	45.45	21.16	182	52
94°	86°35"	86°	15.54	15.39	45.83	21.47	186	50
95°	87°35"	85°	15.82	15.12	46.21	21.79	190	48
96°	88°35"	84°	16.10	14.86	46.59	22.11	195	46
97°	89°35"	83°	16.38	14.60	46.98	22.45	199	44
98°	90°35"	82°	16.67	14.34	47.38	22.79	203	42
99°	91°35"	81°	16.96	14.09	47.79	23.13	208	40
100°	92°35"	80°	17.26	13.85	48.20	23.49	213	38
101°	93°35"	79°	17.57	13.60	48.62	23.85	218	37
102°	94°35"	78°	17.88	13.36	49.05	24.23	223	35
103°	95°35"	77°	18.19	13.12	49.48	24.61	228	34
104°	96°35"	76°	18.51	12.89	49.93	25.00	233	32
105°	97°35"	75°	18.84	12.66	50.38	25.40	239	31



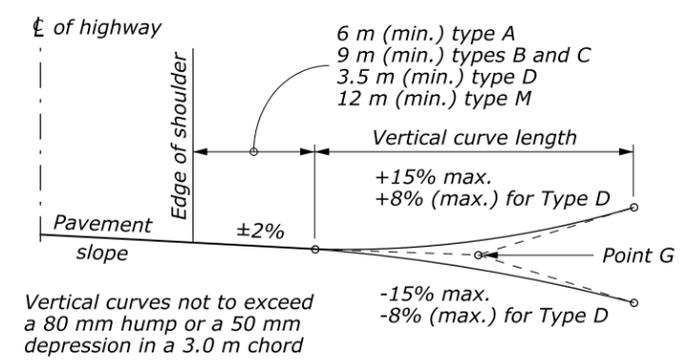
**PLAN OF TYPE D APPROACH**



**PLAN OF TYPE M APPROACH**



**ROAD APPROACH LOCATIONS ON PLAN SHEETS**



**PROFILE OF TYPE A, B, C, D, M APPROACHES**

U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 WESTERN FEDERAL LANDS HIGHWAY DIVISION

METRIC DETAIL

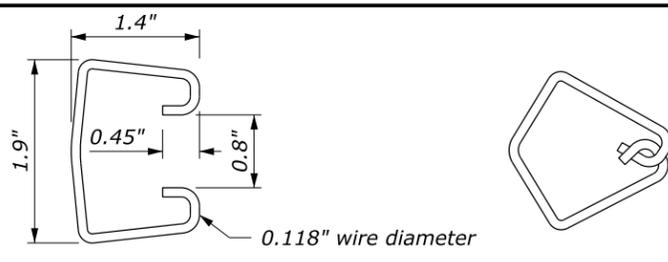
**WASHINGTON ROAD APPROACHES**

DETAIL APPROVED FOR USE 2/2004

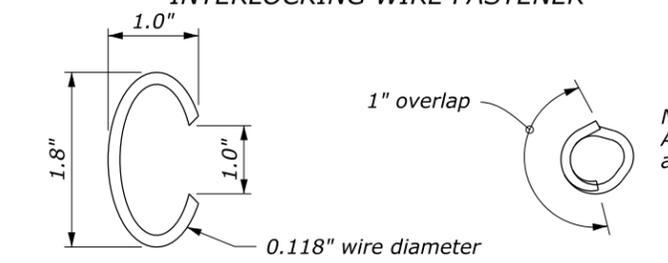
REVISOR: DRAFT: 11/2014

DETAIL WM200-80

NO SCALE



**INTERLOCKING WIRE FASTENER**

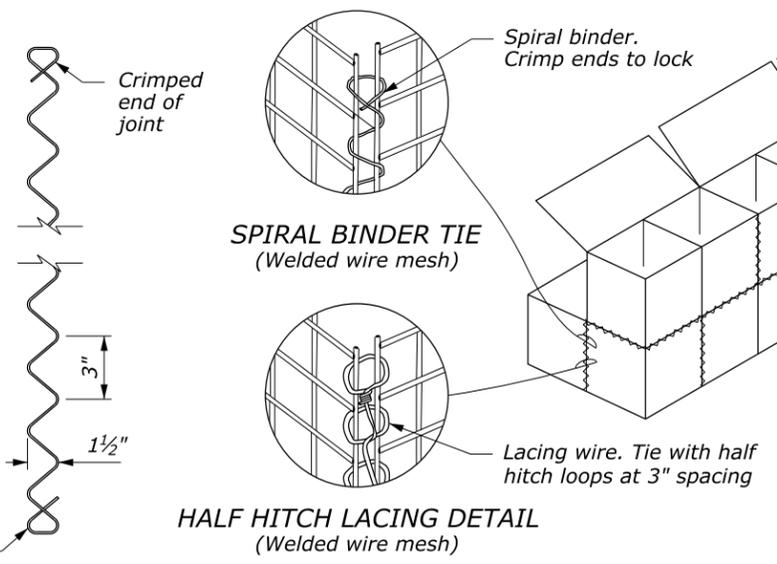


**OVERLAPPING RING WIRE FASTENER**  
(Not allowed for basket to basket connection)

**ALTERNATE TYING FASTENERS**

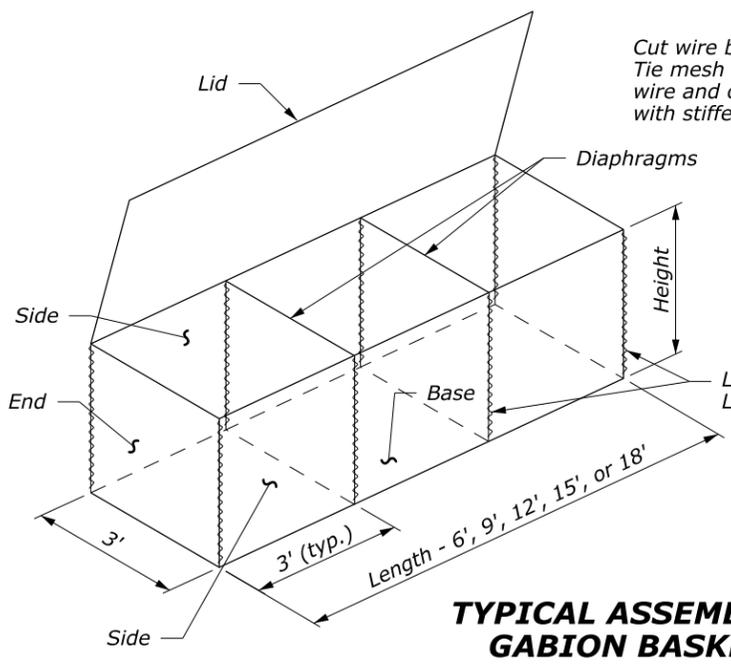
NOTE:  
All dimensions  
are nominal

NOTE:  
All dimensions  
are nominal



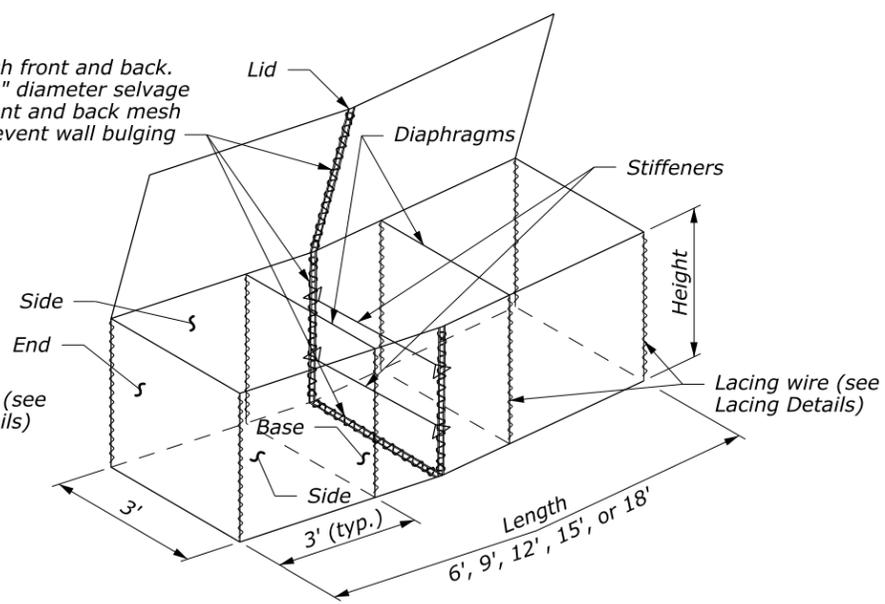
**TYPICAL INSTALLATION GABION BASKETS**

**0.150" DIAMETER SPIRAL BINDER**

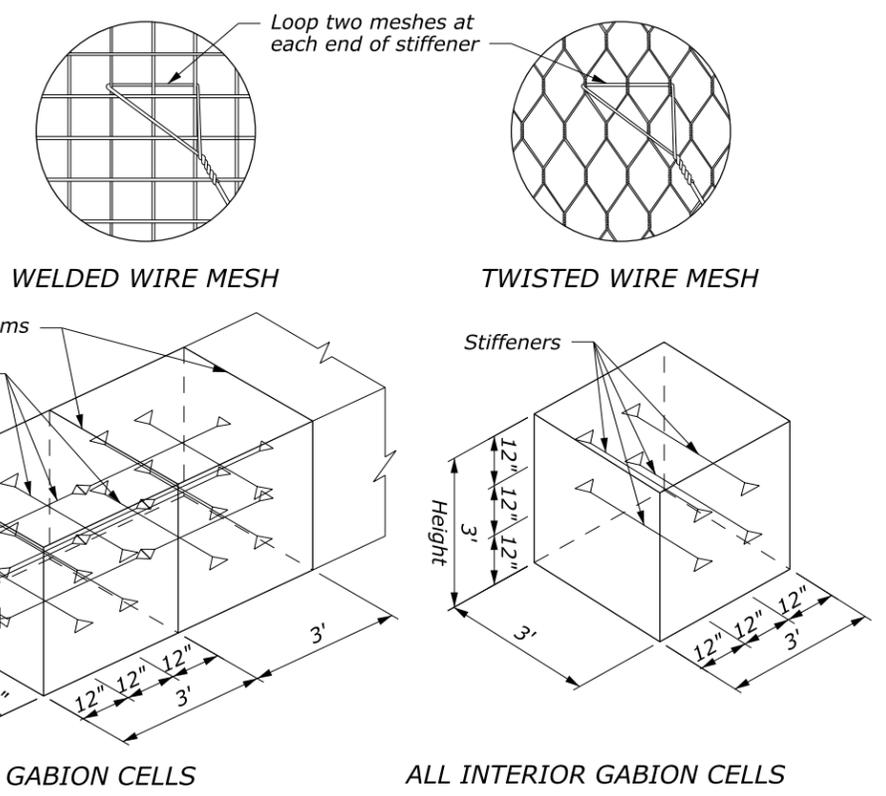


**TYPICAL ASSEMBLED GABION BASKET**

Cut wire basket mesh front and back. Tie mesh with 0.150" diameter selvage wire and connect front and back mesh with stiffeners to prevent wall bulging.



**ASSEMBLED GABION BASKET IN WALL GRADE TRANSITION AREAS**

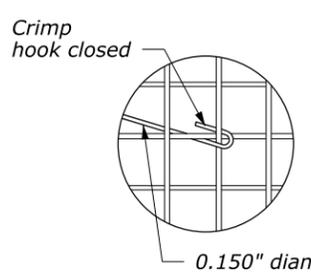


**TYPICAL STIFFENERS**

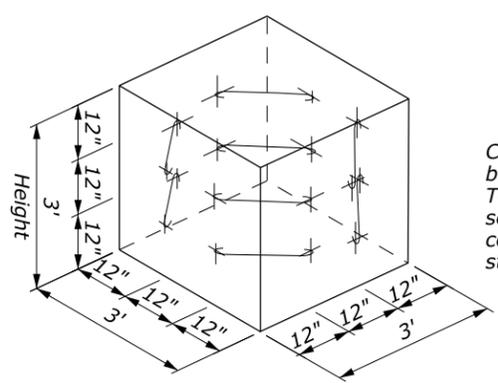
**ALL END GABION CELLS**

**ALL INTERIOR GABION CELLS**

GABION BASKET NOMINAL SIZES AND CAPACITY				
Size Code Letter	Size in feet		Diaphragm Partitions	Capacity (CUYD)
	Length	Height		
A	6	3.0	1	2.00
B	9	3.0	2	3.00
C	12	3.0	3	4.00
X	15	3.0	4	5.00
Y	18	3.0	5	6.00
D	6	1.5	1	1.00
E	9	1.5	2	1.50
F	12	1.5	3	2.00
G	6	1.0	1	0.67
H	9	1.0	2	1.00
I	12	1.0	3	1.33

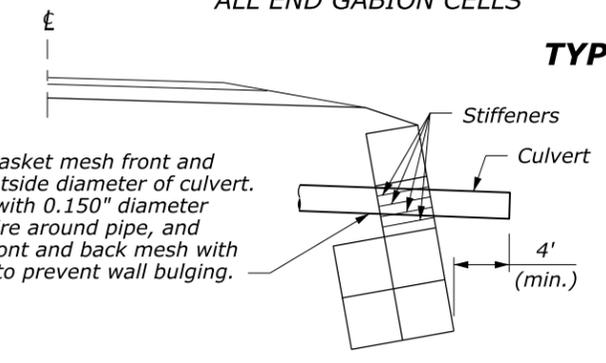


0.150" diameter stiffener hooked at intersection of wires



**ALL GABION CELLS OPTIONAL STIFFENERS WELDED WIRE GABION BASKET**

Cut wire basket mesh front and back to outside diameter of culvert. Tie mesh with 0.150" diameter selvage wire around pipe, and connect front and back mesh with stiffeners to prevent wall bulging.



**TYPICAL CULVERT INSTALLATION THROUGH GABION WALL**

NO SCALE

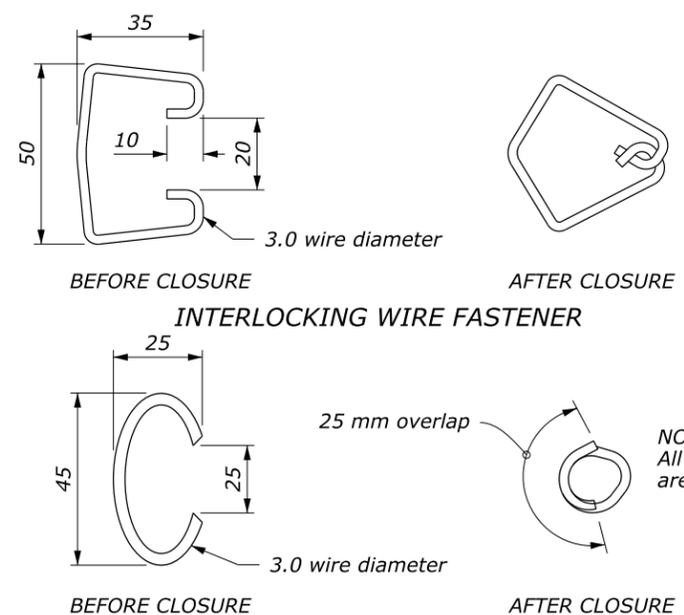
U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

**GABION BASKET**

DETAIL APPROVED FOR USE --/---  
REVISED: 9/2011  
DRAFT: 9/2011

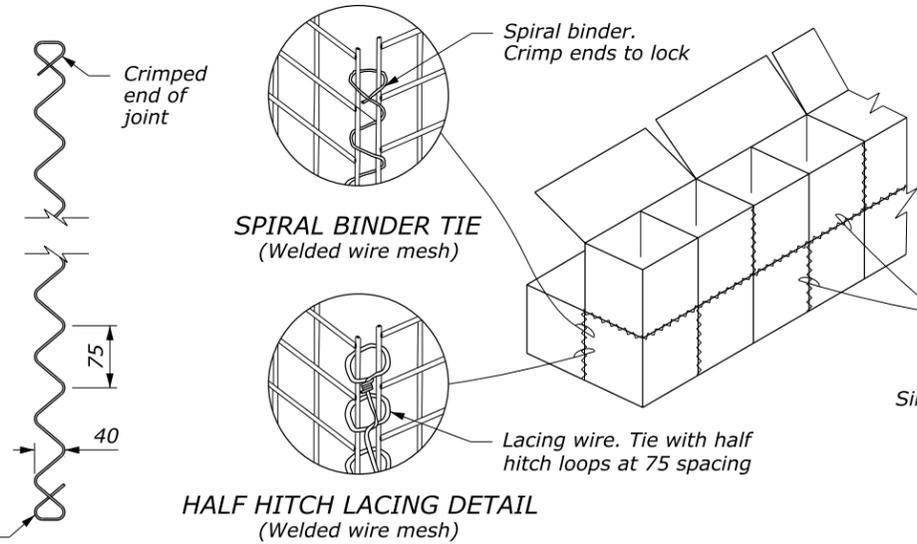
DETAIL W253-1



NOTE:  
All dimensions  
are nominal

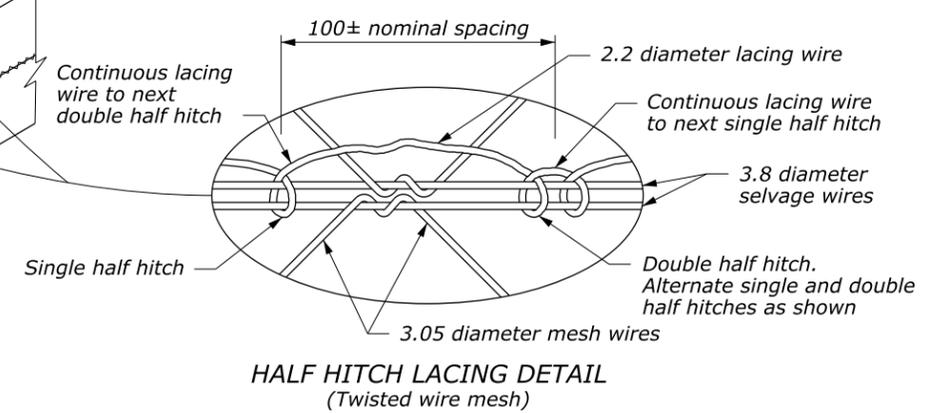
NOTE:  
All dimensions  
are nominal

**3.8 mm DIAMETER SPIRAL BINDER**



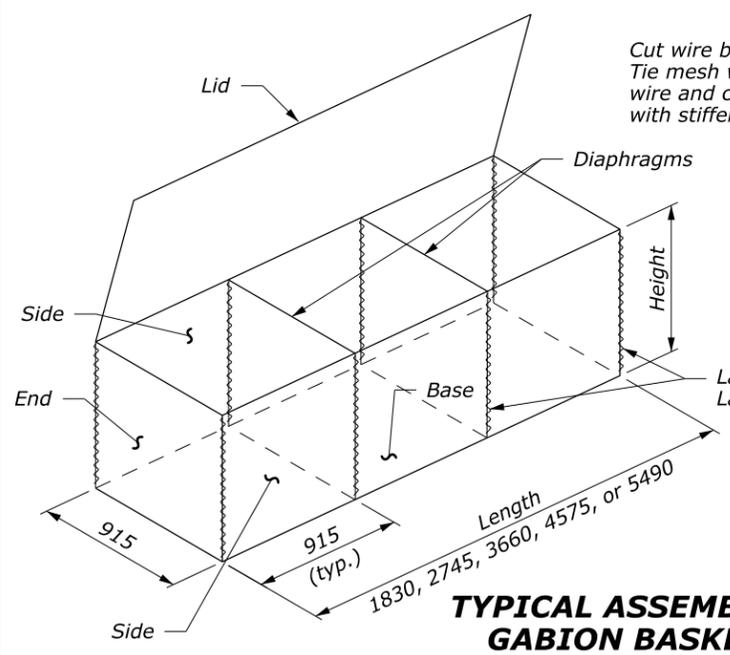
**NOTE:**

1. Dimensions not labeled are in millimeters.

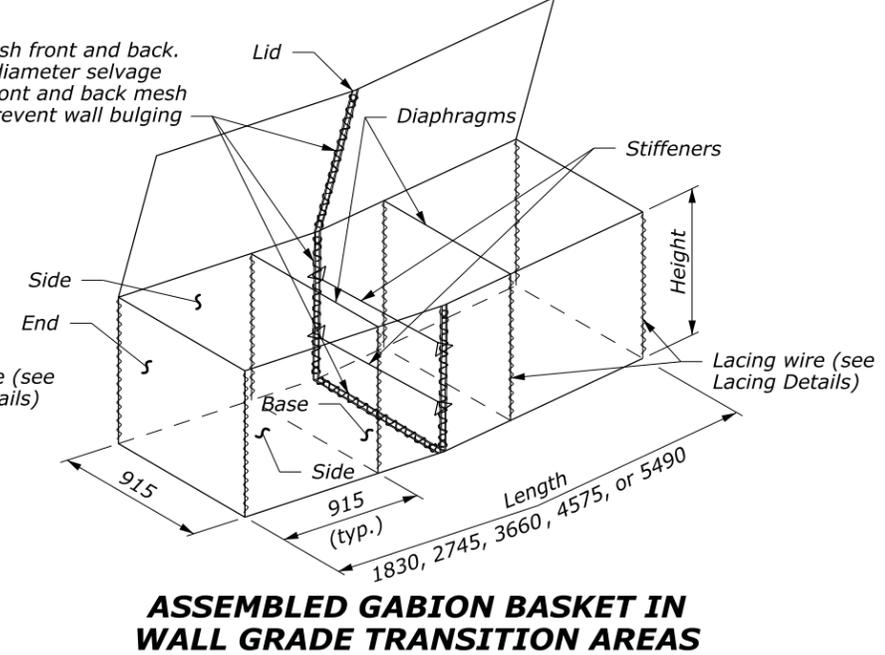


**TYPICAL INSTALLATION GABION BASKETS**

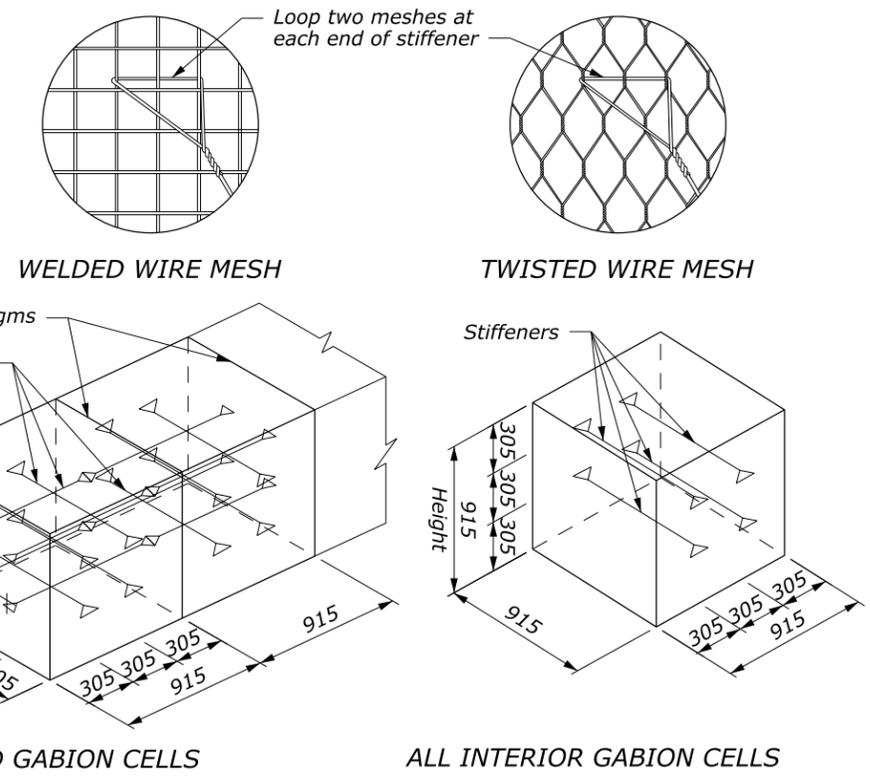
**ALTERNATE TYING FASTENERS**



**TYPICAL ASSEMBLED GABION BASKET**



**ASSEMBLED GABION BASKET IN WALL GRADE TRANSITION AREAS**

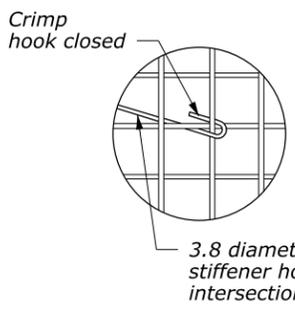


**TYPICAL STIFFENERS**

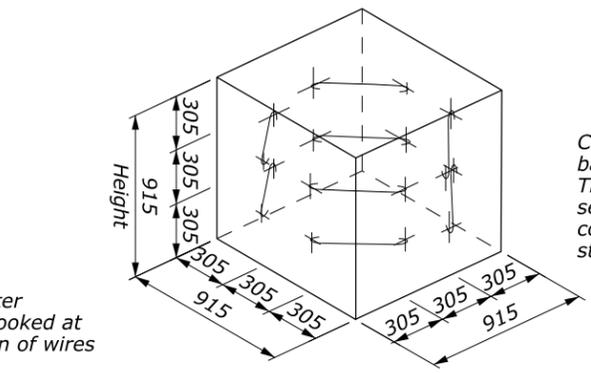
ALL END GABION CELLS

ALL INTERIOR GABION CELLS

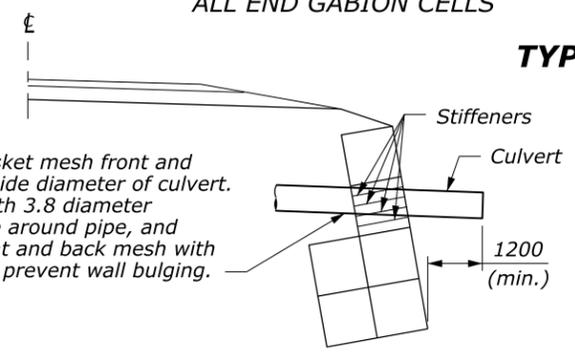
GABION BASKET NOMINAL SIZES AND CAPACITY				
Size Code Letter	Size in meters		Diaphragm Partitions	Capacity (m <sup>3</sup> )
	Length	Height		
A	1.83	0.915	1	1.5
B	2.75	0.915	2	2.3
C	3.66	0.915	3	3.1
X	4.58	0.915	4	3.8
Y	5.49	0.915	5	4.6
D	1.83	0.45	1	0.8
E	2.75	0.45	2	1.1
F	3.66	0.45	3	1.5
G	1.83	0.30	1	0.5
H	2.75	0.30	2	0.8
I	3.66	0.30	3	1.0



3.8 diameter stiffener hooked at intersection of wires



**OPTIONAL STIFFENERS WELDED WIRE GABION BASKET**



**TYPICAL CULVERT INSTALLATION THROUGH GABION WALL**

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

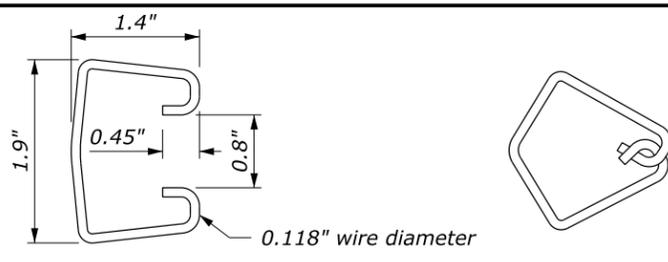
METRIC DETAIL

**GABION BASKET**

DETAIL APPROVED FOR USE --/----

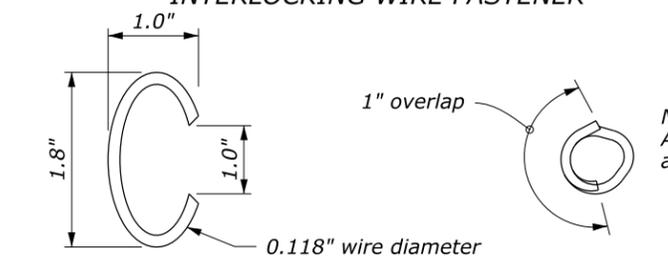
REVISD: 9/2011

DETAIL WM253-1



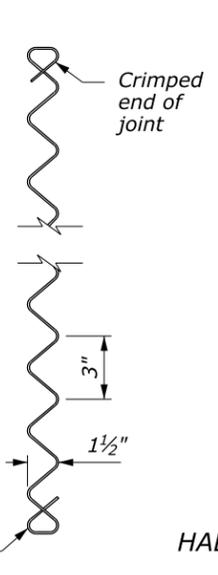
BEFORE CLOSURE AFTER CLOSURE  
**INTERLOCKING WIRE FASTENER**

NOTE:  
All dimensions  
are nominal

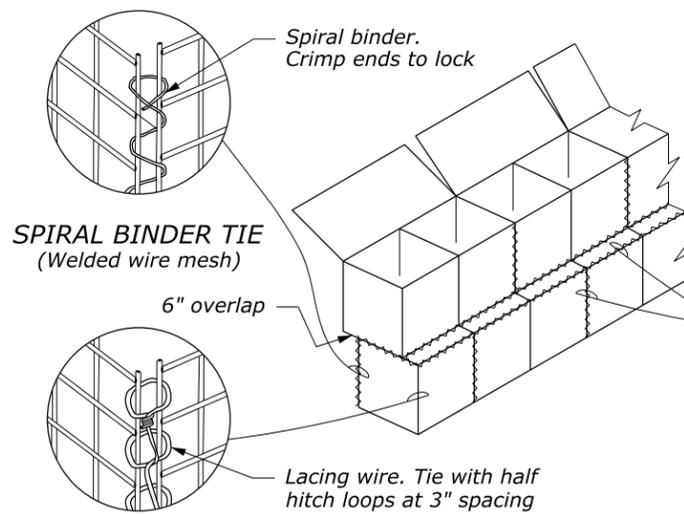


BEFORE CLOSURE AFTER CLOSURE  
**OVERLAPPING RING WIRE FASTENER**

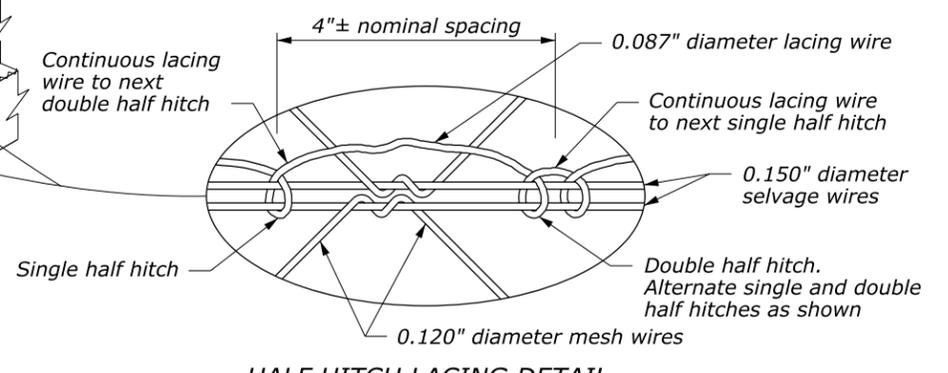
**ALTERNATE TYING FASTENERS**



**0.150" DIAMETER SPIRAL BINDER**

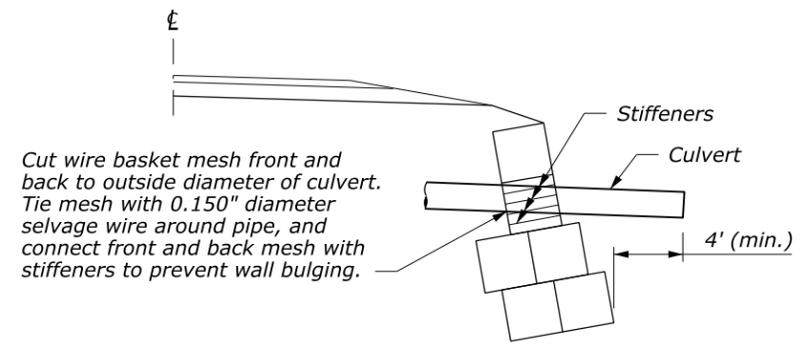


**HALF HITCH LACING DETAIL (Welded wire mesh)**

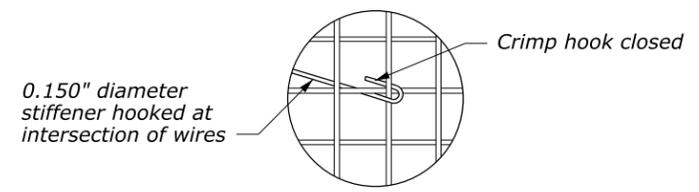


**HALF HITCH LACING DETAIL (Twisted wire mesh)**

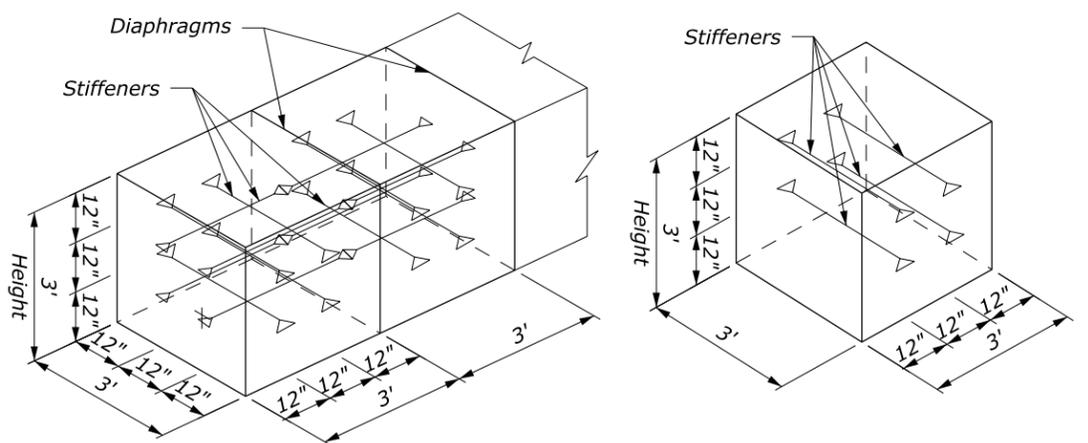
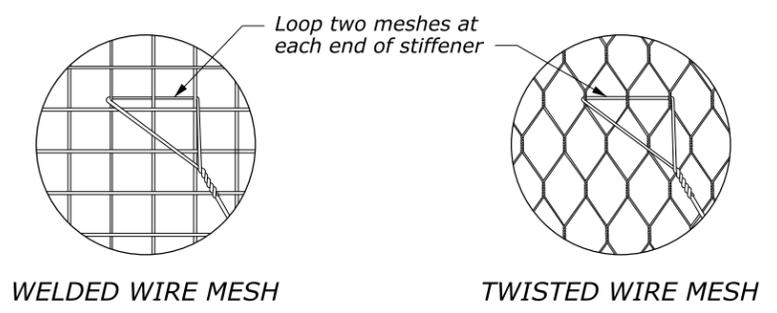
**TYPICAL INSTALLATION GABION BASKETS**



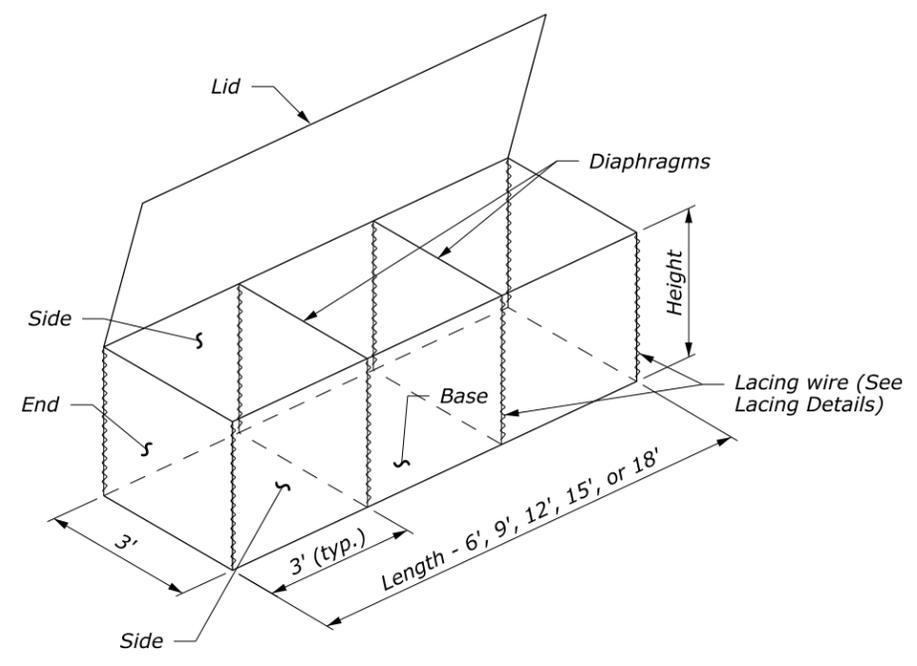
**TYPICAL CULVERT INSTALLATION THROUGH GABION WALL**



**OPTIONAL STIFFENERS WELDED WIRE GABION BASKET**



**TYPICAL STIFFENERS**

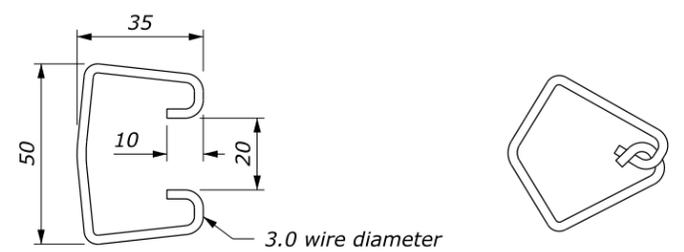


**TYPICAL ASSEMBLED GABION BASKET**

GABION BASKET NOMINAL SIZES AND CAPACITY				
Size Code Letter	Size in feet		Diaphragm Partitions	Capacity (CUYD)
	Length	Height		
A	6	3	1	2
B	9	3	2	3
C	12	3	3	4
X	15	3	4	5
Y	18	3	5	6

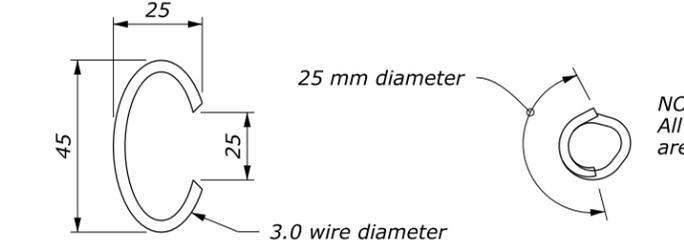
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION WESTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
<b>GABION FACED WALL</b>	
DETAIL APPROVED FOR USE --/----	DETAIL W253-2
REVISED: 9/2011	



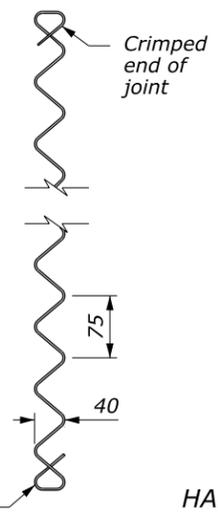
BEFORE CLOSURE AFTER CLOSURE  
**INTERLOCKING WIRE FASTENER**

NOTE:  
All dimensions are nominal

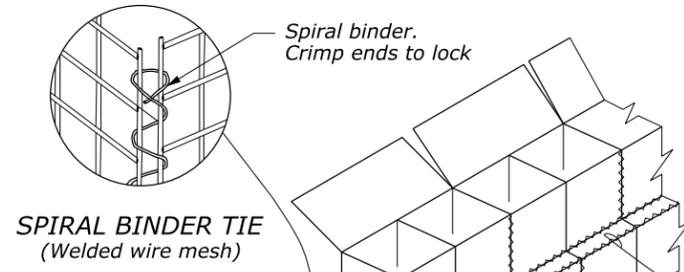


BEFORE CLOSURE AFTER CLOSURE  
**OVERLAPPING RING WIRE FASTENER  
ALTERNATE TYING FASTENERS**

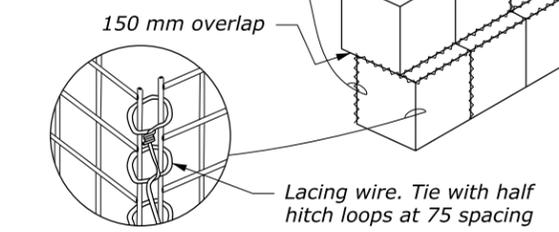
NOTE:  
All dimensions are nominal



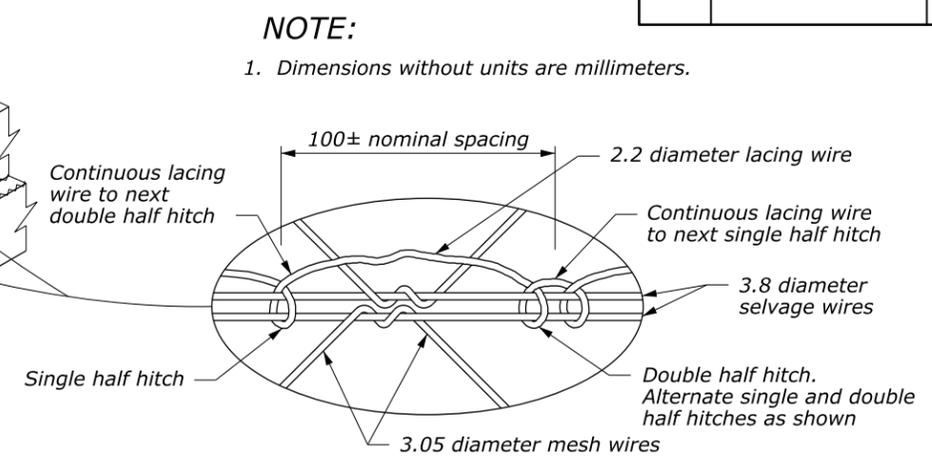
**3.8 mm DIAMETER  
SPIRAL BINDER**



**SPIRAL BINDER TIE  
(Welded wire mesh)**



**HALF HITCH LACING DETAIL  
(Welded wire mesh)**

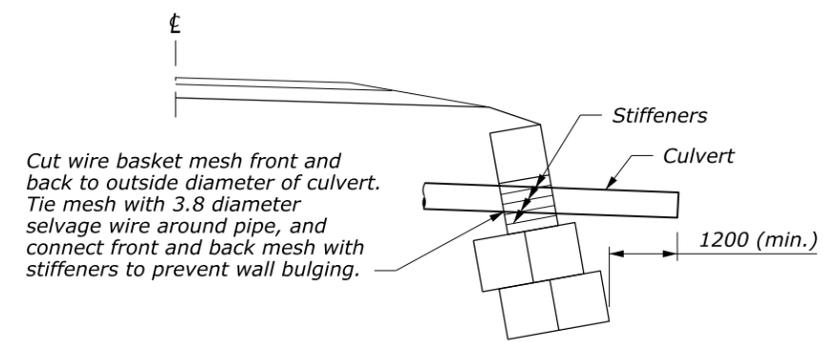


**NOTE:**

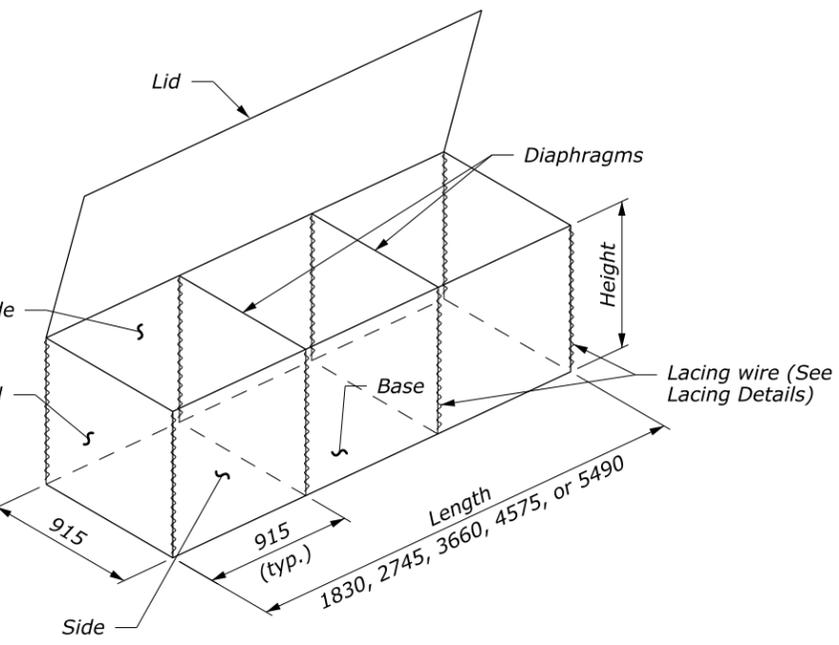
1. Dimensions without units are millimeters.

**HALF HITCH LACING DETAIL  
(Twisted wire mesh)**

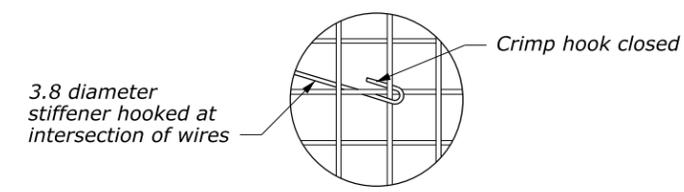
**TYPICAL INSTALLATION GABION BASKETS**



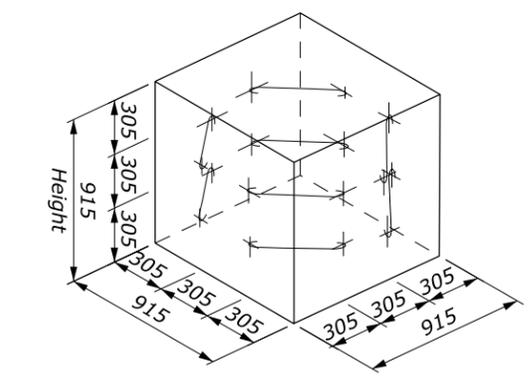
**TYPICAL CULVERT INSTALLATION  
THROUGH GABION WALL**



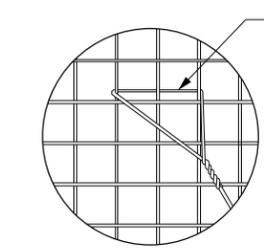
**TYPICAL ASSEMBLED GABION BASKET**



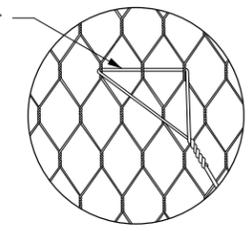
3.8 diameter stiffener hooked at intersection of wires



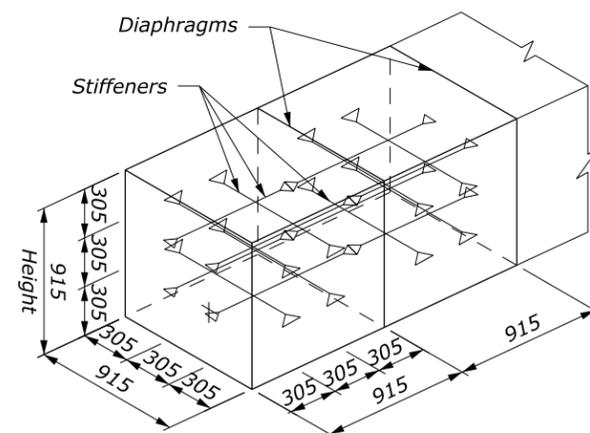
**ALL GABION CELLS  
OPTIONAL STIFFENERS  
WELDED WIRE GABION BASKET**



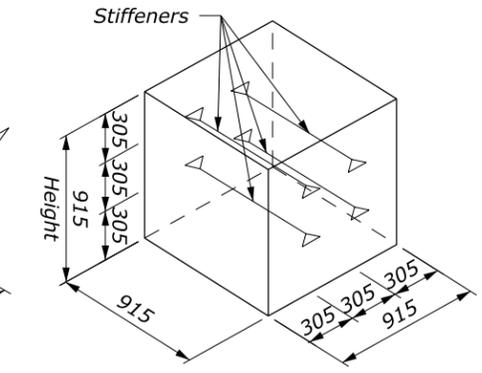
**WELDED WIRE MESH**



**TWISTED WIRE MESH**



**ALL END GABION CELLS**



**ALL INTERIOR GABION CELLS**

**TYPICAL STIFFENERS**

GABION BASKET NOMINAL SIZES AND CAPACITY				
Size Code Letter	Size in meters		Diaphragm Partitions	Capacity m <sup>3</sup>
	Length	Height		
A	1.83	0.915	1	1.5
B	2.75	0.915	2	2.3
C	3.66	0.915	3	3.1
X	4.58	0.915	4	3.8
Y	5.49	0.915	5	4.6

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

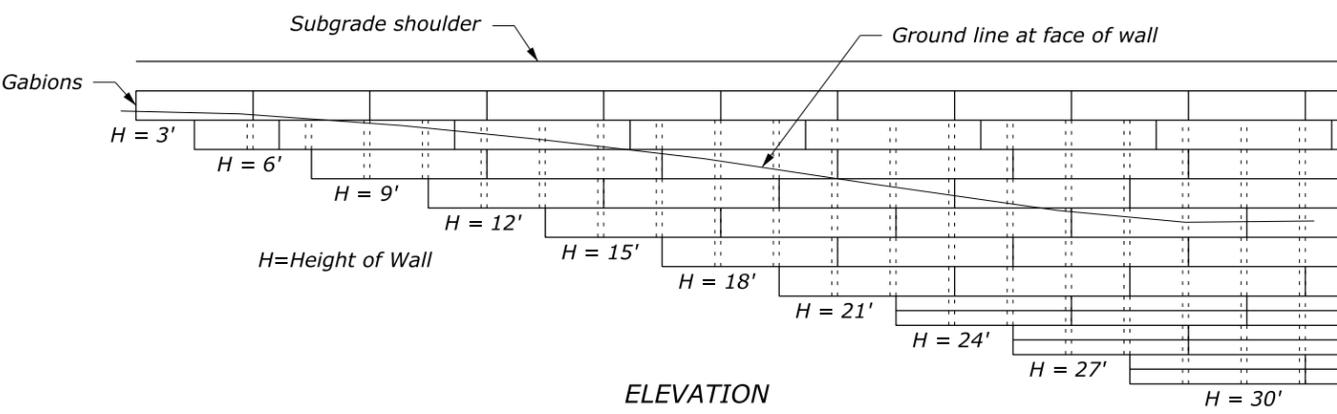
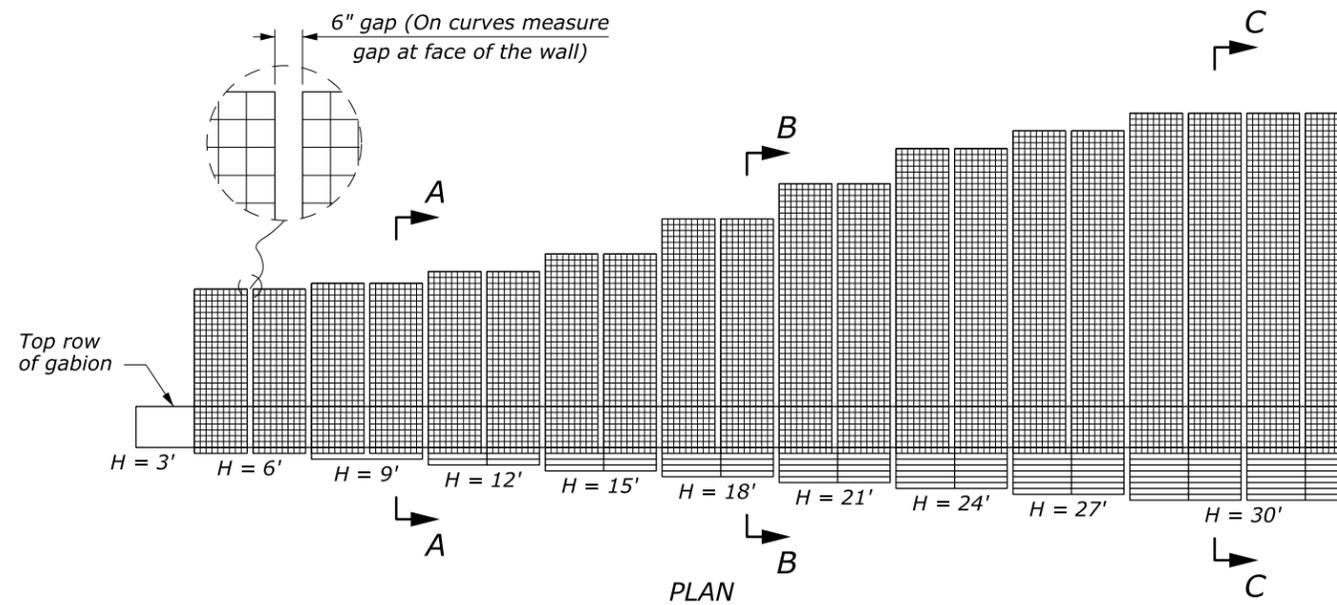
METRIC DETAIL

**GABION FACED WALL**

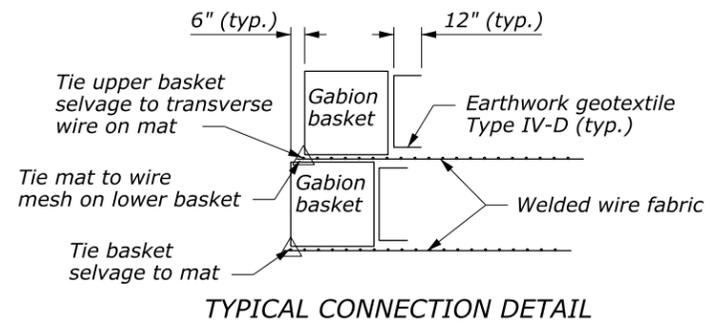
DETAIL APPROVED FOR USE --/----

REVISID: 9/2011  
DRAFT: 9/2011

DETAIL  
WM253-2

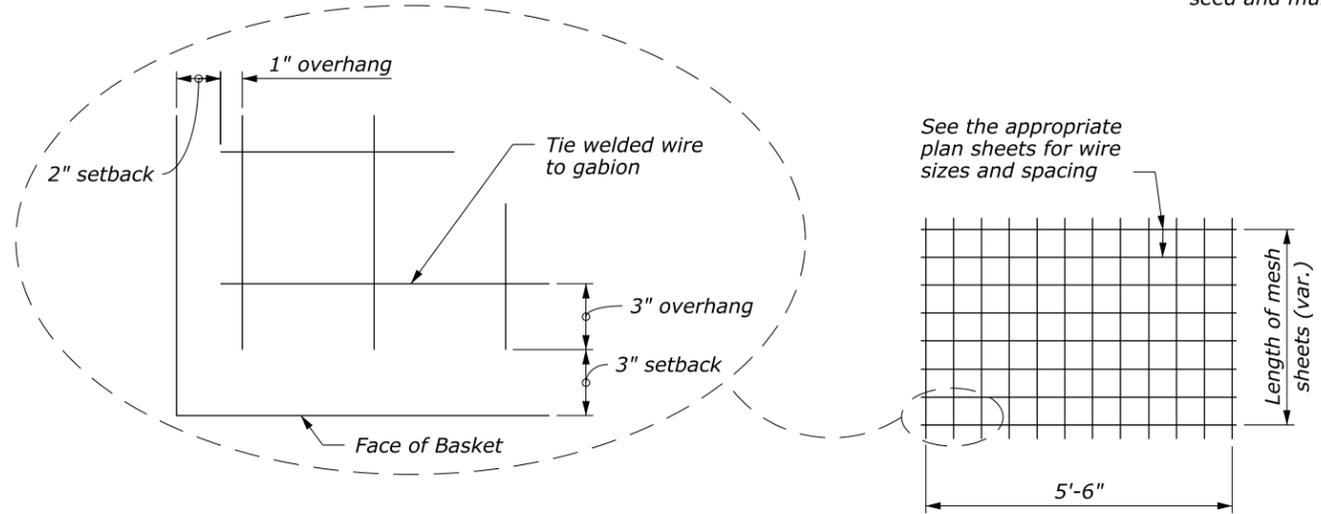
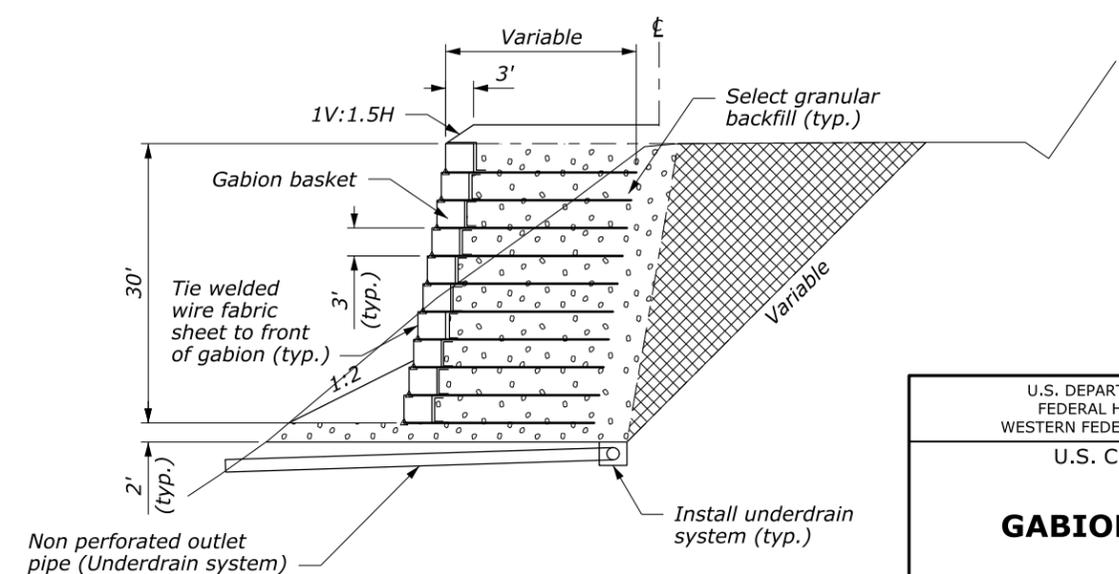
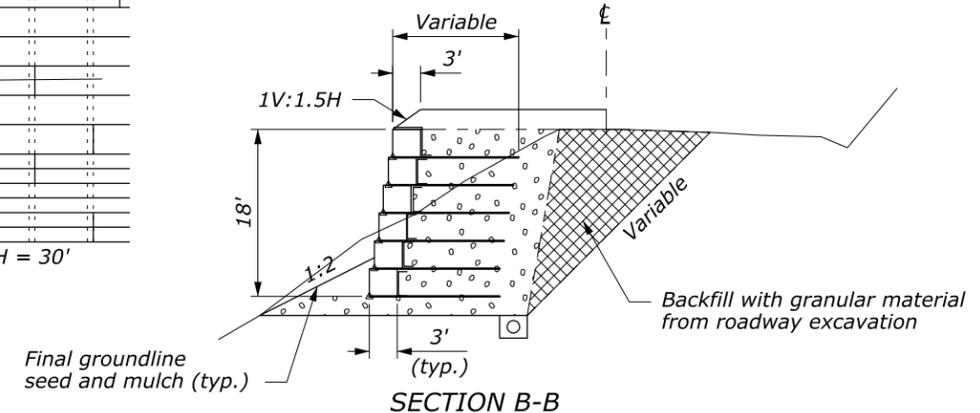
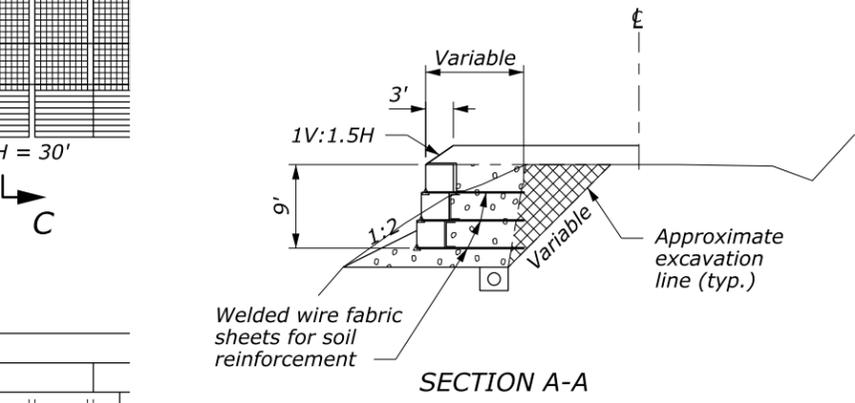


**TYPICAL GABION WALL**



**NOTE:**

1. The welded wire fabric sheets vary in length within each wall. The height (H) of the vertical face of the wall determines the length of the welded wire fabric for the entire section. See other plan sheets for fabric lengths, wire sizes and spacing and number of mats. Where the wall construction requires the width of the welded wire fabric sheets to be less than 5.5 feet, the fabric wire may be field cut to fit. Cut fabric at center of mesh of welded wire fabric sheets.
2. Place layers of welded wire fabric sheets with 6" gaps between sheets. The 6" gaps are measured at the face of the wall. Connect the welded wire fabric sheets with spiral binders or tie wire to the front edge of each gabion basket.
3. The heights and quantities are subject to field adjustment. Any increase in wall heights over those shown on the plans require investigation to determine that the safe bearing pressure is not exceeded.
4. Average design assumption values. See the Geotechnical Report, if available, for site specific values.  
 Unit weight of backfill material 125 pcf  
 Unit weight of filled gabions is 105 pcf  
 $\phi$  angle = 35° for backfill material



U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 WESTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

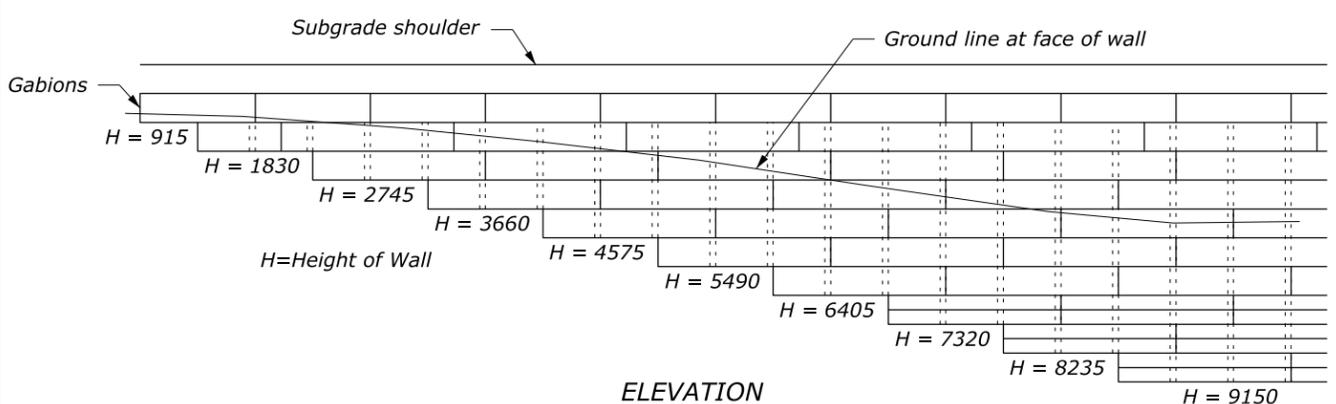
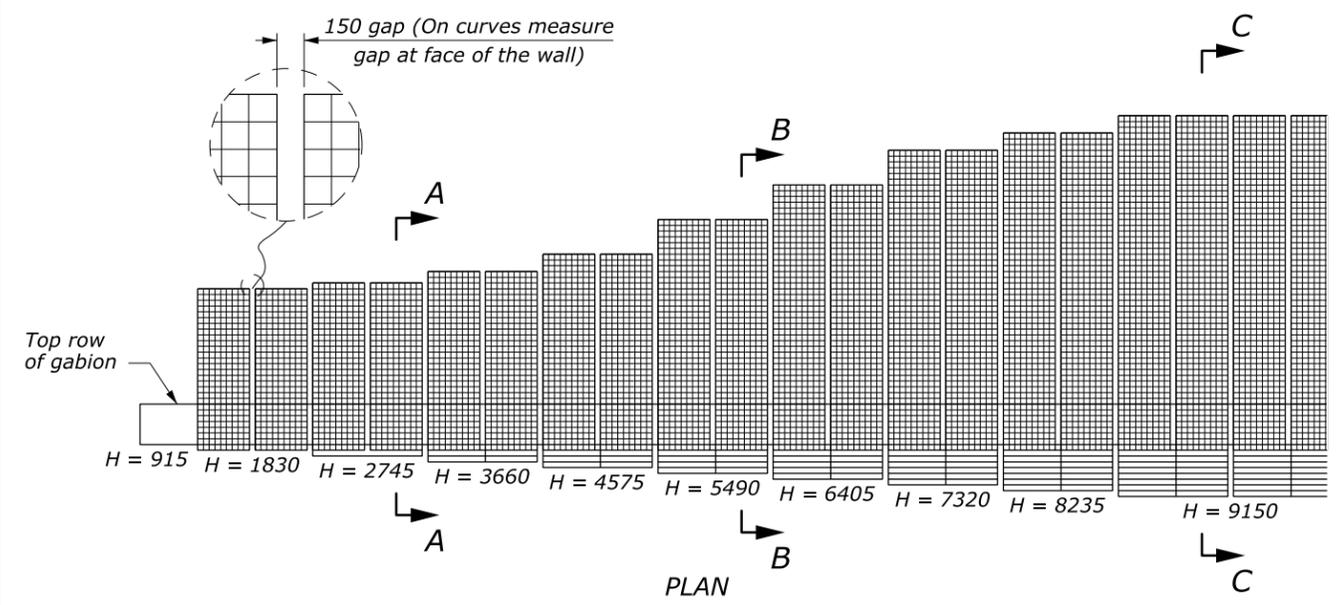
**GABION FACED WALL**

DETAIL APPROVED FOR USE --/---

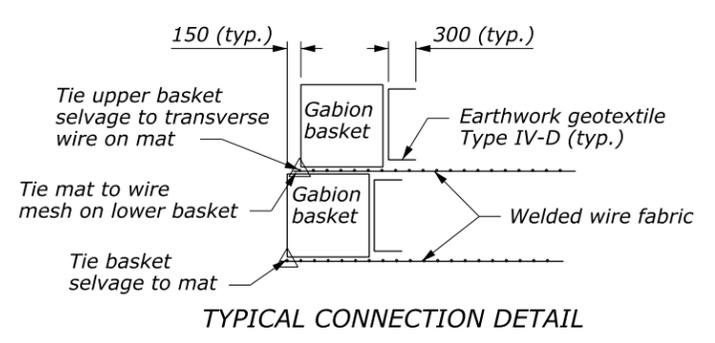
REVISOR: 9/2011

DETAIL W253-3

24 August 2011 8:06 AM c:\myfiles\pw\_production\dmst18765\FLLH.dgnlib [Detail\_US]



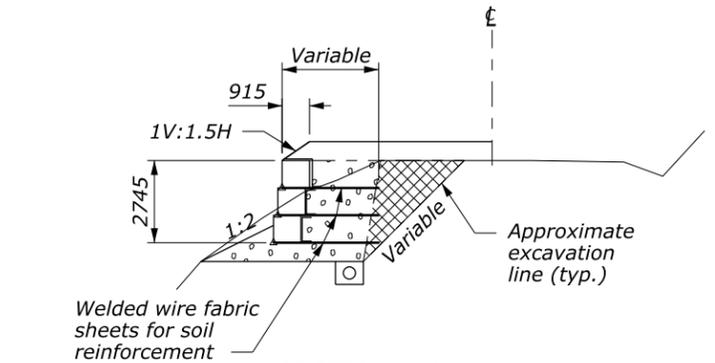
**TYPICAL GABION WALL**



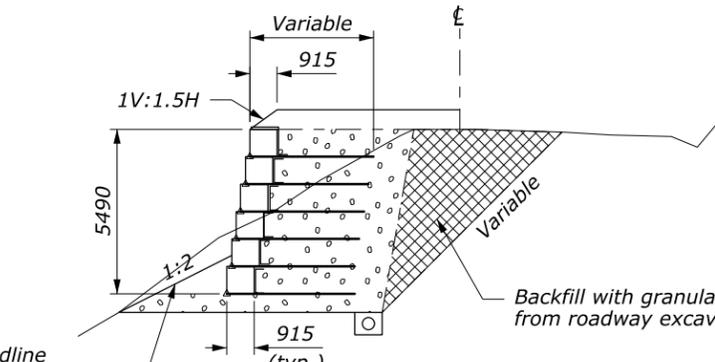
**TYPICAL CONNECTION DETAIL**

**NOTE:**

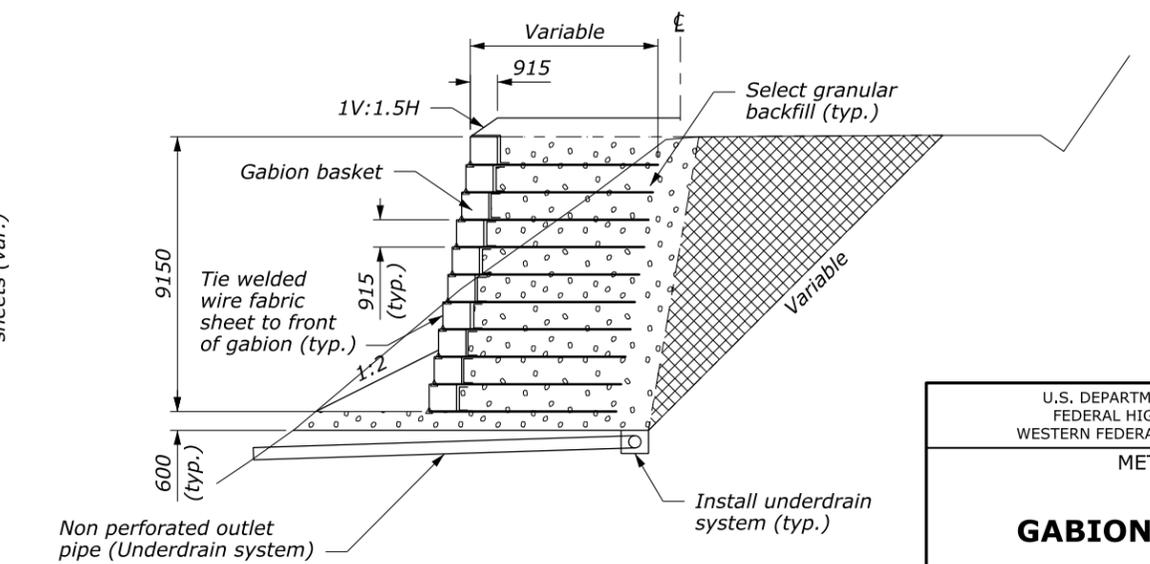
1. The welded wire fabric sheets vary in length within each wall. The height (H) of the vertical face of the wall determines the length of the welded wire fabric for the entire section. See other plan sheets for fabric lengths, wire sizes and spacing and number of mats. Where the wall construction requires the width of the welded wire fabric sheets to be less than 1650 mm, the fabric wire may be field cut to fit. Cut fabric at center of mesh of welded wire fabric sheets.
2. Place layers of welded wire fabric sheets with 150 mm gaps between sheets. The 150 mm gaps are measured at the face of the wall. Connect the welded wire fabric sheets with spiral binders or tie wire to the front edge of each gabion basket.
3. The heights and quantities are subject to field adjustment. Any increase in wall heights over those shown on the plans require investigation to determine that the safe bearing pressure is not exceeded.
4. Average design assumption values. See the Geotechnical Report, if available, for site specific values.  
Unit weight of backfill material 20.8 kN/m<sup>3</sup>  
Unit weight of filled gabions is 17.6 kN/m<sup>3</sup>  
Ø angle = 35° for backfill material
5. Dimensions without units are millimeters.



**SECTION A-A**

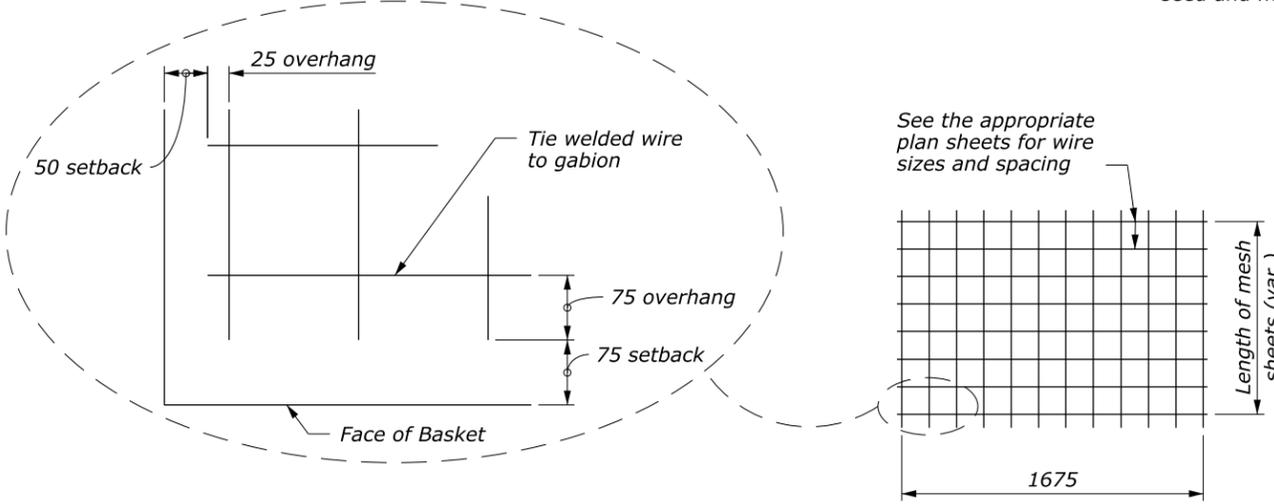


**SECTION B-B**



**SECTION C-C**

NO SCALE



**WELDED WIRE FABRIC SHEETS FOR SOIL REINFORCEMENT**

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION WESTERN FEDERAL LANDS HIGHWAY DIVISION	
METRIC DETAIL	
<b>GABION FACED WALL</b>	
DETAIL APPROVED FOR USE --/----	DETAIL
REVISED: DRAFT: 9/2011	WM253-3