

$\Delta$	total central angle	M.L.	main line
$\Delta c$	curve central angle	M.P.	mile post
$\emptyset$	diameter	matl.	material
$\theta_s$	spiral central angle	max.	maximum
abut.	abutment	MGAL	thousand gallon
ADT	average daily traffic	min.	minimum
AH	ahead	mon.	monument
appr.	approach	N	north
BK	back	NC	normal crown
BM	bench mark	o. c.	on center
BP	balance point	o. to o.	out to out
br.	bridge	OD	outside diameter
brg.	bearing	OG	original ground
cc or c. to c.	center to center	PC	point of curve
$\text{¢}$	centerline	PCC	point of compound curve
clr.	clear	PCS	point of curve to spiral
CMP	corrugated metal pipe	PI	point of intersection
col.	column	pl.	plate
conc.	concrete	POC	point on curve
conn.	connection	POS	point on spiral
constr. jt.	construction joint	POT	point on tangent
cont.	continuous	PS	point of tangent to spiral
CS	point of curve to spiral	PSC	point of spiral to curve
ctrs.	centers	PST	point of spiral to tangent
CUFT	cubic foot (feet)	PT	point of tangent
culv.	culvert	pvmt.	pavement
CUYD	cubic yard(s)	R	radius
D	diameter	R.	range
DHV	design hourly volume	R/W	right-of-way
dia.	diameter	rdwy.	roadway
diag.	diagonal	reinf.	reinforcement
diaph.	diaphragm	reqd.	required
dist.	distance	rt. or RT	right
drwg(s).	drawing(s)	rte.	route
E	east	S	south
e	superelevation rate	SADT	seasonal average daily traffic
El. 94.16 ft	elevation with number	SC	point of spiral to curve
elev.	elevation	sec.	section
emb.	embankment	shldr.	shoulder
EP	edge of pavement	SLRY	slurry unit
EQ or eq.	equation	spa.	spacing, spaces or spaced
ER	edge of road	SQFT	square foot
EW	edge of water	SQYD	square yard
exc.	excavation	SRS	point of spiral to reverse spiral
exp. jt.	expansion joint	SS	point of spiral to spiral (no curve)
fin.	finish	ST	point of spiral to tangent
fig.	flange	STA, Sta.	station
ft2	square foot	std.	standard
ft3	cubic foot (feet)	str.	stringer
ftg.	footing	stiff.	stiffener
ga.	gage (gauge)	struc.	structural
galv.	galvanized	STS	point of spiral to tangent spiral
hdwl.	headwall	sym.	symmetrical
hex.	hexagon	T	tangent distance
HW	high water	T.	township
ID	inside diameter	TBM	temporary bench mark
jt.	joint	thd.	thread
L	length of curve	TS	point of tangent to spiral
lam.	lamination	Ts	tangent distance (spiraled curve)
lat.	latitude	typ.	typical
LNFT	linear foot (feet)	V	design speed
long.	longitudinal	vph	vehicles per hour
LPSM	lump sum	VPI	vertical point of intersection
Ls	length of spiral	W	west
lt. or LT	left	yd2	square yard
LW	low water	yd3	cubic yard(s)

M.L.	main line	National Boundary	-----
M.P.	mile post	State Boundary	-----
matl.	material	County Boundary	-----
max.	maximum	City Boundary	-----
MGAL	thousand gallon	Township or Range Line	-----
min.	minimum	Section Line	-----
mon.	monument	Section Corner (Found, Projected)	36 31 1 6
N	north	1/4 Section Line	-----
NC	normal crown	1/4 Section Corner (Found, Projected)	15 15 22 22
o. c.	on center	1/16 Section Line	-----
o. to o.	out to out	1/16 Section Corner (Found, Projected)	1/16 SEC. 1/16 SEC.
OD	outside diameter	Property Line w/Found Property Corner	P/L P/L P/L
OG	original ground	Parcel Number	400
PC	point of curve	National Park Boundary	////// NP ////
PCC	point of compound curve	National Forest Boundary	////// NFW ////
PCS	point of curve to spiral	National Wildlife Refuge Boundary	////// NWR ////
PI	point of intersection	BLM Lands Boundary	XXXXXXXXXXXXXXXXXXXX
pl.	plate	Indian Reservation Boundary	~~~~~
POC	point on curve	Existing Roadway (Road, Paved, Gravel)	-----
POS	point on spiral	Railroad	-----
POT	point on tangent	Trail	-----
PS	point of tangent to spiral	Wattle	-----
PSC	point of spiral to curve	Silt Fence	-----
PST	point of spiral to tangent	Intermittent Drainage or Small Creek	-----
PT	point of tangent	Large Creek or River	-----
pvmt.	pavement	Lake, Pond or Reservoir; Marshland	-----
R	radius	Spring or Seep	-----
R.	range	Treeline; Individual Trees	-----
R/W	right-of-way	Material Source; Bore Hole; Test Pit	-----
rdwy.	roadway	Spot Elevation; Coordinate Grid Tick	EL. 1234.56
reinf.	reinforcement	Above Ground Tank; Underground Tank	-----
reqd.	required	Boulder; Well; Satellite Dish; Grave	-----
rt. or RT	right	Cooking Grate; Garbage Can; Picnic Table	-----
rte.	route	Flagpole; Fire Hydrant	-----
S	south	Gas & Water Meter; Gas & Water Valve	-----
SADT	seasonal average daily traffic	Control Point (Terrestrial and GPS); Jump Hub	-----
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		
str.	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)	36 31 1 6
1/4 Section Line	-----
1/4 Section Corner (Found, Projected)	15 15 22 22
1/16 Section Line	-----
1/16 Section Corner (Found, Projected)	1/16 SEC. 1/16 SEC.
Property Line w/Found Property Corner	P/L P/L P/L
Parcel Number	400
National Park Boundary	////// NP ////
National Forest Boundary	////// NFW ////
National Wildlife Refuge Boundary	////// NWR ////
BLM Lands Boundary	XXXXXXXXXXXXXXXXXXXX
Indian Reservation Boundary	~~~~~
Existing Roadway (Road, Paved, Gravel)	-----
Railroad	-----
Trail	-----
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	EL. 1234.56
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	<table border="0"> <tr> <td>EXISTING</td> <td>PROPOSED</td> </tr> <tr> <td>Top of Cut</td> <td>-----</td> </tr> <tr> <td>Toe of Fill</td> <td>-----</td> </tr> <tr> <td>Transition</td> <td>-----</td> </tr> </table>	EXISTING	PROPOSED	Top of Cut	-----	Toe of Fill	-----	Transition	-----
EXISTING	PROPOSED								
Top of Cut	-----								
Toe of Fill	-----								
Transition	-----								
Fence	X-X-X-X								
Gate with Fence	X-X-X-X								
Cattleguard									
Guardrail	-----								
Concrete Barrier	-----								
Retaining Wall	----- wall face								
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	----- UD								
Overhead/Above Ground Utilities	----- P								
Underground Utilities	----- W								
FM = force main, FO = fiber optic, G = gas, IRR = irrigation, O = oil, P = power, SA = sanitary sewer, SD = storm drain, SS = storm sewer, STEAM = steam, T = telephone, TV = CATV, W = water									
Poles (Power, Telephone, Joint Use, Light, Support w/Anchor)									
Miscellaneous Utility Features	EM, T, TV, UP								
Building	-----								
Right-of-Way Line with Monument	----- R/W								
Permanent Easement	----- P/E								
Construction Easement	----- C/E								
Riprap									

NO SCALE

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

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  
 REVISIONS: 9/2005 1/2007

DETAIL W101-1

$\Delta$	total central angle	M.L.	main line
$\Delta c$	curve central angle	M.P.	mile post
$\emptyset$	diameter	m2	square meter
$\theta_s$	spiral central angle	m3	cubic meter
abut.	abutment	matl.	material
ADT	average daily traffic	max.	maximum
AH	ahead	min.	minimum
appr.	approach	mon.	monument
BK	back	N	north
BM	bench mark	NC	normal crown
BP	balance point	o. c.	on center
br.	bridge	o. to o.	out to out
brg.	bearing	OD	outside diameter
cc or c. to c.	center to center	OG	original ground
$\xi$	centerline	PC	point of curve
clr.	clear	PCC	point of compound curve
CMP	corrugated metal pipe	PCS	point of curve to spiral
col.	column	PI	point of intersection
conc.	concrete	pl.	plate
conn.	connection	POC	point on curve
constr. jt.	construction joint	POT	point on tangent
cont.	continuous	PS	point of tangent to spiral
CS	point of curve to spiral	PSC	point of spiral to curve
ctrs.	centers	PST	point of spiral to tangent
culv.	culvert	PT	point of tangent
D	diameter	pvmt.	pavement
DHV	design hourly volume	R	radius
dia.	diameter	R.	range
diag.	diagonal	R/W	right-of-way
diaph.	diaphragm	rdwy.	roadway
dist.	distance	rein.	reinforcement
drwg(s).	drawing(s)	reqd.	required
E	east	rt. or RT	right route
e	superelevation rate	rte.	route
El. 94.061 m	elevation with number	S	south
elev.	elevation	SADT	seasonal average daily traffic
emb.	embankment	SC	point of spiral to curve
EP	edge of pavement	sec.	section
EQ or eq.	equation	shldr.	shoulder
ER	edge of road	slry	slurry unit
EW	edge of water	spa.	spacing, spaces or spaced
exc.	excavation	SRS	point of spiral to reverse spiral
exp. jt.	expansion joint	SS	point of spiral to spiral (no curve)
fin.	finish	ST	point of spiral to tangent
fig.	flange	Sta.	station
ftg.	footing	std.	standard
ga.	gage (gauge)	stgr.	stringer
galv.	galvanized	stiff.	stiffener
hdwl.	headwall	struc.	structural
hex.	hexagon	STS	point of spiral to tangent spiral
HW	high water	sym.	symmetrical
ID	inside diameter	T	tangent distance
jt.	joint	T.	township
K.P.	kilometer post	TBM	temporary bench mark
L	length of curve	thd.	thread
lam.	lamination	thd.	thread
lat.	latitude	TS	point of tangent to spiral
long.	longitudinal	Ts	tangent distance (spiraled curve)
LPSM	lump sum	typ.	typical
Ls	length of spiral	V	design speed
lt. or LT	left	vph	vehicles per hour
LW	low water	VPI	vertical point of intersection
		W	west

M.L.	main line	National Boundary	
M.P.	mile post	State Boundary	
m2	square meter	County Boundary	
m3	cubic meter	City Boundary	
matl.	material	Township or Range Line	
max.	maximum	Section Line	
min.	minimum	Section Corner (Found, Projected)	
mon.	monument	1/4 Section Line	
N	north	1/4 Section Corner (Found, Projected)	
NC	normal crown	1/16 Section Line	
o. c.	on center	1/16 Section Corner (Found, Projected)	
o. to o.	out to out	Property Line w/Found Property Corner	
OD	outside diameter	Parcel Number	
OG	original ground	National Park Boundary	
PC	point of curve	National Forest Boundary	
PCC	point of compound curve	National Wildlife Refuge Boundary	
PCS	point of curve to spiral	BLM Lands Boundary	
PI	point of intersection	Indian Reservation Boundary	
pl.	plate	Existing Roadway (Road, Paved, Gravel)	
POC	point on curve	Railroad	
POT	point on tangent	Trail	
PS	point of tangent to spiral	Wattle	
PSC	point of spiral to curve	Silt Fence	
PST	point of spiral to tangent	Intermittent Drainage or Small Creek	
PT	point of tangent	Large Creek or River	
pvmt.	pavement	Lake, Pond or Reservoir; Marshland	
R	radius	Spring or Seep	
R.	range	Treeline; Individual Trees	
R/W	right-of-way	Material Source; Bore Hole; Test Pit	
rdwy.	roadway	Spot Elevation; Coordinate Grid Tick	
rein.	reinforcement	Above Ground Tank; Underground Tank	
reqd.	required	Boulder; Well; Satellite Dish; Grave	
rt. or RT	right route	Cooking Grate; Garbage Can; Picnic Table	
rte.	route	Flagpole; Fire Hydrant	
S	south	Gas & Water Meter; Gas & Water Valve	
SADT	seasonal average daily traffic	Control Point (Terrestrial and GPS); Jump Hub	
SC	point of spiral to curve		
sec.	section		
shldr.	shoulder		
slry	slurry unit		
spa.	spacing, spaces or spaced		
SRS	point of spiral to reverse spiral		
SS	point of spiral to spiral (no curve)		
ST	point of spiral to tangent		
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		
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		

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	
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	<table border="0"> <tr> <td>EXISTING</td> <td></td> </tr> <tr> <td>PROPOSED</td> <td></td> </tr> </table>	EXISTING		PROPOSED	
EXISTING					
PROPOSED					
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					
<p>FM = force main, FO = fiber optic, G = gas, IRR = irrigation, O = oil, P = power, SA = sanitary sewer, SD = storm drain, SS = storm sewer, STEAM = steam, T = telephone, TV = CATV, W = water</p>					
Poles (Power, Telephone, Joint Use, Light, Support w/Anchor)					
Miscellaneous Utility Features					
<p>EM = electric meter, T = telephone pedestal, TV = CATV pedestal, UP = transformer or junction box, WF = water fountain</p>					
Building					
Right-of-Way Line with Monument					
Permanent Easement					
Construction Easement					
Riprap					

**NOTE:**

- Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
- Dimensions in this plan set are in millimeters unless otherwise noted.

NO SCALE

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

**METRIC DETAIL**  
**PLAN SYMBOLS**  
**AND**  
**ABBREVIATIONS**

DETAIL APPROVED FOR USE 11/2001	DETAIL
REVISED: 9/2005 1/2007	WM101-1

27-Jun-2007 12:32 PM

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$\Delta$	total central angle
$\Delta c$	curve central angle
$\emptyset$	diameter
$\emptyset s$	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
£	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
ft <sup>2</sup>	square foot
ft <sup>3</sup>	cubic foot (feet)
ftg.	footing
ga.	gage (gauge)
galv.	galvanized
hdwl.	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
pvmt.	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
str.	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
yd <sup>2</sup>	square yard
yd <sup>3</sup>	cubic yard(s)

NATIONAL BOUNDARY	
STATE BOUNDARY	
COUNTY BOUNDARY	
CITY BOUNDARY	
TOWNSHIP or RANGE LINE	
SECTION LINE	
1/4 SECTION LINE	
1/16 SECTION LINE	
NATIONAL PARK or FOREST BOUNDARY	
PROPERTY LINE	
RIGHT-OF-WAY LINE	
RIGHT-OF-WAY LINE with MONUMENT	
EASEMENT (Permanent; Non-Permanent)	
SLOPE STAKE	
ROADWAY, EXISTING	
RAILROAD	
WATTLE	
SILT FENCE	
TRAIL	
INTERMITTENT DRAINAGE and SMALL CREEK	
LARGE CREEK/RIVER	
LAKE, POND or RESERVOIR; MARSHLAND	
SPRING	
TREELINE; TREE	
MATERIAL SOURCE	
SECTION CORNER	
1/4 SECTION CORNER	
1/16 SECTION or PROPERTY CORNER	
PROPERTY CORNER	
PARCEL NUMBER	

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

NORTH ARROW	
FENCE	
GATE with FENCE	
CATTLEGUARD	
GUARDRAIL	
SIGNS	
RETAINING WALL	
POWER POLE UTILITIES	
UNDERGROUND UTILITIES	
SUPPORT POLE with ANCHOR	
TELEPHONE BOOTH or PEDESTAL	
STREET LIGHT	
BRIDGE	
PIPE CULVERT (arrow shows flow)	
PIPE CULVERT with END SECTION	
PIPE CULVERT with HEADWALL	
BOX CULVERT	
CULVERT with DROP INLET	
UNDERDRAIN	
CONTROL POINT	
SURVEY MONUMENT	
HUB & TACK	
SPOT ELEVATION	
COORDINATE GRID TICK	
BUILDING	
BORING LOCATION	
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  
REVISED: 9/2005 1/2007 6/2007

DETAIL  
W101-1A

$\Delta$	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
$\xi$	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
culv.	culvert
D	diameter
DHV	design hourly volume
dia.	diameter
diag.	diagonal
diaph.	diaphragm
dist.	distance
drwg(s).	drawing(s)
E	east
e	superelevation rate
El. 94.061 m	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
fig.	flange
ftg.	footing
ga.	gage (gauge)
galv.	galvanized
hdwl.	headwall
hex.	hexagon
HW	high water
ID	inside diameter
jt.	joint
K.P.	kilometer post
L	length of curve
lam.	lamination
lat.	latitude
long.	longitudinal
LPSM	lump sum
Ls	length of spiral
lt. or LT	left
LW	low water

M.L.	main line
M.P.	mile post
m2	square meter
m3	cubic meter
matl.	material
max.	maximum
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
pvmt.	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
SRS	point of spiral to reverse spiral
SS	point of spiral to spiral (no curve)
ST	point of spiral to tangent
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

NATIONAL BOUNDARY	
STATE BOUNDARY	
COUNTY BOUNDARY	
CITY BOUNDARY	
TOWNSHIP or RANGE LINE	
SECTION LINE	
1/4 SECTION LINE	
1/16 SECTION LINE	
NATIONAL PARK or FOREST BOUNDARY	
PROPERTY LINE	
RIGHT-OF-WAY LINE	EXISTING PROPOSED
RIGHT-OF-WAY LINE with MONUMENT	EXISTING PROPOSED
EASEMENT (Permanent; Non-Permanent)	
SLOPE STAKE	TOP OF CUT TOE OF FILL TRANSITION
ROADWAY, EXISTING	
RAILROAD	SINGLE TRACK MULTIPLE TRACK
WATTLE	
SILT FENCE	
TRAIL	
INTERMITTENT DRAINAGE and SMALL CREEK	
LARGE CREEK/RIVER	
LAKE, POND or RESERVOIR; MARSHLAND	
SPRING	
TREELINE; TREE	
MATERIAL SOURCE	
SECTION CORNER	FOUND PROJECTED
1/4 SECTION CORNER	FOUND PROJECTED
1/16 SECTION or PROPERTY CORNER	FOUND PROJECTED
PROPERTY CORNER	FOUND PROJECTED
PARCEL NUMBER	FOUND PROJECTED

**NOTE:**

- Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
- Dimensions in this plan set are in millimeters unless otherwise noted.

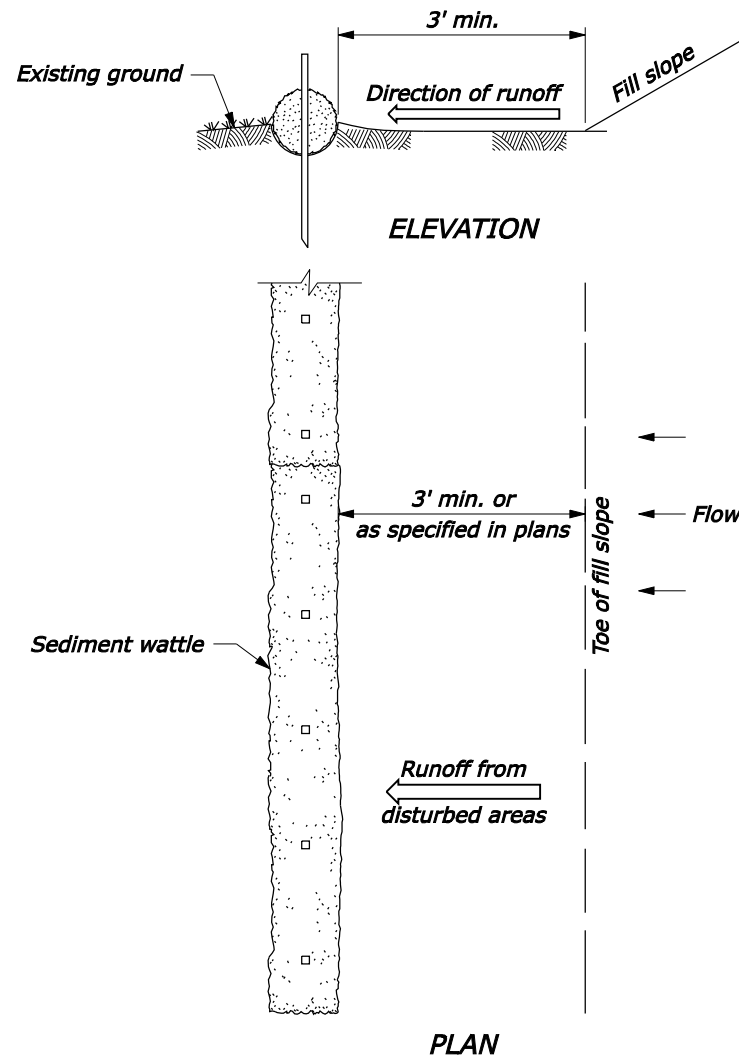
NORTH ARROW	
FENCE	EXISTING PROPOSED
GATE with FENCE	EXISTING PROPOSED
CATTLEGUARD	EXISTING PROPOSED
GUARDRAIL	EXISTING PROPOSED
SIGNS	Post mounted, single Post mounted, double Portable No Symbol
RETAINING WALL	EXISTING PROPOSED
POWER POLE UTILITIES	P=power, T=telephone EXISTING PROPOSED
UNDERGROUND UTILITIES	G=gas, O=oil, P=power, SA=sanitary sewer, SS=storm sewer, T=telephone, W=water EXISTING PROPOSED
SUPPORT POLE with ANCHOR	EXISTING PROPOSED
TELEPHONE BOOTH or PEDESTAL	TB or TP EXISTING PROPOSED
STREET LIGHT	EXISTING PROPOSED
BRIDGE	EXISTING PROPOSED
PIPE CULVERT (arrow shows flow)	EXISTING PROPOSED
PIPE CULVERT with END SECTION	EXISTING PROPOSED
PIPE CULVERT with HEADWALL	EXISTING PROPOSED
BOX CULVERT	EXISTING PROPOSED
CULVERT with DROP INLET	EXISTING PROPOSED
UNDERDRAIN	EXISTING PROPOSED
CONTROL POINT	CP 12345 EXISTING PROPOSED
SURVEY MONUMENT	EXISTING PROPOSED
HUB & TACK	EXISTING PROPOSED
SPOT ELEVATION	EL. 1234.56 ft EXISTING PROPOSED
COORDINATE GRID TICK	N m EXISTING PROPOSED
BUILDING	EXISTING PROPOSED
BORING LOCATION	EXISTING PROPOSED
RIPRAP	EXISTING PROPOSED

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WESTERN FEDERAL LANDS HIGHWAY DIVISION

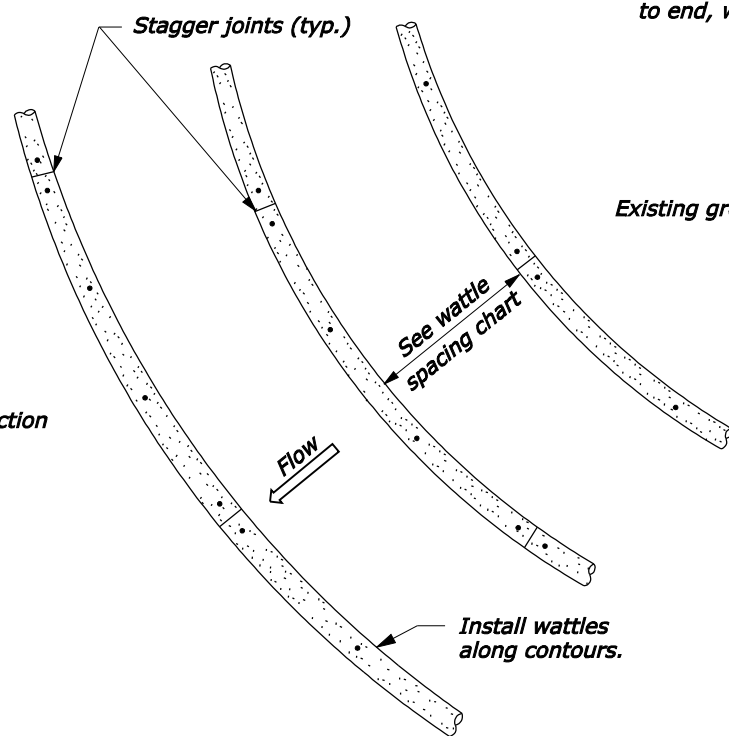
**METRIC DETAIL**  
**PLAN SYMBOLS AND ABBREVIATIONS**

DETAIL APPROVED FOR USE 11/2001  
REVISED: 9/2005 1/2007 6/2007

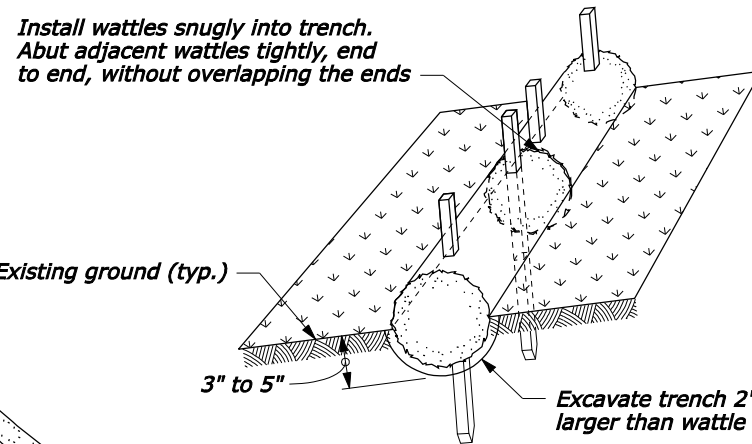
DETAIL  
WM101-1A



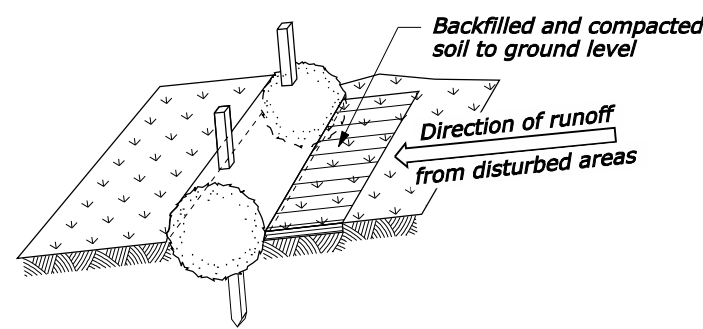
**INSTALLATION BEYOND TOE OF SLOPE**



**INSTALLATION ALONG SLOPES**



**Step 1: Excavate trench and install wattles**



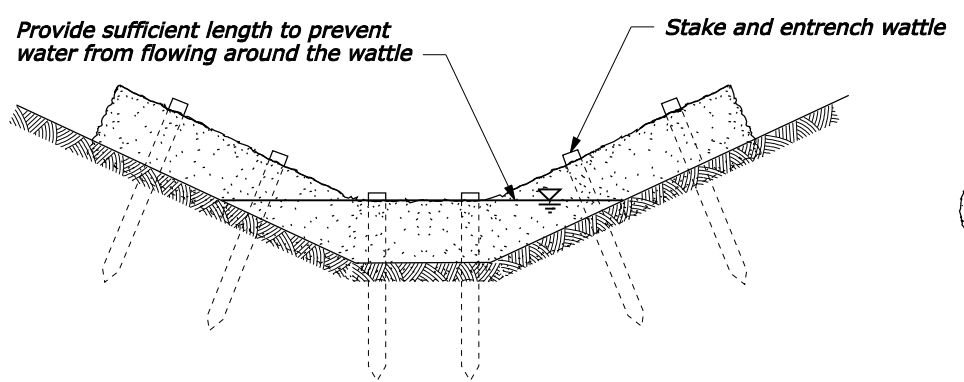
**Step 2: Backfill soil against wattles**

**PROPERLY STAKED AND ENTRENCHED WATTLE**

- NOTE:**
1. Drive stakes at each end and at 4' 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.

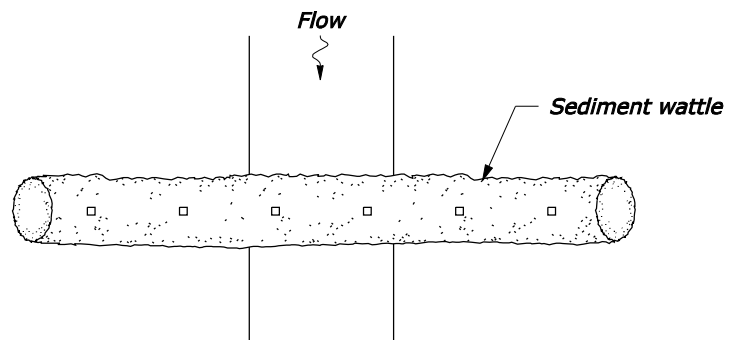
STAKES REQUIRED	
Wattle length (ft)	Stakes required for each wattle
25	8
20	6
12	4

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

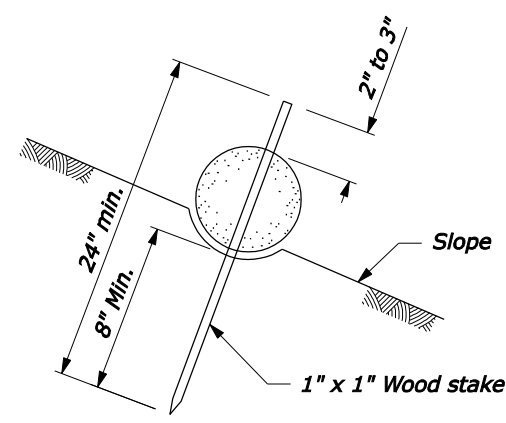


**ELEVATION**

**DRAINAGE DITCH INSTALLATION**



**PLAN**



**WATTLE STAKING DETAIL**

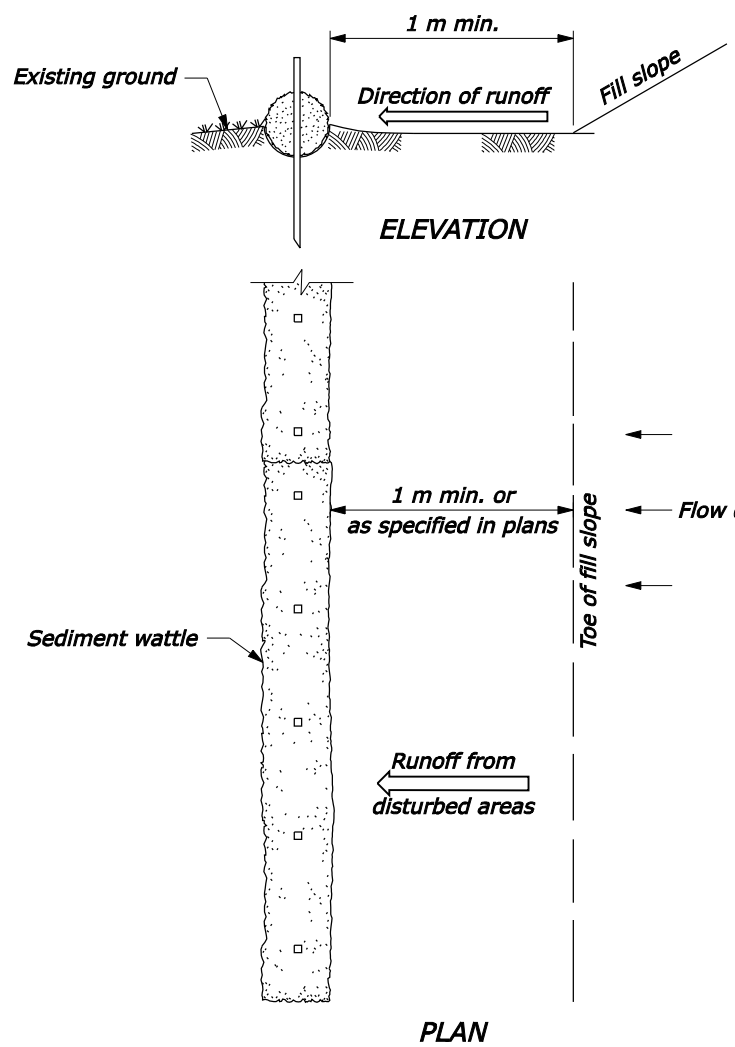
NO SCALE

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

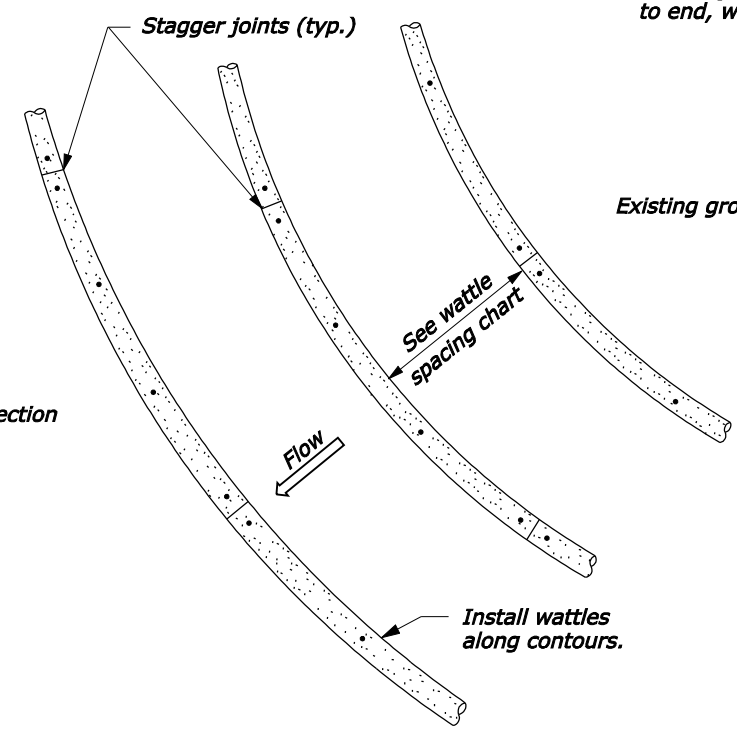
U.S. CUSTOMARY DETAIL

**SEDIMENT WATTLE**

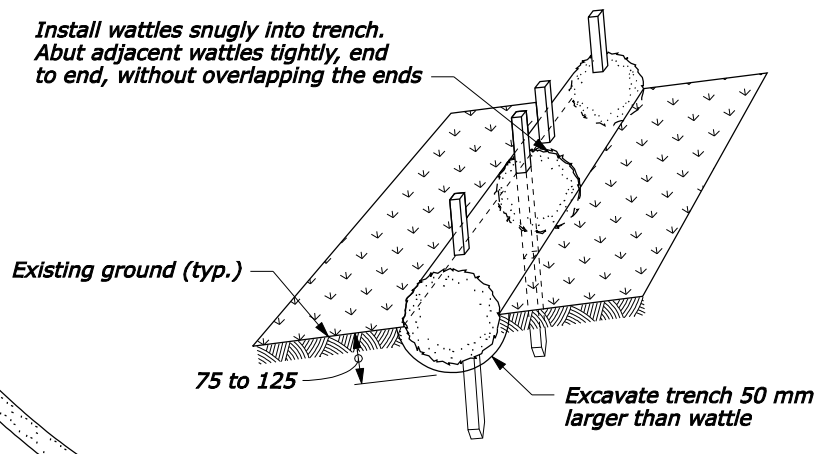
DETAIL APPROVED FOR USE 9/2007	DETAIL
REVISED:	W157-20



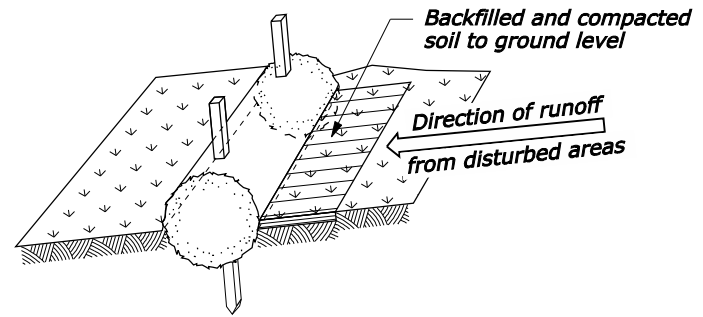
**INSTALLATION BEYOND TOE OF SLOPE**



**INSTALLATION ALONG SLOPES**



**Step 1: Excavate trench and install wattles**



**Step 2: Backfill soil against wattles**

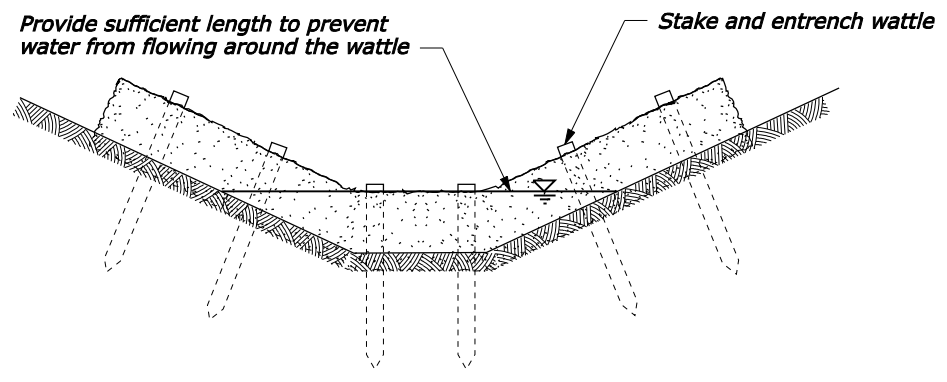
**PROPERLY STAKED AND ENTRENCHED WATTLE**

**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.

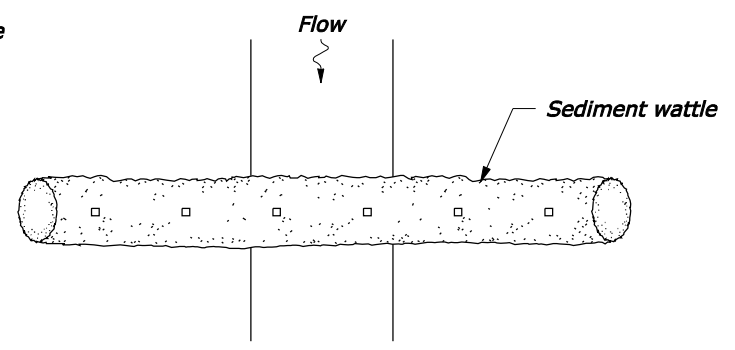
STAKES REQUIRED	
Wattle length (m)	Stakes required for each wattle
7.5	8
6.0	6
3.5	4

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

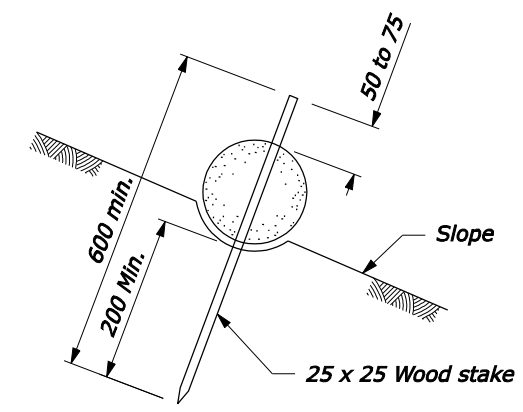


**ELEVATION**

**DRAINAGE DITCH INSTALLATION**



**PLAN**



**WATTLE STAKING DETAIL**

NO SCALE

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

**METRIC DETAIL**

**SEDIMENT WATTLE**

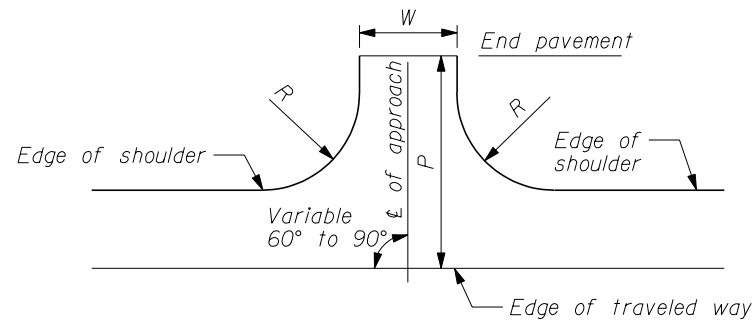
DETAIL APPROVED FOR USE 9/2007

REVISID:

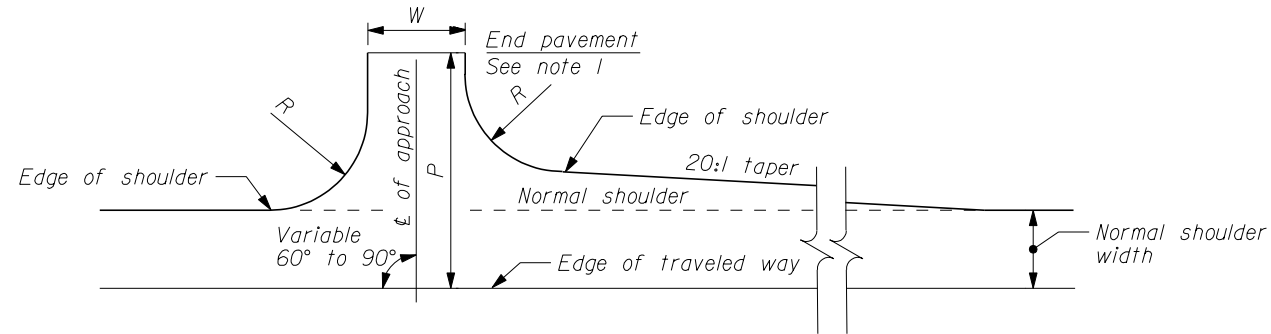
DETAIL  
WM157-20

**NOTE:**

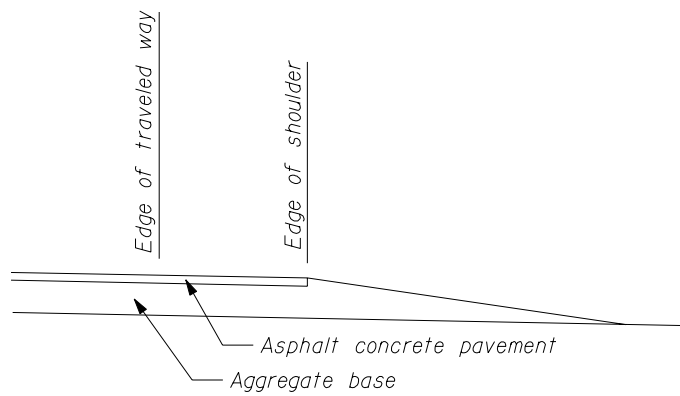
1. Finish Type 3 approaches to public roads (county, state and municipalities) and public or private roads used for commercial purposes with the same pavement structure as shown for the adjacent roadbed.
2. Finish other approaches with untreated base. Provide a wearing surface of the same treatment as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



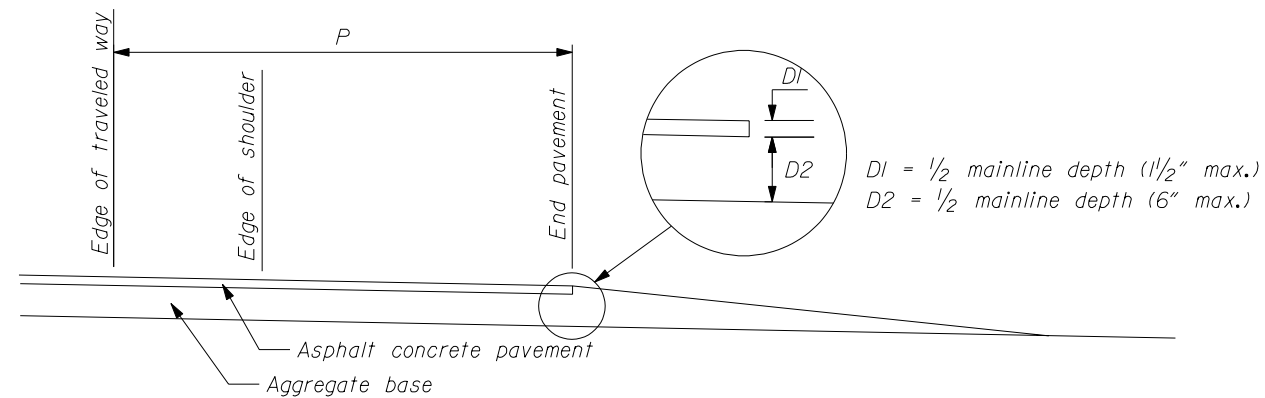
TYPE 1 AND 2



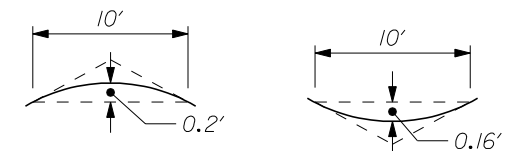
TYPE 3



TYPE 1 APPROACH (UNPAVED)

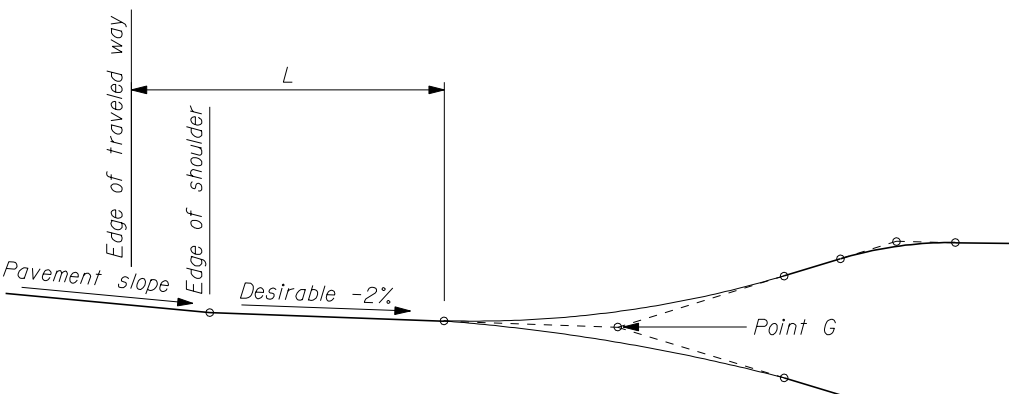


TYPE 2 APPROACHES

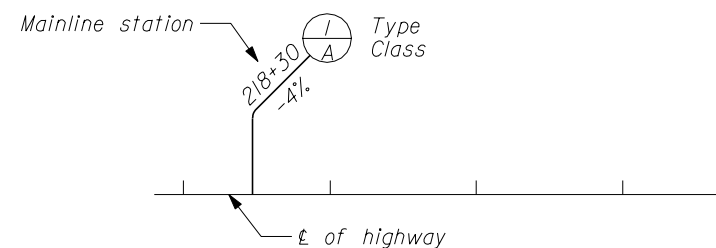


MAXIMUM CREST      MAXIMUM SAG

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



APPROACH PROFILE



ROAD APPROACH SYMBOL

ROAD APPROACHES					
TYPE	CLASS	W	R	L (min.)	P
		Dimensions in feet			
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

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WESTERN FEDERAL LANDS HIGHWAY DIVISION

DETAIL

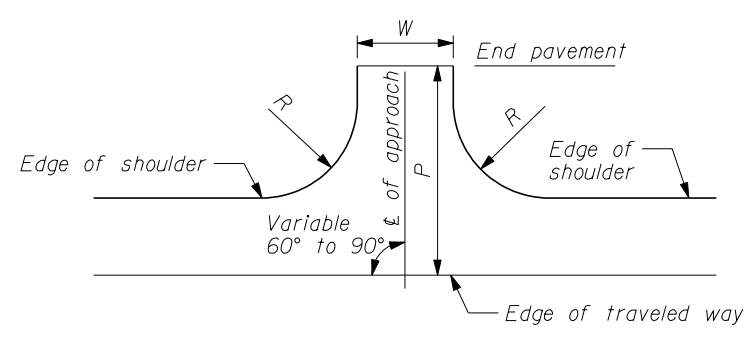
STANDARD OREGON  
ROAD APPROACH

DETAIL APPROVED FOR USE 12/2002

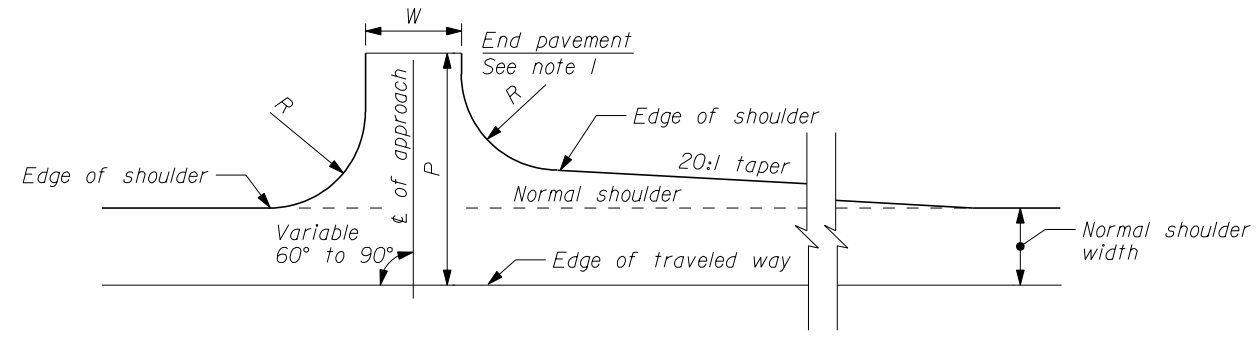
REVISIONS:

DETAIL W200-2

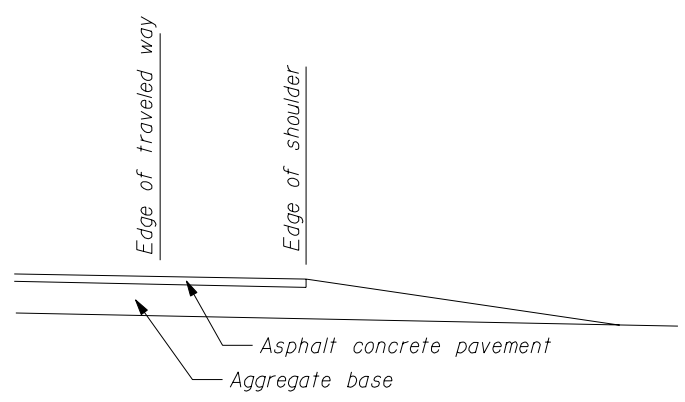
NO SCALE



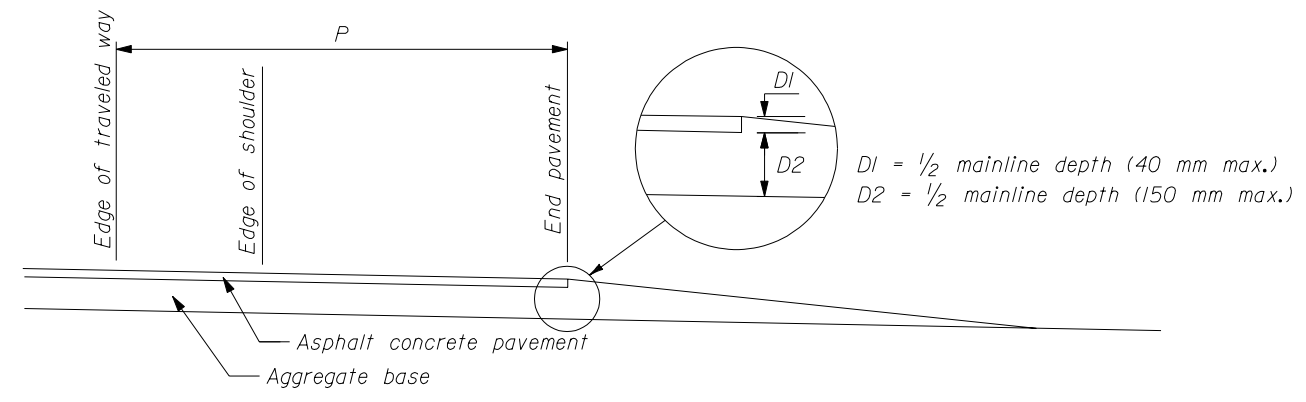
TYPE 1 AND 2



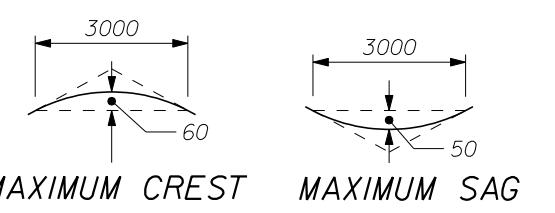
TYPE 3



TYPE 1 APPROACH (UNPAVED)

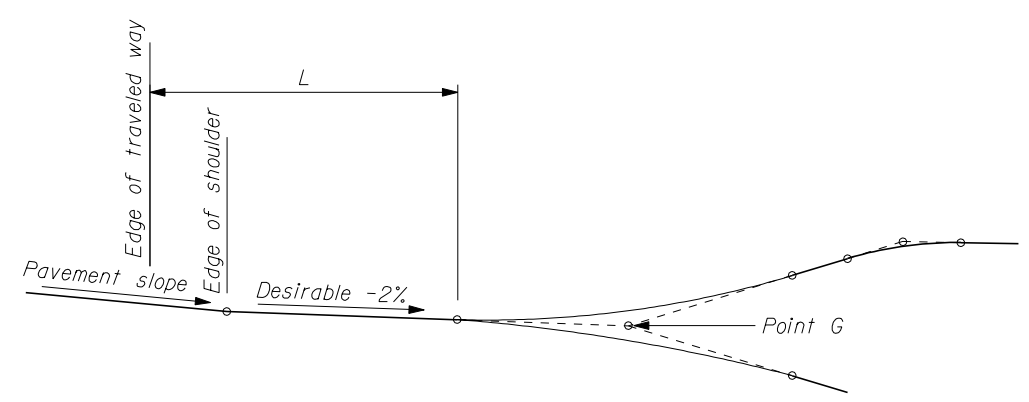


TYPE 2 APPROACHES

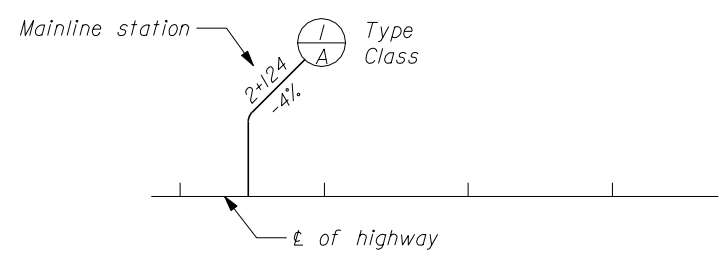


**MAXIMUM CREST**      **MAXIMUM SAG**

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



APPROACH PROFILE



ROAD APPROACH SYMBOL

ROAD APPROACHES					
TYPE	CLASS	W	R	L (min.)	
				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

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FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

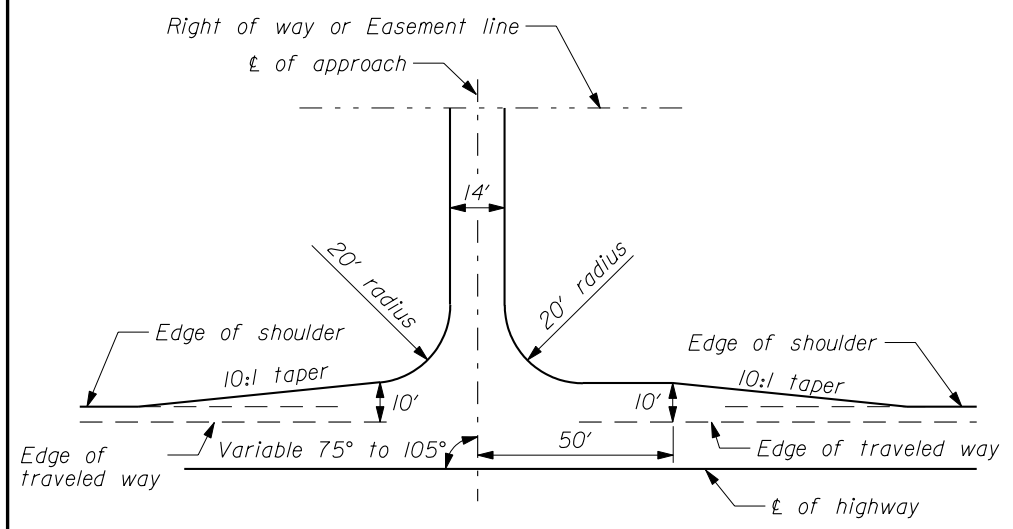
**METRIC DETAIL**

**STANDARD OREGON  
ROAD APPROACH**

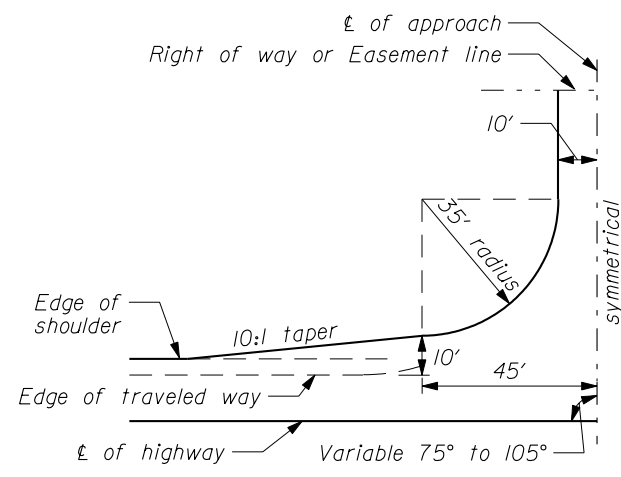
DETAIL APPROVED FOR USE 3/1996	DETAIL
REVISED: 12/2000 9/2001 12/2002	WM200-2

NO SCALE

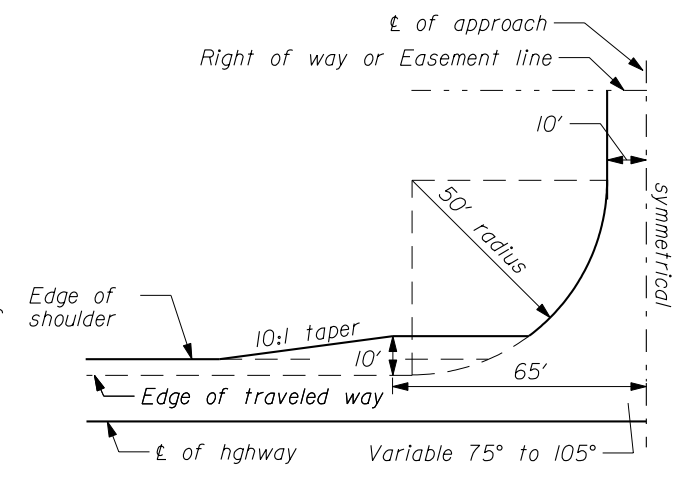




PLAN OF TYPE A APPROACH



PLAN OF TYPE B APPROACH

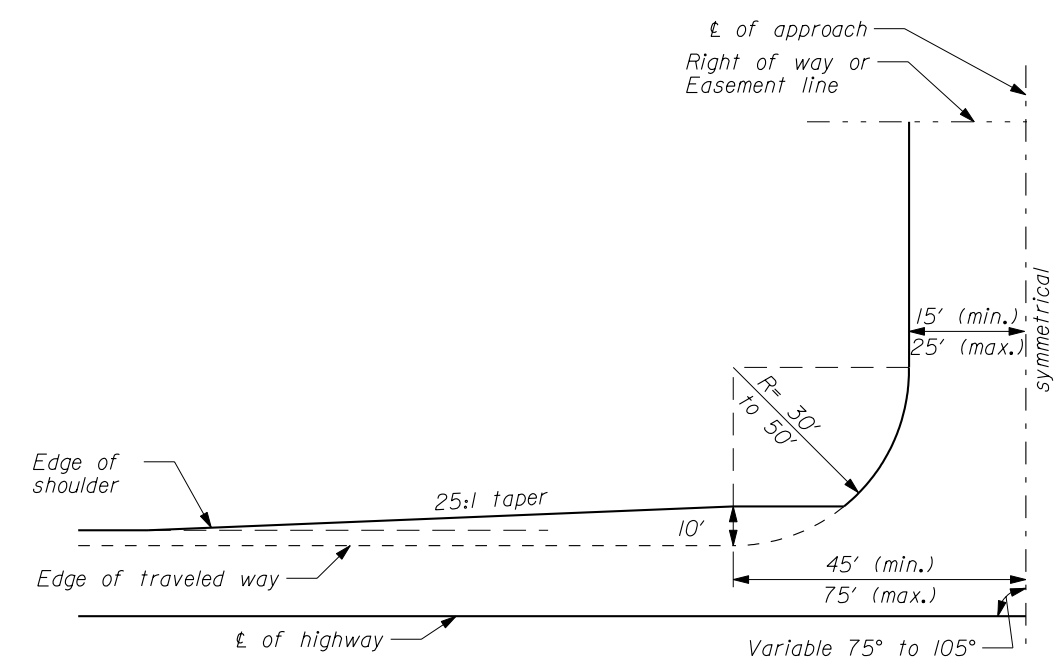


PLAN OF TYPE C APPROACH

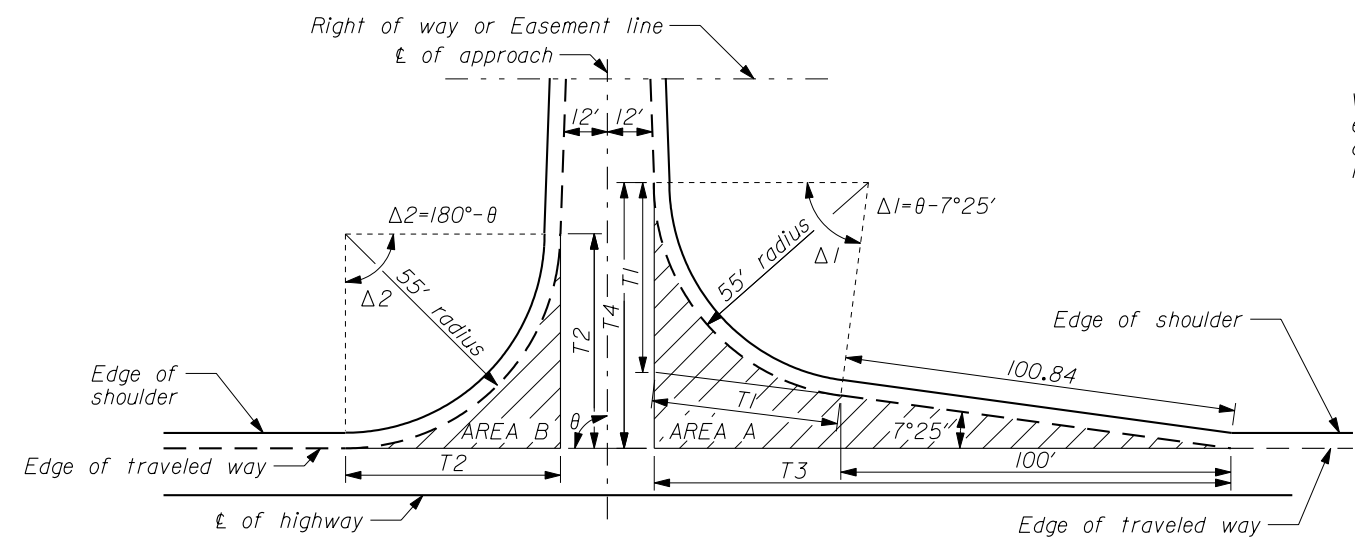
NOTE:

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 for the adjacent roadbed, except the surface course shall not exceed 1/2 inches 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.

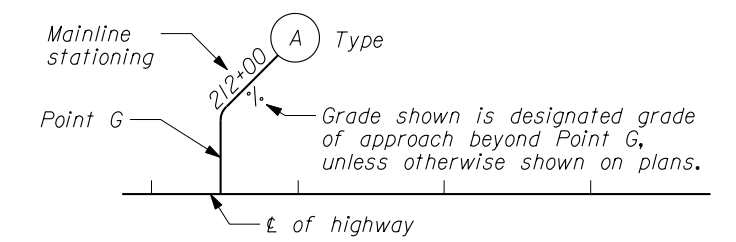
TYPE M INTERSECTION DATA								
SKEW $\theta$	$\Delta 1$	$\Delta 2$	T1 ft	T2 ft	T3 ft	T4 ft	Area A sqyd	Area B sqyd
75°	67°35"	105°	36.81	71.68	131.74	55.20	157	130
76°	68°35"	104°	37.51	70.40	132.74	55.91	160	125
77°	69°35"	103°	38.21	69.14	133.75	56.64	163	120
78°	70°35"	102°	38.93	67.92	134.77	57.38	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



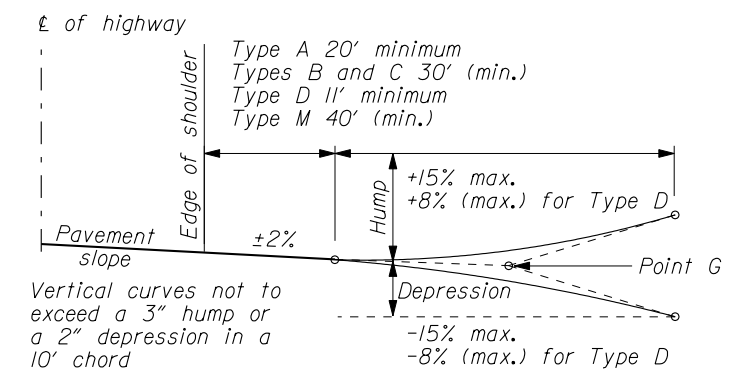
PLAN OF TYPE D APPROACH



PLAN OF TYPE M APPROACH



ROAD APPROACH LOCATIONS ON PLAN SHEETS



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

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

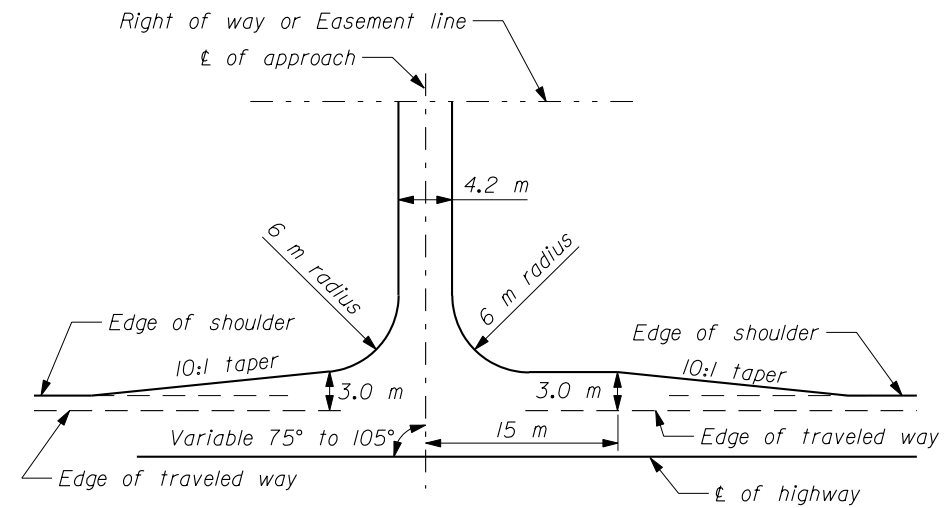
DETAIL

**STANDARD WASHINGTON ROAD APPROACHES**

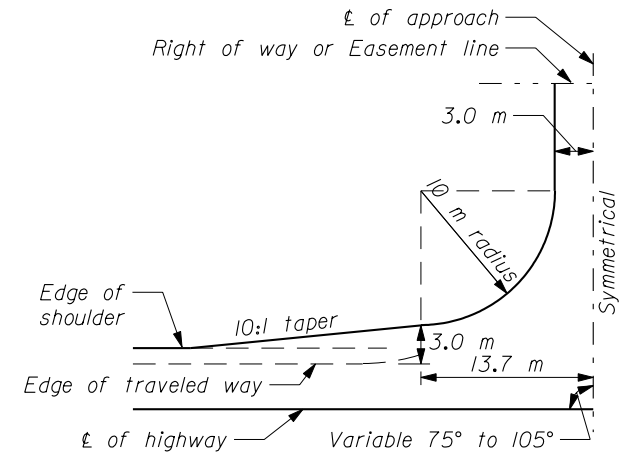
DETAIL APPROVED FOR USE 3/2003  
 REVISIONS: 4/2003

DETAIL  
 W200-4

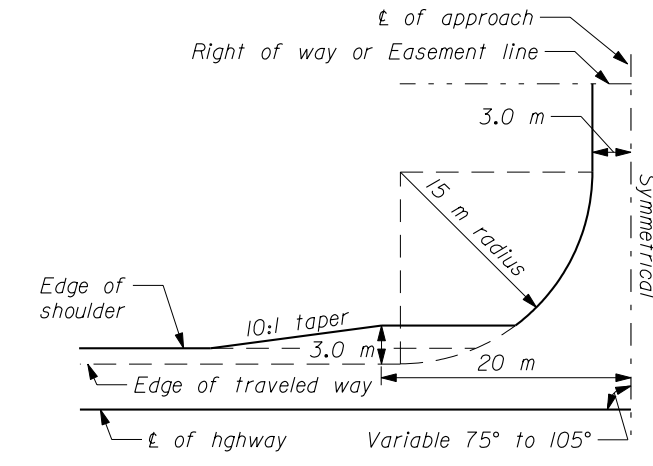
NO SCALE



PLAN OF TYPE A APPROACH



PLAN OF TYPE B APPROACH

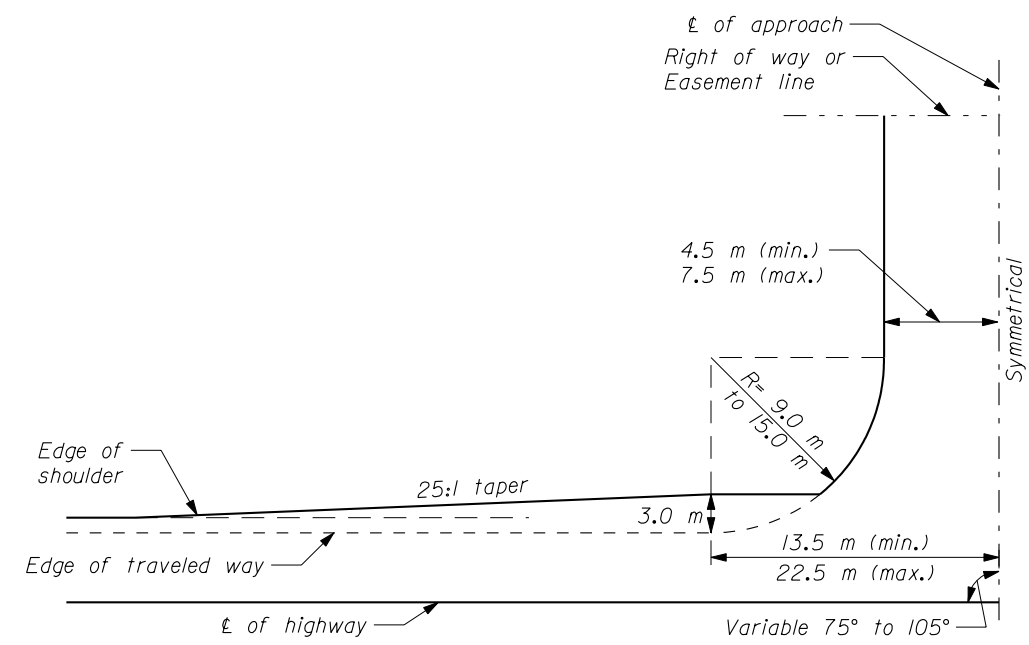


PLAN OF TYPE C APPROACH

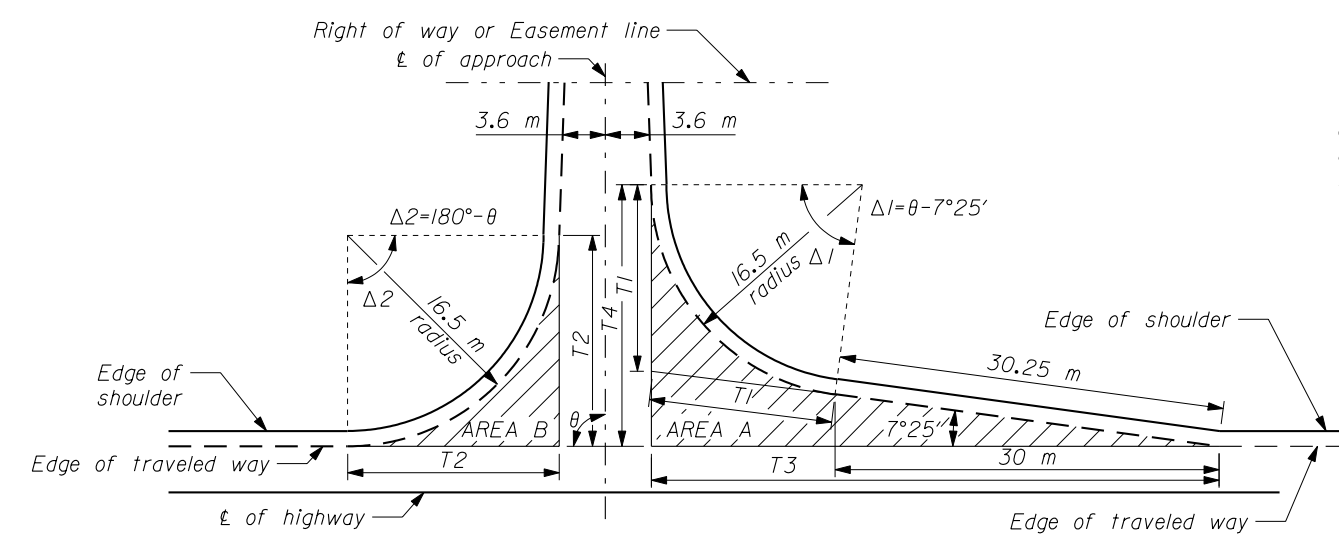
NOTE:

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 for the adjacent roadbed, except 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 not labeled are in millimeters.

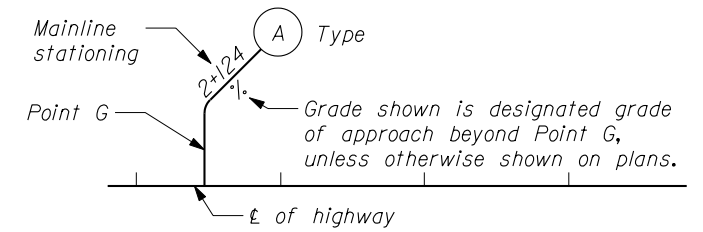
TYPE M INTERSECTION DATA								
SKEW $\theta$	$\Delta 1$	$\Delta 2$	T1 m	T2 m	T3 m	T4 m	Area A m <sup>2</sup>	Area B m <sup>2</sup>
75°	67°35"	105°	11.04	21.50	39.52	16.56	127	105
76°	68°35"	104°	11.25	21.12	39.82	16.77	129	101
77°	69°35"	103°	11.46	20.74	40.13	16.99	132	98
78°	70°35"	102°	11.68	20.38	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



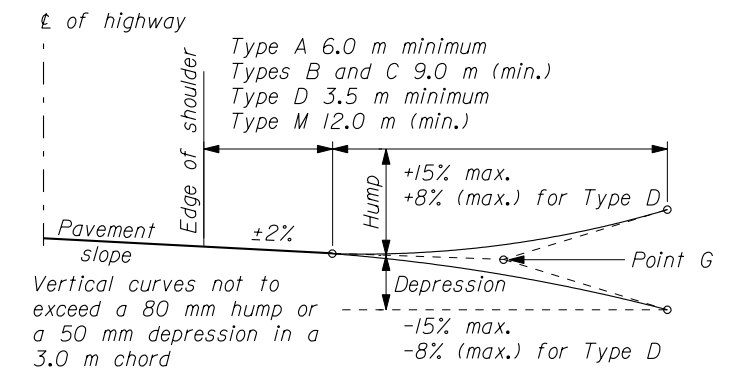
PLAN OF TYPE D APPROACH



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

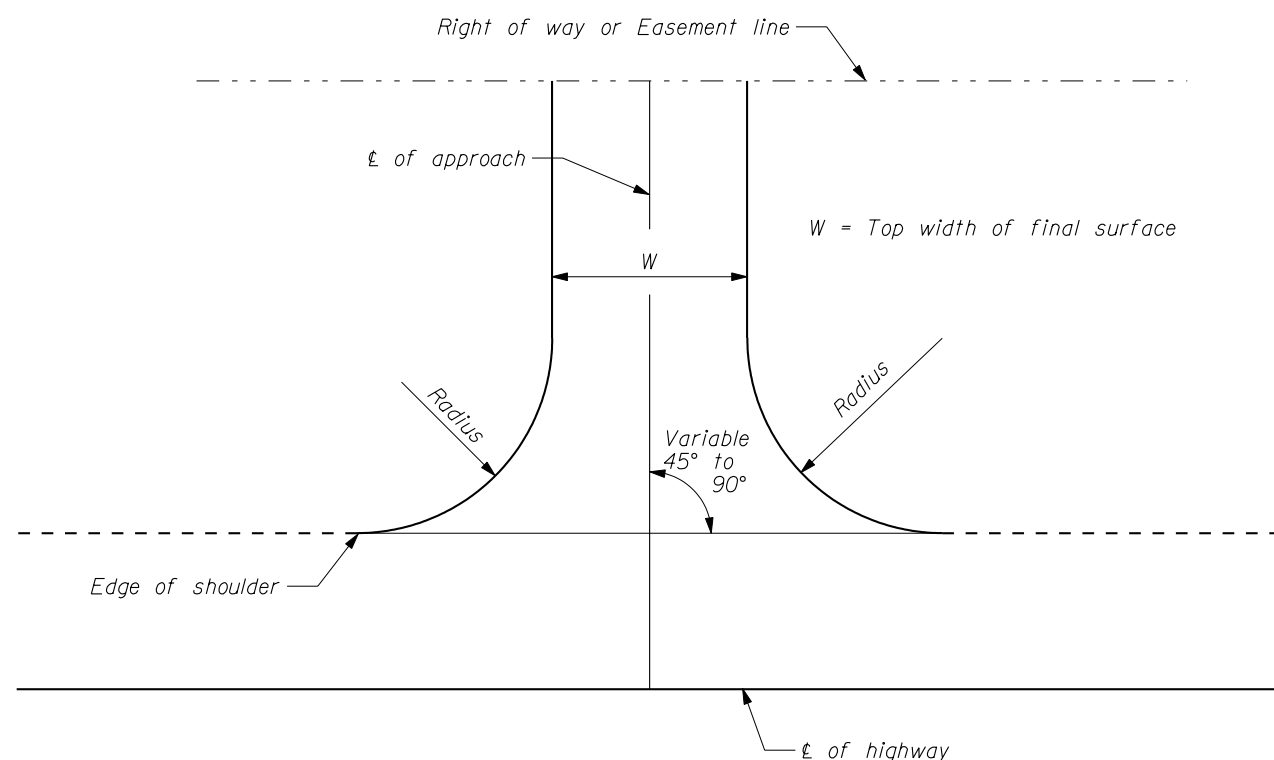
METRIC DETAIL

STANDARD WASHINGTON  
ROAD APPROACHES

DETAIL APPROVED FOR USE 3/1996  
REVISED: 3/1999 12/2000 3/2003 4/2003

DETAIL  
WM200-4

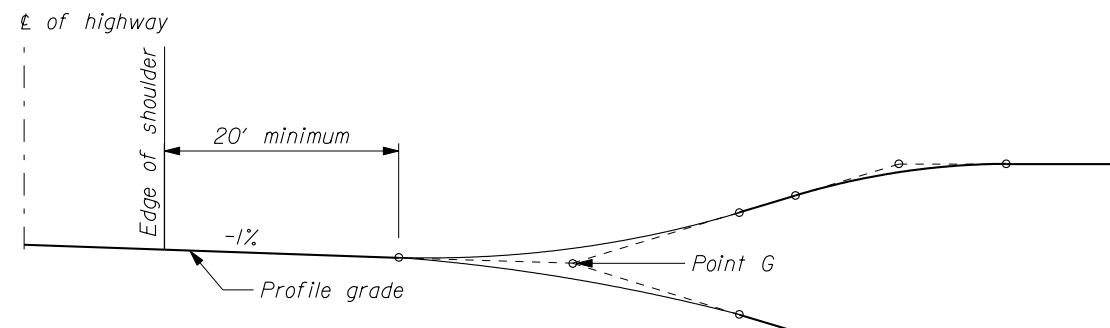
NO SCALE



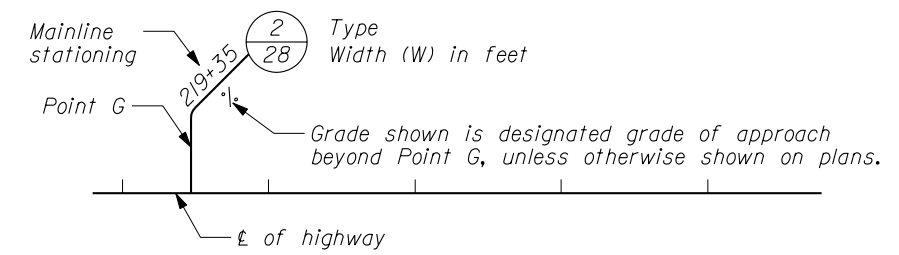
APPROACHES FOR UNCURBED HIGHWAYS  
TYPE 1 AND TYPE 2

NOTE:

1. TYPE 1 APPROACH:  
Top width (W) - 16' minimum  
Radius - 20' minimum
2. TYPE 2 APPROACH:  
Top width (W) - 24' minimum  
Radius - 30' minimum
3. GRADING REQUIREMENTS: Construct sideslopes of finish approaches compatible with adjacent roadway construction.
4. PAVEMENT STRUCTURE REQUIREMENTS: Extend the surface course to the right-of-way or easement line unless otherwise shown on the plans.
5. Finish approaches to public roads used for commercial purposes with same treatment as shown for the adjacent roadbed.
6. Finish other approaches with aggregate base. Provide a surface course of the same treatment as shown for the adjacent roadbed, but do not exceed 1/2" in depth.



APPROACH PROFILE

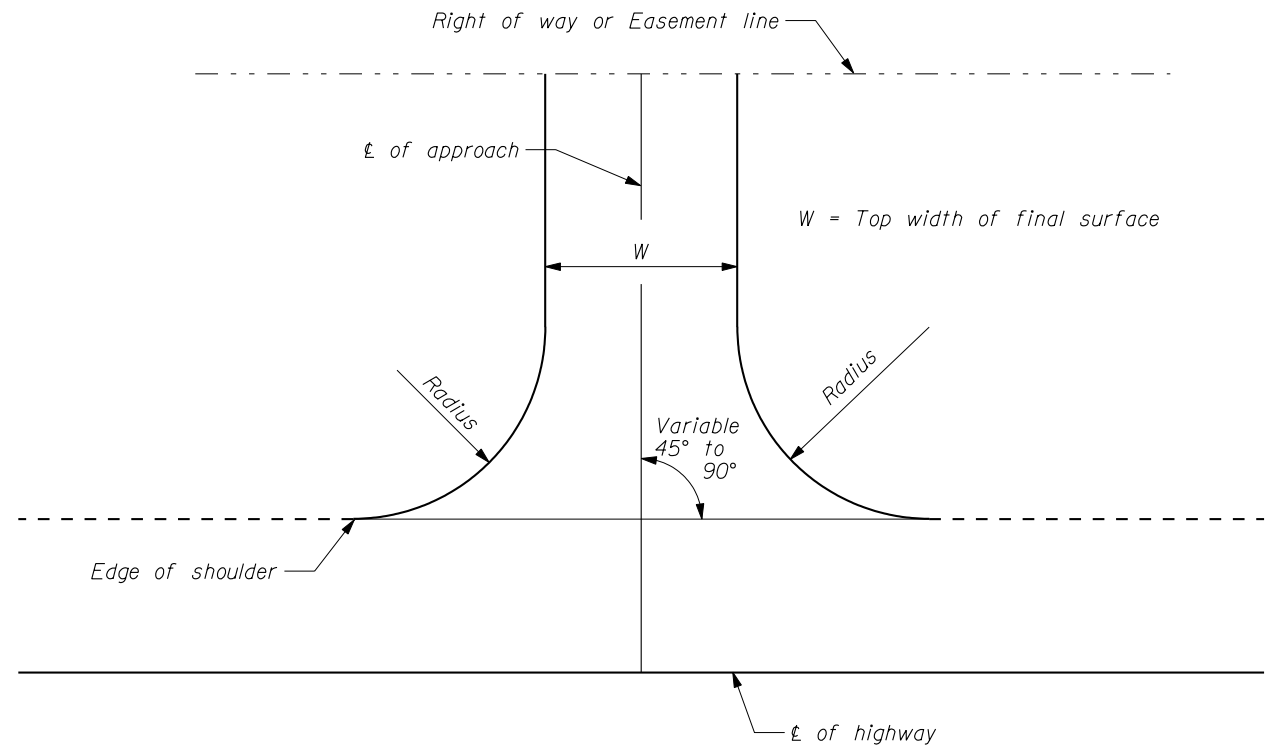


ROAD APPROACH LOCATIONS  
ON PLAN SHEETS

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION WESTERN FEDERAL LANDS HIGHWAY DIVISION	
DETAIL	
STANDARD IDAHO ROAD APPROACH	
DETAIL APPROVED FOR USE 3/2003	DETAIL
REVISED:	W200-5

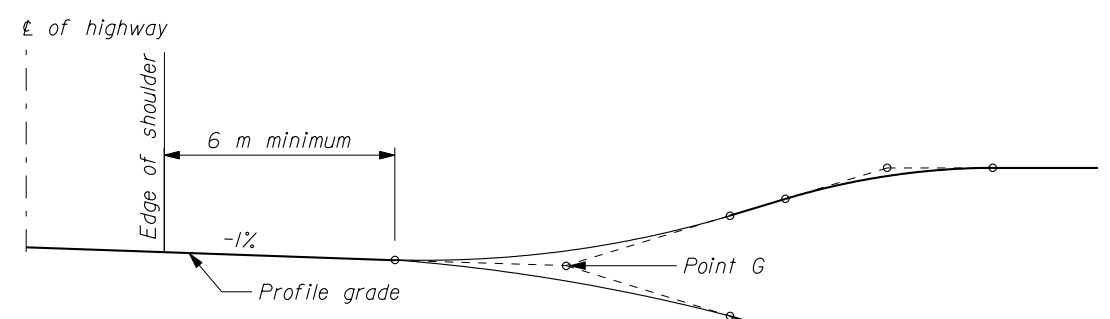
3/18/2003 f:\StandDraw\Western\w20005.dgn



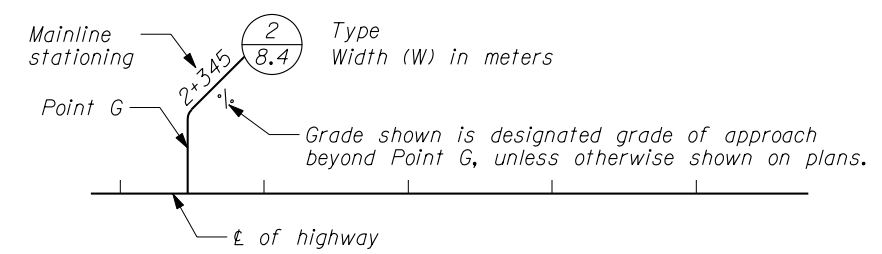
APPROACHES FOR UNCURBED HIGHWAYS  
TYPE 1 AND TYPE 2

NOTE:

1. TYPE 1 APPROACH:  
Top width (W) - 4.8 m minimum  
Radius - 6 m minimum
2. TYPE 2 APPROACH:  
Top width (W) - 7.2 m minimum  
Radius - 9 m minimum
3. GRADING REQUIREMENTS: Construct sideslopes of finish approaches compatible with adjacent roadway construction.
4. PAVEMENT STRUCTURE REQUIREMENTS: Extend the surface course to the right-of-way or easement line unless otherwise shown on the plans.
5. Finish approaches to public roads used for commercial purposes with same treatment as shown for the adjacent roadbed.
6. 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 in depth.
7. Dimensions not labeled are in millimeters.



APPROACH PROFILE

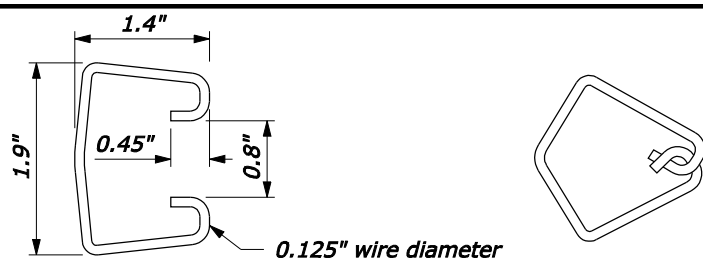


ROAD APPROACH LOCATIONS  
ON PLAN SHEETS

NO SCALE

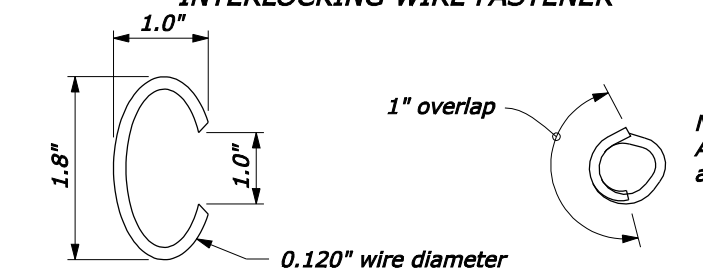
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION WESTERN FEDERAL LANDS HIGHWAY DIVISION	
METRIC DETAIL	
<b>STANDARD IDAHO ROAD APPROACH</b>	
DETAIL APPROVED FOR USE 3/1996	DETAIL
REVISED: 12/2000 3/2003	WM200-5

3/18/2003  
f:\s\anDraw\Western\wm20005.dgn



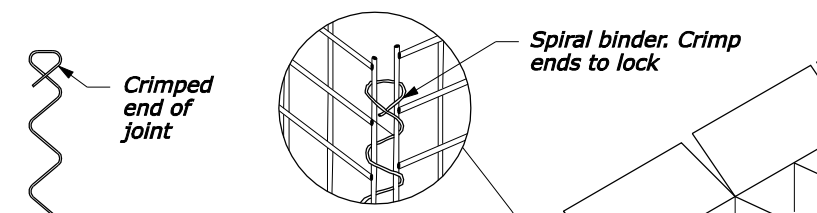
**INTERLOCKING WIRE FASTENER**  
BEFORE CLOSURE      AFTER CLOSURE

NOTE:  
All dimensions  
are nominal

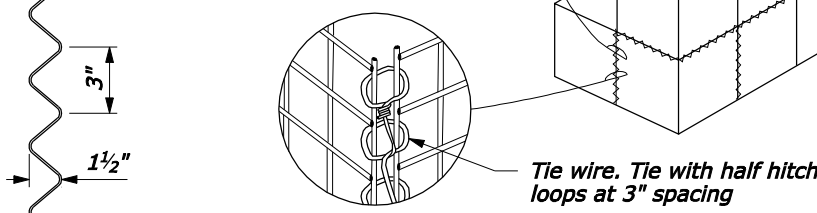


**OVERLAPPING RING WIRE FASTENER**  
BEFORE CLOSURE      AFTER CLOSURE

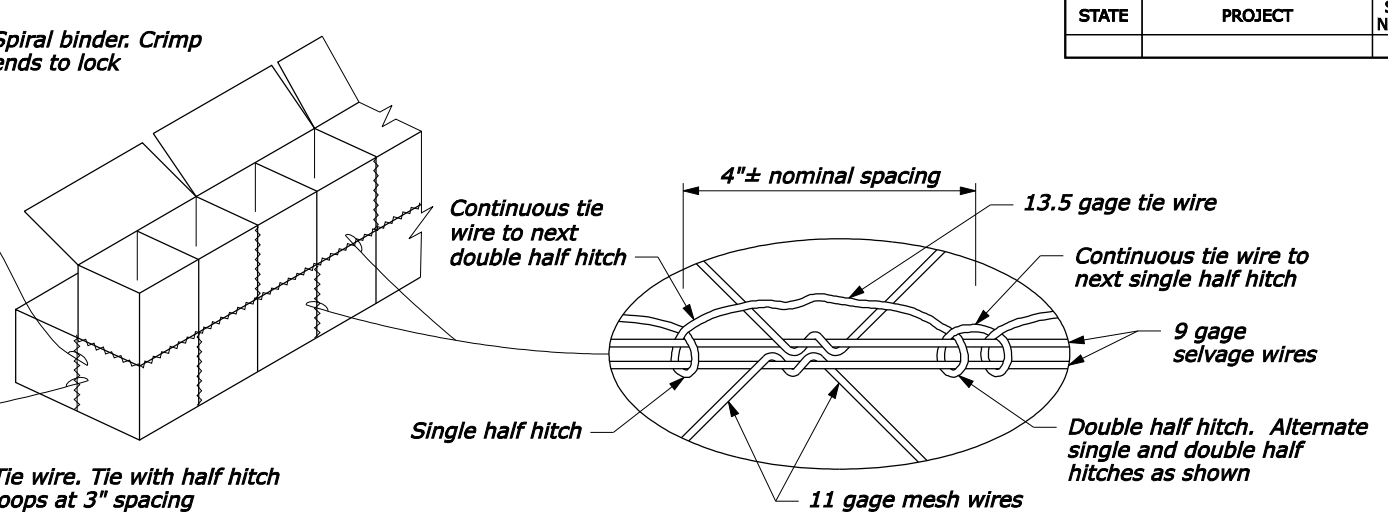
**ALTERNATE TYING FASTENERS**  
(Not allowed for basket to basket connection)



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



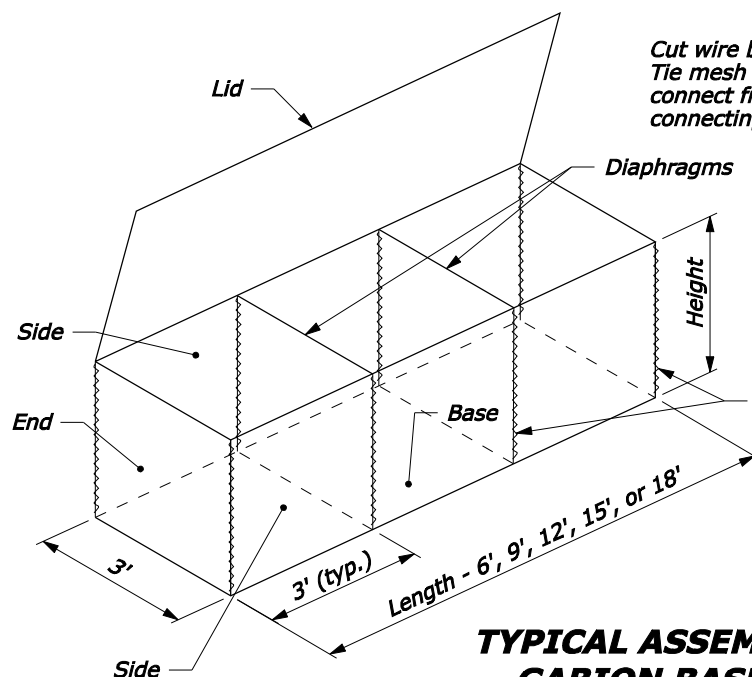
**HALF HITCH TYING DETAIL**  
(Welded wire mesh)



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

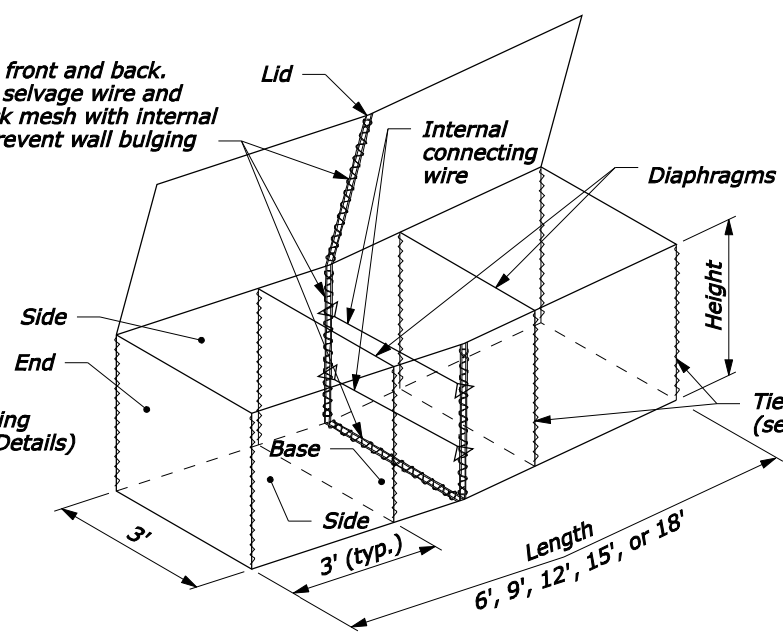
**TYPICAL INSTALLATION GABION BASKETS**

**9 GAGE SPIRAL BINDER**

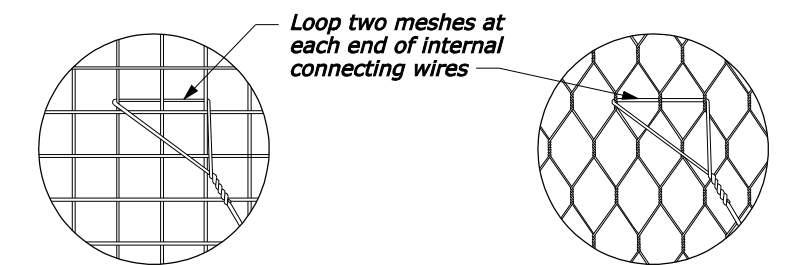


**TYPICAL ASSEMBLED GABION BASKET**

Cut wire basket mesh front and back. Tie mesh with 9 gage selvage wire and connect front and back mesh with internal connecting wires to prevent wall bulging.

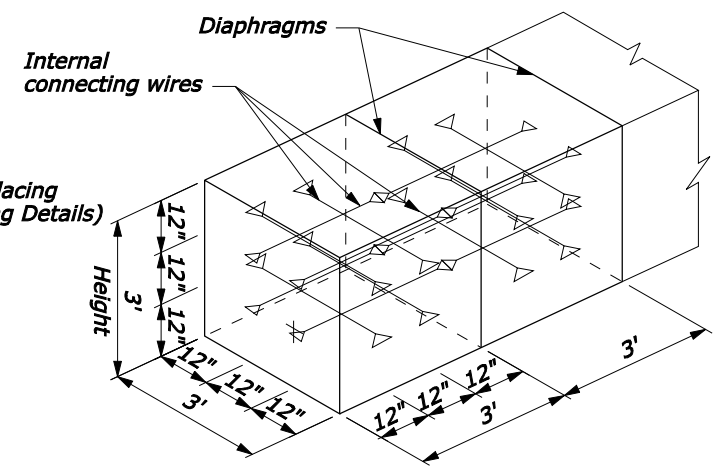


**ASSEMBLED GABION BASKET IN WALL GRADE TRANSITION AREAS**

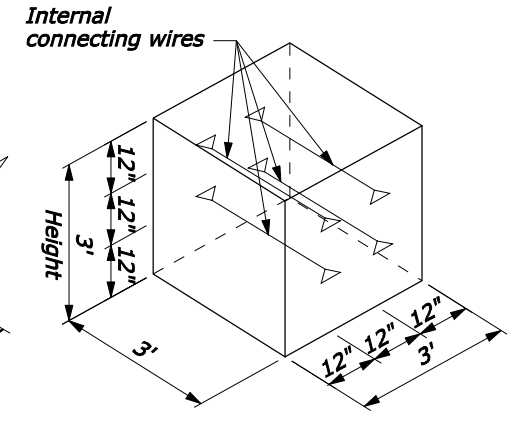


**WELDED WIRE MESH**

**TWISTED WIRE MESH**

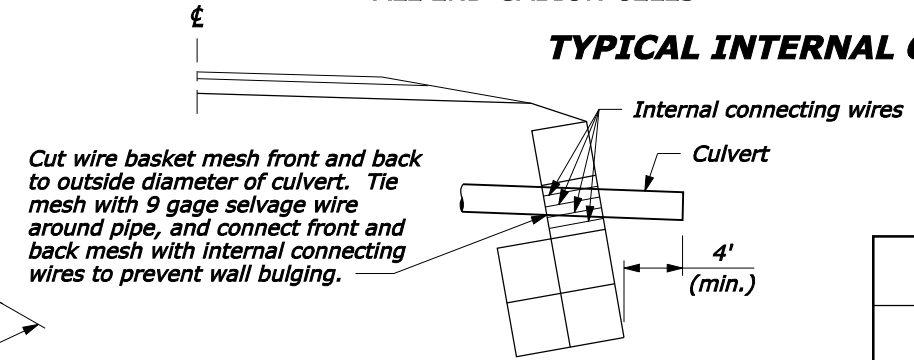


**ALL END GABION CELLS**



**ALL INTERIOR GABION CELLS**

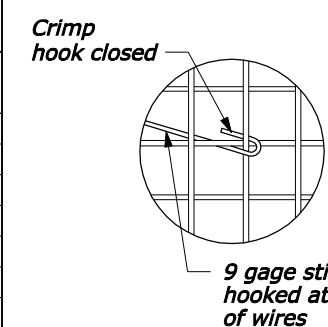
**TYPICAL INTERNAL CONNECTING WIRES**



**TYPICAL CULVERT INSTALLATION THROUGH GABION WALL**

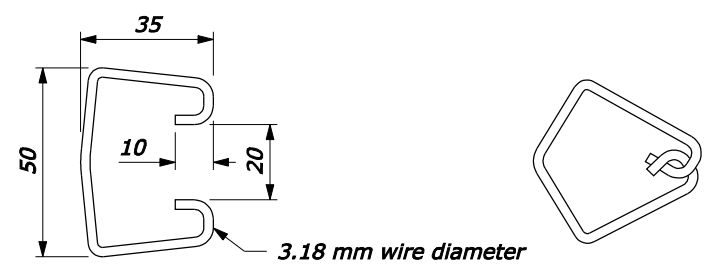
NO SCALE

<b>GABION BASKET NOMINAL SIZES AND CAPACITY</b>				
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

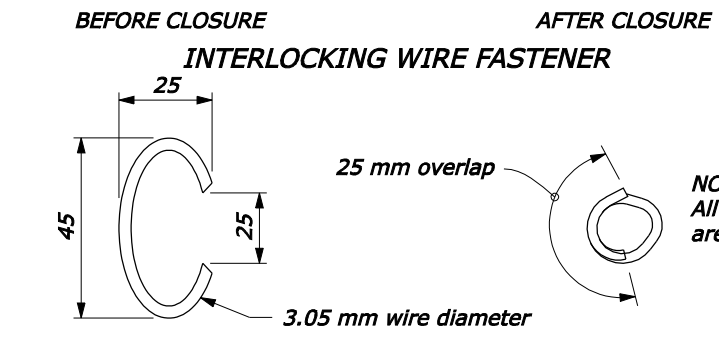


**OPTIONAL INTERNAL CONNECTING WIRES WELDED WIRE GABION BASKET**

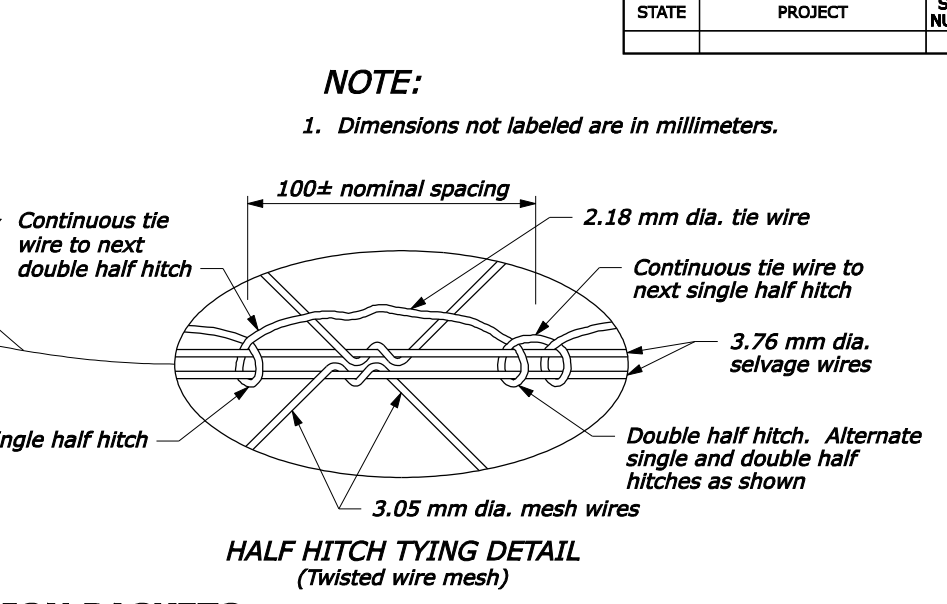
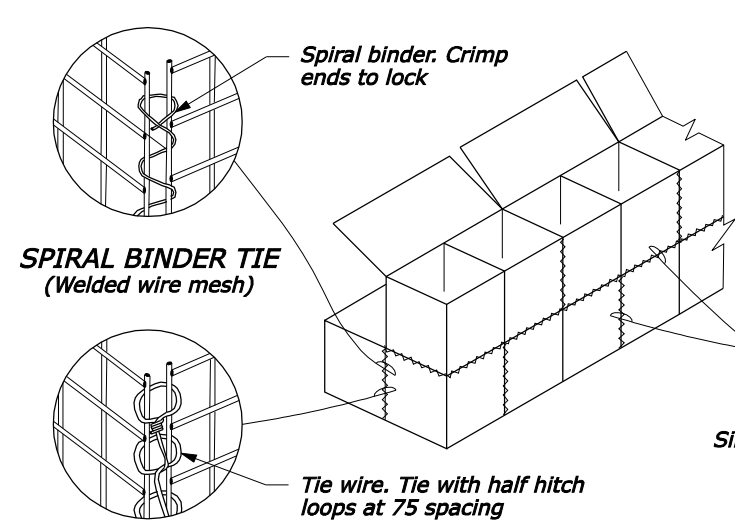
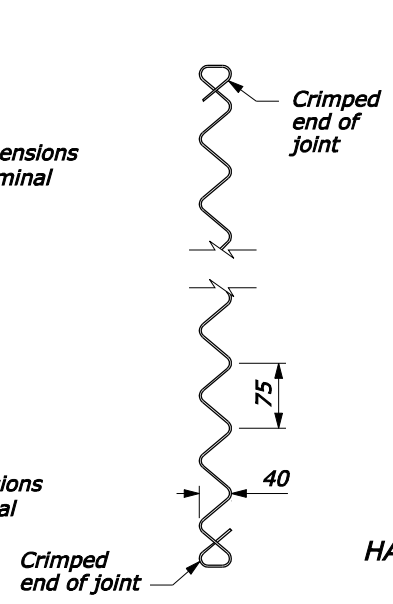
07-Feb-2008 03:47 PM Pp://198.145.186.2/std.pln/vf/w25301.dgn [US Customary]



NOTE:  
All dimensions are nominal



NOTE:  
All dimensions are nominal

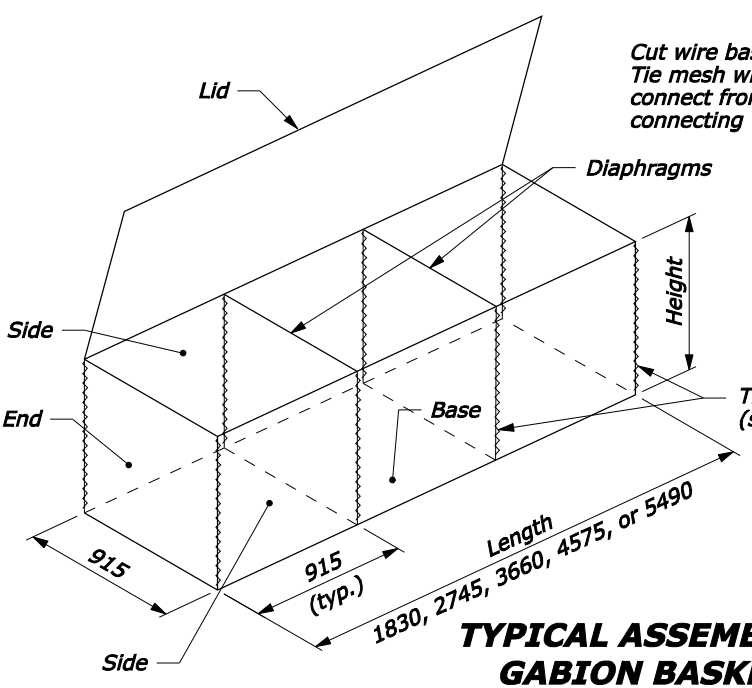


NOTE:  
1. Dimensions not labeled are in millimeters.

**TYPICAL INSTALLATION GABION BASKETS**

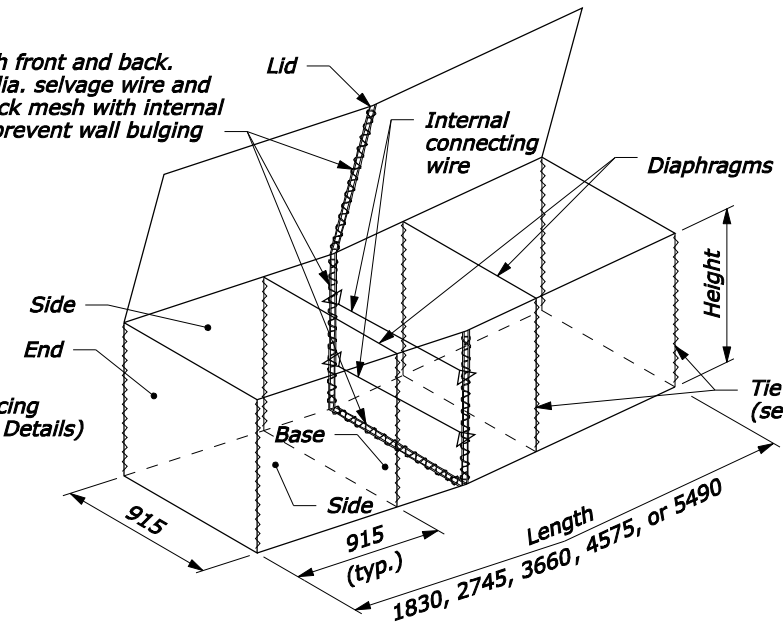
**ALTERNATE TYING FASTENERS**  
OVERLAPPING RING WIRE FASTENER  
(Not allowed for basket to basket connection)

**3.76 mm DIAMETER SPIRAL BINDER**

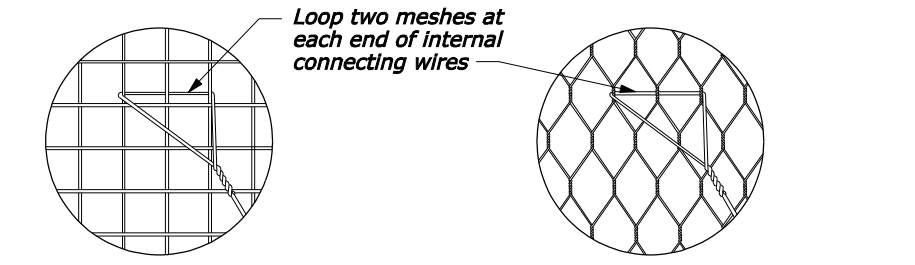


**TYPICAL ASSEMBLED GABION BASKET**

Cut wire basket mesh front and back. Tie mesh with 2.76 dia. selvage wire and connect front and back mesh with internal connecting wires to prevent wall bulging

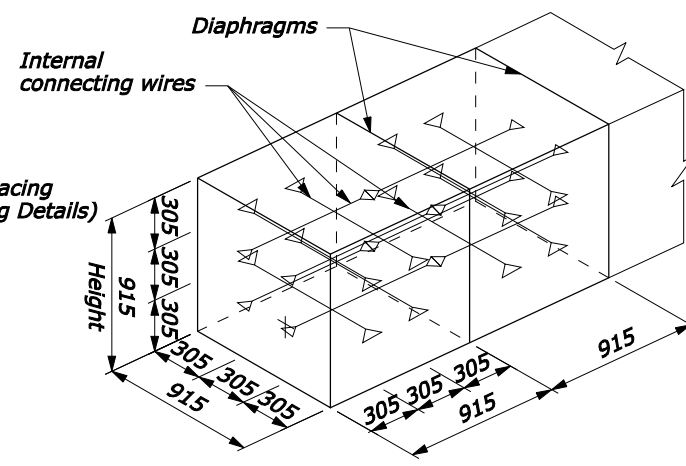


**ASSEMBLED GABION BASKET IN WALL GRADE TRANSITION AREAS**

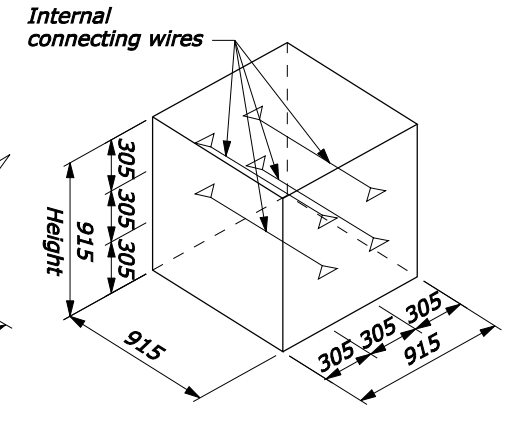


**WELDED WIRE MESH**

**TWISTED WIRE MESH**

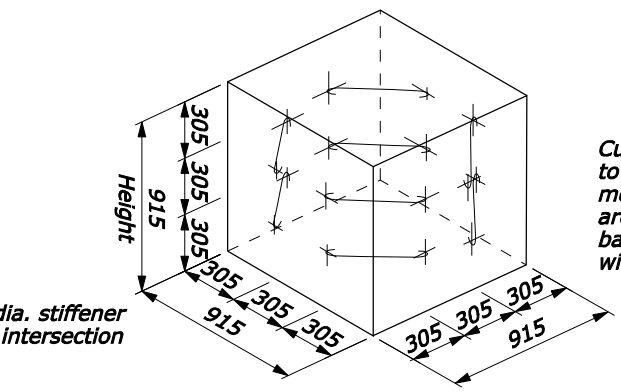
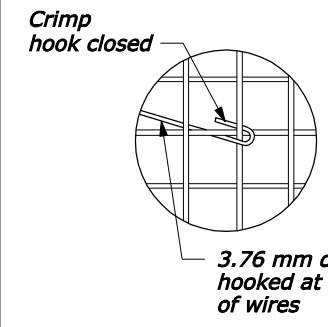


**ALL END GABION CELLS**

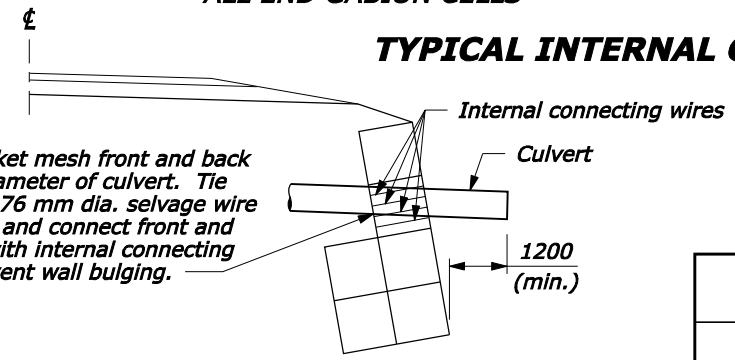


**ALL INTERIOR GABION CELLS**

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



**ALL GABION CELLS**  
**OPTIONAL INTERNAL CONNECTING WIRES**  
**WELDED WIRE GABION BASKET**



Cut wire basket mesh front and back to outside diameter of culvert. Tie mesh with 3.76 mm dia. selvage wire around pipe, and connect front and back mesh with internal connecting wires to prevent wall bulging.

**TYPICAL CULVERT INSTALLATION THROUGH GABION WALL**

**TYPICAL INTERNAL CONNECTING WIRES**

NO SCALE

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

**METRIC DETAIL**

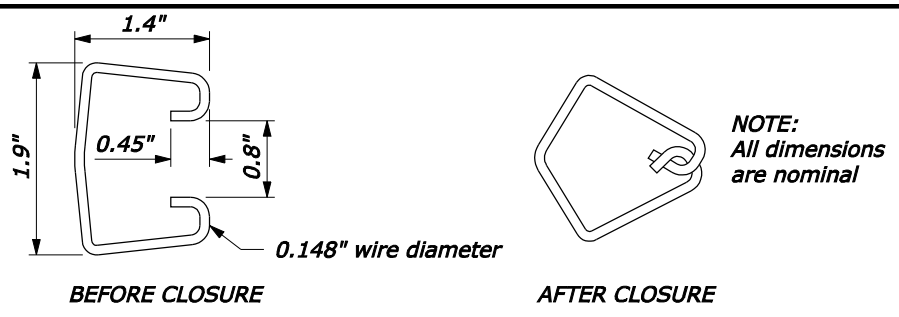
**GABION BASKET**

DETAIL APPROVED FOR USE --/----

REVISED: DRAFT: 2/2008

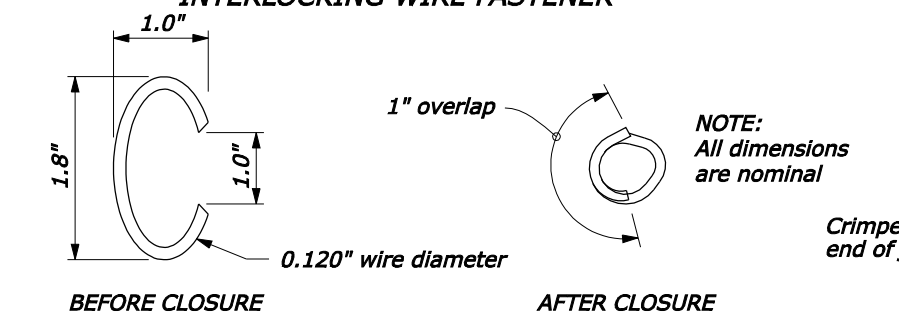
DETAIL WM253-1

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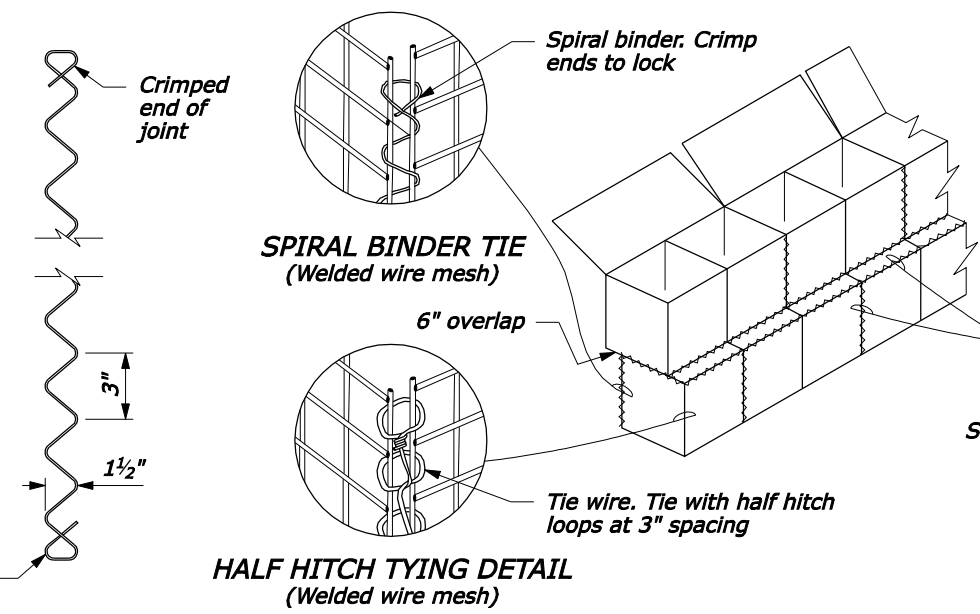
**INTERLOCKING WIRE FASTENER**

NOTE:  
All dimensions  
are nominal



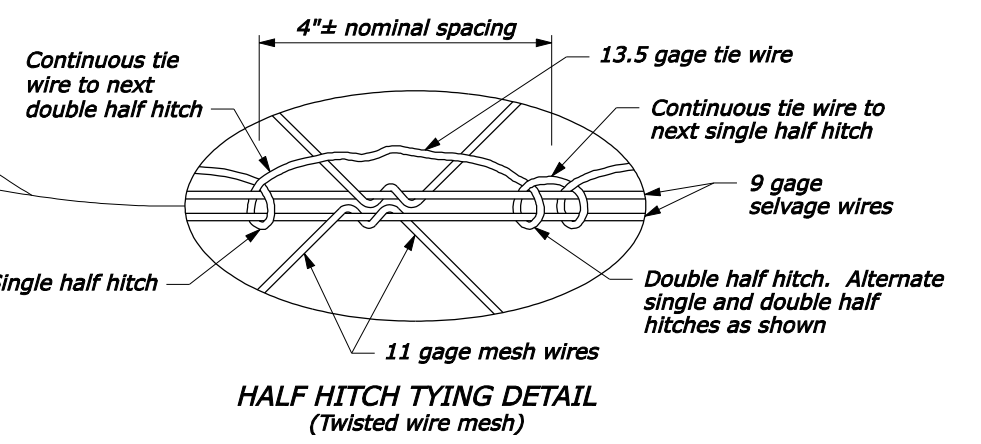
**OVERLAPPING RING WIRE FASTENER  
ALTERNATE TYING FASTENERS**

NOTE:  
All dimensions  
are nominal



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

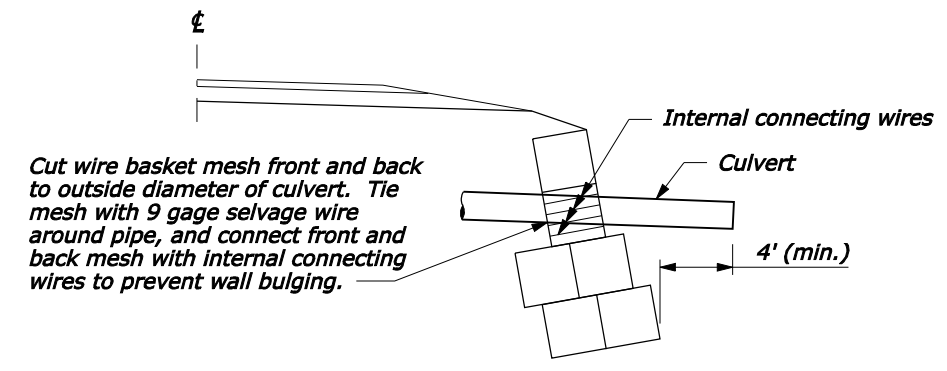
**HALF HITCH TYING DETAIL  
(Welded wire mesh)**



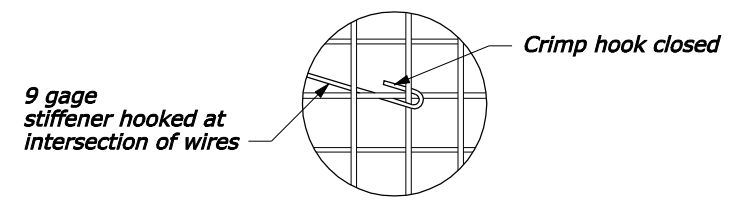
**HALF HITCH TYING DETAIL  
(Twisted wire mesh)**

**TYPICAL INSTALLATION GABION BASKETS**

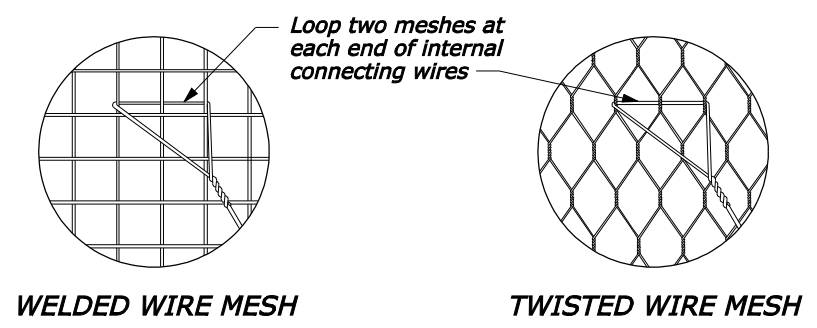
**9 GAGE  
SPIRAL BINDER**



**TYPICAL CULVERT INSTALLATION  
THROUGH GABION WALL**

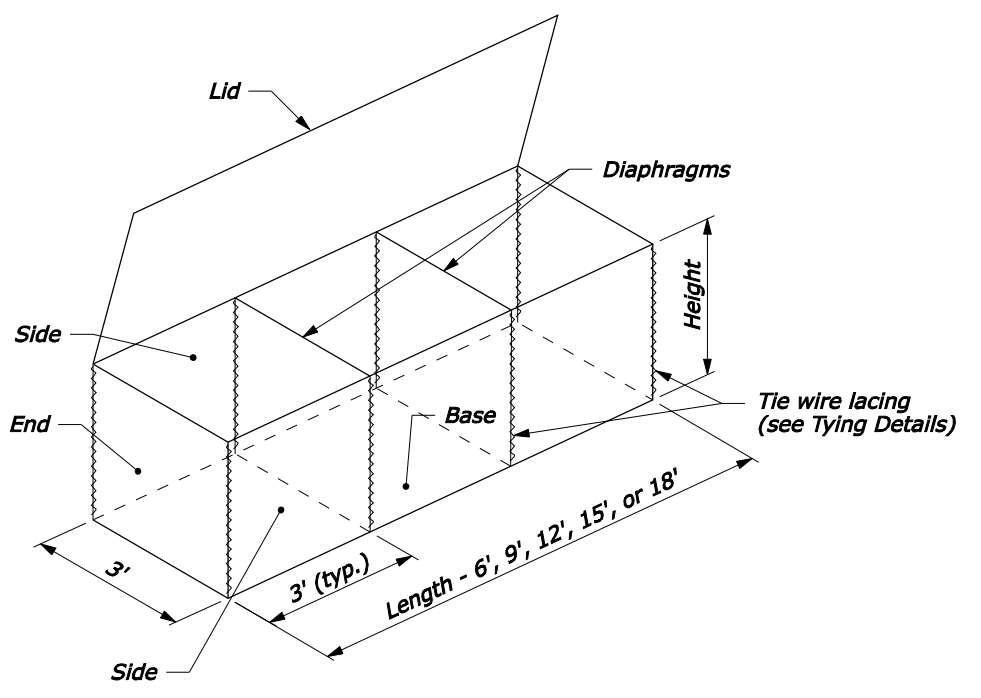


**9 gage  
stiffener hooked at  
intersection of wires**

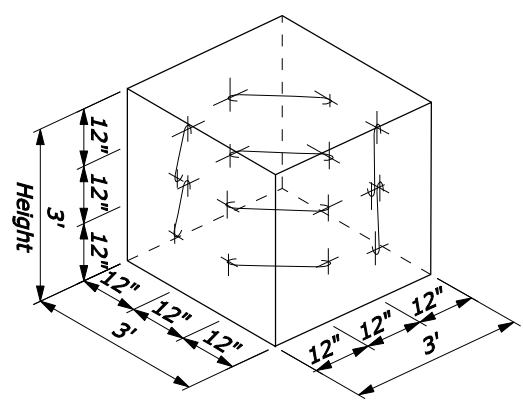


**WELDED WIRE MESH**

**TWISTED WIRE MESH**

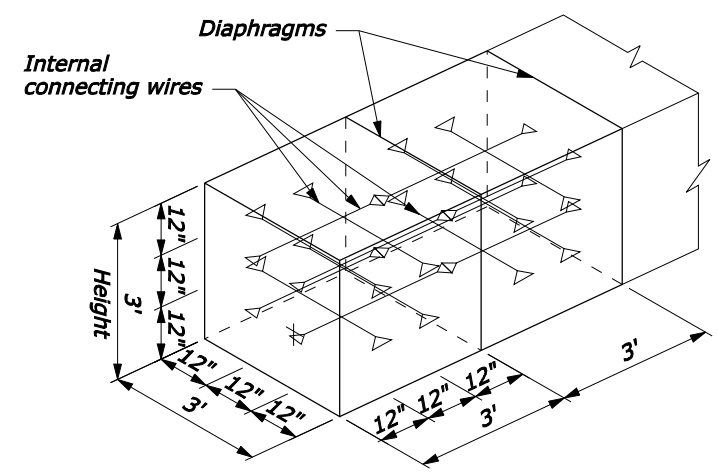


**TYPICAL ASSEMBLED GABION BASKET**

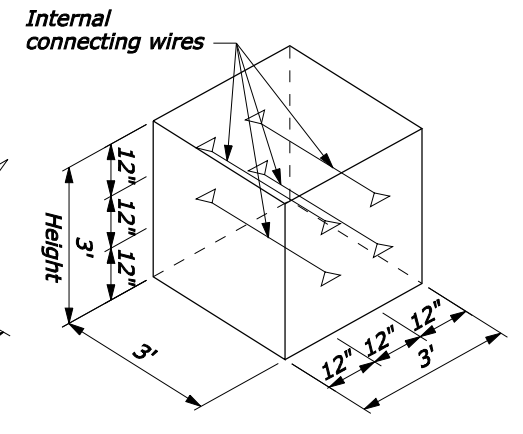


**ALL GABION CELLS**

**OPTIONAL INTERNAL CONNECTING WIRES  
WELDED WIRE GABION BASKET**



**ALL END GABION CELLS**



**ALL INTERIOR GABION CELLS**

**TYPICAL INTERNAL CONNECTING WIRES**

<b>GABION BASKET NOMINAL SIZES AND CAPACITY</b>				
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

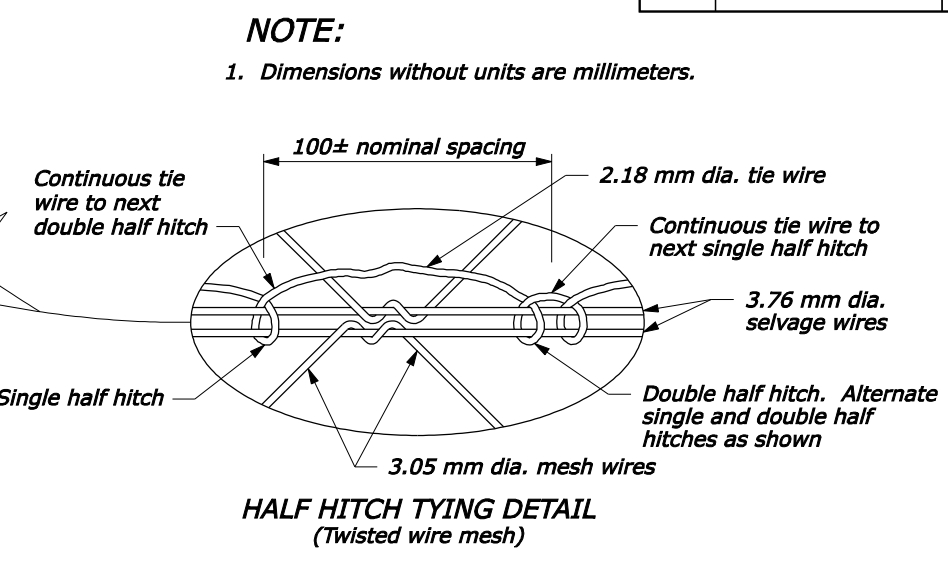
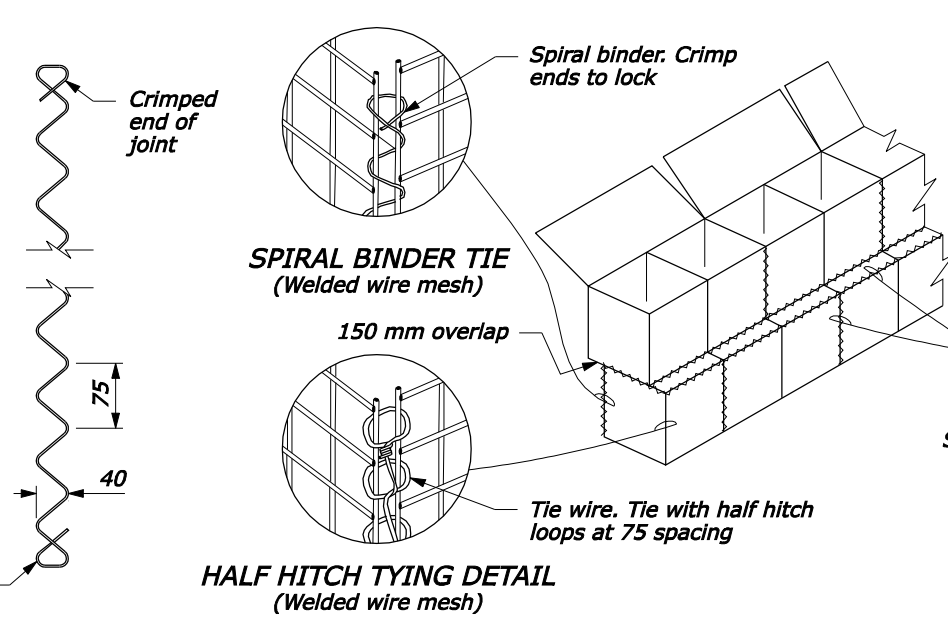
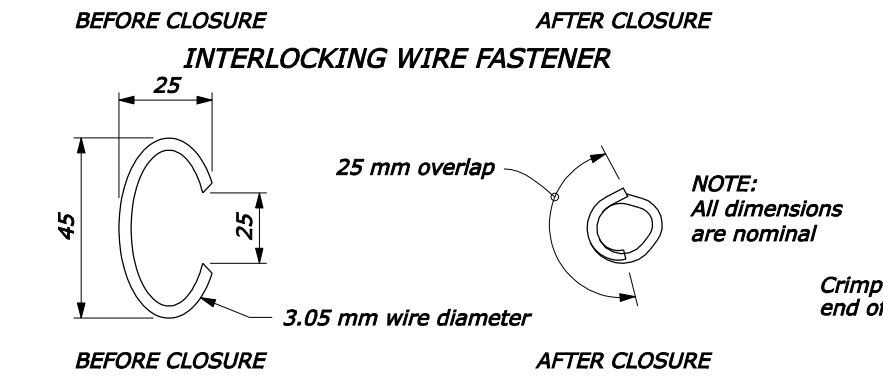
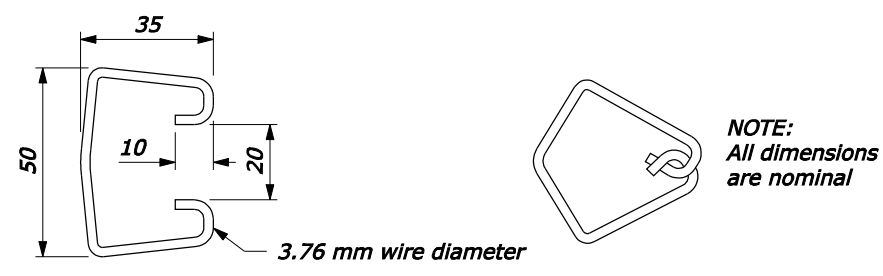
**GABION FACED WALL**

DETAIL APPROVED FOR USE --/---

REVISIONS:  
DRAFT: 2/2008

DETAIL  
W253-2

08-Feb-2008 07:08 AM  
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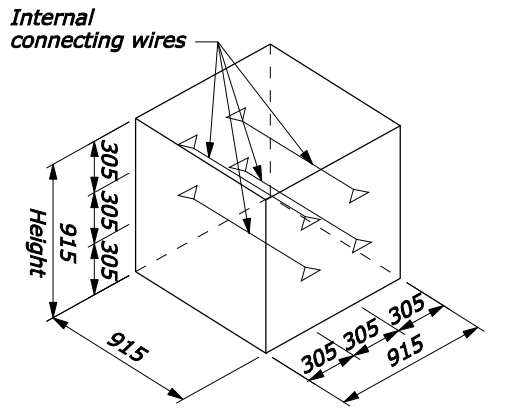
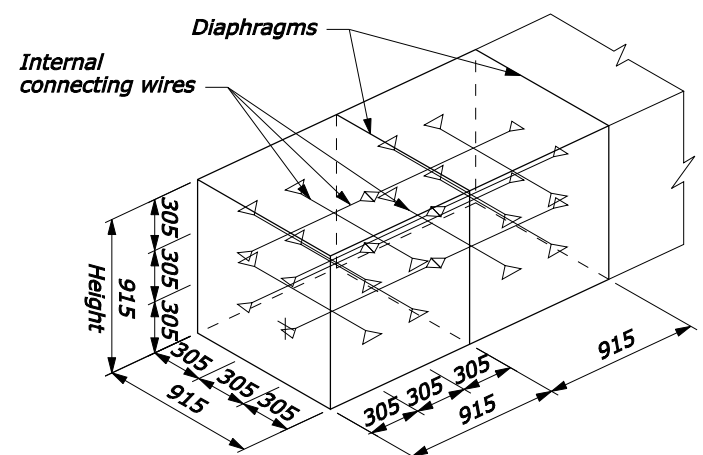
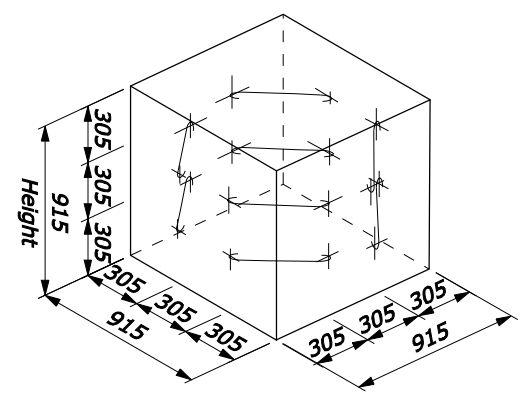
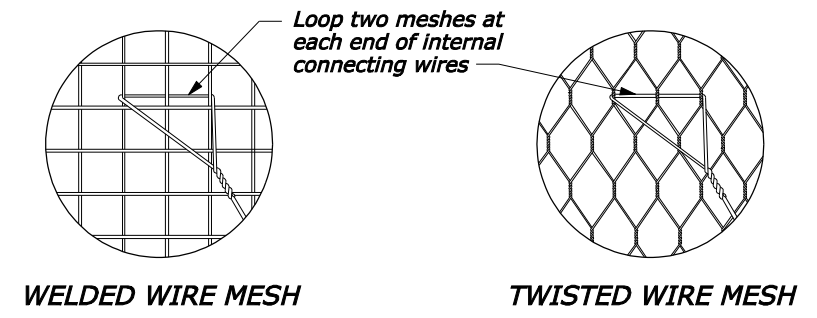
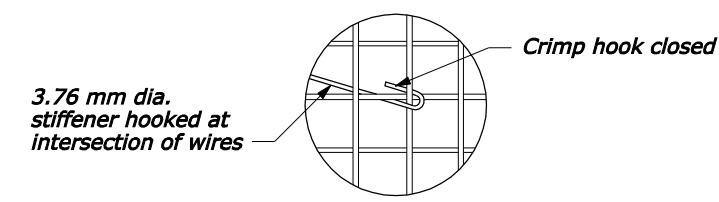
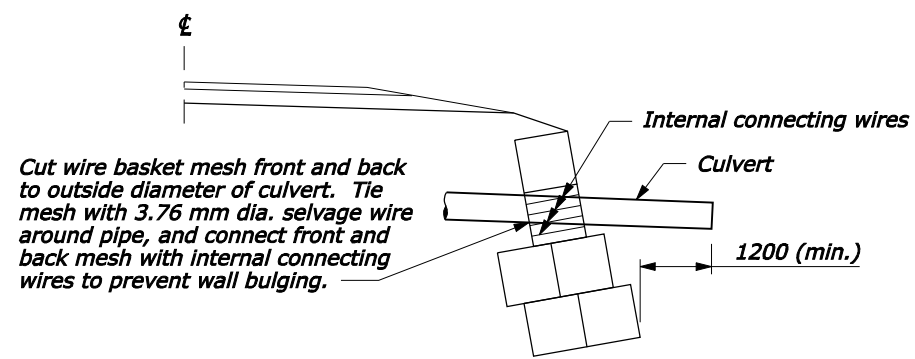


**NOTE:**  
1. Dimensions without units are millimeters.

**TYPICAL INSTALLATION GABION BASKETS**

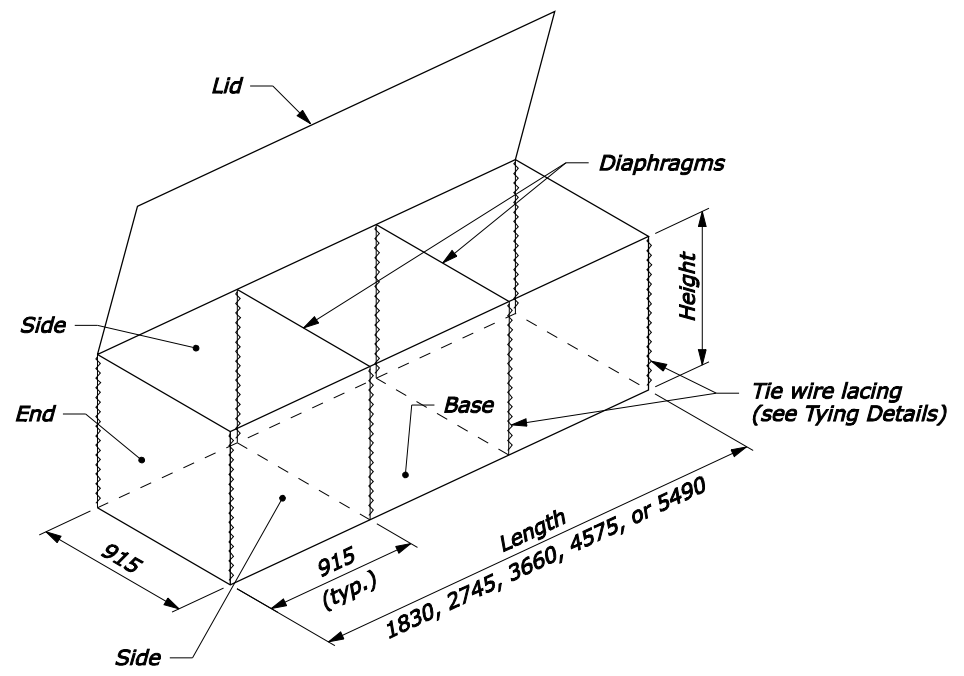
**3.76 mm DIAMETER SPIRAL BINDER**

**ALTERNATE TYING FASTENERS**



**OPTIONAL INTERNAL CONNECTING WIRES WELDED WIRE GABION BASKET**

**TYPICAL INTERNAL CONNECTING WIRES**



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

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WESTERN FEDERAL LANDS HIGHWAY DIVISION

**METRIC DETAIL**

**GABION FACED WALL**

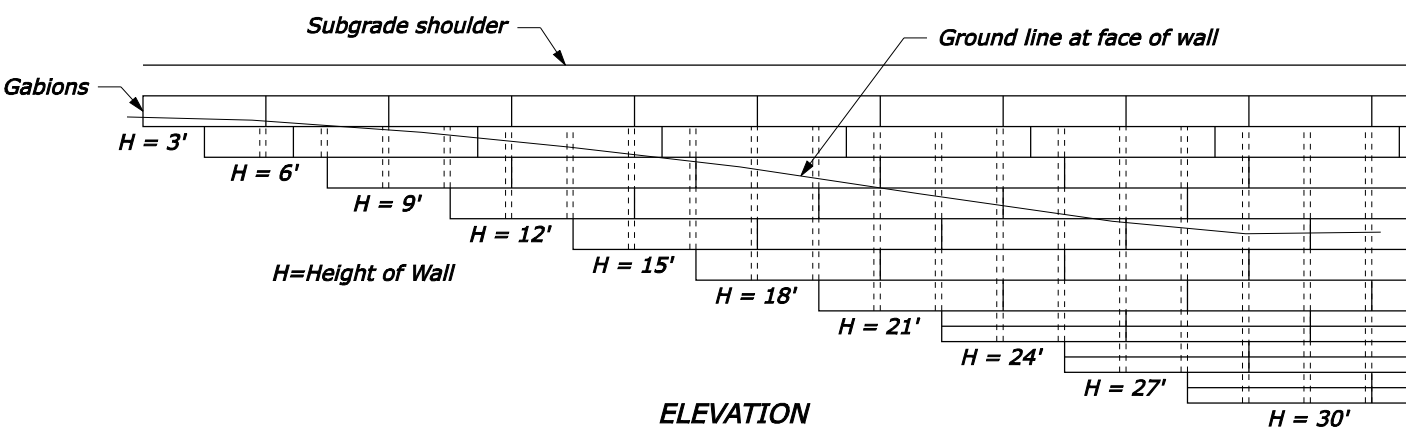
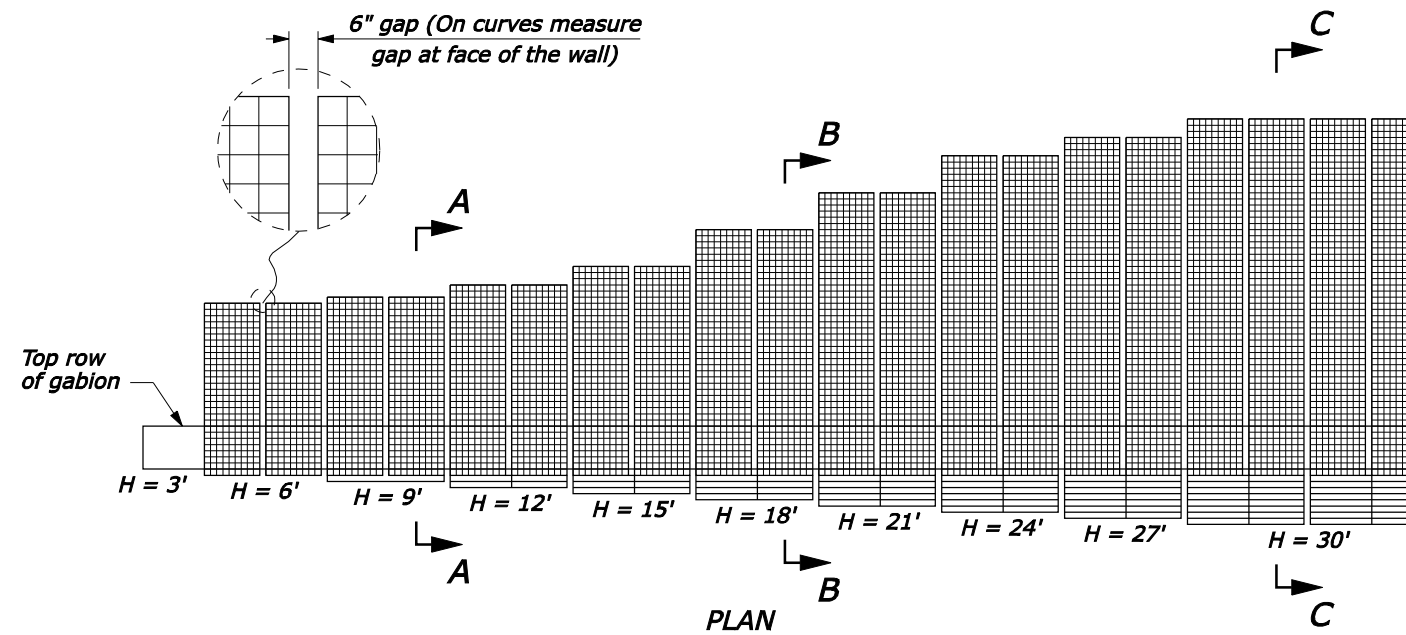
DETAIL APPROVED FOR USE --/----

REVISION: 2/2008

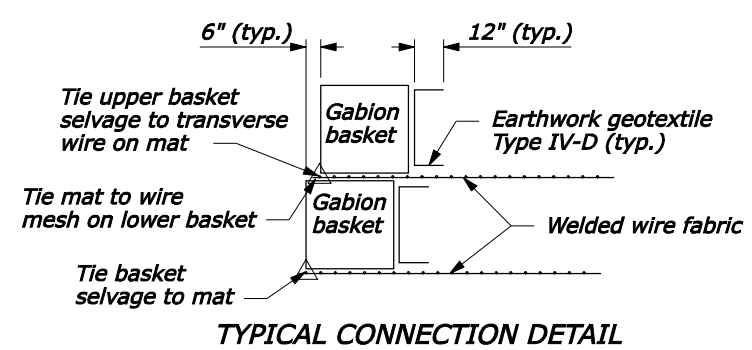
DETAIL WM253-2

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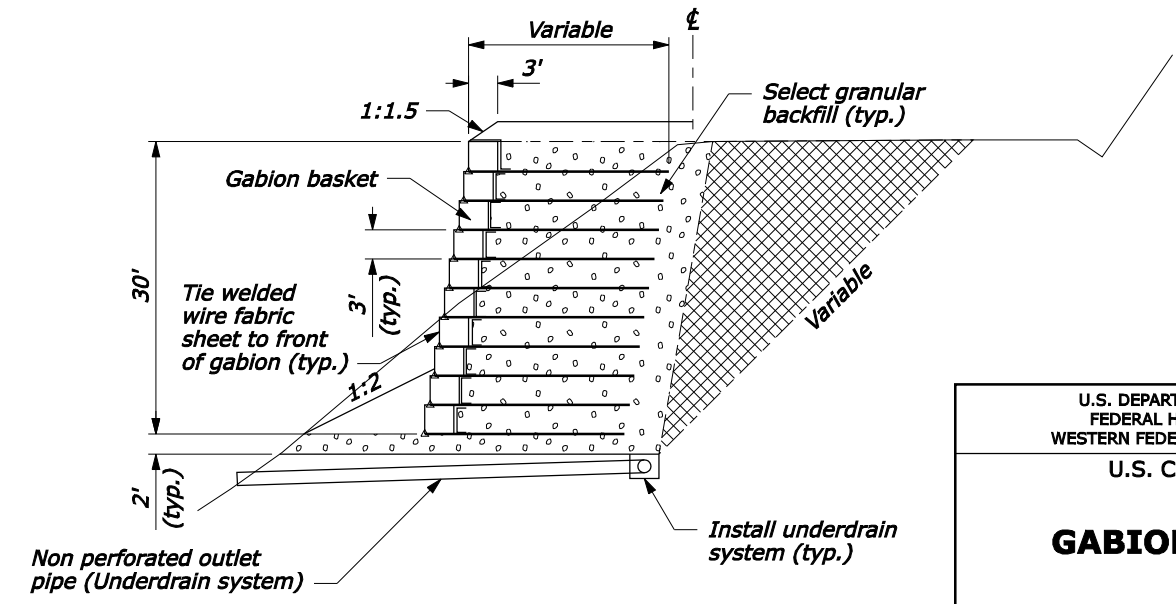
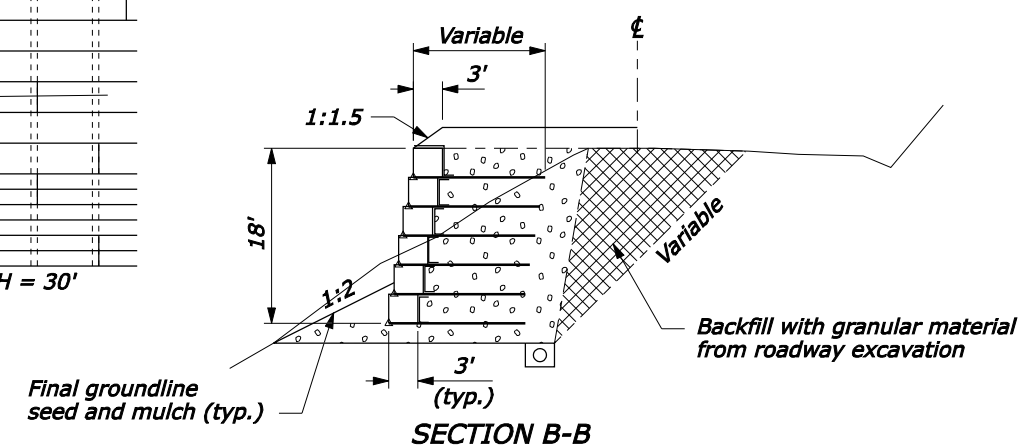
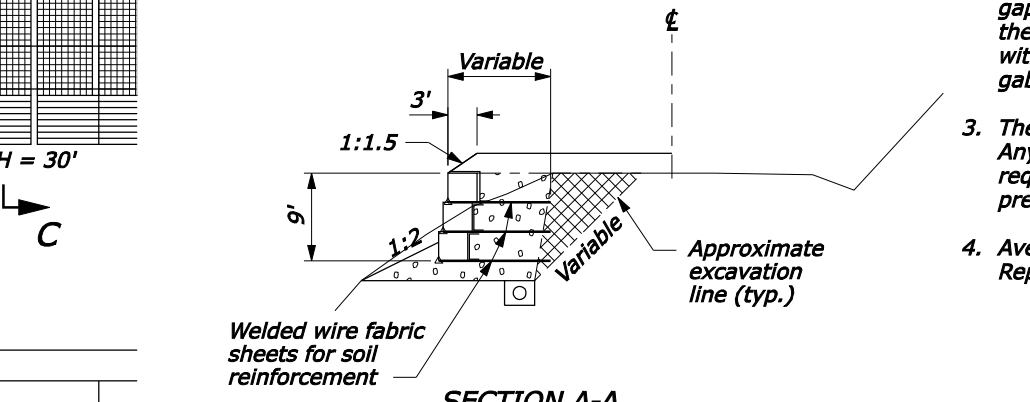


**TYPICAL GABION WALL**

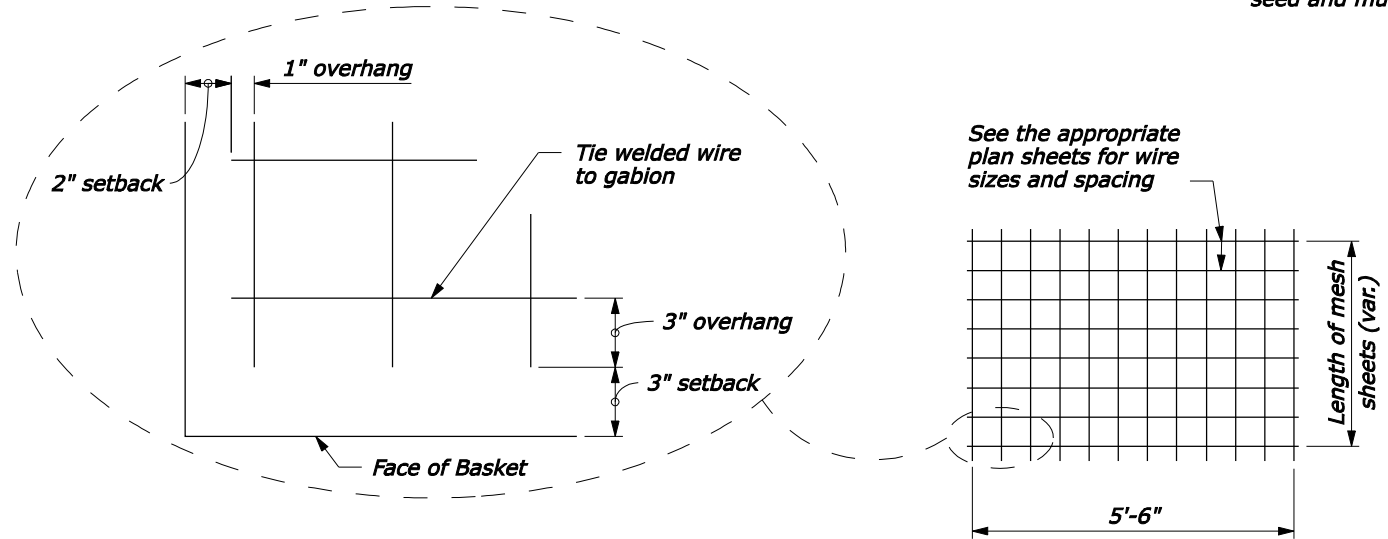


**NOTE:**

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" 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 125 pcf  
Unit weight of filled gabions is 105 pcf  
Ø angle = 35° for backfill material



NO SCALE



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WESTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

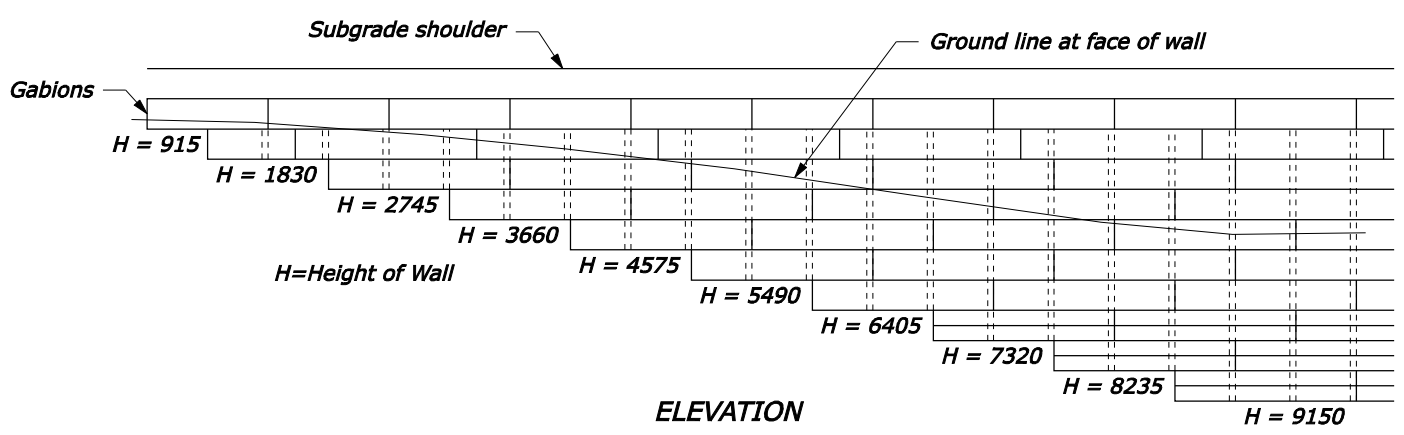
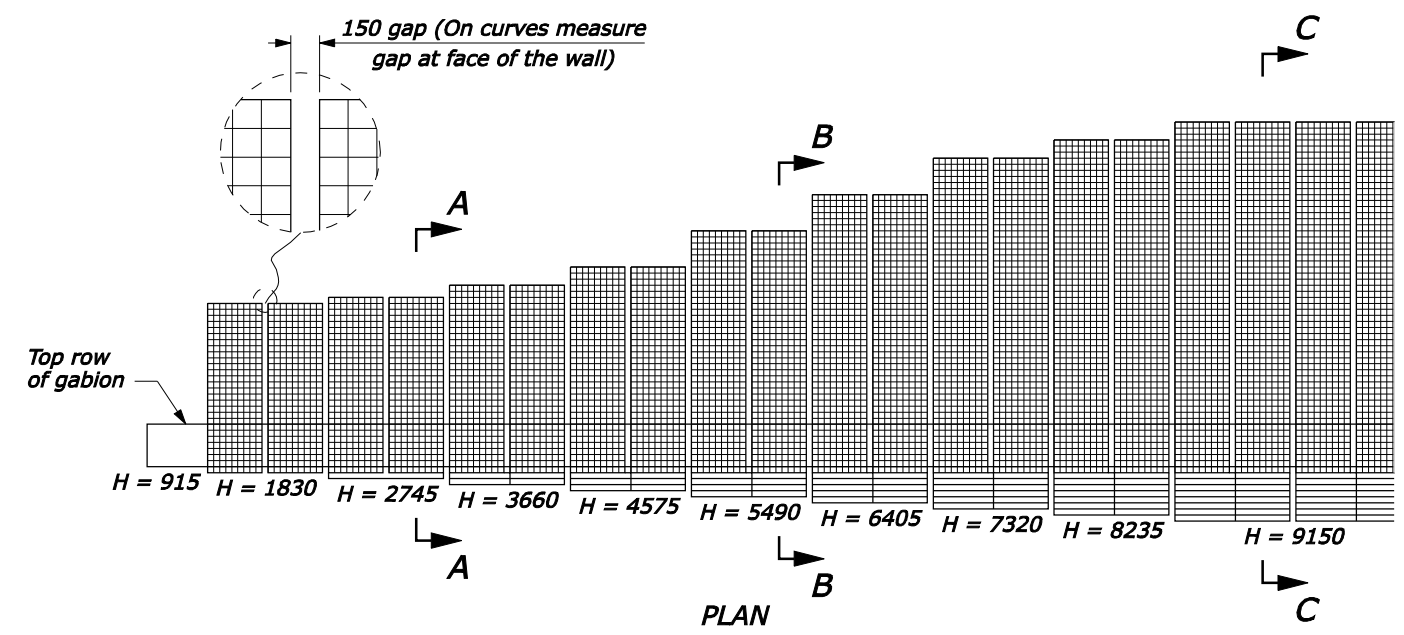
**GABION FACED WALL**

DETAIL APPROVED FOR USE -/---

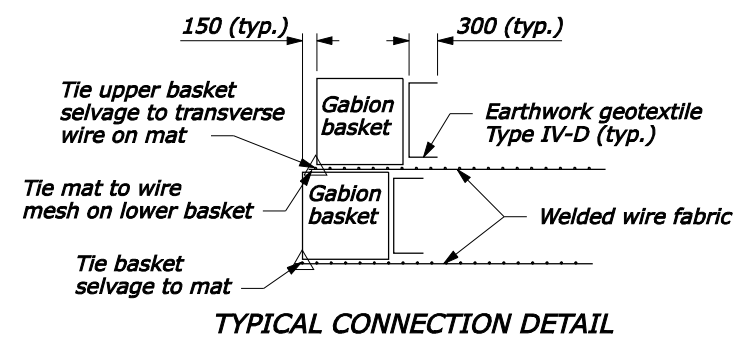
REVISID: DRAFT: 2/2008

DETAIL W253-3

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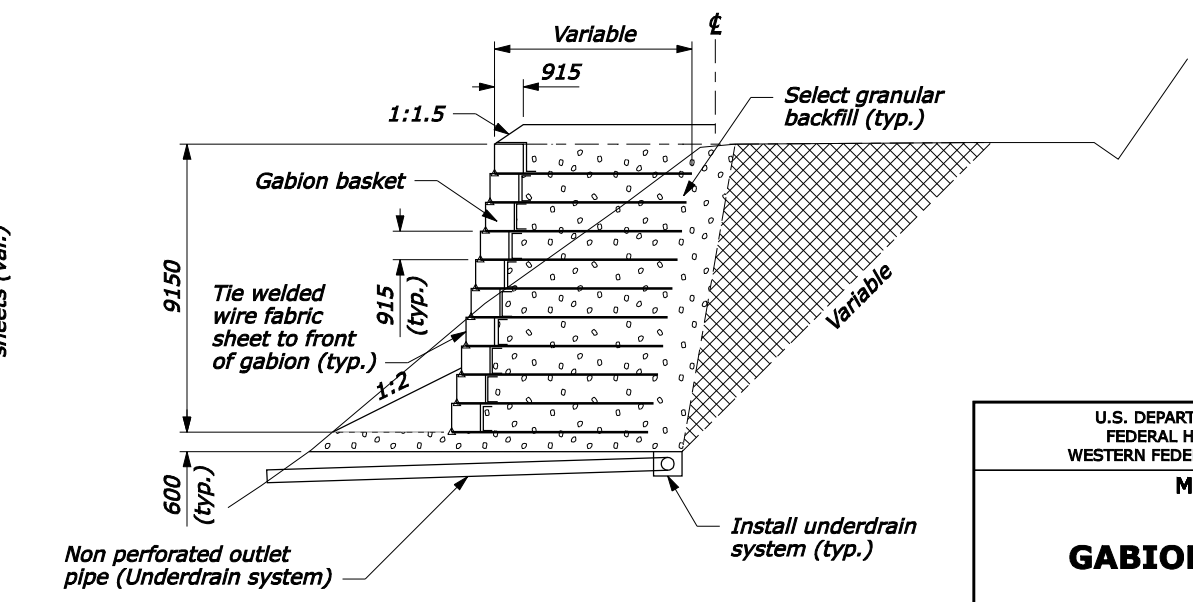
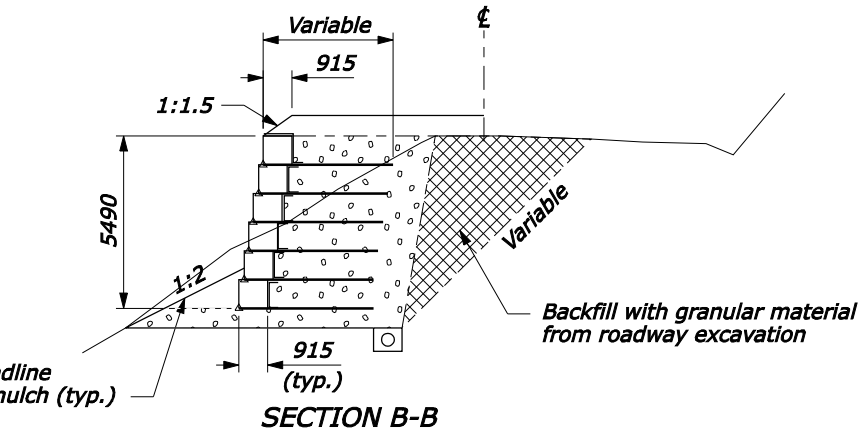
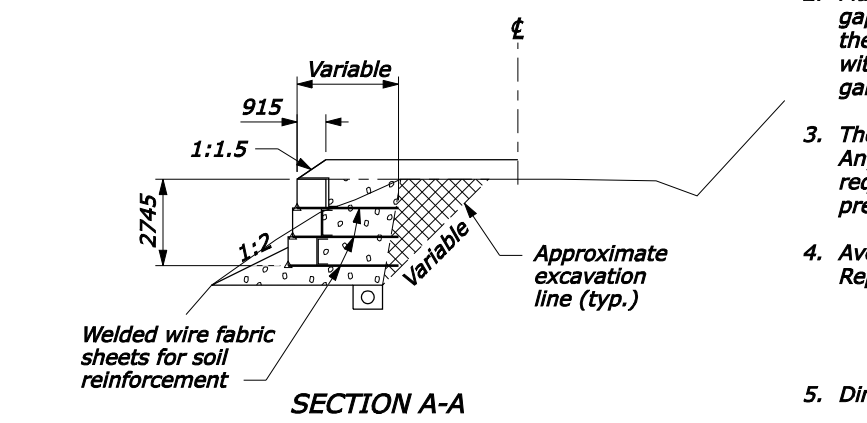


**TYPICAL GABION WALL**

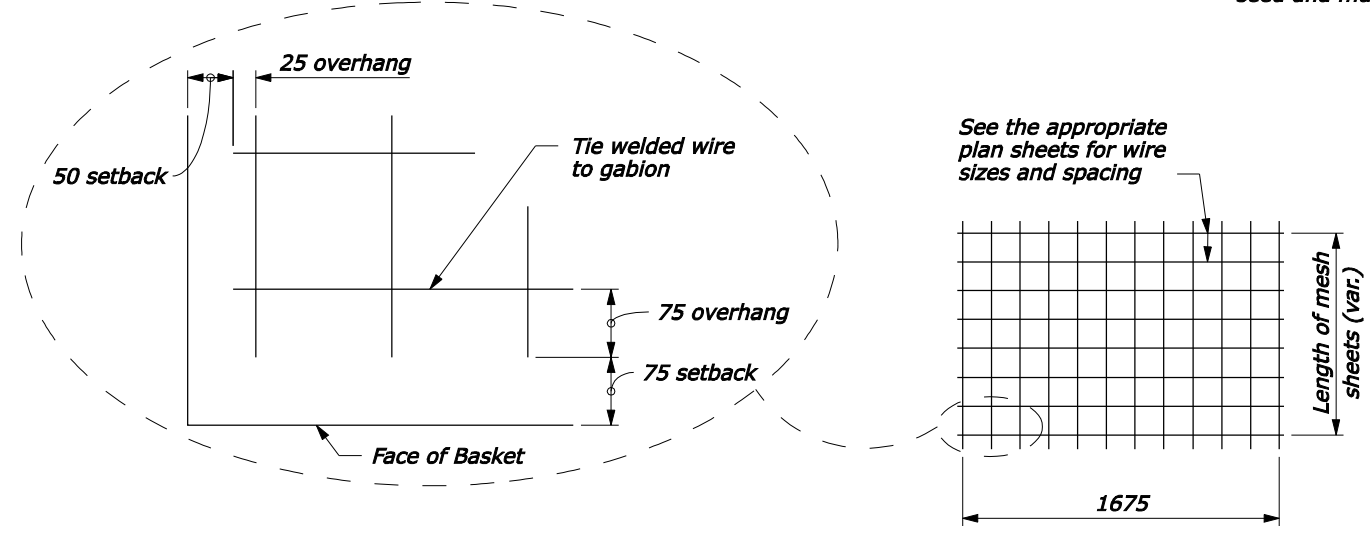


**NOTE:**

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 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.



NO SCALE



**WELDED WIRE FABRIC SHEETS FOR SOIL REINFORCEMENT**

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METRIC DETAIL

**GABION FACED WALL**

DETAIL APPROVED FOR USE --/----

REVISION: 2/2008

DETAIL WM253-3

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