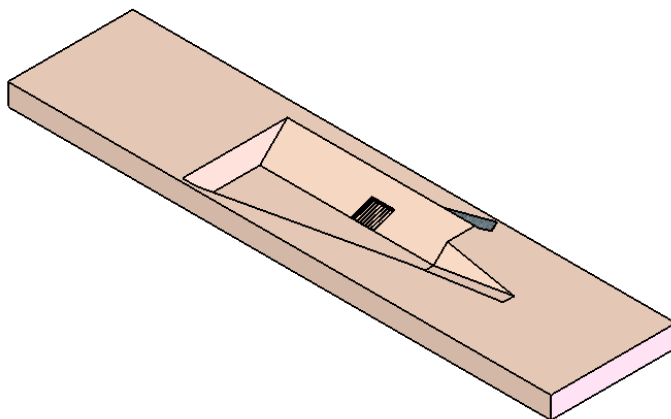
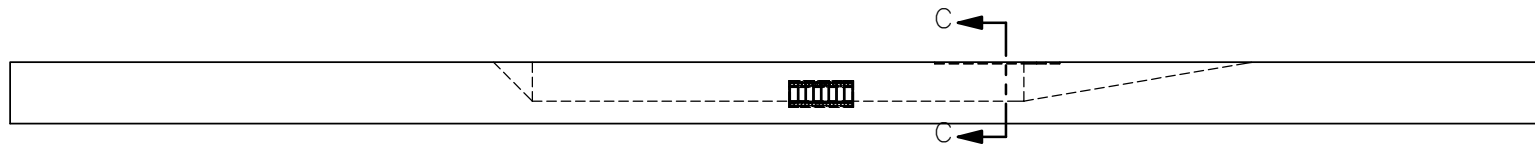
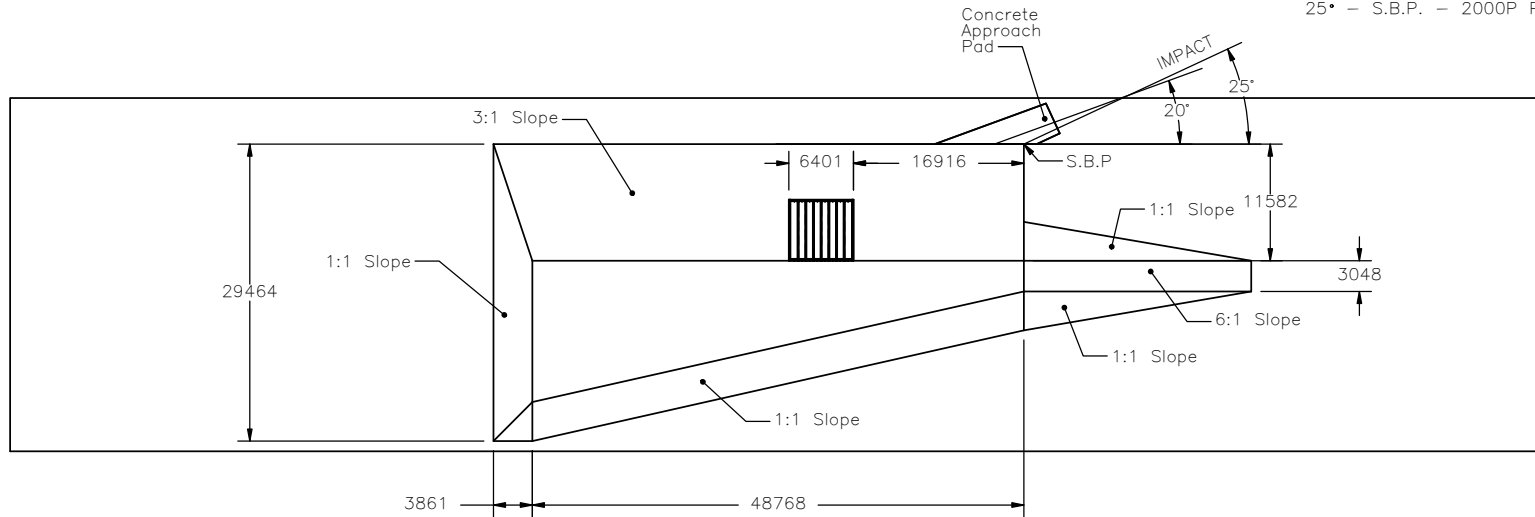


IMPACT LOCATIONS

- 20• - 2921 DS of S.B.P. - 820C Car
- 25• - S.B.P. - 2000P Pickup



Midwest Roadside  
Safety Facility

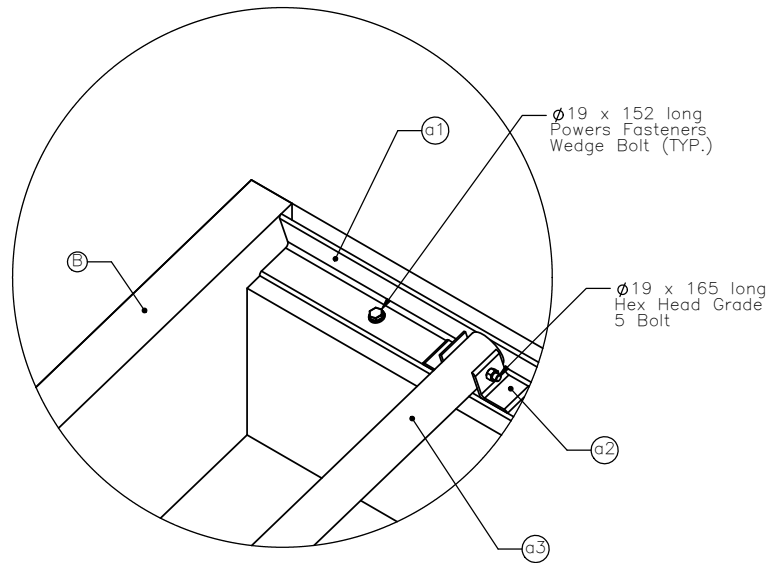
Culvert on Slope  
Culvert Layout

SHEET:  
1 of 11  
DATE:  
7/10/2006  
DRAWN BY:  
GEP

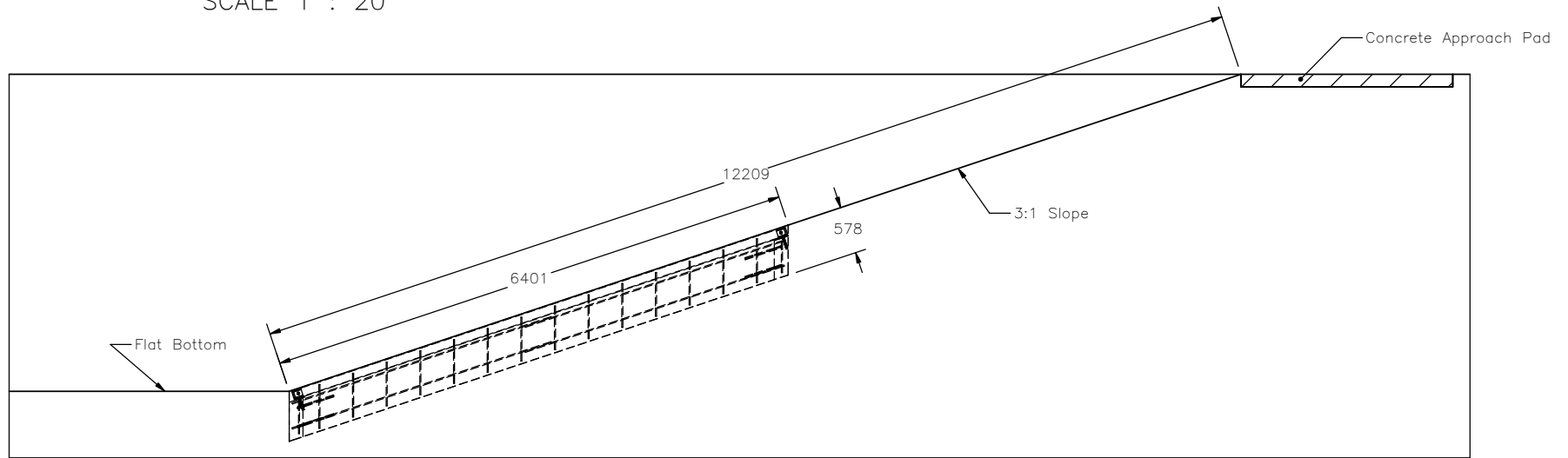
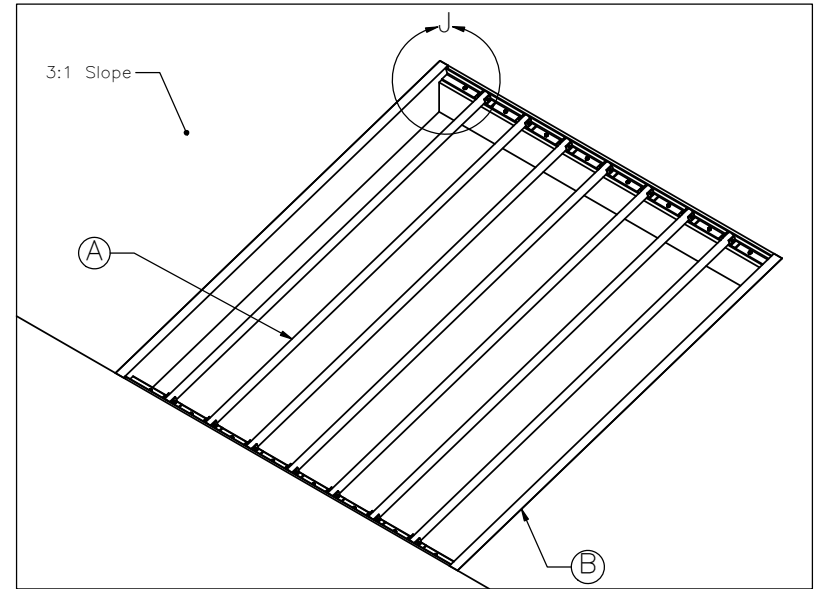
DWG. NAME:  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

REV. BY:  
KAP/RKF



DETAIL J  
SCALE 1 : 20



SECTION C-C  
SCALE 1 : 80

NOTE:  
Cut into soil 6400 x 6400 x  
610 for culvert grate



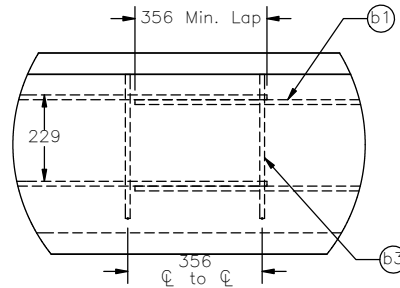
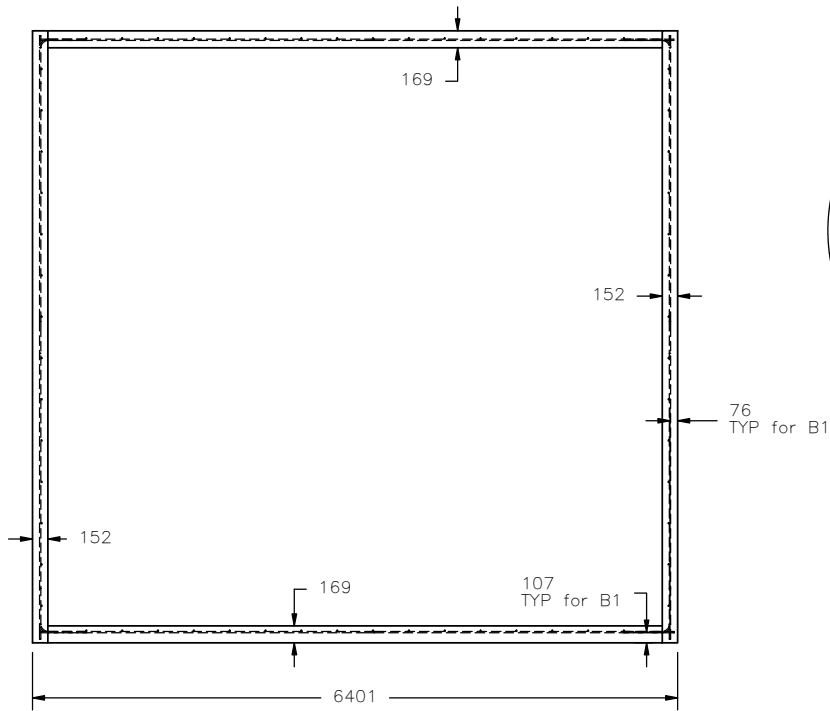
Midwest Roadside  
Safety Facility

Culvert on Slope  
Culvert Details

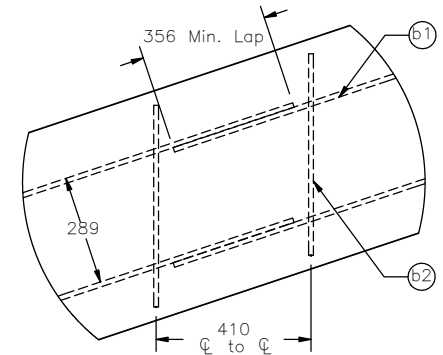
DWG. NAME.  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

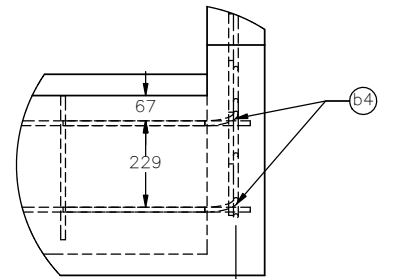
SHEET:  
2 of 11  
Date:  
7/10/2006  
DRAWN BY:  
GEP  
REV. BY:  
KAP/RKF



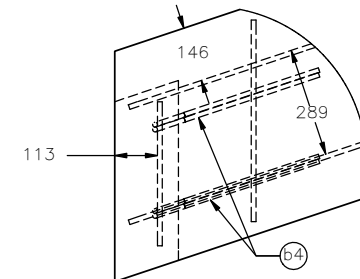
DETAIL E  
SCALE 1 : 20



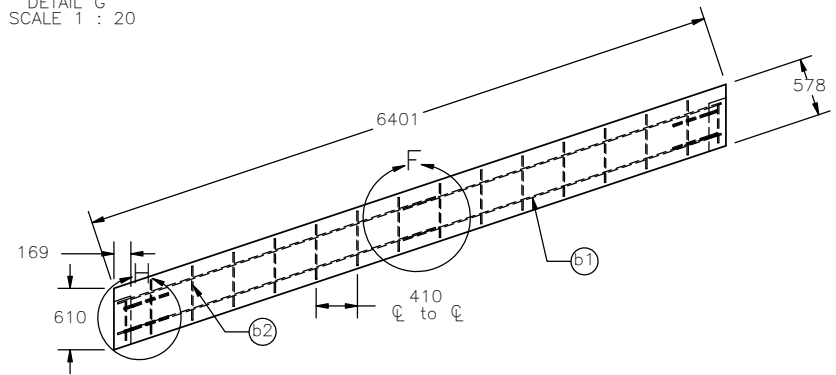
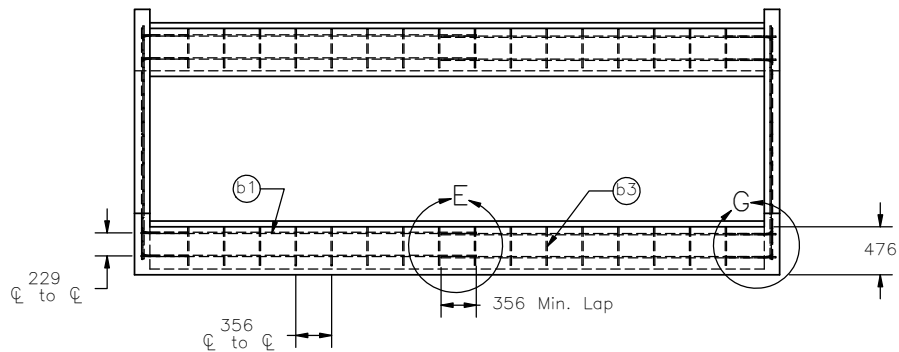
DETAIL F  
SCALE 1 : 20



DETAIL G  
SCALE 1 : 20



DETAIL H  
SCALE 1 : 20



Item No.	QTY.	Description	Material Specification
B	1	Concrete Culvert Wall	f'c=4000 psi
b1	16	#4 Bar - 3321 long	Grade 60 Steel
b2	28	#4 Bar - 533ng	Grade 60 Steel
b3	32	#4 Bar - 381 long	Grade 60 Steel
b4	8	#4 Bar - 914 long (L Bar)	Grade 60 Steel



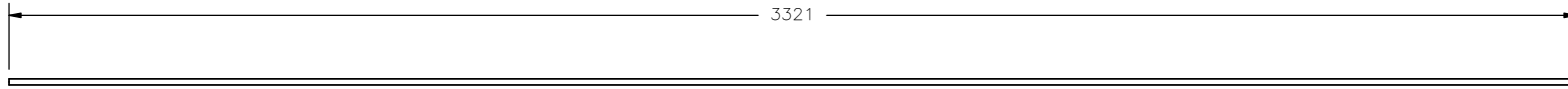
Midwest Roadside  
Safety Facility

Culvert on Slope  
Concrete Wall Details  
Part B

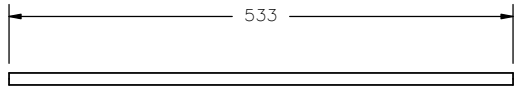
DWG. NAME.  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

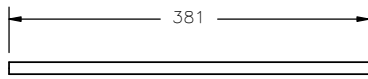
SHEET:  
3 of 11  
DATE:  
7/10/2006  
DRAWN BY:  
GEP  
REV. BY:  
KAP/RKF



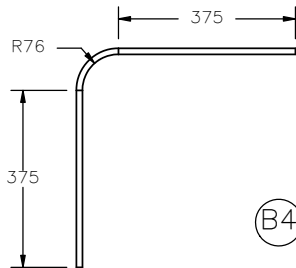
(B1)



(B2)



(B3)



(B4)



Midwest Roadside  
Safety Facility

Culvert on Slope  
Bill of Bars

SHEET:  
4 of 11

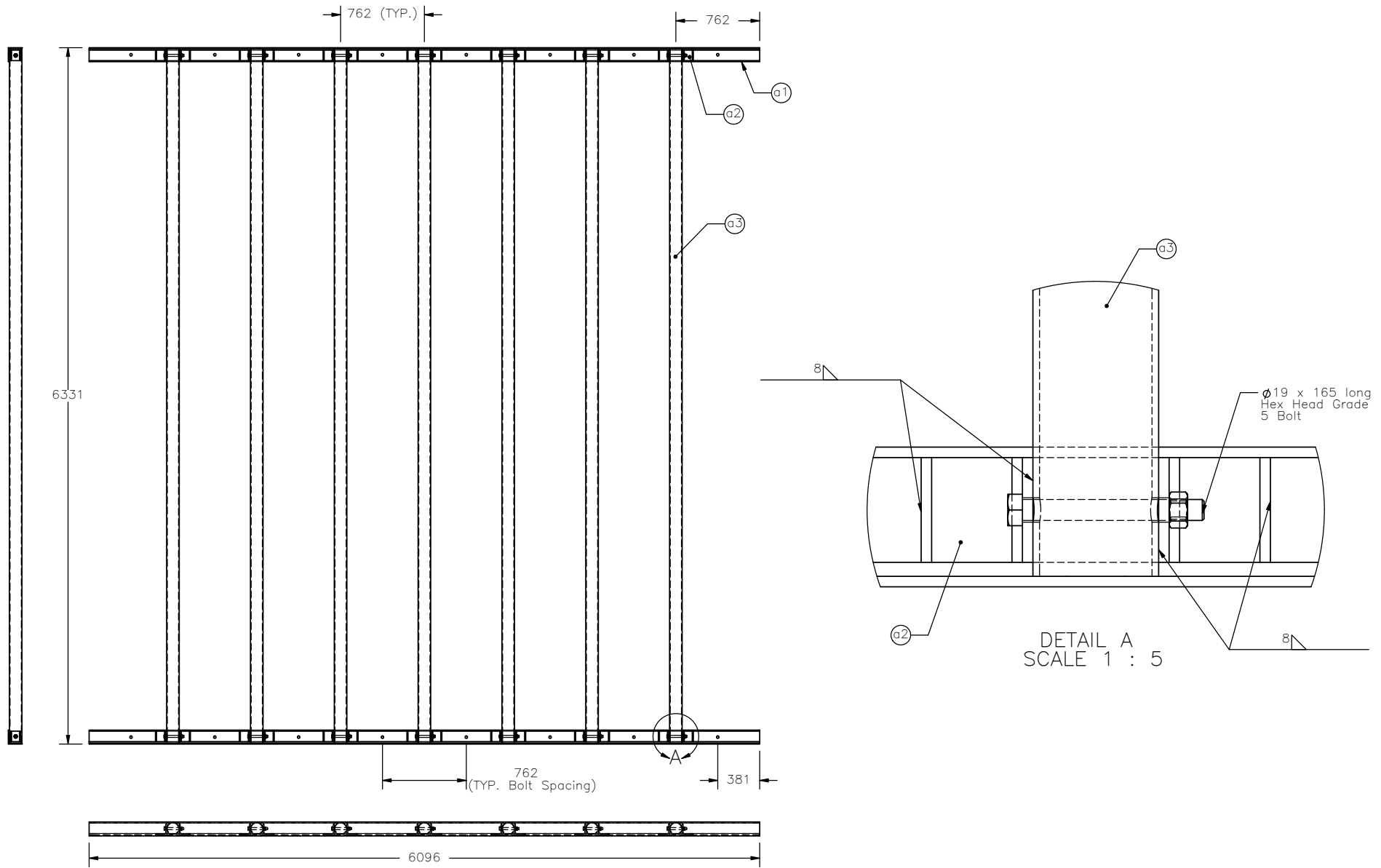
DATE:  
7/10/2006

DRAWN BY:  
GEP

DWG. NAME:  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

REV. BY:  
KAP/RKF



Item No.	QTY.	Description	Material Specification
a1	2	127x127x10 Angle x 6096 long	A36 Steel
a2	28	102x102x10 Angle x 95 long	A36 Steel
a3	7	102 Nominal Dia. x 6400 long Pipe	Schedule 40, A36 Steel
-	14	19 Dia. x 165 long Hex Head Bolt	Grade 5
-	14	19 Dia. Nut	Grade 5



Midwest Roadside  
Safety Facility

## Culvert on Slope

Culvert Grate Details  
Part A

DWG. NAME.  
Culvert\_System\_Metric

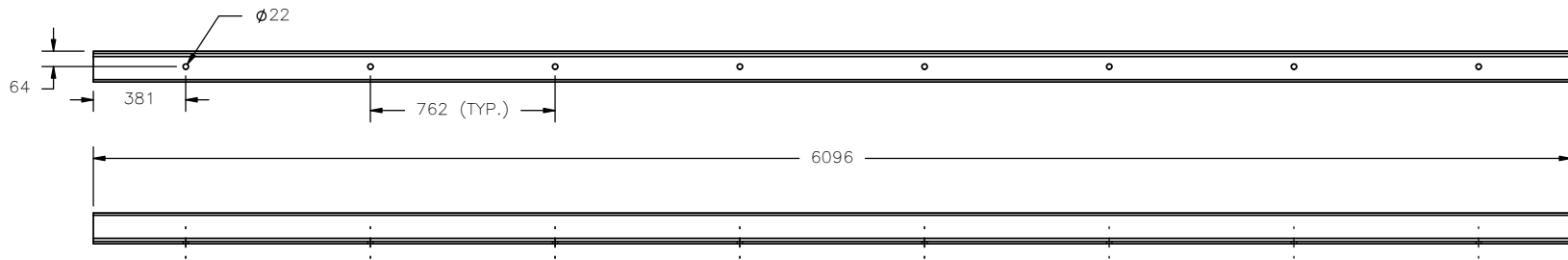
SCALE: None  
UNITS: mm

SHEET:  
5 of 11

DATE:  
7/10/2006

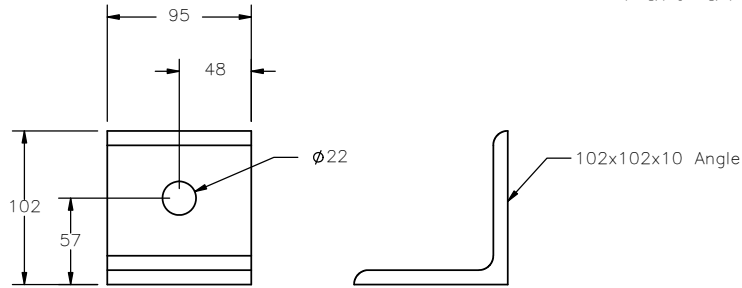
DRAWN BY:  
GEP

REV. BY:  
KAP/RKF

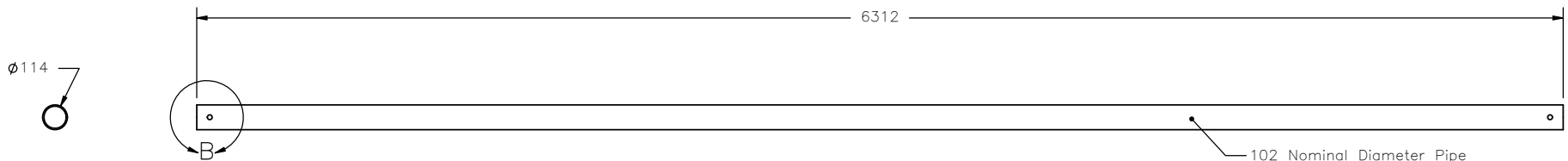


127x127x10 Angle

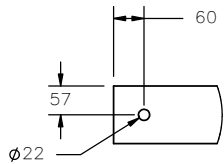
Angle Clip Base  
Part a1



Angle Clips  
Part a2



Grate Pipe  
Part a3



DETAIL B (Both Ends)  
SCALE 1 : 15



Midwest Roadside  
Safety Facility

Culvert on Slope

Culvert Grate Part Details

SHEET:  
6 of 11

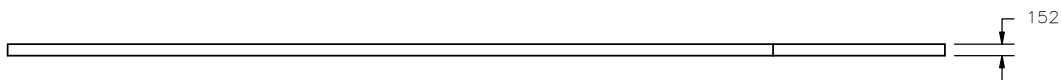
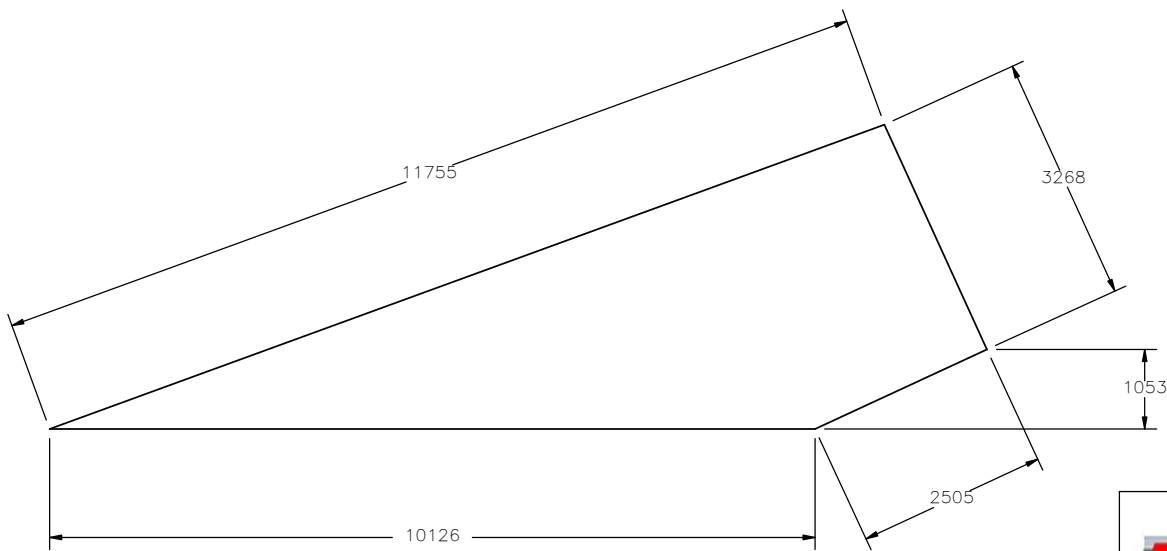
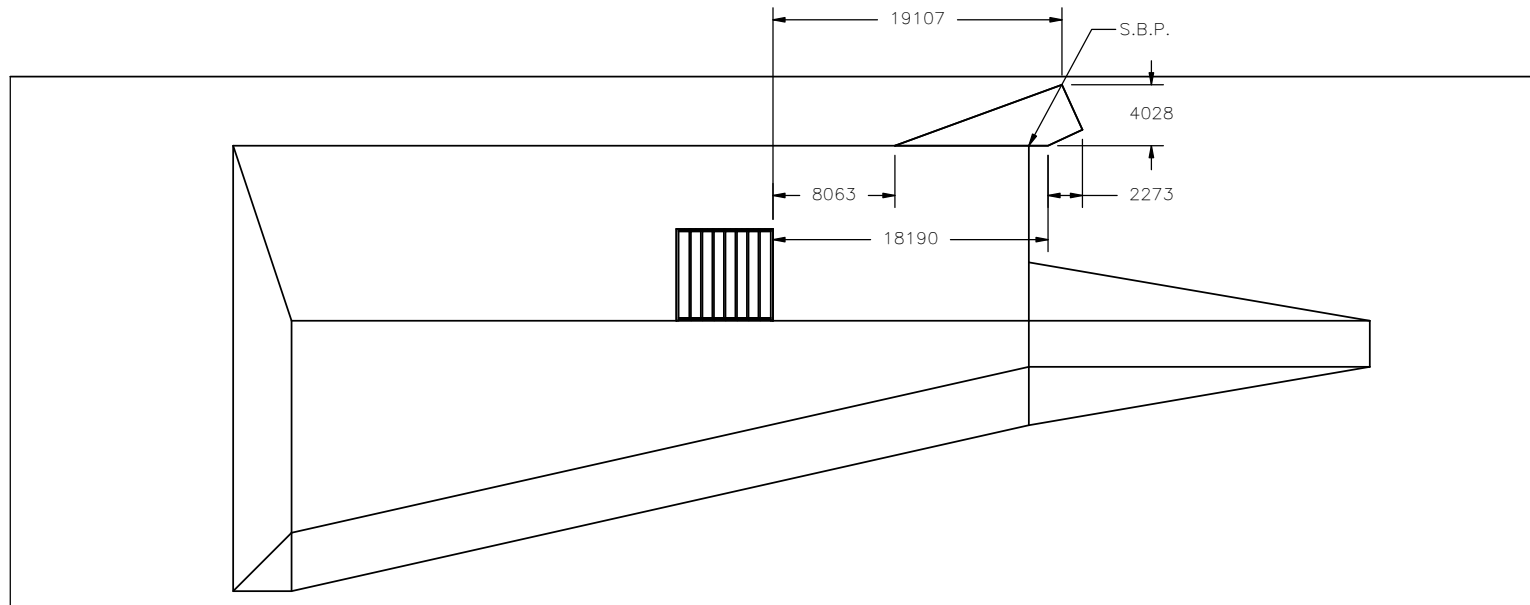
DATE:  
7/10/2006

DRAWN BY:  
GEP

DWG. NAME:  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

REV. BY:  
KAP/RKF



Midwest Roadside  
Safety Facility

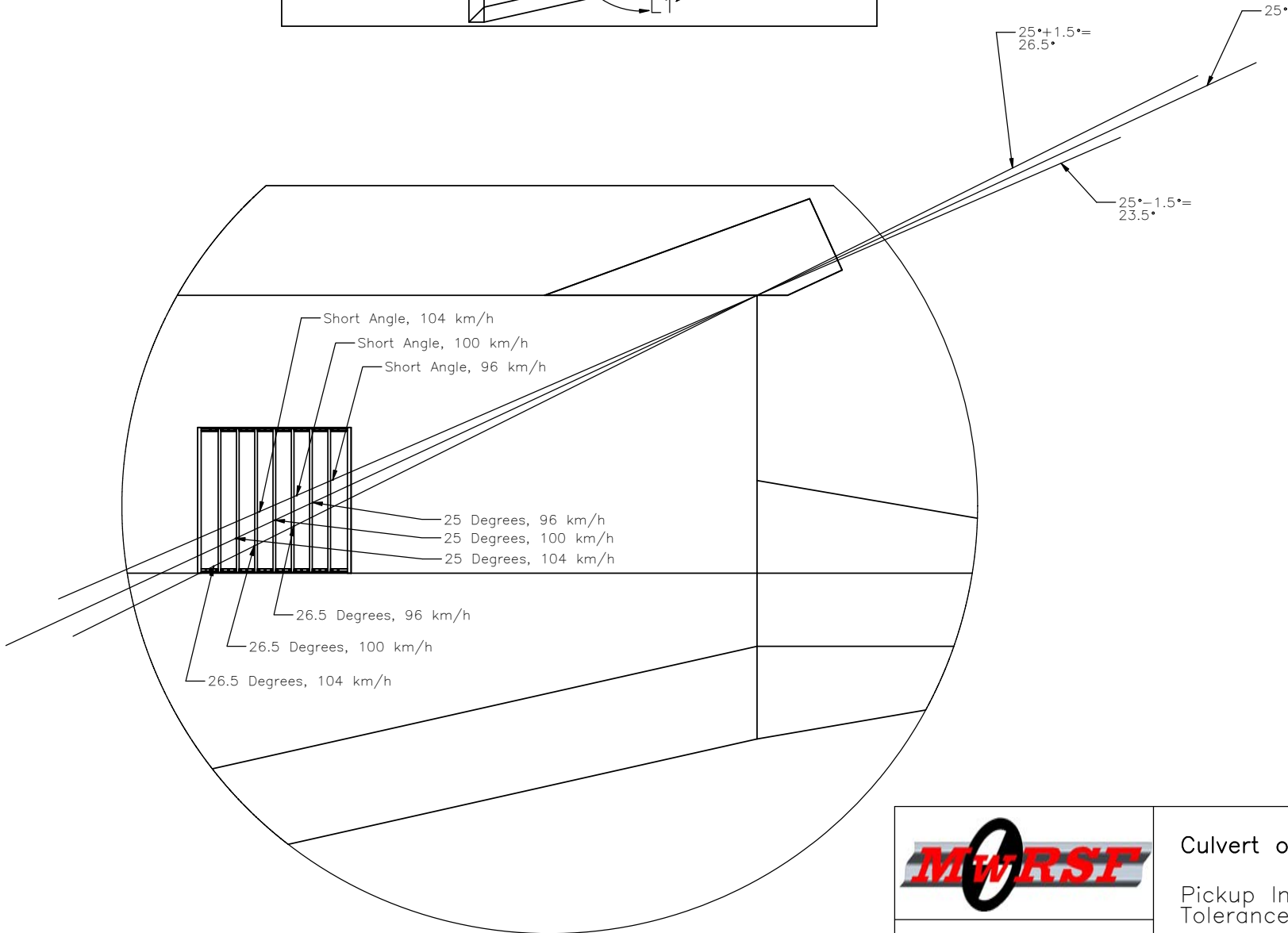
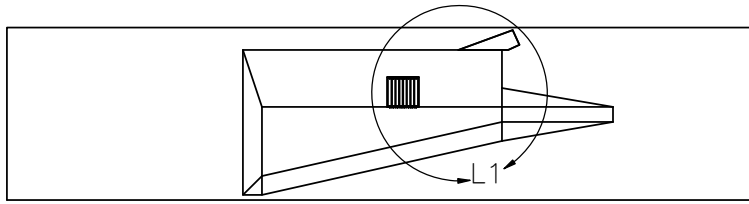
Culvert on Slope  
Concrete Launch Pad

SHEET:  
7 of 11  
DATE:  
7/10/2006  
DRAWN BY:  
GEP/CSS

DWG. NAME:  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

REV. BY:  
KAP/RKF



DETAIL L1  
SCALE 1 : 250



Midwest Roadside  
Safety Facility

Culvert on Slope

Pickup Impact  
Tolerances (Faller)

SHEET:  
8 of 11

DATE:  
7/10/2006

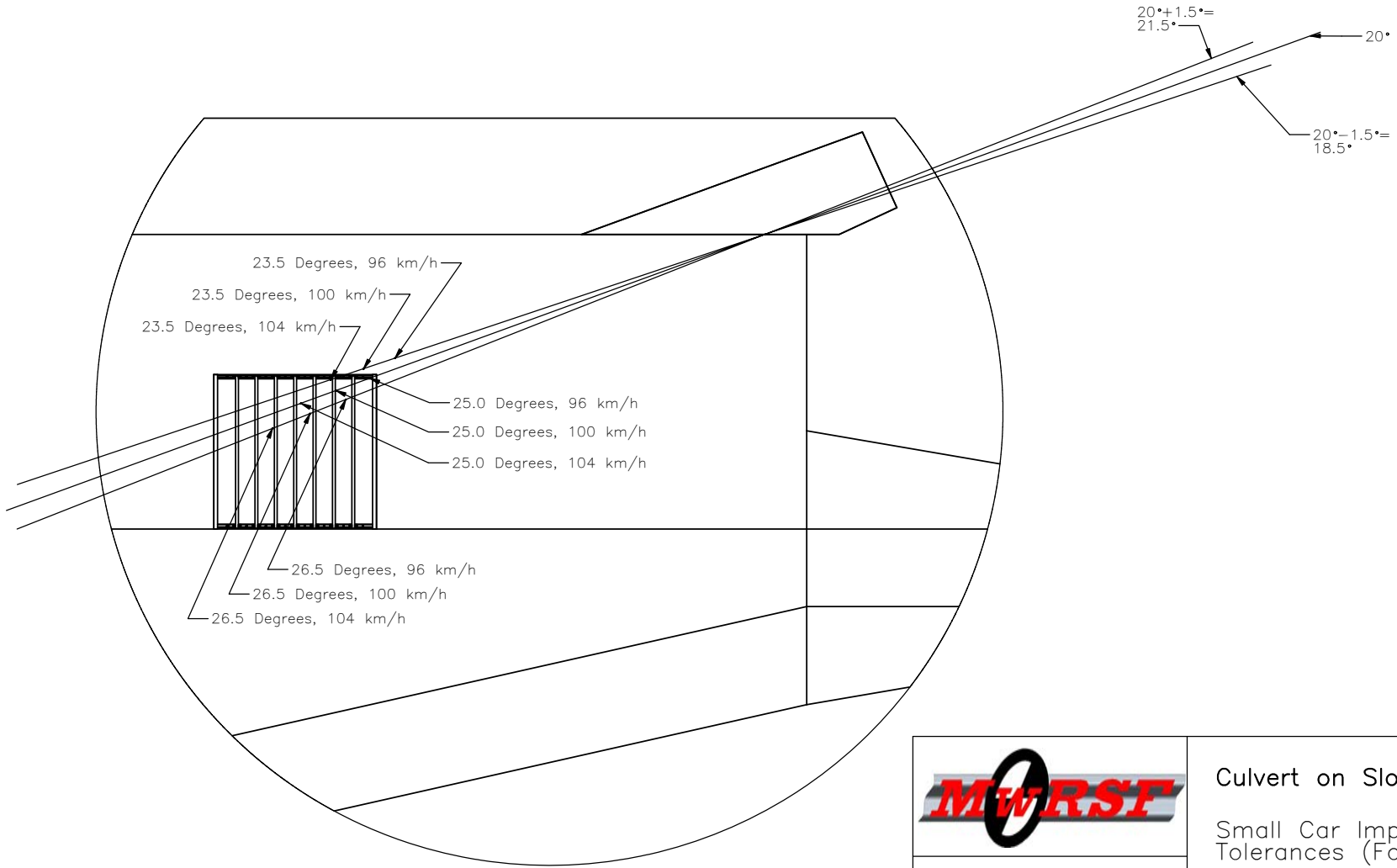
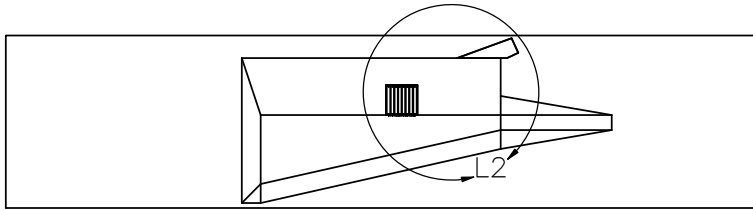
DRAWN BY:  
GEP/CSS

DWG. NAME:  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

REV. BY:  
KAP/RKF





DETAIL L2  
SCALE 1 : 250



Midwest Roadside  
Safety Facility

Culvert on Slope  
Small Car Impact  
Tolerances (Faller)

SHEET:  
9 of 11

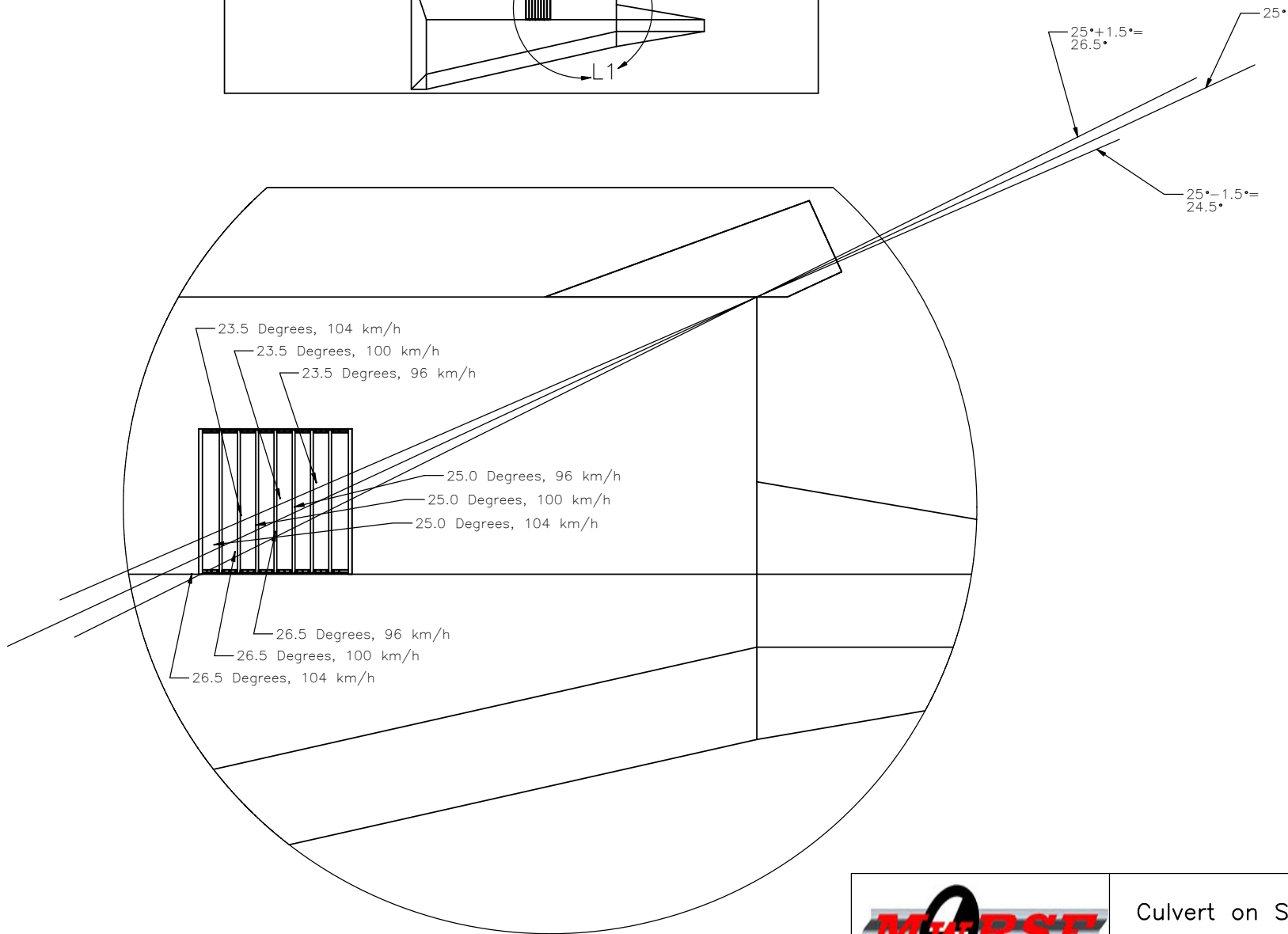
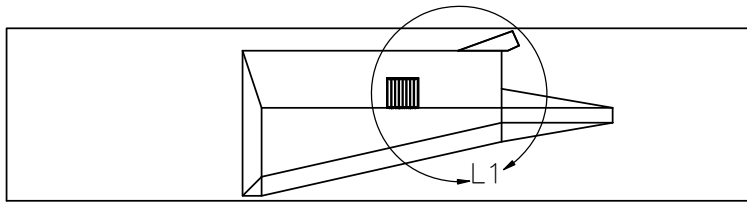
DATE:  
7/10/2006

DRAWN BY:  
GEP

DWG. NAME:  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

REV. BY:  
KAP/RKF



DETAIL L1  
SCALE 1 : 250



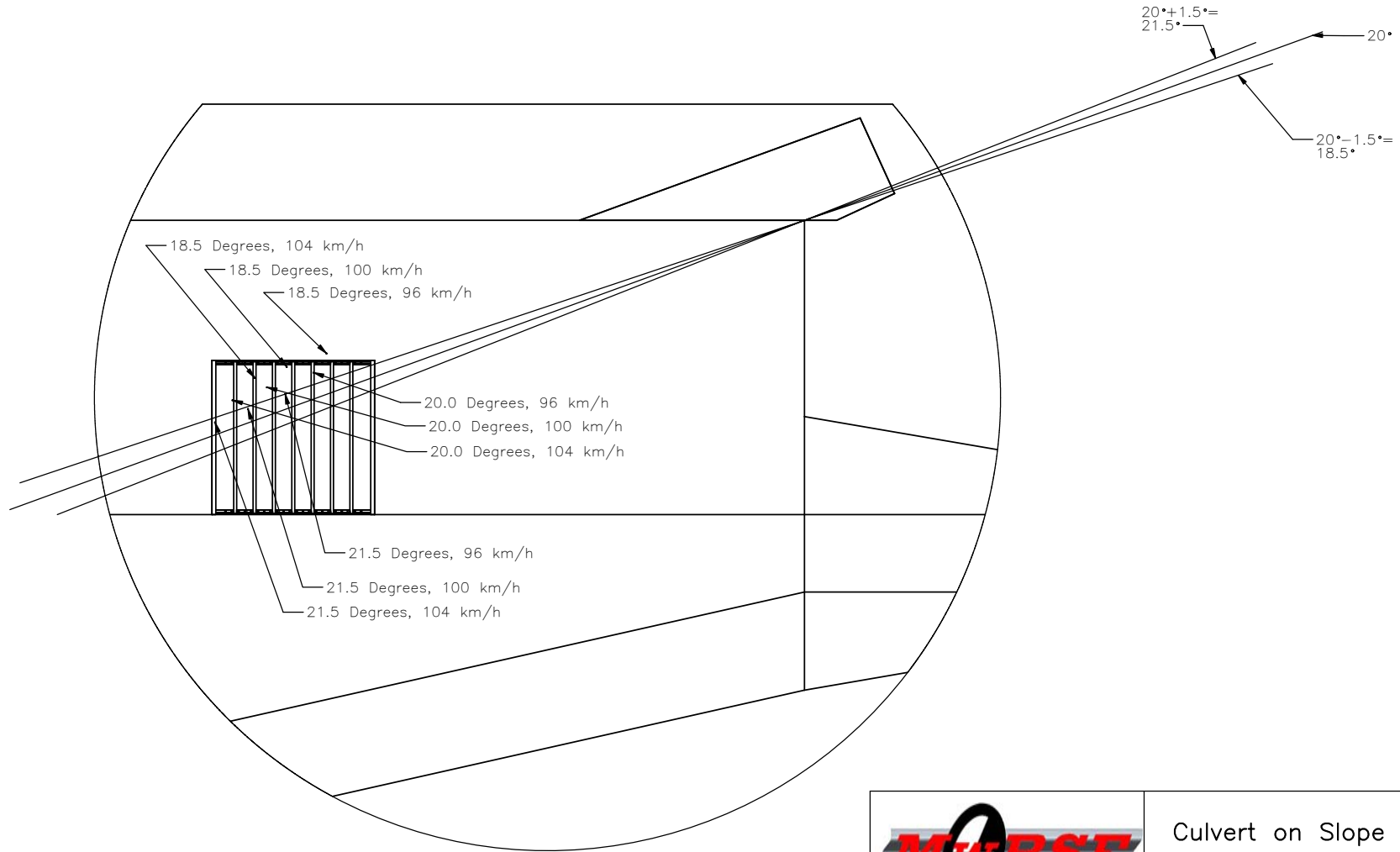
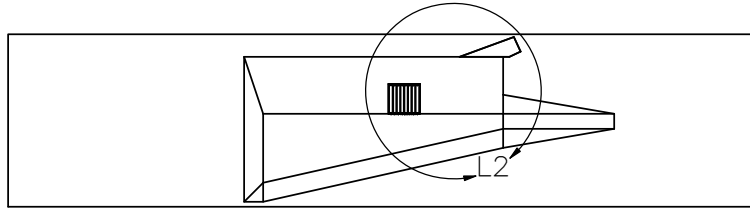
Midwest Roadside  
Safety Facility

Culvert on Slope  
Pickup Impact  
Tolerances (Reid)

DWG. NAME.  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

SHEET:  
10 of 11  
DATE:  
7/10/2006  
DRAWN BY:  
GEP  
REV. BY:  
KAP/RKF



DETAIL L2  
SCALE 1 : 250



Midwest Roadside  
Safety Facility

Culvert on Slope

Small Car Impact  
Tolerances (Reid)

SHEET:  
11 of 11

DATE:  
7/10/2006

DRAWN BY:  
GEP

DWG. NAME:  
Culvert\_System\_Metric

SCALE: None  
UNITS: mm

REV. BY:  
KAP/RKF