TERM	DEFINITION
APPROACH MEGARAIL	THE LENGTH OF MEGARAIL SYSTEM NEAREST THE APPROACHING TRAFFIC
DEPARTURE MEGARAIL	THE LENGTH OF MEGARAIL SYSTEM NEAREST THE DEPARTING TRAFFIC
TAPER	ANY LENGTH OF MEGARAIL OF VARIABLE OFFSET DIMENSION (NORMALLY BETWEEN TWO DISTINCT WORKING CLASS WIDTHS)
WORKING CLASS WIDTH	THE WORKING WIDTH DESIGNATION OF MEGARAIL RESTRAINT SYSTEM
W1	APPROVED MEGARAIL SYSTEM SUITABLE FOR AVAILABLE WORKING WIDTHS IN EXCESS OF 600mm
W2	APPROVED MEGARAIL SYSTEM SUITABLE FOR AVAILABLE WORKING WIDTHS IN EXCESS OF 800mm
W3	APPROVED MEGARAIL SYSTEM SUITABLE FOR AVAILABLE WORKING WIDTHS IN EXCESS OF 1000mm
W4	APPROVED MEGARAIL SYSTEM SUITABLE FOR AVAILABLE WORKING WIDTHS IN EXCESS OF 1300mm
W5	APPROVED MEGARAIL SYSTEM SUITABLE FOR AVAILABLE WORKING WIDTHS IN EXCESS OF 1700mm
AVAILABLE WORKING WIDTH	THE MINIMUM DIMENSION BETWEEN THE OBSTRUCTION OR HAZARD AND THE TRAFFIC FACE OF THE MEGARAIL RESTRAINT SYSTEM
VERGE	LAND TO THE NEAR SIDE OF A CARRIAGEWAY
CENTRAL RESERVE	LAND BETWEEN TWO CARRIAGEWAYS OF TRAFFIC TRAVELLING IN OPPOSING DIRECTIONS
BEAM LAPPING	ANY LENGTH OF BEAM (EITHER FRONT BEAM, BACK BEAM OR BOTH) THAT OVERLAPS AT LEAST ONE OTHER LENGTH OF BEAM

REVn	DATE	DETAILS	INITIAL
04	20.06.19	TERMINOLOGY REVISED	M.T
03	12.02.19	TITLEBLOCK REVISED	M.T
02	24.01.17	W5 DEFINITION UPDATED	M.T
1.0	21.01.15	DETAILS REVISED	M.T

MegaRail

VEHICLE RESTRAINT SYSTEM
DEFINITION OF TERMS

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-APPENDIX 001	04

SCHEDULE OF MEGARAIL COMPONENTS	
PART NUMBER	DESCRIPTION
SR000	BEAM "A" PROFILE x 4300 x 2.5mm
SR001	BEAM "A" PROFILE x 4300
SR014	BEAM TRI-WAVE 4820mm
SR021	BEAM "A" PROFILE x 2300
SR022	BEAM "A" PROFILE x 4300 x 2.4mm
SR024	BEAM "B" PROFILE x 4300
SR025	BEAM ½ ROUND ESP x 4300
SR028	sk BEAM "A" PROFILE 4300
SR070	POST SIGMA 100 x 1700
SR071	POST SIGMA 100 x 1900
SR072	POST SIGMA 100 x 2100
SR073	POST SIGMA 100 x 1100
SR050	POST "C" 125 1400
SR051	POST "C" 125 1800
SR052	POST "C" 125 2000
SR053	POST "C" 125 1100
SR054	POST "C" 125 1900
SR055	POST "C" 125 2400
SR056	POST "C" 125 1600
SR057	POST "C" BASEPLATE bs UK CENTRE
SR058	POST "C" BASEPLATE bs UK VERGE
SR059	POST "C" 125 1700 x 5
SR060	POST "C" 125 1100 x 5
SR062	POST "C" 125 1600
SR063	POST "C" BASEPLATE bs UK VERTICAL
SR064	POST "C" 125 2400
SR066	POST "C" BASEPLATED bs LEFT 495
SR067	POST "C" BASEPLATED bs UK CENTRE 495
SR034	POST "C" 125 1100
SR035	POST "C" 125 1800
SR036	POST "C" 125 2000
SR037	POST "C" 125 C/W BRACKET 2400
SR039	POST "C" 125 2400
SR040	POST "C" 125 2400 (PUNCHED BOTH ENDS)
SR041	POST "C" 125 1600
SR042	POST "C" 125 1700
SR043	POST "C" 125 1800
SR044	POST "C" 125 2000
SR045	POST "C" 125 1100
SR046	POST "C" 125 C/W BRACKET 1600

SR047	**POST "C" 125 C/W BRACKET 1800**
SR048	**POST "C" 125 C/W BRACKET 2000**
SR049	**POST "C" 125 C/W BRACKET 1100**
SR170	**POST C100/60/4 1100**
SR171	**POST C100/60/4 1800**
SR172	**POST C100/60/4 2000**
SR173	**POST C100/60/4 2400**
SR214	**POST "C" 125 1600 (SAFESTAR)**
SR225	**POST "C" 125 2000 (SAFESTAR)**
SR240	**POST "C" 125 1250 (SAFESTAR)**
SR330	**POST "C" 125 2400 (TM32-34)**
SR332	**POST "C" 125 2000 (TM32-34)**
SR333	**POST "C" 125 1800 (TM32-34)**
SR336	**POST "C" 125 1360 (TM32-34)**
SR339	**POST "C" 125 1280 (TM32-34)**
SR340	**POST "C" 125 1080 (TM32-34)**
SR111	**BRACKET SINGLE SPACER LEFT 340mm**
SR112	**BRACKET SINGLE SPACER RIGHT 340mm**
SR113	**SPACER BRACKET 45mm**
SR320	**SPACER BRACKET 45mm (TM32-34)**
SR321	**SPACER LEFT HAND 480mm (TM32-34)**
SR322	**BOX PROFILE BRACKET (TM32-34)**
SR323	**BOX PROFILE FITTING PIECE (TM32-34)**
SR324	**KP LOWERING MEMBER 13° (TM32-34)**
SR325	**KP M LATERAL OFFSET B+C (TM32-34)**
SR328	**MOUNTING BRACKET 100° (TM32-34)**
SR329	**KP M LATERAL OFFSET A+D (TM32-34)**
SR151	**WASHER PLATE 115x40x6 DIA. 18**
SR152	**WASHER PLATE 115x40x5 DIA. 12**
SR154	**WASHER PLATE MR bw FOR HD BOLTS**
SR155	**WASHER PLATE 85x35x4 DIA. 18**
SR105	**WASHER PLATE 115x40x5 TEAR DROP**
SR200	**SETSCREW 4.6 LIP M16x27 c/w NUT**
SR106	**SETSCREW 4.6 LIP M16x40 c/w NUT**
SR201	**SETSCREW 8.8 M16x45 c/w NUT**
SR202	**SETSCREW 8.8 M16x30 c/w NUT**
SR203	**SETSCREW 4.6 M10x60 c/w NUT**
SR204	**SETSCREW 4.6 M10x45 c/w NUT**
SR205	**SETSCREW 8.8 M10x30 c/w NUT**
SR206	**SETSCREW 4.6 M10x30 c/w NUT**

SR207	SETSCREW 8.8 M16x30 c/w NUT HRK SHOULDER
SR220	SETSCREW 4.6 LIP M16x27 c/w NUT & WASHER
SR221	SETSCREW 4.6 LIP M16x40 c/w NUT, WASHER & PLATE
SR222	SETSCREW 8.8 M16x45 c/w NUT, WASHER & PLATE
SR223	SETSCREW 4.6 M10x45 c/w NUT, WASHER & PLATE
SR224	SETSCREW 4.6 M10x30 c/w NUT, WASHER & PLATE
SR208	WASHER M16 HEX
SR209	WASHER M16 18x38
SR300	WASHER M16 18 DIA. HOLE
SR301	WASHER M10 11 DIA. HOLE
SR090	SIGMA POST SOCKET 420mm
SR091	SIGMA POST SOCKET 470mm
SR092	SIGMA POST SOCKET 520mm
SR093	SIGMA POST SOCKET 550mm
SR094	SIGMA POST SOCKET 570mm
SR080	"C" POST SOCKET 470mm
SR081	"C" POST SOCKET 520mm
SR082	"C" POST SOCKET 550mm
SR083	"C" POST SOCKET 570mm
SR084	"C" POST SOCKET 470mm (PLASTIC)
SR181	C100 POST SOCKET 450mm
SR182	C100 POST SOCKET 500mm
SR183	C100 POST SOCKET 550mm
SR100	A21 REINFORCING RING

REVn	DATE	DETAILS	INITIAL
05	20.06.23	SR180 REMOVED	A.D
04	18.10.22	PRODUCT ADDED	M.T
03	12.02.19	DETAILS ADDED, REVISED	M.T
02	24.01.17	ITEMS, CODES UPDATED	M.T
1.0	21.05.15	DETAILS REVISED	M.T

MegaRail

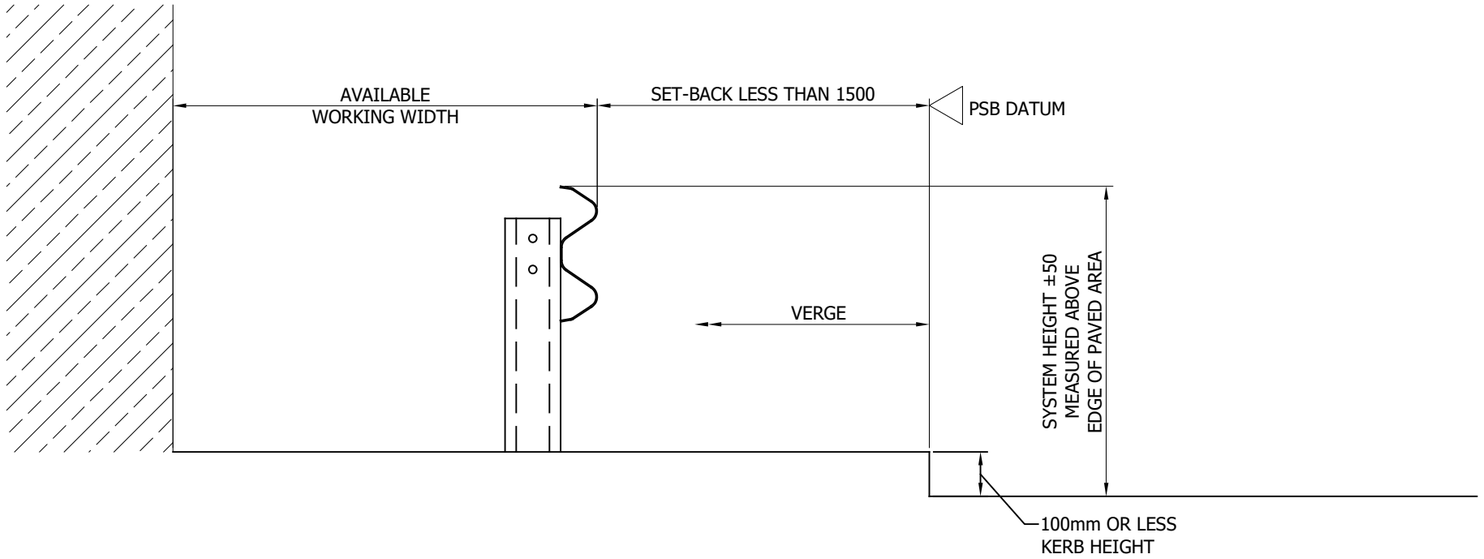
VEHICLE RESTRAINT SYSTEM
DEFINITION OF SYSTEM
COMPONENTS AND PART NUMBERS

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

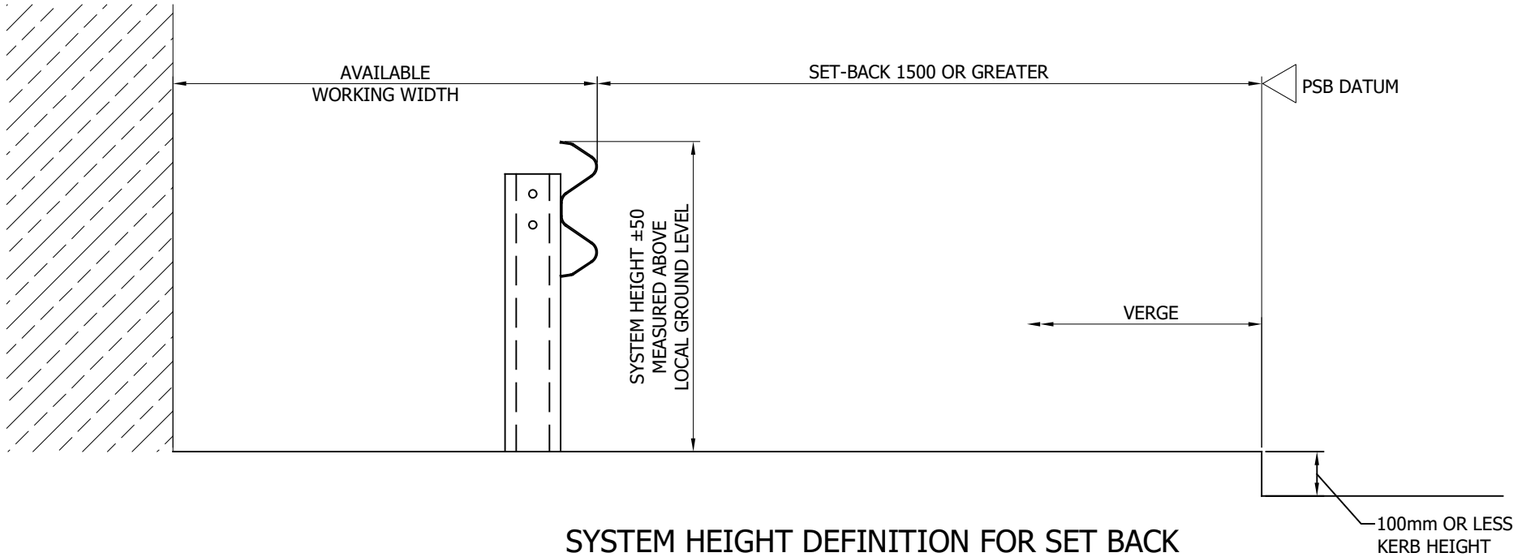
DRAWING NUMBER:	REVn:
MR-APPENDIX 002	05

GENERAL NOTES:

1. P.S.B. = POINT FROM WHERE SET-BACK IS MEASURED.
2. FOR INSTALLATIONS WITH BEAMS TO A SINGLE SIDE OF THE POSTS THE POSTS ARE TO BE INSTALLED WITH THE CLOSED FACE OF THE CHANNEL TOWARDS THE ON-COMING TRAFFIC.
3. FOR INSTALLATIONS WITH BEAMS TO BOTH SIDES OF THE POSTS; THE POSTS ARE TO BE INSTALLED WITH THE CLOSED FACE OF THE CHANNEL TOWARDS THE ON-COMING TRAFFIC WITH THE SMALLEST SETBACK BIAS.
4. MEGARAIL SYSTEM MAY BE EITHER SINGLE OR DOUBLE SIDED.



SYSTEM HEIGHT DEFINITION FOR SET BACK
DIMENSIONS LESS THAN 1500mm



SYSTEM HEIGHT DEFINITION FOR SET BACK
DIMENSIONS 1500mm AND GREATER

04	17.12.21	HEIGHT NOTE REVISED	A.D
03	12.02.19	TITLEBLOCK REVISED	M.T
02	24.01.17	KERB HEIGHTS ADDED	M.T
1.0	21.05.15	DETAILS REVISED	M.T
REVn	DATE	DETAILS	INITIAL

MegaRail

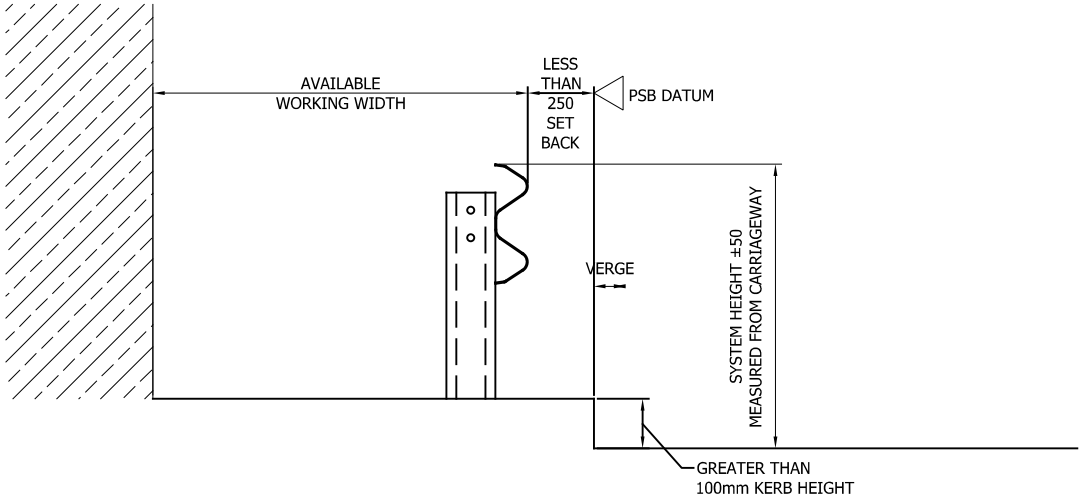
VEHICLE RESTRAINT SYSTEM
SYSTEM HEIGHT MEASUREMENTS
FOR ALTERNATE SETBACKS
100mm OR LESS KERB HEIGHT

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-001	04

GENERAL NOTES:

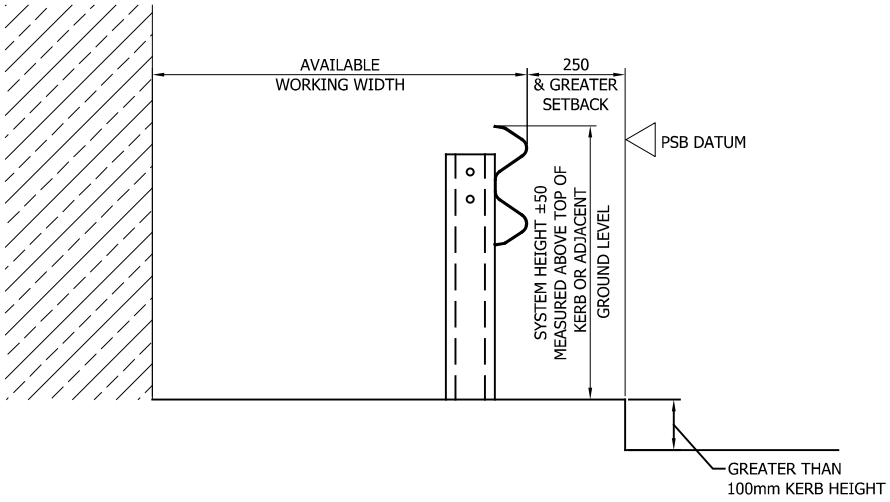
1. P.S.B. = POINT FROM WHERE SET-BACK IS MEASURED.
2. WHERE A KERB IS PRESENT THE MAXIMUM HEIGHT IS 100mm. SHOULD THE KERB BE HIGHER THAN 100mm AND THE BARRIER SETBACK LESS THAN 250mm FROM FACE OF KERB, THE SYSTEM HEIGHT IS MEASURED FROM THE CARRIAGEWAY. IF THE SETBACK IS GREATER THAN 250mm FROM THE FACE OF KERB, THE SYSTEM HEIGHT IS MEASURED FROM THE TOP OF THE KERB OR ADJACENT GROUND LEVEL.



SYSTEM HEIGHT DEFINITION FOR SET BACKS OF LESS THAN 250mm & KERB HEIGHTS OF GREATER THAN 100mm

THIS DRAWING (MR-GA-03) APPLIES TO SAFEROAD MEGARAIL PRODUCTS ONLY.

IT DOES NOT APPLY TO NPSBS PRODUCTS



SYSTEM HEIGHT DEFINITION FOR SET BACKS OF 250mm & GREATER & KERB HEIGHTS OF GREATER THAN 100mm

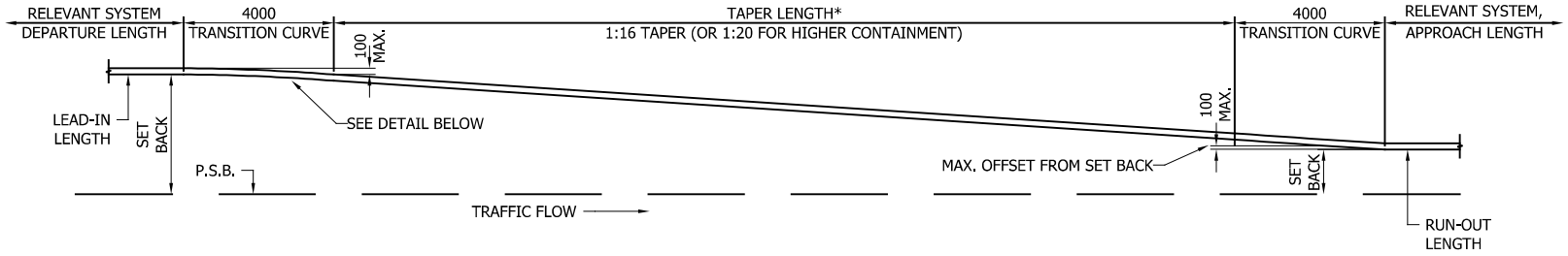
REVn	DATE	DETAILS	INITIAL
06	18/01/24	LIST OF APPLICABLE SYSTEMS REMOVED	H.B
05	19.05.23	LIST OF APPLICABLE SYSTEMS REVISED	A.D
04	17.12.21	HEIGHT NOTE REVISED	A.D
03	02.11.21	LIST OF APPLICABLE SYSTEMS REVISED	A.D
02	27.05.21	DETAILS & NOTES REVISED	M.T
01	12.02.19	TITLEBLOCK REVISED	M.T
00	25.01.17	DRAWING CREATED	M.T

MegaRail

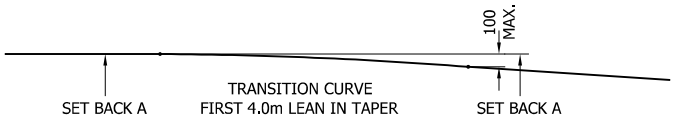
VEHICLE RESTRAINT SYSTEM
SYSTEM HEIGHT MEASUREMENTS
FOR SETBACKS
GREATER THAN 100mm KERB HEIGHT

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

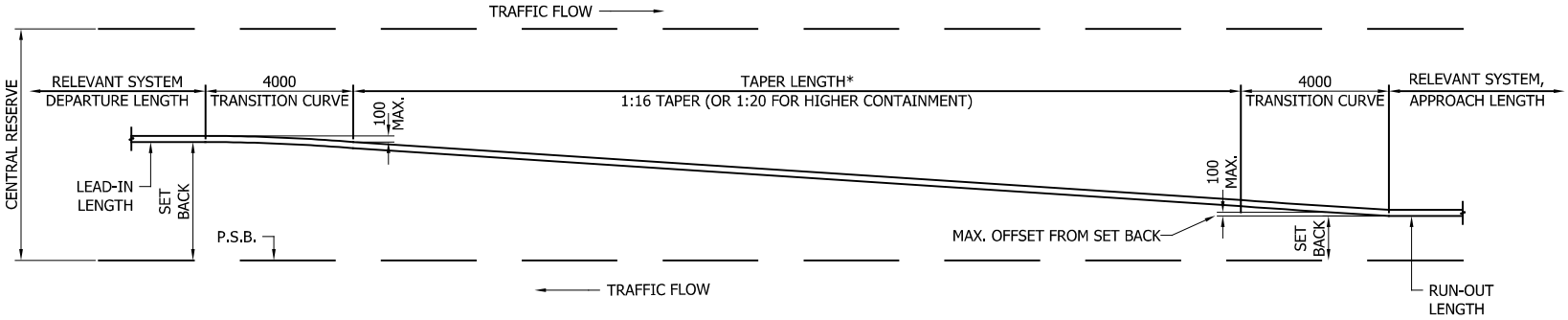
DRAWING NUMBER:	REVn:
MR-GA-003	06



* TAPER MAY BE EITHER TOWARDS (AS SHOWN) OR AWAY FROM TRAFFIC.



VERGE TAPER



CENTRAL RESERVE TAPER

NOTE: 1:16 FOR N2 SYSTEMS & 1:20 FOR H LEVEL SYSTEMS ARE MAXIMUM PERMITTED TAPERS. THE TAPER LENGTH SHOWN IN THE TABLES CAN BE REDUCED. BUT CHANGES IN SAFETY BARRIER PROFILE MUST NOT OCCUR ABRUTLY, ANY ANGLES PRESENTED TO ONCOMING TRAFFIC MUST HAVE A FLOWING ALIGNMENT. THE TRANSITION CURVE IS AN IMPORTANT ELEMENT OF MAINTAINING A FLOWING ALIGNMENT.

TABLE OF TYPICAL TAPER LENGTHS FOR VARIABLE SET BACKS 1 IN 16	
VARIANCE IN SET BACKS, mm	MINIMUM TAPER LENGTH, m
250	4.00
350	5.60
450	7.20
550	8.80
650	10.40
750	12.00
900	14.40
1100	17.60
1200	19.20
1600	25.60
1900	30.40
2000	32.00

TABLE OF TYPICAL TAPER LENGTHS FOR VARIABLE SET BACKS 1 IN 20	
VARIANCE IN SET BACKS, mm	MINIMUM TAPER LENGTH, m
250	5.00
350	7.00
400	8.00
550	11.00
650	13.00
750	15.00
900	18.00
1000	20.00
1200	24.00
1400	28.00
1600	32.00
2000	40.00

GENERAL NOTES:

1. ON ALL SYSTEMS THE WORKING WIDTH CLASSIFICATIONS THE TAPER LENGTH IS TO BE THE SAME WORKING WIDTH AS THE ADJACENT SYSTEMS.
2. LENGTH OF TAPER TO BE DETERMINED FROM CHANGE IN SET BACK MEASUREMENT. FOR NORMAL CONTAINMENT (N2) SYSTEMS THE LENGTH OF TAPER MUST NOT BE LESS THAN 1 IN 16. FOR HIGH CONTAINMENT (H) SYSTEMS THE LENGTH OF TAPER MUST NOT BE LESS THAN 1 in 20.
3. WHERE THE RATE OF CHANGE IN SET BACK IS LESS THAN 1 in 30 (i.e. 1 in 35) NO TAPER ARRANGEMENT IS REQUIRED.
4. CHANGES IN HORIZONTAL ALIGNMENT BETWEEN THE LEAD-IN AND RUN-OUT LENGTHS OF MEGARAIL ARE TO TAKE PLACE UNIFORMLY OVER THE TAPER LENGTH.
5. WHERE CHANGES IN HORIZONTAL ALIGNMENT OCCUR (WHICH MAY ALSO BE DUE TO THE ALTERNATE METHODOLOGY FOR DETERMINING REFERENCE HEIGHT OF BARRIERS - REFER MR-GA001) THIS MAY RESULT IN LOCAL ISOLATED AREAS OF FENCE THAT ARE OUTSIDE THE RANGE OF PERMISSIBLE DIMENSIONS.
6. FOR MEGARAIL EP C120 ONLY, MAXIMUM TAPER IS 1 in 10. PLEASE SEE MEGARAIL EP C120 GA DRAWINGS FOR DETAILS.

REVn	DATE	DETAILS	INITIAL
07	27.10.23	NOTE 6 ADDED	H.B
06	11.06.21	TAPER DETAILS REVISED	M.T
05	16.03.21	TAPER DETAILS REVISED	M.T
04	12.02.19	TITLEBLOCK REVISED	M.T
03	17.10.18	TAPER DETAILS ADDED	M.T
02	24.01.17	TAPER LENGTHS REVISED	M.T
1.0	21.05.15	DETAILS REVISED	M.T

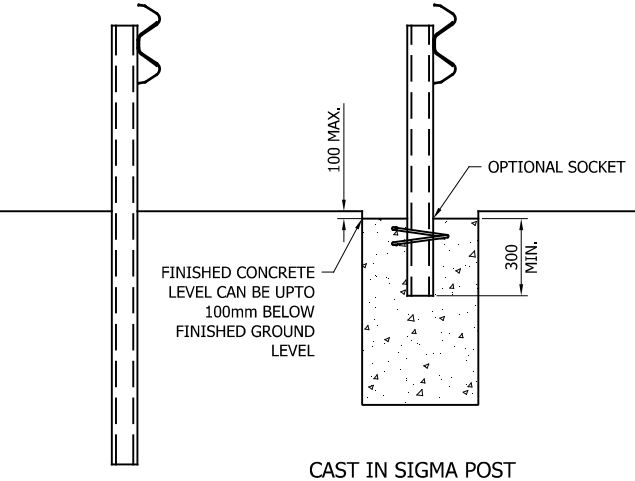
MegaRail

VEHICLE RESTRAINT SYSTEM
VERGE AND CENTRAL RESERVE
TAPER GENERAL ARRANGEMENTS

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

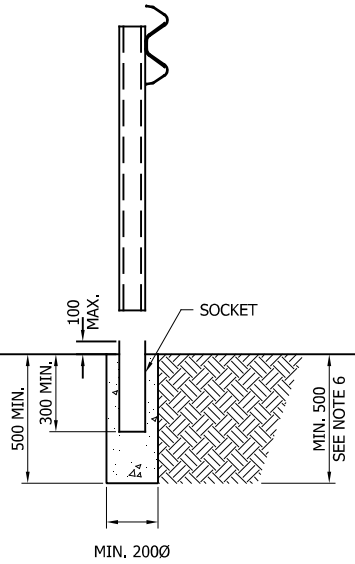
DRAWING NUMBER: MR-GA-010

REVn: 07



DRIVEN SIGMA POST

CAST IN SIGMA POST

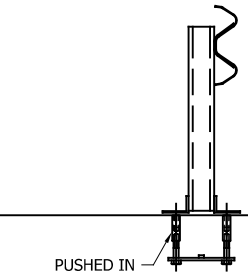


CORED SIGMA POST

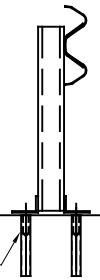
SIGMA POST;
MAX. ULS SHEAR FORCE AT BASE OF POST = 9.0 kN

MAX. TENSILE LOAD PER BOLT:
12.0 kN (24.0 kN SHARED BETWEEN A BOLT PAIR)

MAX. CO-EXISTENT SHEAR LOAD PER BOLT = 2.0 kN (OR 4.0 kN SHARED BETWEEN A BOLT PAIR)



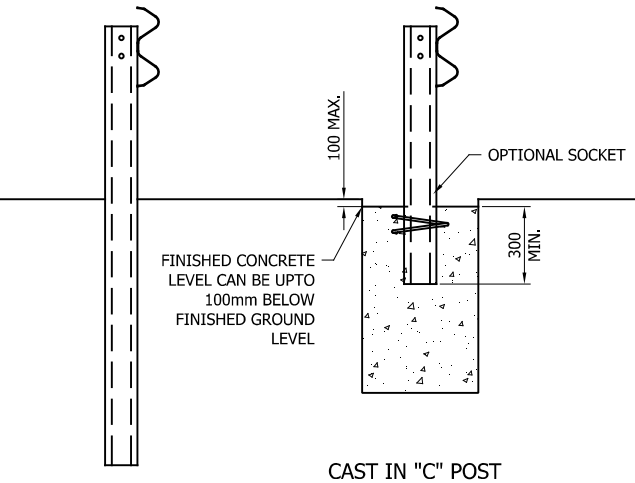
SURFACE MOUNTED SIGMA POST



SURFACE MOUNTED SIGMA POST

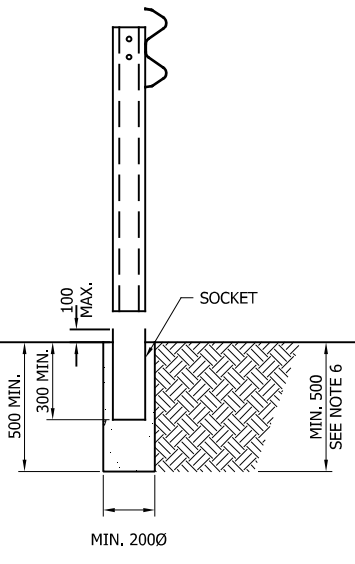
GENERAL NOTES:

1. CONCRETE FOUNDATIONS TO BE DESIGNED BY THE CONTRACTOR AND TESTED TO COMPLY WITH THE REQUIREMENTS OF SAFEROAD TESTING PROCEDURE.
2. CONCRETE TO BE PRESCRIBED MIX ST5 OR RC20/25. STRONGER GRADES OF STRUCTURAL CONCRETE ARE ACCEPTABLE.
3. SOCKETS MAY BE INSTALLED FLUSH WITH THE TOP OF CONCRETE, HOWEVER THE PROTRUSION SHOULD NOT EXCEED 100mm. SOCKET PROTRUSIONS WILL AID THE PREVENTION OF DETRITOUS INCURSION.
4. MINIMUM SOCKET AND OR POST EMBEDMENT IS 300mm.
5. POSTS IN SPECIAL CONCRETE FOUNDATIONS SUCH AS FILTER DRAIN OR SIMILAR MUST BE DESIGNED BY THE CONTRACTOR TO COMPLY WITH THE REQUIREMENTS OF THE SAFEROAD TEST PROCEDURE.
6. WHERE POSTS ARE TO BE INSTALLED BY CORING THROUGH EXISTING CARRIAGEWAY THE OVERALL CARRIAGEWAY CONSTRUCTION THICKNESS MUST BE A MINIMUM OF 500mm. THIS MINIMUM INCLUDES COMPACTED SUB-BASE.
7. SCENARIOS ARE SUITABLE FOR ALL POST TYPES.
8. FOR SURFACE MOUNTED POST TEST LOADS, SEE THE MEGARAIL MANUAL.
9. FINISHED CONCRETE FOOTING LEVEL CAN BE UPTO 100mm BELOW FINISHED GROUND LEVEL.



DRIVEN "C" POST

CAST IN "C" POST

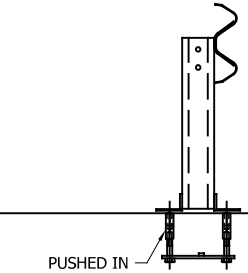


CORED "C" POST

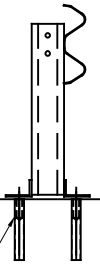
C125 POST;
MAX. ULS SHEAR FORCE AT BASE OF POST =22.0 kN

MAX. TENSILE LOAD PER BOLT:
44.0 kN (88.0 kN SHARED BETWEEN A BOLT PAIR)

MAX. CO-EXISTENT SHEAR LOAD PER BOLT = 5.5 kN (OR 11.0 kN SHARED BETWEEN A BOLT PAIR)



SURFACE MOUNTED "C" POST



SURFACE MOUNTED "C" POST

C100 POST;
MAX. ULS SHEAR FORCE AT BASE OF POST =20.0 kN

MAX. TENSILE LOAD PER BOLT:
40.0 kN (80.0 kN SHARED BETWEEN A BOLT PAIR)

MAX. CO-EXISTENT SHEAR LOAD PER BOLT = 5.0 kN (OR 10.0 kN SHARED BETWEEN A BOLT PAIR)

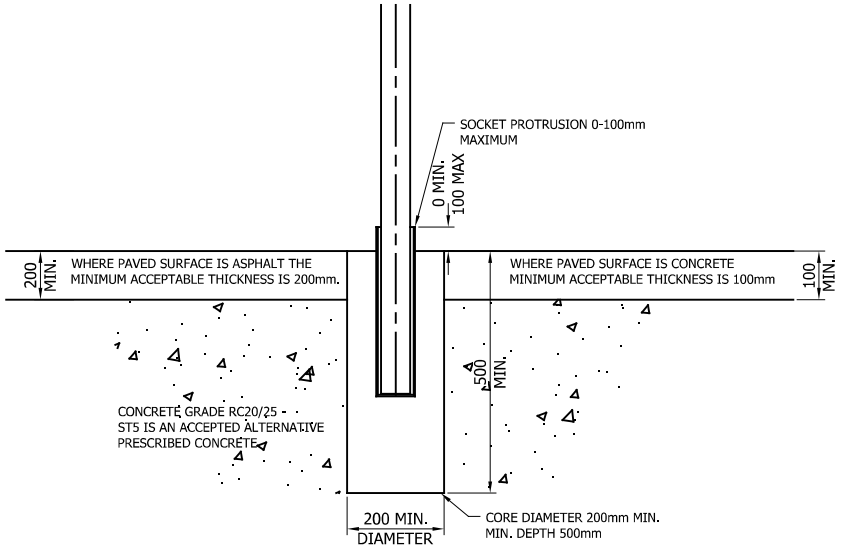
REVn	DATE	DETAILS	INITIAL
08	19/01/24	MIN. EMBEDMENT REVISED	H.B
07	05.07.23	GENERAL NOTE 2 REVISED	A.D
06	16.10.19	DETAILS ADDED	M.T
05	12.02.19	TITLEBLOCK REVISED	M.T
04	17.10.18	DRILL & FIX DETAILS ADDED	M.T
03	10.03.17	NOTE No. 9 ADDED	M.T
02	24.01.17	ANCHOR DETAILS REVISED	M.T

MegaRail

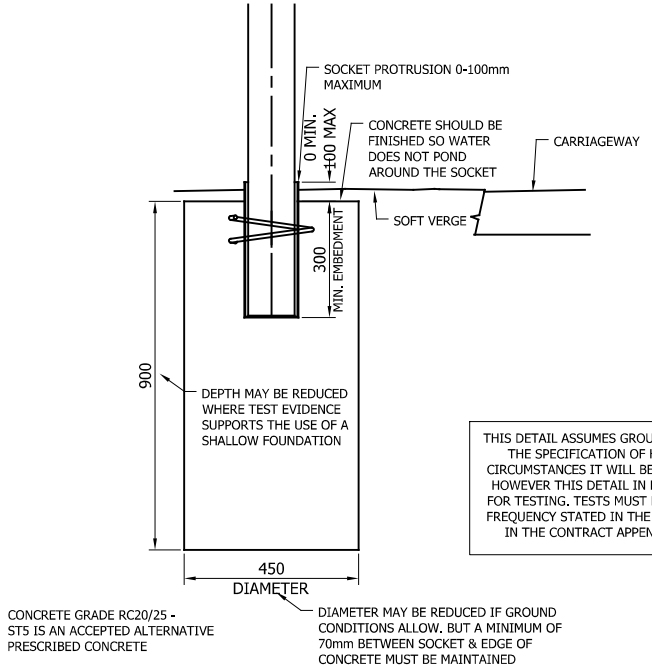
VEHICLE RESTRAINT SYSTEM ARRANGEMENTS FOR DRIVEN CAST IN AND CORED POSTS

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

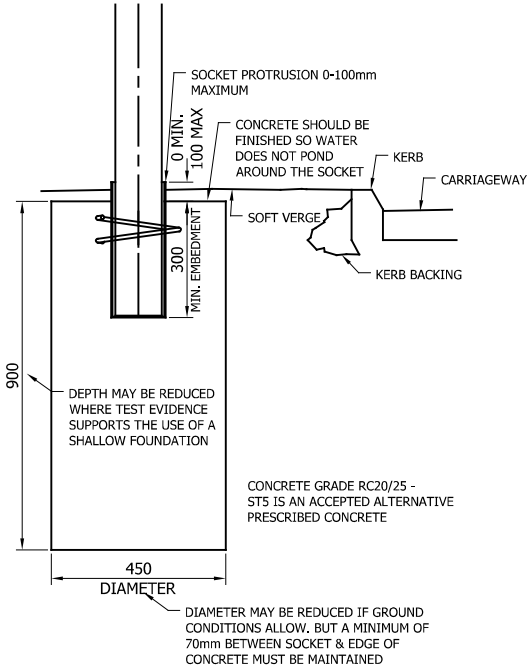
DRAWING NUMBER:	REVn:
MR-GA-020	08



SAFEROAD CORED FOUNDATION DETAIL



THIS DETAIL ASSUMES GROUND COMPACTED IN ACCORDANCE WITH THE SPECIFICATION OF HIGHWAYS WORKS & UNDER THESE CIRCUMSTANCES IT WILL BE ADEQUATE & PERFORM AS INTENDED. HOWEVER THIS DETAIL IN NO WAY REMOVES THE REQUIREMENT FOR TESTING. TESTS MUST BE CONDUCTED AS A MINIMUM AT THE FREQUENCY STATED IN THE SAFEROAD INSTALLATION MANUAL OR IN THE CONTRACT APPENDIX, WHICHEVER IS THE GREATEST



AUGERED FOUNDATION DETAIL

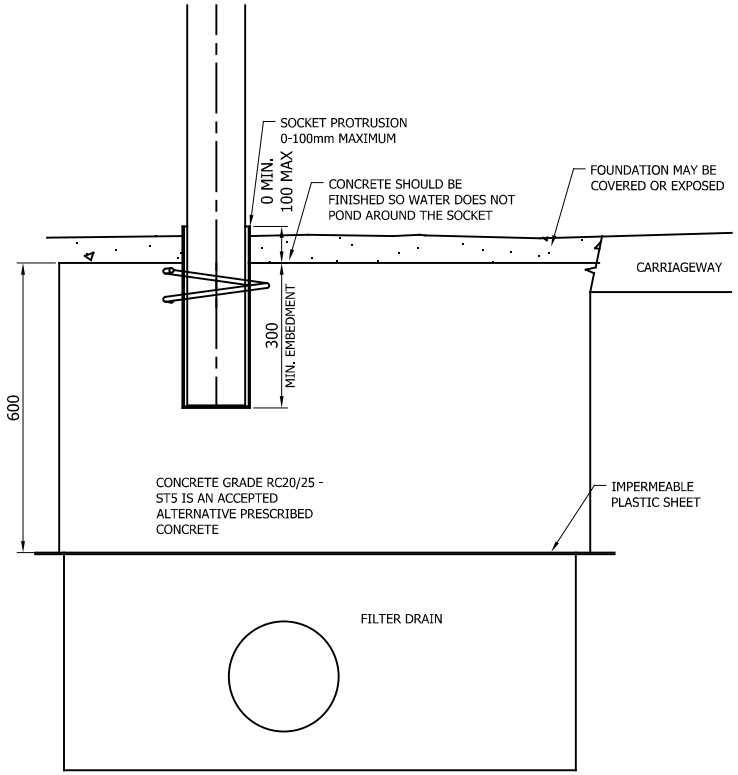
REVn	DATE	DETAILS	INITIAL
04	19/01/24	MIN. EMBEDMENT REVISED	H.B
03	28.09.22	CONCRETE NOTE REVISED	A.D
02	16.08.21	TITLE BLOCK REVISED	A.D
01	13.02.19	DETAILS REVISED	M.T
00	14.11.18	DRAWING CREATED	M.T

MegaRail

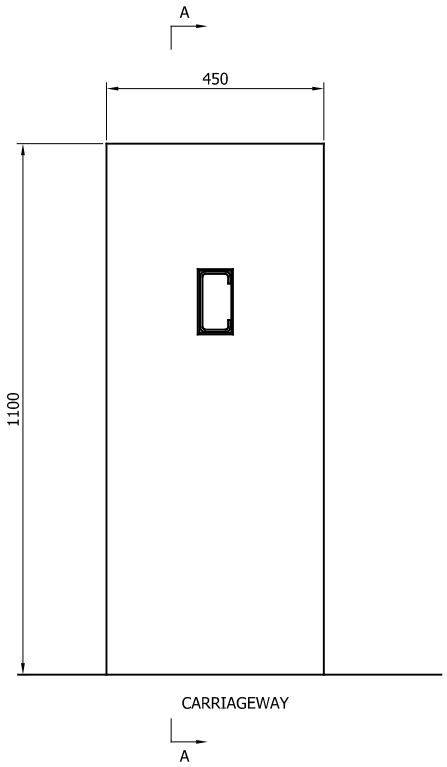
SAFEROAD FOUNDATION DETAILS
CORED & AUGERED FOUNDATIONS

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-021	04



SECTION A-A



FILTER DRAIN FOUNDATION

THIS DRAWING ASSUMES FILTER DRAIN IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAYS FOR HIGHWAYS WORKS F2 y=x+450 WITH A PIPE DIAMETER NOT EXCEEDING 450mm

THIS STANDARD DETAIL IN NO WAY REMOVES THE REQUIREMENT FOR SOIL TESTS. TESTS MUST BE CARRIED OUT AT THE FREQUENCY STATED IN THE SAFEROAD INSTALLATION MANUAL OR IN THE CONTRACT APPENDIX WHICH EVER IS THE GREATER

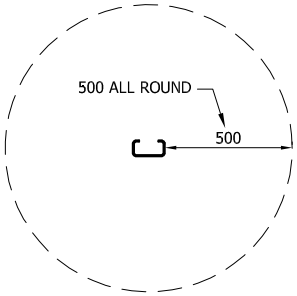
03	19/01/24	MIN. EMBEDMENT REVISED	H.B
02	28.09.22	CONCRETE NOTE REVISED	A.D
01	13.02.19	DETAILS REVISED	M.T
00	14.11.18	DRAWING CREATED	M.T
REVn	DATE	DETAILS	INITIAL

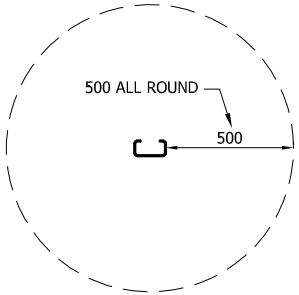
MegaRail

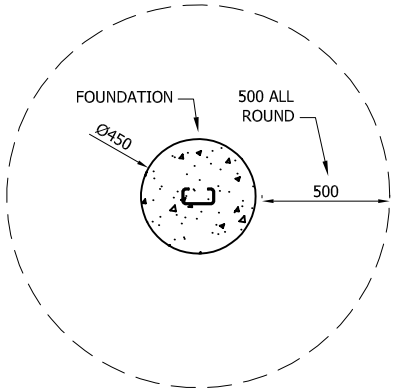
SAFEROAD FOUNDATION DETAILS
FILTER DRAIN FOUNDATION

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

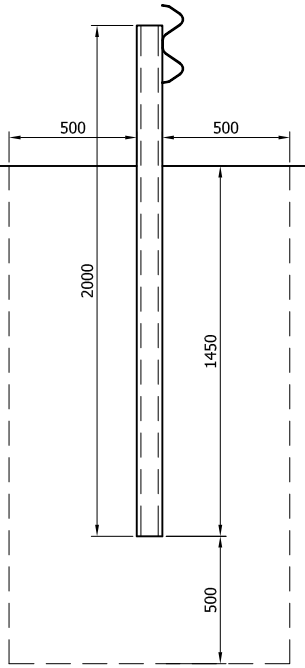
DRAWING NUMBER:	REVn:
MR-GA-022	03



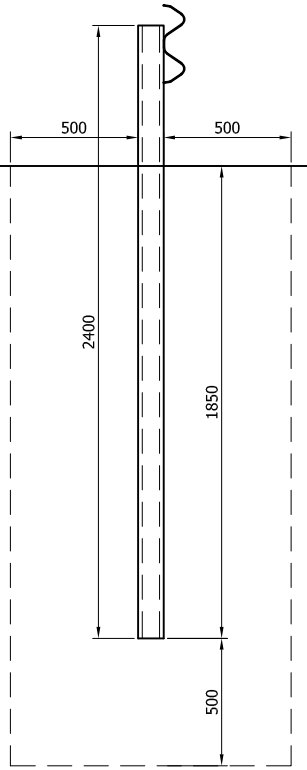




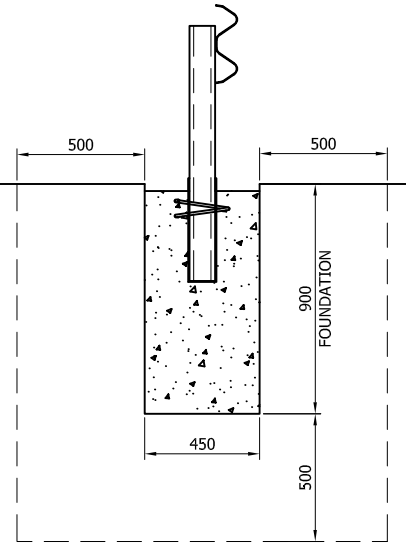
THIS ILLUSTRATION IS TO SHOW 500mm EXCLUSION ZONES TO ENABLE SHW. NO SERVICES/UTILITIES TO BE PLACED WITHIN THESE EXCLUSION ZONES. PLEASE GIVE FURTHER CONSIDERATION TO PLACING SERVICES/UTILITIES WITHIN CLOSE PROXIMITY TO THIS EXCLUSION ZONE AS THIS CAN COMPROMISE SUITABILITY OF THE GROUND. IF GROUND IS NOT COMPACTED & INSTALLED IN ACCORDANCE WITH SHWTHEN THERE IS AN INCREASED LIKELIHOOD THE FOUNDATION SHALL FAIL.



2m DRIVEN POST EXCLUSION ZONE



2.4m DRIVEN POST EXCLUSION ZONE



SOCKETED POST EXCLUSION ZONE

REVn	DATE	DETAILS	INITIAL
00	02.12.19	DRAWING CREATED	M.T

MegaRail

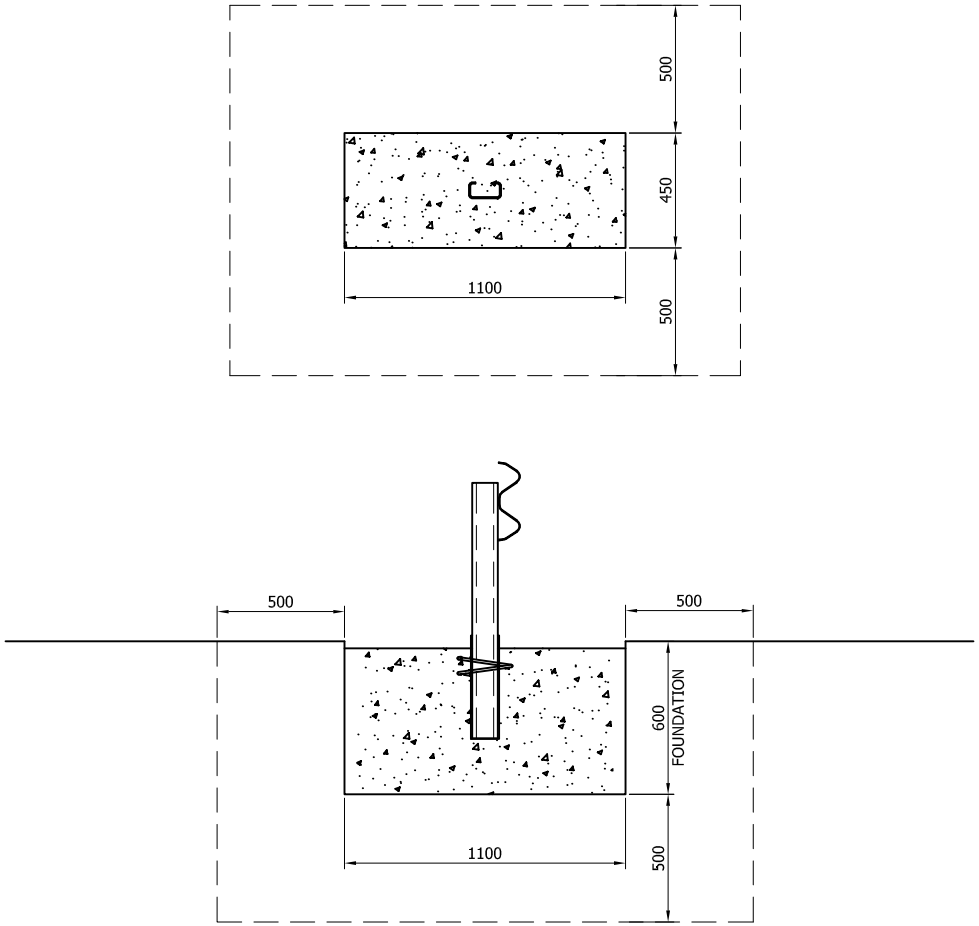
SAFEROAD POST EXCLUSION ZONE DETAILS
DRIVEN & SOCKETED POSTS

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-023	00

THIS ILLUSTRATION IS TO SHOW 500mm EXCLUSION ZONES TO ENABLE A SAFE WORKING ZONE. NO SERVICES/UTILITIES TO BE PLACED WITHIN THESE EXCLUSION ZONES. PLEASE GIVE FURTHER CONSIDERATION TO PLACING SERVICES/UTILITIES WITHIN CLOSE PROXIMITY TO THIS EXCLUSION ZONE AS THIS CAN COMPROMISE SUITABILITY OF THE GROUND. IF GROUND IS NOT COMPACTED & INSTALLED IN ACCORDANCE WITH SHWTHEN THERE IS AN INCREASED LIKELIHOOD THE FOUNDATION SHALL FAIL.

SEE SPECIFICATION FOR HIGHWAYS WORKS DRAWINGS B1 & B2.



FOUNDATION EXAMPLE EXCLUSION ZONE

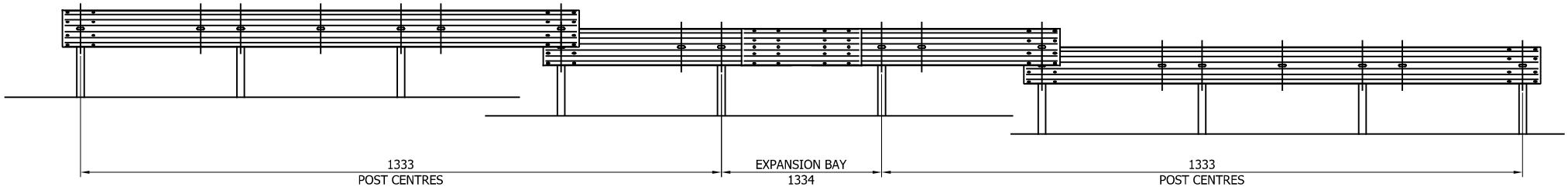
REVn	DATE	DETAILS	INITIAL
00	02.12.19	DRAWING CREATED	M.T

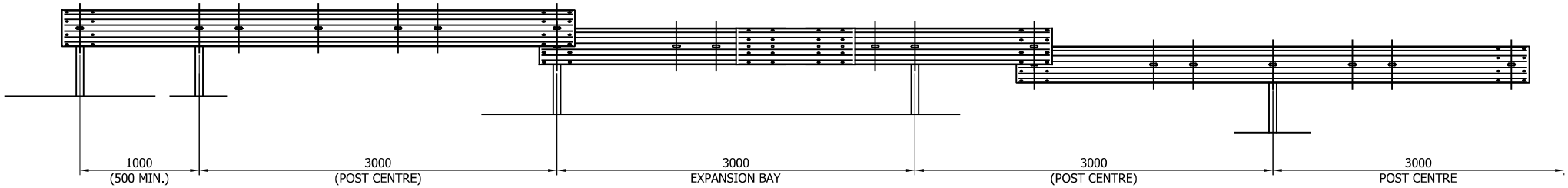
MegaRail

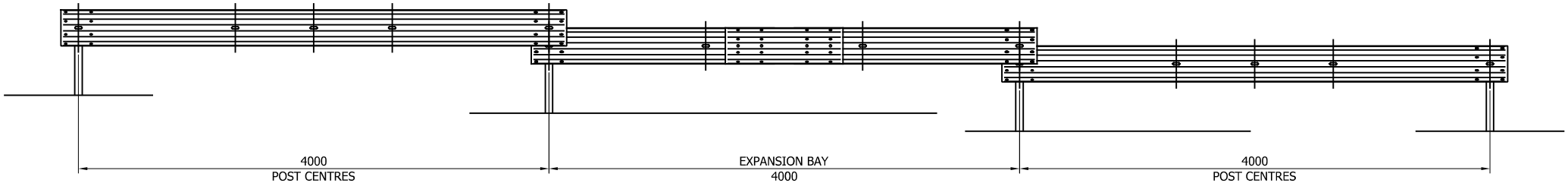
SAFEROAD POST EXCLUSION ZONE DETAILS
FOUNDATION EXAMPLE

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-024	00





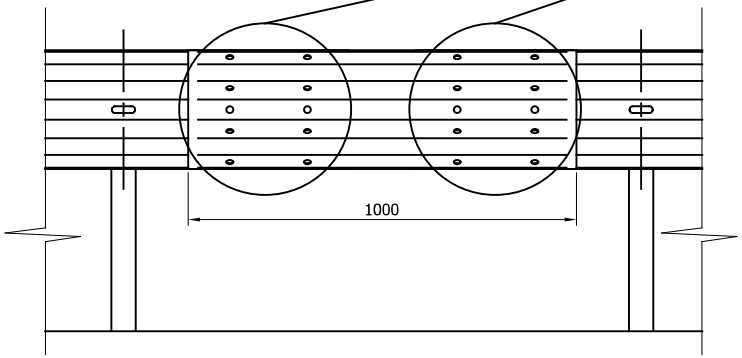


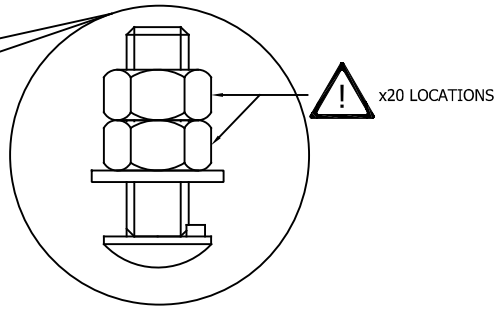
FOR SYSTEMS USING 3M POST CENTRES:

PERMISSABLE DEVIATIONS TO BE APPLIED (500MM MIN.) IN LEAD UP TO EXPANSION BAY. PERMISSABLE DEVIATIONS AS DETAILED WITHIN exH1W2-GA-40

FOR SYSTEMS USING 2M POST CENTRES:

PERMISSABLE DEVIATIONS CAN ALSO BE APPLIED 2M POST CENTRE SYSTEMS IN LEAD UP TO EXPANSION BAY. PERMISSABLE DEVIATIONS AS DETAILED SYSTEM GA DRAWINGS (GA-40). EXPANSION BAY POST ARRANGEMENT TO BE AS PER 1333 SYSTEM ARRANGEMENT





GENERAL NOTES:

1. EXPANSION BEAM ASSEMBLY IS SUPPLIED PRE-ASSEMBLED AND IS NOT TO BE DISMANTLED.FOR SYSTEMS AT STANDARD POST CENTRES OF 1333mm NO MODIFICATION TO THE POST CENTRES SHOULD BE NECESSARY.
2. DIMENSIONS SUFFIXED WITH * HAVE BEEN REDUCED FROM THE STANDARD SYSTEM POST PITCH TO REDUCE POCKETING EFFECTS.
3. ILLUSTRATIONS ARE NOT EXHAUSTIVE AND OTHER ALTERNATIVES WITHIN THE SYSTEM DEVIATION AND PROGRESSION RULES ARE PERMITTED.

REVn	DATE	DETAILS	INITIAL
05	17.06.24	DETAILS REVISED	H.B
04	25.05.21	DETAILS REVISED	M.T
03	12.02.19	TITLEBLOCK REVISED	M.T
02	24.01.17	SYSTEMS, DETAILS REVISED	M.T
1.0	21.05.15	DETAILS REVISED	M.T

MegaRail

VEHICLE RESTRAINT SYSTEM
TYPICAL ARRANGEMENT FOR
SYSTEM MODIFICATION AT
EXPANSION JOINT LOCATIONS

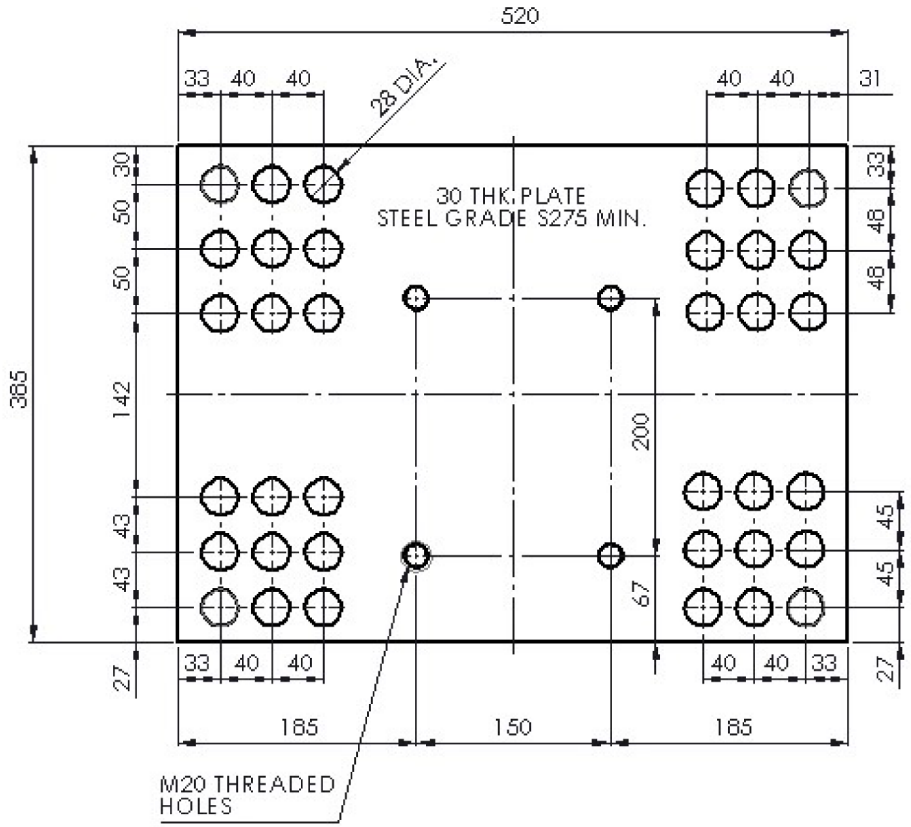
SAFEROAD
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER: MR-GA-025

REVn: 05

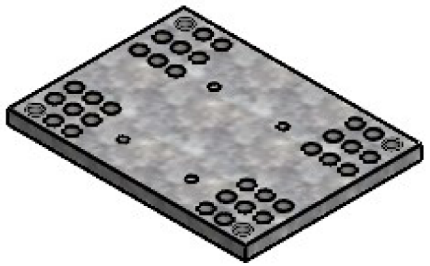
GENERAL NOTES;

1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. PLATE DESIGN SHOWN TO BE 520x385x30 THK STEEL GRADE S275 MIN.
3. HOLE POSITIONING MAY VARY SLIGHTLY TO COINCIDE WITH SPECIFIC STRUCTURES REQUIREMENTS.
4. PLATES TO BE GALVANISED TO BS EN ISO 1461.



TYPICAL PLATE DETAIL

COMPONENT WEIGHT: 41.8 kg



ISOMETRIC VIEW

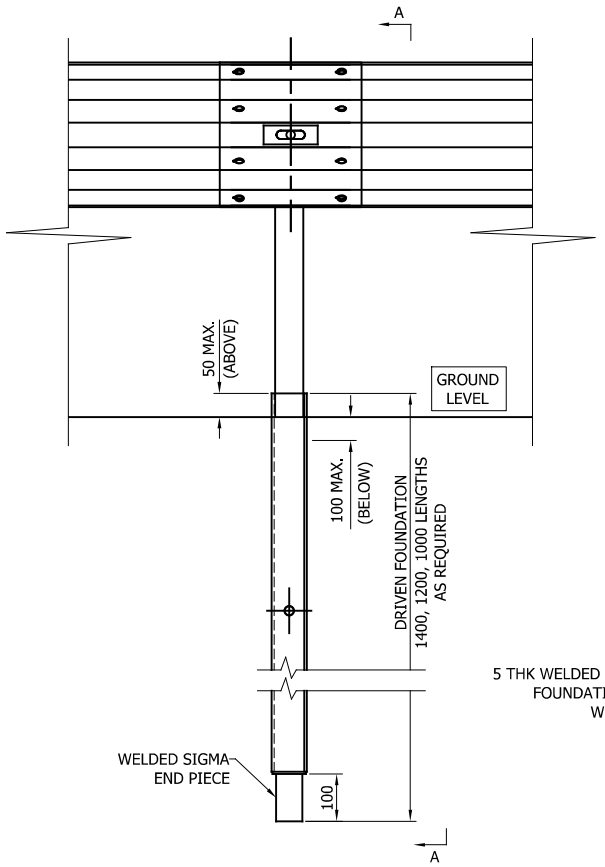
REVn	DATE	DETAILS	INITIAL
00	18.02.22	DRAWING CREATED	M.T

MegaRail

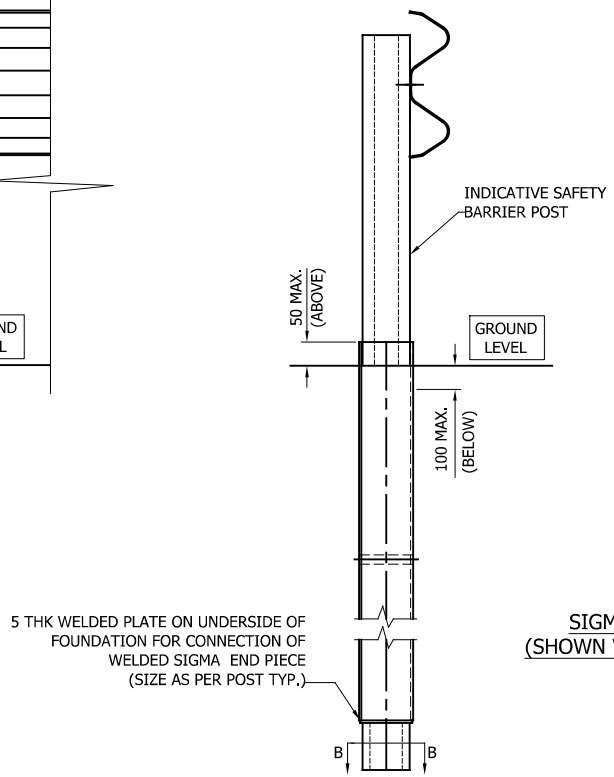
STEEL PLATE FOUNDATION

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

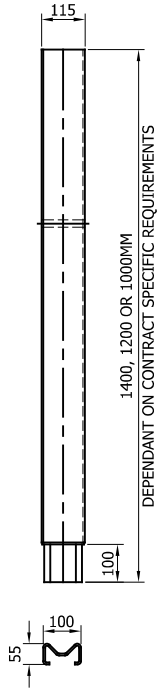
DRAWING NUMBER:	REVn:
MR-GA-026	00



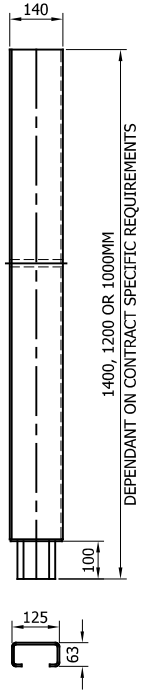
ELEVATION ON INDICATIVE
SAFETY BARRIER INSTALLED WITH DRIVEN FOUNDATION
SCALE: 1:16



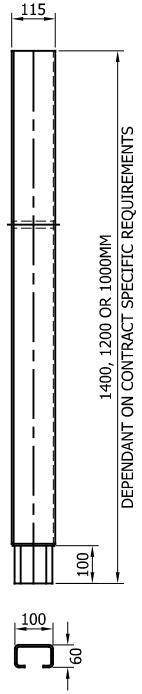
SECTION A-A
(SIDE ELEVATION ON EXAMPLE DRIVEN FOUNDATION)
SCALE: 1:16



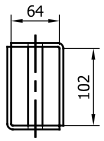
SIGMA DRIVEN FOUNDATION
(SHOWN WITH SIGMA POST SECTION)
SCALE: 1:20



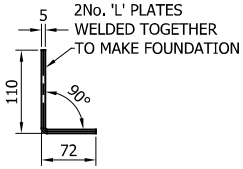
C125 DRIVEN FOUNDATION
(SHOWN WITH C125 POST SECTION)
SCALE: 1:20



C100 DRIVEN FOUNDATION
(SHOWN WITH C100 POST SECTION)
SCALE: 1:20



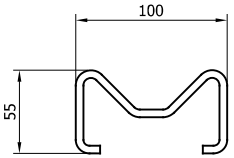
INTERNAL SIZE
EXAMPLE
SCALE: 1:10



'L' PLATE
EXAMPLE DETAIL
SCALE: 1:10

LIMITS ON FOUNDATION
(WITH GROUND LEVEL AS 0MM DATUM)

ABOVE GROUND LEVEL: +50MM
BELOW GROUND LEVEL: -100MM



SECTION B-B
(SECTION ON WELDED SIGMA END PIECE)
SCALE: 1:5

DRIVEN FOUNDATION INTERNAL DIMENSIONS TABLE

POST TYPE	FOUNDATION INTERNAL DIMENSIONS
SIGMA	105 x 62
C125	130 x 68
C100	104 x 64

GENERAL NOTES:

1. ALL DIMENSIONS IN MM UNLESS STATED OTHERWISE
2. DRIVEN FOUNDATION LENGTHS TO BE AS CONTRACT REQUIRES
3. POSTS TO BE INSTALLED WITH CLOSED FACE TOWARDS ONCOMING TRAFFIC
4. FOR INSTALLATION TOLERANCES ABOVE/BELOW GROUND LEVEL, REFER TO ABOVE NOTATION

REVn	DATE	DETAILS	INITIAL
01	03/03/23	TOLERANCES UPDATED	H.B
00	31/05/22	DRAWING CREATED	H.B

MEGARAIL

DRIVEN FOUNDATION DETAILS

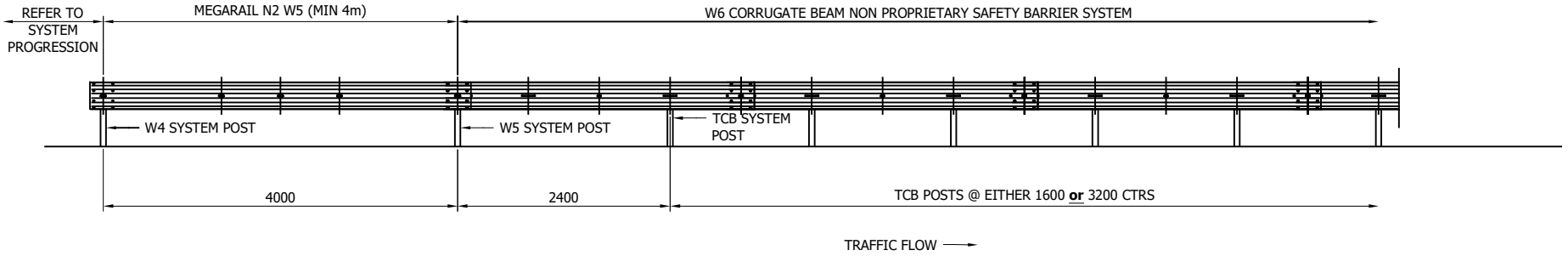
SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

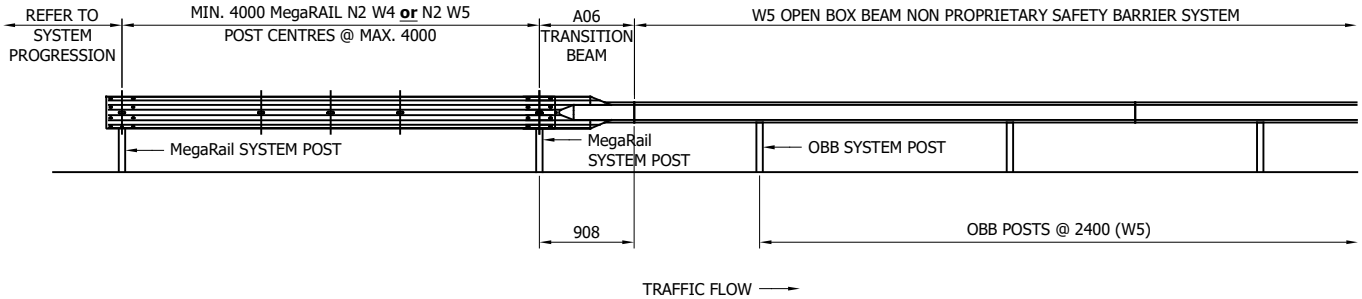
DRAWING NUMBER: MR-GA-027

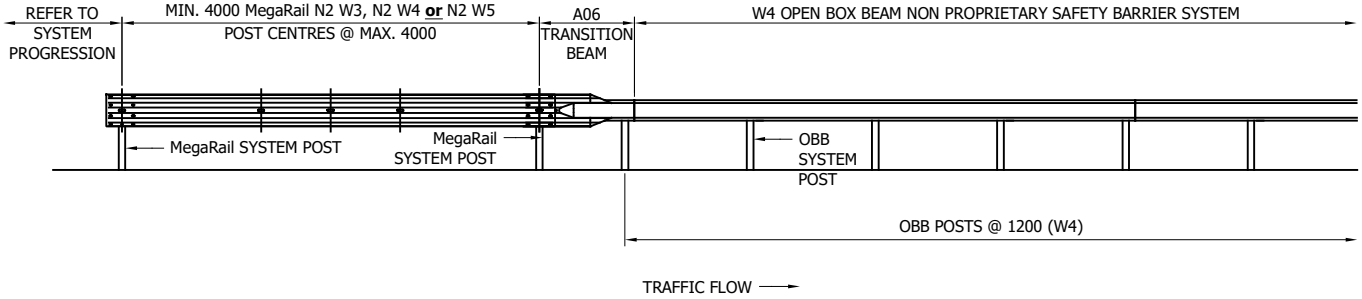
REVn: 01

GENERAL NOTES:

1. POST MAY BE EITHER DRIVEN, SET IN CONCRETE, SURFACE MOUNTED OR ANY COMBINATION OF THE THREE OPTIONS.
2. WHEN REMOVING NPSBS TO INTRODUCE A P4 TERMINAL, ENSURE THAT THE MINIMUM LENGTH OF NEED IS MAINTAINED IN ACCORDANCE WITH CD377 CHAPTER 3 'LENGTH OF NEED' CLAUSE 3.12 TO CLAUSE 3.14.







REVn	DATE	DETAILS	INITIAL
05	26.07.21	NOTE REVISED ON TOP ELEVATION	A.D
04	25.05.21	NOTES REVISED	M.T
03	12.02.19	TITLEBLOCK REVISED	M.T
02	24.01.17	DETAILS UPDATED	M.T
1.0	21.05.15	DETAILS REVISED	M.T

MegaRail

VEHICLE RESTRAINT SYSTEM ARRANGEMENT FOR MEGARAIL TO NON-PROPRIETARY SAFETY BARRIER SYSTEMS

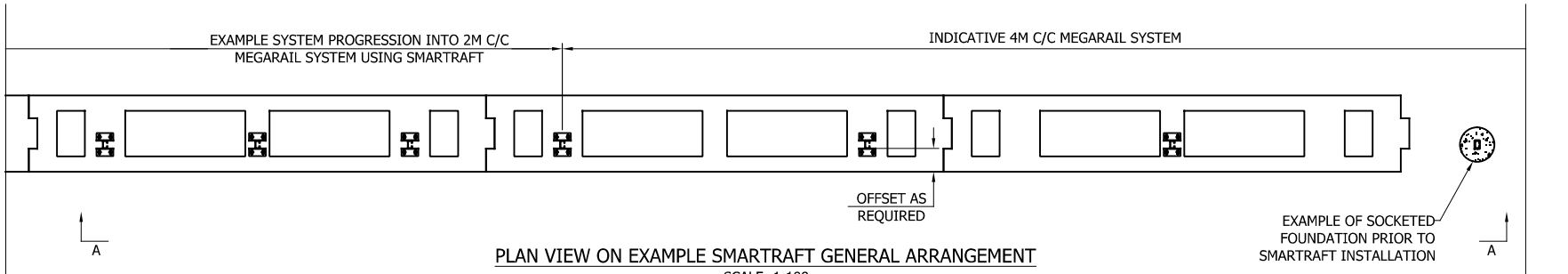
SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-040	05

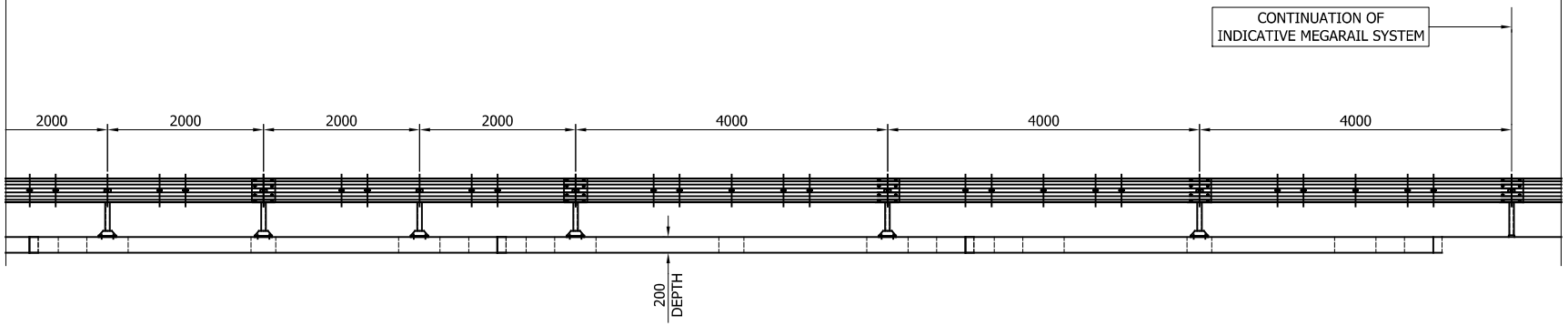
GENERAL NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. SMARTRAFT IS A PRODUCT OF ARBUS LIMITED.
3. SMARTRAFT EXAMPLE SHOWN WITH INDICATIVE LINEAR MEGARAIL SAFETY BARRIER SYSTEM.
4. SMARTRAFT MAY ALSO BE INSTALLED WITH SOCKETED POSTS

BEAMS OMITTED FROM PLAN VIEW FOR CLARITY



PLAN VIEW ON EXAMPLE SMARTRAFT GENERAL ARRANGEMENT
SCALE: 1:100



A-A
(ELEVATION ON TRAFFIC FACE)
SCALE: 1:100

SMARTRAFT EXAMPLE DETAILED WITH SURFACE MOUNTED INDICATIVE LINEAR MEGARAIL SAFETY BARRIER SYSTEM. SMARTRAFT IS SUITABLE FOR USE WITH MAJORITY OF SAFEROADS MEGARAIL PRODUCT RANGE

SMARTRAFT MODULAR HIGHWAY SOLUTIONS

SMARTRAFT IS A PRODUCT OF ARBUS LIMITED

SAFEROAD RECOMMENDS SMARTRAFT AS AN ALTERNATIVE VRS FOUNDATION TYPE

REVn	DATE	DETAILS	INITIAL
02	27/08/24	DRAWING UPDATED	H.B
01	23.07.21	WORKING WIDTH NOTE REVISED	A.D
00	05.02.21	DRAWING CREATED	M.T

SMARTRAFT

GENERAL ARRANGEMENT DETAIL SHOWN WITH INDICATIVE MEGARAIL SYSTEM

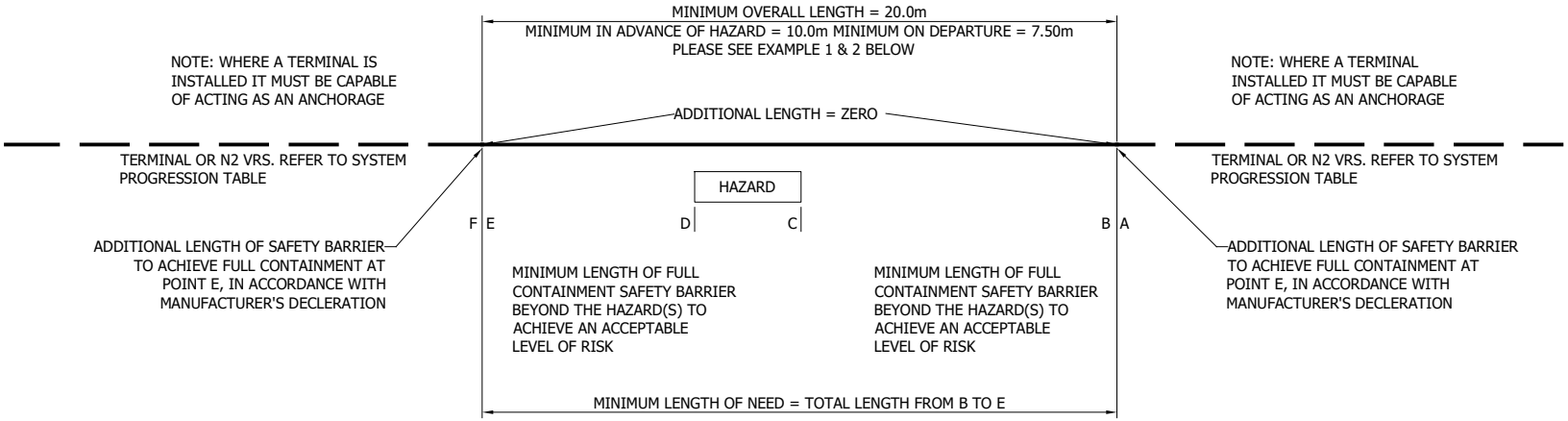
SAFEROAD

CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-41	02

CD 377 MINIMUM LENGTHS FOR ACHIEVING FULL CONTAINMENT

ALL SYSTEMS INCLUSIVE OF ep ETC. WHEN USED FOR N2 CONTAINMENT



EXAMPLE 1:

LENGTH OF NEED IDENTIFIED AS 12.0m. 6.0M IN ADVANCE & 6.0m ON DEPARTURE.
MINIMUM 10.0m IN ADVANCE WOULD DICTATE THE VRS HAS TO BE EXTENDED BY 4.0m
TO ACHIEVE THE MINIMUM LENGTH OF FULL CONTAINMENT
LENGTH OF HAZARD = 9.0m LENGTH OF VRS NOW = 19.0m
LENGTH OF FULL CONTAINMENT ON THE DEPARTURE IS 6.0m THIS WILL NEED TO BE
EXTENDED TO 7.5m TO ACHIEVE THE MINIMUM LENGTH OF FULL CONTAINMENT.
TOTAL LENGTH OF THE VRS = 26.5m ROUNDED UP TO THE NEAREST UNIT LENGTH.

EXAMPLE 2:

LENGTH OF FULL CONTAINMENT IS 22.0m ON APPROACH & 8.0m ON DEPARTURE
THE APPROACH LENGTH WOULD BE THE 22.0m IDENTIFIED IN APPENDIX 4/1 TO
ACHIEVE THE MINIMUM 22.0m FULL CONTAINMENT.
LENGTH OF HAZARD = 9.0m LENGTH OF VRS NOW = 31.0m
THE DEPARTURE LENGTH WOULD BE THE 8.0m IDENTIFIED IN APPENDIX 4/1 TO
ACHIEVE THE MINIMUM 8.0m CONTAINMENT.
TOTAL LENGTH = 39.0m ROUNDED UP TO THE NEAREST UNIT LENGTH.

REVn	DATE	DETAILS	INITIAL
01	25.05.21	DETAILS REVISED	M.T
00	05.02.21	DRAWING CREATED	M.T

MegaRail

CD 377 MINIMUM LENGTHS FOR ACHIEVING FULL CONTAINMENT

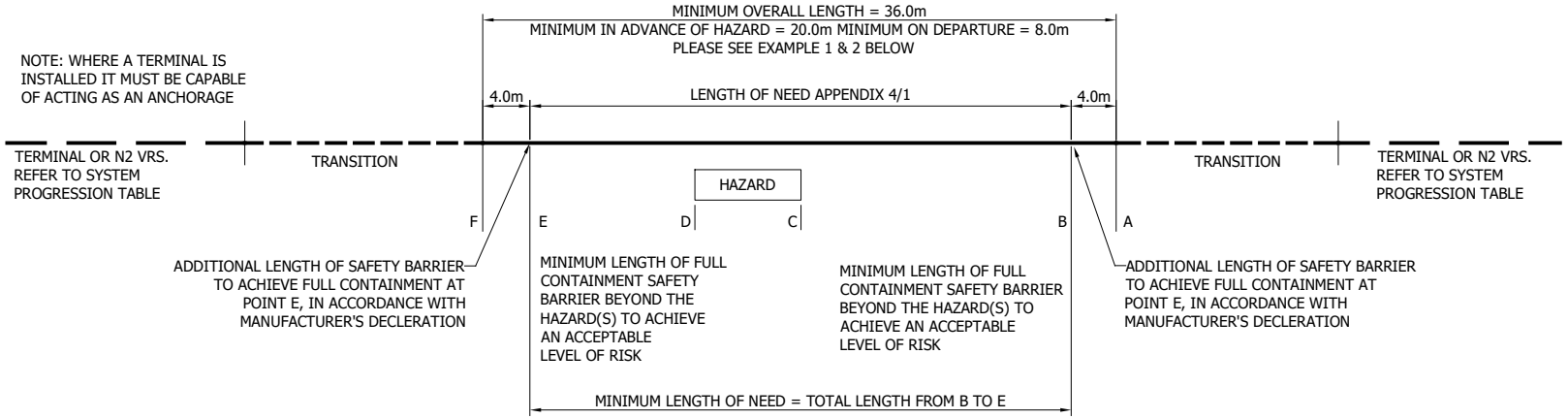
N2 SYSTEMS

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-042	01

CD 377 MINIMUM LENGTHS FOR ACHIEVING FULL CONTAINMENT

HIGH CONTAINMENT SYSTEMS H1 & H2 WHERE THE LENGTH OF NEED ON THE APPROACH
IS LESS THAN 30.0m OR ON DEPARTURE LESS THAN 10.5m.
WHERE THE LENGTH OF NEED IS EQUAL TO OR GREATER THAN 30 & 10.5 LENGTHS A TO B & E TO F = ZERO



EXAMPLE 1:

LENGTH OF FULL CONTAINMENT IDENTIFIED AS 12.0m IN ADVANCE & 6.0m ON DEPARTURE
MINIMUM 20.0m IN ADVANCE WOULD INCOPORATE THE 4.0m OUTSIDE OF THE LENGTH
OF FULL CONTAINMENT.
LENGTH OF HAZARD = 9.0m LENGTH OF VRS NOW = 29.0m.
LENGTH OF NEED ON DEPARTURE 6.0m + 4.0m E TO F = 10.0m
TOTAL LENGTH OF THE VRS = 39.0m ROUNDED UP TO THE NEAREST UNIT LENGTH.

EXAMPLE 2:

LENGTH OF FULL CONTAINMENT IDENTIFIED AS 22.0m ON APPROACH & 2.0m ON DEPARTURE.
THE APPROACH LENGTH WOULD BE THE 22.0m IDENTIFIED IN APPENDIX 4/1 PLUS
THE 4.0m A TO B = 26.0m
LENGTH OF HAZARD 9.0m. LENGTH OF VRS NOW 35.0m
THE DEPARTURE LENGTH WOULD BE THE 2.0m IDENTIFIED IN APPENDIX 4/1 + 4.0m
E TO F = 6.0m + 2.0m TO ACHIEVE THE MINIMUM 8.0m.
TOTAL LENGTH 43.0m ROUNDED UP TO THE NEAREST UNIT LENGTH.

REVn	DATE	DETAILS	INITIAL
00	05.02.21	DRAWING CREATED	M.T

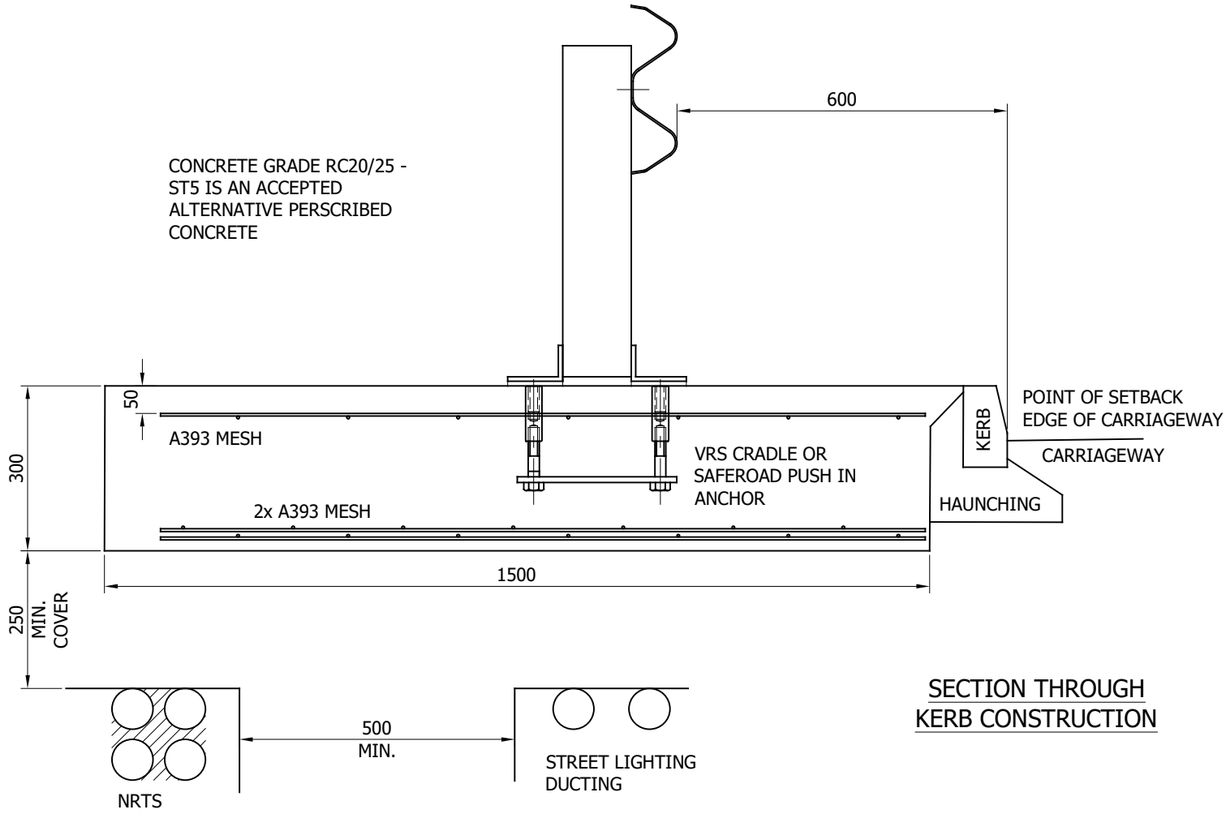
MegaRail

CD 377 MINIMUM LENGTHS FOR ACHIEVING FULL CONTAINMENT

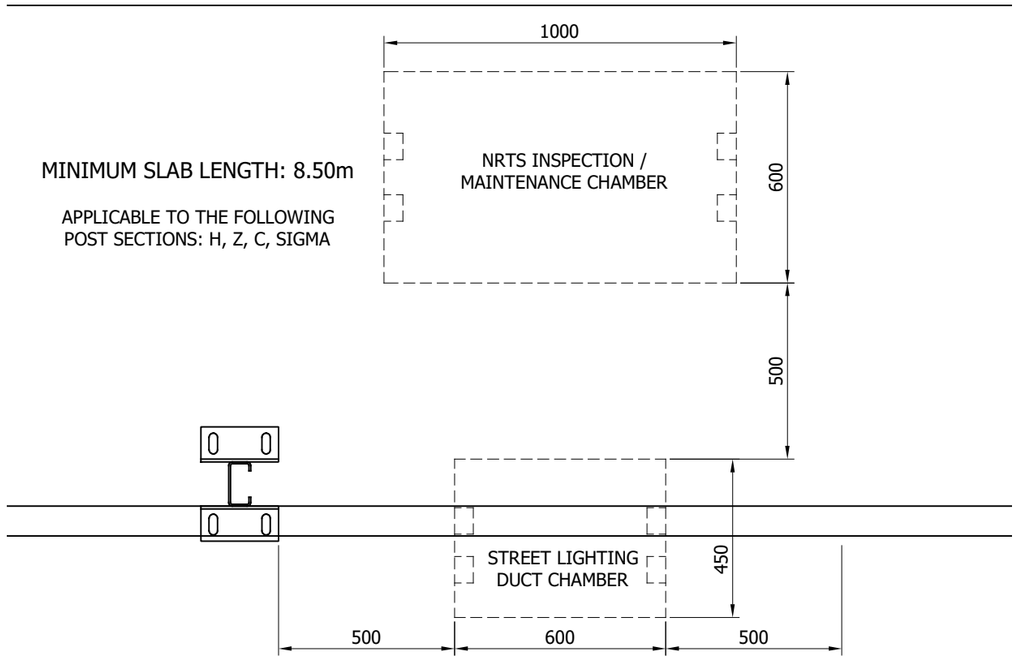
HIGH CONTAINMENT (H1 & H2)

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-043	00

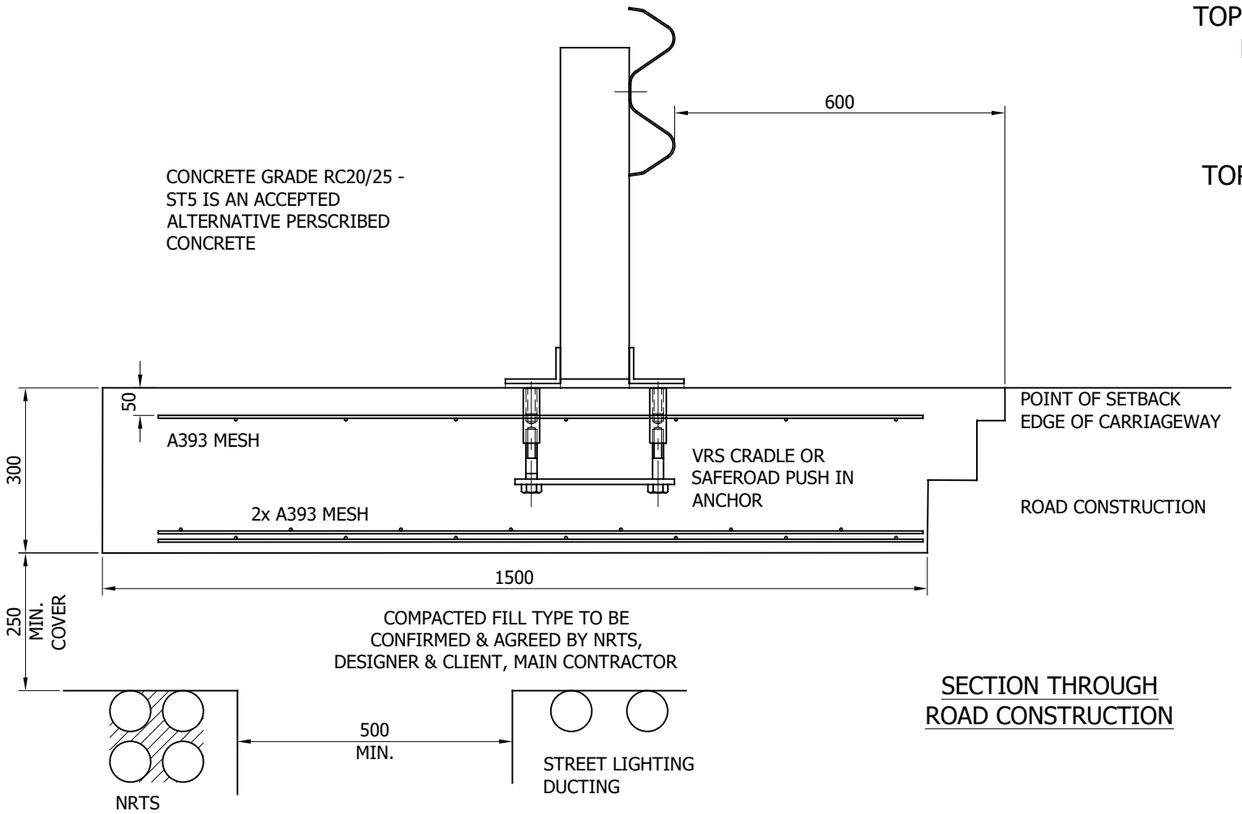


SECTION THROUGH KERB CONSTRUCTION



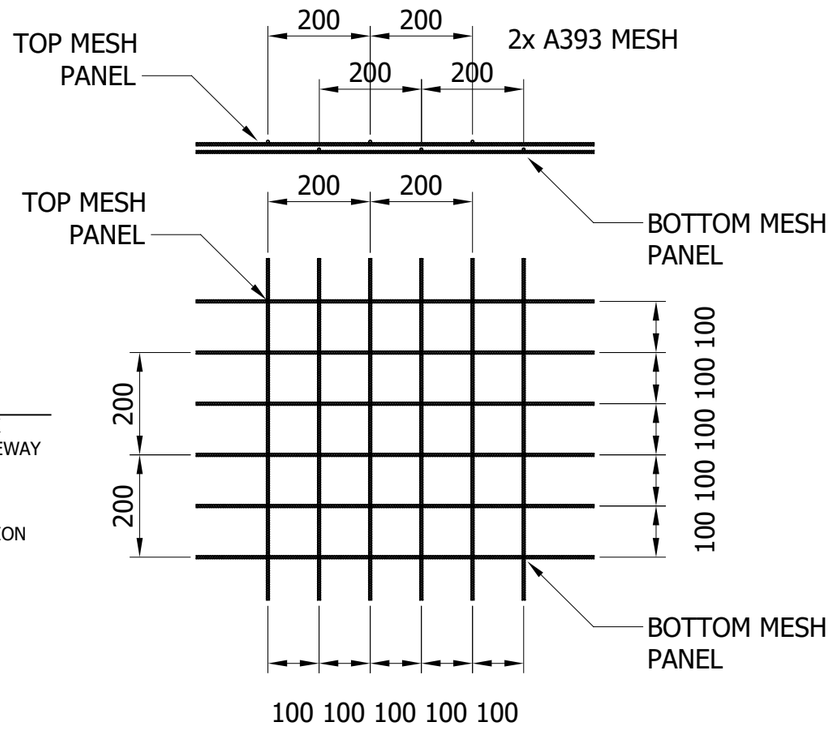
EXAMPLE ANCHOR EXCLUSION ZONE. IF POST REQUIRED IN THIS LOCATION USE MEGARAIL BRIDGING PLATE WITH ANCHORS 500mm INTO SLAB DESIGN

KERB CONSTRUCTION OR ROAD CONSTRUCTION



SECTION THROUGH ROAD CONSTRUCTION

PLAN VIEW



LOWER MESH OVERLAPPING DETAIL

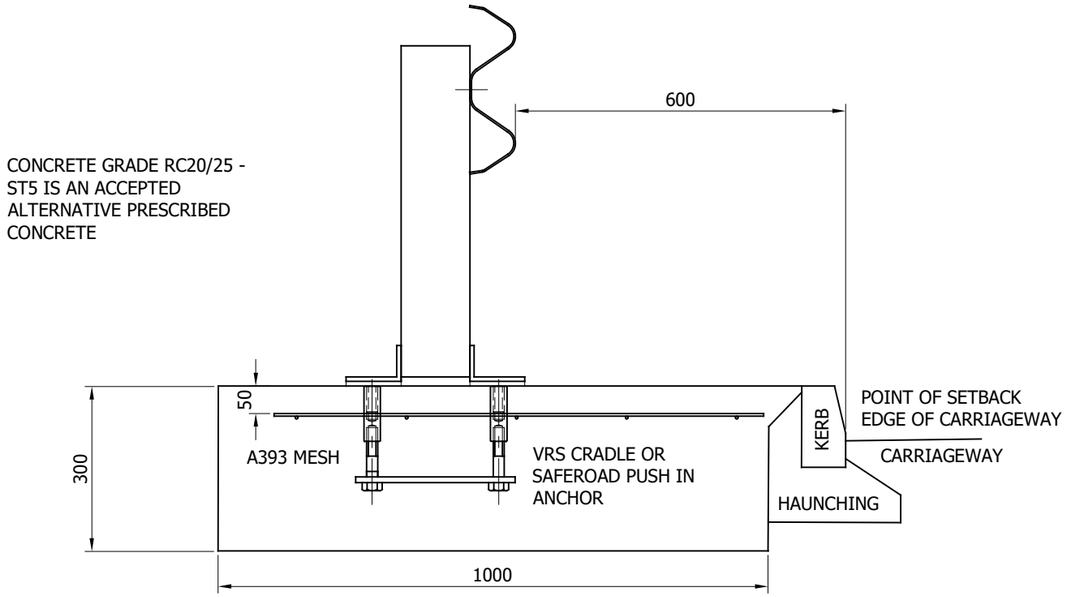
REVn	DATE	DETAILS	INITIAL
05	28.09.22	CONCRETE NOTES REVISED	A.D
04	20.09.22	CONCRETE NOTES REVISED	A.D
03	25.05.21	DETAILS REVISED	M.T
02	04/07/19	DETAILS REVISED	M.T
01	27/09/17	MESH DETAIL CORRECTED	M.T
00	16/05/17	DRAWING CREATED	M.T

Saferoad VRS

EXAMPLES OF REASONS TO HAVE BREAK IN SHALLOW SLAB FOUNDATION DUE TO CONSTRAINTS DESIGN A

SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-050	05

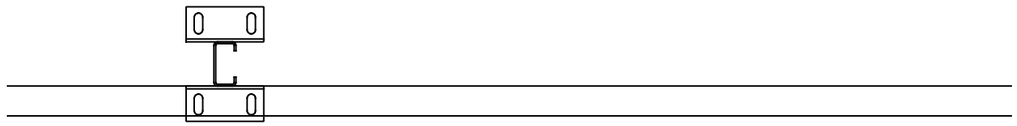


SECTION THROUGH
KERB CONSTRUCTION

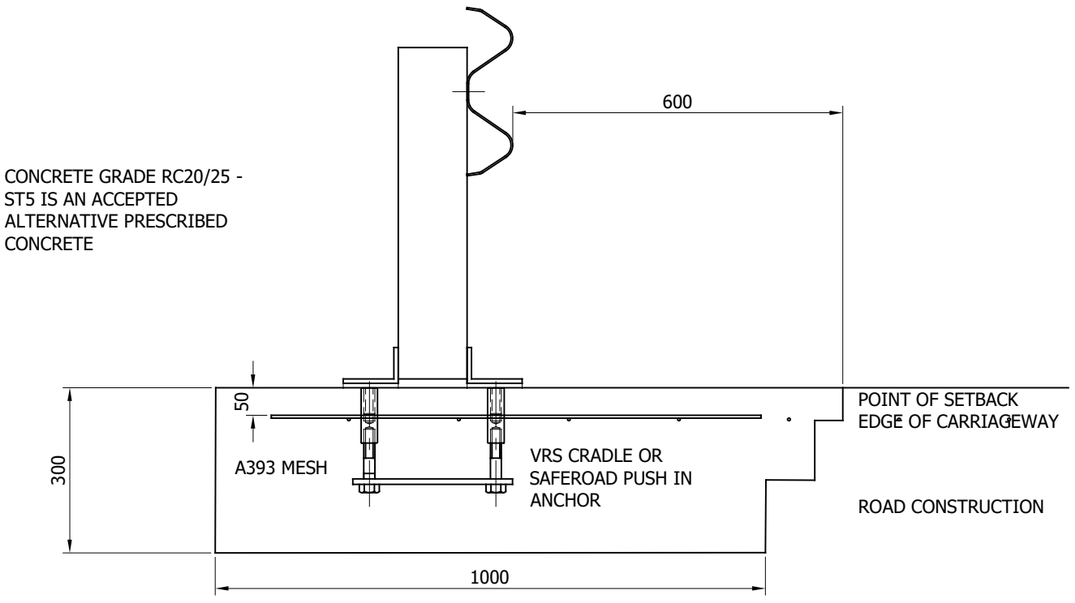
MINIMUM SLAB LENGTHS:

12.0m LONG FOR H OR Z SECTION
8.0m LONG FOR C SECTION
7.0m FOR SIGMA SECTION

ANTI-CRACK JOINTS AT MAX 12.0m



PLAN VIEW



SECTION THROUGH
ROAD CONSTRUCTION

REVn	DATE	DETAILS	INITIAL
05	28.09.22	CONCRETE NOTES REVISED	A.D
04	20.09.22	CONCRETE NOTES REVISED	A.D
03	27.06.22	DIMENSION ALTERED	A.D
02	25.05.21	DETAILS REVISED	M.T
01	04/07/19	DETAILS REVISED	M.T
00	16/05/17	DRAWING CREATED	M.T

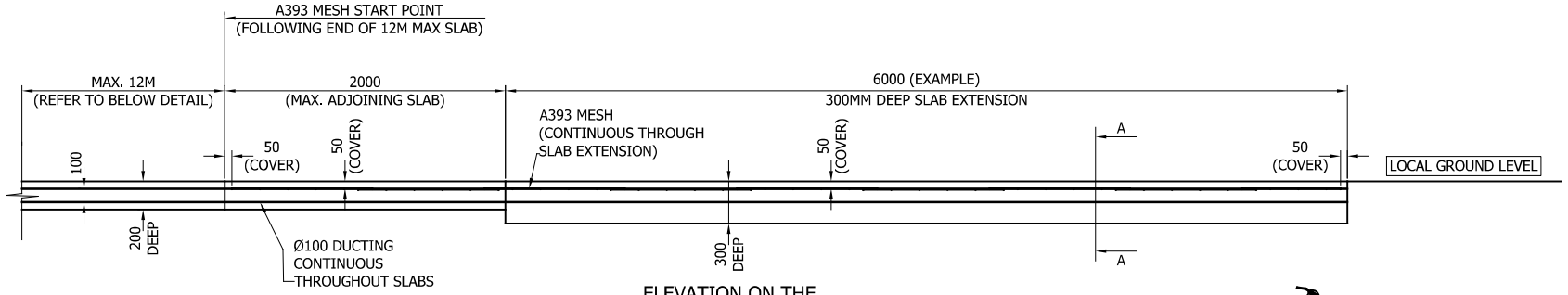
Saferoad VRS

EXAMPLES OF REASONS TO HAVE BREAK IN SHALLOW SLAB FOUNDATION DUE TO CONSTRAINTS DESIGN B

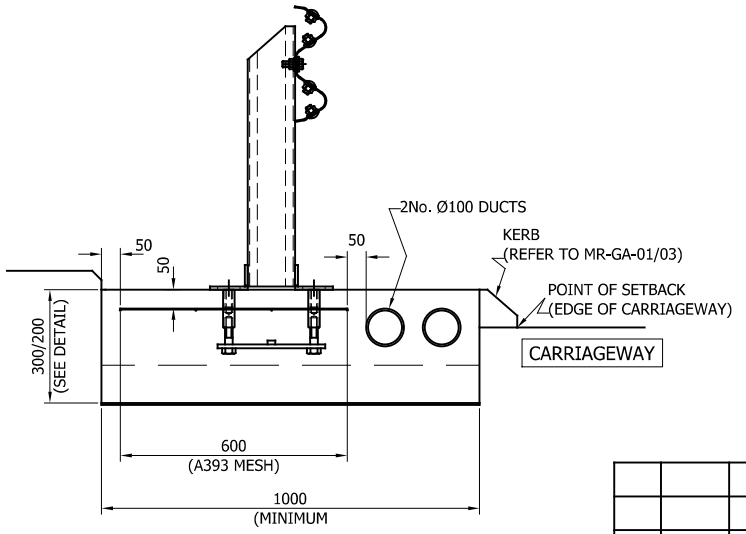
SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER: MR-GA-051

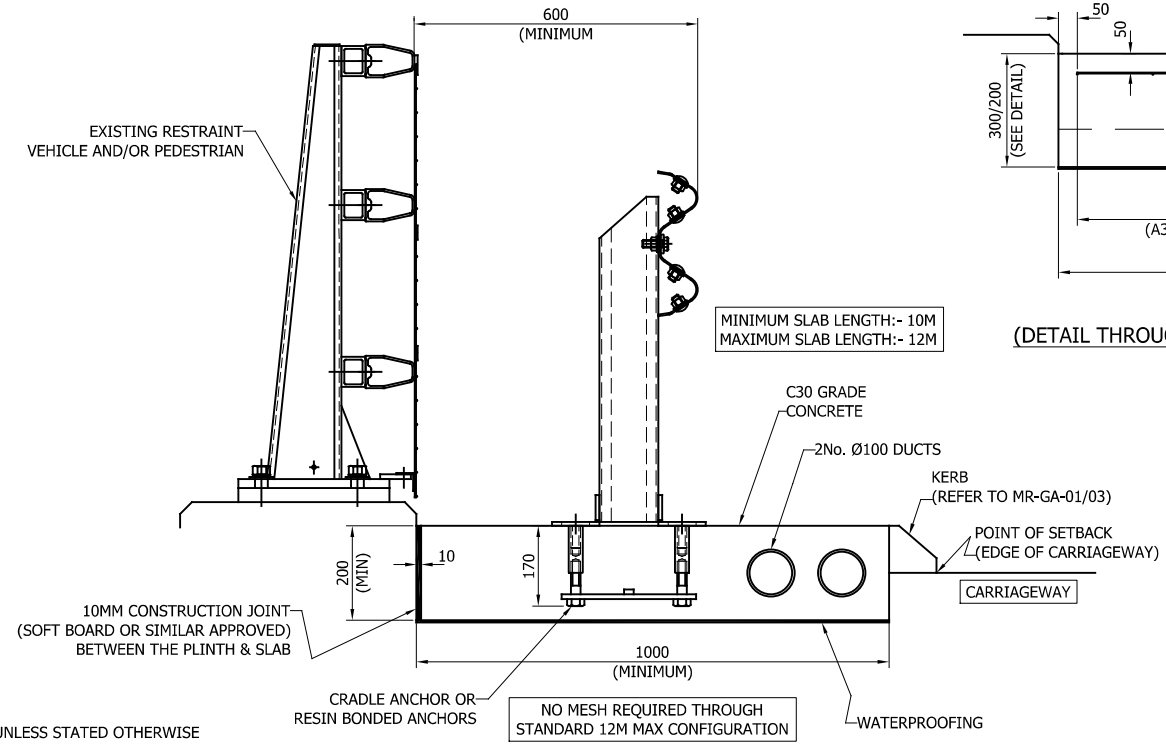
REVn: 05



ELEVATION ON THE
INCREASING OF LENGTH OF SHALLOW BRIDGE DECK SLABS
(TO MEET THE MINIMUM REQUIRED LENGTHS)
SCALE: 1:50



SECTION A-A
(DETAIL THROUGH OPTIONAL SLAB EXTENSION)
SCALE: 1:50



SECTION THROUGH ON
SHALLOW BRIDGE DECK SLAB DETAIL
SCALE: 1:16

GENERAL NOTES:

1. ALL DIMENSIONS IN MM UNLESS STATED OTHERWISE
2. POSTS TO BE INSTALLED WITH CLOSED FACE TOWARDS ONCOMING TRAFFIC
3. FOR DETAILS OF SYSTEM HEIGHT MEASUREMENTS, SEE MR-GA-001/003
4. A393 MESH TO BE USED IN LOCATIONS DETAILED ONLY
5. CRADLE/RESIN BONDED ANCHOR DEPTH TO BE 170MM MAX.

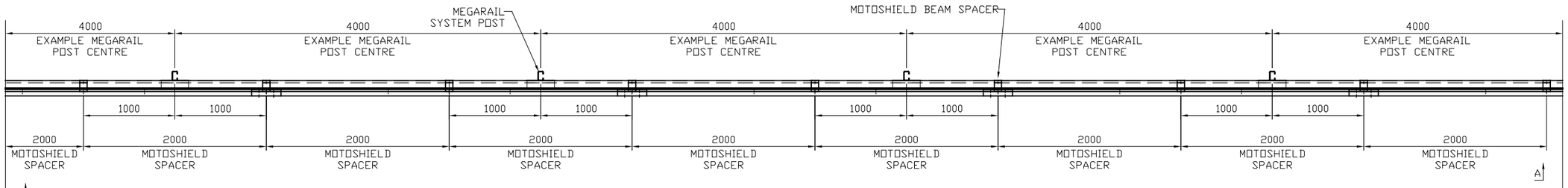
REVn	DATE	DETAILS	INITIAL
00	11/01/23	DRAWING CREATED	H.B

MEGARAIL

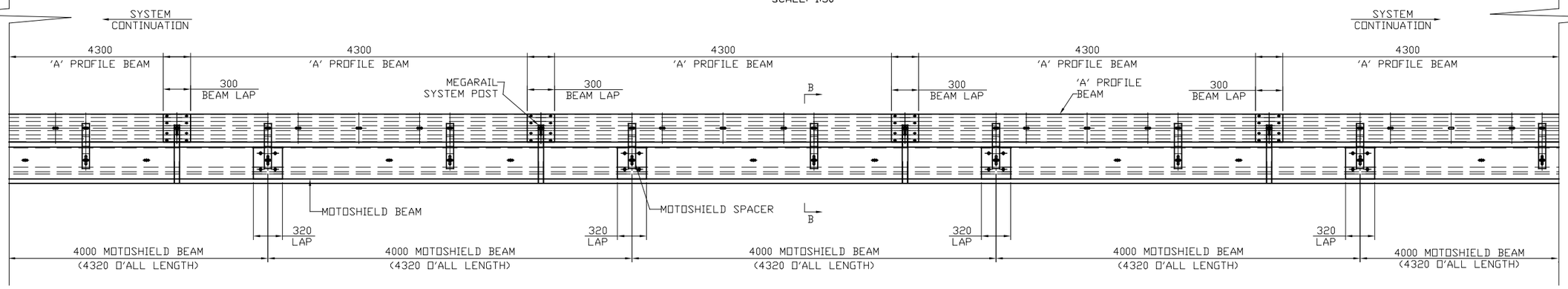
SHALLOW BRIDGE DECK SLAB DETAIL

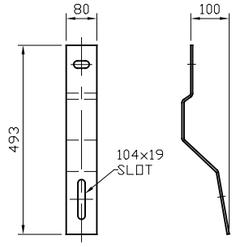
SAFEROAD®
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
t: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-052	00



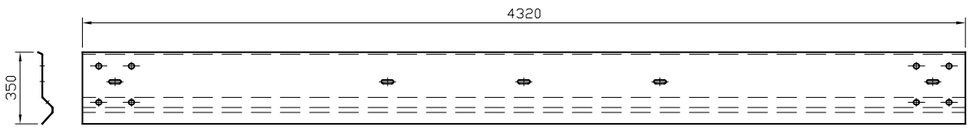
PLAN VIEW ON MEGARAIL SYSTEM
C/W MOTOSHIELD PROTECTION
SCALE: 1:50





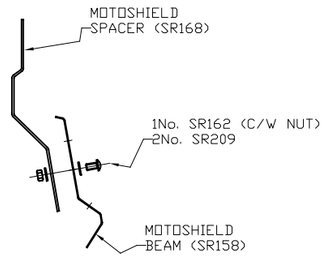
MOTOSHIELD SPACER
DETAILS
(SR168)
SCALE: 1:16

SECTION A-A
ELEVATION ON MOTOSHIELD LAYOUT
SCALE: 1:50

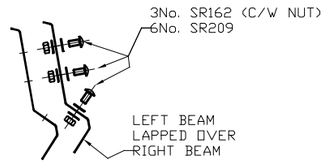


MOTOSHIELD BEAM
DETAILS
(SR158)
SCALE: 1:30

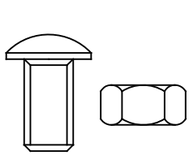
MOTOSHIELD SPACER BRACKET MAY BE INSTALLED INBETWEEN POST & BEAM, IF SPACER FALLS ON SYSTEM POST LOCATION



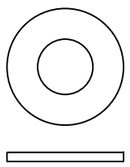
BEAM TO SPACER
FIXING DETAILS
SCALE: 1:16



BEAM LAP DETAILS
SCALE: 1:16

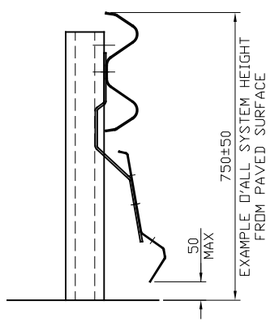


SR162
M16x30 PANHEAD 5.8
C/W NUT

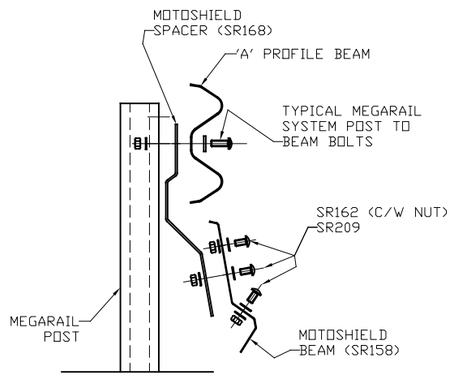


SR209
M16 Ø18x30x3 WASHER

TOLERANCE WITHIN MOTOSHIELD SPACER SLOTS TO BE USED TO ACHIEVE REQUIRED PARAMETERS



ELEVATION B-B
(SECTION THROUGH ON ASSEMBLED MEGARAIL SYSTEM
C/W MOTOSHIELD PROTECTION)
SCALE: 1:16



EXPLODED MOTOSHIELD
ASSEMBLY
SCALE: 1:16

GENERAL NOTES;

1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. FOR GENERAL DETAILS REGARDING MEGARAIL, SEE SYSTEM MANUAL DRAWINGS
3. FOR MINIMUM LENGTH OF FULL HEIGHT VRS, REFER TO SAFEROAD MEGARAIL MANUAL
4. MOTOSHIELD PROTECTION COMPATIBLE WITH ALL 'A' PROFILE BEAM MEGARAIL SYSTEMS

REVn	DATE	DETAILS	INITIAL
00	21/03/24	DRAWING CREATED	H.B

MOTOSHIELD PROTECTION SYSTEM

GENERAL ARRANGEMENT & ASSEMBLY DETAILS

SAFEROAD
CONCORD HOUSE,
BESSEMER WAY, SCUNTHORPE,
NORTH LINCOLNSHIRE, DN15 8XE
T: 01724 289119
FOR TECHNICAL ASSISTANCE CONTACT
john.cudlipp@saferoad.co.uk

DRAWING NUMBER:	REVn:
MR-GA-053	00