

VIRM: HEAVY VEHICLE SPECIALIST CERTIFICATION AMENDMENT CONSULTATION

9 December 2019 List of changes and previews

DECEMBER 2019

LIST OF CHANGES

SECTION	CHANGE DESCRIPTION
Introduction 3-9 Minimum file content	<ul style="list-style-type: none"> New section to specify with clarity the Transport Agency's expectation around the minimum information that should be held on file for each piece of certification work
Introduction 6 Appointments	<ul style="list-style-type: none"> This section has been rewritten for clarity to incorporate the appointment section of <i>Manufacture and repair code of practice</i> (MRCOP)
11 Local manufacture and repair code of practice	<ul style="list-style-type: none"> New section incorporating the MRCOP into the VIRM.
12-3 Recertification of drawbeams and drawbars of known identity	<ul style="list-style-type: none"> Title change from <i>Component recertification</i> Section rewritten and simplified for clarity
Technical bulletin 5: Local manufacturing certifier use of design certificates for batch built or standard components	<ul style="list-style-type: none"> Adding further clarification of when a design certificate can be used (change highlighted) Updating the page to the correct HMxD naming convention from HV*D (changes not highlighted)

3-9 Minimum file content

The following table defines the minimum file content that should be present in any HVSC certification file. In addition to the listed minimum requirements, all files should contain sufficient information such that another HVSC can independently verify the certification decision.

Required items	Certifier categories		
	HVEA, HVET, HVEC, HVEL, HVEK	HMAD, HMTD, HMCD, HMLD, HMKD	HVS1, HVS2, HVS3, HVP1, HVP2
PDS (identifying the vehicle, work carried out/certified, and the standards used)	✓	✓	✓
LT400 (or SODC if applicable)	✓	✓	✓
Inspection notes and sketches	✓	✓	✓
Photographs showing: <ul style="list-style-type: none"> entire vehicle, VIN and plate (if registered) detailed views of the component build/repair progress (if applicable) vehicle/component condition before repair (if applicable) final inspection after all work completed component rating and serial numbers (if applicable) 	✓	✓	✓
Material specifications	✓	✓	
Calculations	✓		✓
Hubometer history and residual life assessment (for drawbar and drawbeam recertifications only)	✓		
Drawings / fabricator instructions	✓		
Proprietary component data	✓	✓	
Welder qualifications (positions and techniques)	✓	✓	
Evidence of design that was followed, ie one of: <ul style="list-style-type: none"> SoDC and drawings NZTA pre-approved solution Copy of load anchor design from NZS 5444 		✓	

<ul style="list-style-type: none"> Manufacturers fitting instructions for replacement fifth wheel or kingpin Design Certificate and drawings 			
Vehicle information, eg data sheets, bodybuilder guide, vehicle history from LANDATA if already registered, etc	✓	✓	
Welding/bolting procedures as appropriate		✓	
NDT records as required		✓	

6 Appointments

There are currently seven different technical certification categories of HV certifier. The NZTA assesses and qualifies four and the other three are assessed by external organisations, with final approval the responsibility of the NZTA.

The categories that the NZTA assess are:

- chassis modification
- towing connections
- load anchorages, and
- swept path analysis.

Those assessed by external organisations are:

- log bolster attachments
- brake modifications
- static rollover threshold.

Fit and proper criteria

All persons appointed as HV certifiers are required to be and to remain 'fit and proper persons'. The criteria considered for this include:

- a) relevant criminal convictions
- b) transport-related offences
- c) relevant warnings, penalties and disciplinary actions imposed
- d) relevant complaints
- e) the interest of the public and land transport safety.

Engineering certifier requirements

All HV engineering certifiers must:

- a) have a minimum qualification of NZCE (mechanical, civil or aviation) or approved equivalent >(minimum Level 6 Diploma, except where specialist knowledge and experience is deemed acceptable by the NZTA. In special circumstances and upon application a Level 5 Diploma may be considered. Overseas qualifications must be referred to the New Zealand Qualifications Authority (NZQA), who will determine the New Zealand equivalent, if available.
- b) have knowledge of the requirements specified in:
 - i. this manual, VIRM: Heavy vehicle specialist certification
 - ii. the relevant parts of the [Land Transport Act 1998](#)
 - iii. the [Land Transport Rule: Vehicle Standards Compliance 2002](#)
 - iv. Other relevant [Land Transport Rules](#).

Applicants for appointment as HV engineering certifiers will be assessed on their understanding of design principles for their category and their knowledge of the general and New Zealand requirements for heavy vehicles.

Load anchorage engineering certifiers (HVEA)

Scope

All anchorages for securing loads to vehicles, excluding logging bolsters. Certifiers shall use the latest version of any standard except where permitted otherwise in the Rule.

Experience requirements

Relevant work experience in the design or fabrication of load anchorages. Working knowledge of the following documents:

1. [Land Transport Rule: Heavy Vehicles 2004](#) and its amendments
2. Welding in the transport industry (see [Technical bulletin 13](#))
3. NZS 5444: Load Anchorage Points for Heavy Vehicles
4. NZS 5413: Stock Crates
5. AS/NZS 1554: Structural Steel Welding (parts 1 and 4 as appropriate)
- 6 AS/NZS 1665: Welding of Aluminium structures
7. AS 3990: Mechanical Equipment – Steelwork (supersedes AS 1250)
8. ISO 1161: Series 1 Freight Containers – Corner Fittings – Specification
9. BS 5400: Part 10, Code of Practice for Fatigue
10. BS 7608: Code of Practice for Fatigue Design and Assessment of Steel Structures
11. AS/NZS 2980: Qualification Tests for Metal Arc Welders
12. AS/NZS 4380: Cargo restraint systems – Webbing load restraint systems.

Towing connections engineering certifier (HVET)

Scope

All towing connections between vehicles. This includes fifth wheels, fifth-wheel kingpins, towbars, drawbeams and drawbars.

Experience requirements

Relevant work experience in the design or fabrication of towing connections. Working knowledge of the following documents:

1. [Land Transport Rule: Heavy Vehicles 2004](#) and its amendments
2. Welding in the transport industry (see [Technical bulletin 13](#))
3. NZS 5446: Code of Practice for Heavy Motor Vehicle Towing Connections: Drawbar Trailers
4. NZS 5450: Specification for Coupling Devices for Articulated Vehicles – Fifth Wheel Assemblies
5. NZS 5451: Specification for Coupling Devices for Articulated Vehicles – Fifth Wheel Kingpins
6. AS/NZS 4968, Heavy-vehicles – Mechanical coupling between articulated vehicle combinations
7. AS 2174, Articulated vehicles – Mechanical coupling between prime movers and semitrailers
8. AS 3990: 1993, Mechanical Equipment – Steelwork
9. AS/NZS 1554: Structural Steel Welding (parts 1 and 4 as appropriate)
- 10 AS/NZS 1665: Welding of Aluminium structures
11. AS/NZS 2980: Qualification Tests for Metal Arc Welders
12. NZS 5467: Code of Practice for Light Trailers
13. ISO 1102: Commercial Road Vehicles – Mechanical Connections between Towing Vehicles and Trailers–50mm Drawbar Couplings
14. AS 1110: ISO Metric Hexagon Precision Bolts and Screws
15. AS/NZS 4291.1: Mechanical properties of fasteners
16. AS 2213: 50mm Pin-Type Couplings and Drawbar Eyes for Trailers
17. BS 5400: Part 10, Code of Practice for Fatigue
18. BS 7608: Code of Practice for Fatigue Design and Assessment of Steel Structures.

Chassis modification and repair engineering certifier (HVEC)

Scope

Chassis modification includes rollover strength for PSVs, steering conversions, chassis modifications and repairs, design of new chassis and ratings, mounting of cranes and other equipment, modifications and repairs to drive trains and axles, and seatbelt anchorage design.

Experience requirements

Relevant work experience in the design, modification and fabrication of vehicles and vehicle components. Working knowledge of the following documents:

1. [Land Transport Rule: Vehicle Standards Compliance 2002](#) and its amendments
2. [Land Transport Rule: Heavy Vehicles 2004](#) and its amendments
3. Welding in the transport industry (see [Technical bulletin 13](#))
4. AS/NZS 1554: Structural Steel Welding (parts 1 and 4 as appropriate)
5. AS/NZS 1665: Welding of Aluminium structures
6. AS/NZS 2980: Qualification Tests for Metal Arc Welders
7. AS 3990: 1993, Mechanical Equipment – Steelwork
8. Ladder frame chassis design guide (joint MoT/IRL document)
9. BS 5400: 1980, Part 10, Code of Practice for Fatigue
10. BS 7608: 1993 Code of Practice for Fatigue, Design and Assessment of Steel Structures
11. AS 1110: ISO Metric Hexagon Precision Bolts and Screws
12. AS/NZS 4291.1: Mechanical properties of fasteners
13. Low Volume Vehicle Code.

Brake engineering certifier (HVEK)

Scope

All heavy vehicle brake system design and modification

Experience requirements

Relevant work experience in the design and modification of braking systems. Passed Heavy Vehicle Brake course and exam as approved by the NZTA. Working knowledge of the following documents:

1. [Land Transport Rule: Heavy Vehicles Brakes 2006](#) and its amendments, including Schedule 5
2. [Land Transport Rule: Vehicle Standards Compliance 2002](#) and its amendments
3. Access to the New Zealand brake calculator or an approved proprietary device.

Bolster attachment engineering certifier (HVEL)

Scope

All logging bolster attachments, modifications and repairs.

Experience requirements

The certifier must:

1. be an appointed HVEC certifier with sufficient (three years or more) experience in the transport industry in manufacturing, supervision, quality control or drafting in a similar area:
2. have passed the log bolster attachment course and exam set by the Log Transport Safety Council
3. have a working knowledge of [Land Transport Rule: Heavy Vehicles 2004](#) and its amendments
4. have a working knowledge of Log Transport Safety Council: Log Bolster Attachment Code.
5. have a working knowledge of Welding in the transport industry (see [Technical bulletin 13](#))
6. have a working knowledge of AS/NZS 1554: Structural Steel Welding (parts 1 and 4 as appropriate)

7. have a working knowledge of AS/NZS 1665: Welding of Aluminium structures
8. have a working knowledge of AS/NZS 2980: Qualification Tests for Metal Arc Welders
9. have a working knowledge of AS 3990: 1993, Mechanical Equipment – Steelwork
10. have a working knowledge of BS 5400: 1980, Part 10, Code of Practice for Fatigue
11. have a working knowledge of BS 7608: 1993 Code of Practice for Fatigue, Design and Assessment of Steel Structures
12. have a working knowledge of AS 1110: ISO Metric Hexagon Precision Bolts and Screws
13. have a working knowledge of AS/NZS 4291.1: Mechanical properties of fasteners

Static rollover threshold engineering certifier (HVSx)

Scope

Measure and input vehicle data into a computer program to establish a stability angle. There are currently three different certification categories for SRT calculation

- SRT level 1
- SRT level 2
- SRT level 3.

Experience requirements

For those wishing to qualify as NZTA approved and appointed inspectors there are two tests:

- basic for level 1 inspectors and
- advanced for level 2 inspectors.

Level 1 certifiers use the SRT calculator software but are limited to simpler cases. For certification purposes a level 1 certifier may use all the features of the calculator except Load category 'Other', which requires the calculation of the payload centre of gravity and the 'user defined' suspension options, which requires the obtaining and interpretation of suspension parameters.

Level 2 certifiers also use the SRT calculator software but have all options available.

Level 3 certifiers may be approved by the NZTA to use alternative methods of determining SRT. These could include tilt table testing or computer simulation.

Within the framework of the two levels of certification, there are four parties that may be involved in gathering the data for SRT certification, namely:

1. Operator: may provide tare axle weight data and may nominate load type (Uniform density/ Mixed freight/ Other) on which the certification is to be based except where this is defined by the NZTA.
2. Level 1 SRT inspectors: typically these are individuals who have passed the level 1 SRT training but have not been authorised by the NZTA to be certifiers.
3. HVS1 certifiers: typically these are individuals who have passed the level 1 SRT training and have been appointed by the NZTA to act as certifiers under the NZTA's Notice of Appointment.
4. HVS2 certifiers: typically individuals who have passed both the level 1 and level 2 SRT training and have been appointed by the NZTA to act as certifiers.

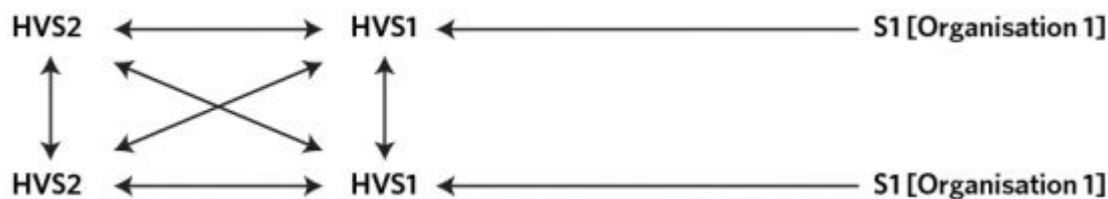
Information and measured vehicle data may be shared between the last three parties as indicated in the diagram below. In this diagram S1 refers to Level 1 SRT inspectors, while HVS1 and HVS2 refers to the certifiers. The arrows indicate allowable paths of information and data transfer. Thus a Level 1 certifier, HVS1, may receive vehicle data that has been obtained by a Level 1 SRT inspector and use these data to undertake a level 1 certification without personally inspecting the vehicle and making the measurements. However, the HVS1 certifier is ultimately responsible for the accuracy of the SRT certificate issued and must ensure that the S1 inspector is appropriately qualified and competent.

Although the allowable data transfers do permit the transfer of information from HVS1 certifiers to HVS2 certifiers, this can only be within the scope of the HVS1's demonstrated level of competence.

Thus a level 2 certification which requires an HVS2 certifier will also require that the vehicle is inspected by an HVS2 certifier.

When the certifier issues an SRT certificate he must also issue an LT400 to accompany it.

For some vehicles, the SRT certification process will lead to some vehicle or suspension modifications being undertaken in order to improve the vehicle's stability and allow it to maintain its load carrying capacity while achieving the required SRT. These vehicle modifications will generally require certification by an NZTA- approved certifying engineer and will require the issuing of an LT400 detailing the modifications made. Although the certification of the vehicle modifications and the SRT certification may be undertaken by the same engineer certifier, if he is appropriately qualified, two separate LT400s are required, one for the vehicle modifications and one for the SRT.



Dynamic Performance engineering certifier (HVPx)

Scope

To confirm swept path and dynamic vehicle performance by calculation using approved software or by physical testing. There are two different certification categories for Swept Path/Dynamic Performance

- HVP1 – Swept Path Certification
- HVP2 – Dynamic Vehicle Performance (PBS)

Experience requirements

For those wishing to qualify as NZTA approved and appointed inspectors in either of these categories there are some prerequisites. The certifier must:

1. be an appointed HVEC certifier with sufficient (one year for HVP1 or three years or more for HVP2) experience in the transport industry in manufacturing, supervision, quality control or drafting in a similar area:
2. for HVP1 & 2 have access to and be able to prove competence operating appropriate computer software (such software to be advised to the NZTA who will rule on its suitability) and/or the ability to carry out appropriate physical testing.
3. have attended and passed any course and/or exam set or approved by the NZTA
4. have a working knowledge of [Land Transport Rule: Vehicle Dimensions and Mass 2016](#) and its amendments
5. have a working knowledge of [Land Transport Rule: Heavy vehicles 2004](#) and its amendments

HVP1 certifiers use appropriate software or physical testing to provide Swept Path Certificates to either or both of Schedule 8 or Schedule 9 of [Land Transport Rule: Vehicle Dimensions and Mass 2016](#).

HVP2 certifiers also use the appropriate software and/or physical testing to provide dynamic vehicle performance analysis for proposed high productivity vehicles, either new pro-forma or bespoke designs within the limits set by the [Land Transport Rule: Vehicle Dimensions and Mass 2016](#) and its amendments.

HV manufacturer certifier (HMxD)

Scope

As different from the HV engineering certifier, the HV manufacturer certifier responsibility is split between an HV manufacturer inspecting organisation (IO) and an HV manufacturer vehicle inspector (VI). Each of these roles is vital and interdependent. A HV manufacturer certifier IO cannot certify a heavy vehicle while a HV manufacturer certifier VI can only certify a heavy vehicle

within the requirements of the VIRM and Memos if s/he is in the employ of a manufacturing certifier IO and the NZTA has a record of this employment.

There are currently five different HV manufacturer certification categories:

- chassis modification (HMCD)
- towing connections (HMTD)
- load anchorages (HMAD)
- log bolster attachments (HMLD)
- heavy vehicle brakes (HMKD)

Permitted certifications

Where permitted, all work certified by the manufacturing certifier VI at the approved manufacturing certifier IO premises is to be certified with either:

- a Statement of Design Compliance (SoDC), issued by an engineer certifier, or
- for load anchorages, to the designs in NZS 5444, or
- for worn or damaged fifth wheels, replaced to the fifth wheel manufacturer's instructions for replacing bolt on components, or
- for worn or damaged kingpins, replaced according to the kingpin manufacturer's instructions on replacement, or
- to NZTA approved pre-engineered solutions
- a design certificate for batch built or standard components (refer [Technical bulletin 5](#))

HMxD manufacturer inspection organisation (IO) requirements

The manufacturing certification process is made up of two parts. The HV manufacturer certifier (VI), whose task is to ensure that any certification that they sign off is correct to the Design Certificate or SoDC, and the HV manufacturer IO responsible for ensuring that the certifications carried out in their name, meet requirements. The HV manufacturer IO must also ensure that any HV manufacturer VI in their employ has all the appropriate tools and equipment to carry out the certification that they hold the categories for.

There are separate skills and knowledge requirements for appointment by the Transport Agency as an HV manufacturer IO or HV manufacturer VI and these must be demonstrated following appropriately targeted training programmes. Once qualified and appointed as an HV manufacturer IO, a manufacturing or repair organisation must employ one or more appropriately qualified HV manufacturer VIs to carry out certifications on their behalf. Similarly, once appointed, a HV manufacturer certifier VI, must be employed by an HV manufacturer certifier IO before they can carry out certifications.

The authorised HV manufacturer IO is the company or entity responsible for the structural work carried out on a heavy vehicle (not the CEO) and the application must be signed by an appointed office holder of the company who can sign on behalf of the company (Director etc) accompanied by the company seal in the case of a registered company. Each location that is involved with manufacturing certification operations must have an individual appointment. The IO is responsible for ensuring that:

- the HV manufacturer IO maintains Professional Indemnity & Public Liability insurance, acceptable to the Agency.
- the HV manufacturer IO operates an effective, formal and audited quality management system (QMS).
- the HV manufacturer IO takes responsibility for the certification activities carried out by any HV manufacturer VI in their employ
- the premises are well lit and meet the requirements in the VIRM of the certification categories being carried out

- the HV manufacturer IO controls and maintains all necessary equipment for the certification categories carried out
- the HV manufacturer IO controls and maintains a library of all processes and procedures required for all the certification categories carried out, including welding procedures, relevant standards and pre-Engineered Solutions.
- one or more qualified welding supervisors are appointed to oversee welding operations
- they have staff with a sound working knowledge of standards, codes of practice and general documents as well as their trade related published material. This includes:
 - welding knowledge
 - materials and product knowledge
 - drawing interpretation
 - scope of work that local manufacturing certifiers can certify
 - repairs, including repairs to industry best practice for temporary endorsement
 - working knowledge of documents, including the following, as they apply to the business:
 - Welding in the Transport Industry (see [Technical bulletin 10](#))
 - This HVSC VIRM
 - [Land Transport Rule 35001: Vehicle Standards Compliance 2002](#) and amendments
 - [Land Transport Rule 34001: Vehicle Repair 1998](#) and amendments
 - [Land Transport Rule 31002: Heavy Vehicles 2004](#) and amendments
 - [Land Transport Rule 32015: Heavy-vehicle Brakes 2006](#) and amendments
 - Other [Land Transport Rules](#) relevant to the certification categories carried out.
- Ensure a PDS is completed for each certification activity carried out

HMxD manufacturer vehicle inspector (VI) requirements

Each appointed VI may inspect and certify the work of other operators in the employ of the same HV manufacturer IO and must:

- take full responsibility for all certifications which they sign off
- only certify work they're permitted to certify (see Permitted certifications above).
- only certify work in categories they are authorised for
- ensure that they only carry out certification activities when there is sufficient properly controlled and maintained equipment for the certification to be carried out
- ensure that they only carry out certification activities when there is a sufficient library of all processes and procedures required for the certification being carried out, including welding procedures, relevant standards and pre-engineered solutions, DCs or SoDCs.
- ensure that, where necessary, a properly qualified and appointed welding supervisor has approved the welding on any activity being certified and all welding is carried out by an appropriately qualified and certified welder.
- ensure that they and the staff whose work they are certifying have a sound working knowledge of standards, codes of practice and general documents as well as their trade related published material. This includes:
 - welding knowledge
 - materials and product knowledge
 - drawing interpretation

- scope of work that HV manufacturer certifiers can certify
- repairs, including repairs to industry best practice for temporary endorsement
- working knowledge of documents, including the following, as they apply to the business:
 - Welding in the Transport Industry (see [Technical bulletin 10](#))
 - This HVSC VIRM
 - [Land Transport Rule 35001: Vehicle Standards Compliance 2002](#) and amendments
 - [Land Transport Rule 34001: Vehicle Repair 1998](#) and amendments
 - [Land Transport Rule 31002: Heavy Vehicles 2004](#) and amendments
 - [Land Transport Rule 32015: Heavy-vehicle Brakes 2006](#) and amendments
 - Other [Land Transport Rules](#) relevant to the certification categories carried out.
- Maintain a PDS for each certification carried out.

11 LOCAL MANUFACTURE AND REPAIR CODE OF PRACTICE

11-1 Scope and tasks certifiable by a local manufacturing certifier (HMXD)

Background and acknowledgement

The manufacture and repair code of practice was created in 2003 by the NZ Truck and Trailer Manufacturers Federation (TTMF). That code was adapted by the NZTA in 2019 to reside within the *VIRM: Heavy vehicle specialist certification*.

Applicability

In the event of any contradiction, the Act, Regulations, Land Transport Rules and the original manufacturer's repair or modification guidelines (manufacturer's body builders' manual) take precedence over this code. Persons repairing or certifying repairs to heavy vehicles must ensure that all applicable manufacturer's recommendations are complied with and that no regulatory compliance is invalidated, even as an unintended consequence of complying with this code. Where there is disagreement between this code and the manufacturer's body builder's manual, or the repair procedure in the body builder's manual is inappropriate, the repair must be referred to a HV engineering certifier with the appropriate category.

Repairers are obliged under [Land Transport Rule: Vehicle Repair 1998](#), to repair vehicles in accordance with the Rule and the applicable requirements in the Rule. This rule also requires repairers to provide information or assistance to the Transport Agency when requested.

Range of tasks covered by this code

This Code of Practice applies to:

- The **minor** repair of heavy motor vehicles currently registered in New Zealand.
- The manufacture and/or fitting of new components covered by the [Appointments Section](#).

This code provides procedural requirements and examples of acceptable practice for a range of common repairs and standard manufactured components. It is intended to **supplement** the recommendations of the original vehicle manufacturer in relation to vehicle repair techniques or standards and provides guidelines where manufacturer's standards do not exist. It does not cover every eventuality.

Failure modes

The failure mode of a structural component of a HV, including the chassis, may be classified according to the following:

Minor	Failures that are unlikely to cause safety concerns and may be repaired according to good industry standard without welding and where certification isn't required. Repairs in this category are covered in this code.
Medium	Failures that may cause safety concerns unless repaired according to best industry practice, following either a properly designed repair specification or a pre-engineered solution reflecting industry best practice based on a detailed engineering analysis carried out by a HV engineering certifier with the appropriate category. Repairs in this category are covered in this code.
Critical	Failures with serious safety implications, including safety critical bolt-on items such as repaired steering or suspension items, that must always be repaired according to a repair specification based on a detailed engineering analysis carried out by a HV engineering certifier with the appropriate category. Repairs without an SoDC in this category are not covered in this code.

Note: Where a subsequent failure occurs in a repair that used a method selected from this code, **it must be considered a critical failure** and be referred to a HV engineering certifier with the appropriate category. This is due to the safety risk as the initial repair was demonstrably not adequate and thus resulted in the subsequent failure showing there were unrecognised risk factors in the original repair.

The repairs covered by this code are typically of a structural nature requiring the replacement or repair of an item which usually involves some welding. It does not cover components that are attached using fasteners that can be replaced in a bolt-on, bolt-off manner. These components do not need certification except as noted above but it is the repairer's responsibility that they are fit for purpose and meet the requirements of Land Transport Rule: Vehicle Repair 1998, of returning the vehicle to within safe tolerance of original manufacture. After market or pattern parts may not meet these criteria.

A repair carried out under this code cannot be used justify the alteration of a vehicle's chassis rating.

Table 11-1-1 Tasks for HV manufacturer certifiers allowed in this code

Component/item – repair type	Significance		
	Simple ¹	Minor ²	Major ³
Damage to web stiffener with no significant attachments		✓	
Crossmember gusset with cracks in gusset		✓	
Crossmember with cracks – 1st repair		✓	
Crossmember with cracks – 2nd repair of same problem failure			✓
Cracks in web - through crossmembers		✓	
Cracks in web - crossmembers butt to web		✓	
Chassis rail flange crack – in front/rear overhang (not load bearing)		✓	
Body component not part of monocoque framework		✓	
Cracked crossmember more than 300 mm from a suspension		✓	
Toweye weld (as per original)		✓	
Proprietary Components (using manufacturer's instructions)			
Suspension hanger, spring seat.		✓	
Unacceptable Repairs/Practices			
Unauthorised welded attachments to suspension components.			
Unauthorised bolted attachments to suspension components.			
Ballrace/turntables – welded repairs.			
Bolted Components			
Ballrace	✓		
Bolted toweye	✓		

¹ Simple items do not require certification if repaired/replaced.

² LT400 required.

³ LT400 and SoDC.

Page added **1 November 2019** (see [amendment details](#)).

11-2 Vehicle service life and application

Fatigue life

The fatigue life of a vehicle in terms of kilometres travelled and the type of application it is operated under is significant when determining whether the failure should be considered acceptable, premature, or somewhere in between. When working in linehaul operation a chassis failure would not be expected. However, the rigors of logging and its poor road and skid site access and other off-road usage such as quarrying, means higher fatigue loadings that can result in a failure much earlier in the vehicle's life even if it is no longer operating in that high fatigue environment.

First failure of a chassis rail (only use this code after the vehicle has traveled these distances)

Truck or tractor units

After at least 250,000km for a unit used for at least 30% of its operating life, at time of failure, on unsealed roads or in off-road conditions (loggers and milk tankers are two vehicle groups that generally fall into this category).

After at least 500,000km for a unit that does not spend at least 30% of its operating life off-road or on unsealed roads.

Trailers

After at least 250,000km for a trailer that does not spend at least 30% of its operating life off-road or on unsealed roads.

Cross-members and gussets

[Technical Bulletin 1 – Heavy vehicle repair thresholds](#) identifies those cross-members where the first failure, at whatever mileage, may be repaired using this code without requiring HV engineer certification.

Subsequent failure of cross-members if the failure does not occur within 250,000km of the repair.

Failure of gussets or auxiliary components of the chassis occurring after 250,000km.

11-3 Manufacturing and repair procedures

Background

This section contains information and illustrations relating to a range of typical repairs and manufacturing tasks undertaken by the industry.

Each workshop should have a Quality Management System (QMS) and should develop and implement a comprehensive procedure for dealing with the range of manufacturing and repair tasks it is likely to deal with. This procedure should be formally incorporated in the workshop's QMS and refer to this code. As with all procedures this will evolve over time and the QMS must be audited and reviewed regularly and updated as required.

The various types of manufacture and repair processes will need a range of equipment, skills, instructions and records to complete the task so an evaluation of the task is necessary to ascertain whether it is within the capacity of the workshop, what resources are required and how it will be achieved.

The HV manufacturer IO will have a PDS which must cover all aspects of each certification.

Manufacturer's repair information

All repairs should be first referred to the manufacturer to establish:

- if they can provide an appropriate repair instruction
- if they specifically prohibit a repair
- if they cannot offer a repair procedure but would allow an appropriate repair to be undertaken

Where a manufacturer's repair procedure is available this must comply fully with one of the pre-approved repairs or a DC in order for the repair to be certified without a SoDC from an HVSC.

If the manufacturer specifically prohibits the repair (refer "c" above) this position should be confirmed in writing and include the reasons. In this situation a repair must not be attempted without reference to a HV engineering certifier with the appropriate category.

Where a manufacturer cannot offer a repair procedure (eg if they don't specifically prohibit a repair) but would allow an appropriate repair to be undertaken, confirmation of this position should be requested for the job file and the design referred to a HV engineer certifier with the appropriate category.

Design certificates

Design certificates (DC) or 'Pre-engineered solutions' in this Code of Practice are designs for repairs or simple, repetitive manufacturing processes. The DCs have been commissioned by the TTMF, peer reviewed by a HV engineering certifier with the appropriate category and passed to the NZTA for inclusion in [11-7 Pre-approved repairs](#) of this code.

Individual manufacturing certifier IOs may also commission their own DCs from a HV engineering certifier with the appropriate category. These will not be published in this Code but will be the property of the IO that commissioned them. They must be made available to the Transport Agency for audit and feature in the job file as described in [11-5 Documentation](#).

Pre-approved repair of items covered by the VIRM

The repairs included in section [11-7 Pre-approved repairs](#) can be performed without a SoDC from a HV engineering certifier only if the scope of the repair is fully covered in that drawing and there is no conflict with the manufacturer's repair instructions.

11-4 Welding

Introduction

Welding is a specialised and skilled task. For example, some metals cannot be welded or can only be welded once without degradation of its properties. Others require the use of pre-heating or cooling, alternative grades of welding consumables and other specialised techniques. Only welders qualified to carry out the weld procedures appropriate to the particular task should be employed to weld items, whether for repair or the manufacture and fitting of components. Where there is doubt the repair or design must be referred to a HV engineer certifier with the appropriate category.

All welding shall follow the procedures specified by and comply with an appropriate standard:

Carbon Steel	AS/NZS 1554 Parts 1, 5 (Yield < 500 Mpa)
High strength quenched and tempered steel	AS/NZS 1554.4
Aluminium	AS/NZ 1665
Stainless Steel	AS/NZS 1554 Part 6, Industry Codes

All welders shall be currently qualified and certified in the appropriate position and technique being employed for the manufacture or repair of any structure or component.

Manufacturers' instructions and industry guidelines, including [Technical bulletin 10: Welding in the transport industry](#), are to be followed at all times.

Welding repairs

Repair by welding may be required either during fabrication of a structure or component, or as a result of service failure. The following steps are important in developing a repair procedure:

- establish the cause of failure
- determine the material composition
- develop a repair procedure in accordance with the applicable code
- carry out the repair with the proper work instructions and weld procedure
 - carry out the required inspection/NDT
 - carry out post weld heat treatment (if specified/required)
- final inspection prior to certification.

Determining the material composition

While all materials in a new component or structure are specified this may not be the case with a repair and it is critical that all the materials involved in such a repair are identified. This identification is an essential first step in the development of an appropriate welding procedure. Contacting the original manufacturer or their agent is the primary source of information. However, material identification may not be straightforward in the case of post fabrication failures if the original drawings or manufacturer's information is not available. In this instance advice must be sought from materials specialists such as HERA. If there is doubt then the repair must be referred to an HV engineering certifier with the appropriate category.

Developing a welding procedure

A weld procedure needs to define:

- pre-weld treatment/preparation
- pre-and post-heat treatment
- the welding process and equipment
- the welding consumable
- the welding parameters
- monitoring and inspection techniques
- the required inspection/NDT
- the identity of the welder.

Pre-weld treatment for repair includes examination of the extent of the defect, removal of existing cracks, cleaning and checking for base metal soundness and material preparation for the welding procedure to be used.

Pre-weld treatment for manufacturing new structure or components includes:

ensuring substrate materials and consumables are correct to drawing

specified weld procedure is appropriate

cleaning and material preparation for specified weld procedure.

11-5 Documentation

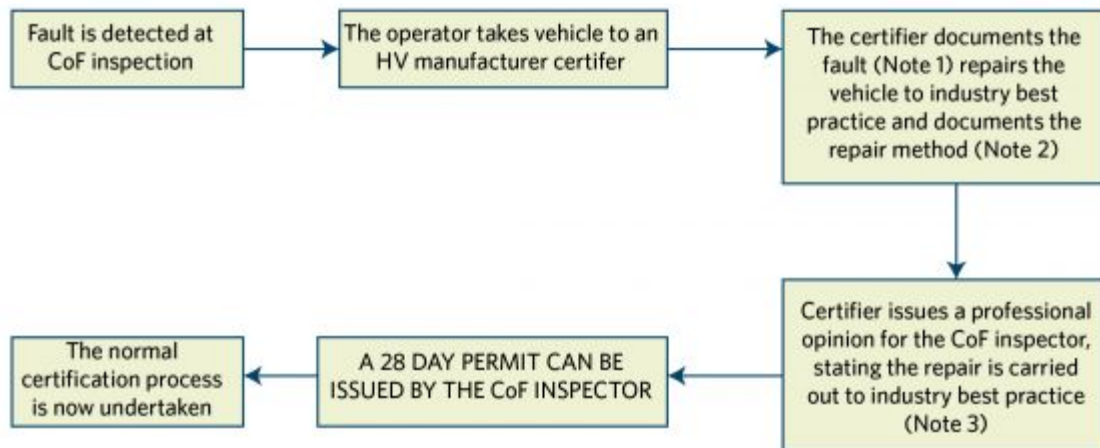
All manufacturing and repair activities must be documented for traceability and accountability. This shall be done as a function of the organisation's QMS.

See [Introduction 3-9 Minimum file content](#) for further information.

11-6 In-service conditional (28-day) permits

To assist with minimising delays in certifying repairs to heavy motor vehicles, the process for temporary permits, issued in place of a certificate of fitness (CoF) is outlined below. This process can only be used by a **HV manufacturer certifier**.

If a minor fault is identified on a heavy vehicle at the time of CoF that is not covered by a pre-engineered solution and would normally require input from an engineer before the repair can be certified, this temporary permit process is designed to allow the vehicle to remain in service until the normal certification process can be completed.



With the permit issued the vehicle is able to be operated on the road. Before the permit expires the normal certification process is to be undertaken so that an LT400 can be issued. It is important to note that only one permit per-repair will be issued and no extension given.

If the certification process is not completed before the expiry date, the vehicle is not allowed to operate after this date until the process is complete and a full CoF has been issued.

Note 1

The HV manufacturer certifier documents the fault – documenting the exact location, type of failure and other relevant details in sketches, accurate descriptions of materials and photographs.

Note 2

Document the repair method – the applied technology (including electrode quality etc) and all relevant details regarding the repair method must be documented.

Note 3

Issuing a professional opinion – this is not a certification, so an LT400 **must not** be used. The professional opinion should be on your company letterhead and shall contain:

- vehicle details
- your details
- details of the fault
- a statement stating that it has been repaired to industry best practice and is safe to operate on the road for up to 28 days
- the date and sign the document.

Note 4

The normal certification process – an engineer or HV manufacturer certifier can certify the final repair and issue a LT400.

Questions

Why can only a CoF inspector issue the temporary 28 day permit?

The Vehicle Standards Compliance Rule (the Rule) does not allow for temporary certification to be issued by Specialist Certifiers. Clause 7.8(1) of the Rule allows a Vehicle Compliance Certifier (CoF Inspector) to issue a temporary permit, when a vehicle does not comply with all

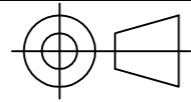
applicable requirements, but is nevertheless in a safe condition to be operated. Conditions on vehicle operations can be placed on the temporary permit.

Do I need to give a professional opinion?

If you do not wish to use this process and give a professional opinion you do not have to. You can use the normal certification process.

What does a certifier give to the CoF inspector when asked for a professional opinion?

Under this process the certifier is not issuing a certification. Do not use a LT400, a Statement of Design Compliance or a Procedure Documentation Sheet. The certifier is giving a professional opinion to the CoF inspector, based on their experience and knowledge of vehicles, whether they believe the vehicle to be safe to operate on the road while it awaits a fully certified repair. The information that should be placed in your professional opinion is stated in Note 3 above.



DO NOT SCALE – IF IN DOUBT ASK

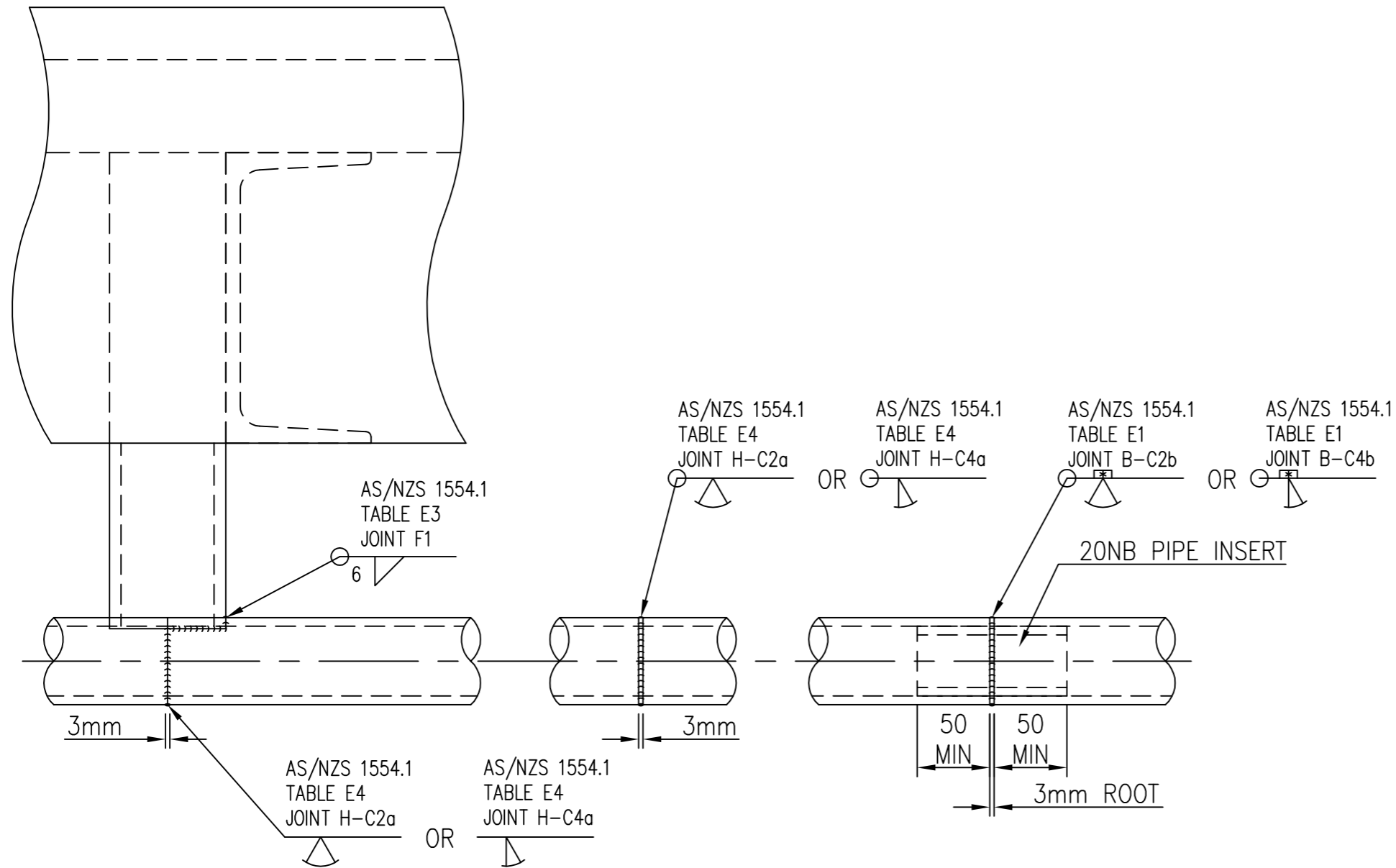
ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

DRAWING LIMITATIONS:

SUITS 25NB MEDIUM WALL PIPE.
REPLACEMENT OF DAMAGED/CORRODED RAIL. ONLY
NOT FOR INSTALLATION OF NEW RAIL.
IF MORE THAN ONE RAIL SECTION IS REPLACED
CONSULT A LOAD ANCHORAGE ENGINEER

NOTES:

1. DO NOT SCALE OFF DRAWING
2. WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED.
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
3. RHS TO COMPLY WITH AS 1163, GRADE 350 OR EQUIVALENT, AND TO MEET CHARPY IMPACT REQUIREMENTS AS STATED IN NZS 5446:1991 APPENDIX A2. (UNLESS SPECIFIED)
4. STEEL SECTIONS MEET BS 4360 GRADE 43A, (MINIMUM YIELD STRESS OF 250Mpa) OR EQUIVALENT. (UNLESS SPECIFIED)
5. REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
6. ENSURE WELDING COMPATIBILITY OF MATERIAL. THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MPa YIELD. CONSULT AN ENGINEER WITH THE LOAD ANCHOR CATEGORY IF HIGHER YIELD MATERIAL IS USED



JOINT AT DROPPER
ENSURE WELDER QUALIFICATION FOR SINGLE SIDED BUTT WELD

MIDSPAN JOINT
MIDSPAN JOINT WITH INSERT
(PREFERRED)

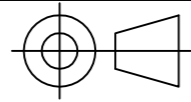
OWNER			
MAKE		MODEL	
CERTIFIER		CERT. No.	

C		
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM
A		FIRST ISSUE TO CLIENT
ISSUE	DATE	CHANGES MADE
		BY

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ITEM	QTY	MATERIAL	DESCRIPTION	DRAWING
25NB (Medium Wall) Pipe Rail Replacement/Repair Fy < 350 MPa			4 – MRCP – A001	Sheet: 1/1
		Drawn: R.F.	Issue: B	Chkd:
		Job: 12726	Ref: MRCP-A001	Scale: NTS
		Date: 30/3/2015	Date:	

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DO NOT SCALE – IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

DRAWING LIMITATIONS:

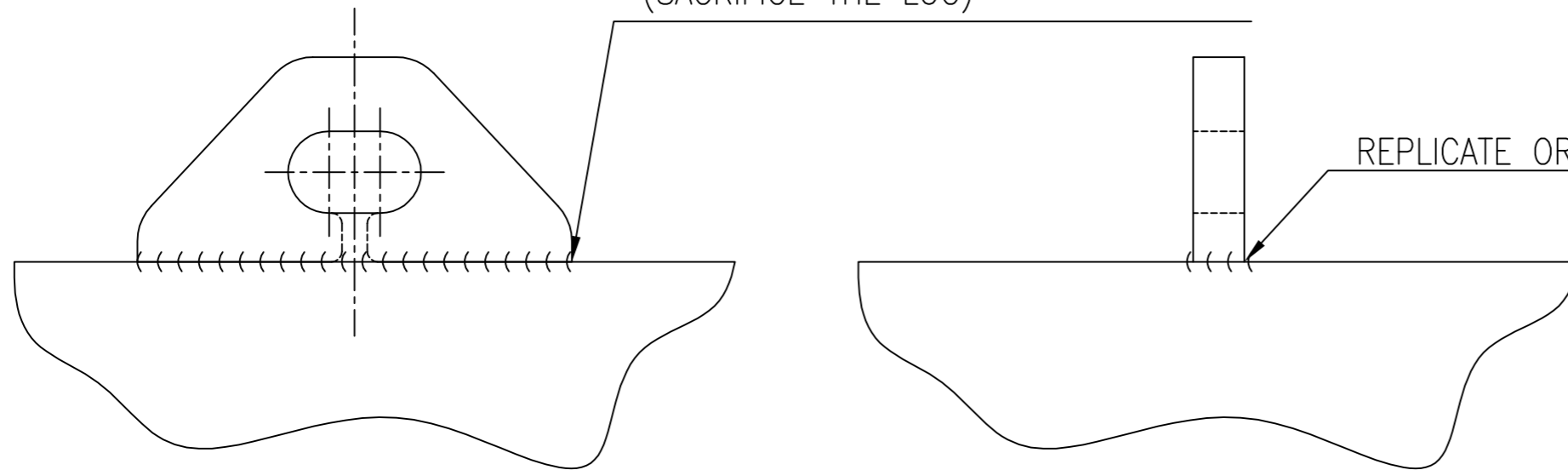
REPLACEMENT OF DAMAGED/CORRODED LUG ONLY,
NOT FOR INSTALLATION OF NEW LUGS.
EXCLUDES LUGS ON SUSPENSION COMPONENTS OR AXLES
UNLESS EXPRESSLY PERMITTED BY AXLE/SUSPENSION MANUFACTURER

NOTES:

1. WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED. (ALL POSITIONS AND STEELS UP TO CLASS 3 MIN.)
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
2. REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
3. ENSURE WELDING COMPATIBILITY OF MATERIAL. THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MP_a YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
4. ATTACHMENT AREA SURFACE TO BE CAREFULLY EXAMINED FOR CRACKS AFTER REMOVAL. ANY CRACKS FOUND TO BE REFERRED TO AN ENGINEER WITH THE CHASSIS CATEGORY

GRIND OUT OR ARC-AIR EXISTING LUG
DO NOT DAMAGE MOUNTING SURFACE
(SACRIFICE THE LUG)

REPLICATE ORIGINAL WELD



SIDE VIEW

END VIEW

CONDITIONS:

REPLACE LUG IF DAMAGE OR WEAR IS GREATER THAN 10% OF ORIGINAL DIMENSIONS

INSTRUCTIONS:

MATCH EXISTING LUGS FOR: – PROFILE
– WELD DETAIL
– MATERIAL

WORKSHOP	
OWNER	
MAKE	MODEL
CERTIFIER	CERT. No.
JOB #	

C		
B		UPDATED FOR ISSUE IN NZTA VIRM
A	09/07/19	FIRST ISSUE TO CLIENT
ISSUE DATE	CHANGES MADE	BY

ITEM	QTY	MATERIAL	DESCRIPTION	DRAWING
			4 – MRCP – A002	Sheet: 1/1
			Drawn: R.F.	Issue: B
			Scale: NTS	Chkd:
			Date: 30/10/2015	Date:



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REPLACEMENT ANCHOR LUGS
F_y < 350 MPa

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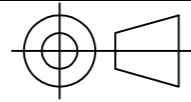
Job: 12726

Ref: MRCP-A002

Scale: NTS

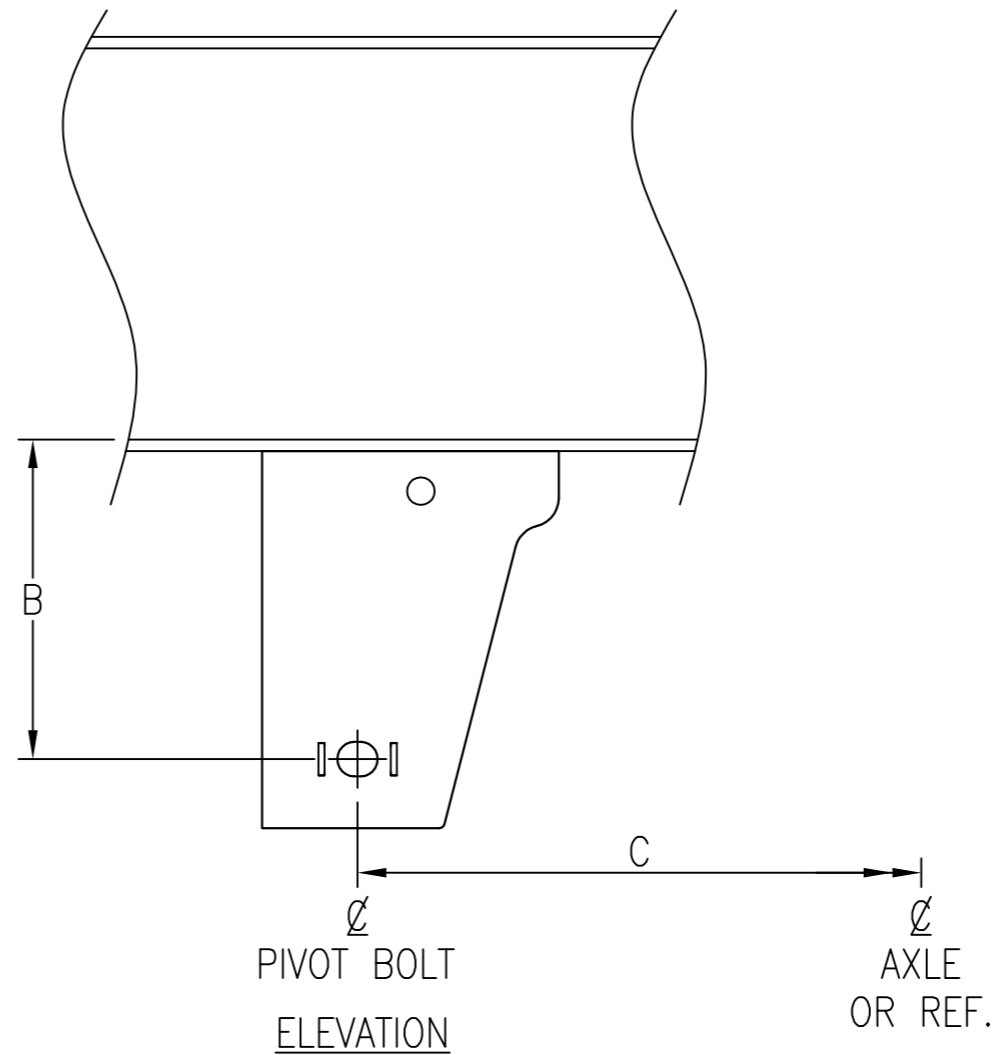
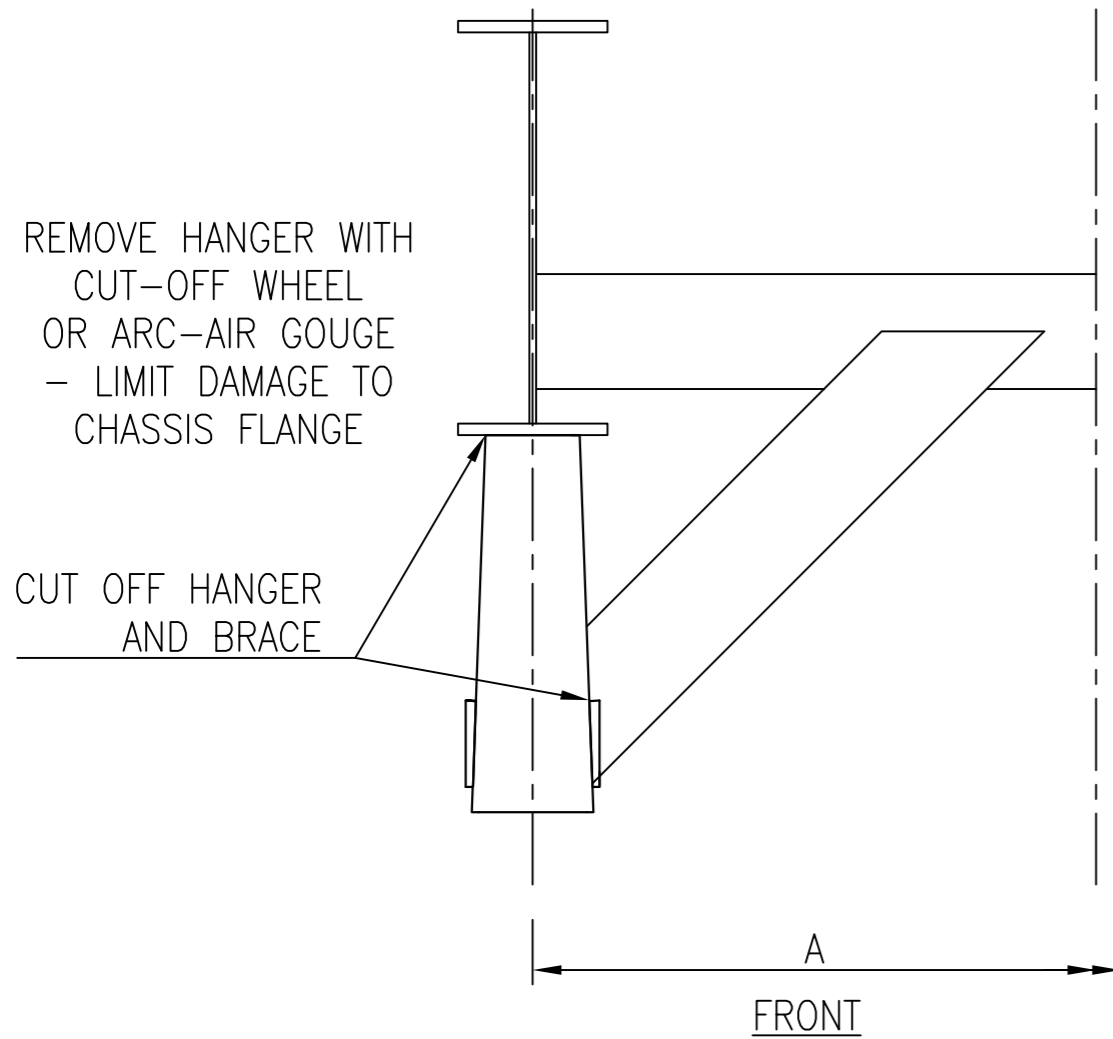
Date: 30/10/2015

Date:



DO NOT SCALE – IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

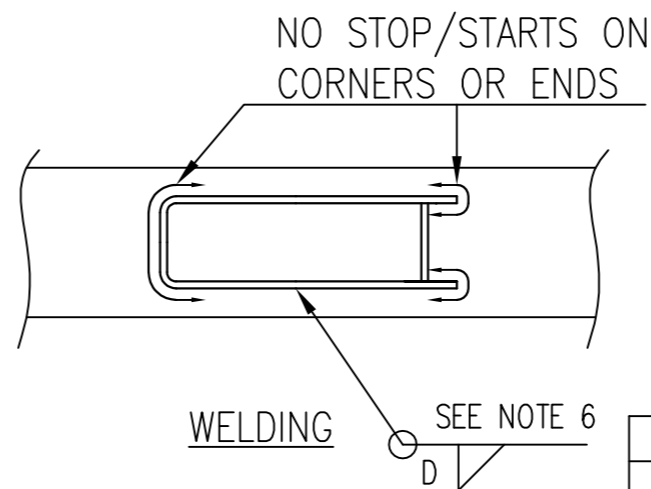


- NOTES:
- LIMITATIONS:
 - FOR REPLACEMENT OF HANGER ONLY NOT NEW INSTALLATION
 - APPLIES ONLY TO TRAILER SUSPENSIONS
 - WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED.
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
 - RHS TO COMPLY WITH AS 1163, GRADE 350 OR EQUIVALENT
 - STEEL SECTIONS MEET AS/NZS 3678 &/OR 3679, OR EQUIVALENT. (UNLESS SPECIFIED)
 - REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
 - ENSURE WELDING COMPATIBILITY OF MATERIAL. THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MP_a YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
 - RE-WELD NEW HANGER IN PLACE USING SUSPENSION MANUFACTURERS WELD DETAILS
- OR
- COPY OEM WELDING IF MANUFACTURERS INSTRUCTIONS ARE NOT AVAILABLE
- REINSTALL SUSPENSION AND AXLE IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS
 - REFIT WHEELS/TYRES & TORQUE TO MANUFACTURERS RECOMENDATIONS
 - REALIGN ALL TRAILER AXLES AFTER HANGER FITTINGS

DRAWING LIMITATIONS:

FOR REPLACEMENT OF HANGER ONLY
NOT TO BE USED FOR NEW INSTALLATION
APPLIES ONLY TO TRAILER SUSPENSIONS

RECORD EXISTING DIMENSION (MM)					
A					
B					
C					
D					
AXLE	1	2	3	4	5



OWNER				
VEHICLE	MAKE		MODEL	
SUSPENSION	MAKE		MODEL	

C		
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM
A		FIRST ISSUE TO CLIENT
ISSUE DATE	CHANGES MADE	BY

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AIR SUSPENSION HANGER REPLACEMENT ONLY
FOR WEAR OR DAMAGE – MATERIAL YIELD < 350 MP_a

ITEM	QTY	MATERIAL	DESCRIPTION	DRAWING
			4 – MRCP – C012	Sheet: 1/1
			Drawn: R.F.	Issue: B
			Scale: NTS	Chkd:
			Date: 2/3/2015	Date:

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Job: 12726

Ref: MRCP-C012

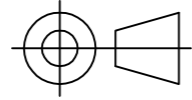
Scale: NTS

Date: 2/3/2015

Date:

DRAWING LIMITATIONS:

CRACKS IN CHASSIS WEB ONLY
CRACK LENGTH < 30mm



DO NOT SCALE – IF IN DOUBT ASK

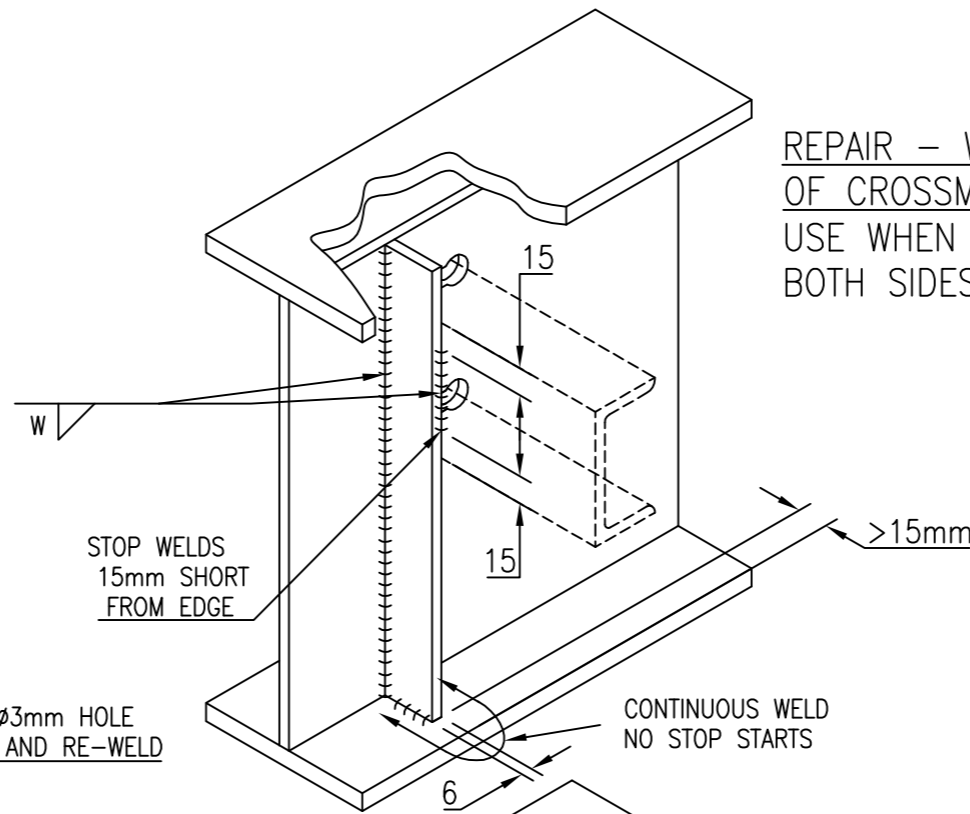
ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

NOTES:

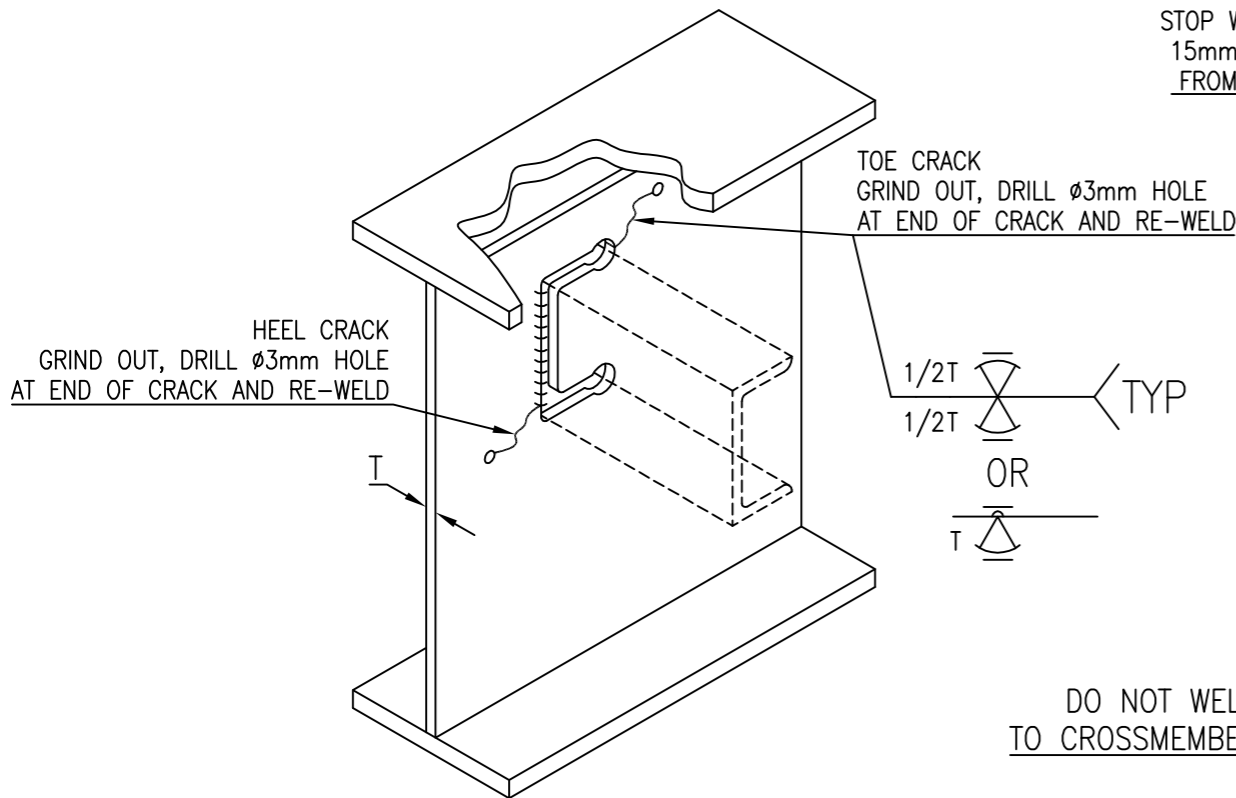
1. WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED. (ALL POSITIONS AND STEELS UP TO CLASS 3 MIN.)
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
2. CHASSIS MATERIAL TO BE IDENTIFIED BEFORE REPAIR
ADDITIONAL MATERIAL TO BE EQUIVALENT
3. REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
4. ENSURE WELDING COMPATIBILITY OF MATERIAL.
THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MP_a YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
5. STEEL PLATE TO MEET AS/NZS 3678 &/OR 3679 OR EQUIVALENT (UNLESS SPECIFIED)

WELD SYMBOLS TO AS/NZS 1554.1

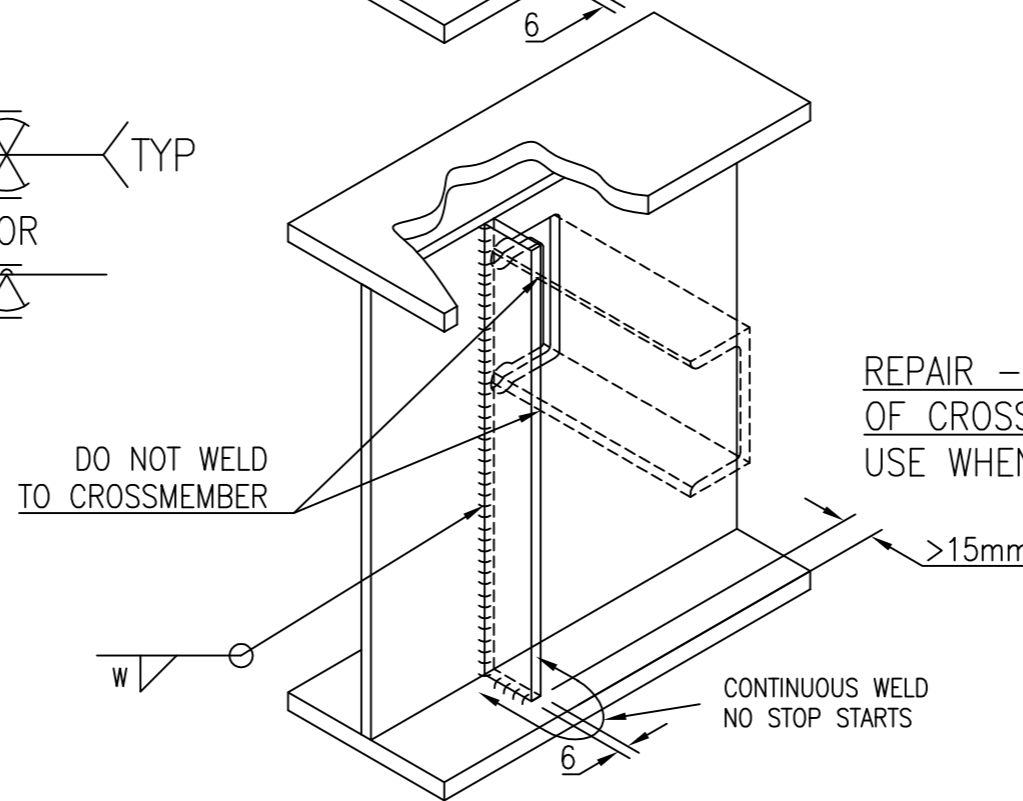
SYMBOL	JOINT	TABLE
	B-C2a	E1
	B-C3	E1
	F1	E3



REPAIR – WEB SIDE
OF CROSSMEMBER
USE WHEN WEB OR
BOTH SIDES CRACKED



CRACK DETAIL – HEEL OR TOE
INSTALL STIFFENER ON ONE SIDE ONLY
T = THICKNESS OF WEB (mm)
W = MIN = 4mm
MAX = 1.5 X T



REPAIR – WEB SIDE
OF CROSSMEMBER
USE WHEN ONLY TOE SIDE CRACKED

WORKSHOP			
OWNER			
MAKE		MODEL	
CERTIFIER		CERT. No.	
JOB #			

C			
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM	
A		FIRST ISSUE TO CLIENT	
ISSUE DATE		CHANGES MADE	BY



N7 Truck Trailer Manufacturers Federation Inc

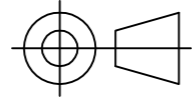
WEB CRACKS AT X-MEMBER CUTOUTS
CHANNEL CROSSMEMBER AND CUTOUT. MATERIAL YIELD < 350 MP_a

4 – MRCP – C003

Sheet: 1/3

DRAWING LIMITATIONS:

CRACKS IN CHASSIS WEB ONLY
CRACK LENGTH < 30mm



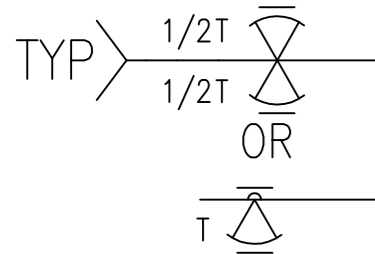
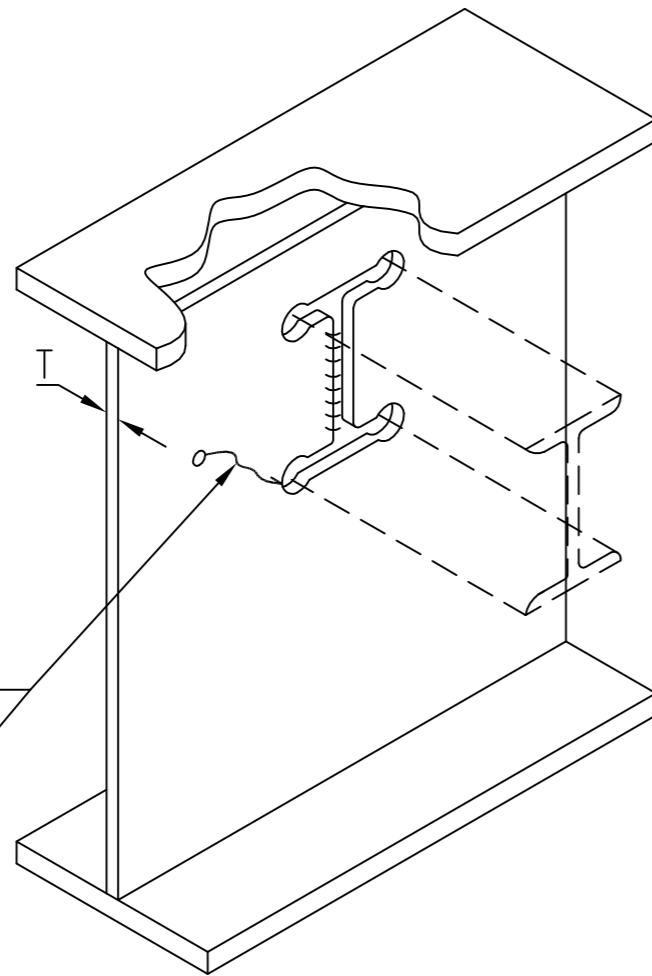
DO NOT SCALE - IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554
PART 1(CATEGORY SP)

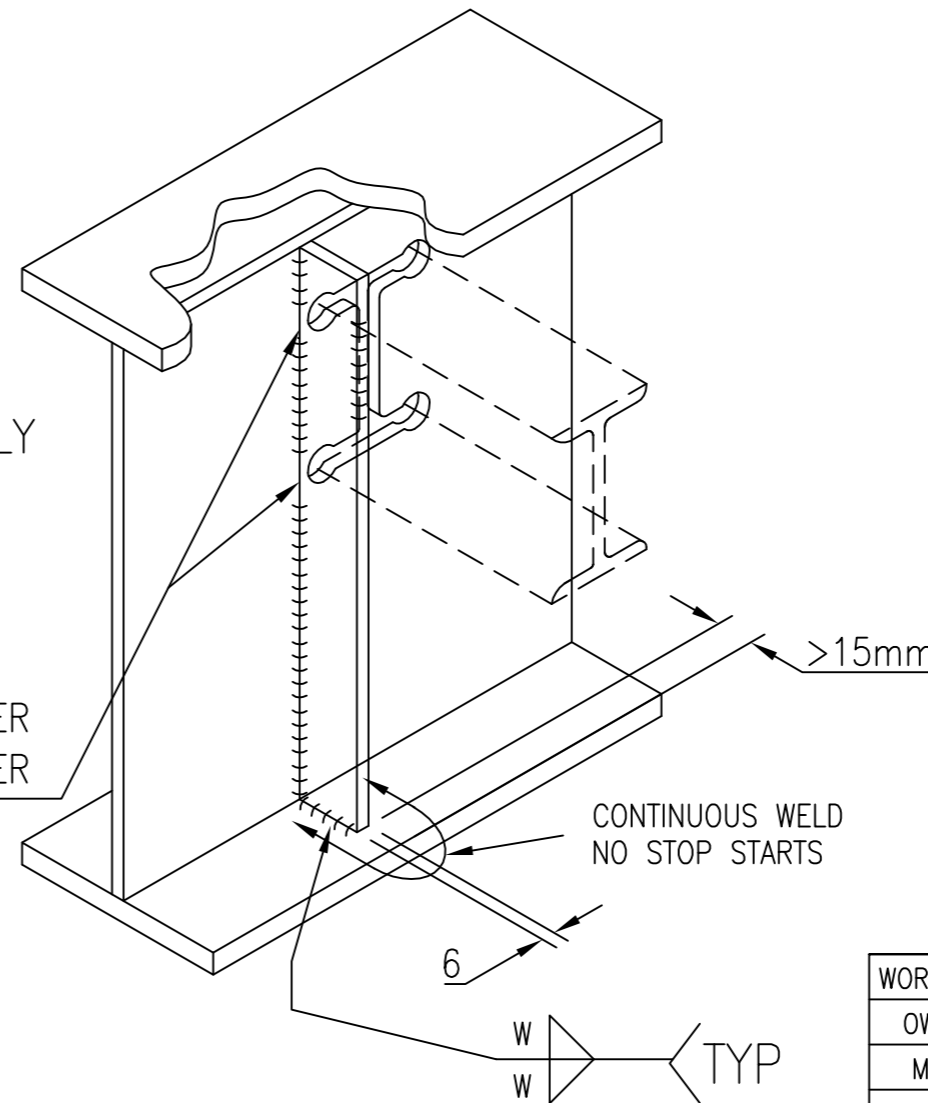
1.
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED. (ALL POSITIONS AND STEELS UP TO CLASS 3 MIN.)
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
2. CHASSIS MATERIAL TO BE IDENTIFIED BEFORE REPAIR
ADDITIONAL MATERIAL TO BE EQUIVALENT
3. REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
4. ENSURE WELDING COMPATIBILITY OF MATERIAL.
THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MP_a YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
5. STEEL PLATE TO MEET AS/NZS 3678 &/OR 3679 OR EQUIVALENT (UNLESS SPECIFIED)

TOE CRACK
GRIND OUT, DRILL $\phi 3$ mm HOLE
AT END OF CRACK AND RE-WELD



TOE CRACK DETAIL
INSTALL STIFFENER ON ONE SIDE ONLY
T = THICKNESS OF WEB (mm)
W = MIN = 4mm
MAX = 1.5 X T

DO NOT WELD STIFFENER TO CROSSMEMBER
WELD/BACKFILL WEB CUTOUT BEHIND STIFFENER



REINFORCEMENT DETAIL

WELD SYMBOLS TO AS/NZS 1554.1

SYMBOL	JOINT	TABLE
	B-C2a	E1
	B-C3	E1
	F1	E3

WORKSHOP			
OWNER			
MAKE		MODEL	
CERTIFIER		CERT. No.	
JOB #			

C			
B			
A		FIRST ISSUE TO CLIENT	
ISSUE DATE		CHANGES MADE	BY

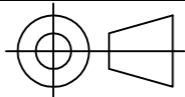


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WEB CRACKS AT X-MEMBER CUTOUTS
RSJ CROSSMEMBER AND CUTOUT. MATERIAL YIELD < 350 MP_a

4 - MRCP - C003

Sheet: 3/3



DO NOT SCALE - IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

DRAWING LIMITATIONS:

SIDE-ARM INNER WALL IS NOT
CRACKED OR PERMANENTLY DEFLECTED.
SEE DENT DEFINITION
SEE REQUIRED CERT TEXT BELOW

THE FOLLOWING TEXT MUST APPEAR ON THE LT400 FOR THIS REPAIR:

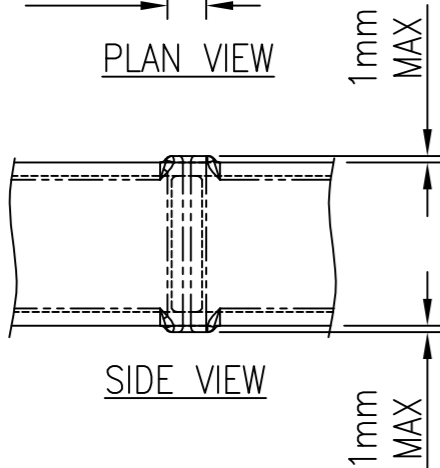
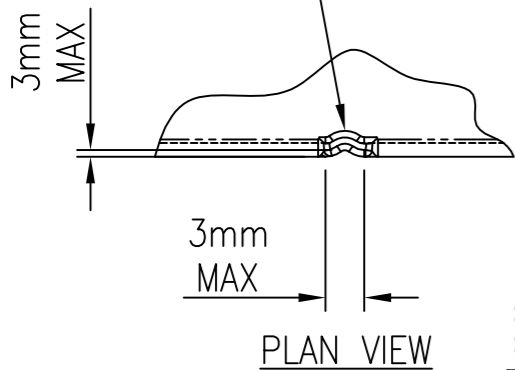
A MODIFICATION CARRIED OUT TO THIS DRAWING IS APPROVED BY THIS
AGENCY NOT TO SUPERCEDE THE CURRENT CERTIFICATION

CHECK DIAGONAL DIMENSIONS FOR DRAWBAR TO CONFIRM
STRAIGHTNESS OF DRAWBAR SIDEARMS
CHECK STRAIGHTNESS OF BOTH ARMS OF DRAWBAR
AS NO BOWING ALLOWED IN SIDE ARMS OF DRAWBAR

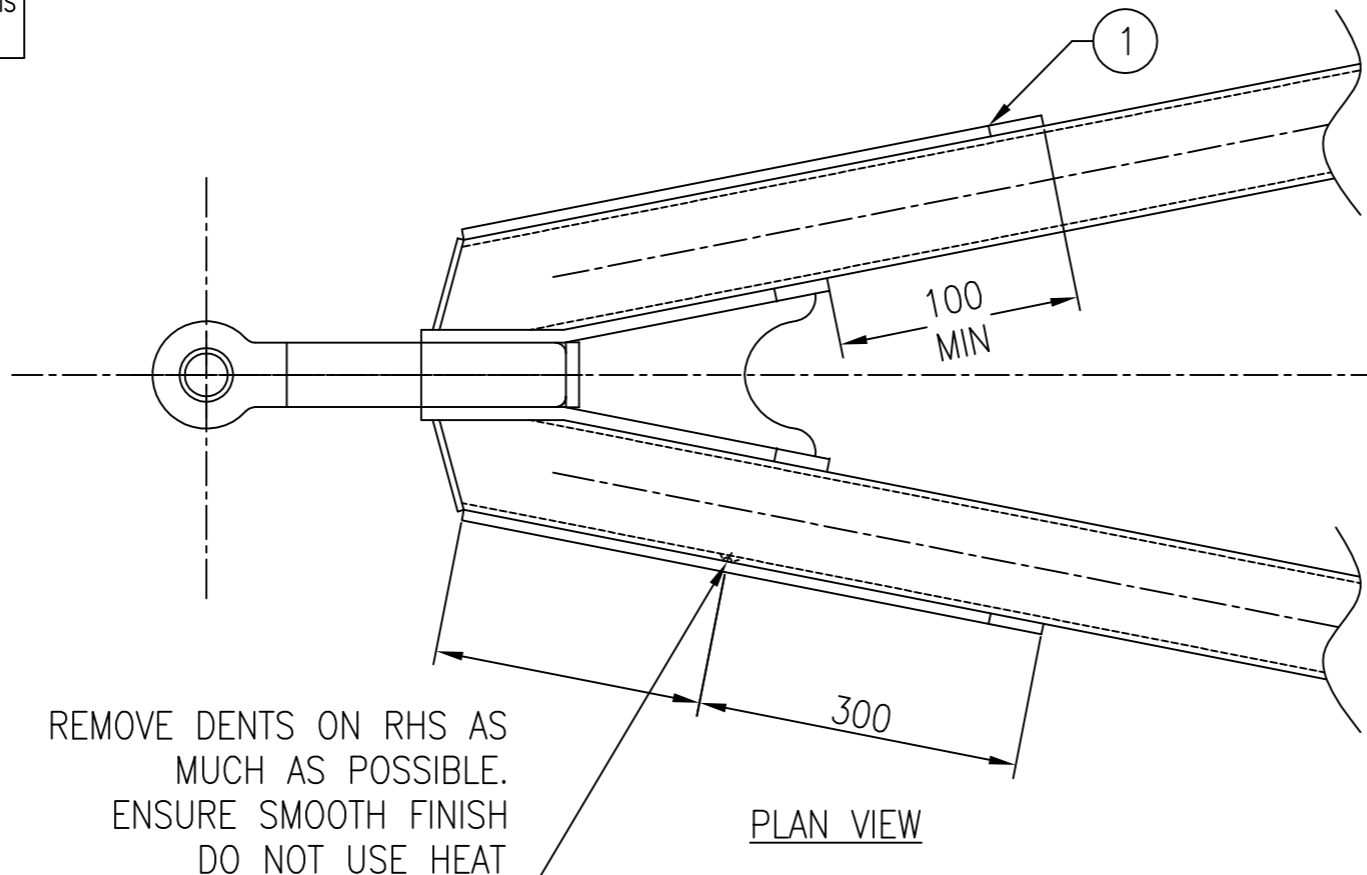
NOTES:

1. WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED.
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
2. REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
3. ENSURE WELDING COMPATIBILITY OF MATERIAL. THIS REPAIR IS ONLY SUITABLE FOR MATERIAL UP TO 350 MPa YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
4. MAXIMUM RATING NOT TO EXCEED VEHICLE OR COUPLING MANUFACTURERS RATINGS. COUPLING MAY MATCH ORIGINAL CERTIFICATION RATING IF THE ABOVE CONDITIONS ARE MET OTHERWISE CONTACT AN ENGINEERING CERTIFIER WITH THE TOWING CATEGORY.
5. ADDITIONAL STEEL PLATE MATERIAL TO MEET AS/NZS 3678 &/OR AS/NZS 3679

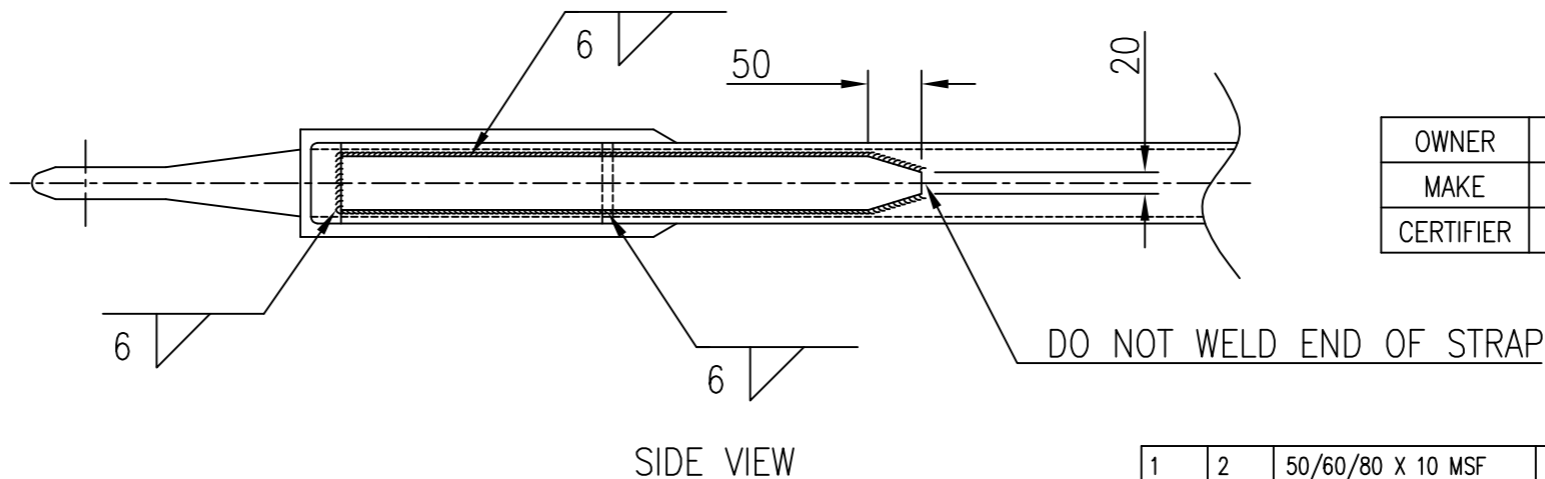
NO EVIDENCE OF
BROKEN INNNER SKIN



MAXIMUM REPAIRABLE DENT SIZE



STRAPS MUST BE FITTED TO BOTH SIDES OF DRAWBAR



WELD SYMBOLS TO AS/NZS 1554.1

SYMBOL	JOINT	TABLE
	F1	E3

OWNER			
MAKE		MODEL	
CERTIFIER		CERT. No.	

THIS REPAIRED UNIT MUST COMPLY WITH
INSPECTION REQUIRMENTS IN THE HVSC VIRM SECTION 9-2

C			
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM	
A		FIRST ISSUE TO CLIENT	
ISSUE DATE	CHANGES MADE		BY

1	2	50/60/80 X 10 MSF	FLATBAR REINFORCING STRAP	
ITEM	QTY	MATERIAL	DESCRIPTION	DRAWING



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A-FRAME - DRAWBAR DENT REPAIR - MATERIAL YIELD < 350 MPa
WORKSHOP: _____ CLIENT: _____

4 - MRCP - T002

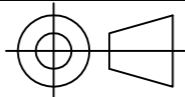
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Drawn: R.F.	Issue: B	Chkd:
Scale: NTS	Date: 2/11/2015	Date:

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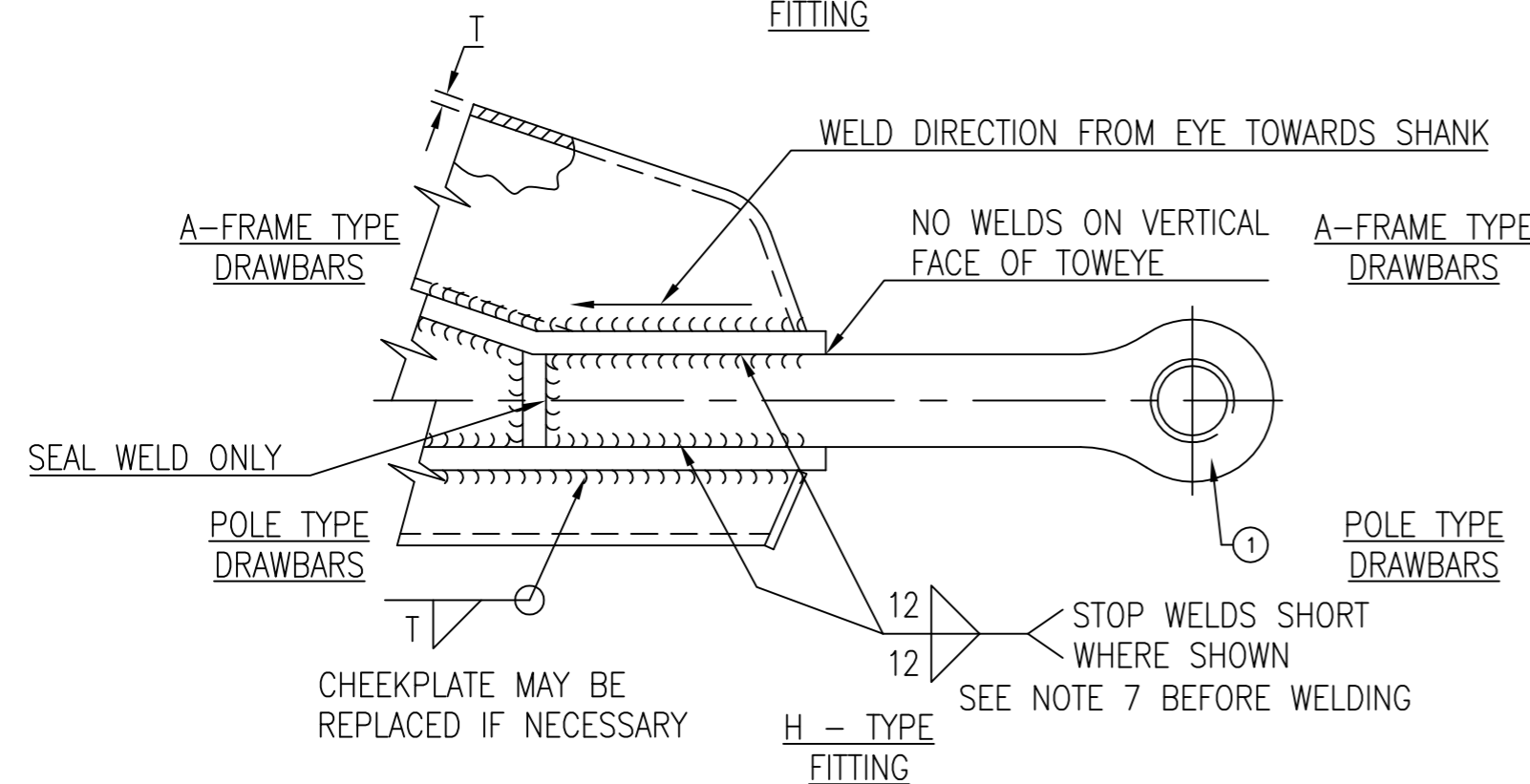
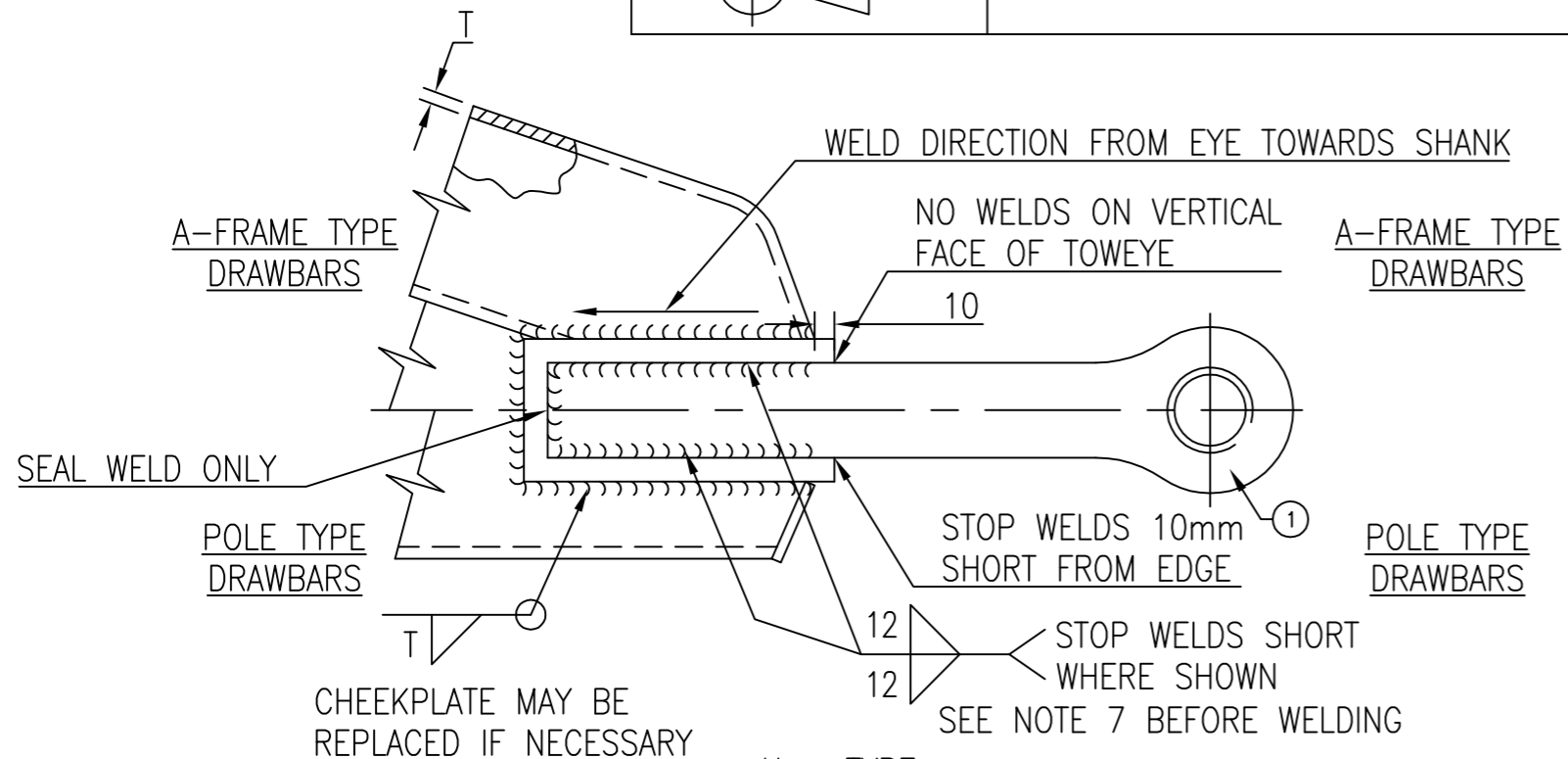
Job: 12726

Ref: MRCP-T002



DO NOT SCALE - IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987



ENSURE TOWEYE D-VALUE RATING IS EQUIVELANT
DRAWBAR LENGTH IS NOT TO BE ALTERED
ORIGINAL STRUCTURE MUST BE REPLICATED.
MODIFICATIONS ARE NOT ALLOWED

NOTES:

- DO NOT SCALE OFF DRAWING
- WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED. (STEELS UP TO CLASS 3 MINIMUM)
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
- STEEL SECTIONS MEET AS/NZS 1163 GRADE 350, & AS/NZS 3968 FOR PLATE OR EQUIVALENT. (UNLESS SPECIFIED)
- REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
- CERTIFICATION IS VOID IF:
 - THE TOWEYE IS MANUFACTURED OR MODIFIED OUTSIDE THE SCOPE OF THIS DRAWING.
 - THE DRAWBAR IS MODIFIED FROM ITS ORIGINAL CONFIGURATION (PRIOR TO TOWEYE DAMAGE)
- DO NOT WELD ON VERTICAL FACE OF TOWEYE OR WITHIN 10mm OF FRONT EDGE.
FOLLOW MANUFACTURERS FITTING/WELDING INSTRUCTIONS

WELD SYMBOLS TO AS/NZS 1554.1

SYMBOL	JOINT	TABLE
	F1	E3
	F1	E3

- IF THE MANUFACTURER DOES NOT PROVIDE SPECIFIC WELDING INTRUCTIONS THE FOLLOWING INFORMATION FROM NZS5446 2007 SHALL BE USED:
 - PRE HEAT TO 250°C
 - HYDROGEN CONTROLLED ELECTRODES DRIED TO MANUFACTURERS RECCOMENDATIONS OR HYDROGEN CONTROLLED WELDING PROCESS SHALL BE USED TO MAKE ALL WELDS, INCLUDING TACK WELDS, WELDS ON COVER PLATES ETC...
 - WELDING OF THE THE TOWEYE SHANK SHALL BE ON THE PARELELL SECTION OF THE SHANK ONLY, EXCEPT A SEAL WELD MAY BE APPLIED TO REAR FACE OF SHANK
 - AFTER WELDING, THE TOWEYE SHALL BE PROTECTED BY SUITABLE MEANS TO ENSURE SLOW COOLING FROM WELDING TEMPERATURES
 - IF WELDING ON THE TOWEYE SHANK IS STOPPED AND THE TEMPERATURE FALLS BELOW 250°, THE COMPONENT SHALL BE RAISED BACK TO 250° BEFORE WELDING IS RECCOMMENCED.
- FOR OTHER VARIANTS OF TOWEYE ATTACHMENT, CONSULT ORIGINAL MANUFACTURER OF DRAWBAR FOR REPAIR INSTRUCTION OR CERTIFYING ENGINEER TO PROVIDE REPAIR DETAIL.

OWNER			
MAKE		MODEL	
CERTIFIER		CERT. No.	
EXPIRY		LENGTH	

1	1	12T MIN. D-VALUE	TOWEYE - TO DIN. 74053/74054	
ITEM	QTY	MATERIAL	DESCRIPTION	DRAWING

C			
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM	
A		FIRST ISSUE TO CLIENT	
ISSUE DATE	CHANGES MADE		BY



N7 Truck Trailer Manufacturers Federation Inc

WORKSHOP _____ TOWEYE REPLACEMENT - A FRAME / POLE TYPE CLIENT _____

4 - MRCP - T001

Sheet: 1/1

Drawn: R.F.	Issue: B	Chkd:
Scale: NTS	Date: 2/11/2015	Date:

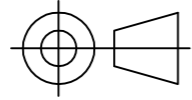
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Job: 12726

Ref: MRCP-T001

DRAWING LIMITATIONS:

CRACKS IN CHASSIS WEB ONLY
EXCLUDES ALL FLANGE CRACKS

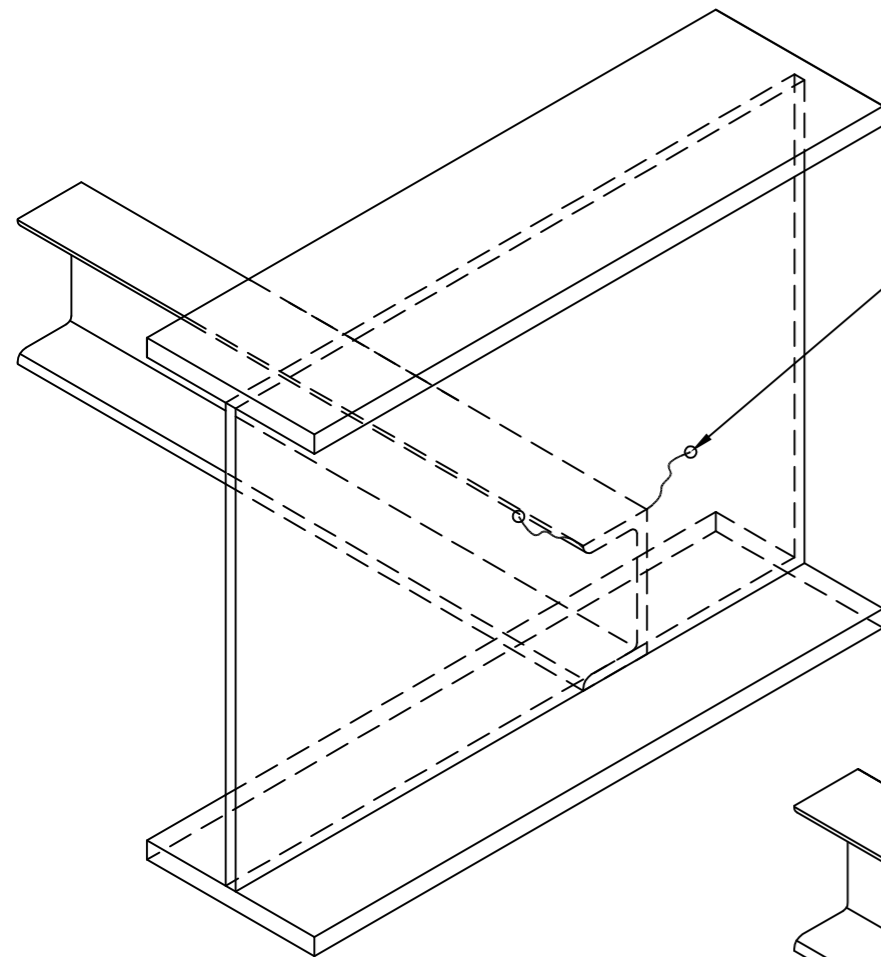


DO NOT SCALE – IF IN DOUBT ASK

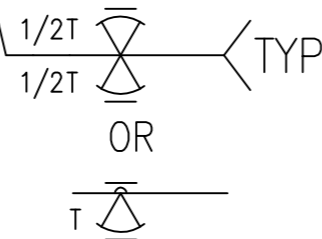
ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

NOTES:

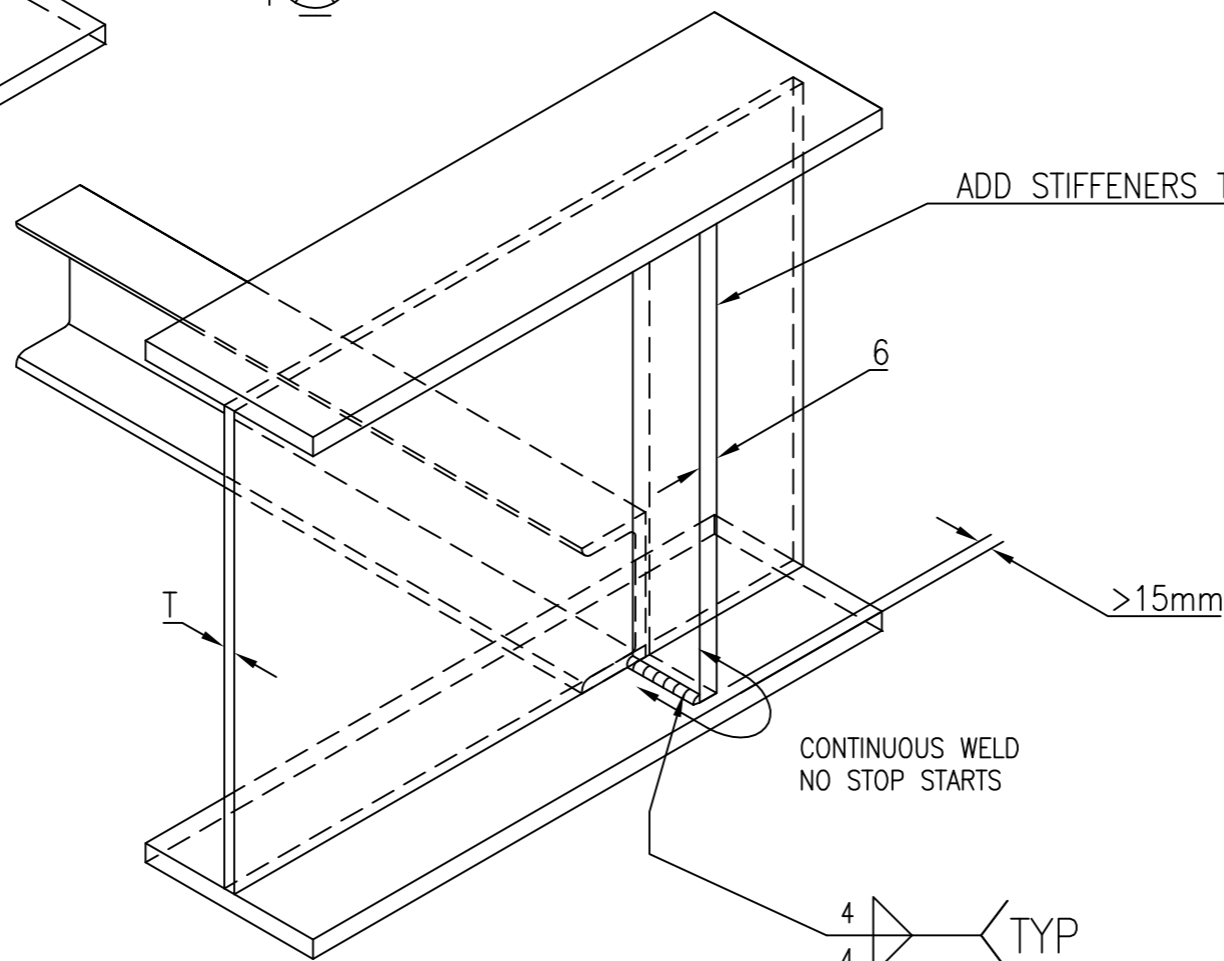
1. WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED. (ALL POSITIONS AND STEELS UP TO CLASS 3 MIN.)
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
2. CHASSIS MATERIAL TO BE IDENTIFIED BEFORE REPAIR
ADDITIONAL MATERIAL TO BE EQUIVALENT
3. REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
4. ENSURE WELDING COMPATIBILITY OF MATERIAL.
THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MPa YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
5. STEEL PLATE TO MEET AS/NZS 3678 &/OR 3679 OR EQUIVELANT (UNLESS SPECIFIED)



WEB CRACKS
GRIND OUT, DRILL $\phi 3\text{mm}$ HOLE
AT END OF CRACK AND RE-WELD



WEB CRACK DETAIL



ADD STIFFENERS TO OUTSIDE OF WEB

CONTINUOUS WELD
NO STOP STARTS

REINFORCEMENT DETAIL

WELD SYMBOLS TO AS/NZS 1554.1

SYMBOL	JOINT	TABLE
	B-C2a	E1
	B-C3	E1
	F1	E3

C		
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM
A		FIRST ISSUE TO CLIENT
ISSUE DATE	CHANGES MADE	BY

WORKSHOP	
OWNER	
MAKE	MODEL
CERTIFIER	CERT. No.
JOB #	



N7 Truck Trailer Manufacturers Federation Inc

CHASSIS WEB CRACKS AT CHANNEL CROSSMEMBER JOINT
MATERIAL YIELD < 350 MPa

4 – MRCP – C006

Sheet: 1/1

Drawn: R.F.

Issue: B

Chkd:

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Job: 12726

Ref: MRCP-C006

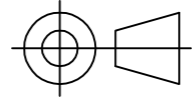
Scale: NTS

Date: 30/10/2015

Date:

DRAWING LIMITATIONS:

CRACKS IN CHASSIS WEB ONLY
EXCLUDES ALL FLANGE CRACKS

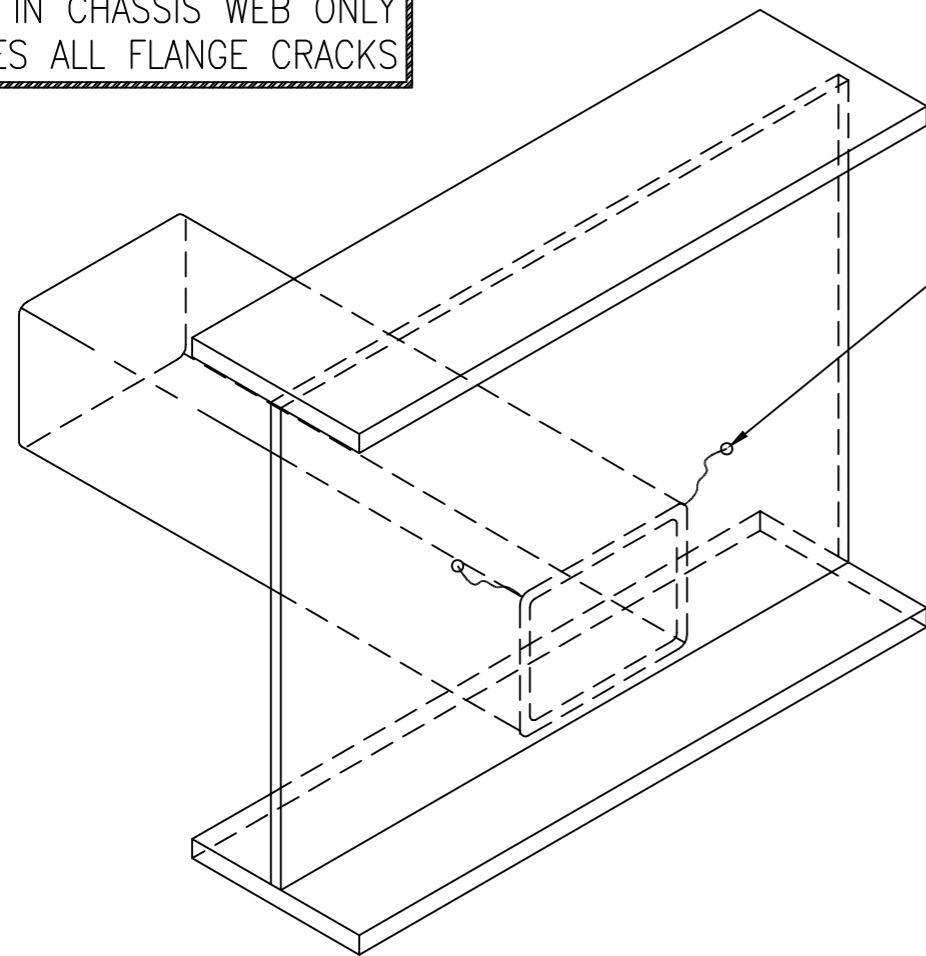


DO NOT SCALE – IF IN DOUBT ASK

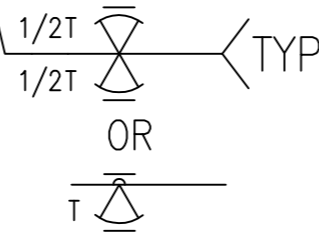
ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

NOTES:

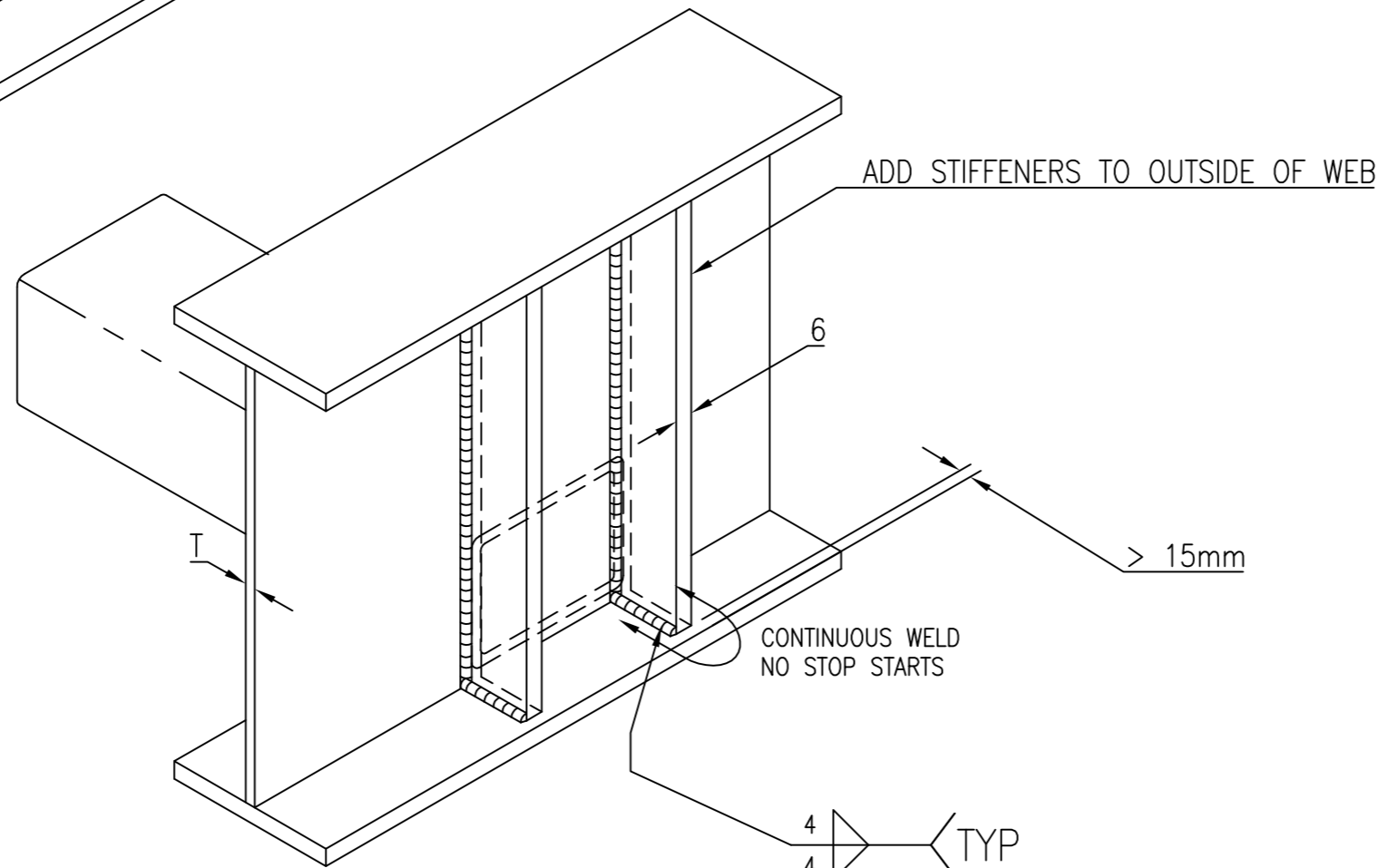
1. WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED. (ALL POSITIONS AND STEELS UP TO CLASS 3 MIN.)
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
2. CHASSIS MATERIAL TO BE IDENTIFIED BEFORE REPAIR
ADDITIONAL MATERIAL TO BE EQUIVALENT
3. REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
4. ENSURE WELDING COMPATIBILITY OF MATERIAL.
THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MPa YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
5. STEEL PLATE TO MEET AS/NZS 3678 &/OR 3679 OR EQUIVELANT (UNLESS SPECIFIED)



WEB CRACKS
GRIND OUT, DRILL $\phi 3\text{mm}$ HOLE
AT END OF CRACK AND RE-WELD



WEB CRACK DETAIL



ADD STIFFENERS TO OUTSIDE OF WEB

> 15mm

CONTINUOUS WELD
NO STOP STARTS

REINFORCEMENT DETAIL

WELD SYMBOLS TO AS/NZS 1554.1

SYMBOL	JOINT	TABLE
	B-C2a	E1
	B-C3	E1
	F1	E3

C		
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM
A		FIRST ISSUE TO CLIENT
ISSUE	DATE	CHANGES MADE
		BY

WORKSHOP	
OWNER	
MAKE	MODEL
CERTIFIER	CERT. No.
JOB #	



N7 Truck Trailer Manufacturers Federation Inc

CHASSIS WEB CRACKS AT SHS/RHS CROSSMEMBER JOINT
MATERIAL YIELD < 350 MPa

4 – MRCP – C005

Sheet: 1/1

Drawn: R.F.	Issue: B	Chkd:
Date: 30/10/2015	Date:	

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Job: 12726

Ref: MRCP-C005

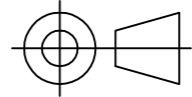
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Date: 30/10/2015

Date:

DRAWING LIMITATIONS:

CRACKS IN CHASSIS WEB ONLY
CRACK LENGTH < 30mm

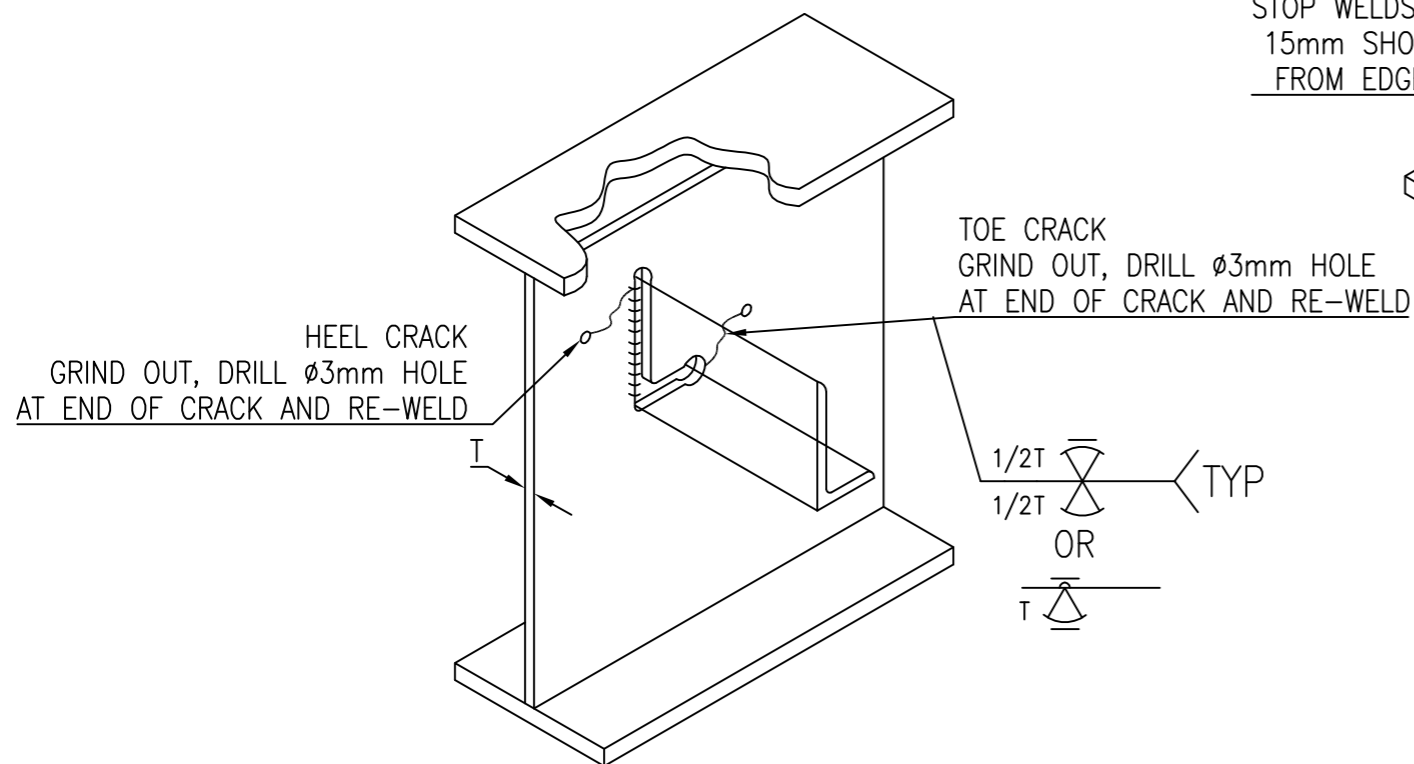


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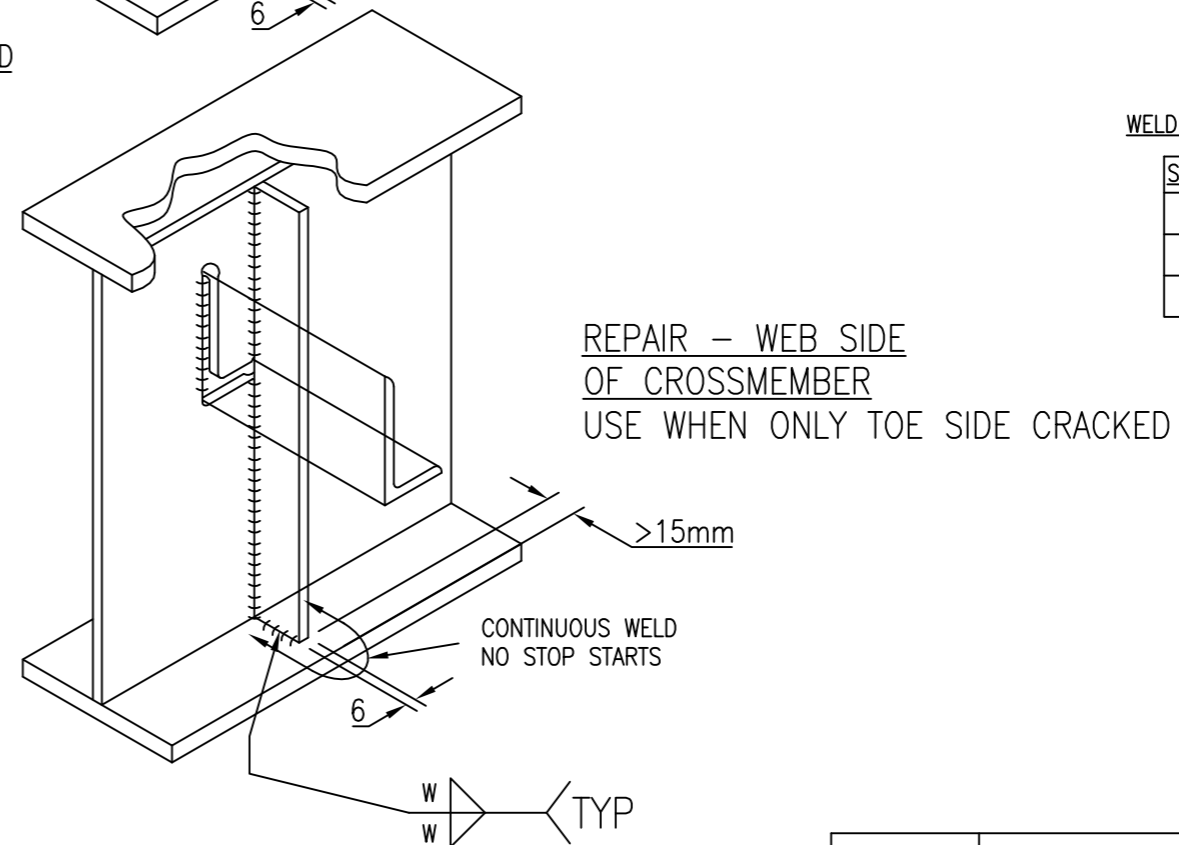
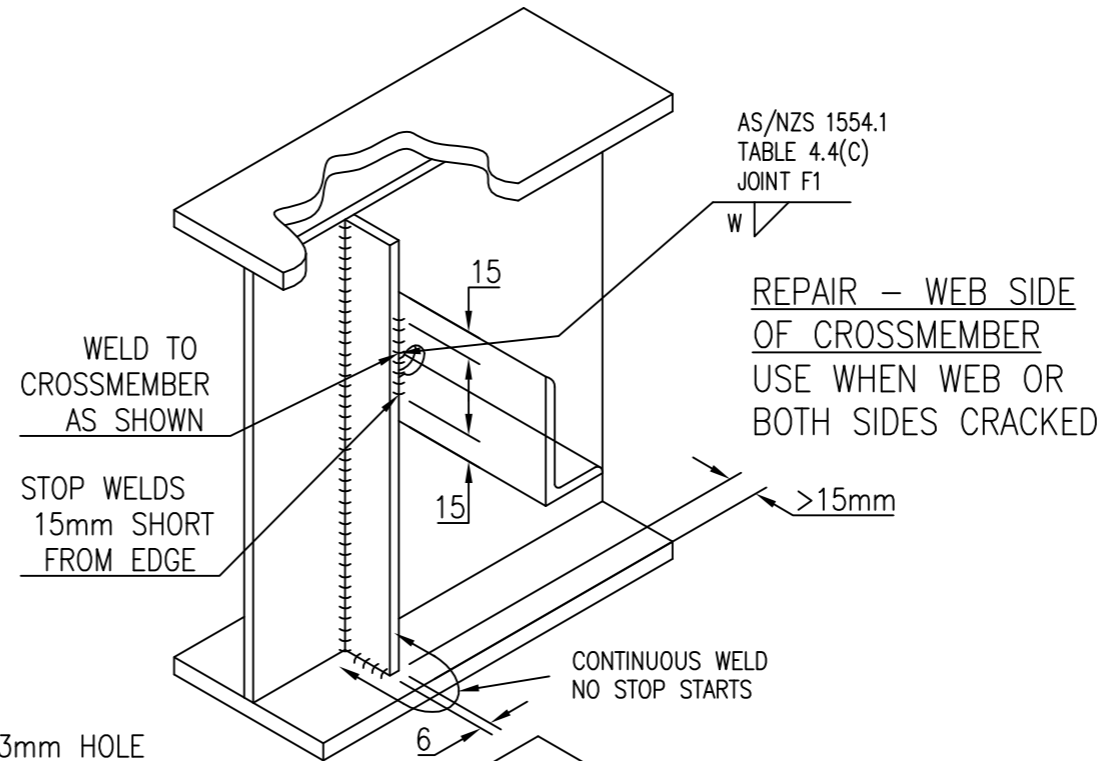
ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

NOTES:

- WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED. (ALL POSITIONS AND STEELS UP TO CLASS 3 MIN.)
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
- CHASSIS MATERIAL TO BE IDENTIFIED BEFORE REPAIR
ADDITIONAL MATERIAL TO BE EQUIVALENT
- REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
- ENSURE WELDING COMPATIBILITY OF MATERIAL.
THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MP_a YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
- STEEL PLATE TO MEET AS/NZS 3678 &/OR 3679 OR EQUIVALENT (UNLESS SPECIFIED)



CRACK DETAIL – HEEL OR TOE
INSTALL STIFFENER ON ONE SIDE ONLY
T = THICKNESS OF WEB (mm)
W = MIN = 4mm
MAX = 1.5 X T



WELD SYMBOLS TO AS/NZS 1554.1

SYMBOL	JOINT	TABLE
	B-C2a	E1
	B-C3	E1
	F1	E3

WORKSHOP			
OWNER			
MAKE		MODEL	
CERTIFIER		CERT. No.	
JOB #			

C		
B	09/07/19	UPDATED FOR ISSUE IN NZTA VIRM
A		FIRST ISSUE TO CLIENT
ISSUE DATE	CHANGES MADE	BY



N7 Truck Trailer Manufacturers Federation Inc

WEB CRACKS AT X-MEMBER CUTOUTS
ANGLE CROSSMEMBER AND CUTOUT. MATERIAL YIELD < 350 MP_a

4 – MRCP – C003

Sheet: 2/3

Drawn: R.F.	Issue: B	Chkd:
Date: 2/11/2015	Date:	

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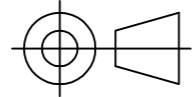
Job: 12726

Ref: MRCP-C003

Scale: NTS

Date: 2/11/2015

Date:



DO NOT SCALE – IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

DRAWING LIMITATIONS:

CROSSMEMBER AND GUSSET CRACKS ONLY
CHASSIS WEB, CHASSIS FLANGE OR CHASSIS
WELDS ARE EXPRESSLY EXCLUDED

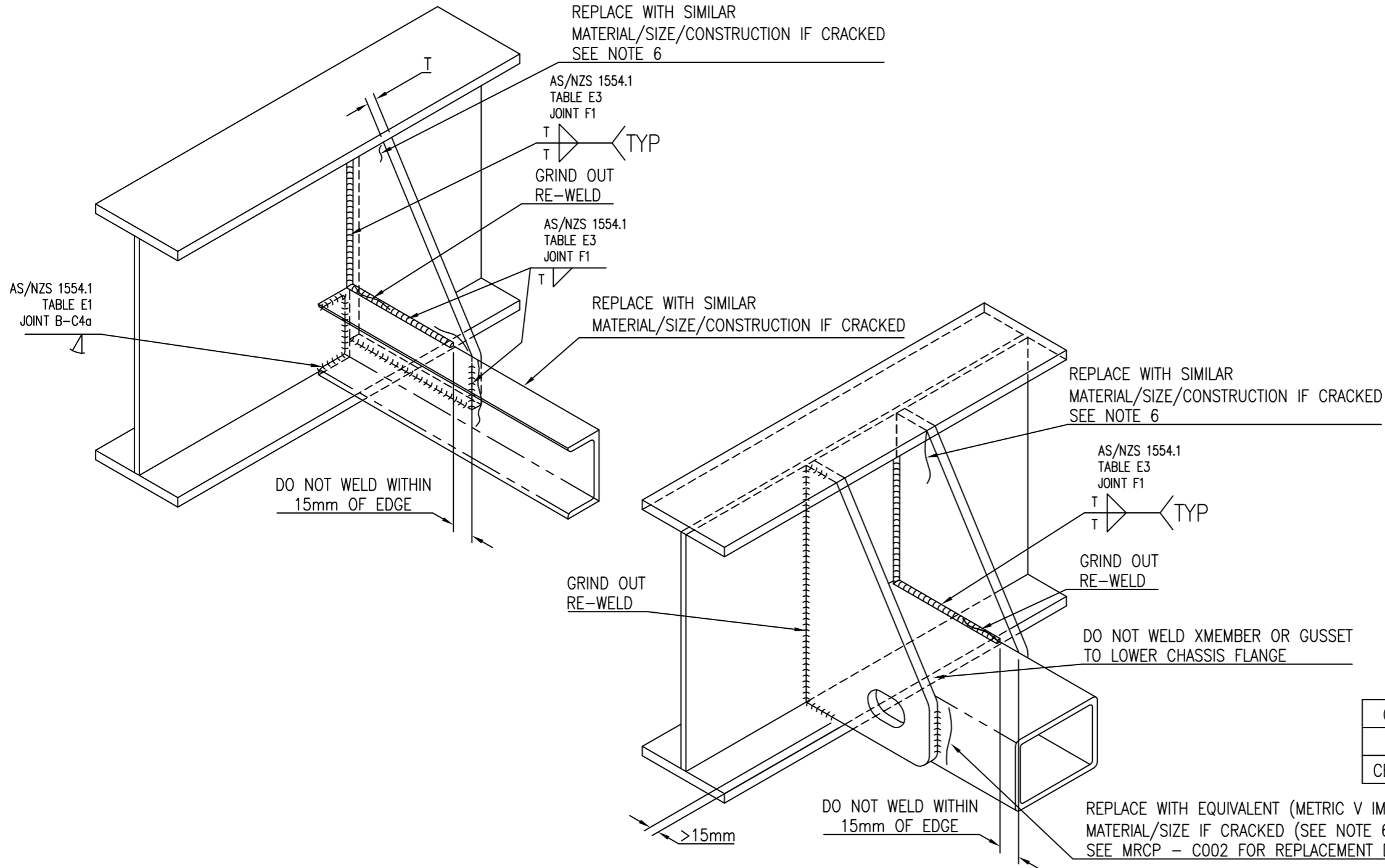
NOTES:

1. WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED.
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
2. RHS TO COMPLY WITH AS 1163, GRADE 350 OR EQUIVALENT
3. STEEL SECTIONS MEET AS/NZS 3678 &/OR 3679, OR EQUIVALENT. (UNLESS SPECIFIED)
4. REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
5. ENSURE WELDING COMPATIBILITY OF MATERIAL. THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MPa YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
6. ANY WELDED COMPONENT REMOVED FROM THE CHASSIS MUST BE REMOVED USING A CUTTING WHEEL, DISC OR OTHER ABRASIVE CUTTING DEVICE

NO THERMAL CUTTING TOOLS TO BE USED
THIS EXCLUSION INCLUDES BUT IS NOT LIMITED TO:

- OXY-FUEL TORCHES
- ARC-AIR TORCHES
- PLASMA CUTTERS

ATTACHMENT AREA SURFACE TO BE CAREFULLY EXAMINED FOR CRACKS AFTER REMOVAL. ANY CRACKS FOUND TO BE REFERRED TO AN ENGINEER WITH THE CHASSIS CATEGORY



OWNER			
MAKE		MODEL	
CERTIFIER		CERT. No.	

C			
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM	
A		FIRST ISSUE TO CLIENT	
ISSUE	DATE	CHANGES MADE	BY



N7 Truck Trailer Manufacturers Federation Inc

Chassis Crossmember or Gusset Crack
MATERIAL YIELD < 350 MPa

4 – MRCP – C004

Sheet: 1/1

Drawn: R.F.

Issue: B

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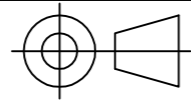
Job: 12726

Ref: MRCP-C004

Scale: NTS

Date: 8/4/2014

Date:

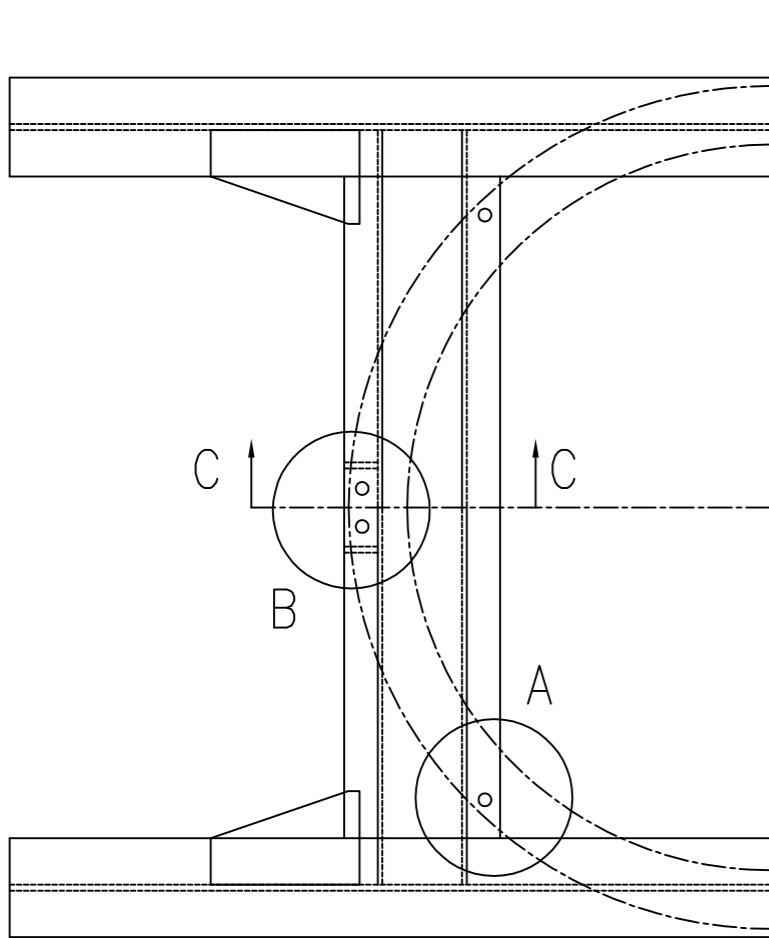


DO NOT SCALE – IF IN DOUBT ASK

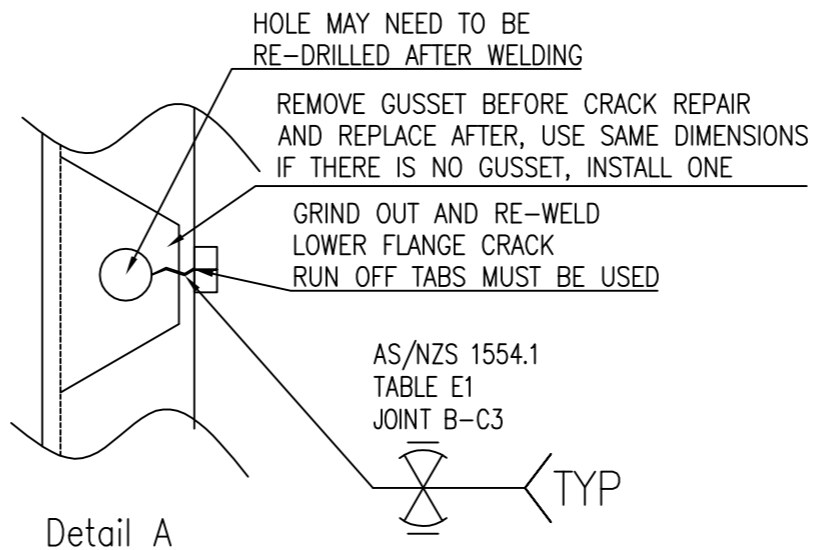
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TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

DRAWING LIMITATIONS:

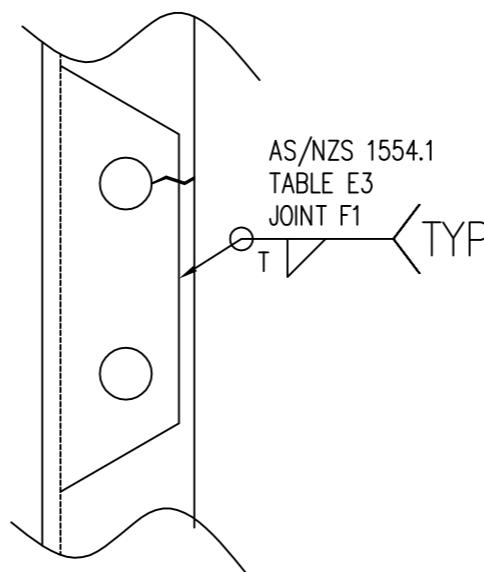
TOES DOWN CHANNEL CROSSMEMBERS ONLY
BALLRACE SUPPORT CROSSMEMBER ONLY



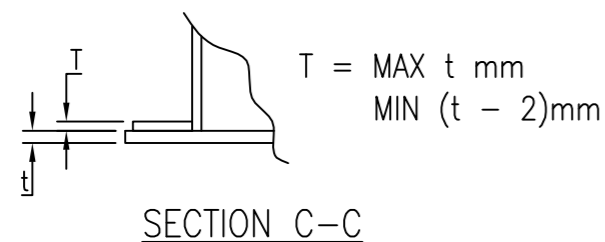
1/2 PLAN VIEW



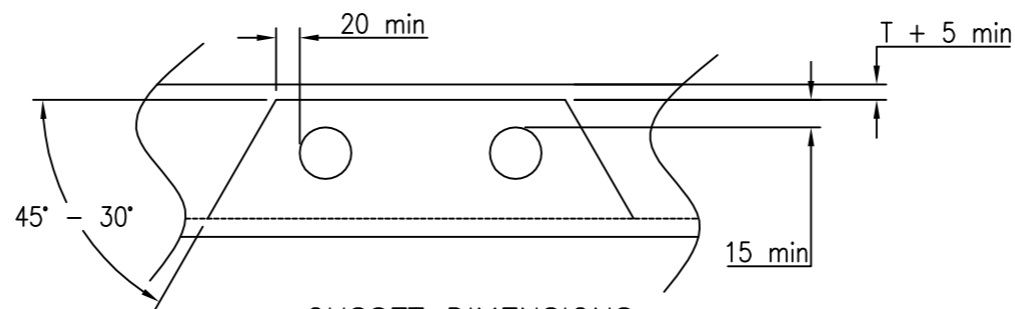
Detail A



Detail B



SECTION C-C



GUSSET DIMENSIONS

NOTES:

- WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)
 - WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
 - WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED.
 - WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
 - INSPECTION TO BE CARRIED OUT AS PER SECTION 7.
 - RHS TO COMPLY WITH AS 1163, GRADE 350 OR EQUIVALENT
 - STEEL SECTIONS MEET AS/NZS3679 &/OR 3679, OR EQUIVALENT. (UNLESS SPECIFIED)
 - REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS
 - ENSURE WELDING COMPATIBILITY OF MATERIAL. THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MPa YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED
 - ANY WELDED COMPONENT REMOVED FROM THE CHASSIS MUST BE REMOVED USING A CUTTING WHEEL, DISC OR OTHER ABRASIVE CUTTING DEVICE
 - NO THERMAL CUTTING TOOLS TO BE USED THIS EXCLUSION INCLUDES BUT IS NOT LIMITED TO:
 - OXY-FUEL TORCHES
 - ARC-AIR TORCHES
 - PLASMA CUTTERS
- ATTACHMENT AREA SURFACE TO BE CAREFULLY EXAMINED FOR CRACKS AFTER REMOVAL. ANY CRACKS FOUND TO BE REFERRED TO AN ENGINEER WITH THE CHASSIS CATEGORY

OWNER			
MAKE		MODEL	
CERTIFIER		CERT. No.	

C			
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM	
A		FIRST ISSUE TO CLIENT	
ISSUE	DATE	CHANGES MADE	BY

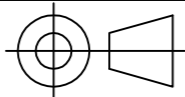
ITEM	QTY	MATERIAL	DESCRIPTION	DRAWING
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ttmf
N7 Truck Trailer Manufacturers Federation Inc.

CRACKS AT BALLRACE BOLT HOLES
MATERIAL YIELD < 350 MPa

4 – MRCP – C010

Sheet: 1/1



DO NOT SCALE – IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES
TOLERANCES CLASS II UNLESS
OTHERWISE SPECIFIED
WELD SYMBOLS TO AS1101.3-1987

DRAWING LIMITATIONS:
CROSSMEMBER AND GUSSET CRACKS ONLY
OR CROSSMEMBER REPLACEMENT
CHASSIS WEB, CHASSIS FLANGE OR CHASSIS
WELDS ARE EXPRESSLY EXCLUDED

NOTES:

1. WELDING OF STEEL SECTIONS TO COMPLY WITH AS/NZS1554 PART 1(CATEGORY SP)

MATERIAL YIELD STRENGTH < 1000Mpa, > 500Mpa TO COMPLY WITH: PART 4[CATEGORY SP OR FP(SPECIFIED)]

-WELDING AND JOINT PREP. TO COMPLY WITH SECTION 4.
-WELDER TO BE CURRENTLY CERTIFIED TO CLAUSE 4.11.2 IN APPROPRIATE POSITIONS AND TECHNIQUES USED.
-WELDING CONSUMABLES TO COMPLY WITH SECTION 4.5 FOR THE TYPE AND GRADE OF MATERIALS USED.
-INSPECTION TO BE CARRIED OUT AS PER SECTION 7.

2. RHS TO COMPLY WITH AS 1163, GRADE 350 OR EQUIVALENT, AND TO MEET CHARPY IMPACT REQUIREMENTS AS STATED IN NZS 5446:1991 APPENDIX A2. (UNLESS SPECIFIED)

3. STEEL PLATE MEET AS/NZS 3678 &/OR 3679 OR EQUIVALENT. (UNLESS SPECIFIED)

4. REMOVE ALL BURRS AND SHARP EDGES, DRESS WELD TERMINATIONS

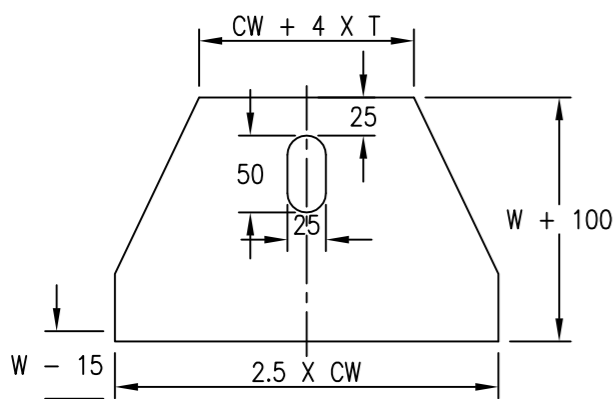
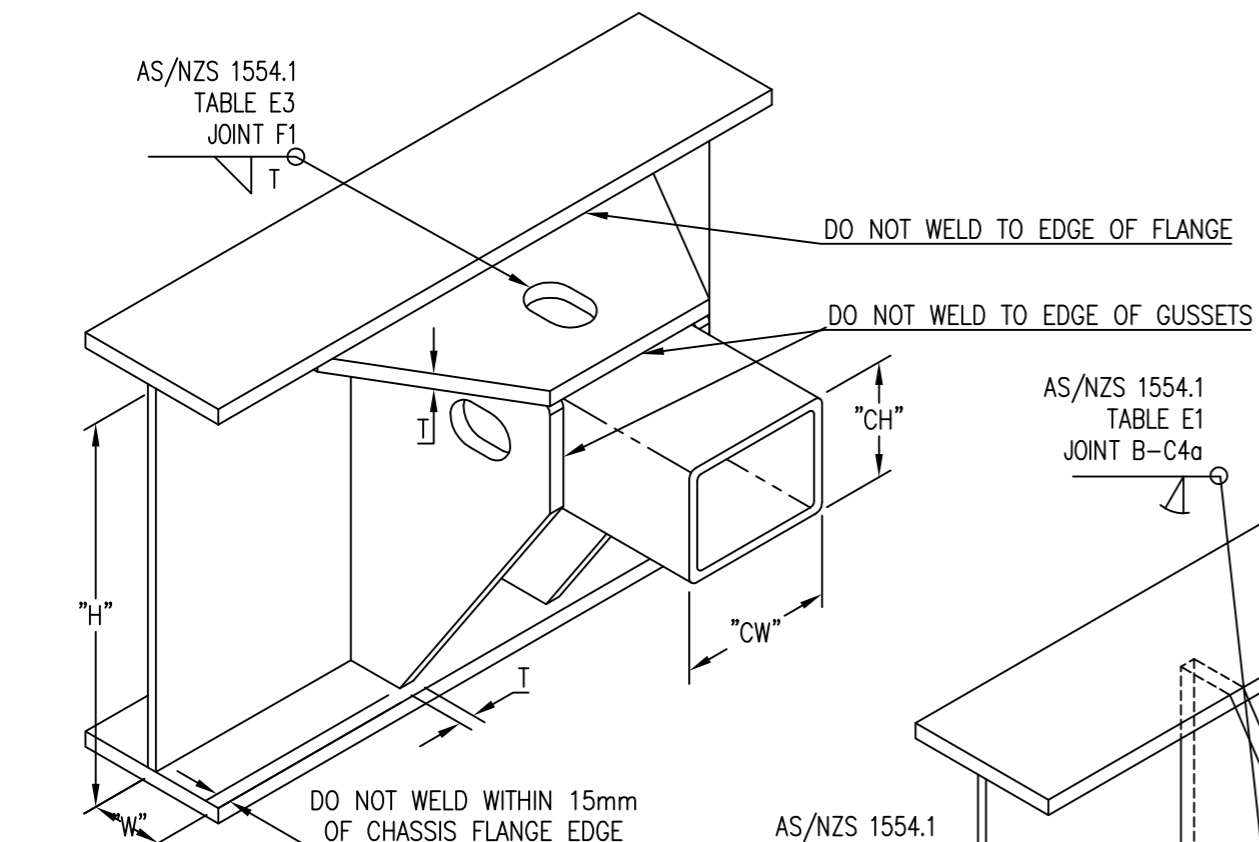
5. ENSURE WELDING COMPATIBILITY OF MATERIAL. THIS REPAIR IS ONLY SUITABLE FOR CHASSIS MATERIAL UP TO 350 MPa YIELD. CONSULT AN ENGINEER WITH THE CHASSIS CATEGORY IF HIGHER YIELD MATERIAL IS USED

6. ANY WELDED COMPONENT REMOVED FROM THE CHASSIS MUST BE REMOVED USING A CUTTING WHEEL, DISC OR OTHER ABRASIVE CUTTING DEVICE

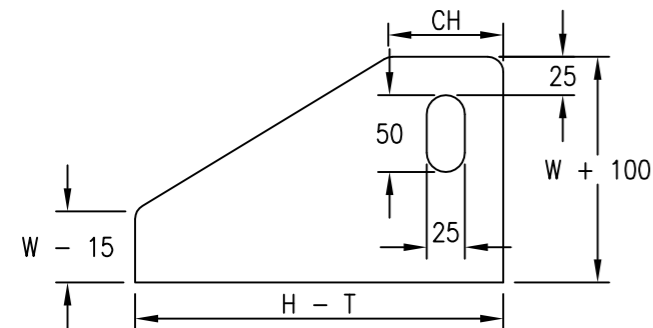
NO THERMAL CUTTING TOOLS TO BE USED THIS EXCLUSION INCLUDES BUT IS NOT LIMITED TO:

- OXY-FUEL TORCHES
- ARC-AIR TORCHES
- PLASMA CUTTERS

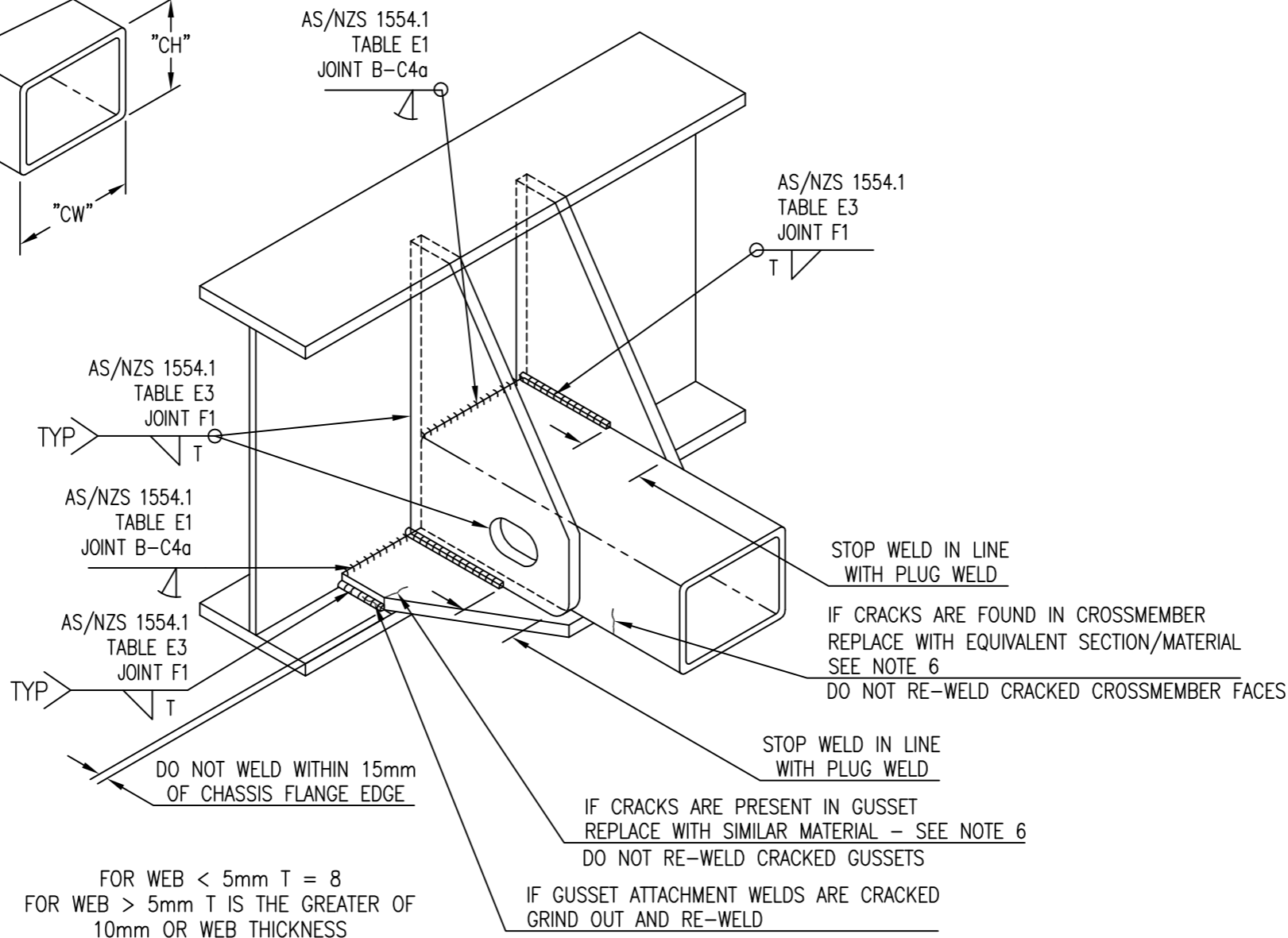
ATTACHMENT AREA SURFACE TO BE CAREFULLY EXAMINED FOR CRACKS AFTER REMOVAL. ANY CRACKS FOUND TO BE REFERRED TO AN ENGINEER WITH THE CHASSIS CATEGORY



UNDERSIDE MOUNTING PLATE
2 REQUIRED PER XMEMBER



CROSSMEMBER GUSSET
4 REQUIRED PER XMEMBER



FOR WEB < 5mm T = 8
FOR WEB > 5mm T IS THE GREATER OF
10mm OR WEB THICKNESS

OWNER			
MAKE		MODEL	
CERTIFIER		CERT. No.	

C			
B	09/07/19	UPDATE FOR ISSUE IN NZTA VIRM	
A		FIRST ISSUE TO CLIENT	
ISSUE DATE	CHANGES MADE		BY

ITEM	QTY	MATERIAL	DESCRIPTION	DRAWING
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ttmf
N7 Truck Trailer Manufacturers Federation Inc

REPLACEMENT OR REPAIR OF TRAILER CROSSMEMBER
Fy < 350 MPa

4 - MRCP - C002

Sheet: 1/1

Drawn: R.F.	Issue: B	Chkd:
Scale: NTS	Date: 16/9/2015	Date:

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Job: 12726

Ref: MRCP-C002

Extract taken: from NZTA Vehicle Portal > VIRMs > Heavy vehicle specialist certification > Additional topics > Recertification of drawbeams and drawbars of known identity

12-3 Recertification of drawbeams and drawbars of known identity

Certifier categories: HVET | HMTD

Flow diagram

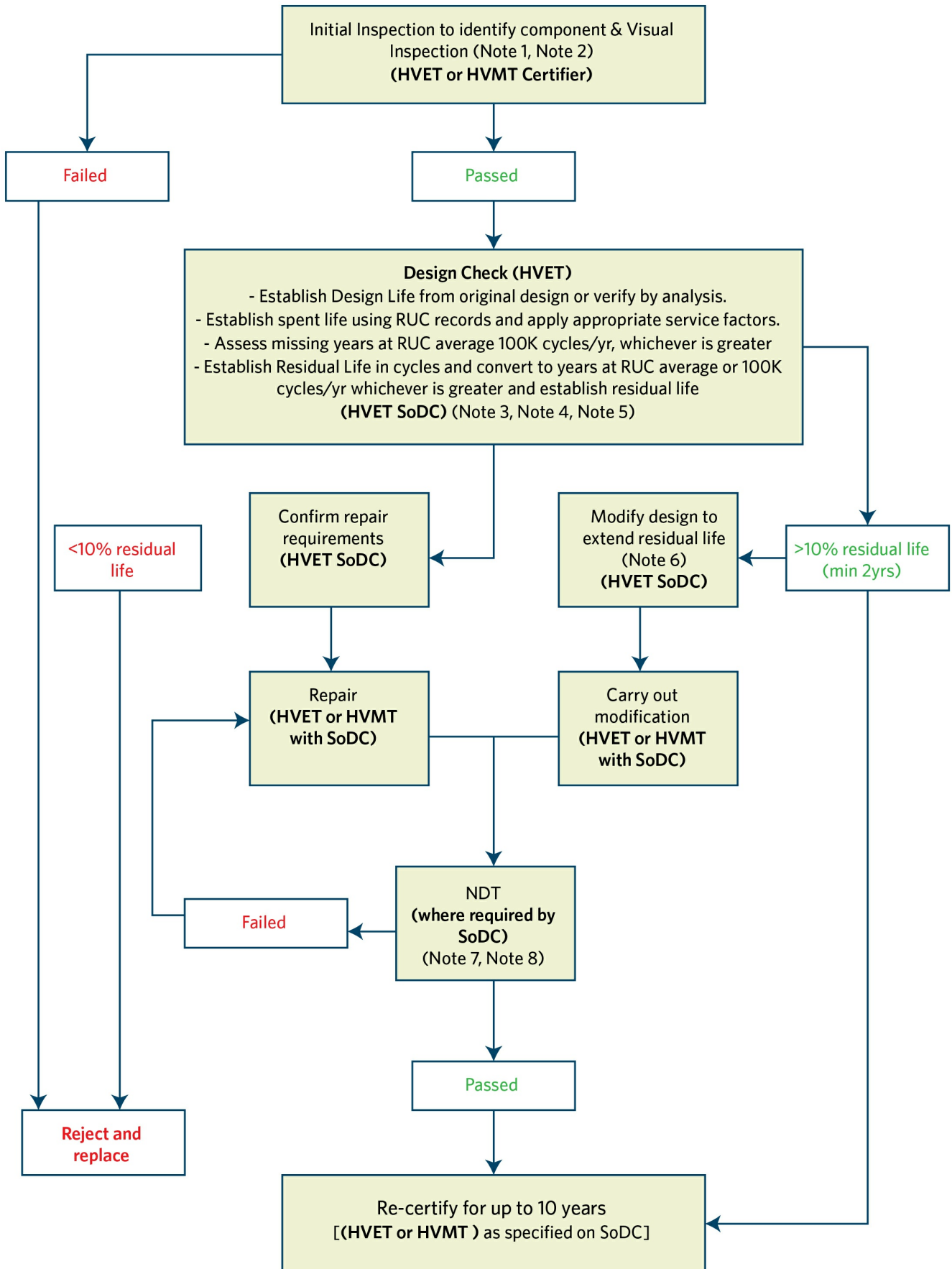
Re-certification of drawbars and drawbeams with **unknown** identity

If the original date of manufacture and attachment to the vehicle of a drawbar/beam/towbar **cannot be determined**, the component **must not be re-certified**.

If the identity of a drawbar or drawbeam cannot be established, then the design details and fatigue history of the components cannot be reliably ascertained. This means re-certification according to the current version of the re-certification process cannot be carried out.

Figure 12-3-1. Re-certification of drawbars and drawbeams of known identity

- For easy reference, download [Re-certification of drawbars & drawbeams of known identity](#)



Note 1

A complete visual inspection of the components must be carried out, either by a specialist engineering certifier (HVET) or a manufacturing certifier (HMTD) to identify the component and its original certifier. This must include the assessment of all welding details and must establish or verify the dimensions and material sections that are relevant to the re-certification. It must also include the details of any repairs or modifications carried out. All findings of the inspection must be recorded as part of the re-certification and must be sent to the specialist engineering certifier so those findings can be taken into account.

Note 2

Re-certification by an HMTD manufacturing certifier can only be carried out with reference to the original manufacturing drawings for that component. The HMTD must have a SoDC from an HVET engineering certifier that references the original manufacturing drawings, confirming the residual life and repair requirements (if necessary). There must be a separate SoDC for each recertification by an HMTD and the SoDC must be VIN specific. The SoDC must be produced specifically for the recertification, it is not acceptable to rely on the SoDC under which the component was originally certified. The HMTD is responsible for confirming that the component complies with the drawings, and isn't modified, worn, cracked or damaged.

Note 3

The design check (full stress analysis) must always be carried out unless the re-certification is carried out by the HVET who originally designed/certified the item. In such cases, the HVET must have full records of the original calculations and must be able to demonstrate, when requested, that those calculations are correct. If repair or modification has been carried out then the HVET must carry out a full stress analysis unless they were both the original certifier and the certifier of the repair and/or modification.

Note 4

Where the flowchart requires the fatigue load history of a component to be determined, it must be based on the distance traveled, supported by documented evidence such as RUC or CoF records, etc. When assessing the fatigue load cycles for vehicles with low annual road mileage but considerable off highway or extreme highway mileage (such as loggers, bulk tippers, fertiliser spreaders etc.), the HVET must take into account, for example by using suitable dynamic factors such as the higher dynamic loads or higher fatigue frequencies, the higher stresses that are associated with the operational circumstances.

Note 5

A drawbar or drawbeam may be re-certified for up to 10 years. When doing so, the HVET must not consider the current operational circumstances (which may mean relatively lower annual mileage). The fatigue-based approach of NZS 5446, which considers 2 million cycles during an expected life of 20 years, must be followed, with appropriate adjustments made for arduous conditions.

Note 6

Where a drawbar or drawbeam was originally manufactured under a previous version of the Standard it may be recertified under that same Standard, however, if it is modified it is to be upgraded to meet the requirements of the latest version of the Standard.

Note 7

The HVET must make a decision, as to the type of NDT required and the specific points and areas of the component that must be tested. Where the repair is the result of fatigue type failure then NDT inspection **MUST** be specified to ensure all fatigue induced imperfections have been removed. All stress risers must be addressed by appropriate strengthening, reinforcement or finishing. When selecting the type of NDT to be carried out, and when the test results, including the imperfections and weld quality are evaluated, AS/NZS 1554 must be taken into account.

Note 8

Where NDT is specified, all relevant details of the NDT, such as the recommendation of the Inspector, the decision of the HVET and the test report of the Inspector must be recorded as part of the re-certification.

Summary of legislation

Applicable references

- AS 3990: , Mechanical Equipment – Steelwork
- AS/NZS 1554 Welding
- AS/NZS 2980, Qualification of welders for fusion welding of steels
- NZS5446, Code of Practice for Heavy Motor Vehicle Towing Connections: Drawbar Trailers
- NZS5467: Code of Practice for Light Trailers.

Applicable legislation

- [Land Transport Rule: Heavy Vehicles 2004.](#)

Extract taken: from NZTA Vehicle Portal > VIRMs > Heavy vehicle specialist certification > Technical bulletins > HV manufacturer certifier (HMxD) use of design certificates for batch built or standard components

5 HV manufacturer certifier (HMxD) use of design certificates for batch built or standard components

This technical bulletin replaces memo 65.

The following are examples where a design certificate (DC) can be used by an HV manufacturer certifier (HMxD) for batch built or standard components:

- An HVSC may provide a HV manufacturer certifier (HMxD) certifier ([Note 1](#)) with a single design certificate (DC) for seat belt anchorages fitted to heavy motorhomes, towbars or drawbeams fitted to heavy vehicles, provided that the DC is for specific vehicles (of the same make, model, sub-model) and specifies a fitting envelope which allows the design (once fitted to the vehicle) to meet all the design requirements of the relevant standards.
- This approval is extended to manufacturers who want to build certifiable components (eg load anchorages) in a batch and store them until they are fitted to a vehicle. These components may be built to a DC and certified, using an LT400 when fitted.
- A HVxD certifier may accept and use such a DC from a HVSC provided that any and all restrictions placed on the design are met. These restrictions may include limiting the DC to specific makes, models or fitting locations, numbers of vehicles or any other restriction the HVE certifier might apply. The HMxD engineering certifier must not go outside the requirements of the DC.

In these circumstances the HVSC takes responsibility for the design and that it is of sufficient strength and durability to do the job in the proposed application or applications. The following apply:

- The HVSC is responsible for any failure of the component that is not linked to faulty manufacture.
- The HMxD certifier takes responsibility for the manufacture and that all manufacturing instruction from the HVSC issuing the DC are met in full.
- Any fault linked to the manufacture of the component or its inappropriate installation are the sole responsibility of the HMxD certifier.

Additional points to provide clarification to HMxD certifiers

- Load anchorages and other standard fittings may not require a DC from a HVSC if they are manufactured or fitted to the relevant Standard. However, they may require specialist certification or a DC for the load path back to the chassis if this is not covered in the Standard or the vehicle manufacturer's body builders' manual. The HMxD certifier takes responsibility for both the manufacture and fitting of any component built against a DC.

Note 1

The following categories are summarised by (HVxD):

HMAD: Heavy Vehicle Manufacturer Certifier – Load anchorages

HMKD: Heavy Vehicle Manufacturer Certifier – Brakes

HMCD: Heavy Vehicle Manufacturer Certifier – Chassis

HMLD: Heavy Vehicle Manufacturer Certifier – Log bolster attachment

HMTD: Heavy Vehicle Manufacturer Certifier – Towing connections