SPECIFICATION 405

DRAINAGE STRUCTURES

REVISION REGISTER			
Clause Number	**Description of Revision**	**Authorised By**	**Issue Date**
Guidance Notes	Change of Custodian	MRTE	06/08/2021
405.02	Added reference to National Code of Practice for the safe removal of Asbestos	SRE	21/10/2019
405.03	Added new definition for Asbestos Containing Material	SRE	21/10/2019
405.36,405.37, 405.38,405.39	Added requirements relating to Asbestos Containing Material (ACM)	SRE	21/10/2019
Guidance Note 4	Additional Guidance Note relating to Specification 203 Occupational Safety and Health	SRE	21/10/2019
405.02, 405.29, 405.31, 405.33.2, 405.34.01.3, 405.34.01.5, 405.34.02.2	Standards and clauses updated	SRE	20/03/2019
Whole document	Reformatted	SCO	01/05/2017
Guidance Notes	Amended note incorrectly shown as Clause	SRE	24/06/2011
Whole document	Updated / amended referenced documents. Amended compressive strength for bricks and amended wall thickness requirements. Revised Clauses for consistency with Specification 404.	SRE	06/02/2009
Whole document	Complete revision of Issue No 2.2 to new format	MCP	01/08/2006

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SPECIFICATION 405

DRAINAGE STRUCTURES

GENERAL

405.01 SCOPE

1. The work under this specification consists of the supply and installation of minor road drainage structures including gullies, manholes and catchpits.

405.02 REFERENCES

1. Australian Standards, MAIN ROADS Western Australia Standards and MAIN ROADS Western Australia Test Methods are referred to in abbreviated form (e.g. AS 1234, MRS 67-08-43 or WA 123). For convenience, the full titles are given below:

Australian/New Zealand Standards

AS/NZS 1554.1	Structural steel welding - Part 1: Welding of steel structures
AS/NZS 3679.1	Structural steel - Part 1: Hot-rolled bars and sections
AS/NZS 4058	Precast concrete pipes (pressure and non-pressure)
AS/NZS 4456.4	Masonry units and segmental pavers and flags - Methods of test - Method 4: Determining compressive strength of masonry units
AS/NZS 4456.10	Masonry units and segmental pavers and flags - Methods of test - Method 10: Determining resistance to salt attack
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles

Main Roads Test Methods

WA 115.2	Particle Size Distribution: Abbreviated Method for Coarse and Medium Grained Soils

Other Standards

NOHSC:2002	National Code of Practice for the Safe Removal of Asbestos

Main Roads Specifications

Specification 201	QUALITY SYSTEMS

Specification 203 OCCUPATIONAL SAFETY AND HEALTH

Specification 204 ENVIRONMENTAL MANAGEMENT

Specification 302 EARTHWORKS

Specification 404 CULVERTS

Specification 410 LOW STRENGTH INFILL

Specification 501 PAVEMENTS

Specification 503 BITUMINOUS SURFACING

Specification 504 ASPHALT SURFACING

Specification 901 CONCRETE - GENERAL WORKS

405.03 DEFINITIONS

1. Asbestos Containing Material (ACM) has the same meaning as detailed in the National Code of Practice for the Safe Removal of Asbestos

Asbestos Containing Material

405.04 – 405.05 NOT USED

PRODUCTS AND MATERIALS

405.06 CONCRETE

1. All in-situ concrete shall be supplied in accordance with Specification 901 CONCRETE - GENERAL WORKS unless otherwise detailed.

Supply

405.07 REINFORCEMENT

1. Reinforcing steel shall conform to the relevant requirements of AS/NZS 4671 for both Plain Steel Reinforcing Bars and Hard Drawn Steel Wire Reinforcing Fabric.

Steelwork

2. The cleaning, binding, fixing and tying of all reinforcement shall be completed as specified in Specification 901 CONCRETE - GENERAL WORKS.

Fixing

405.08 MANHOLES, GULLIES AND CATCHPITS

405.08.01 MANHOLE, GULLY AND CATCHPIT COVERS AND FRAMES

1. Manhole, gully and catchpit covers and frames shall be manufactured from pre-cast concrete and mild steel plates to the shapes and sizes shown in the Drawings.

Covers & Frames

2. Mild steel plates and sections shall be of Grade 300 steel in accordance with AS/NZS 3679.1.

Steel Grade

3. All welds shall be 6 mm continuous fillet welds in accordance with AS/NZS 1554.1 unless otherwise detailed on the Drawings.

Welds

4. All mild steel components shall be hot dipped galvanised after fabrication in accordance with AS/NZS 4680. ***Galvanising***

5. Manhole, gully and catchpit covers should be flush with the frame with a maximum allowable vertical tolerance of ± 3 mm. ***Tolerances***

6. Manhole, gully and catchpit covers shall fit tightly within their frames with the total gap between the cover and their frame in any direction not be greater than 5 mm

405.08.02 MISCELLANEOUS STEEL DETAILS

1. Miscellaneous steel details such as gully hoods shall be manufactured from mild steel conforming to AS/NZS 3679.1and where required, hot dipped galvanised conforming to the requirements of AS/NZS 4680 except that the zinc coating shall weigh not less than 600 grams per square metre of actual surface area. ***Steel***

405.08.03 BRICKS

1. All bricks shall be 230 mm x 110 mm x 76 mm nominal size, sound, hard, well burnt and true to shape and dimensions. All bricks shall be solid brick having durability classification ‘Exposure’ in accordance with AS/NZS 4456.10 and have minimum characteristic unconfined compressive strength of 16 MPa in accordance with AS/NZS 4456.4. ***Size & Strength***

405.08.04 PRECAST CONCRETE LINERS

1. Pre-cast liner segments shall be manufactured as concrete pipes to AS/NZS 4058.

2. Reinforcement shall be the same as that for the equivalent Class ‘2’ RCP, but shall be circular. ***Reinforcement***

3. Pre-cast concrete liner wall thickness shall as a minimum permit concrete cover to reinforcement to be in accordance with Specification 404 – CULVERTS for reinforced concrete pipes (RCPs). ***Wall Thickness***

4. Load testing will not be required. ***Load Testing***

405.09 SELECT BEDDING MATERIAL

1. Select bedding material shall be basecourse material, or other suitable material approved by the Superintendent, containing less than 20% by mass material retained on the 37.5 mm sieve as determined by MRWA Test Method WA 115.2

405.10 – 405.25 NOT USED

INSTALLATION

405.26 GENERAL

1. The installation of drainage structures shall include all excavations, construction and backfill to the details shown on the Drawings and as described in this Specification.

405.27 EXCAVATIONS

1. The hole for the installation of the drainage structure shall be excavated to the extent permitting installation in accordance with the Drawings, with vertical sides throughout where the excavation is up to 1.5 metres deep. ***< 1.5m Depth***

2. Where the excavation is greater than 1.5 metres deep, the hole shall be excavated in accordance with the Drawings for pipes having trench excavation greater than 1.5 metres deep. Any loose or disturbed material shall be removed from the walls of the excavation. ***> 1.5m Depth***

3. All spoil material from excavations shall be disposed of in accordance with Specification 302 EARTHWORKS. ***Unsuitable Material***

4. Excavations shall be kept free from water until work below ground level is sufficiently set or protected. Dewatering operations shall be undertaken in accordance with Specification 204 ENVIRONMENT, and water discharged from trenches shall in no circumstances be disposed of to sanitary sewers. ***Dewatering***

5. Excavation in rock shall be carried out in accordance with Specification 302 EARTHWORKS.

405.28 BLASTING

1. Any requirement for blasting shall be carried out in accordance with Specification 302 EARTHWORKS. ***Blasting***

405.29 PROTECTION OF FOUNDATION SURFACES

1. The exposed surface at the bottom of each excavation shall be adequately protected from any disturbance by the Contractor's operations or any action from stormwater and groundwater. Where required, dewatering shall be undertaken in accordance with the requirements of Specification 204 ENVIRONMENT. Any disturbance shall be reinstated to the requirements of Clause 405.30 'Bedding' by the Contractor at no cost to the Principal. ***Exposed Surface***

405.30 BEDDING

1. Unless shown otherwise on the Drawings, drainage structures shall be bedded on the in-situ foundation material, which has been compacted to the requirements specified for 'Embankment Foundation' in Specification 302 EARTHWORKS, with a testing frequency in accordance with Specification 201 QUALITY SYSTEMS. ***In-situ Bedding***

2. In-situ bedding material deemed unsuitable by the Superintendent shall be removed to the depth as directed and replaced with a suitable bedding material prior to the laying of the base slab. ***Unsuitable Material***

3. The bedding material shall be compacted to the Characteristics Dry Density Ratio as specified for 'Embankment Construction' in Specification 302 EARTHWORKS, with a testing frequency in accordance with Specification 201 QUALITY SYSTEMS. ***Select Bedding Material***

405.31 HANDLING OF PRECAST UNITS

1. Pre-cast units shall be handled and installed in such a manner that no non-conforming cracking or any other non-conforming defect occurs outside the acceptable limits given in Specification 404 CULVERTS Annexure 404B. Damaged pipe and box culverts shall be repaired or replaced in accordance with Annexure 404B and Annexure 404C at no cost to the Principal. ***Damaged Concrete Units***

405.32 BACKFILL AND COMPACTION

1. **Prior to backfilling the Contractor shall certify to the Superintendent that compliance has been achieved with all specified requirements.** ***HOLDPOINT***

2. Unless otherwise shown on the Drawings backfill material up to sub-grade level shall be embankment material placed and compacted to the requirements as specified for 'Embankment Construction' in Specification 302 EARTHWORKS, with a testing frequency in accordance with Specification 201 QUALITY SYSTEMS. ***Below Subgrade***

3. Unless otherwise shown on the Drawings backfill material above sub-grade level shall be pavement material placed and compacted in accordance with Specification 501 PAVEMENTS, with a testing frequency in accordance with Specification 201 QUALITY SYSTEMS. ***Above Subgrade***

4. Backfilling and compaction of stormwater drains shall be carried out in accordance with Specification 404 CULVERTS. All conduits connecting to the drainage structure that are damaged by the backfilling and compaction processes used by the Contractor, shall be repaired or replaced at no cost to the Principal. ***Damage***

405.33 PAVEMENT REINSTATEMENT

1. Where a structure is constructed within an existing road pavement, the pavement on the existing road shall be reinstated by the construction of the appropriate pavement layers with thicknesses as shown in the Drawings. ***Reinstatement***

2. The edges of the excavation shall be saw cut straight and the excavation backfilled to the requirements of Clauses 405.26 'General' and 405.32 'Backfill and Compaction' respectively. The pavement layer(s) shall be constructed to the relevant requirements of Specification 501 PAVEMENTS. ***Edges & Pavement***

3. Bituminous surfacing and asphalt shall be applied in accordance with requirements of Specification 503 BITUMINOUS SURFACING and Specification 504 ASPHALT SURFACING respectively, with the top surface finished level with the surrounding existing sealed surface. ***Surfacing***

4. A waterproof seal shall be placed between the new and the old surfaces. ***Waterproof Seal***

405.34 DRAINAGE STRUCTURES

405.34.01 GENERAL

1. Drainage structures shall be installed as the Works proceed and shall be effectively sealed at joints and connection point against the ingress of water and other kinds of materials.

2. Drainage structures shall be constructed for details and location as specified in the Drawings to a horizontal tolerance of ± 25 mm. The bases shall be placed on firm uniformly compacted and finished bedding as specified in Clause 405.30 BEDDING. ***Tolerances***

3. Inlet and outlet invert levels shall be as shown in the Drawings to a vertical tolerance of ± 10 mm. ***Level Tolerances***

4. The finished level of manholes, gullies and catchpits should be flush with the finished level of surrounding area. The maximum allowable vertical tolerance is ± 3 mm ***Finished Surface Tolerance***

5. Any drainage structure which is not true to line, or level, or shows settlement after laying, or which is damaged during backfilling, compaction or subsequent operations, shall be removed by the Contractor and replaced at no cost to the Principal. ***Replacement***

405.34.02 IN-SITU CONCRETE DRAINAGE STRUCTURES

1. Unless otherwise shown on the Drawings, all in-situ concrete shall be Class N32, supplied and placed in accordance with Specification 901 CONCRETE - GENERAL WORKS and to the details shown on the Drawings. ***Concrete***

2. The base concrete slab shall be laid first. Pipes entering the structure shall be trimmed to length if necessary, supported on the slab and secured at their correct location and level and the walls built up around them. Any reinforcement exposed at the ends of the cut pipes shall be treated with an approved Epoxy mortar.

3. All inlet and outlet pipes shall be solidly grouted in place to affect a watertight closure using a cement mortar of one (1) part Portland cement and three (3) parts sand. ***Grouting***

4. Special care shall be taken to bring the top of the walls to a good finish so that the cover slabs may be accurately seated with a minimum thickness of mortar bed. ***Finish***

5. All holes shall be completely filled with cement mortar consisting of one (1) part Portland cement and three (3) parts sand and all joints neatly pointed inside and outside. ***Holes***

6. On completion of the walls to the required height the reinforced cover slab may be placed in position. The opening in the cover slab shall be closed with a suitable temporary cover before backfilling is completed. ***Cover Slab***

7. All sheeting braces and similar temporary supports shall be entirely removed from the excavation prior to backfilling. Removal shall be effected in such a way so as not to disturb or displace the drainage structure. ***Temporary Support***

8. No backfill shall be placed behind in-situ drainage structures within seven days of concrete being placed. ***Concrete Strength***

405.34.03 BRICK CONSTRUCTION

1. Unless otherwise detailed on the Drawings the provisions relating to in-situ concrete drainage structures shall apply to drainage structures of brick construction where such method is a specified alternative.

2. Bricks shall be well wetted before use and every course shall be set in a full bed of cement mortar with all joints solidly filled. Walls shall be properly bonded, fair faced and flush pointed internally. ***Pointing***

3. No bats or broken bricks will be allowed, except where necessary for closers. Mortar joints shall not be thicker than 10 mm, but some variation is permissible where brickwork is used to adjust the height and slope of catchpit and gully frames. ***Mortar Thickness***

405.34.04 PRECAST CONCRETE LINERS

1. Unless otherwise detailed on the Drawings the provisions relating to in-situ concrete drainage structures shall apply to those of precast concrete liner construction wherever relevant.

2. Holes of sufficient size to accommodate entry and exit pipes shall be cut or punched out in accordance with the manufacturer's published requirements without cracking the liner or causing unnecessary damage. The hole to accommodate the pipe shall be no greater than the pipe diameter plus 100 mm. Cement mortar, or an approved Epoxy mortar shall be used in sealing around holes formed in structures to accommodate entry and exit conduits. ***Liner Holes***

405.35 STEP IRONS

1. Where the depth of manholes and gullies are greater than one metre, step irons shall be provided at 300 mm intervals in height unless otherwise shown on the Drawings.

405.36 REMOVAL OF EXISTING DRAINAGE STRUCTURES

1. Where detailed on the Drawings, redundant drainage structures located under roadways shall be removed. ***Removal***

2. Existing drainage structures nominated by the Principal as requiring demolition or removal that contain or potentially contain asbestos are nominated in SPECIFICATION 203 OCCUPATIONAL SAFETY AND HEALTH. Management of these existing drainage structures shall be in accordance with SPECIFICATION 203 OCCUPATIONAL SAFETY AND HEALTH. ***Asbestos Containing Material***

3. If an existing drainage structure does not contain Asbestos Containing Material it shall be disposed of by the Contractor to the Contractor’s disposal site, or an authorised waste disposal site or a site approved by the relevant Local Government Authority.

4. Voids left from the removal of a drainage structure, not intended to be replaced shall be backfilled and compacted with embankment quality material in accordance with Specification 302 EARTHWORKS or Pavement Material in accordance with Specification 501 PAVEMENTS, as required by this Specification. ***Voids***

405.37 DAMAGE TO EXISTING STRUCTURES

1. If during construction of the Works, the Contractor causes damage to any drainage structure that is not to be removed or disturbed, the Contractor shall adhere to the requirements of SPECIFICATION 203 OCCUPATIONAL SAFETY AND HEALTH relating to Asbestos Containing Material.

2. Where the existing drainage structure does not contain Asbestos Containing Material, the Contractor shall repair the damage or replace the damaged drainage structure to the requirements of this Specification at no extra cost to the Principal.

405.38 ADJUSTMENTS OF EXISTING GULLY GRATES AND MANHOLE COVERS

1. Where existing gully grates and manholes need to have the levels adjusted to suit the Works, level adjustments up to a maximum of 50 mm are acceptable by using an approved mortar.

405.38.01 PRE-CAST LINERS

1. For adjustments greater than 50 mm either spacer rings, cutting of the existing liner or cutting of additional nominal length liners shall be used. The Contractor shall adhere to the requirements of SPECIFICATION 203 OCCUPATIONAL SAFETY AND HEALTH relating to Asbestos Containing Material for all cutting of existing liners. All cutting of either the existing liner or the spacer rings shall be undertaken such that the cuts are square to the length.

2. The reinforcement exposed at the ends of the cut liners shall be treated with an approved Epoxy mortar.

405.38.02 BRICK STRUCTURES

1. For level adjustments from 60 mm to 86 mm, 50 mm high bricks shall be used.

2. For level adjustments greater than 86 mm, additional 76 mm high bricks shall be added to the structure up to a maximum of six courses. Alternatively a conversion slab and precast spacer rings and/or liners can be used to adjust the levels.

405.38.03 CONCRETE CAST IN-SITU STRUCTURES

1. For level adjustments from 60 mm to 86 mm, 50 mm high bricks shall be used.

2. For level adjustments greater than 86 mm, additional 76 mm high bricks shall be added to the structure up to a maximum of six courses. Alternatively a conversion slab and precast spacer rings and/or liners can be used to adjust the levels.

405.39 BREAKING INTO AN EXISTING STRUCTURE

1. Where shown on the Drawings existing drainage structures shall be broken into and new pipes installed. The Contractor shall adhere to the requirements of SPECIFICATION 203 OCCUPATIONAL SAFETY AND HEALTH relating to Asbestos Containing Material for all breaking into existing drainage structures.

2. When breaking into the structure, holes of sufficient size to accommodate the new pipes shall be cut or punched out without causing any unnecessary damage to the structure. The hole to accommodate the pipe shall be no greater than the pipe diameter plus 100 mm. Cement mortar or an approved Epoxy mortar shall be used in sealing holes around the new pipe to affect a watertight closure.

3. Any damage to the structure during the installation of new pipes shall be repaired by the Contractor at no cost to the Principal.

405.40 NEW STRUCTURE WITH EXISTING PIPES

1. Drainage structures shall be constructed on existing drainage lines where shown on the Drawings. The Contractor shall adhere to the requirements of SPECIFICATION 203 OCCUPATIONAL SAFETY AND HEALTH relating to Asbestos Containing Material for all breaking into existing drainage lines.

2. When breaking into existing drainage lines, cutting of the existing pipes shall be made square to the pipe.

3. The reinforcement exposed at the ends of the cut pipes shall be treated with an approved Epoxy mortar.

405.41 CLEANING

1. **Prior to the Superintendent's inspection and commissioning, all drainage structures shall be completely cleaned of any material left over as a result of the construction process upon completion of the Works.** ***HOLD POINT***

405.42 STORMWATER DRAINS

1. Supply and installation of connecting stormwater drains shall be in accordance with the Drawings and Specification 404 CULVERTS

405.43 – 405.80 NOT USED

AS BUILT AND HANDOVER REQUIREMENTS

405.81 – 405.90 NOT USED

CONTRACT SPECIFIC REQUIREMENTS

405.91 – 405.99 NOT USED

GUIDANCE NOTES

FOR REFERENCE ONLY – DELETE GUIDANCE NOTES FROM FINAL DOCUMENT

1. All edits to downloaded Specifications shall be made using *Track Changes*, to clearly show added/deleted text.

2. If **all** information relating to a clause is deleted, the clause number should be retained and the words **"NOT USED"** should be inserted.

3. The proposed documents with tracked changes shall be submitted to the Project Manager for review, prior to printing the final batch of documents. When this final printing is carried out, the tracked changes option is to be turned off.

4. Before printing accept all changes in the document, turn off *Track Changes* and refresh the Table of Contents.

5. The Custodian of this specification is Principal Design Engineer (Drainage).

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1. WALL THICKNESS (Clause 405.08.04.3)

1.1. Where Specification 404 CULVERTS (Annexure 404A) specifies that the in-situ ground conditions for Reinforced Concrete Pipe are "Aggressive" the minimum concrete cover to steel reinforcement shall be 20 mm in accordance AS/NZS 4058. As such 900 mm diameter liners should not be used in aggressive environment as the typical wall thickness does not allow 20 mm cover to be achieved. In such circumstances 1050 mm diameter liners should be specified instead.

2. PRECAST CONCRETE LINERS (Clause 405.34.04.2)

2.1. There is a practical limit as to the number and size of holes which can be safely punched into the walls of the liner to accommodate entry and exit drainage conduits without compromising wall strength. Where the manufacturer's published requirements differ to those shown on the Drawings then the Contractor shall use the more stringent requirements.

3. DEWATERING (Clause 405.27.4 and/or 405.29.1)

3.1. Where the requirement for dewatering exists then Clause 204.94 in Specification 204 – ENVIRONMENT (Specification 204 Guidance Notes) shall be added to the Contract Specific Requirements of that document.

4. SCHEDULE OF EXISTING DRAINAGE STRUCTURES AND PIPES THAT MAY CONTAIN ASBESTOS CONTAINING MATERIAL (ACM) in SPECIFICATION 203 OCCUPATIONAL SAFETY AND HEALTH

4.1. In the schedule in SPECIFICATION 203 OCCUPATIONAL SAFETY AND HEALTH include existing drainage structures and pipes that are being removed or substantially disturbed where the drainage structure or pipe is manufactured from a concrete (or similar) product (i.e. excluding brick and blockwork drainage structures, PVC, HDPE and circular steel pipes) and:

a. there is reasonable grounds to believe that they were constructed in 2003 or earlier (refer to IRIS and/or As Constructed Drawings for further information); and

b. testing of the drainage structures and pipes for ACM has not been conducted or testing has confirmed the presence of ACM.

4.2. For drainage structures, include diameters and depths

4.3. For pipes, include diameters.

4.4. In comments column, minimum detail should state whether testing for ACM has been conducted and if it has been conducted, confirm the presence of ACM, along with reference to further information.

CONTRACT SPECIFIC REQUIREMENTS

The following clauses are to be placed under the CONTRACT SPECIFIC REQUIREMENTS, as required. After inserting the clause, change the clause number and heading to style “H2 SP” so it appears in the Table of Contents.

1. RE-USEABLE REDUNDANT DRAINAGE STRUCTURES

The following Clause concerns the removal and storage of re-usable redundant drainage structures. If required, Clause 405.91 should be added and Annexure 405A as shown below also needs to be inserted on a separate page following Clause 405.91 and completed:

405.91 RE-USABLE REDUNDANT STRUCTURES

1. Where redundant drainage structures are located under roadways, such structures shall be removed by the Contractor, and if deemed suitable for re-use by the Superintendent, shall be delivered to the storage area nominated in Annexure 405A.

2. Damaged or unusable drainage structures shall be disposed of by the Contractor to the Contractors disposal site approved by the Superintendent. ***Damaged***

2. LOW STRENGTH INFILL FOR REDUNDANT STRUCTURES

The practice of infilling redundant drainage structures with low strength infill should be discouraged as the locations of redundant structures are rarely monitored and subsequent service checks are not likely to show their location, resulting in unnecessary delays if exposed in future works. Should their removal not be possible, then Clause 404.92 below should be added:

405.92 LOW STRENGTH INFILL

1. Where detailed on the Drawings, redundant drainage structures shall be filled with low strength concrete infill in accordance with Specification 410 LOW STRENGTH INFILL.

ANNEXURE 405A

EXISTING DRAINAGE STRUCTURES

1. STORAGE OF REMOVED STRUCTURES

1.1 Removed and reusable drainage structures shall be transported and neatly stacked at the following location:

AMENDMENT CHECKLIST

Specification No. **405** Title: **DRAINAGE STRUCTURES** Revision No:_____

Project Manager:_____ Signature:_____ Date:_____

Checked by:_____ Signature:_____ Date:_____

Contract No:_____ Contract Description:_____

ITEM	DESCRIPTION	SIGN OFF
Note: All changes/amendments must be shown in Tracked Changes mode until approved.		
1.	Project Manager has reviewed Specification and identified Additions and Amendments.	
2.	**CONTRACT SPECIFIC REQUIREMENTS** addressed? Contract specific materials, products, clauses added? (Refer Specification Guidance Notes for guidance).	
3.	Any unlisted materials/products proposed and approved by the Project Manager? If "Yes" provide details at 16.	
4.	Standard clauses amended? **MUST SEEK** approval from Manager Contracts	
5.	Clause deletes shows as **"NOT USED"**.	
6.	Appropriate **INSPECTION AND TESTING** parameters included in Spec 201 (Text Methods, Minimum Testing Frequencies verified).	
7.	**ANNEXURES** completed (refer Specification Guidance Notes).	
8.	**HANDOVER** and **AS BUILT** requirements addressed.	
9.	Main Roads QS has approved changes to **SMM**.	
10.	Project Manager certifies completed Specification reflects intent of the design.	
11.	Completed Specification – independent verification arranged by Project Manager.	
12.	Project Manager's review completed.	
13.	**SPECIFICATION GUIDANCE NOTES** deleted.	
14.	**TABLE OF CONTENTS** updated.	
15.	**FOOTER** updated with Document No., Contract No. and Contract Name.	
16.	Supporting information prepared and submitted to Project Manager.	
Further action necessary:		

Signed:_____ *(Project Manager)* Date:_____