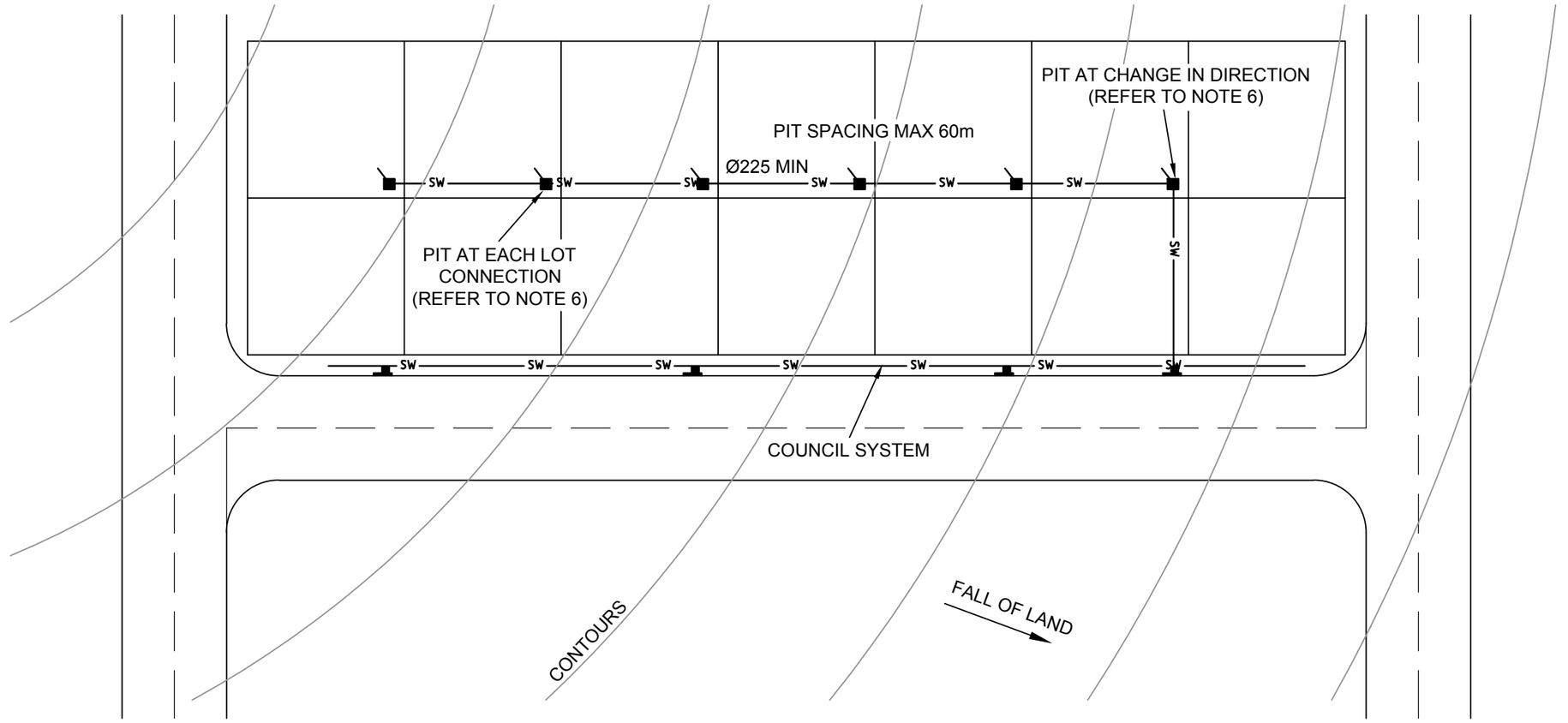


PLAN

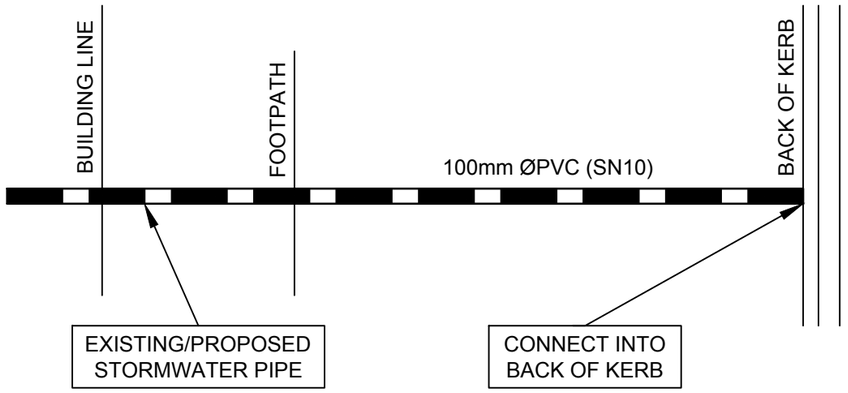
NOTES

1. STANDARD INTER-ALLOTMENT STORMWATER DRAINAGE IS CONSIDERED OWNED BY AND IS TO BE MAINTAINED THOSE BENEFITING FROM THE SYSTEM.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. LOCATE INSPECTION OPENINGS IN ACCORDANCE WITH APPROVED DESIGN DRAWING REQUIREMENTS.
4. ALL CONNECTION TYPES SHOWN IN THIS DRAWING ARE APPLICABLE TO RPP, FRC, RCP UNLESS OTHERWISE SHOWN.
5. PIT SHALL BE IN ACCORDANCE WITH ARC STANDARD DRAWINGS (MIN. 600 x 600 INTERNAL DIMENSIONS). PITS DEEPER THAN 1.2m ARE TO BE 900 X 900 WITH STEP IRONS.
6. PITS SHALL BE CONSTRUCTED FOR EACH ALLOTMENT CONNECTION AND AT ALL CHANGES IN DIRECTION. MAXIMUM DISTANCE BETWEEN PITS SHALL BE NO GREATER THAN 60m.
7. ALIGNMENT OF INTER-ALLOTMENT DRAINAGE IS TO BE A MINIMUM OF 1m FROM THE BOUNDARY AND CONTAINED IN AN EASEMENT OF AT LEAST 2m WIDE. WHERE DISCHARGE FROM A PUBLIC ROAD / RESERVE IS TO BE CARRIED THROUGH THE SYSTEM, DIMENSIONS ARE TO BE AMENDED TO A MINIMUM OF 1.5m AND 3m RESPECTIVELY.
8. WIDER EASEMENTS MAYBE REQUIRED FOR OVERLAND SYSTEMS OR LARGER OR DEEPER PIPED SYSTEMS.
9. CONSIDERATION WILL BE GIVEN TO REDUCE THE EASEMENT WIDTH IN CONSTRAINED SITES.

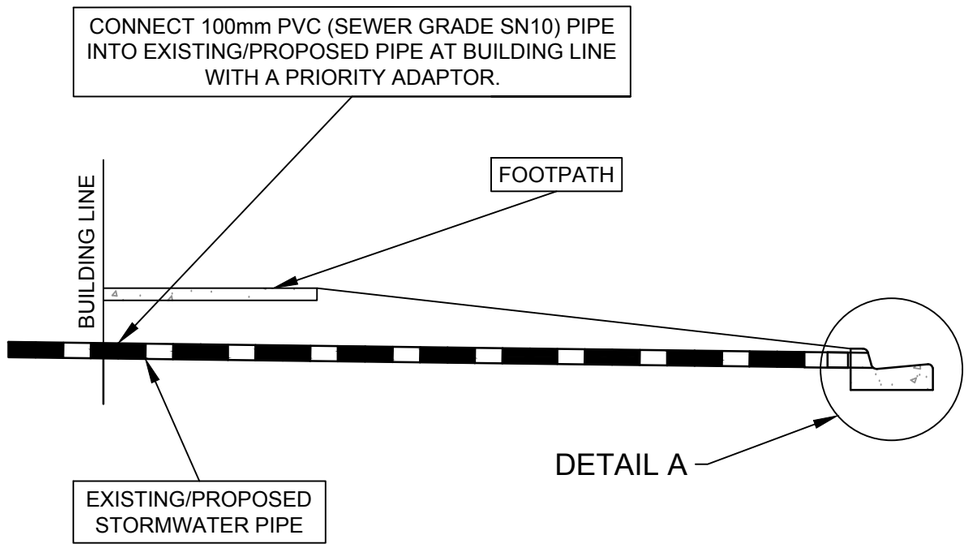
Armidale Regional Council — Dept of Public Infrastructure

INTERALLOMENT PROPERTY DRAINAGE CONNECTIONS

SCALES	NTS
APPROVED	D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT
DATE	31/08/2016
SHEET	1 OF 1
SURV	
DRWN	TY
DES	
CHKD	MW
AS SHEET SIZE	A3
DRAWING No	080-026
AMDT No	
CADFILE	080-026.dwg
DATE	31/08/2016



PLAN

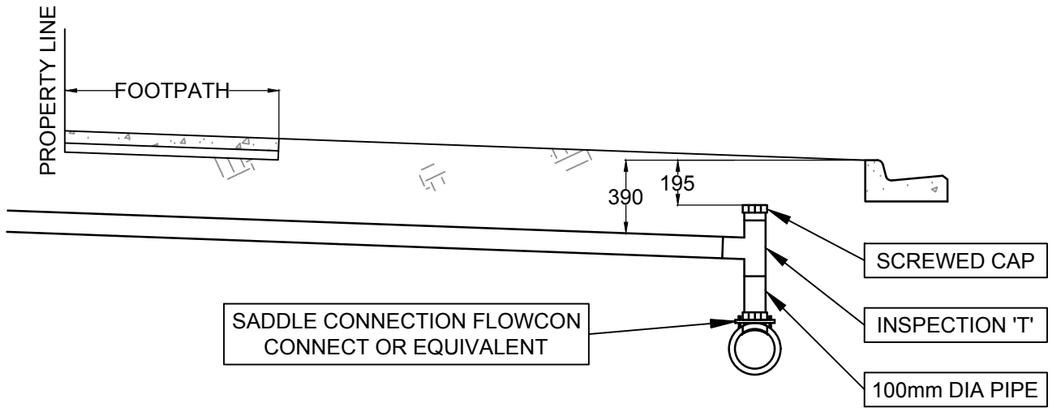


SECTION

KERB INSTALLATION

NOTES: KERB INSTALLATION

1. FOR SINGLE PIPE INSTALLATION CONNECT PIPE TO KERB VIA APPROVED KERB ADAPTOR. CURRENTLY RECYCLE RUBBER OR CAST ALUMINIUM.
2. FOR DUAL PIPE INSTALLATIONS SEPARATE PIPES BY A MINIMUM 300mm AND CONNECT TO KERB VIA KERB ADAPTORS.
3. FOR MORE THAN TWO PIPES A PURPOSE BUILT GALVANISED STEEL KERB ADAPTOR IS REQUIRED. DESIGN THE OPENING SPAN TO ACCOMMODATE A WHEEL LOAD. MATCH PROFILE OF KERB. ROUND ALL EDGES, NO SHARP EDGES OR CORNERS PERMITTED.
4. FOR ALL OPTIONS SAW CUT KERB MINIMUM 25mm WIDER EITHER SIDE OF ADAPTOR. REINSTATE KERB WITH HIGH CEMENT MORTAR/CONCRETE.

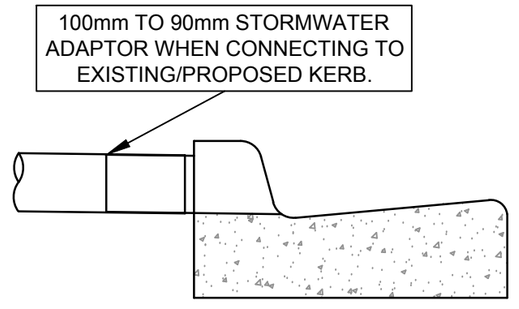


SECTION VIEW

DIRECT CONNECTION TO PIPE INSTALLATION

NOTES: PIPE CONNECTION INSTALLATION

1. ALL PIPES AND FITTINGS ARE TO BE PVC SN10.
2. ALL SOLVENT ADHERED JOINTS MUST BE COMPLETED AS PER THE MANUFACTURERS RECOMMENDED INSTRUCTIONS.
3. RCP STORM WATER PIPE TO BE CORED OR DRILLED TO CREATE OPENING. CUT SURFACES TO BE EXPOXY SEALED TO PREVENT CORROSION OF STEEL REINFORCEMENT.
4. THE PROPERTY STORMWATER DRAIN IS TO EXTEND 500mm INTO THE PROPERTY.
5. THE FOOTPATH AND BACK OF KERB ARE TO BE STAMPED WITH 'SW' TO INDICATE THE LINE OF THE PROPERTY STORM WATER DRAIN .



DETAIL A

Armidale Regional Council — Dept of Public Infrastructure

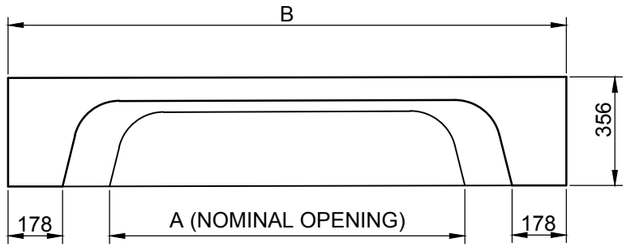
SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — 31/08/2016 DATE

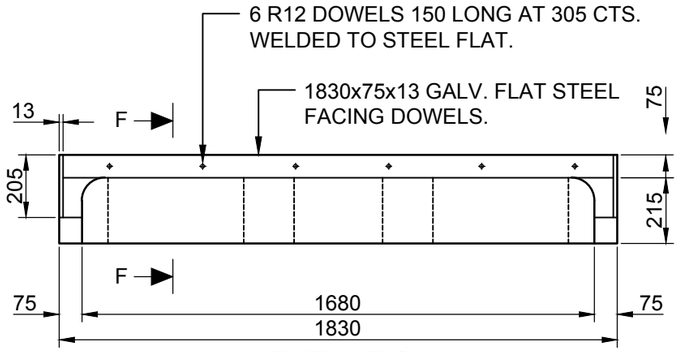
SHEET 1 OF 1

PROPERTY STORMWATER CONNECTION TO KERB AND PIPE

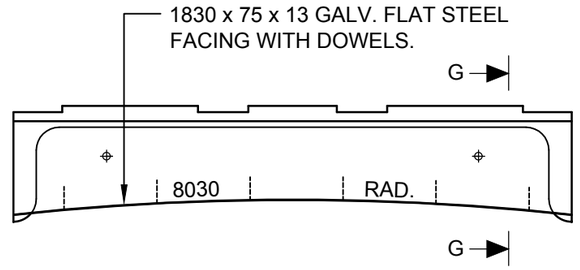
SURV		AS SHEET SIZE: A3	DRAWING No: 080-027
DRWN	ST		AMDT No:
DES	MW		
CHKD	MW	CADFILE: 080-027.dwg	DATE: 31/08/2016



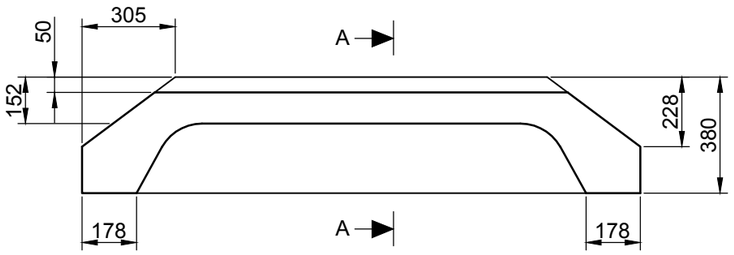
ELEVATION
EXTENDED KERB INLET LINTEL



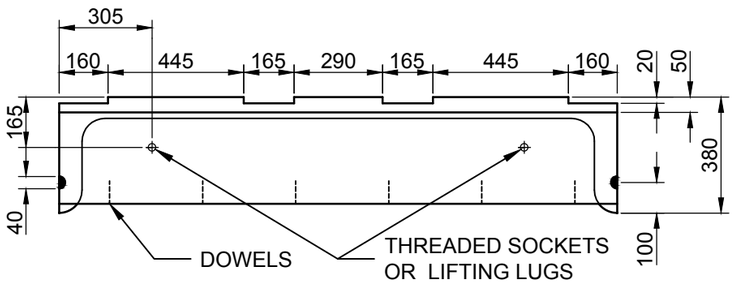
ELEVATION
KERB INLET GULLY PIT LINTEL



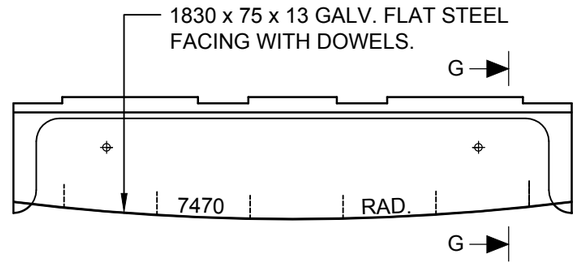
PLAN
CONCAVE LINTEL



PLAN
EXTENDED KERB INLET LINTEL



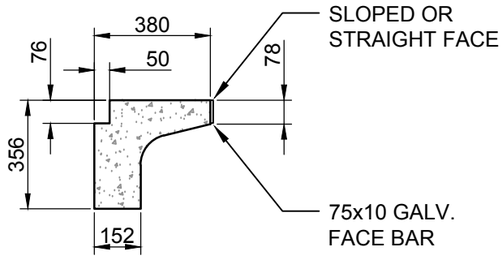
PLAN
KERB INLET GULLY PIT LINTEL



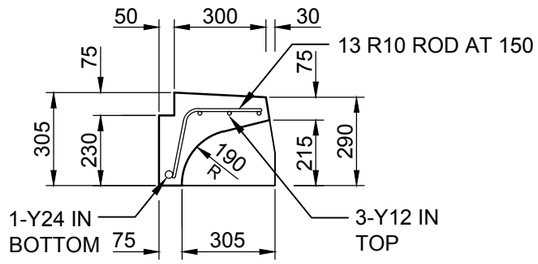
PLAN
CONVEX LINTEL

	A	B	WEIGHT
*	1800	2400	457kg
	2400	3000	579kg
	3000	3600	701kg

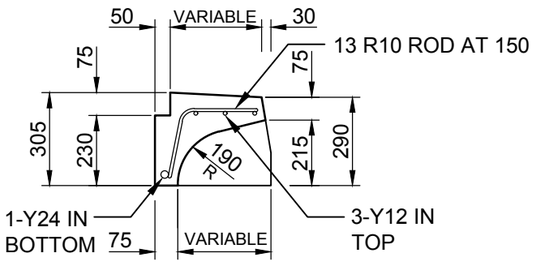
* STANDARD SIZE
CONCAVE / CONVEX UNITS
8300 RADIUS ONLY.



SECTION A-A



SECTION F-F



SECTION G-G

NOTES

1. ALL MEASUREMENTS ARE IN MILLIMETERS.
2. ALL PRECAST COMPONENTS TO BE FACTORY PRODUCED OF VIBRATED CONCRETE AND STEAM CURED.
3. COMPRESSIVE STRENGTH OF CONCRETE (F'c) 30MPa AT 28 DAYS.
4. ALL EXPOSED EDGES TO BE ROUNDED TO 5 RAD.
5. PROVISIONS TO BE MADE FOR 15 DIA LIFTING HOOKS BY INSERTION OF THREADED SOCKETS INTO LINTEL AND SURROUND AT POINT OF BALANCE OR PROPRIETARY DESIGN.
6. GALVANIZING TO BE IN ACCORDANCE WITH AUSTRALIAN STANDARD FOR ALL EXPOSED COMPONENTS.
7. EXPOSED SURFACES TO BE OF STEEL FORM FINISH OR OF HIGH QUALITY STEEL FLOAT FINISH.

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

PRECAST COMPONENTS FOR KERB INLET PIT LINTELS (RM4)

SURV
DRWN JB
DES
CHKD MW

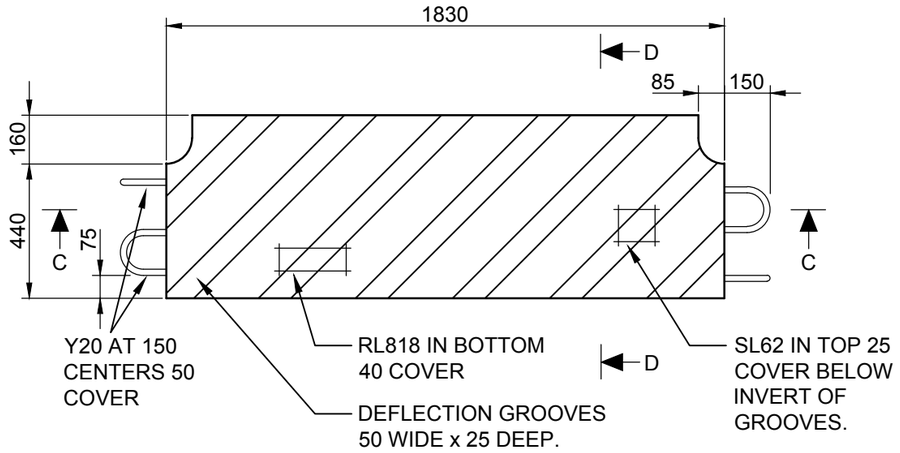
AS SHEET SIZE: A3

DRAWING No: 080-028

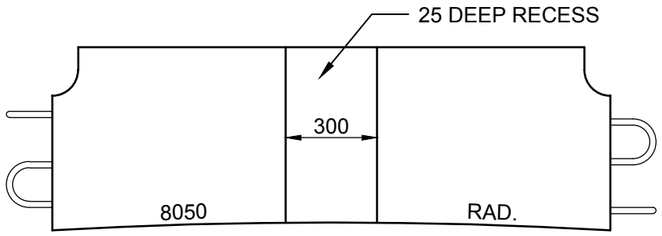
AMDT No

CADFILE 080-028.dwg

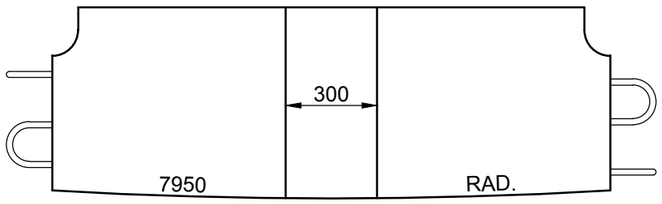
DATE 31/08/2016



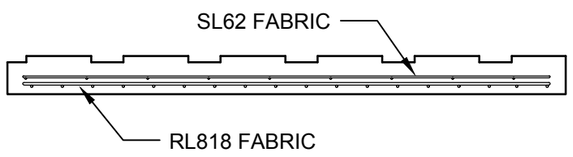
STANDARD GUTTER PLAN



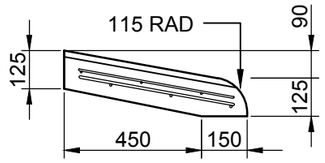
CONCAVE GUTTER PLAN



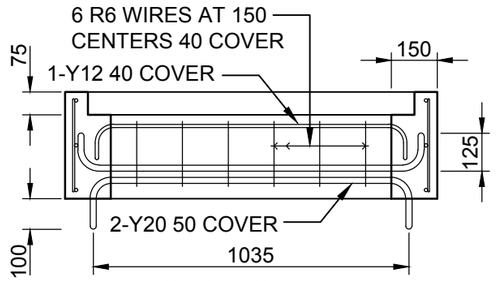
CONVEX GUTTER PLAN



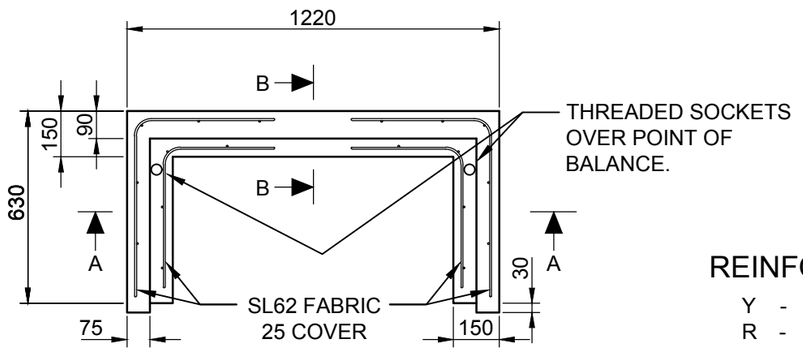
SECTION C-C



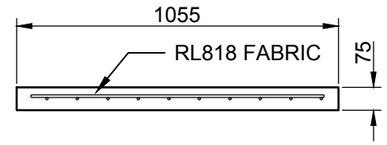
SECTION D-D



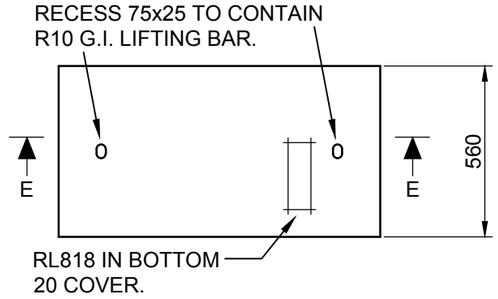
SECTION A-A



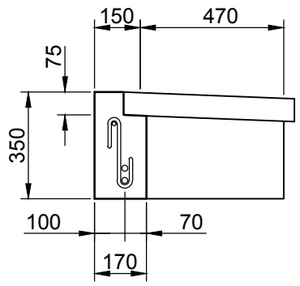
PLAN
GULLY PIT SURROUND



SECTION E-E



PLAN
GULLY PIT LID COVER



SECTION B-B

NOTES

1. ALL PRECAST COMPONENTS TO BE FACTORY PRODUCED OF VIBRATED CONCRETE AND STEAM CURED.
2. COMPRESSIVE STRENGTH OF CONCRETE (F'c) 30MPa AT 28 DAYS.
3. ALL EXPOSED EDGES TO BE ROUNDED TO 5 RAD.
4. PROVISIONS TO BE MADE FOR 15 DIA LIFTING HOOKS BY INSERTION OF THREADED SOCKETS INTO LINTEL AND SURROUND AT POINT OF BALANCE AS PER 080-029.
5. GALVANIZING TO BE IN ACCORDANCE WITH AUSTRALIAN STANDARD FOR ALL EXPOSED COMPONENTS.
6. EXPOSED SURFACES TO BE OFF STEEL FORM FINISH OR OF HIGH QUALITY STEEL FLOAT FINISH.

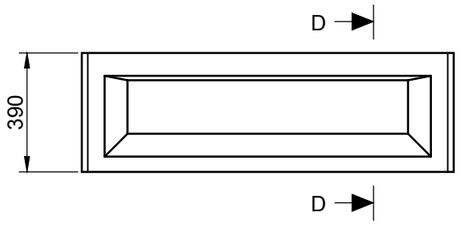
REINFORCEMENT NOTES

Y - DENOTES TEMPCORE BARS AS4671.
R - DENOTES STRUCTURAL GRADE ROUND BARS TO AS4671. R6 HARD DRAWN WIRE TO AS 4671.
SL/RL - DENOTES FABRIC TO AS4671.
THE NUMBER FOLLOWING 'Y' OR 'R' DENOTES BAR DIAMETER IN MM.

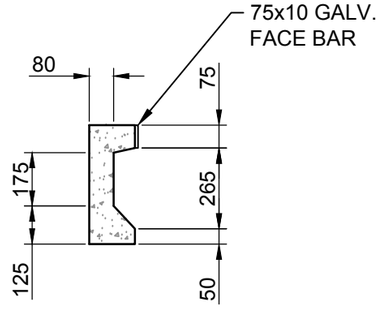
Armidale Regional Council — Dept of Public Infrastructure

PRECAST COMPONENTS FOR KERB INLET GULLY PIT (RM4)

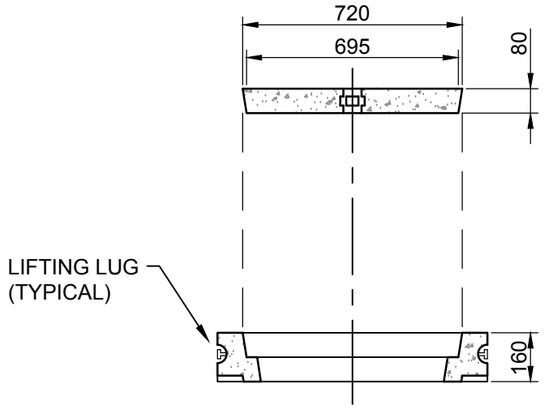
SCALES: NTS	APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT	DATE: 31/08/2016	SHEET 1 OF 1		
SURV		AS SHEET SIZE: A3	DRAWING No: 080-029	AMDT No	
DRWN: JB					
DES					
CHKD: MW		CADFILE: 080-029.dwg	DATE: 31/08/2016		



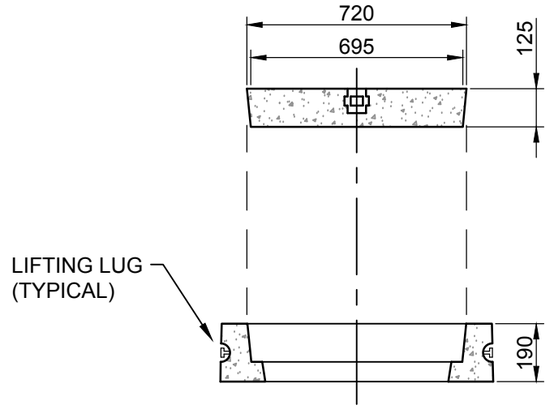
ELEVATION
1220 PATHWAY KERB INLET



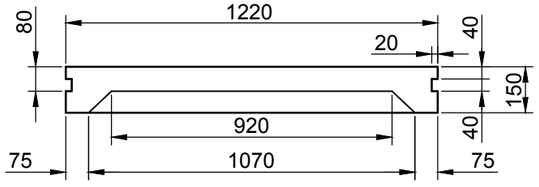
SECTION D-D
1220 PATHWAY KERB INLET



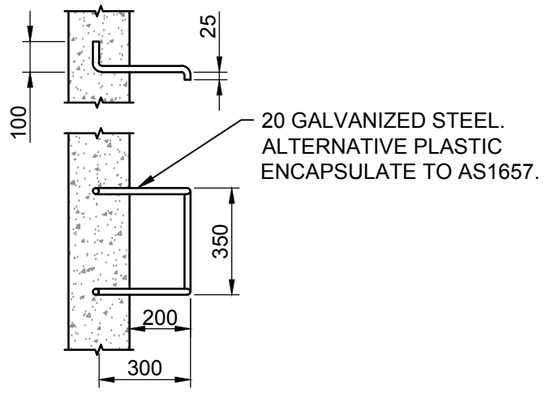
SECTION B-B



SECTION C-C

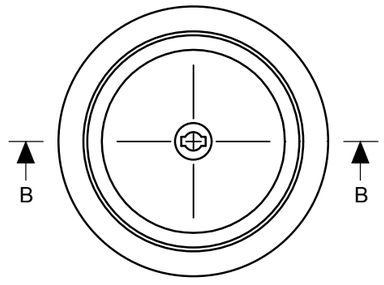


PLAN
1220 PATHWAY KERB INLET

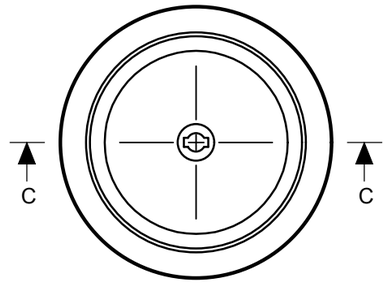


CLIMB IRONS SHALL BE PROVIDED AT 450 CTS.
UNDER LID WHERE PIT IS DEEPER THAN 1200.

DETAIL OF CLIMB IRON



PLAN



PLAN

PRECAST MANHOLE COVER AND SURROUND
REINFORCEMENT TO AUSTRALIAN STANDARDS

NOTES
1. ALL MEASUREMENTS ARE IN MILLIMETERS.
2. ALL PRECAST COMPONENTS TO BE FACTORY PRODUCED OF VIBRATED CONCRETE AND STEAM CURED.
3. COMPRESSIVE STRENGTH OF CONCRETE (F'c) 30MPa AT 28 DAYS.
4. ALL EXPOSED EDGES TO BE ROUNDED TO 5 RAD.
5. PROVISIONS TO BE MADE FOR 15 DIA LIFTING HOOKS BY INSERTION OF THREADED SOCKETS INTO LINTEL AND SURROUND AT POINT OF BALANCE OR PROPRIETARY DESIGN.
6. GALVANIZING TO BE IN ACCORDANCE WITH AUSTRALIAN STANDARD FOR ALL EXPOSED COMPONENTS.
7. EXPOSED SURFACES TO BE OFF STEEL FORM FINISH OR OF HIGH QUALITY STEEL FLOAT FINISH.

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

COMPONENTS FOR STORMWATER PITS (RM3)

SURV
DRWN JB
DES
CHKD MW

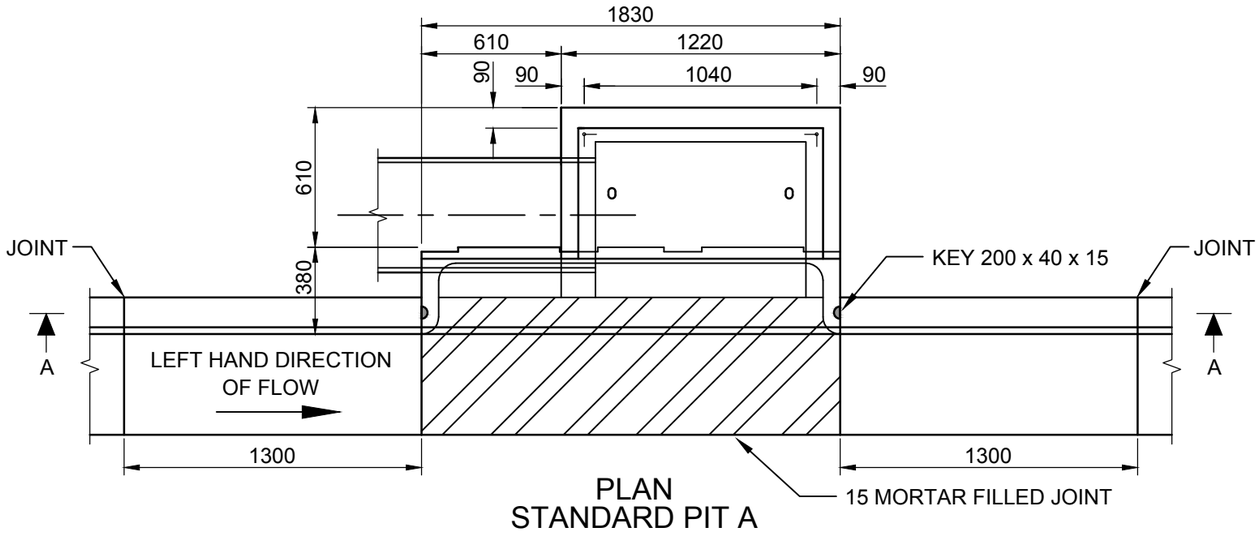
AS SHEET SIZE: A3

DRAWING No: 080-030

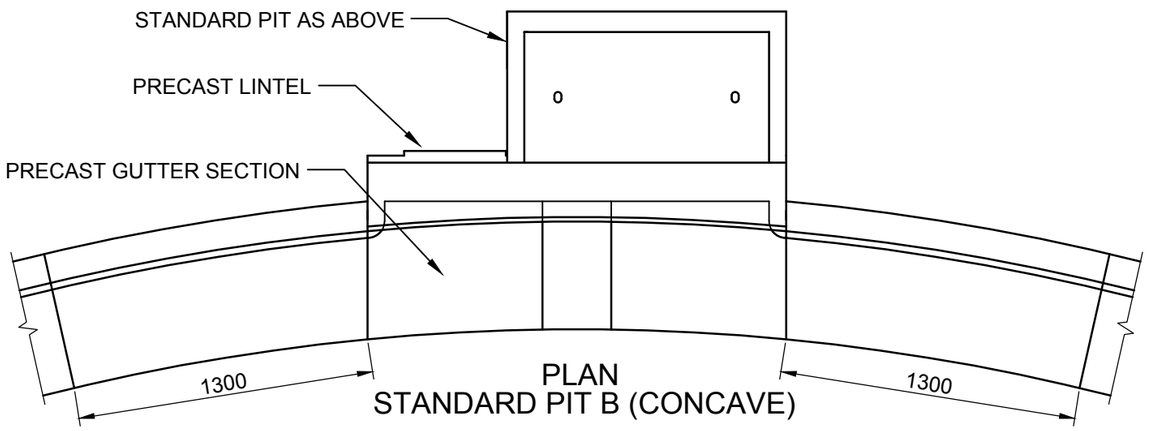
AMDT No:

CADFILE 080-030.dwg

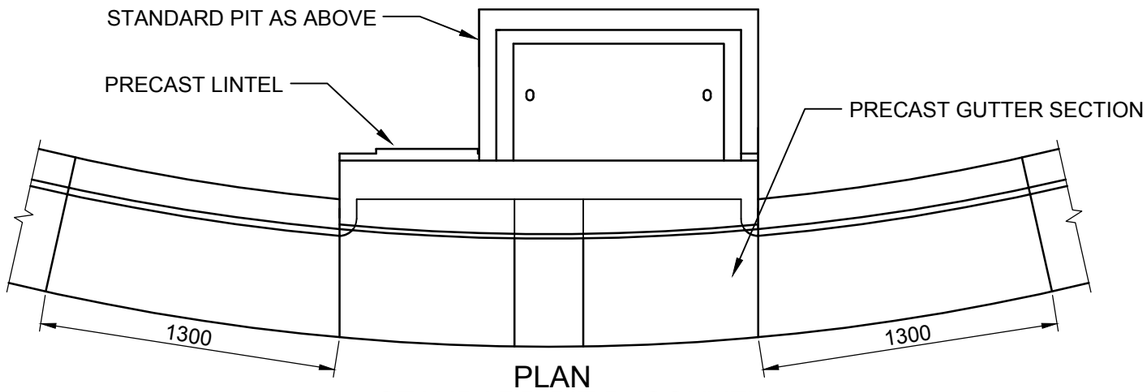
DATE 31/08/2016



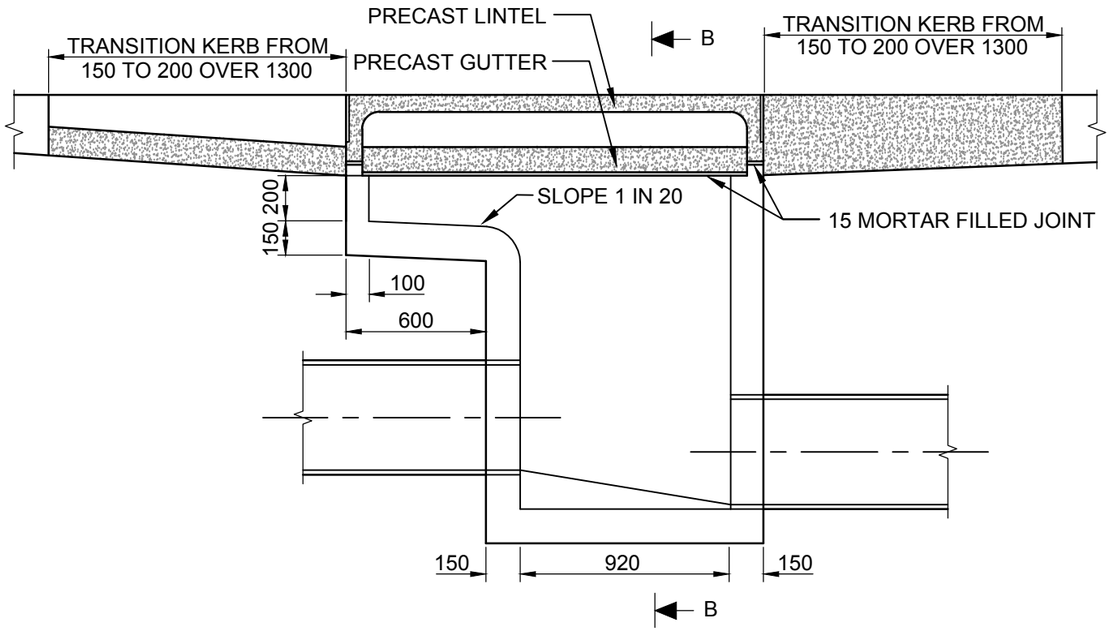
PLAN
STANDARD PIT A



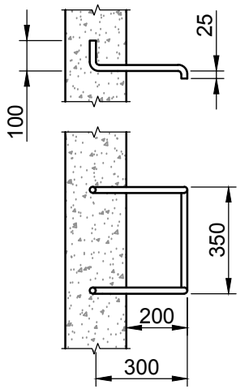
PLAN
STANDARD PIT B (CONCAVE)



PLAN
STANDARD PIT B (CONVEX)

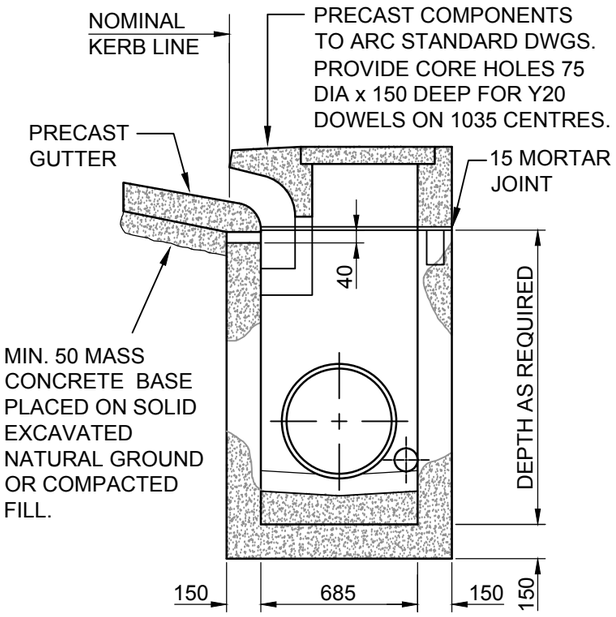


SECTION A - A



DETAIL OF STEP IRON

STEP IRON OF 20 GALVANIZED STEEL MADE TO ABOVE SHAPE AND DIMENSIONS SHALL BE PROVIDED AT 450 CTS. UNDER LID WHERE PIT IS DEEPER THAN 1200.



SECTION B - B

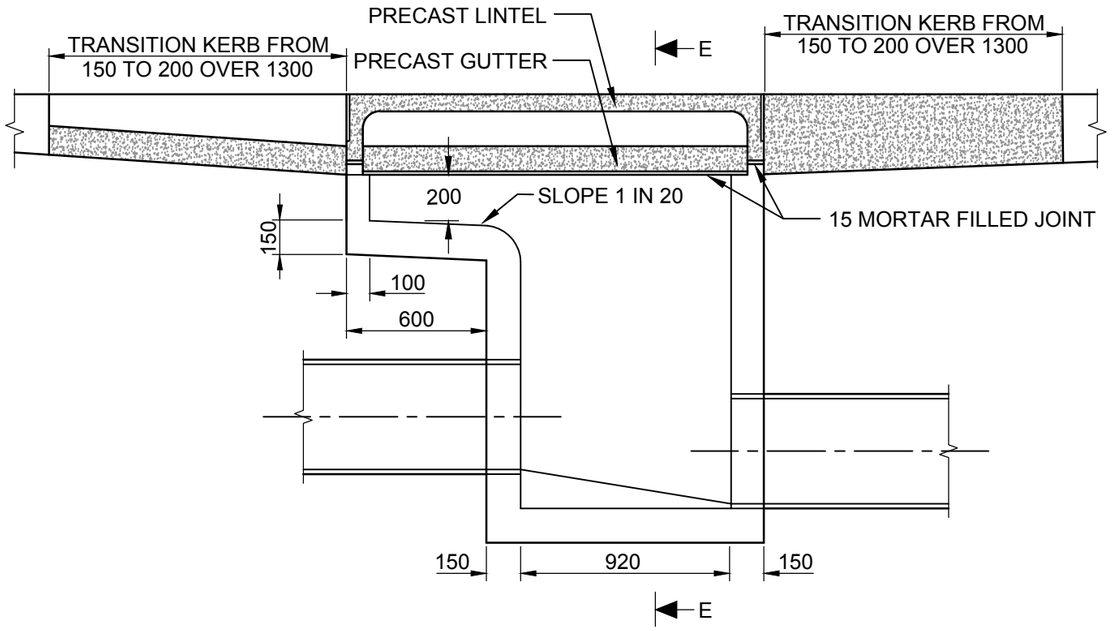
NOTES

1. ALL MEASUREMENTS ARE IN MILLIMETERS.
2. COMPRESSIVE STRENGTH (F'c) FOR CAST IN SITU CONCRETE TO BE A MINIMUM OF 32MPa AT 28 DAYS.
3. PRECAST GUTTERS ARE MANUFACTURED FOR GUTTER FLOWS FROM LEFT OR RIGHT HAND DIRECTIONS.
4. Ø100 SUBSOIL DRAINAGE PIPE 3000 LONG WRPD. IN A FABRIC SOCK TO BE PROVIDED AJCT. TO INLET PIPES.
5. MULTIPLE LIDS MAY BE USED TO SUIT SITE OR TO INCREASE INLET CAPACITY.
6. PROVIDE SL92 MESH CENTRALLY PLACED TO WALLS AND BASE FOR PITS ≥ 1.5m DEEP PLUS Y12 STARTER BARS SPACED AT 150 C/C.
7. ALL STEELWORK SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS 1650.

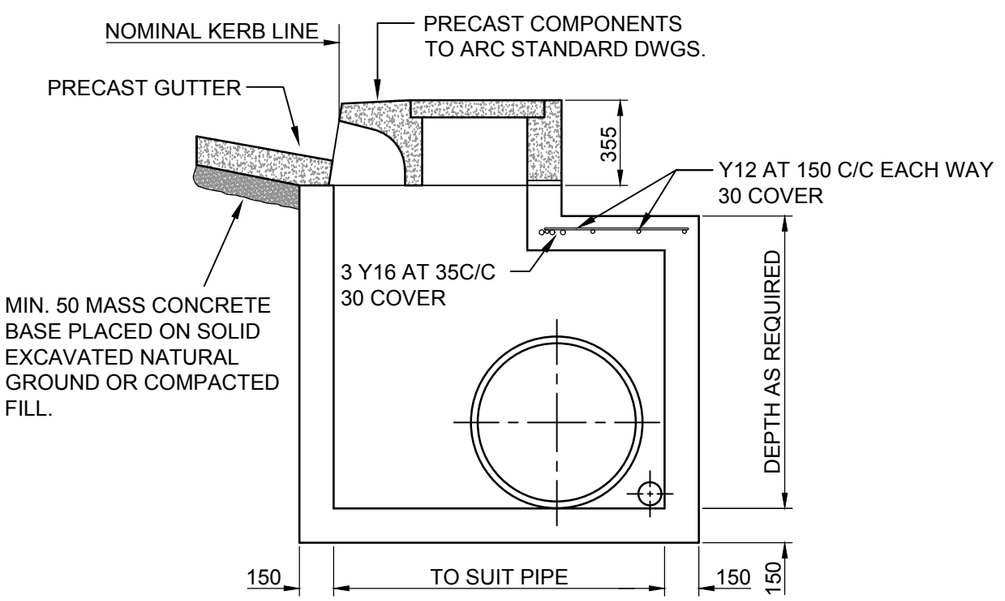
Armidale Regional Council — Dept of Public Infrastructure

REAR ACCESS GULLY PIT PIPES UP TO Ø600 (RM5)

SCALES	NTS
APPROVED	D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — 31/08/2016 DATE
SHEET	1 OF 2
SURV	
DRWN	JB
DES	
CHKD	MW
AS SHEET SIZE	A3
DRAWING No	080-031
AMDT No	
CADFILE	080-031_1.dwg
DATE	31/08/2016



SECTION A-A



SECTION E-E

NOTES

1. COMPRESSIVE STRENGTH (F'c) FOR CAST IN SITU CONCRETE TO BE A MINIMUM OF 32MPa AT 28 DAYS.
2. PRECAST GUTTERS ARE MANUFACTURED FOR GUTTER FLOWS FROM LEFT OR RIGHT HAND DIRECTIONS.
3. 100 DIA. SUBSOIL DRAINAGE PIPE 3000 LONG WRAPPED IN A FABRIC SOCK TO BE PROVIDED ADJACENT TO INLET PIPES.
4. MULTIPLE LIDS MAY BE USED TO SUIT SITE OR TO INCREASE INLET CAPACITY.
5. PROVIDE SL92 MESH CENTRALLY PLACED TO WALLS AND BASE FOR PITS ≥ 1.5m DEEP PLUS Y12 STARTER BARS SPACED AT 150 C/C.
6. ALL STEELWORK SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS 1650.

Armidale Regional Council — Dept of Public Infrastructure

REAR ACCESS GULLY PIT PIPES GREATER THAN Ø600 (RM5)

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 2 OF 2

SURV

DRWN JB

DES

CHKD MW

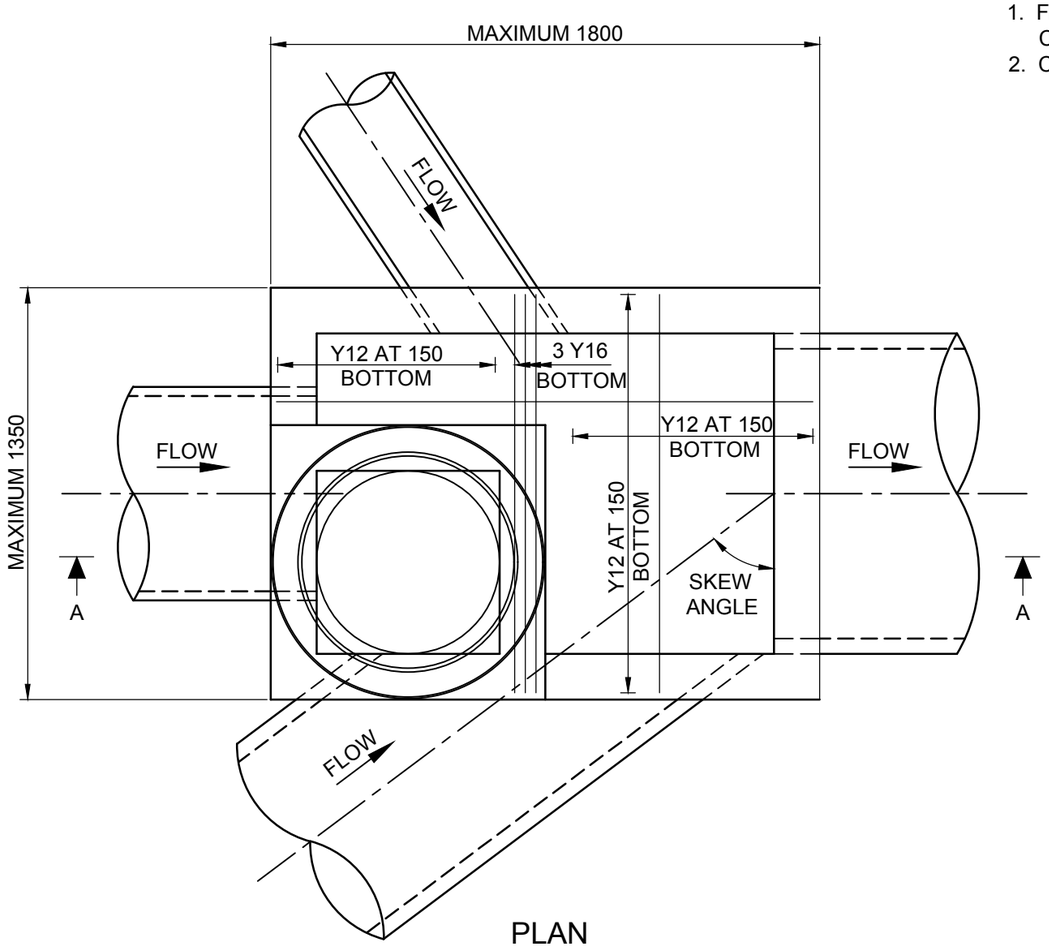
AS SHEET SIZE: A3

DRAWING No: 080-031

AMDT No:

CADFILE 080-031_2.dwg

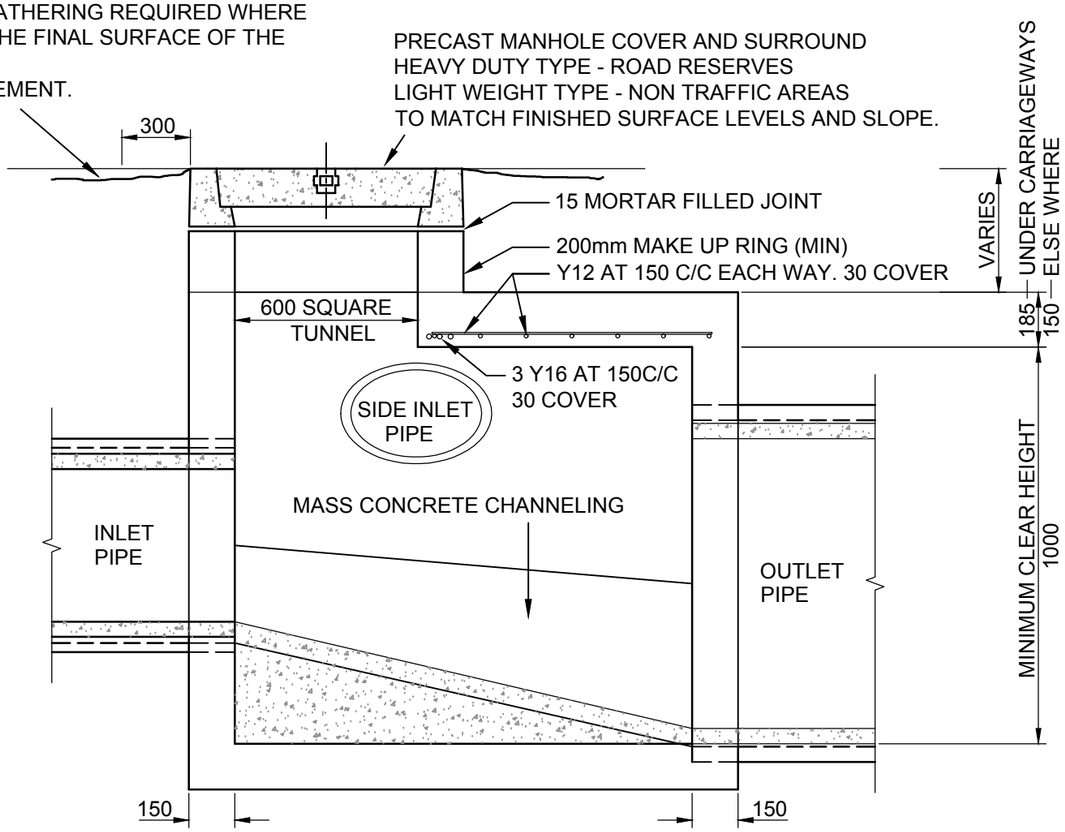
DATE 31/08/2016



PLAN

300 WIDE FEATHERING WITH PREMIX ALL ROUND PRIOR TO HOTMIX FOR PITS IN CARRIAGEWAY LOCATIONS. NO FEATHERING REQUIRED WHERE

1. FLUSH SEAL IS THE FINAL SURFACE OF THE CARRIAGEWAY.
2. CONCRETE PAVEMENT.



SECTION A-A

NOTES

1. ALL MEASUREMENTS ARE IN MILLIMETERS.
2. 100 DIA. DRAINAGE PIPE 3000 LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED ADJACENT TO INLET PIPES.
3. MAXIMUM OUTLET PIPE ON STRAIGHT 900 DIAMETER.
4. MAXIMUM OUTLET PIPE ON SKEW 825 DIAMETER.
5. MAXIMUM SIDE ENTRY PIPE 825 DIAMETER AT APPROXIMATELY 40° SKEW.
6. MINIMUM INTERNAL DIMENSIONS - LENGTH 900
   - WIDTH 700
   - HEIGHT 1000
7. COMPRESSIVE STRENGTH (F'c) FOR CAST IN SITU CONCRETE TO BE MINIMUM 32 MPa AT 28 DAYS.
8. PROVIDE SL92 MESH CENTRALLY PLACED TO WALLS AND BASE FOR PITS ≥ 1.5m DEEP PLUS Y12 STARTER BARS SPACED AT 150 C/C.
9. STEP IRON DETAILS - REFER ARC DWG.
10. MAKE UP RINGS TO BE UTILIZED UNDER MANHOLE COVER TO ALLOW FOR FUTURE ADJUSTMENT IN ROAD PAVEMENTS.
11. IN DEEP PITS THE VERTICAL TURRET MAY BE EXTENDED WITH COUNCIL APPROVAL. DESIGN STRUCTURALLY TO SUIT DEPTH.

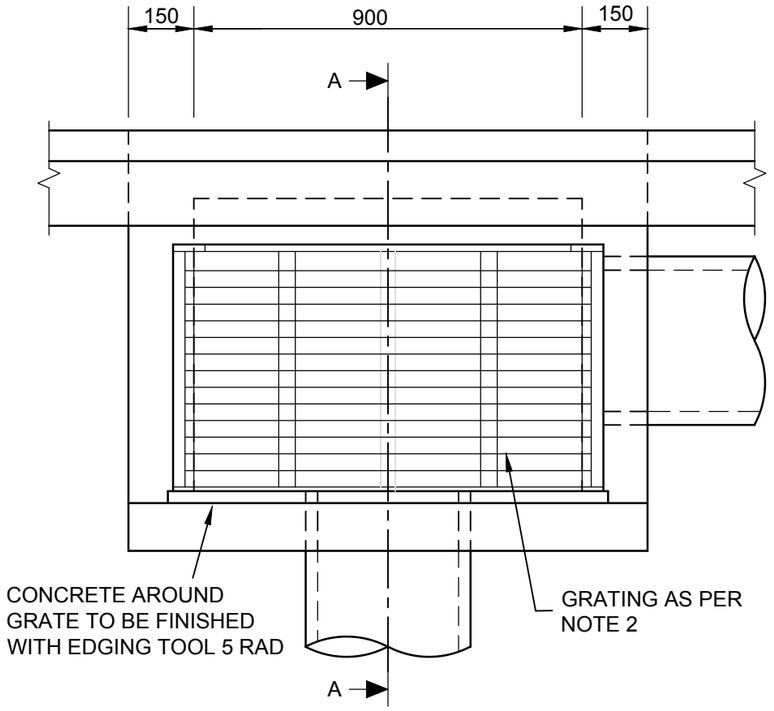
* NEW PIT INSTALLATIONS

ALL NEW PITS SHALL BE INSTALLED WITH CAST DUCTILE IRON MH COVERS WITH CONCRETE SURROUNDS. ALL MH COVERS SHALL BE CLASS D FOR ALL INSTALLATIONS.

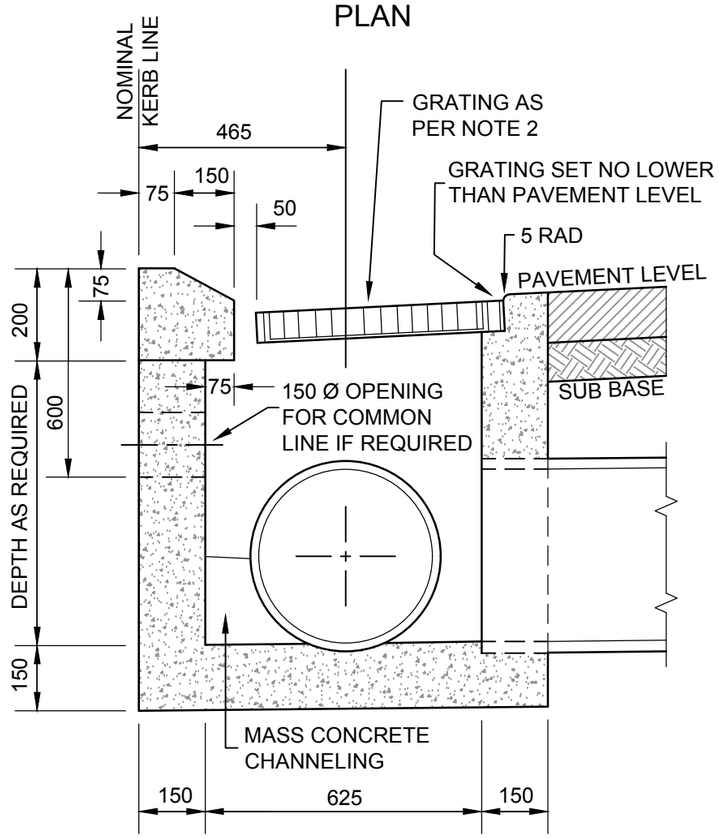
Armidale Regional Council — Dept of Public Infrastructure

STANDARD JUNCTION PIT (RM6)

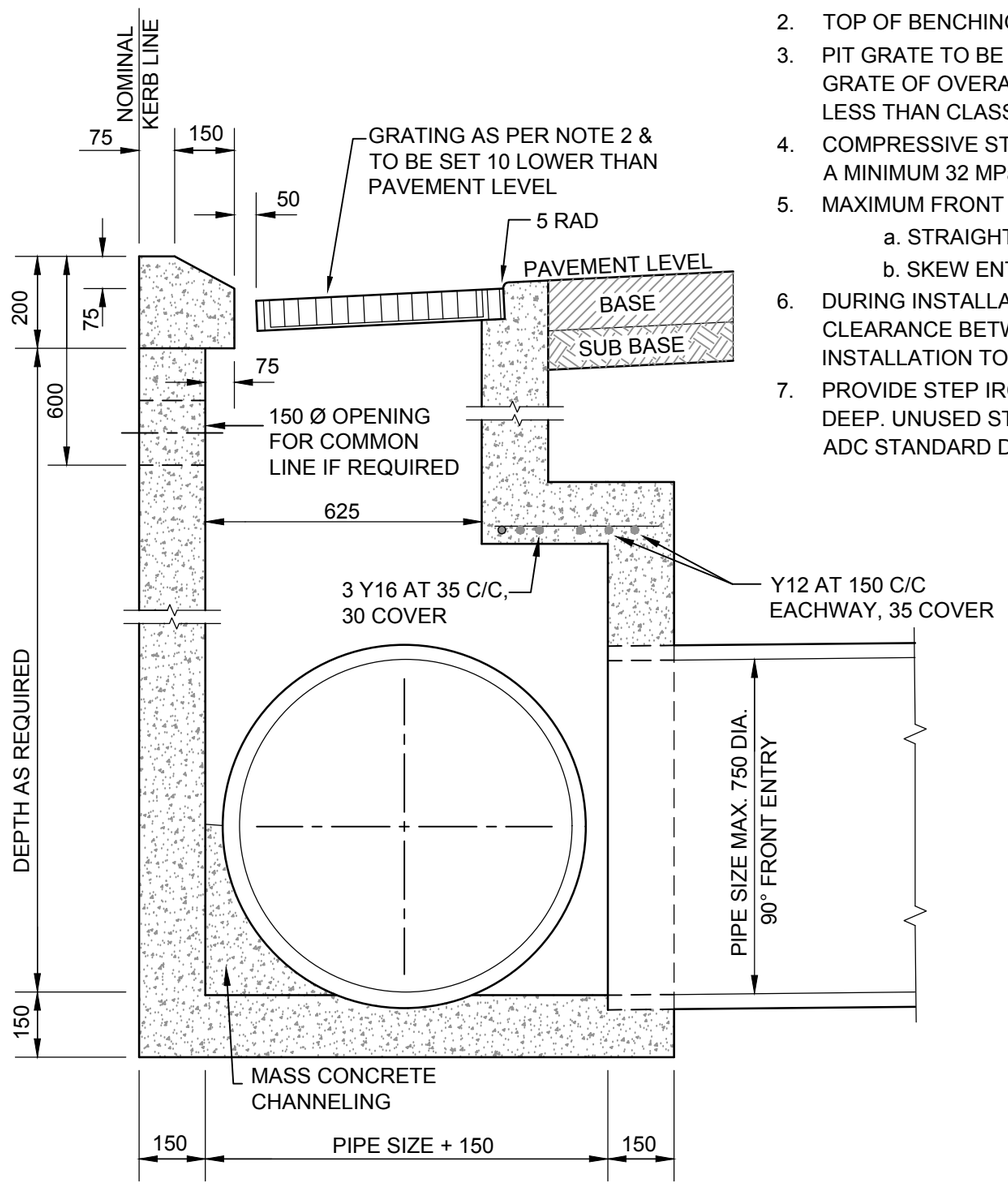
SCALES: NTS	APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT	DATE: 31/08/2016	SHEET 1 OF 1		
SURV		AS SHEET SIZE: A3	DRAWING No: 080-032	AMDT No	
DRWN: JB					
DES					
CHKD: MW		CADFILE: 080-032.dwg	DATE: 31/08/2016		



PLAN



SECTION A-A
FOR PIPES UP TO 525 DIA



SECTION A-A
FOR PIPES 600 DIA AND OVER

NOTES

1. 100 Ø SUBSOIL DRAINAGE PIPE 3000 LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED ADJACENT TO INLET PIPES.
2. TOP OF BENCHING SHALL BE $\frac{1}{2}$ OF OUTLET PIPE DIAMETER
3. PIT GRATE TO BE TYPICALLY CLASS D 'WELDLOK' HINGED GULLY GRATE OF OVERALL SIZE 1020 x 540 OR APPROVED EQUIVALENT. LESS THAN CLASS D TO BE USED AS APPROPRIATE.
4. COMPRESSIVE STRENGTH F'c FOR CAST IN SITU CONCRETE TO BE A MINIMUM 32 MPa AT 28 DAYS.
5. MAXIMUM FRONT ENTRY PIPE;
   a. STRAIGHT ENTRY - 750 DIA.
   b. SKEW ENTRY 45° - 525 DIA
6. DURING INSTALLATION OF GRATE AND FRAME, ENSURE CLEARANCE BETWEEN LINTEL AND OPENED GRATE (REFER TO INSTALLATION TOLERANCE)
7. PROVIDE STEP IRONS AT 300 CENTERS IN PITS GREATER THAN 1200 DEEP. UNUSED STEP IRON HOLES TO BE RENDERED. REFER TO ADC STANDARD DRAWING FOR STEP IRON DETAILS.

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

STANDARD GRATED GULLY PIT IN CONCRETE ACCESSWAYS (RM7)

SURV
DRWN TY
DES
CHKD MW

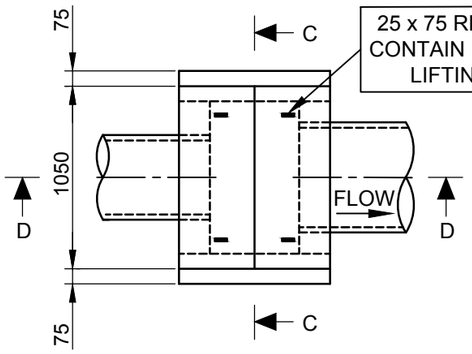
AS SHEET SIZE: A3

DRAWING No: 080-033

AMDT No:

CADFILE 080-033.dwg

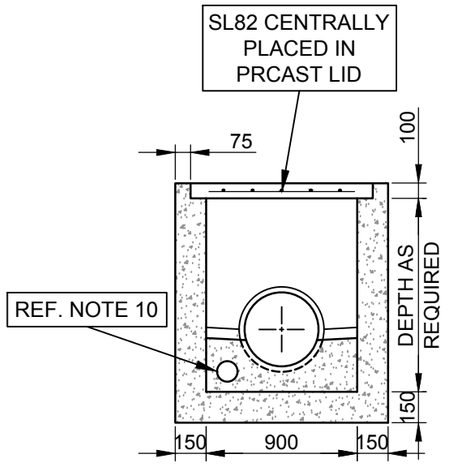
DATE 31/08/2016



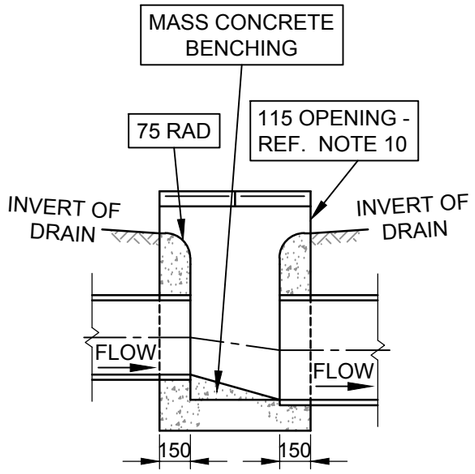
PLAN

MAXIMUM PIPE SIZES - TYPE A PIT

INLET / OUTLET PIPE ON STRAIGHT	-825 DIA.
INLET / OUTLET PIPE AT 45° SKEW	-525 DIA.
SIDE ENTRY / OUTLET PIPE ON STRAIGHT	-600 DIA.
SIDE ENTRY / OUTLET PIPE AT 45° SKEW	-375 DIA.

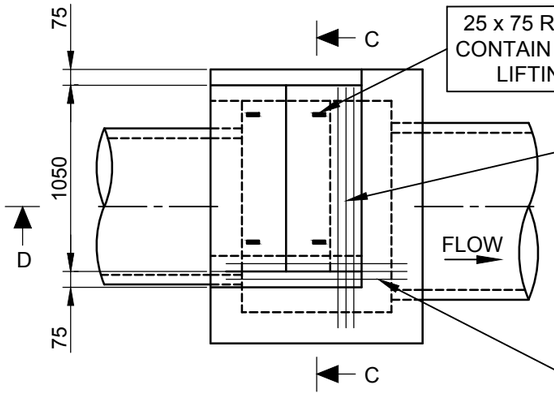


SECTION C-C



SECTION D-D

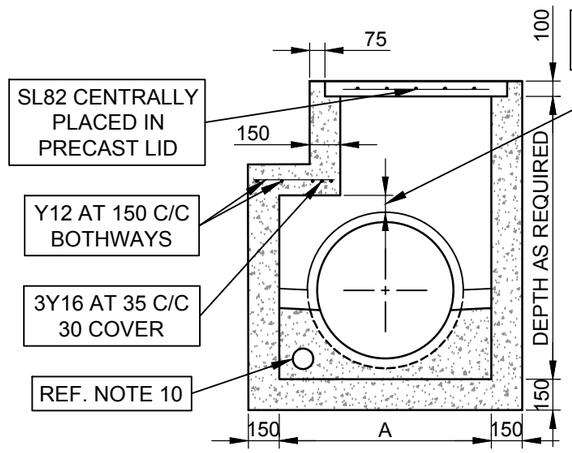
SURFACE INLET PIT TYPE A



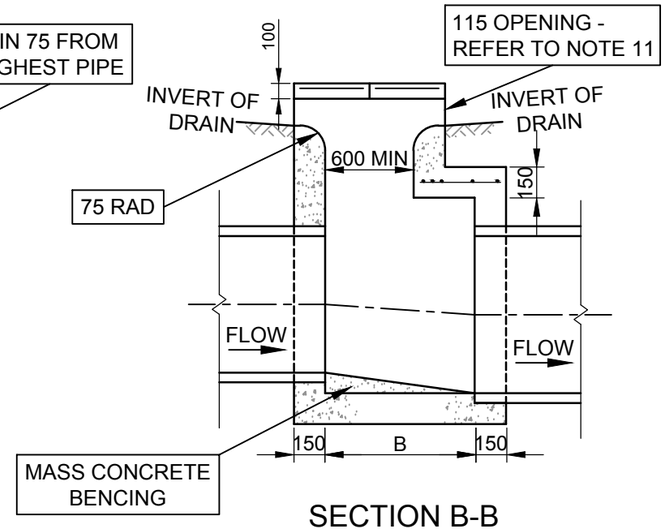
PLAN

MAXIMUM PIPE SIZES - TYPE A PIT

INLET / OUTLET PIPE ON STRAIGHT	-825 DIA.
INLET / OUTLET PIPE AT 45° SKEW	-525 DIA.
SIDE ENTRY / OUTLET PIPE ON STRAIGHT	-600 DIA.
SIDE ENTRY / OUTLET PIPE AT 45° SKEW	-375 DIA.



SECTION A-A



SECTION B-B

DIAMETER OF OUTLET ON STRAIGHT	A	B	DIAMETER OF OUTLET ON STRAIGHT	A	B
900	1050	900	1500	1650	1200
1050	1200	900	1650	1800	1200
1200	1350	900	1800	1950	1200
1350	1500	1050			

SURFACE INLET PIT TYPE B

NOTES

1. ALL MEASUREMENTS ARE IN MILLIMETERS.
2. COMPRESSIVE STRENGTH f'c FOR CAST INSITU TO BE MIN N32 TO AS3600.
3. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SHOWN.
4. SIDE WALLS OF ALL PITS DEEPER THAN 1500mm ARE TO BE REINFORCED WITH ONE LAYER OF SL82 MESH RETURNED 300mm INTO BASE.
5. DEPTH OF PIT NOT TO EXCEED 3500mm.
6. ALL REINFORCEMENT LAPS TO BE 300mm LONG.
7. MINIMUM COVER OF REINFORCEMENT SHALL BE 50 UNLESS SHOWN OTHERWISE.
8. WHERE PIT IS DEEPER THAN 1200mm PROVIDE STEP IRONS.
9. TOP OF BENCHING TO BE $\frac{1}{2}$ OF OUTLET PIPE DIAMETER.
10. 100 DIA SUBSOIL DRAINAGE PIPE 3000mm LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED ADJACENT TO INLET PIPES.
11. WHERE INLET OPENING IN SURFACE INLET PIT IS GREATER THAN 115mm IS REQUIRED AN R20 DIA GALVANISED BAR SHALL BE PLACED HORIZONTALLY ACROSS THE OPENING AT MID HEIGHT.

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

SURFACE INLET PIT CONCRETE LID (RM9)

SURV	
DRWN	ST
DES	MW
CHKD	MW

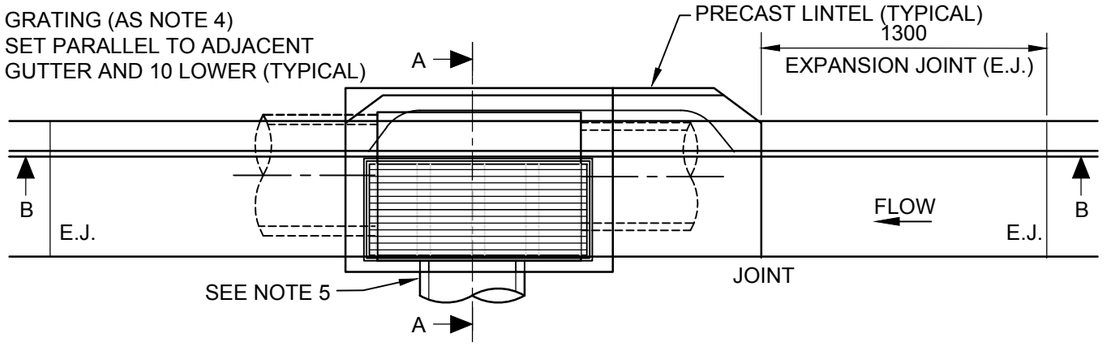
AS SHEET SIZE: A3

DRAWING No: 080-034

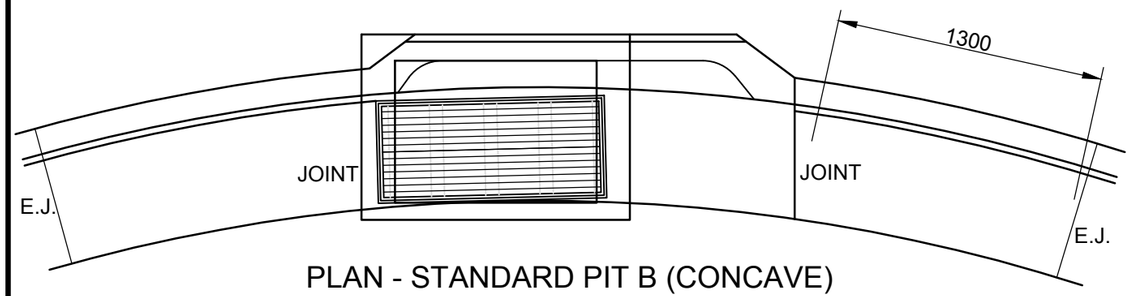
AMDT No:

CADFILE: 080-034.dwg

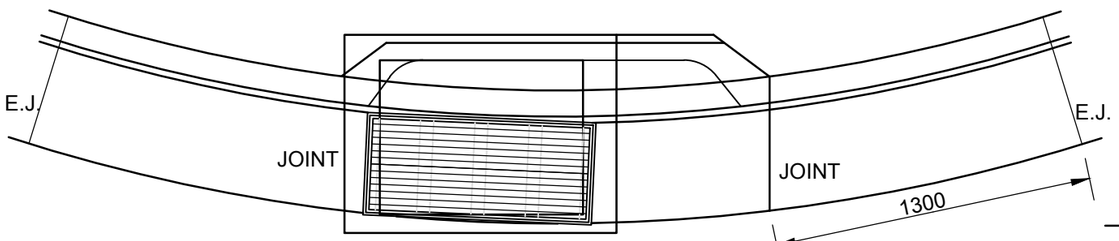
DATE: 31/08/2016



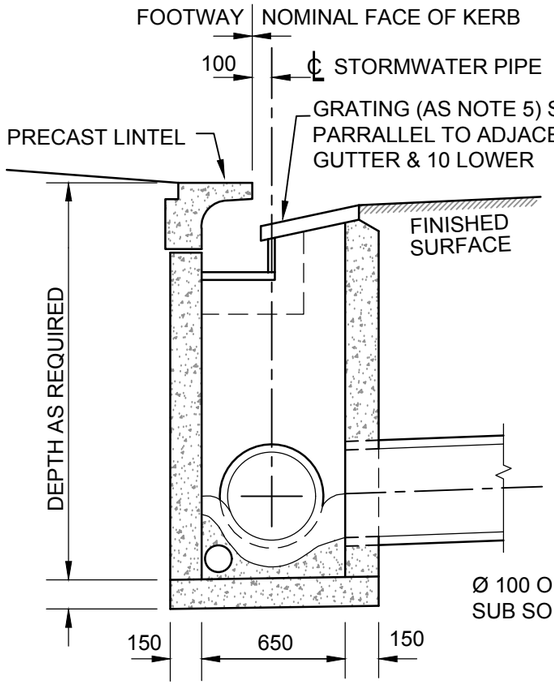
PLAN - STANDARD PIT A (STRAIGHT)



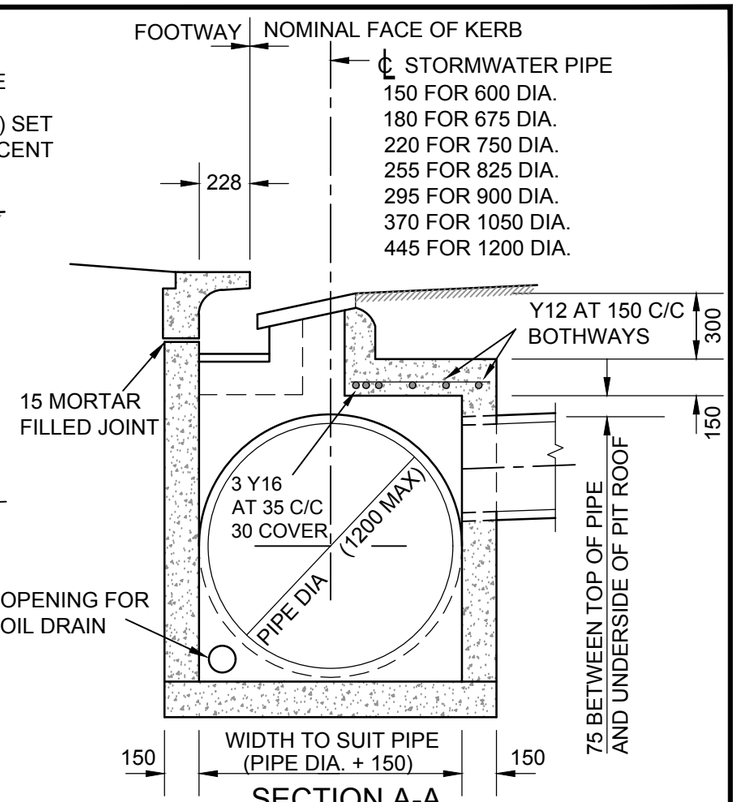
PLAN - STANDARD PIT B (CONCAVE)



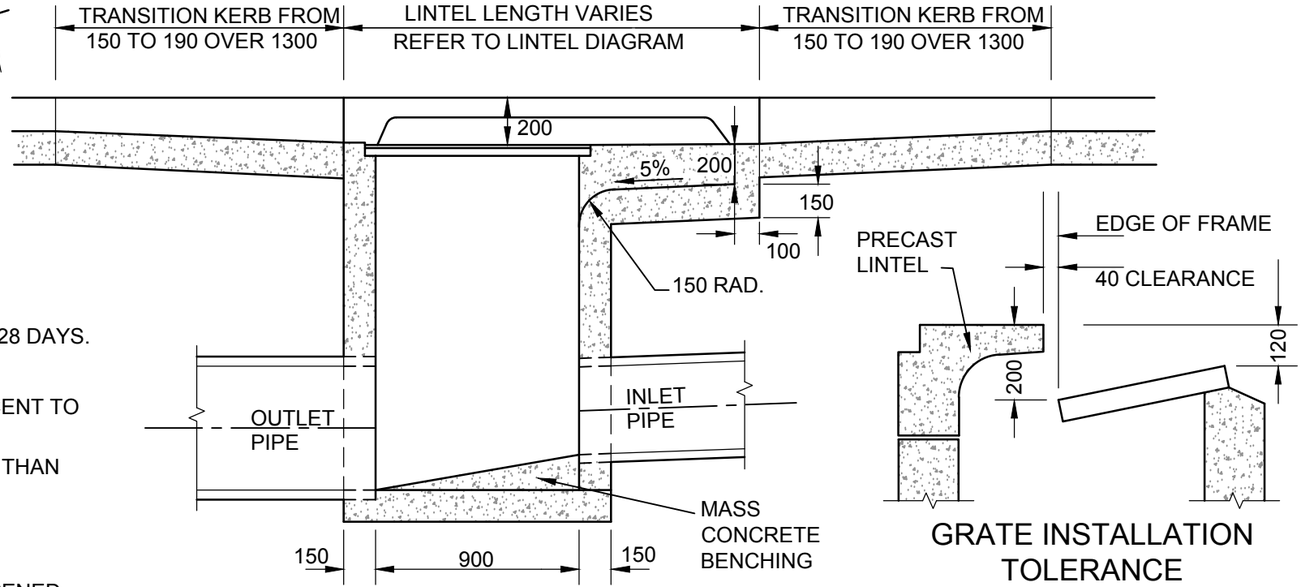
PLAN - STANDARD PIT C (CONVEX)



SECTION A-A
STANDARD GRATED KERB INLET
PIT FOR PIPES UP TO 525 DIA.



SECTION A-A
ENLARGED CHAMBER



SECTION B-B

GRATE INSTALLATION
TOLERANCE
(DIAGRAMTIC ONLY)

NOTES

1. COMPRESSIVE STRENGTH (F'c) FOR CAST IN SITU CONCRETE SHALL BE A MINIMUM 32 MPa AT 28 DAYS.
2. TOP OF BENCHING SHALL BE $\frac{1}{2}$ OF OULET PIPE DIAMETER.
3. 100 Ø SUBSOIL DRAINAGE PIPE 3000 LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED ADJACENT TO INLET PIPES.
4. PIT GRATE TO BE TYPICALLY WELDLOCK HINGED GULLY GRATE GG50D OR EQUIVALENT. LESS THAN CLASS D TO BE USED AS APPROPRIATE.
5. MAXIMUM FRONT ENTRY PIPE; a. STRAIGHT ENTRY - 750 DIA.
   b. SKEW ENTRY 45° - 525 DIA
6. DURING INSTALLATION OF GRATE AND FRAME, ENSURE CLEARANCE BETWEEN LINTEL AND OPENED GRATE (REFER TO INSTALLATION TOLERANCE).
7. PROVIDE STEP IRONS AT 300 CENTERS IN PITS GREATER THAN 1200 DEEP. UNUSED STEP IRON HOLES TO BE RENDERED. REFER TO ADC STANDARD DRAWING FOR STEP IRON DETAILS.
8. PROVIDE SL92 MESH CENTRALLY PLACED TO WALLS AND BASE FOR ALL PITS ≧1.5m DEEP. MINIMUM 50mm COVER PLUS Y12 STARTER BARS SPACED AT 150 C/C.
9. ALL EXPOSED STEELWORK SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS 1650.

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

STNADARD GRATED KERB INLET PIT (RM10)

SURV

DRWN TY

DES

CHKD MW

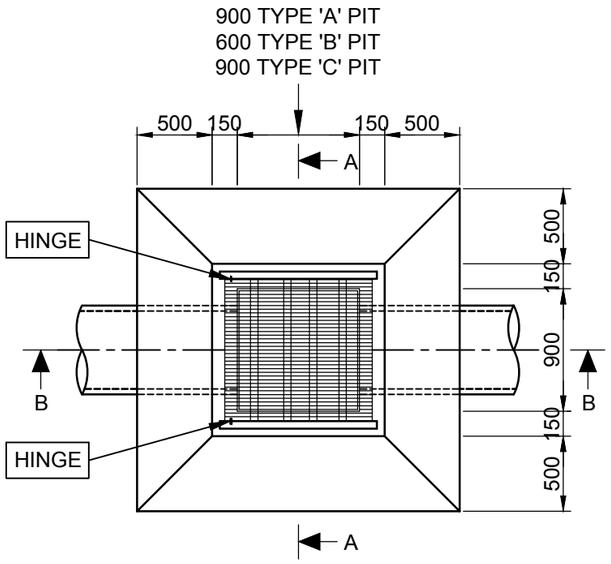
AS SHEET SIZE: A3

DRAWING No: 080-035

AMDT No:

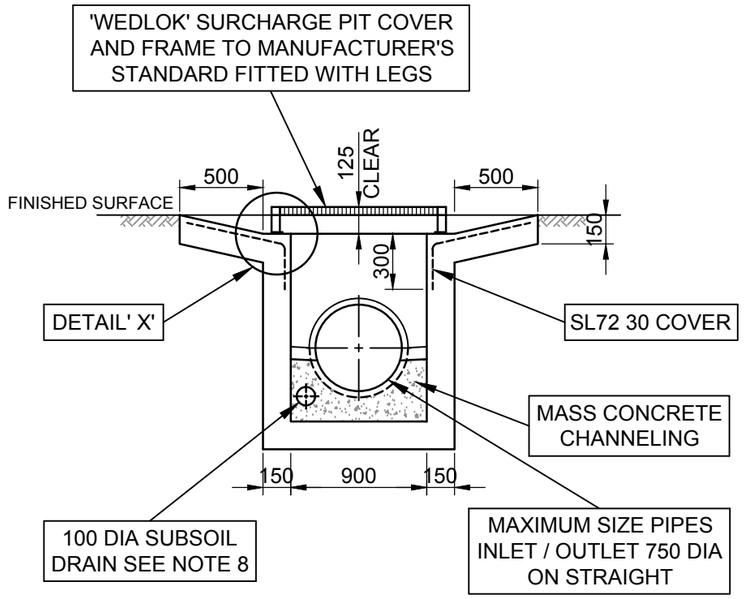
CADFILE 080-035.dwg

DATE 31/08/2016



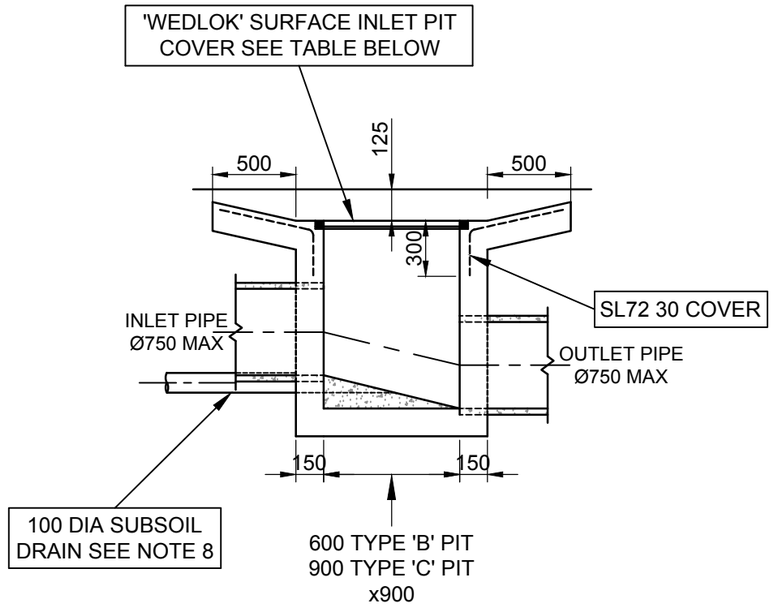
PLAN

SURCHARGE PITS
TYPES A, B & C



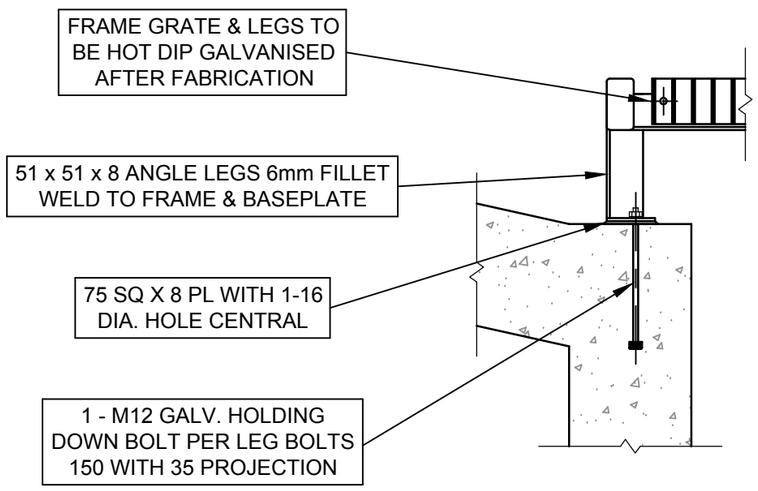
SECTION A-A

SURCHARGE PIT
TYPE A



SECTION B-B

SURCHARGE PIT
TYPES B & C



DETAIL 'X'

SURCHARGE PITS SIZES TABLE	
PIT	OPENING SIZE
TYPE A	900 X 900
TYPE B	600 X 900
TYPE C	900 X 900

NOTES

1. COMPRESSIVE STRENGTH f'c FOR CAST INSITU CONCRETE TO BE A MINIMUM OF 32 MPA AT 28 DAYS .
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. PROVIDE SL92 MESH PLACED CENTRALLY IN WALLS AND BASE OF PITS >1.5m DEEP. 50 MIN COVER RETURN MESH 300 INTO BASE AND SIDES.
4. ALL STEELWORK SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS1650.
5. PROVIDE MIN 50mm DROP THROUGH PIT.
6. WHERE PIT IS DEEPER THAN 1200 PROVIDE STEP IRONS.
7. TOP OF BENCHING TO BE $\frac{1}{2}$ OF OUTLET PIPE DIAMETER.
8. 100 DIA. SUBSOIL DRAINAGE PIPE 300 LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED IN PIPE TRENCHES ADJACENT TO INLET PIPE.

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: M.WILSON, PROGRAM LEADER INVESTIGATION AND DESIGN — DATE: 7/08/2017

SHEET 1 OF 1

STANDARD SURFACE INLET / SURCHARGE PITS (RM11)

SURV

DRWN ST

DES

CHKD MW

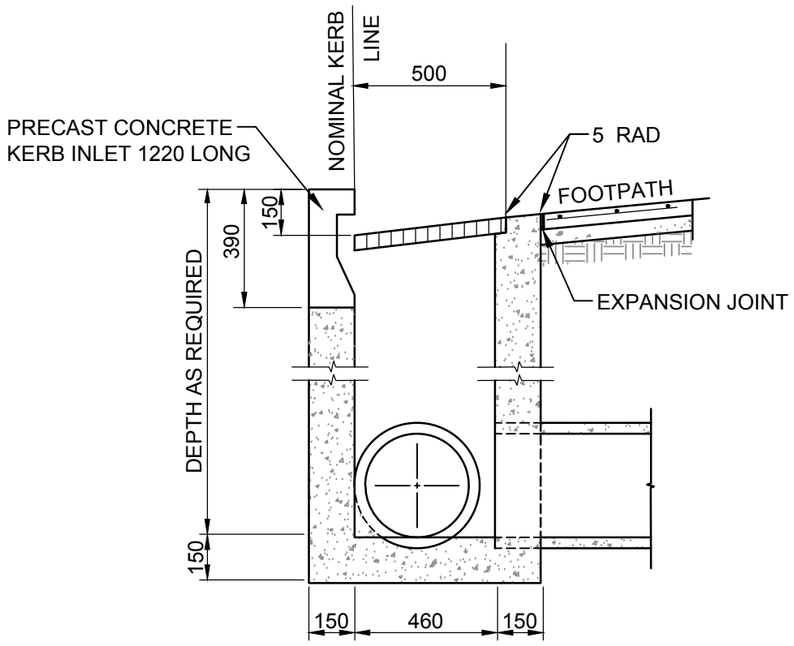
AS SHEET SIZE: A3

DRAWING No: 080-036

AMDT No: A

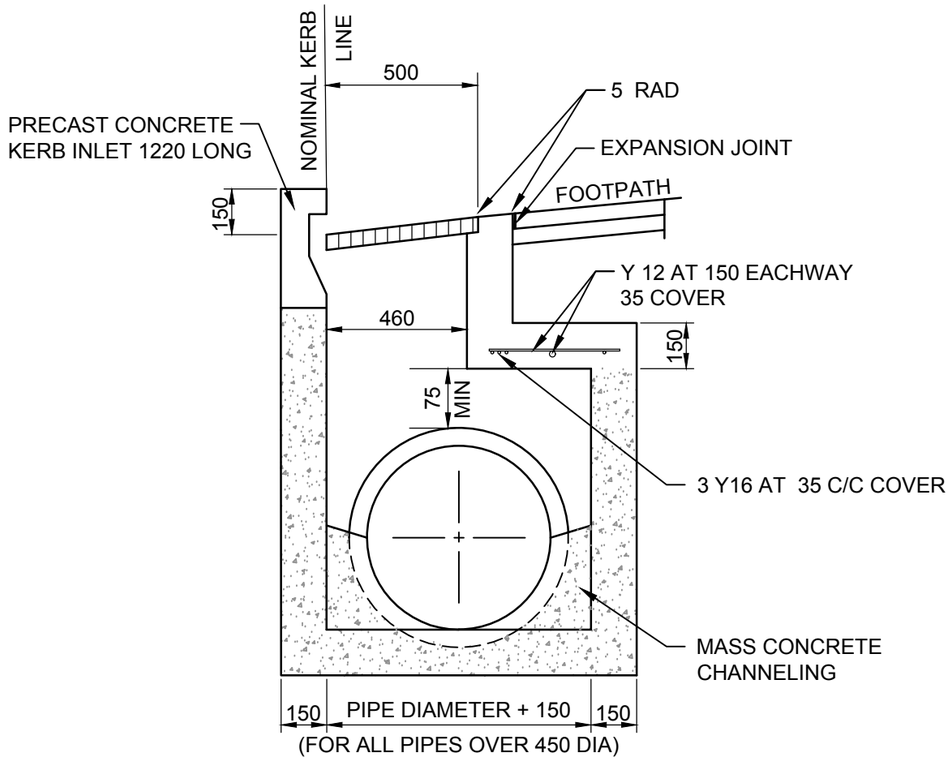
CADFILE 080-036.dwg

DATE 7/08/2016



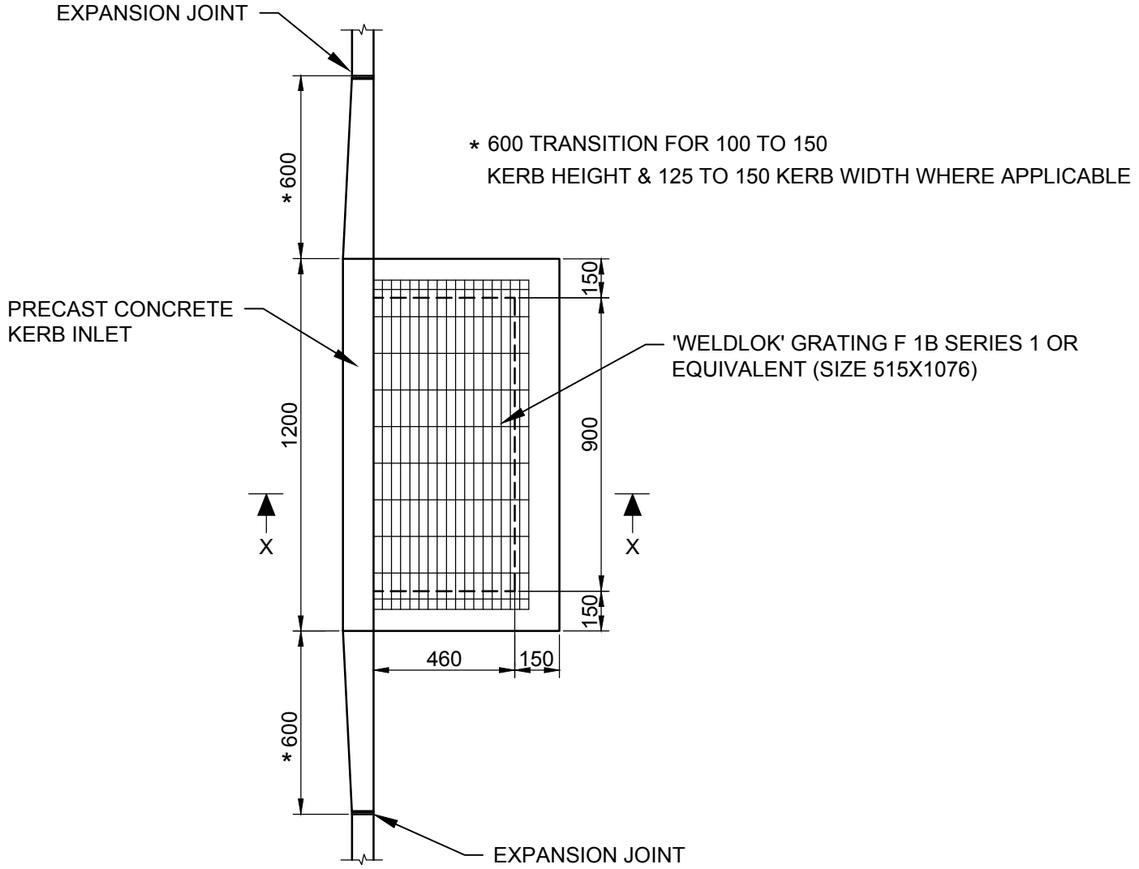
TYPE A

SECTION X-X



TYPE B

SECTION X-X



* 600 TRANSITION FOR 100 TO 150
KERB HEIGHT & 125 TO 150 KERB WIDTH WHERE APPLICABLE

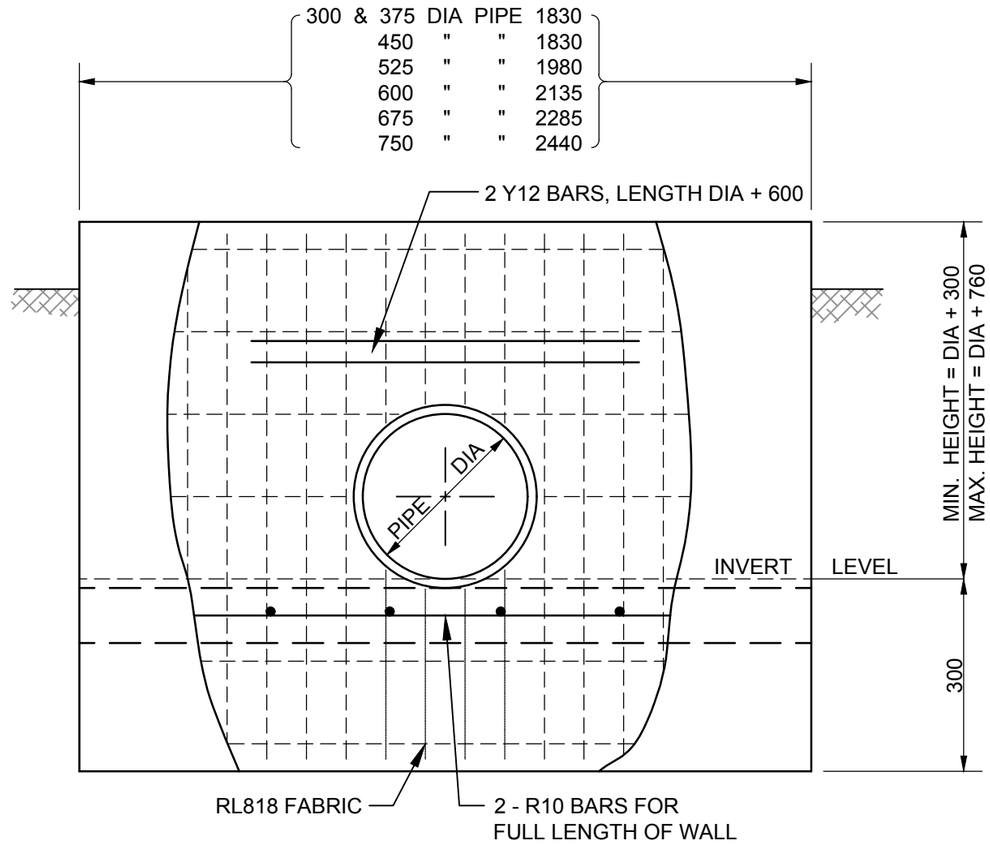
NOTES

1. COMPRESSIVE STRENGHT F'c FOR CAST INSITU CONCRETE TO BE A MINIMUM 32 MPa AT 28 days.
2. PROVIDE CLIMB IRONS WHERE PITS ARE DEEPER THAN 1200.
3. UNUSED STEP IRON HOLES TO BE RENDERED REFER 080-031.

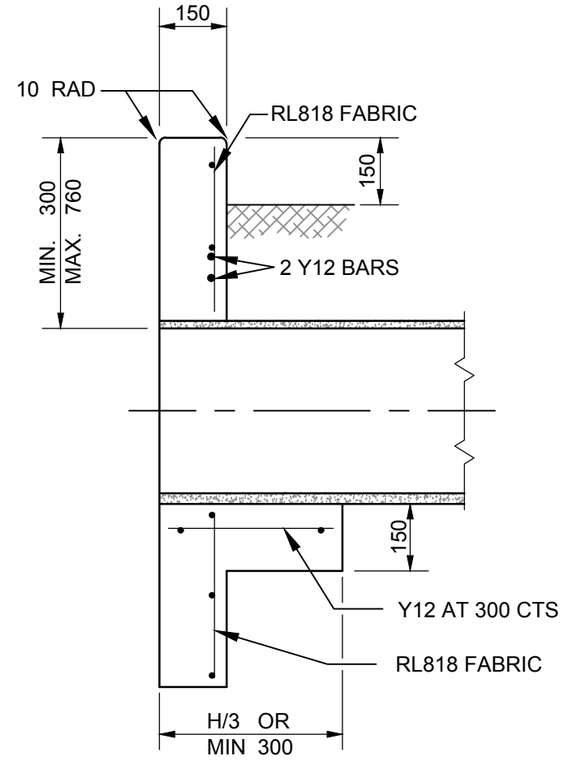
Armidale Regional Council — Dept of Public Infrastructure

STANDARD PATHWAY GRATED KERB INLET PIT (RM 12)

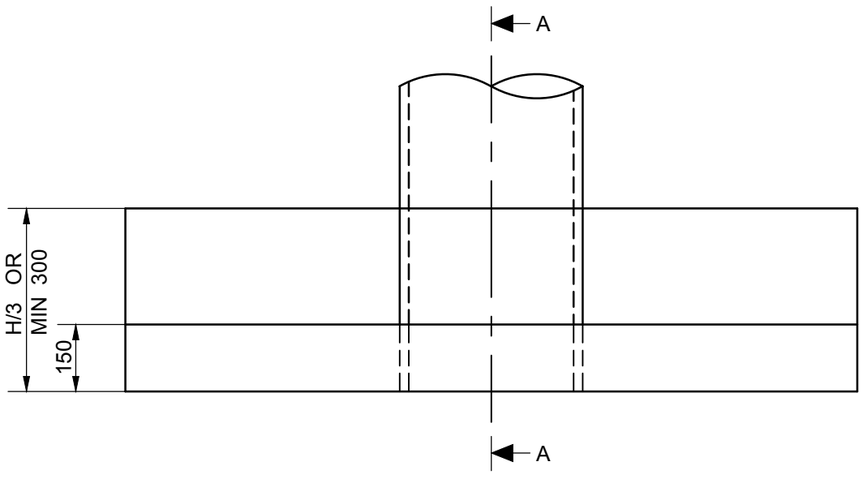
SCALES: NTS	APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT	DATE: 31/08/2016	SHEET 1 OF 1		
SURV		AS SHEET SIZE: A3	DRAWING No: 080-037	AMDT No	
DRWN: PD					
DES					
CHKD: MW		CADFILE: 080-037.dwg	DATE: 31/08/2016		



ELEVATION



SECTION A-A



PLAN

NOTES
1. COMPRESSIVE STRENGTH OF CONCRETE TO BE F'c 32 MPa AT 28 DAYS.
2. MINIMUM COVER OF CONCRETE OVER REINFORCEMENT TO BE 40mm.

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

STANDARD STRAIGHT HEADWALL (RM14)

SURV

DRWN GW

DES

CHKD MW

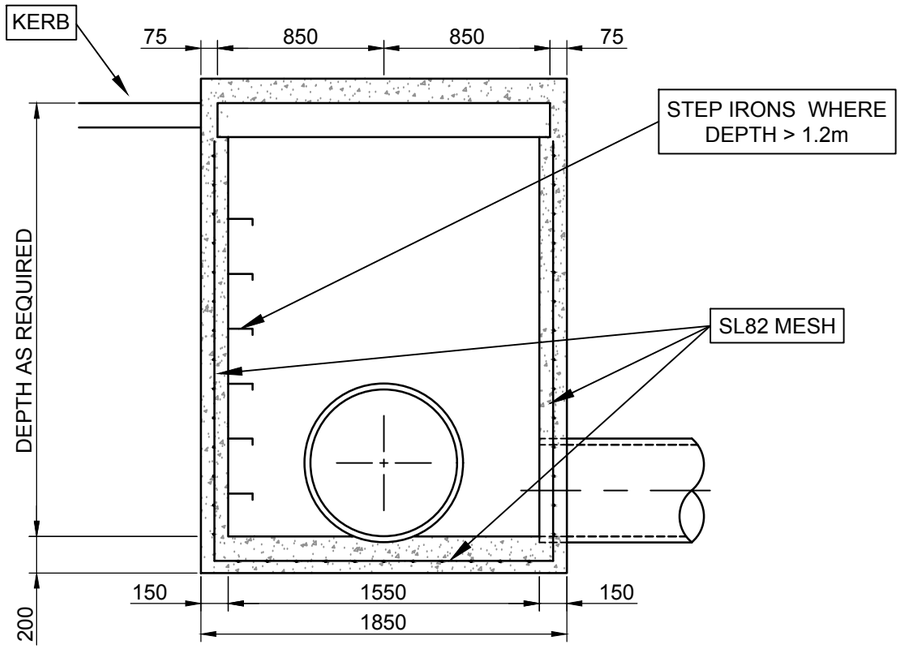
AS SHEET SIZE: A3

DRAWING No: 080-038

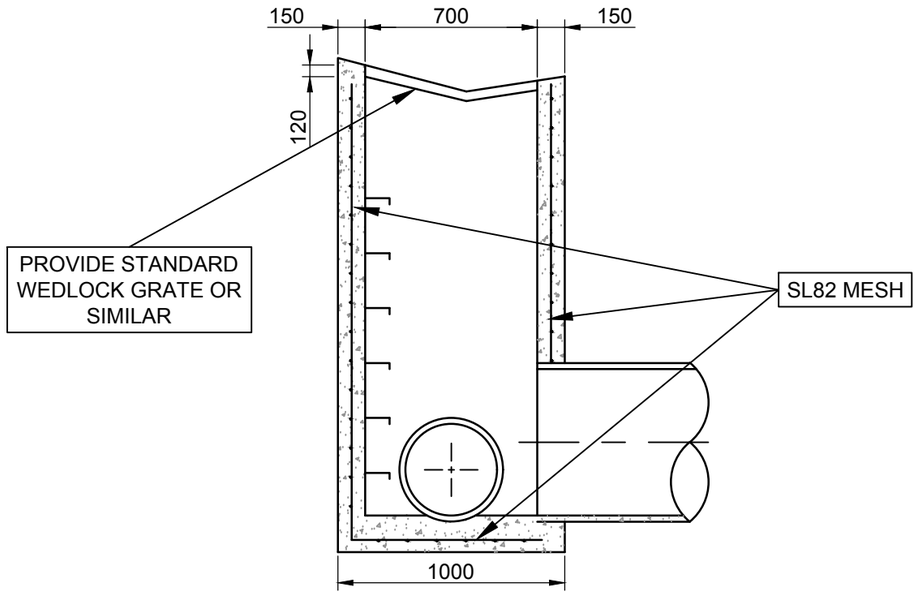
AMDT No:

CADFILE 080-038.dwg

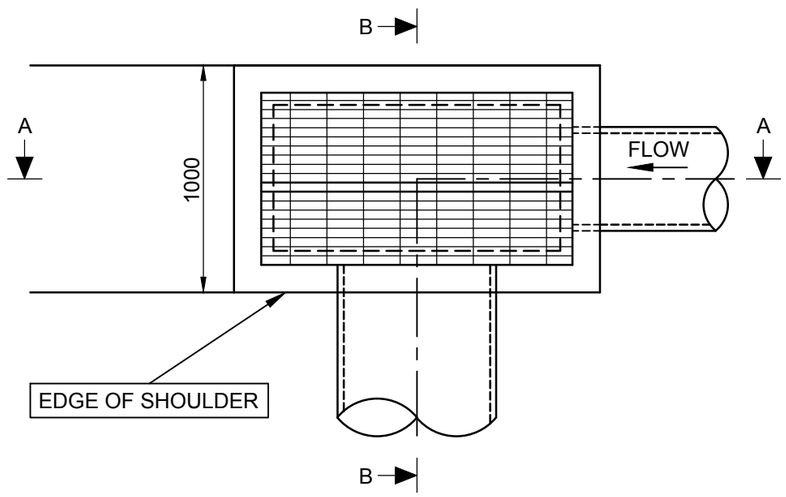
DATE 31/08/2016



SECTION A-A



SECTION B-B



PLAN
'V' DRAIN FOR PIPE Ø450 OR LESS

NOTES

1. COMPRESSIVE STRENGTH f'c, FOR CAST INSITU CONCRETE TO BE MIN N32 TO AS3600
2. ALL DIMENSIONS ARE IN MILLIMETRES
3. PROVIDE SL82 MESH CENTRALLY PLACED TO WALLS AND BASE FOR ALL PITS >1.5m DEEP. MINIMUM 50mm COVER. RETURN MESH 300mm INTO BASE AND SIDES.
4. ALL EXPOSED STEEL WORK SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS 1650
5. 100 DIA. SUBSOIL DRAINAGE PIPE 3000 LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED ADJACENT TO INLET PIPES

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

CAST INSITU GRATED "V" DRAIN PIT FOR ROLL OVER KERB OR DISH DRAIN

SURV

DRWN ST

DES MW

CHKD MW

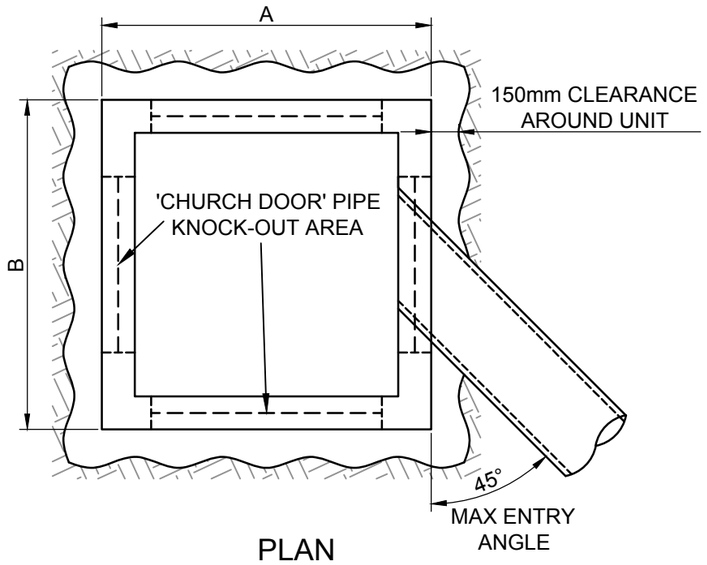
AS SHEET SIZE: A3

DRAWING No: 080-039

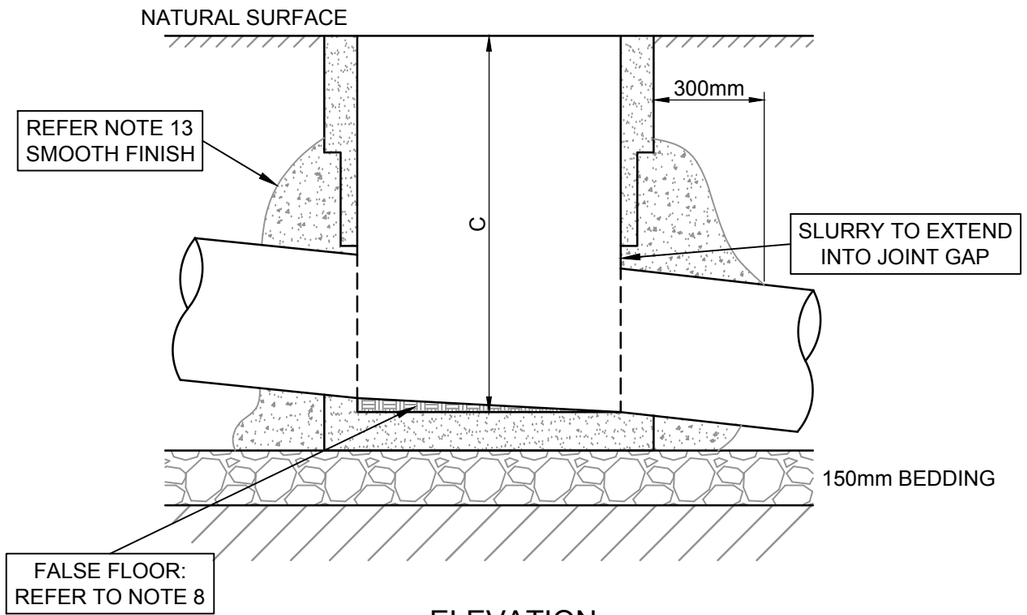
AMDT No:

CADFILE 080-039.dwg

DATE 31/08/2016



PLAN



ELEVATION

MAX PIPE SIZE FOR 45°ENTRY ANGLE	
A x B x C	PIPE
450 x 450 x 450	NONE
600 x 600 x 600	225mm Ø
600 x 600 x 750	225mm Ø
900 x 750 x 600	225mm Ø
900 x 900 x 600	225mm Ø
900 x 750 x 900	375mm Ø
900 x 900 x 900	375mm Ø
900 x 900 x 1200	375mm Ø
1200 x 1200 x 1200	525mm Ø

NOTES

1. PRECAST CONCRETE STORMWATER PITS THAT ARE DAMAGED WITH UNACCEPTABLE DEFECTS SHALL BE DISCARDED.
2. PRECAST UNIT SHALL BE FINISHED TO DESIGN SURFACE LEVELS.
3. ALL EXCAVATION MUST BE 150mm CLEAR OF THE PRECAST UNIT.
4. A 150mm LAYER OF COMPACTED GRANULAR BEDDING MATERIAL SHALL BE PROVIDED UNDER THE UNIT.
5. DO NOT OVERSIZE THE KNOCKOUT HOLE. ONLY THE REQUIRED SIZE HOLE TO ACCOMMODATE THE OUTSIDE PIPE DIAMETER SHOULD BE REMOVED. KNOCKOUT MATERIAL SHALL BE FIRSTLY CUT AROUND PERIMETER THEN GENTLE TAPPING OF EXCESS MATERIAL TO SUITE PIPE SIZE.
6. NOTHING OUTSIDE THE PRESCRIBED KNOCKOUT SECTION IS TO BE REMOVED.
7. PIPES SHALL NOT ENTER THE PIT. BUT CUT FLUSH WITH INSIDE FACE.
8. PIPES SHALL SIT FLUSH WITH THE KNOCKOUT LEDGE. WHERE THE BASE OF THE PIT IS LOWER THAN PIPE INVERT A FALSE FLOOR SHALL BE PORED. THE FLOOR SHALL BE GRADED BETWEEN UPSTREAM AND DOWNSTREAM PIPE INVERTS WITH A SMOOTH FINISH.
9. ALL SUBSOIL DRAINAGE CONNECTIONS SHALL ONLY BE THROUGH THE KNOCKOUT SECTION AND THEN RENDERED IN ACCORDANCE WITH NOTE 12.
10. THE KNOCKOUT SECTIONS ARE DESIGNED FOR PIPES ENTERING AT 90°. PIPES ENTERING AT SKEWED ANGLES SHALL BE CONTAINED WITHIN THE KNOCKOUT AREA. THE KNOCKOUT AREA WIDTH SHALL BE THE PIPE HORIZONTAL SKEW DIMENSIONS.
11. THE ANGLE OF ENTRY SHALL BE NO LESS THAN 45°. SEE TABLE FOR MAXIMUM PIPE SIZE.
12. THE JOINTING SURFACE MUST BE CLEAN.
13. PIPE ENTRY JOINTS ARE TO BE RENDERED WITH AN EPOXY MORTAR TO BE SMOOTH AND FREE FROM INTRUSIONS AND TO ENSURE A WATERTIGHT JOINT.
14. CONCRETE BACKFILL (3:1 SAND/ CEMENT MORTAR) SHALL SURROUND THE PIPE INLET AND OUTLET TO FORM A BELL-HOUSING EFFECT WITH A SMOOTH FINISH.
15. STEP IRONS ARE REQUIRED IN PITS GREATER THAN 1200mm DEEP. UNUSED STEP IRON HOLES TO BE FILLED AND RENDERED.
16. BACKFILLING AROUND EXTERNAL FACES OF THE PRECAST UNIT TO BE SELECTED MATERIAL OR APPROVED PAVEMENT MATERIALS AS APPROPRIATE, ADDED IN 150mm LAYERS AND COMPACTED SIMULTANEOUSLY AROUND THE STRUCTURE TO AVOID DIFFERENTIAL LOADING. ALLOW ALL CONCRETE BACKFILL TO CURE BEFORE BACKFILLING.

Armidale Regional Council — Dept of Public Infrastructure

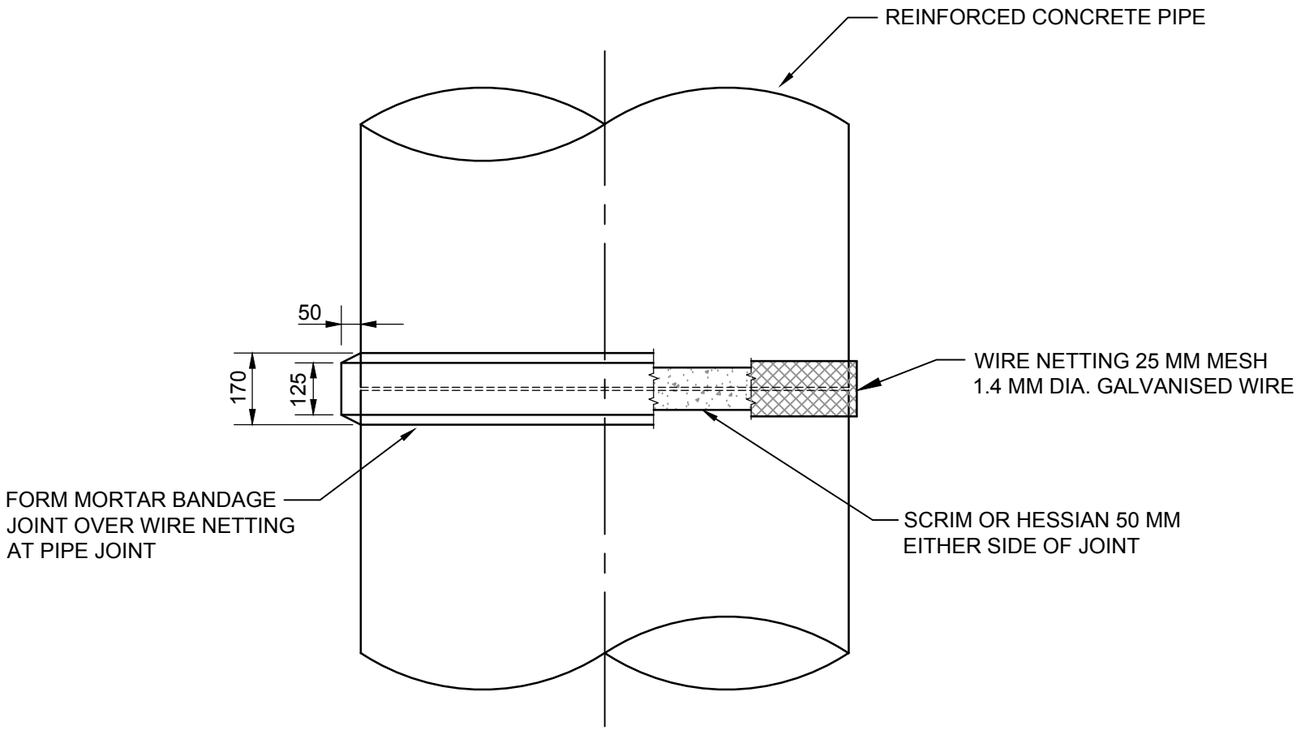
SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

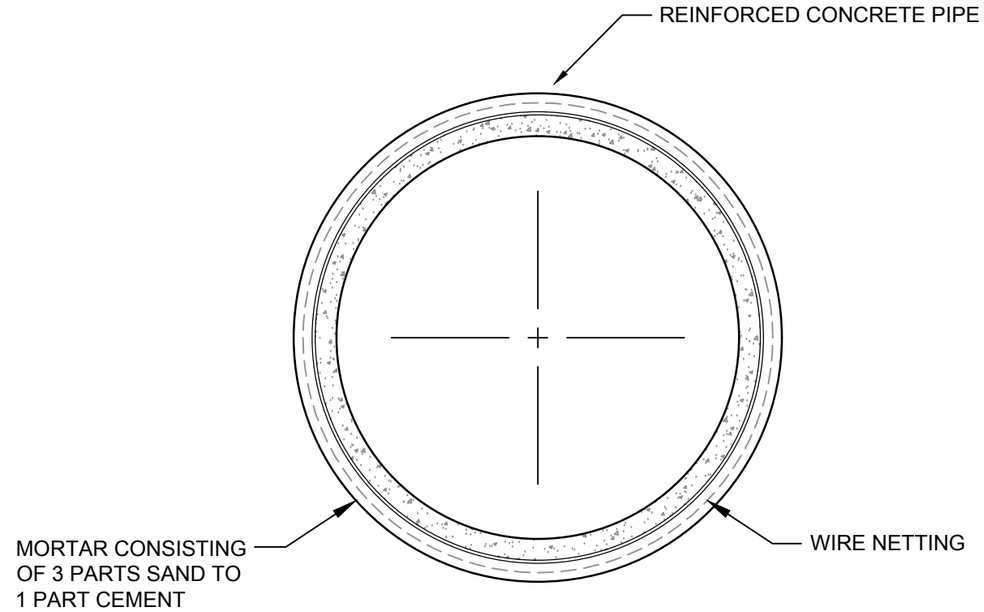
SHEET 1 OF 1

PRECAST STORMWATER PIT INSTALLATION

SURV		AS SHEET SIZE: A3	DRAWING No: 080-040
DRWN	ST		AMDT No:
DES	MW		
CHKD	MW	CADFILE: 080-040.dwg	DATE: 31/08/2016



PLAN



SECTION

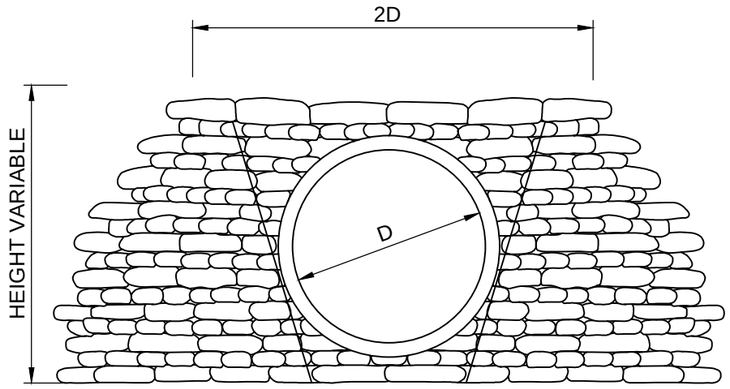
NOTES

1. THIS DRAWING IS FOR REFERENCE TO PREVIOUS INSTALLATION METHOD. REFER TO MANUFACTURERS INSTALLATION DETAILS FOR JOINING NEW FLUSH JOINT PIPE.
2. INSTALLATION OF NEW FLUSH JOINT PIPE IS GENERALLY NOT PERMITTED. THE USE OF NEW FLUSH JOINT PIPE WILL ONLY BE PERMITTED WITH THE APPROVAL OF COUNCIL, WHERE SITE CONSTRAINTS MAKE THE INSTALLATION OF RUBBER RING JOINT PIPE IMPRACTICAL.

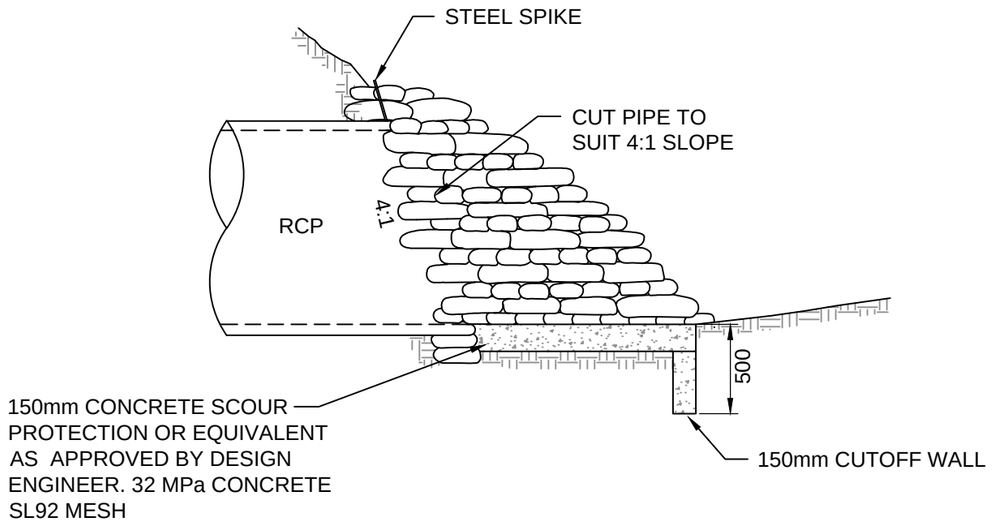
Armidale Regional Council — Dept of Public Infrastructure

BANDAGE JOINT DETAILS (RM13)

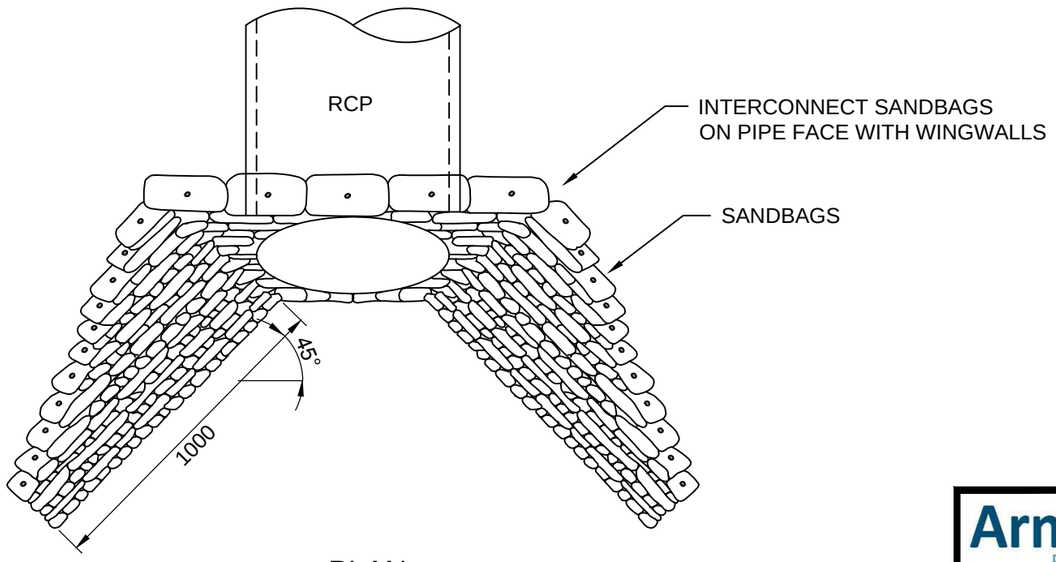
SCALES	NTS
APPROVED	D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT
DATE	31/08/2016
SHEET	1 OF 1
SURV	
DRWN	GW
DES	
CHKD	MW
AS SHEET SIZE	A3
DRAWING No	080-041
AMDT No	
CADFILE	080-041.dwg
DATE	31/08/2016



ELEVATION



SECTIONAL ELEVATION



PLAN

NOTES

1. SANDBAG TO BE FILLED WITH CEMENT STABILIZED SAND OR 10mm DRY CONCRETE MIX TO A UNIFORM SIZE. PLACE DRY AND WET DOWN AFTER INSTALLATION AS LEVELS RISE. ALTERNATING LAYERS IN 90° ORIENTATION.
2. ALL BAG-ENDS TO BE TUCKED NEATLY OUT OF SIGHT.
3. SANDBAGS TO BE SPIKED IN LAYERS OF SIX.
4. FINAL SPIKES TO BE FLUSH WITH TOP OF WALL.
5. SPIKES TO BE Ø10mm PLAIN BAR.

Armidale Regional Council — Dept of Public Infrastructure

SANDBAG HEADWALL

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

SURV

DRWN VC

DES

CHKD MW

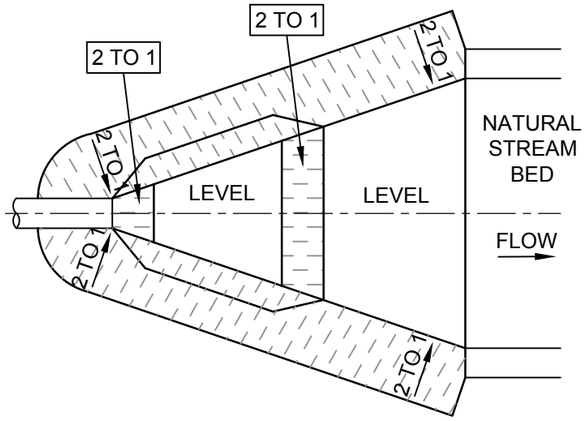
AS SHEET SIZE: A3

DRAWING No: 080-042

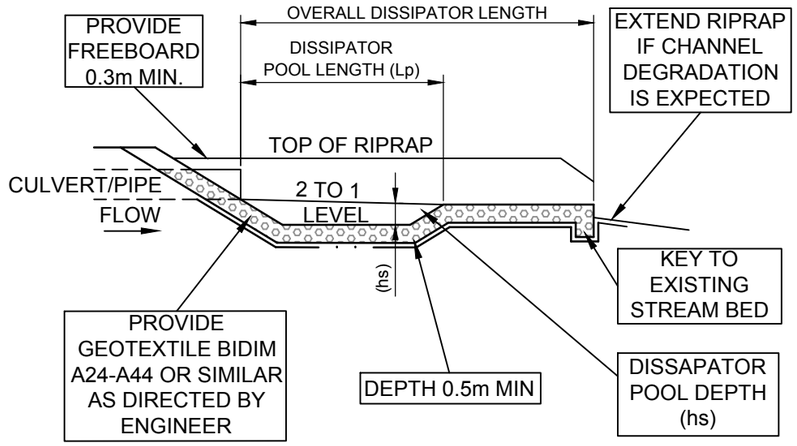
AMDT No:

CADFILE 080-042.dwg

DATE 31/08/2016



PLAN



ELEVATION (SECTIONED ALONG CENTRELINE)

RIPRAP OUTLET PROTECTION / ENERGY DISSIPATOR PIPE OUTLET ONLY

PLAN

ELEVATION (SECTIONED ALONG CENTRELINE)

RIPRAP OUTLET PROTECTION / ENERGY DISSIPATOR PIPE WITH HEADWALL

PIPE CULVERT RIP RAP OUTLET TREATMENT

PIPE SIZE (mm)	PIPE GRADE %	OUTLET ROCK DIA. (m)	OVERALL LENGTH (m)	EXIT WIDTH (m)	DISSAPATOR POOL LENGTH Lp (m)	DISSAPATOR POOL DEPTH hs (m)
Ø 300	<0.5	0.1	1.5	1.2	n/a	n/a
	0.5 - 2.0	0.1	1.0	1.0	1.0	0.10
	2.0 - 2.5	0.2	2.0	1.5	1.0	0.10
	2.5 - 3.0	0.2	2.5	2.0	1.5	2.0
	3.0 - 4.0	0.2	3.0	2.0	2.0	2.0
	4.0 - 5.0	0.2	4.0	3.0	2.5	2.5
	> 5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 375	<0.5	0.1	1.5	1.5	n/a	n/a
	0.5 - 2.0	0.1	1.5	1.0	1.0	0.10
	2.0 - 3.0	0.2	1.5	1.5	1.0	0.10
	3.0 - 4.0	0.2	2.0	1.5	1.5	0.15
	4.0 - 5.0	0.2	2.5	2.0	2.0	0.20
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 450	<0.5	0.2	2.5	2.0	n/a	n/a
	0.5 - 1.0	0.2	2.5	2.0	n/a	n/a
	1.0 - 2.0	0.2	1.0	1.0	1.0	0.10
	2.0 - 3.0	0.2	1.5	1.0	1.0	0.10
	3.0 - 4.0	0.2	2.0	2.0	1.5	0.15
	4.0 - 5.0	0.2	3.5	3.0	2.5	0.25
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 525	<0.5	0.2	1.5	1.5	n/a	n/a
	0.5 - 1.0	0.2	0.5	0.5	0.5	0.10
	1.0 - 2.0	0.2	1.0	1.0	1.0	0.10
	2.0 - 3.0	0.2	2.0	2.0	1.5	0.15
	3.0 - 4.0	0.2	3.5	3.0	2.0	0.20
	4.0 - 5.0	0.2	4.0	3.5	2.5	0.25
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 600	<0.5	0.2	2.5	2.0	n/a	n/a
	0.5 - 2.0	0.2	2.0	1.5	1.0	0.10
	2.0 - 3.0	0.3	2.5	2.0	1.5	0.15
	3.0 - 4.0	0.3	3.0	2.5	2.0	0.20
	4.0 - 5.0	0.3	4.0	3.5	2.5	0.25
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				

NOTES

1. WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT THE SAME LEVEL OR LOWER THAN NATURAL CHANNEL AT THE END OF THE BASIN.
2. CULVERT AND TREATMENT MAY BE VARIED TO SUIT SITE CONDITIONS.
3. A SMALL DIAMETER PIPE SHOULD BE PROVIDED TO DRAIN POOL DURING PERIODS OF LOW FLOW.

Armidale Regional Council — Dept of Public Infrastructure

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

TYPICAL RIPRAP OUTLET PROTECTION DN300 TO DN600 PIPE

SURV
DRWN ST
DES MW
CHKD MW

AS SHEET SIZE: A3

DRAWING No: 080-043

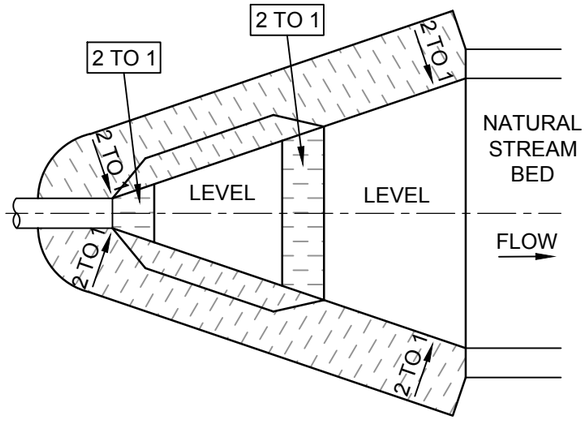
AMDT No:

CADFILE 080-043.dwg

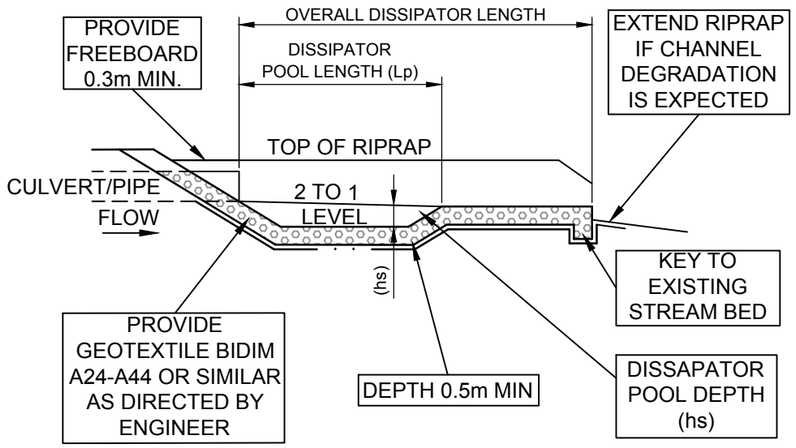
DATE 31/08/2016

PIPE CULVERT RIP RAP OUTLET TREATMENT

PIPE SIZE (mm)	PIPE GRADE %	OUTLET ROCK DIA. (m)	OVERALL LENGTH (m)	EXIT WIDTH (m)	DISSAPATOR POOL LENGTH Lp (m)	DISSAPATOR POOL DEPTH hs (m)
Ø 750	0.0 - 1.0	0.2	1.5	1.5	n/a	n/a
	1.0 - 2.0	0.3	1.0	1.0	0.5	0.10
	2.0 - 3.0	0.3	1.0	1.0	1.0	0.10
	3.0 - 4.0	0.3	2.0	2.0	1.5	0.15
	4.0 - 5.0	0.3	3.0	3.0	2.0	0.20
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 900	0.0 - 1.0	0.2	3.0	3.0	n/a	n/a
	1.0 - 2.0	0.3	2.0	2.0	1.0	0.10
	2.0 - 3.0	0.3	3.5	3.5	2.5	0.25
	3.0 - 4.0	0.3	4.0	4.0	3.0	0.30
	4.0 - 5.0	0.3	7.0	6.5	4.5	0.35
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 1050	<0.5	0.2	3.0	3.1	n/a	n/a
	0.5 - 1.0	0.3	4.0	4.0	2.5	0.25
	1.0 - 2.0	0.3	5.0	5.0	3.5	0.3
	2.0 - 5.0	0.3	5.0	5.0	3.5	0.35
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 1200	<0.5	0.2	6.0	6.5	n/a	n/a
	<0.5	0.3	5.0	5.5	3.5	0.30
	0.5 - 1.0	0.3	7.0	7.0	4.5	0.45
	1.0 - 4.0	0.4	3.0	3.0	2.0	0.20
	4.0 - 5.0	0.4	4.5	5.0	3.0	0.30
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 1500	<0.5	0.2	6.0	7.0	n/a	n/a
	<0.5	0.3	5.0	6.0	3.5	0.4
	0.5 - 2.0	0.4	3.0	3.5	2.0	0.2
	2.0 - 4.0	0.4	4.5	5.5	3.0	0.3
	4.0 - 5.0	0.4	5.5	7.0	4.0	0.4
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 1800	<0.5	0.3	6.0	8.0	n/a	n/a
	<0.5	0.4	4.5	6.0	3.0	0.3
	0.5 - 5.0	0.4	10.0	13.0	7.0	0.7
	>5.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				
Ø 2100	<0.5	0.4	7.5	10.5	n/a	n/a
	<0.5	0.4	10.0	13.5	7.0	0.8
	<0.5	0.5	8.0	11.0	5.5	0.7
	>1.0	DETAILED DESIGN RQD. BASED ON FLOW & VELOCITY				

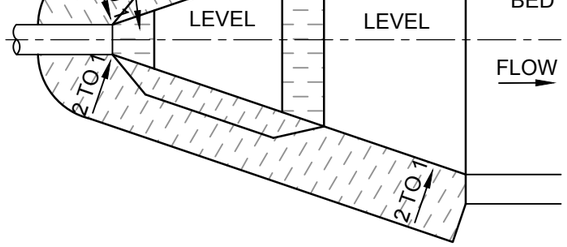


PLAN

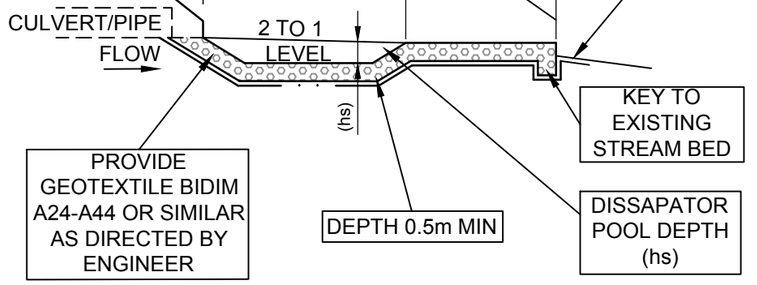


ELEVATION (SECTIONED ALONG CENTRELINE)

RIPRAP OUTLET PROTECTION / ENERGY DISSIPATOR PIPE OUTLET ONLY



PLAN



ELEVATION (SECTIONED ALONG CENTRELINE)

RIPRAP OUTLET PROTECTION / ENERGY DISSIPATOR PIPE WITH HEADWALL

NOTES

1. WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT THE SAME LEVEL OR LOWER THAN NATURAL CHANNEL AT THE END OF THE BASIN.
2. CULVERT AND TREATMENT MAY BE VARIED TO SUIT SITE CONDITIONS.
3. A SMALL DIAMETER PIPE SHOULD BE PROVIDED TO DRAIN POOL DURING PERIODS OF LOW FLOW.

Armidale Regional Council — Dept of Public Infrastructure

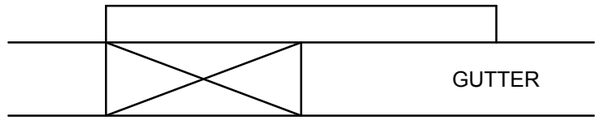
SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 1

TYPICAL RIPRAP OUTLET PROTECTION DN750 TO DN2100 PIPE

SURV		AS SHEET SIZE	DRAWING No	AMDT No
DRWN	ST	A3	080-044	
DES	MW			
CHKD	MW	CADFILE 080-44.dwg	DATE 31/08/2016	



ON GRADE

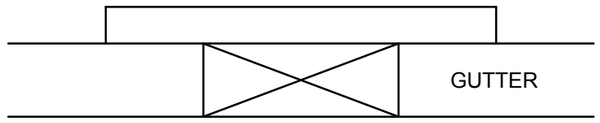
(i) GUTTER FLOW < 0.05 m^3/s
Q INLET = 0.05 m^3/s

(ii) GUTTER FLOW > 0.05 m^3/s
Q INLET = I EFF Q gutter
Q BYPASS = (1-I EFF) Q gutter

I EFF = INLET EFFICIENCY OF PIT SEE FIG 9.3

FIGURE 9.2 AND 9.3 GIVE RESULTS DERIVED FROM MODEL TESTING OF GULLY PITS AND GUTTER FLOWS CARRIED OUT ON BEHALF OF THE DEPARTMENT BY PUBLIC WORKS DEPARTMENT HYDRAULIC LABORATORY.

KERB INLET PIT WITH GRATE ON GRADE



AT A ROAD SAG POINT DRAINED BY A SIDE ENTRY GRATED INLET PIT THE FLOWRATE ENTERING THE PIT IS, FOR DESIGN PURPOSES, BASED UPON:-

FOR PONDING UP TO TOP OF KERB

Q INLET = 1.66 $P.d^{1.5}$ m^3/s

WHERE P = LENGTH OF INLET OPNEING PLUS TWICE THE WIDTH OF THE GRATE (m.)

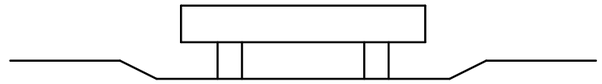
d = DEPTH OF WATER IN GUTTER (m.)

FOR STANDARD RM10 PITS THE DEPTH OF WATER IN THE GUTTER SHALL BE 0.16 m WHICH GIVES THE FOLLOWING INLET CAPACITIES.

1.8 m LINTEL	0.276 m^3/s
2.4 m LINTEL	0.340 m^3/s
3.0 m LINTEL	0.404 m^3/s

FOR DEPTHS GREATER THAN 1.4 h REFER TO ARR.

KERB INLET PIT WITH GRATE AT SAG



PONDING UP TO 1.4 TIMES HEIGHT OF OPENING

THE INTAKE CAPACITY SHALL BE CALCULATED FROM:-

Q INLET = 1.66 $L.D^{1.5}$ m^3/s

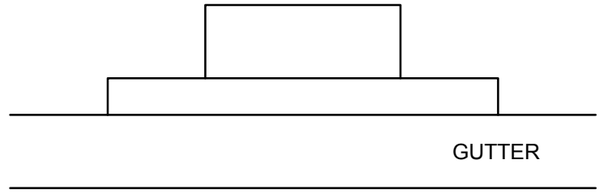
WHERE L = INLET WIDTH IN (m)
d = AVERAGE DEPTH OF PONDING (m)

PONDING GREATER THAN 1.4 TIMES HEIGHT OF OPENING

Q INLET = $0.67A[2g(d-h/2)]^{0.5}$ m^3/s

WHERE A = AREA OF OPENING (m^2)
h = HEIGHT OF INLET (m)
d = AVERAGE DEPTH OF PONDING (m)
g = GRAVITATIONAL ACCELERATION (9.8 m/s^2)

LETTERBOX PIT AT SAG (RM9)



$Q = 1.66\ Ld^{1.5}$

L = INLET WIDTH
d = 1.4H WHERE H = HEIGHT OF INLET
= 1.4 X 0.125 = 0.175

1.8 M INLET OPENING
Q = 1.66 X 1.8 X $0.175^{1.5}$ = 219 L/S

2.4 M INLET OPENING
Q = 1.66 X 2.4 X $0.175^{1.5}$ = 219 L/S

3.0 M INLET OPENING
Q = 1.66 X 3.0 X $0.175^{1.5}$ = 219 L/S

KERB INLET PIT NO GRATE AT SAG (RMS)

NOTES:

1. DATA DERIVED FROM PUBLIC WORKS DEPARTMENT HYDRAULIC LABORATORY - DEPARTMENT HOUSING 1987.
2. ARMIDALE REGIONAL COUNCIL ACCEPTS RESPONSIBILITY FOR THEIR USE.
3. ALTERNATE INLET CHARTS MAY CONSIDERED BUT MUST BE ASSESSED FOR COMPATIBILITY OF PIT CONFIGURATION.

Armidale Regional Council — Dept of Public Infrastructure

DRAINING PIT INLET CAPACITIES

SCALES: NTS

APPROVED: D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — DATE: 31/08/2016

SHEET 1 OF 2

SURV
DRWN ST
DES MW
CHKD MW

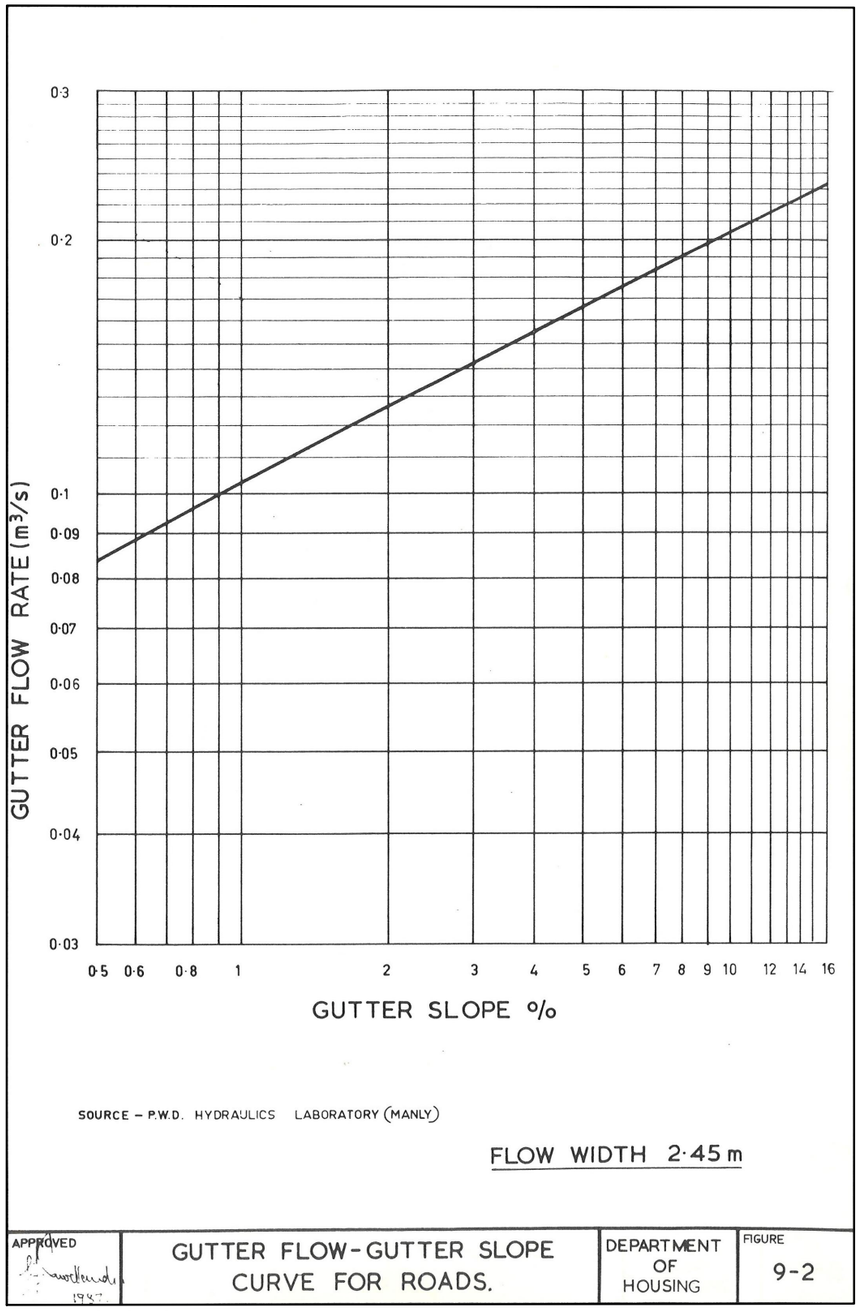
AS SHEET SIZE: A3

DRAWING No: 080-045

AMDT No:

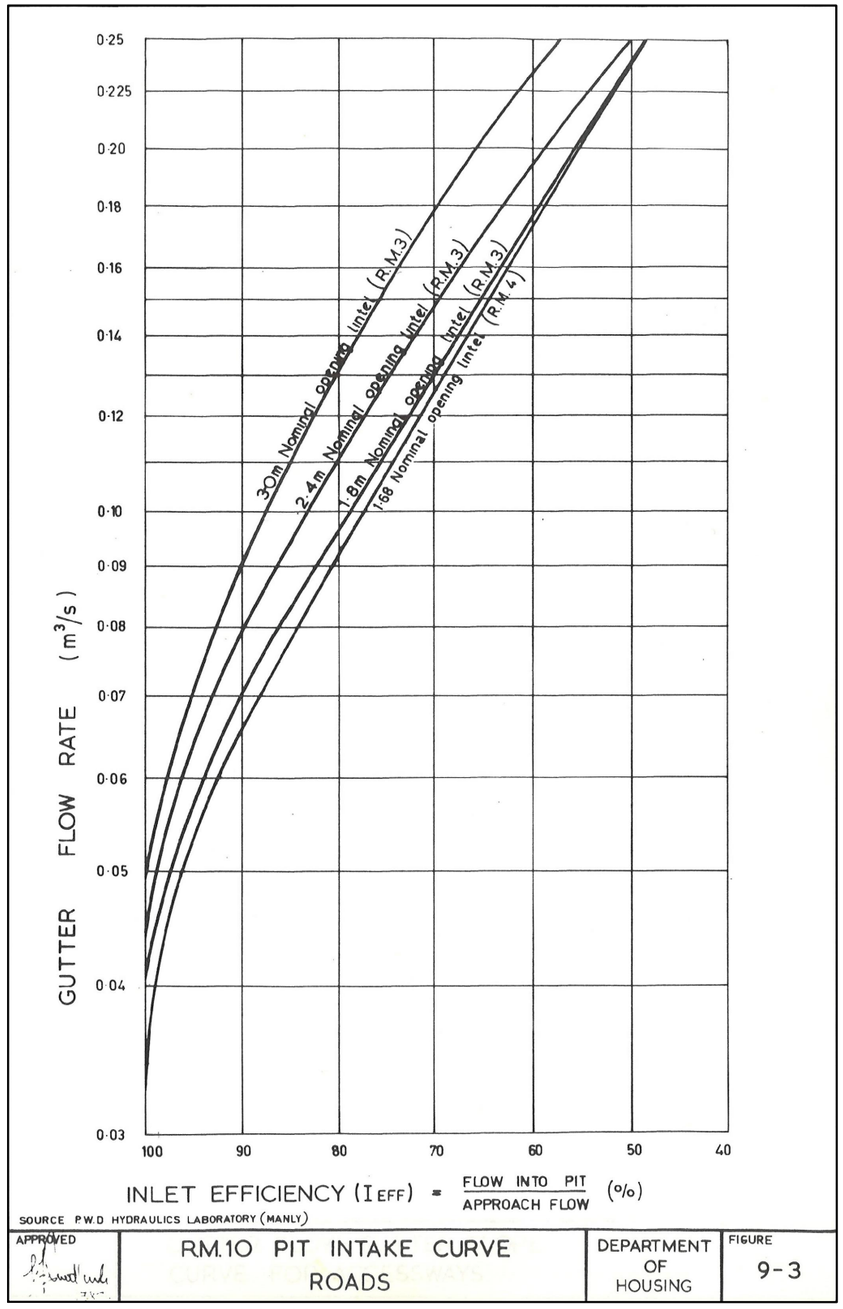
CADFILE 080-045_1.dwg

DATE 31/08/2016



APPROVED	GUTTER FLOW-GUTTER SLOPE CURVE FOR ROADS.	DEPARTMENT OF HOUSING	FIGURE 9-2

DEPT. HOUSING MANUAL 1987



APPROVED	RM.10 PIT INTAKE CURVE ROADS	DEPARTMENT OF HOUSING	FIGURE 9-3

DEPT. HOUSING MANUAL 1987

STANDARD 150 mm KERB AND GUTTER OR ROLL KERB AND GUTTER FLOW ADOPTING A FLOW WIDTH OF 2.45 m INTO THE STANDARD CARRIAGEWAY CROSSFALL (3%) SHALL BE TAKEN FROM THE CHART SHOWN IN FIGURE 9.2 OR CALCULATED FROM THE EQUATION:

$$Q_{GUTTER} = 0.104\, S^{0.3}\ (m^3/s)$$

WHERE "S" IS THE LONGITUDINAL GUTTER SLOPE EXPRESSED AS A PERCENTAGE.

Armidale Regional Council — Dept of Public Infrastructure

DRAINING PIT INLET CAPACITIES

SCALES	NTS
APPROVED	D. MAUNDER, MANAGER ENGINEERING AND STANDARDS SUPPORT — 31/08/2016 DATE
SHEET	2 OF 2
SURV	
DRWN	ST
DES	MW
CHKD	MW
AS SHEET SIZE	A3
DRAWING No	080-045
AMDT No	
CADFILE	080-045_2.dwg
DATE	31/08/2016

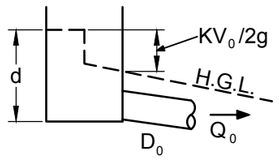
NOTATION:

SYMBOLS

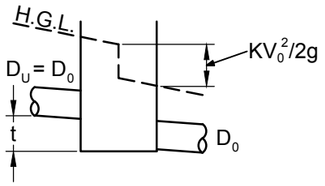
Q	FLOW RATE
D	DIAMETER
d	DEPTH
V	VELOCITY
K	HEADLOSS COEFFICIENT
H	STATIC HEADLOSS = $KV_0^2/2g$
t	PIPE DROP
G	ACCELERATION DUE TO GRAVITY (9.8m/s^2)

SUBSCRIPTS

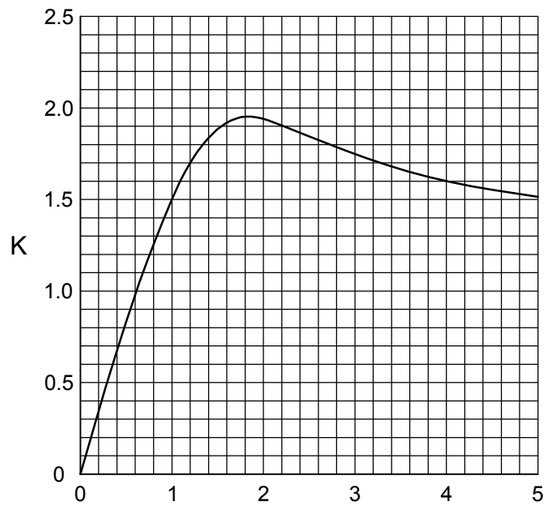
O	OUTLET
U	UPSTREAM
L	LATERAL
G	GRATING OR KERB INLET
hv	HIGHER VELOCITY
lv	LOWER VELOCITY
f	FAR
sj	STRAIGHT JUNCTION



GRATE OR KERB INLET



STRAIGHT JUNCTION
WITH DROP



TWO PIPE JUNCTIONS WITHOUT DROP

D_U/D_0	BRANCH POINT NOT ON DOWNSTREAM FACE			BRANCH POINT ON DOWNSTREAM FACE			WITH USE OF VERTICAL DEFLECTORS	
θ	45°	67.5°	90°	45°	22.5°	0°	90°	67.5°
0.7	1.5	1.7	2.05	-0.9	-1.6	-2.0	0.6	0.4
0.8	1.65	1.8	2.1	0	-0.6	-1.0	0.7	0.5
0.9	1.75	1.9	2.15	0.45	0	-0.25	0.9	0.7
1.0	1.85	2.0	2.2	0.6	0.3	0.2	1.1	0.9

FOR GRATES θ=22.5° TO 90° ADD Q_g/Q_o IF $d/D_o > 2$
ADD $2Q_g/Q_o$ IF $d/D_o < 2$
θ=0° ADD $6Q_g/Q_o$

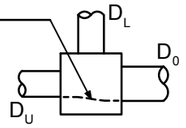
MITRE BENDS (NO PITS)

ANGLE	0°	22.5°	45°	60°	90°
K	0	0.1	0.29	0.49	1.1

THREE PIPE JUNCTIONS

STRAIGHT JUNCTION WITH 90° LATERAL

VERTICAL DEFLECTOR

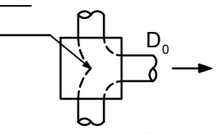


Q_U/Q_0		0.3	0.6	0.9	1.0
$D_0 = D_U$	NO DEFLECTOR: $K_U = K_L$ =	1.8	1.3	0.5	0.2
	WITH DEFLECTOR: $K_U = K_L$ =	1.4	1.0	0.4	0.2

IF $D_0 > D_U$: ADD $\frac{1}{2}(Q_U/Q_0)(K_{USJ})$ (ACTUALLY REDUCES K)
WITH GRATE: ADD Q_g/Q_0 IF $d/D_0 > 2$
ADD $2Q_g/Q_0$ IF $d/D_0 < 2$

OPPOSED INLETS

VERTICAL DEFLECTOR

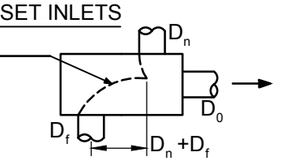


Q_{hv}/Q_0	0.3	0.6	0.9
$D_0 = D_{hv}$: K_{lv} =	1.5	2.0	3.0

WITH GRATE: NO CHANGE
WITH DEFLECTOR: SUBTRACT 0.3, AND K ≯ 2

OPPOSED OFFSET INLETS

VERTICAL DEFLECTOR



Q_n IS Q_{hv} :K_n =1.6, K_f =1.9
Q_n IS Q_{lv} :K_n =1.6, K_f =2.4
WITH GRATE: ADD 0.2
WITH DEFLECTOR SUBTRACT 0.3

NOTES
1. INFORMATION FROM DEPARTMENT OF HOUSING MANUAL 1987.
2. REFER TO ARMIDALE REGIONAL COUNCIL'S ENGINEERING CODE STORMWATER DRAINAGE DESIGN HANDBOOK FOR ADDITIONAL HEADLOSS DATA.

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SCALES NTS

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SHEET 1 OF 1

SURV

DRWN ST

DES

CHKD MW

AS SHEET SIZE A3

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DATE 31/08/2016

PIT STATIC HEADLOSS COEFFICIENTS