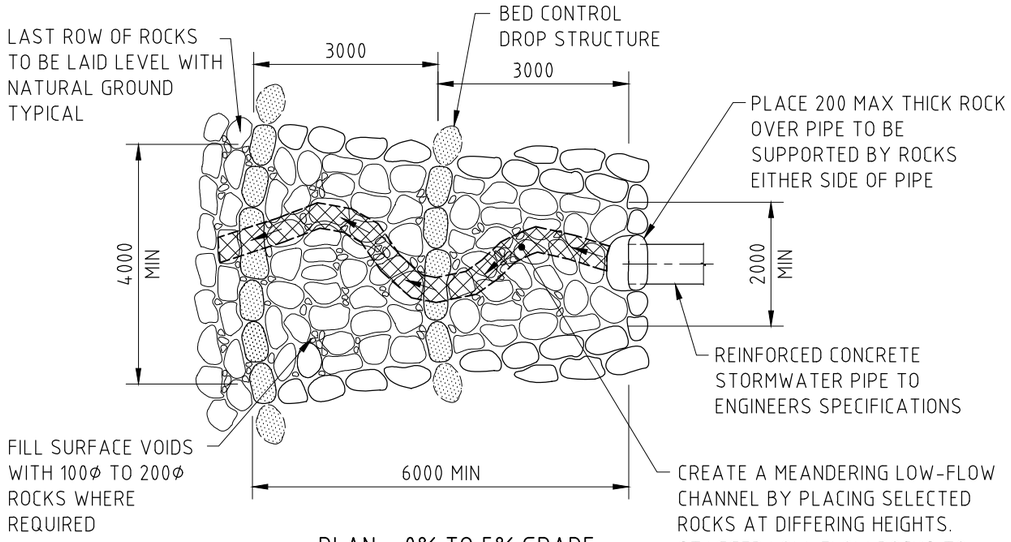
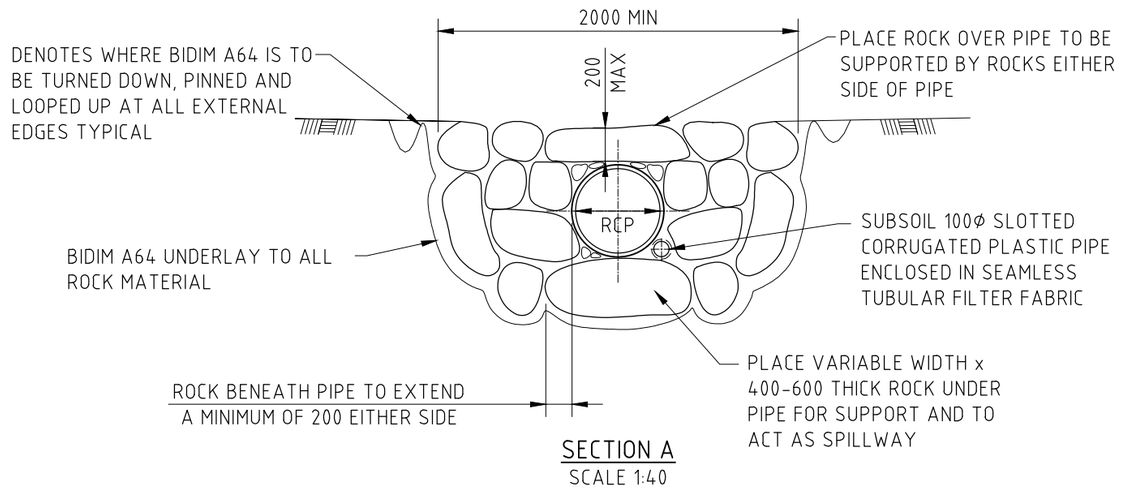
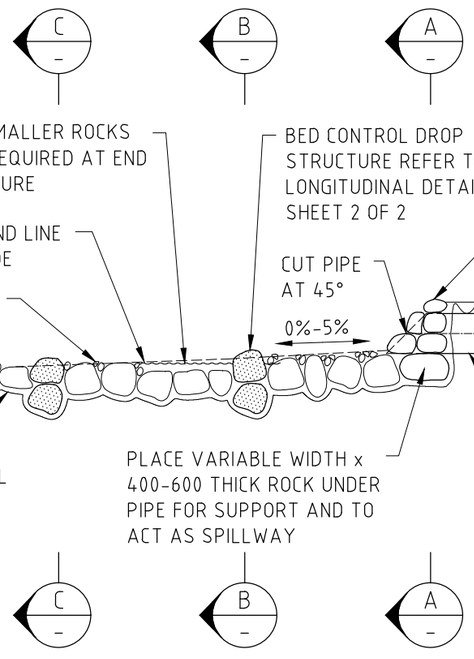



PLAN - 0% TO 5% GRADE
SCALE 1:100




SECTION A
SCALE 1:40



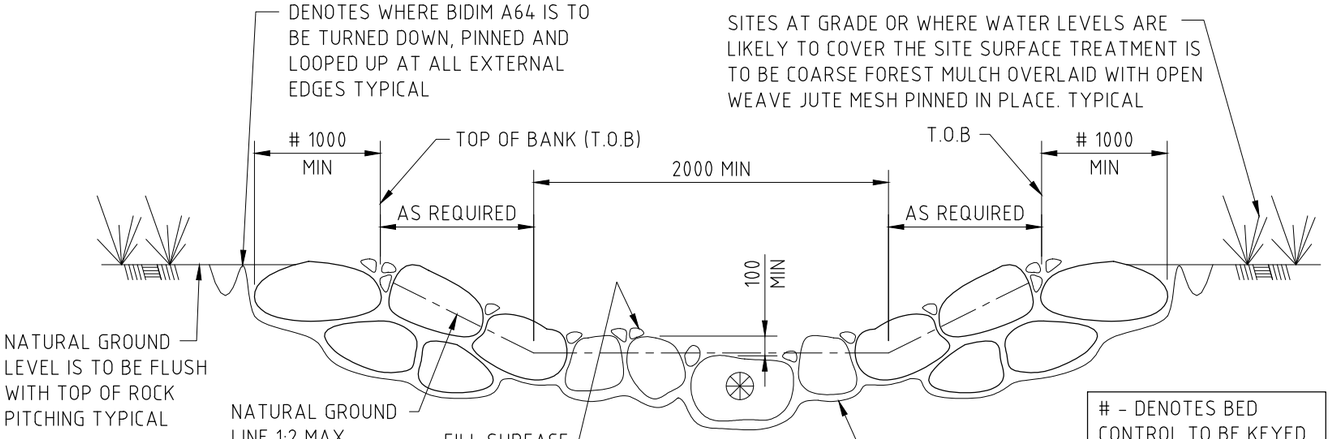

NOTE:
FOUNDING MATERIAL TO ACHIEVE A MINIMUM ALLOWABLE BEARING CAPACITY OF 150KPa




LONGITUDINAL SECTION
SCALE 1:100

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE

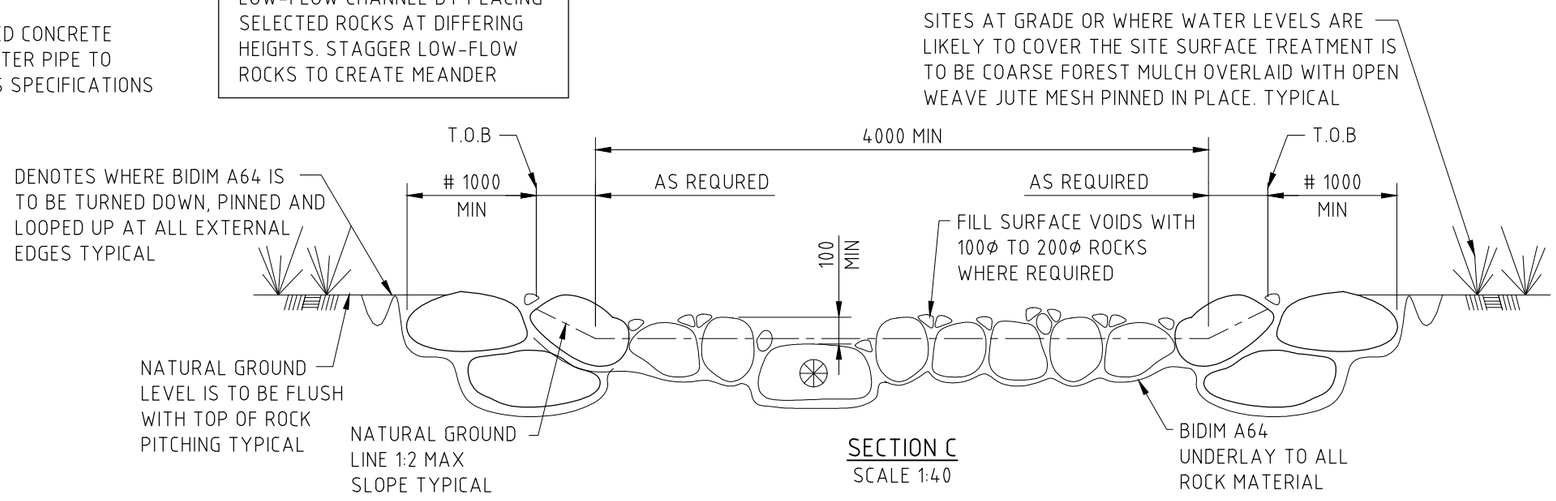
REFER TO DRAWING 2 OF 2 FOR ROCK NOTES AND TABLES




SECTION B
SCALE 1:40

# - DENOTES BED CONTROL TO BE KEYED INTO BANK 1000 MIN

⊛ DENOTES A MEANDERING LOW-FLOW CHANNEL BY PLACING SELECTED ROCKS AT DIFFERING HEIGHTS. STAGGER LOW-FLOW ROCKS TO CREATE MEANDER




SECTION C
SCALE 1:40

| ISSUE | AMENDMENT DETAILS | DATE | INITIALS |
|---|---|---|---|
| 2 | REVISION | 21/12/21 | T.C |
| 1 | CONSTRUCTION | 11/06/13 | J.C |
| 0 | PRELIMINARY | 11/01/13 | J.C |

SCALE
AS SHOWN
DO NOT SCALE DRAWING
REVIEWED J.C

City of Newcastle

APPROVED:
SIGNED:.....
MANGER ASSETS AND PROJECTS (Acting)
DATE: 22/12/2021

CITY OF NEWCASTLE STANDARD DRAWING

# ROCK PITCHED HEADWALL AND ENERGY DISSIPATER OUTLET FOR NATURAL GRADE BETWEEN 0% AND 5%

NCC PLAN No.
A2304

SHEET A3
ISSUE 2

SHEET No.
1 OF 2 SHEETS

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE

## ROCK CONSTRUCTION NOTES

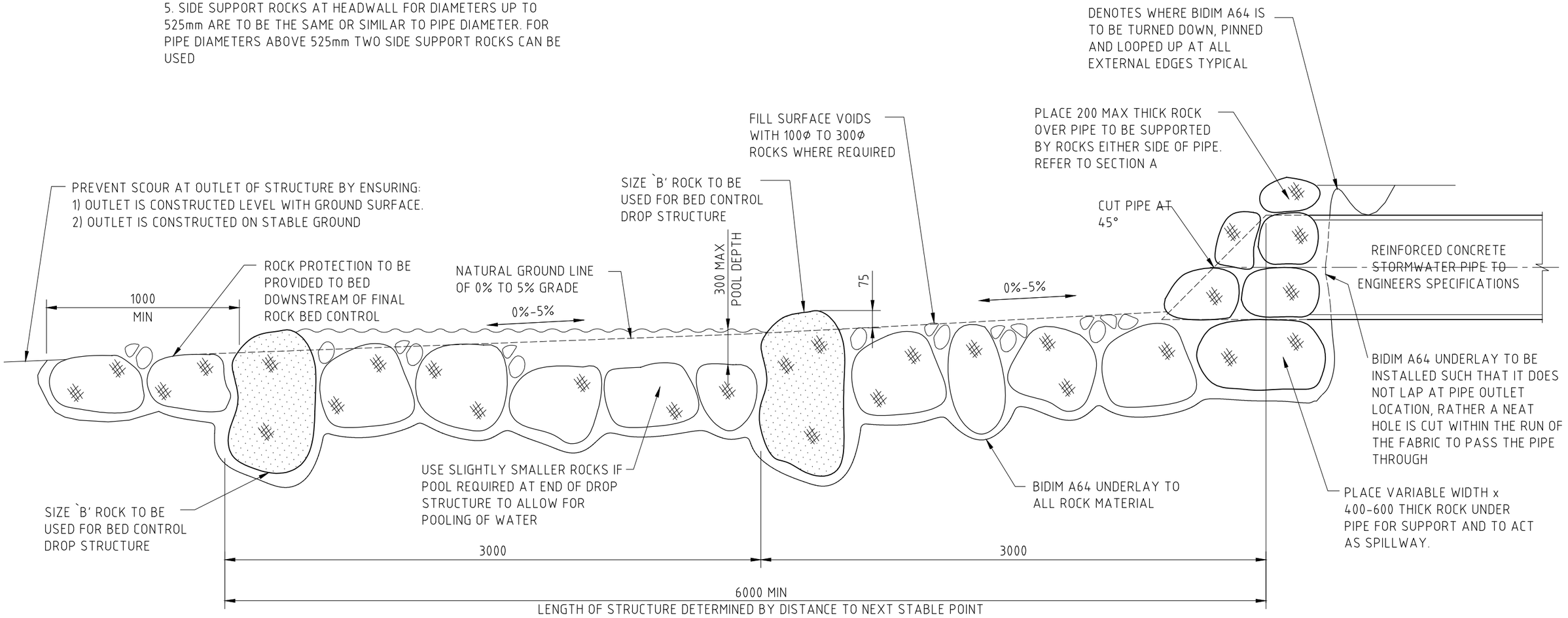
1. SIZE B ROCKS ARE TO BE USED FOR ALL CRITICAL POINTS IN STRUCTURE ie. BED CONTROLS AND STRUCTURE OUTLETS.
2. 100 TO 300mm ROCKS ARE TO BE HAND PACKED INTO VOIDS WITHIN ROCK STRUCTURE BETWEEN SIZE A AND B ROCKS.
3. ROCK PLACED BETWEEN OUTLET OF PIPE IS TO EXTEND A MINIMUM OF 200mm EITHER SIDE OF PIPE.
4. ROCK SELECTION AND PLACEMENT FOR PIPE HEADWALL TO ENSURE NO LOAD BEARING WEIGHT IS PLACED ON PIPE.
5. SIDE SUPPORT ROCKS AT HEADWALL FOR DIAMETERS UP TO 525mm ARE TO BE THE SAME OR SIMILAR TO PIPE DIAMETER. FOR PIPE DIAMETERS ABOVE 525mm TWO SIDE SUPPORT ROCKS CAN BE USED

| ROCK SIZING | | |
|---|---|---|
| PIPE ⌀ (mm) | 0-5% | >5% |
| 375 to 600 | A | B |
| > 600 | B | B |

A - 500⌀ TO 700⌀ SANDSTONE
B - 700⌀ TO 1200⌀ SANDSTONE

APPLICATION OF THIS STANDARD
THIS STANDARD APPLIES TO SINGLE PIPE OUTLETS; WHERE DOWNSTREAM GRADES (BETWEEN PIPE AND STABLE POINT) RANGE FROM 0% TO 10%.
THIS STANDARD IS UNSUITABLE IF:
- PIPE DIAMETER IS GREATER THAN 750mm; OR
- GRADE FROM PIPE END TO STABLE POINT IS GREATER THAN 10%; OR
- SPACE FOR ROCKWORK IS LESS THAN 8.5 METRES; OR
- DISTANCE TO STABLE POINT IS MORE THAN 18 METRES.

IN THESE CASES, THE STANDARD MUST BE ADOPTED TO THE SITE BY SUITABLY QUALIFIED GEOMORPHOLOGIST.
ROCKWORK IS TO END AT A STABLE POINT: FOR EXAMPLE WHERE GRADE REDUCES; OR AT THE BANK TOE OF THE RECEIVING WATERWAY. STABLE POINT MUST BE SPECIFIED ON PLANS.
IF A LONGER LENGTH OF ROCKWORK IS NEEDED TO MEET THE STABLE POINT, BUILD ADDITIONAL WEIRS AND PONDS IN SERIES. NO WEIR DROP TO BE MORE THAN 400MM. ALWAYS END WITH ROW OF LEVEL SPREADER ROCKS.
OUTFLOWS TO JOIN WATERWAY FLOWS IN SAME DIRECTION. IF DISCHARGING TO NARROW WATERWAY (CHANNEL FLOOR <4M WIDE); ROCKWORK CENTRELINE SHOULD BE BETWEEN 45 TO 60 <DEG> TO WATERWAY CENTRELINE.




LONGITUDINAL DETAIL
SCALE 1:25

| ISSUE | AMENDMENT DETAILS | DATE | INITIALS |
|---|---|---|---|
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SCALE
AS SHOWN
DO NOT SCALE DRAWING
REVIEWED J.C

City of Newcastle

APPROVED:
SIGNED:.....
MANGER ASSETS AND PROJECTS (Acting)
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CITY OF NEWCASTLE STANDARD DRAWING

ROCK PITCHED HEADWALL AND ENERGY DISSIPATER OUTLET FOR NATURAL GRADE BETWEEN 0% AND 5%

NCC PLAN No. A2304
SHEET A3
ISSUE 2
SHEET No. 2 OF 2 SHEETS