

**MATERIAL**

**CELLULAR CONFINEMENT MATRIX:**  
HIGH-DENSITY POLYETHYLENE (HDPE) (STIFF CELL WALL).

**TENDONS:** STEEL CABLE, OR BRIGHT, HIGH-TENACITY, INDUSTRIAL- CONTINUOUS-FILAMENT POLYESTER YARN WOVEN INTO ROUND BRAIDED CORD.

**ANCHORS:** WOODEN STAKES, OR 500mm STEEL J-PINS. WOODEN TAKES USED ONLY AS A TEMPORARY ANCHOR DURING THE PLACEMENT OF THE INFILL MATERIAL.

**INFILL:** TOPSOIL, EARTH, AGGREGATE OR CONCRETE. MAXIMUM AGGREGATE SIZE NO GREATER THAN 75% OF THE SIDEWALL DEPTH OF THE CCS MATRIX.

**INSTALLATION**

THE FOLLOWING SPECIFICATION APPLIES TO THE SURFACE PLACEMENT OF A CELLULAR CONFINEMENT SYSTEM WITHIN A DRAINAGE CHANNEL, SPILLWAY OR CHUTE FOR TEMPORARY PURPOSES ONLY. FOR THE PLACEMENT OF PERMANENT INSTALLATION, OR EARTH REINFORCEMENT APPLICATIONS, REFER TO MANUFACTURER'S ADVICE.

1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, AND APPLICATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, OR METHOD OF APPLICATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
2. CLEAR THE TREATMENT AREA OF ANY DEBRIS THAT MAY INTERFERE WITH PLACEMENT OF THE CELLULAR CONFINEMENT SYSTEM (CCS), OR PREVENT GOOD CONTACT BETWEEN THE CCS MATRIX AND THE SUBGRADE.
3. ENSURE THE SURFACE IS FREE OF DEEP TRACK MARKS OF OTHER FEATURES THAT MAY RESULT IN STORMWATER OR GROUNDWATER PASSING IN A CONCENTRATED FORM UNDER THE CCS MATRIX.

4. SHAPE AND COMPACT THE SUBGRADE SURFACES TO THE SHAPE AND ELEVATION SHOWN ON THE CONSTRUCTION DRAWINGS. WHEN DETERMINING THE ELEVATION OF THE SUBGRADE, ENSURE ALLOWANCE IS MADE FOR THE THICKNESS OF THE CCS MATRIX SUCH THAT THE TOP OF THE MATRIX WILL BE FLUSH WITH, OR SLIGHTLY BELOW, THE ADJACENT TERRAIN.

5. WHERE NECESSARY, EXCAVATE THE SUBGRADE SUCH THAT WHEN PLACED, THE UPPER SURFACE OF THE CCS MATRIX WILL BE FLUSH WITH, OR SLIGHTLY LOWER, THAN THE ADJACENT TERRAIN.

6. REMOVE ANY UNSTABLE SUBGRADE, REPLACE WITH SUITABLE MATERIAL AND COMPACT TO ACHIEVE A STABLE SURFACE.

7. IF THE MATERIAL IS TO BE PLACED ON A SLOPE STEEPER THAN 10%, THEN EXCAVATE AN ANCHORING TRENCH ALONG THE TOP OF THE TREATMENT AREA 200mm DEEP AND 500mm WIDE.

8. WHERE PRACTICAL, ROUGHEN ANY EXCESSIVELY SMOOTH, COMPACTED SUBGRADE TO IMPROVE THE EVENTUAL BONDING BETWEEN THE SUBGRADE AND APPLIED CCS MATRIX.

9. IF SPECIFIED, INSTALL THE REQUIRED GEOTEXTILE UNDERLAY ON THE PREPARED SURFACE, ENSURING THAT REQUIRED OVERLAPS ARE MAINTAINED AND THAT THE UPPER EDGE OF THE GEOTEXTILE IS ANCHORED (PINNED) WITHIN THE FORMED ANCHORING TRENCH.

10. SPREAD OUT (EXPAND) INDIVIDUAL PANELS UNIFORMLY ACROSS THE TREATMENT AREA AS SPECIFIED BY THE MANUFACTURER. EXPAND AND STRETCH THE PANELS DOWN THE SLOPE INSTEAD OF ACROSS THE SLOPE.

11. ALONG THE TOP EDGE OF THE TREATMENT AREA, ANCHOR EVERY OTHER CELL INTO THE FORMED ANCHOR TRENCH USING STEEL U-SHAPED OR J-PINS.

12. ON SLOPES STEEPER THAN 10%, ANCHOR EVERY OTHER CELL USING STEEL J-PINS AT 2m INTERVALS DOWN THE SLOPE.

13. ON SLOPES NOT STEEPER THAN 10%, ANCHOR THE INDIVIDUAL PANELS ALONG ALL FOUR SIDES WITH WOODEN STAKES, OR STEEL J-PINS TO PREVENT MOVEMENT WHILE PLACING INFILL.

14. INTERLEAF OR OVERLAP THE EDGES OF ADJACENT PANELS ACCORDING TO WHICH SIDEWALL PROFILE ABUTS. IN ALL CASES, ENSURE THAT THE UPPER SURFACES OF ADJOINING PANEL SECTIONS ARE FLUSH AT THE JOINT AND THAT ADJOINING CELLS ARE FULLY ANCHORED (STAPLED).

15. FILL AND COMPACT (IF NECESSARY) THE ANCHORING TRENCH.

16. FILL THE HONEYCOMB PANELS MECHANICALLY OR MANUALLY. ENSURE EARTH FILL AND SMALL AGGREGATE (<75mm) IS PLACED FROM A DROP HEIGHT NOT EXCEEDING 1m, AND LARGE AGGREGATE (>75mm) FROM A DROP HEIGHT NOT EXCEEDING 0.15m.

17. PLACE THE FILL EVENLY AND SLIGHTLY OVERFILL SUCH THAT WHEN COMPACTED, THE FILL WILL BE LEVEL WITH THE UPPER SURFACE OF THE PANEL.

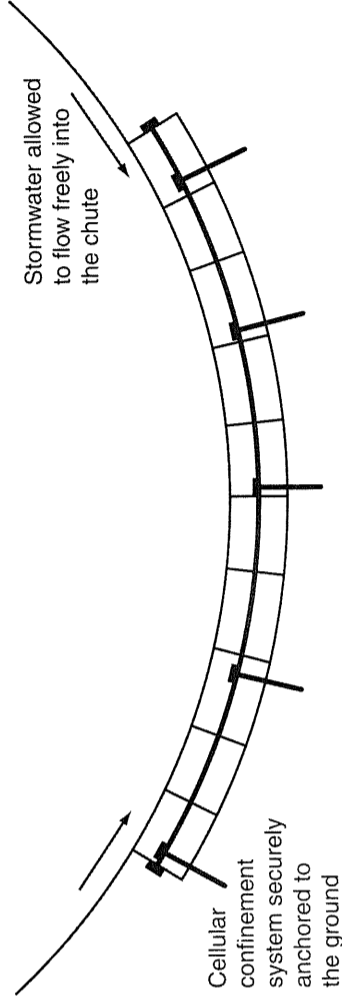
18. LIGHTLY TAMP OR ROLL TOPSOIL OR EARTH FILL, LEVEL AGGREGATE FILL WITH A PLATE TAMPER OR MECHANICAL (BACKHOE) BUCKET.

**ADDITIONAL SPECIFICATION FOR ATTACHMENT OF TENDONS FOR ANCHORAGE:**

1. FEED PRE-CUT LENGTHS OF TENDON MATERIAL THROUGH THE ALIGNED HOLES IN THE CELL WALLS OF THE MATRIX AT 800mm INTERVALS PRIOR TO EXPANDING INDIVIDUAL PANELS INTO POSITION.
2. TIE OFF THE ENDS OF THE TENDONS SO THAT THE KNOT CANNOT PASS THROUGH THE HOLE IN THE CELL WALLS. ENSURE THE KNOTS ARE TIED TO PROVIDE FULL TENDON STRENGTH AND WILL NOT SLIP WHEN TENSIONED.

3. ATTACH RESTRAINING CLIPS TO THE TENDONS AT REGULAR INTERVALS TO ACHIEVE THE NECESSARY LOAD TRANSFER.

4. ANCHOR THE TENDONS AND RESTRAINING CLIPS WITH 500mm STEEL J-PINS AT 1m INTERVALS. AT EACH INTERNAL ANCHOR LOCATION, FORM A LOOP IN THE TENDON, INSERT THE ANCHOR, AND DRIVE INTO THE SUBGRADE.



**Figure 1 - Anchorage of cellular confinement matrix within channel**

NO.	DATE	DESCRIPTION	APP/VD
A	18/11/11	ISSUE FOR CONSTRUCTION	
AMENDMENTS AND REVISIONS			
FILE NAME DESIGN\DOCUMENTS\SSC STD DRAWINGS\...			

SURVEY	
SURVEY FILE No	
LEVEL DATUM	AHD
MERIDIAN	MGA 55

DRAWN	SIGNED	DATE
POG	POG	17/11/11
DESIGNED	SIGNED	DATE
POG	POG	17/11/11
CHECKED	SIGNED	DATE
MANAGER TECHNICAL SERVICES		
G. HAWES RPEQ 5693		

DIRECTOR ENGINEERING SERVICES	DATE
Stuart Holley RPEQ 940	15.11.11



**CELLULAR CONFINEMENT SYSTEM  
USED AS CHUTE/CHANNEL  
LINING**

SHEET 1 OF 1
WORKS JOB No.
DRAWING No.
A3-6744
AMEND.
A