



# BIOSWALE DESIGN NOTES AND GUIDANCE

**PURPOSE:**

BIOSWALE SYSTEMS RETAIN RAINWATER RUNOFF BY PROVIDING SURFACE STORAGE, SUBSURFACE STORAGE AND INFILTRATION INTO NATIVE SOIL. BIOSWALES CAN ALSO REDUCE THE PEAK FLOW ENTERING SEWERS AND REMOVE RAINWATER FROM ENTERING SEWERS. BIOSWALES ARE SIMILAR TO BIORETENTION SYSTEMS BUT CAN PROVIDE SOME SURFACE CONVEYANCE AND ARE GENERALLY EMPLOYED ALONG THE FULL LENGTH OF A ROADWAY. THEY ARE DISTINCT FROM INFILTRATION SYSTEMS BECAUSE THEY INCLUDE SURFACE VEGETATION.

**DESIGNER NOTES & GUIDELINES:**

- WHENEVER POSSIBLE, ROAD DRAINAGE SHOULD BE ALLOWED TO DRAIN INTO ROW BIOSWALES THROUGH CURB CUTS. WHERE THIS OCCURS, REFER TO STD. GI7.2.
- DRAWING 7.1 SHOULD BE USED WHEN NO ROAD DRAINAGE IS NOT DIRECTED TO THE BIOSWALE.
- THE DESIGNER MUST ADAPT PLAN AND SECTION DRAWINGS TO ADDRESS SITE-SPECIFIC CONDITIONS.
- SYSTEM SURFACE AREA, PONDING DEPTH, SOIL DEPTH, AND AGGREGATE STORAGE DEPTH MUST BE SIZED TO MEET PROJECT HYDROLOGIC PERFORMANCE GOALS.
- PONDING AND SYSTEM DRAWDOWN TIME (i.e., TIME FOR MAXIMUM SURFACE PONDING TO DRAIN THROUGH THE SYSTEM AFTER THE END OF A STORM) RECOMMENDATIONS:
  - 24 HOUR MAXIMUM SURFACE PONDING DRAWDOWN
  - 72 HOUR MAXIMUM DRAWDOWN FOR RTT SOIL AND AGGREGATE STORAGE
- BIOSWALE SYSTEMS MAY BE DESIGNED USING AGGREGATE STORAGE OR PROPRIETARY STORAGE SYSTEMS. ALL PROPOSED PRODUCTS FOR USE IN RIGHT-OF-WAYS MUST MEET CITY OF VANCOUVER SPECIFICATIONS REGARDING LOADING CAPACITY OF RIGHT-OF-WAY INFRASTRUCTURE.
- WHEN FACILITY CONSTRUCTION IMPACTS EXISTING SIDEWALK, ALL SAW CUTS MUST ADHERE TO CITY OF VANCOUVER REQUIREMENTS. SAW CUTS SHOULD BE ALONG SCORE LINES AND ANY DISTURBED SIDEWALK PANELS SHOULD BE REPLACED IN THEIR ENTIRETY.
- GI FACILITIES IN PUBLIC RIGHT OF WAY SHALL BE DESIGNED WITH A SAFE, DESIGNATED OVERLAND FLOW PATH TO THE STREET IN THE EVENT THAT THE OVERFLOW STRUCTURE IS OBSTRUCTED OR CLOGGED. THIS FLOW PATH SHOULD BE REFLECTED IN SITE GRADING AND LABELED ON GI DRAWINGS.
- THE DESIGNER MUST EVALUATE UTILITY SURVEYS FOR POTENTIAL UTILITY CROSSINGS OR CONFLICTS.
- MINIMUM UTILITY SETBACKS AND PROTECTION MEASURES MUST CONFORM TO CURRENT CITY OF VANCOUVER ASSET PROTECTION STANDARDS AND OTHER UTILITY PROVIDER REQUIREMENTS.

RELATED DETAILS	
EDGE TREATMENTS	GI 3.5 - GI 3.6
INLETS	GI 2.1 - GI 2.6
UNDERDRAINS:	GI 3.7
CHECK DAMS:	GI 4.7
MONITORING WELL	GI 3.2
CLEANOUTS	GI 3.4
WEIRS AND SEDIMENT PAD	GI 4.5 - GI 4.6
INSPECTION CHAMBERS	GI 3.3
CATCHBASINS	GI 3.1 - GI 3.8

RELATED SPECIFICATIONS	COV SPEC NO.
- AGGREGATE STORAGE	32 11 23
- DRAINAGE FABRIC	31 32 20
- LINERS	33 47 13,13
- ENGINEERED SOIL	32 91 22S
- BIORETENTION SOIL*	32 91 23S

\* TEMPLATE ONLY. AVAILABLE UPON REQUEST FROM THE GII BRANCH.

**LAYOUT REQUIREMENTS:**

- REFER TO THE CITY OF VANCOUVER ACCESSIBILITY STRATEGY, STANDARD DRAWINGS AND CONSTRUCTION SPECIFICATIONS FOR RIGHT-OF-WAY, PARKING SPACE, AND ACCESSIBLE PATH REQUIREMENTS.
- LOCATE CURB CUTS AND GUTTER MODIFICATIONS TO AVOID CONFLICTS WITH ACCESSIBILITY REQUIREMENTS (E.G., LOCATE OUTSIDE OF CROSSWALKS).

**DESIGNER CHECKLIST (MUST SPECIFY, AS APPLICABLE):**

- SYSTEM WIDTH AND LENGTH
- DEPTH OF PONDING (IF APPLICABLE)
- DEPTH OF SYSTEM
- DEPTH AND TYPE OF AGGREGATE STORAGE
- SURFACE ELEVATION AT UPSLOPE AND DOWNSLOPE ENDS OF FACILITY
- DIMENSIONS AND DISTANCE TO EVERY MUNICIPAL SERVICE/UTILITY WITHIN 10m OF THE FACILITY
- ELEVATIONS OF EVERY INLET, OUTLET, STRUCTURE RIM AND INVERT.
- TYPE AND DESIGN OF COMPONENTS (E.G., EDGE TREATMENTS, INLETS/GUTTER MODIFICATIONS, UTILITY CROSSINGS, LINER, AND PLANTING DETAILS)

REV.	REVISION DATE	APPROVED

**BIOSWALES  
DESIGN NOTES AND GUIDANCE**

ISSUE DATE: DECEMBER 2023  
APPROVED BY: N. MEAD-FOX



**STANDARD DETAIL DRAWINGS**  
ENGINEERING SERVICES - VANCOUVER, B.C.

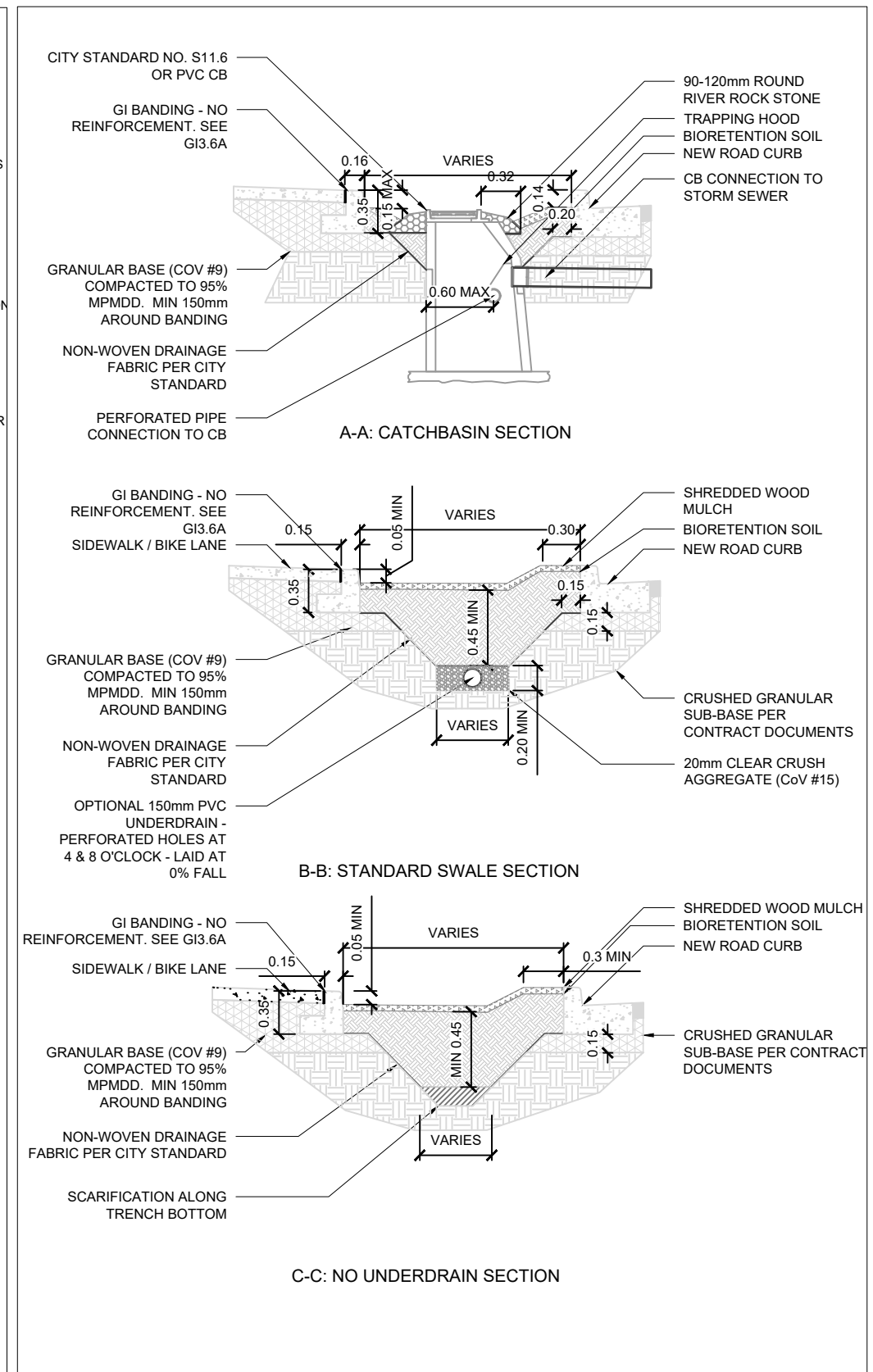
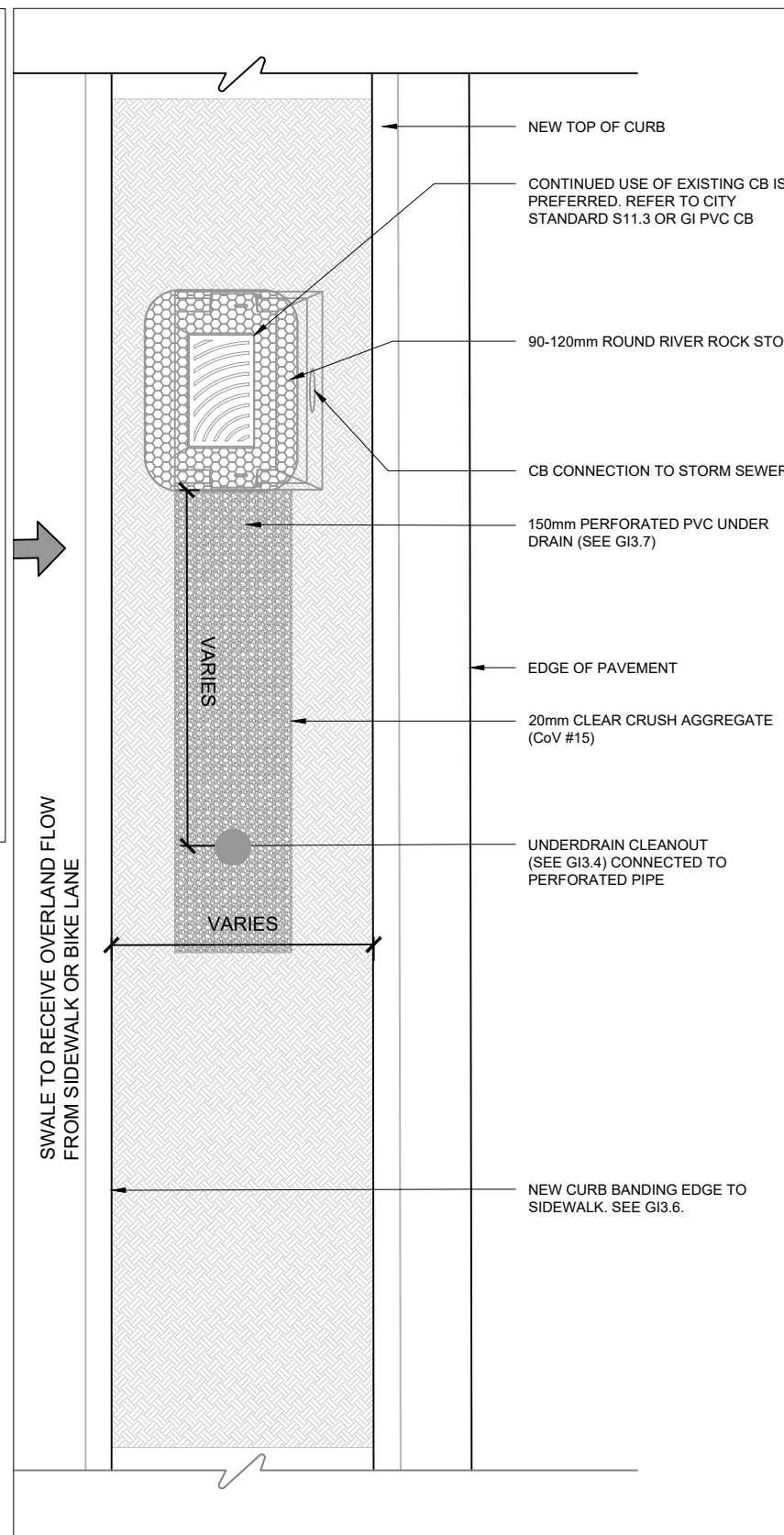
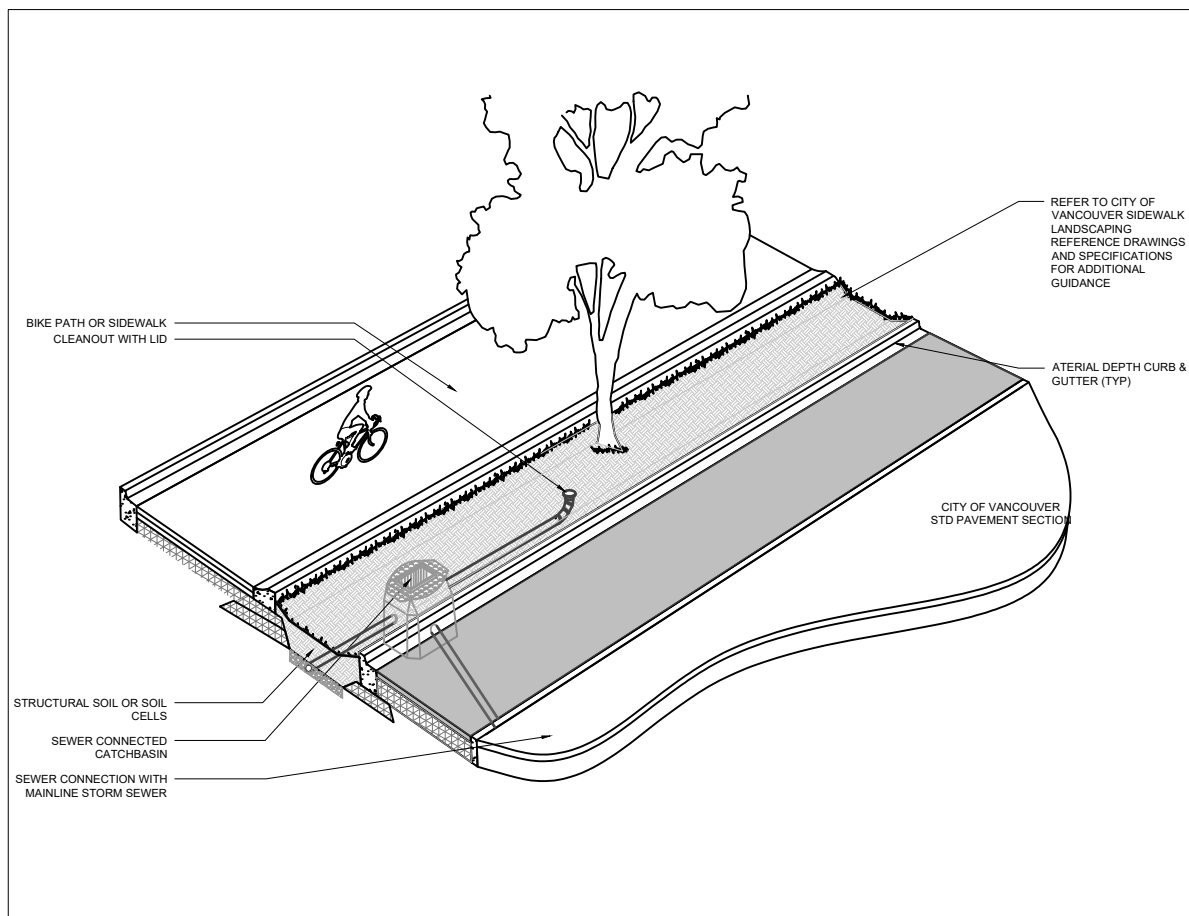
DRAWING No.  
**GI7.0B**

<b>BIOSWALE DRAWING DESCRIPTIONS</b>		
GI7.0A	BIOSWALE DESIGN NOTES AND GUIDANCE	THE BIOSWALE DESIGN NOTES PROVIDE GUIDANCE TO DESIGNERS ON HOW TO USE AND ADAPT THE TEMPLATE STANDARDS IN THIS SECTION.
GI7.0B	BIOSWALE DRAWING DESCRIPTIONS	THIS DRAWING DESCRIBES THE PURPOSE AND INTENDED USE OF EACH RAINWATER TREE TRENCH DRAWING
GI7.1	BIOSWALE - NO ROAD DRAINAGE	GI7.1 IS FOR SYSTEMS THAT ONLY RECEIVE OVERLAND DRAINAGE FROM ADJACENT SIDEWALKS, BOULEVARDS, OR BIKE LANES. THIS SYSTEM SHOULD ONLY BE USED WHEN ROADWAY DRAINAGE CAPTURE IS DEEMED INFEASIBLE OR IF THE ALLOCATED BOULEVARD SPACE IS NOT SUFFICIENT TO ACCOMMODATE ROAD RUNOFF.
GI7.2	BIOSWALE - RECEIVING ROAD DRAINAGE	GI7.2 IS FOR BIOSWALES THAT RECEIVE OVERLAND DRAINAGE FROM THE ROADWAY THROUGH CURB CUTS. THIS DESIGN IS PREFERRED TO GI7.1 BECAUSE IT CAN CAPTURE A LARGER DRAINAGE AREA AND USES THE FULL CAPACITY OF THE SWALE.

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**BIOSWALE DRAWING DESCRIPTIONS**

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NOTES:

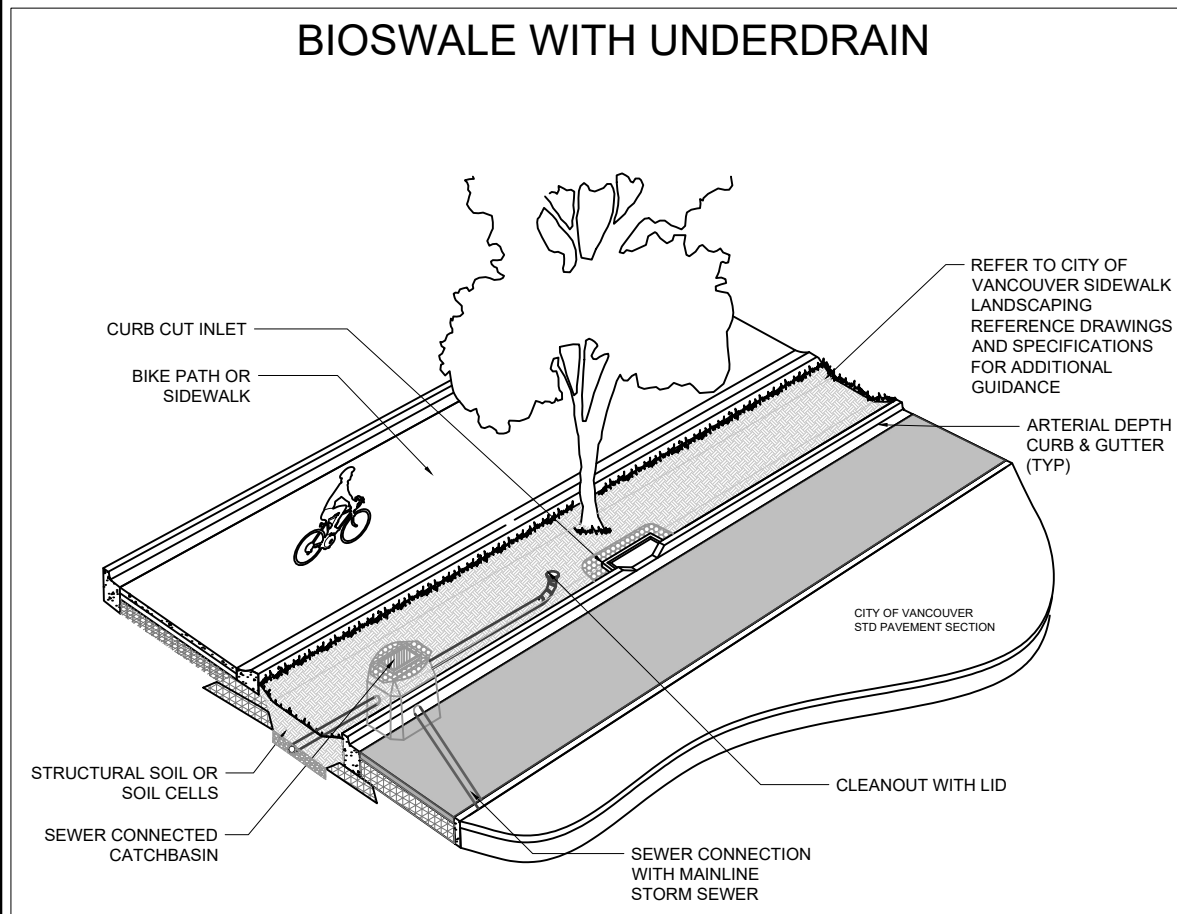
- IF APPROVED BY PROJECT ENGINEER, CATCHBASINS MAY BE REPLACED WITH PVC CATCHBASINS (GI3.8)
- LABEL AND DISPLAY ALL UTILITIES AND/OR SERVICES THAT CROSS BELOW OR THROUGH THE INFILTRATION TRENCH ALONG WITH THEIR INVERT ELEVATIONS
- SHOW ALL UTILITY PROTECTION MEASURES AND SETBACKS FOR SERVICES AND/OR UTILITY CONFLICTS
- PRE-SURVEY OF THE EXISTING CATCH BASIN (CB) CONDITIONS MUST BE CONDUCTED. THE PICTURES OF CBS ( INSIDE AND OUTSIDE ) , WELL ORGANIZED AND CORRELATED WITH THE CB LOCATION, ARE SUFFICIENT.
- CORE OPENING IN THE EXISTING CB WALL TO SUIT PVC PERFORATED PIPE CONNECTION. PVC PIPE IS TO BE SAND BLASTED, COATED WITH ADHESIVE AND SAND (ROUGHEN UP) PRIOR TO THE INSERTION INTO THE CORE. GROUT ANNULAR OPENING AROUND THE PIPE WITH NON-SHRINK GROUT.
- COV REPRESENTATIVE ( SEWER MAINTENANCE INSPECTOR) SHALL INSPECT AND APPROVE THE CONNECTION PRIOR TO THE PIPE BEING BURIED. CONTACT SEWERS AT 604-871-6170 TO ARRANGE FOR INSPECTION. PROVIDE AT LEAST 48 HOURS NOTIFICATION.

BIOSWALES  
BIOSWALE - NO ROAD DRAINAGE

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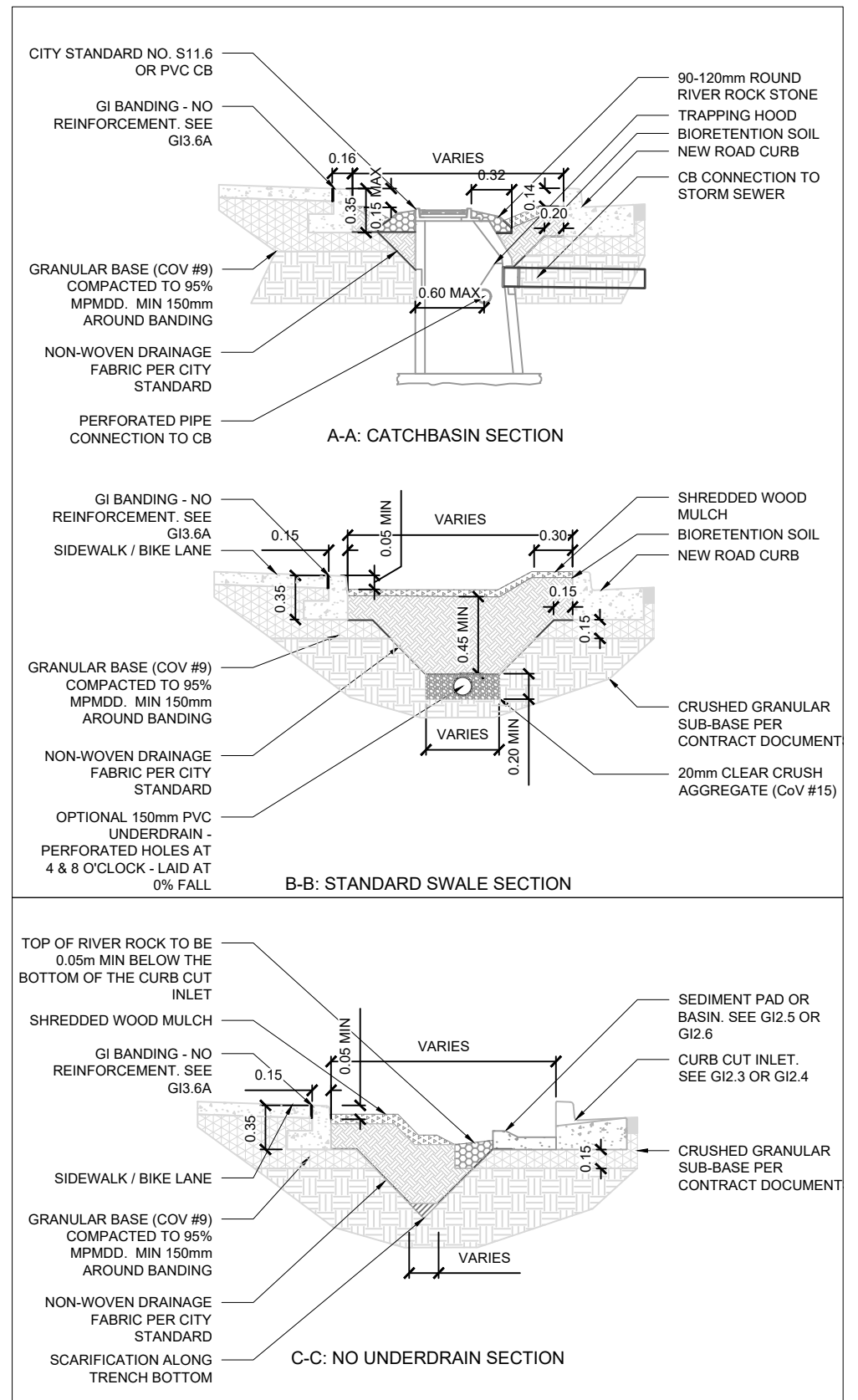
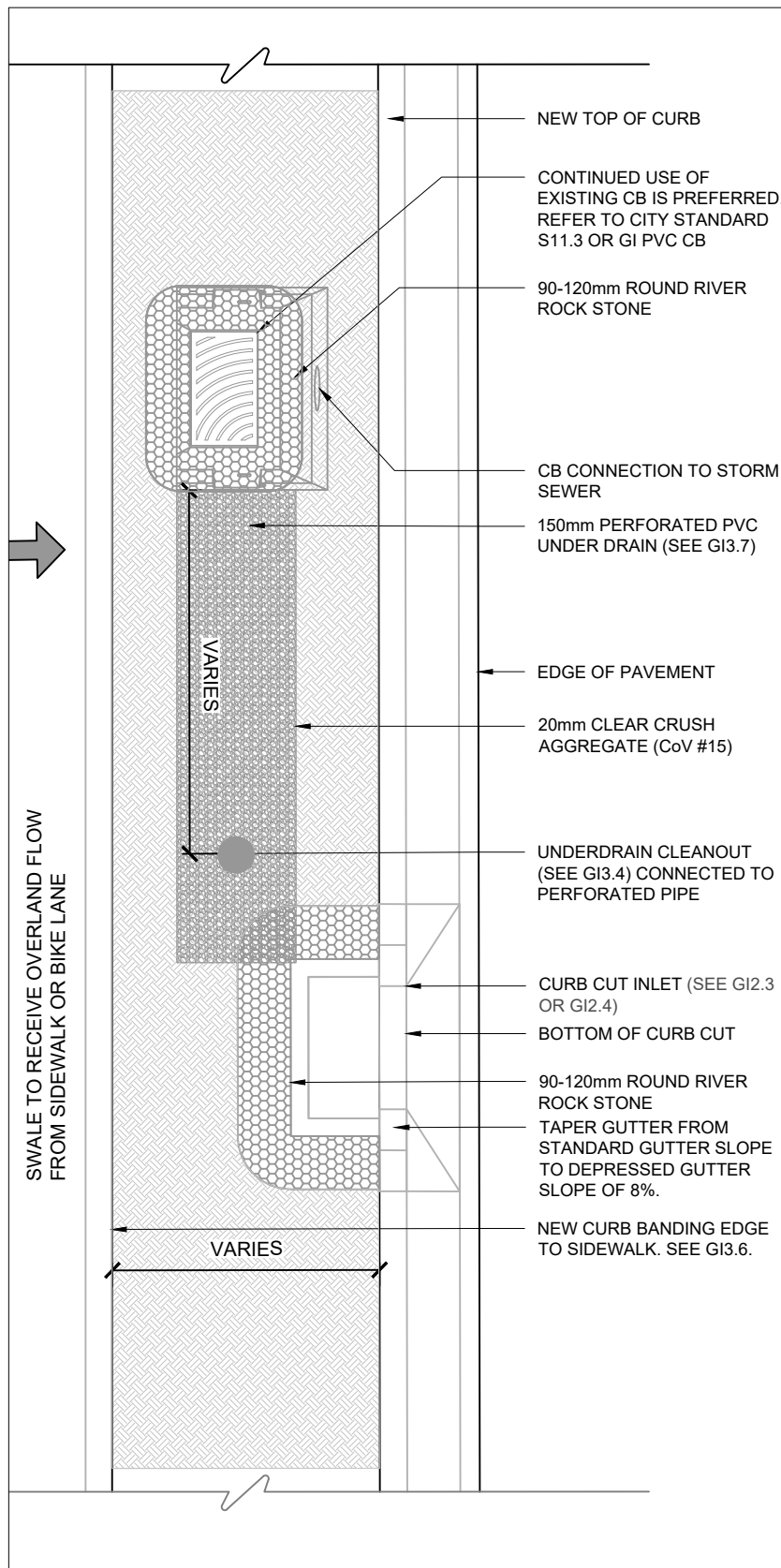
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**BIOSWALE WITH UNDERDRAIN**



**NOTES:**

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**BIOSWALES**  
**BIOSWALE - RECEIVING ROAD DRAINAGE**

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