

PERMEABLE PAVEMENTS DESIGN NOTES AND GUIDANCE

PURPOSE:

INFILTRATION SYSTEMS RETAIN RAINWATER RUNOFF BY PROVIDING SURFACE STORAGE, SUBSURFACE STORAGE AND INFILTRATION INTO NATIVE SOIL. THE STORAGE IN INFILTRATION SYSTEMS CAN ALSO REDUCE THE PEAK FLOW ENTERING SEWERS AND REMOVE RAINWATER FROM ENTERING SEWERS.

DESIGNER NOTES & GUIDELINES:

- 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
- INFILTRATION 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.\
- DESIGN OF SUBSURFACE INFILTRATION FACILITIES MUST ALWAYS BE BASED ON SITE-SPECIFIC GEOTECHNICAL ANALYSIS AND MUST CONSIDER THE POTENTIAL IMPACT OF INCREASED INFILTRATION ON SURROUNDING INFRASTRUCTURE.

RELATED DETAILS

EDGE TREATMENTS:	GI 3.5	-	GI 3.6
INLETS:	GI 2.1	-	GI 2.5
UNDERDRAINS:	GI 3.7		
MONITORING WELL	GI 3.2		
CLEANOUTS	GI 3.4		
INSPECTION CHAMBERS	GI 3.3		
CATCHBASINS	GI 3.1	-	GI 3.8

RELATED SPECIFICATIONS	COV SPEC NO.
- AGGREGATE STORAGE	32 11 23S
- DRAINAGE FABRIC	31 32 20S
- LINERS	33 47 13.13
- ENGINEERED SOIL	32 91 22S

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 OR PARKING LAYBYS)

DESIGNER CHECKLIST (MUST SPECIFY, AS APPLICABLE):

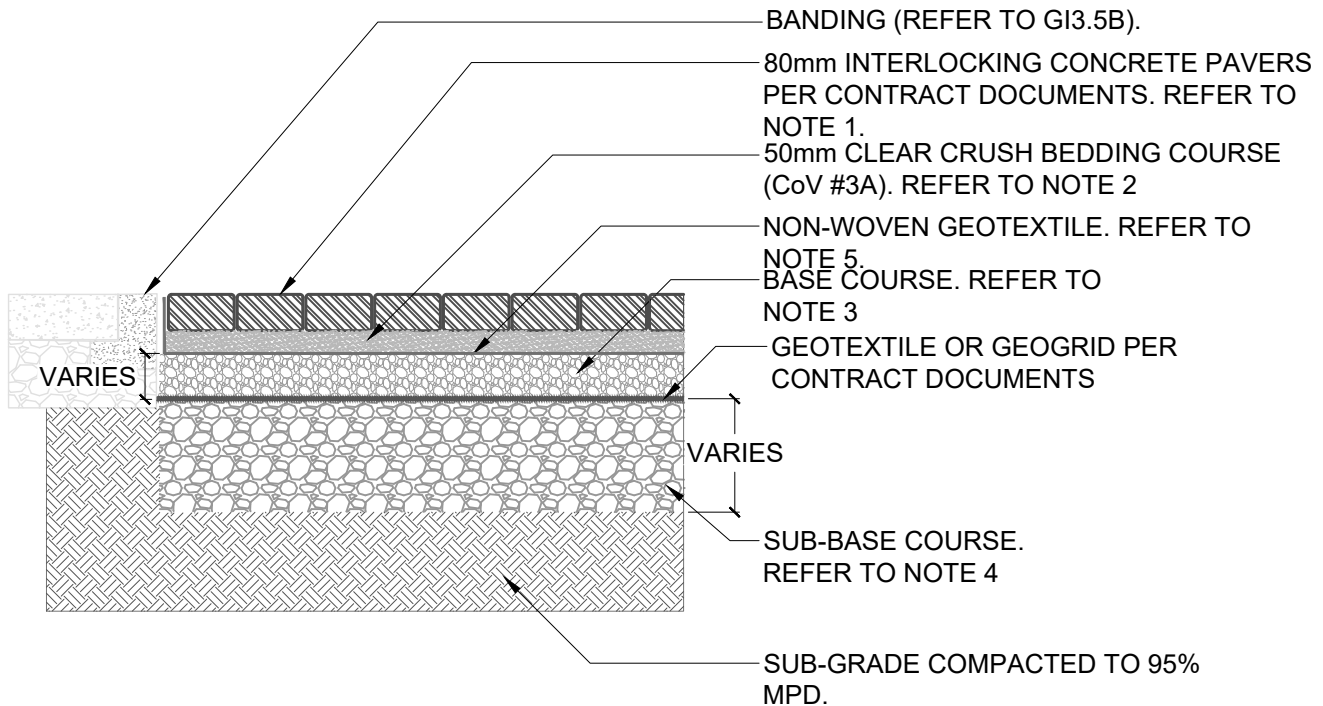
- ☐ SYSTEM WIDTH AND LENGTH
- ☐ DEPTH OF PONDING (IF APPLICABLE)
- ☐ DEPTH OF SYSTEM
- ☐ DEPTH AND TYPE OF AGGREGATE STORAGE
- ☐ SURFACE ELEVATION AT UPSLOPE AND DOWNSLOPE ENDS OF FACILITY
- ☐ DIMENSIONS AND DISTANCE TO EVERY MUNICIPAL SERVICE/UTILITY WITHIN 10m OF THE FACILITY
- ☐ ELEVATIONS OF EVERY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

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PERMEABLE PAVEMENTS DESIGN NOTES AND GUIDANCE

ISSUE DATE: DECEMBER 2023

APPROVED BY: N. MEAD-FOX



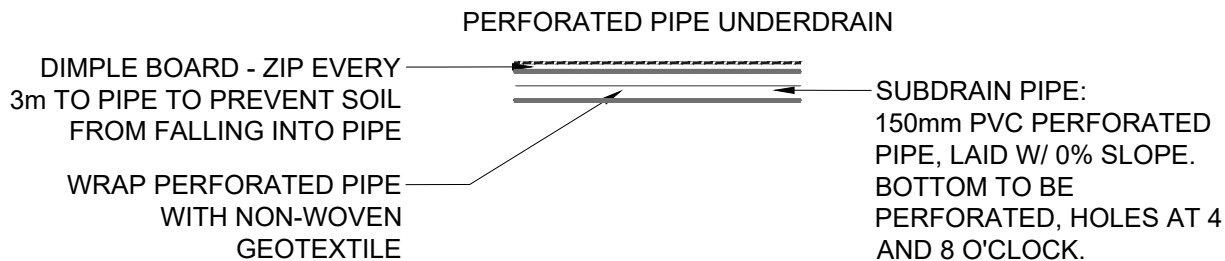
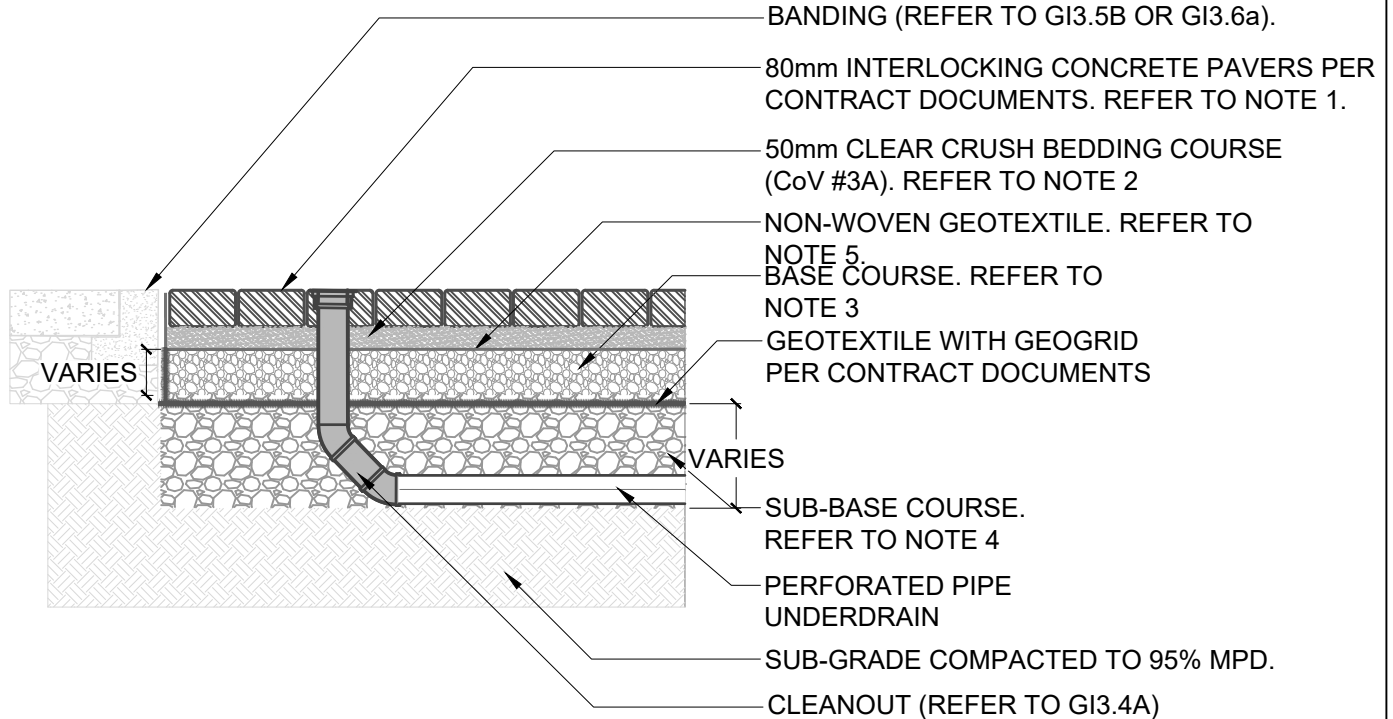
NOTES:

1. **PAVERS:** PAVERS TO BE ARRANGED IN A HERRINGBONE OR RUNNING BOND PATTERN. MATERIAL AND PLACEMENT PER CONTRACT DOCUMENTS. JOINT WIDTH BETWEEN PAVERS MUST BE GREATER THAN 6mm,
2. **BEDDING COURSE:** ANGULAR CLEAR CRUSH (COV #3A) COMPACTED TO 95% MODIFIED PROCTOR. MINIMUM THICKNESS OF 50mm. BEDDING COURSE MATERIAL TO BE USED AS JOINT FILLER.
3. **BASE MATERIAL:** BASE COURSE TO BE ASTM NO. 57 (CSA A23.1 GROUP II 28-14mm) OR 20mm CLEAR CRUSH (COV #15) OR AN APPROVED EQUIVALENT. MINIMUM THICKNESS OF 150mm.
4. **SUB-BASE MATERIAL:** SUB-BASE RESERVOIR TO BE COV #15, ASTM NO. 2, ASTM NO. 3, ASTM NO. 4, OR AN APPROVED EQUIVALENT. DEPTH TO BE DETERMINED BY GI BRANCH. MINIMUM THICKNESS OF 300mm ON LANEWAYS
5. **GEOTEXTILE FABRIC LAYER:** A NON-WOVEN GEOTEXTILE MUST BE INSTALLED BENEATH THE BEDDING COURSE. ADDITIONAL NON-WOVEN GEOTEXTILE PER CONTRACT DOCUMENTS.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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PERMEABLE PAVEMENTS
PERMEABLE CONCRETE PAVERS

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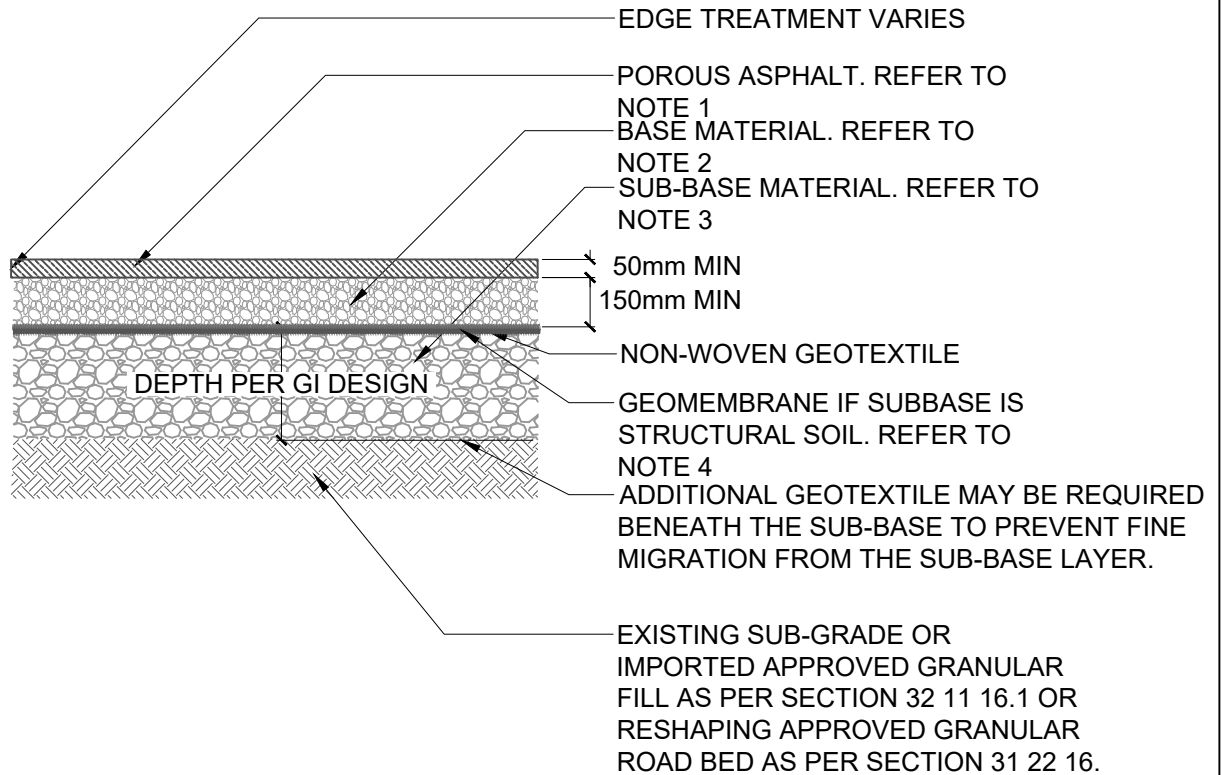
- PAVERS:** PAVERS TO BE ARRANGED IN A HERRINGBONE OR RUNNING BOND PATTERN. MATERIAL AND PLACEMENT PER CONTRACT DOCUMENTS. JOINT WIDTH BETWEEN PAVERS MUST BE GREATER THAN 6mm.
- BEDDING COURSE:** ANGULAR CLEAR CRUSH (COV #3A) COMPACTED TO 95% MODIFIED PROCTOR. MINIMUM THICKNESS OF 50mm. BEDDING COURSE MATERIAL TO BE USED AS JOINT FILLER
- BASE MATERIAL:** BASE COURSE TO BE ASTM NO. 57 (CSA A23.1 GROUP II 28-14mm) OR 20mm CLEAR CRUSH (COV #15) OR AN APPROVED EQUIVALENT. MINIMUM THICKNESS OF 150mm.
- SUB-BASE MATERIAL:** SUB-BASE RESERVOIR TO BE COV #15, ASTM NO. 2, ASTM NO. 3, ASTM NO. 4, OR AN APPROVED EQUIVALENT. MINIMUM THICKNESS OF 150mm IF SUB-BASE LAYER IS REQUIRED.
- GEOTEXTILE FABRIC LAYER:** A NON-WOVEN GEOTEXTILE MUST BE INSTALLED BENEATH THE BEDDING COURSE. ADDITIONAL NON-WOVEN GEOTEXTILE PER CONTRACT DOCUMENTS.
- ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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PERMEABLE PAVEMENTS
PERMEABLE PAVERS WITH UNDERDRAIN

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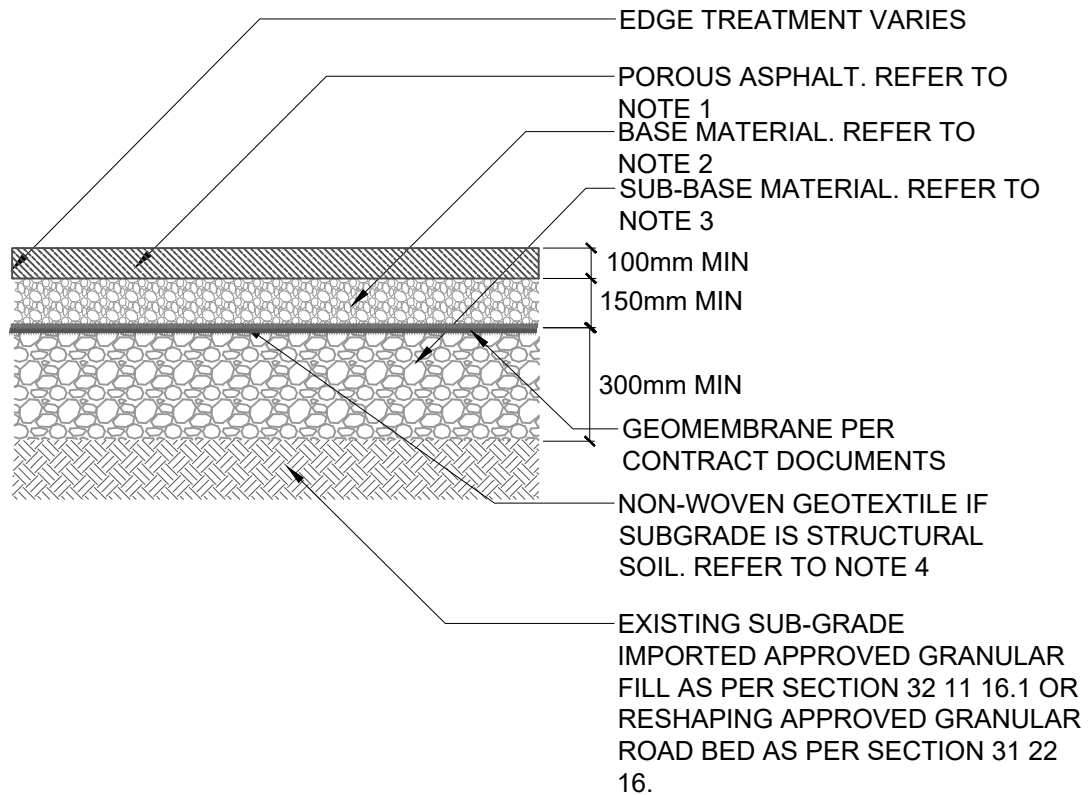
1. **POROUS ASPHALT:** 50mm MIN. MATERIAL PER CONTRACT DOCUMENTS
2. **BASE MATERIAL:** BASE COURSE TO BE ASTM NO. 57 (CSA A23.1 GROUP II 28-14mm) OR 20mm CLEAR CRUSH (COV #15) OR AN APPROVED EQUIVALENT. MINIMUM THICKNESS OF 150mm.
3. **SUB-BASE MATERIAL:** SUB-BASE RESERVOIR IS OPTIONAL IF THE EXISTING NATIVE SUBGRADE IS APPROVED BY THE GEOTECHNICAL ENGINEER. MINIMUM THICKNESS TO BE 150mm IF SUB-BASE LAYER IS REQUIRED. ADDITIONAL DEPTH TO BE DETERMINED BY GI DESIGN REQUIREMENTS. ACCEPTABLE MATERIALS INCLUDE COV #15, STRUCTURAL SOIL, ASTM NO. 2, ASTM NO. 3, ASTM NO. 4, OR OTHER APPROVED EQUIVALENT
4. **GEOTEXTILE FABRIC:** NON-WOVEN GEOTEXTILE PER CONTRACT DOCUMENTS.
5. **GEOMEMBRANE:** GEOMEMBRANE IS OPTIONAL. PER CONTRACT DOCUMENTS
6. **EDGE TREATMENT:** CONCRETE EDGE TREATMENT IS REQUIRED AT THE BOUNDARY OF ALL BIKELANES. REFER TO GI3.5B.
7. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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PERMEABLE PAVEMENTS
POROUS ASPHALT BIKELANE

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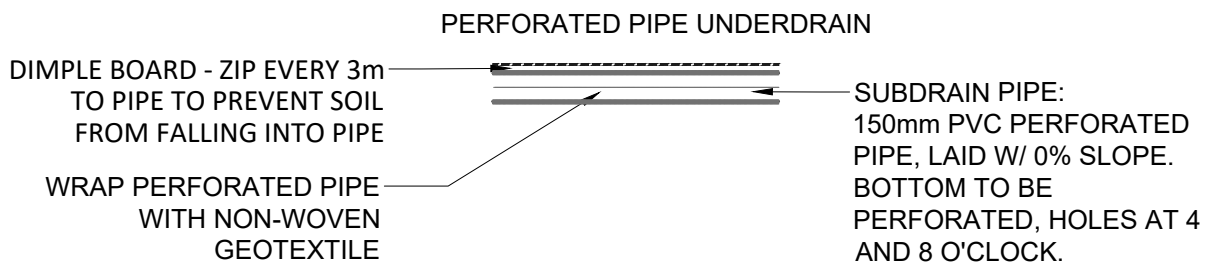
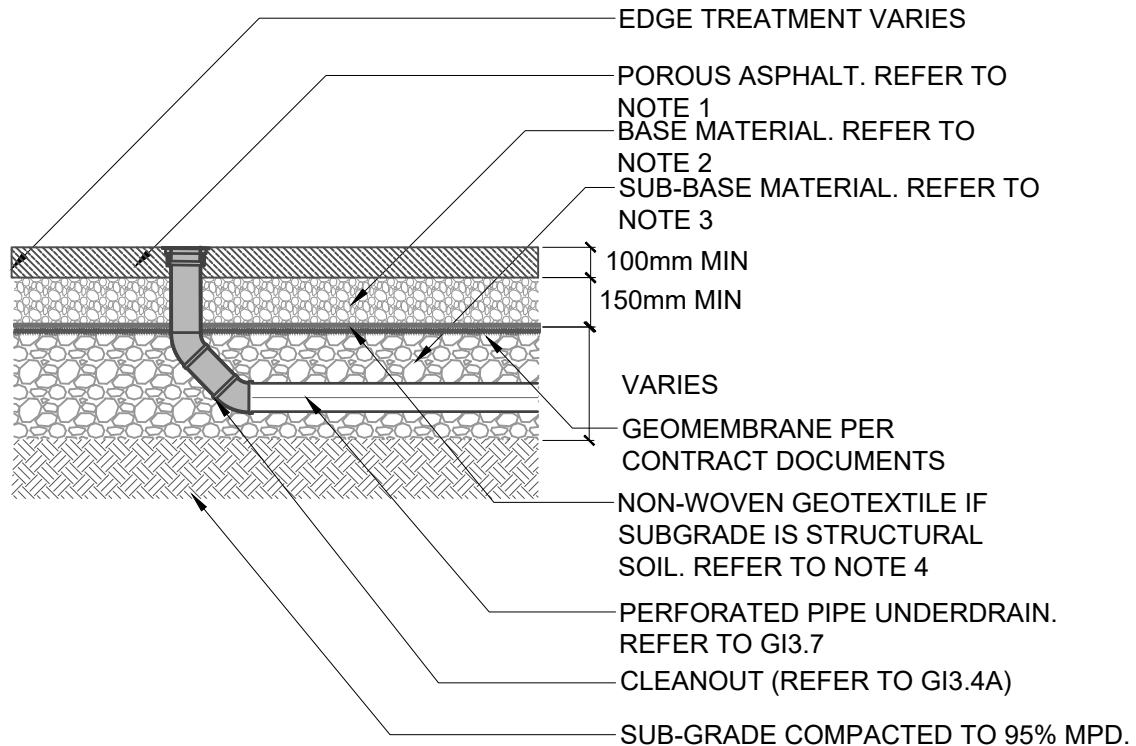
1. POROUS ASPHALT: 100mm MIN. POROUS ASPHALT MATERIAL OR PER CONTRACT DOCUMENTS
2. BASE MATERIAL: BASE COURSE TO BE ASTM NO. 57 (CSA A23.1 GROUP II 28-14mm) OR 20mm CLEAR CRUSH (COV #15) OR AN APPROVED EQUIVALENT. MINIMUM THICKNESS OF 150mm.
3. SUB-BASE MATERIAL: SUB-BASE RESERVOIR TO BE COV #15, STRUCTURAL SOIL, ASTM NO. 2, ASTM NO. 3, ASTM NO. 4, OR AN APPROVED EQUIVALENT. MINIMUM THICKNESS OF 300mm
4. GEOTEXTILE FABRIC: NON-WOVEN GEOTEXTILE PER CONTRACT DOCUMENTS.
5. GEOMEMBRANE: GEOMEMBRANE (OPTIONAL) PER CONTRACT DOCUMENTS
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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PERMEABLE PAVEMENTS
POROUS ASPHALT LANEWAY

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NOTES:

1. POROUS ASPHALT: POROUS ASPHALT MATERIAL PER CONTRACT DOCUMENTS
2. BASE MATERIAL: BASE COURSE TO BE ASTM NO. 57 (CSA A23.1 GROUP II 28-14mm) OR 20mm CLEAR CRUSH (COV #15) OR AN APPROVED EQUIVALENT. MINIMUM THICKNESS OF 150mm
3. SUB-BASE MATERIAL: SUB-BASE RESERVOIR TO BE COV #15, STRUCTURAL SOIL, ASTM NO. 2, ASTM NO. 3, ASTM NO. 4, OR AN APPROVED EQUIVALENT. MINIMUM THICKNESS OF 300mm ON LANEWAYS. OTHERWISE, DEPTH TO BE DETERMINED BY GI BRANCH.
4. GEOTEXTILE FABRIC: NON-WOVEN GEOTEXTILE PER CONTRACT DOCUMENTS.
5. GEOMEMBRANE: GEOMEMBRANE PER CONTRACT DOCUMENTS
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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PERMEABLE PAVEMENTS
POROUS ASPHALT WITH UNDERDRAIN

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