

# **Green Streets Standard Drawings**



## **County of San Diego Department of Public Works**

Revised March 2021

## **Green Streets Standard Drawings**

### **ERRATA**

Original Drawings (October 2019)

#### UPDATE #1 (MARCH 2021):

- UPDATED THE DESIGN OF CONCRETE FOOTINGS AND STEEL REINFORCEMENT FOR ELEMENTS ADJACENT TO UNCOMPACTED BMPs;
- REDUCED MAXIMUM CHECK DAM INTERVALS WHEN USED AS A STRUCTURAL ELEMENT;
- CLARIFIED SOIL DEPTHS FOR BIOFILTRATION BASINS AND TREE WELLS;
- REVISED CALLOUTS TO BE CONSISTENT ON ALL SHEETS;
- MISCELLANEOUS FORMATTING REVISIONS FOR CLARITY.
- UPDATED BMP STANDARDS WITH PARKING RESTRICTIONS.
- UPDATED ALL REBAR CALLOUTS TO USE A #4 REBAR INSTEAD OF A #3.
- UPDATED THE DEFINITION OF STRUCTURAL SOILS.
- ADDED DEEPENED SHEAR KEY AND REBAR TO VARIOUS SIDEWALK AND CURB DETAILS.

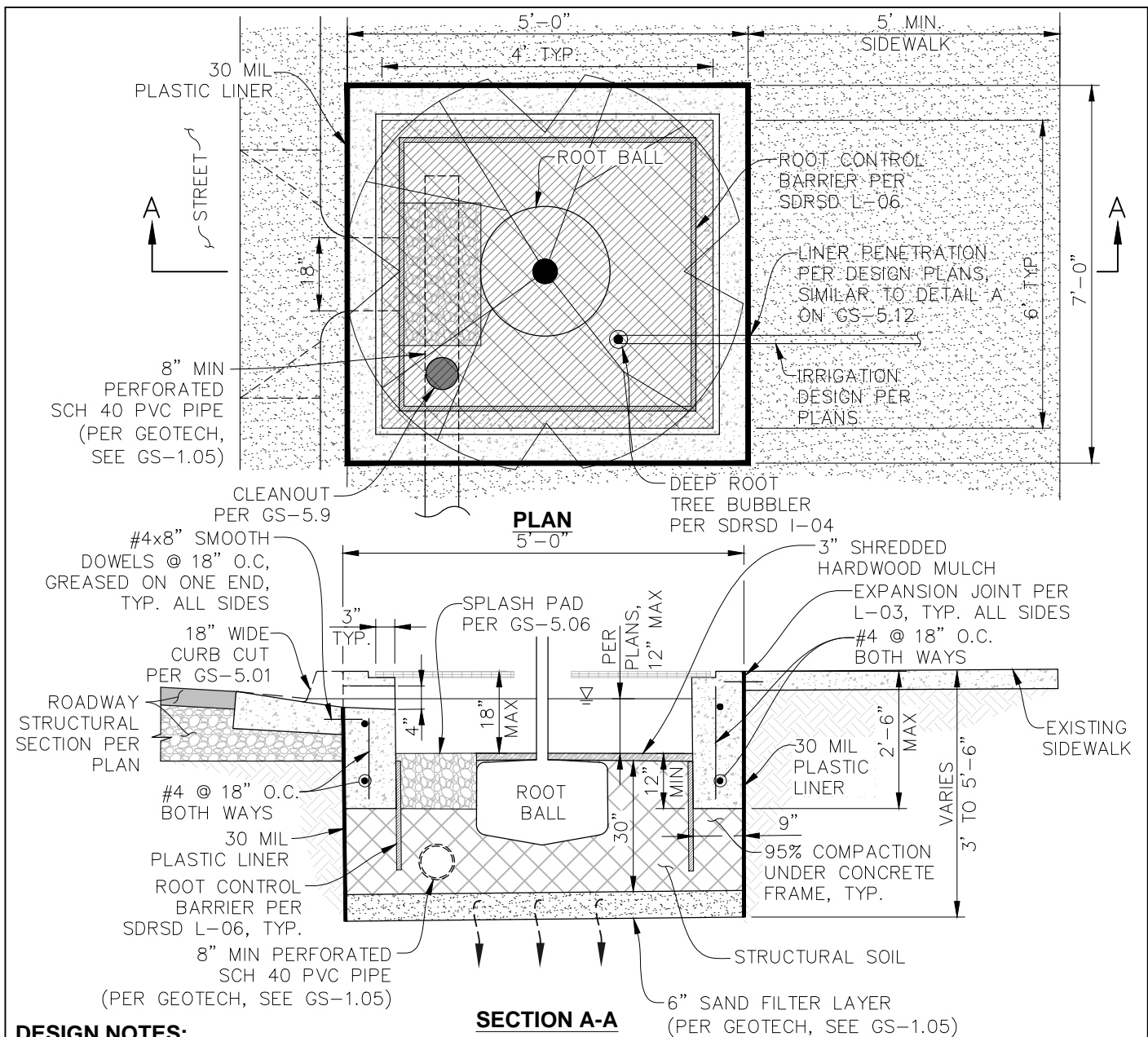
**SAN DIEGO COUNTY  
DEPARTMENT OF PUBLIC WORKS**

**GREEN STREET STANDARD DRAWINGS**

| <u>NUMBER</u> | <u>TITLE</u>   |
|---------------|--|
| <b>GS-1</b>   | <b>TREE WELL</b>   |
| GS-1.00       | TREE WELL GENERAL DESIGN GUIDANCE                                    |
| GS-1.01       | SMALL TREE WELL  |
| GS-1.02       | LARGE TREE WELL  |
| GS-1.03       | TREE WELL ADJACENT TO RIGHT-OF-WAY                                   |
| GS-1.04a      | TREE WELL WITHOUT STRUCTURAL SOIL                                    |
| GS-1.04b      | TREE WELL WITHOUT STRUCTURAL SOIL                                    |
| GS-1.05       | TREE WELL SUBSURFACE DRAINAGE TYPES                                  |
| <b>GS-2</b>   | <b>DISPERSION AREA</b>   |
| GS-2.00       | DISPERSION AREA GENERAL DESIGN GUIDANCE                              |
| GS-2.01       | DISPERSION AREA ADJACENT TO ROADWAY                                  |
| GS-2.02       | DISPERSION AREA WITH STEP OUT ZONE                                   |
| GS-2.03       | DISPERSION AREA ADJACENT TO RIGHT-OF-WAY                             |
| GS-2.04       | CURB EXTENSION ADJACENT TO SIDEWALK                                  |
| GS-2.05       | CURB EXTENSION ADJACENT TO PLANTER STRIP                             |
| GS-2.06       | OPEN DISPERSION AREA   |
| GS-2.07       | DISPERSION SWALES  |
| GS-2.08       | DISPERSION AREA FILTER STRIP   |
| <b>GS-3</b>   | <b>BIOFILTRATION</b>   |
| GS-3.00       | BIOFILTRATION GENERAL DESIGN GUIDANCE                                |
| GS-3.01       | BIOFILTRATION PLANTER ADJACENT TO ROADWAY<br>(12" MAX PONDING DEPTH) |
| GS-3.02       | BIOFILTRATION PLANTER ADJACENT TO ROADWAY<br>(PONDING DEPTH>12")     |
| GS-3.03       | BIOFILTRATION ADJACENT TO ROADWAY (WITH STEP OUT ZONE)               |
| GS-3.04       | BIOFILTRATION ADJACENT TO RIGHT-OF-WAY                               |
| GS-3.05       | CURB EXTENSION ADJACENT TO SIDEWALK W/ BIOFILTRATION                 |
| GS-3.06       | CURB EXTENSION ADJACENT TO PLANTING STRIP W/ BIOFILTRATION           |
| GS-3.07       | BIOFILTRATION IN OPEN AREA   |
| GS-3.08       | PARKING LOT BIOFILTRATION BASIN                                      |
| GS-3.09       | CURB BULBOUT WITH BIOFILTRATION                                      |
| GS-3.10       | BIOFILTRATION SUBSURFACE DRAINAGE TYPES                              |
| <b>GS-4</b>   | <b>PERMEABLE PAVEMENT</b>  |
| GS-4.00       | PERMEABLE PAVEMENT GENERAL DESIGN GUIDANCE                           |
| GS-4.01       | PERMEABLE PAVEMENT ELEVATIONS  |
| GS-4.02       | PERMEABLE PAVEMENT ELEVATIONS W/ UNDERDRAIN                          |
| GS-4.03       | PERMEABLE PAVEMENT SUBSURFACE DRAINAGE TYPES                         |

**GS-5****MISCELLANEOUS**

|          |   |
|----------|---|
| GS-5.01  | DISPERSION AREA CURB CUT  |
| GS-5.02  | BIOFILTRATION BASIN CURB CUT  |
| GS-5.03  | CURB CUT WITH FLUME   |
| GS-5.04a | SIDEWALK UNDERDRAIN   |
| GS-5.04b | SIDEWALK UNDERDRAIN   |
| GS-5.05  | TYPICAL STEP OUT ZONES  |
| GS-5.06  | SPLASH PAD  |
| GS-5.07  | GRAVITY WALL  |
| GS-5.08  | INLET AND OUTLET DETAILS FOR CURB<br>EXTENSIONS & BULBOUTS                |
| GS-5.09  | CLEANOUTS & OBSERVATION WELLS<br>ADJACENT TO CHECK DAMS                   |
| GS-5.10  | CLEANOUTS, OBSERVATION WELLS, & OVERFLOW<br>RISERS ADJACENT TO BMP LIMITS |
| GS-5.11  | PERMEABLE PAVEMENT CLEANOUTS AND OBSERVATION WELLS                        |
| GS-5.12  | DOWNSTREAM STORMWATER FACILITY<br>CONNECTION DETAIL ( $L \leq 10$ )       |
| GS-5.13  | DOWNSTREAM STORMWATER FACILITY<br>CONNECTION DETAIL ( $L > 10$ )          |
| GS-5.14a | CONCRETE CHECK DAM  |
| GS-5.14b | CONCRETE CHECK DAM  |
| GS-5.15  | IMPERMEABLE LINER FASTENING DETAIL  |

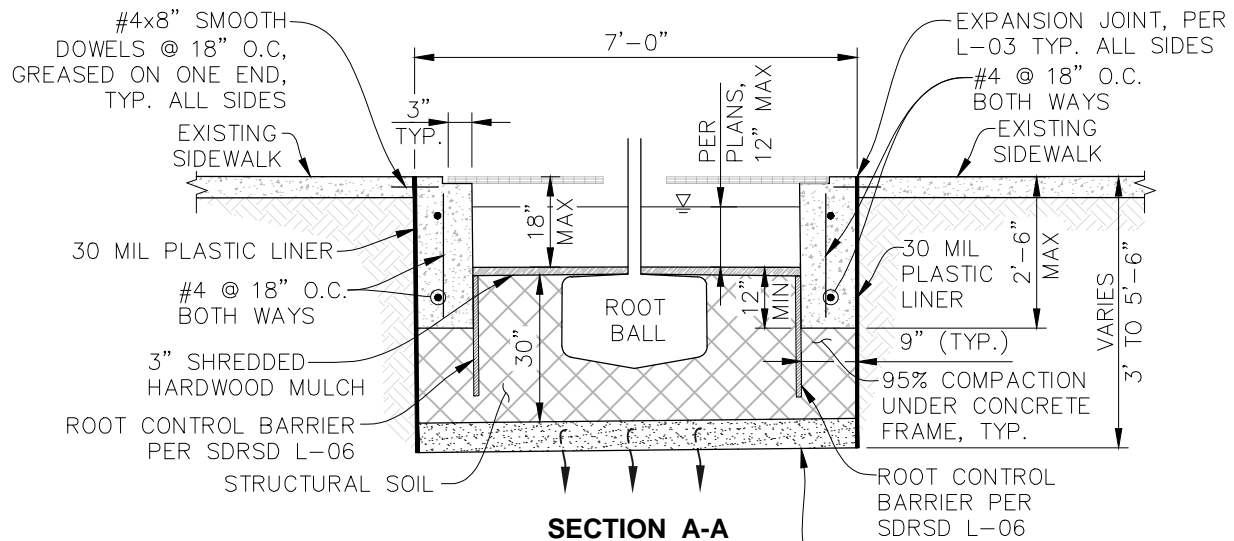
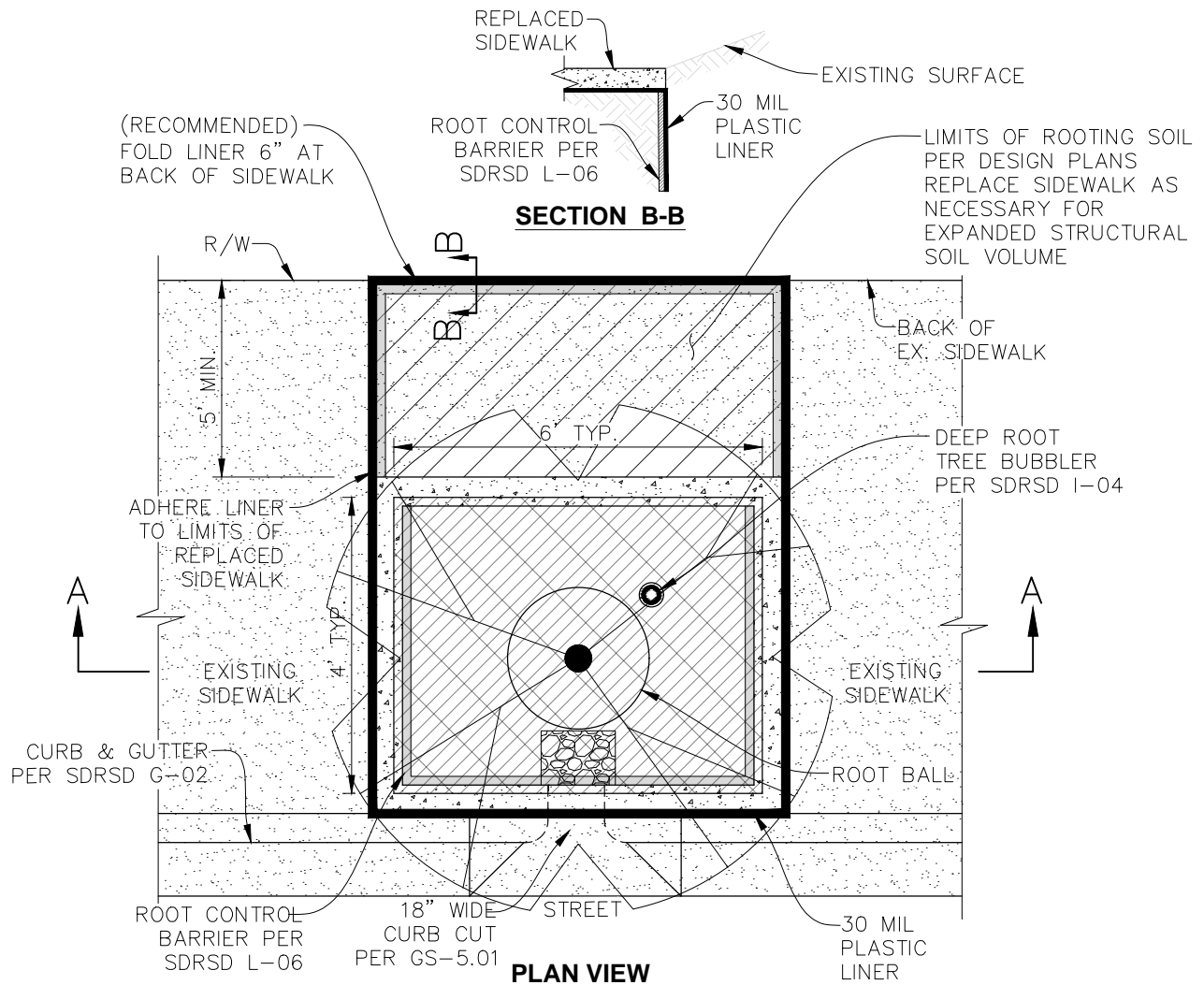


#### DESIGN NOTES:

1. STREET IMPROVEMENTS AND DRAINAGE STRUCTURES SHALL BE CONSTRUCTED ACCORDING TO THE LATEST SAN DIEGO REGIONAL STANDARD DRAWINGS AND CALTRANS STANDARD PLANS.
2. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
3. SEE SDRSD DWG L-01 THROUGH L-06 FOR LANDSCAPING DETAILS NOT SPECIFIED HEREIN. (TREE GRATE PER SDRSD L-04).
4. MINIMUM OPEN TREE PLANTING SPACE DIMENSION 4'x6'.
5. PROVIDE 30 MIL PLASTIC LINER WHERE CONCRETE WILL BE POURED ON TOP OF STRUCTURAL SOIL.
6. SEAL PLASTIC LINER TO ADJACENT IMPROVEMENTS AND EDGE RESTRAINTS PER GS-5.15.
7. WHEN SAND FILTER LAYER IS OMITTED, PROVIDE GEOTEXTILE BENEATH THE STRUCTURAL SOIL LAYER PER PROJECT-SPECIFIC GEOTECHNICAL RECOMMENDATIONS.
8. PROPOSED SIDEWALK LOCATIONS & INTENDED ADA ROUTES PER PROJECT-SPECIFIC DESIGN PLANS.
9. FOR TREE WELL SUBSURFACE DRAINAGE TYPES, SEE DWG GS-1.05.
10. ALL STRUCTURAL SOILS ARE COMPACTED TO 95% RELATIVE COMPACTION.

DRAWING NOT TO SCALE

|  |                        |  |                |                |            |
|--|------------------------|--|----------------|----------------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD                   | REVISIONS      | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |  | ORIGINAL       |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | <b>TREE WELL</b><br><b>GENERAL DESIGN GUIDANCE</b> | REVISED        |                | 03-08-2021 |
|  DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |  | DRAWING NUMBER | <b>GS-1.00</b> |            |

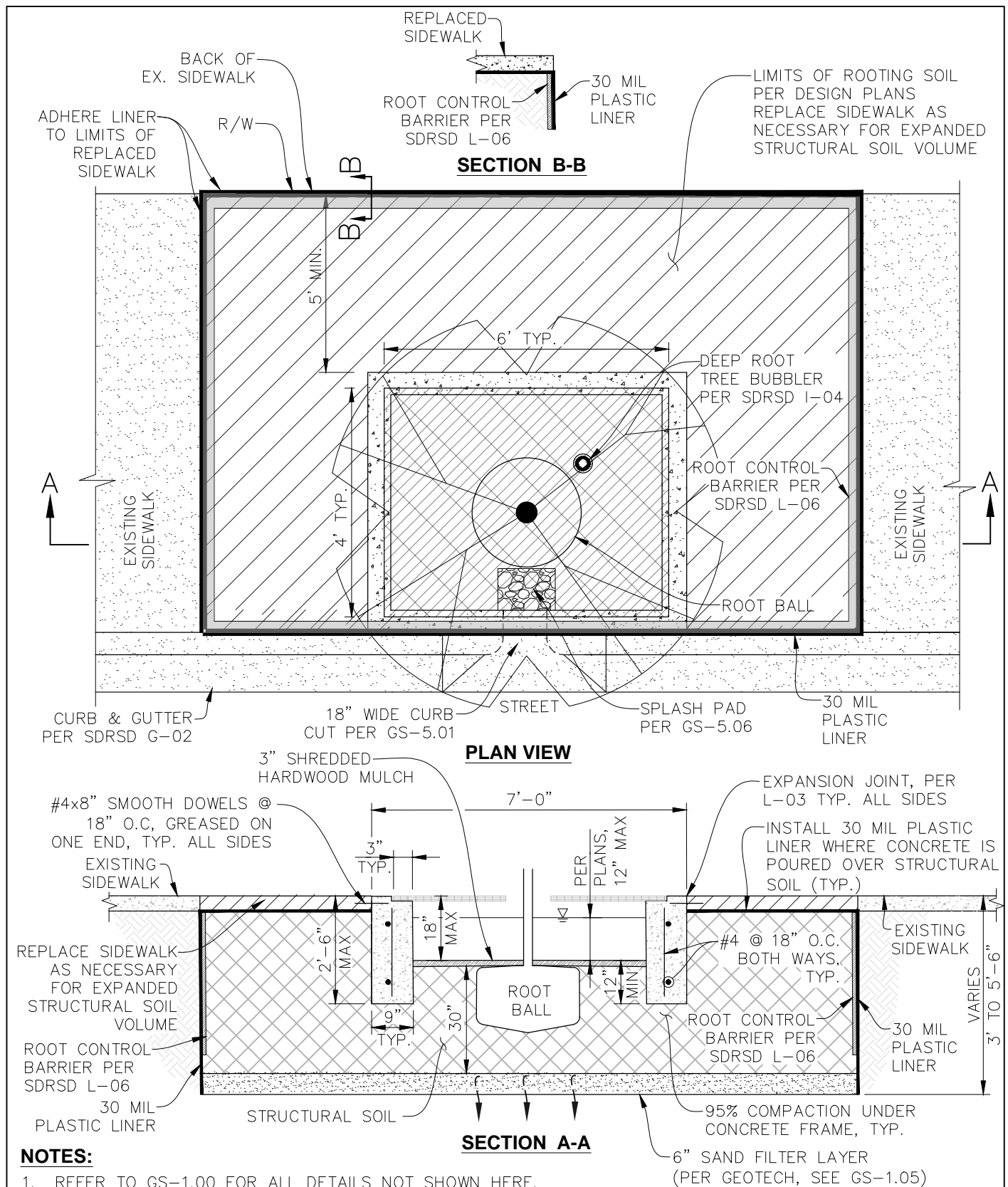


# **NOTES:**

1. REFER TO GS-1.00 FOR ALL DETAILS NOT SHOWN HERE.
2. TREE SIZE & TYPE PER DESIGN PLANS.

**DRAWING NOT TO SCALE**

|   |                        |                                  |                |          |            |
|---|------------------------|----------------------------------|----------------|----------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS      | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |                                  | ORIGINAL       |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | <div>SMALL TREE WELL</div>       | REVISED        |          | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |                                  |                |          |            |
|   |                        |                                  | DRAWING NUMBER | GS-1.01  |            |

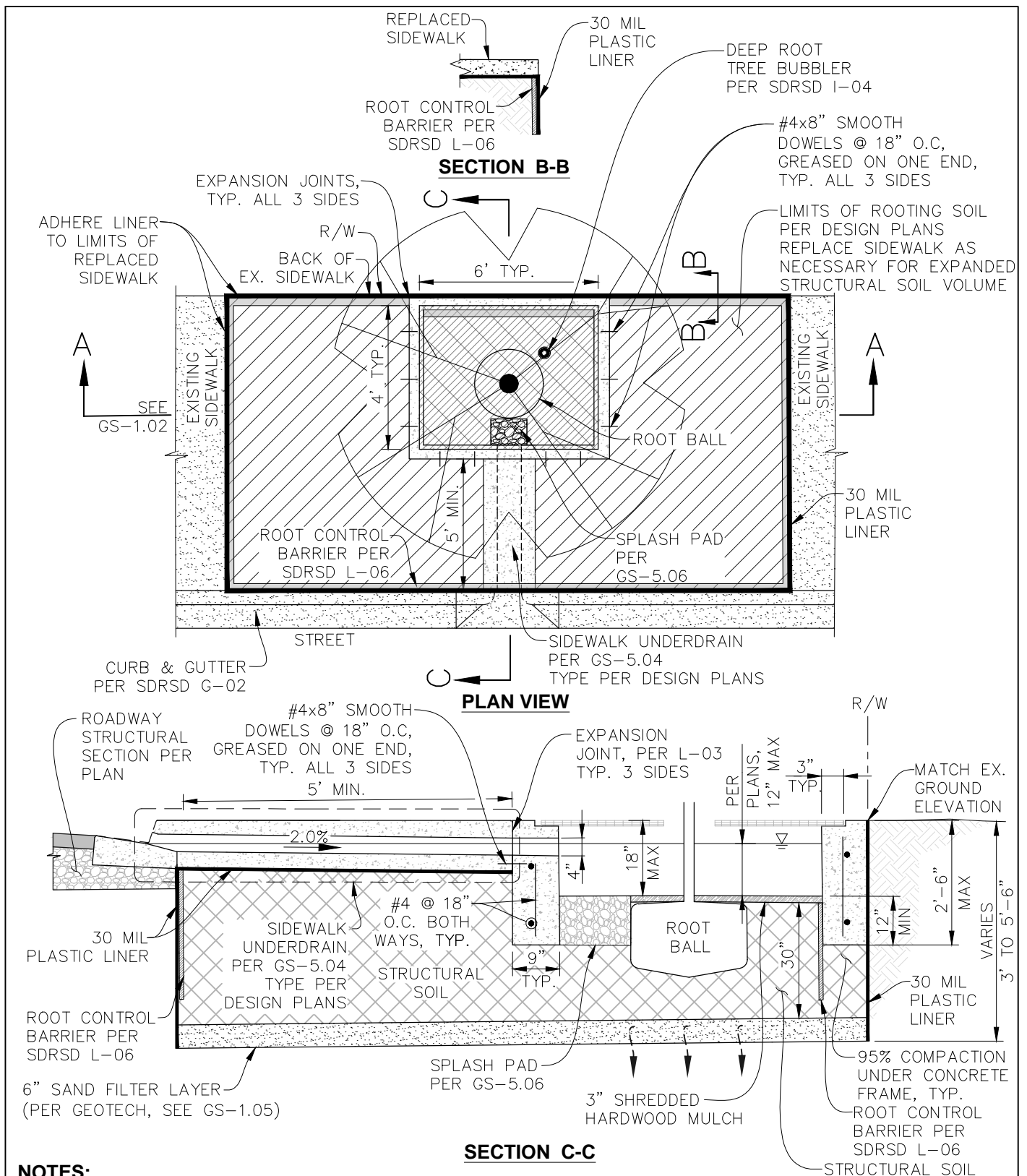


**NOTES:**

1. REFER TO GS-1.00 FOR ALL DETAILS NOT SHOWN HERE.
2. TREE SIZE & TYPE PER DESIGN PLANS.

**DRAWING NOT TO SCALE**


|  |                        |                                  |                   |          |            |
|--|------------------------|----------------------------------|-------------------|----------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS         | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |                                  | ORIGINAL          |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | LARGE TREE<br>WELL               | REVISED           |          | 03-08-2021 |
|  DATE: <u>3/15/21</u> |                        |                                  |                   |          |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022   |                        |                                  | DRAWING<br>NUMBER | GS-1.02  |            |



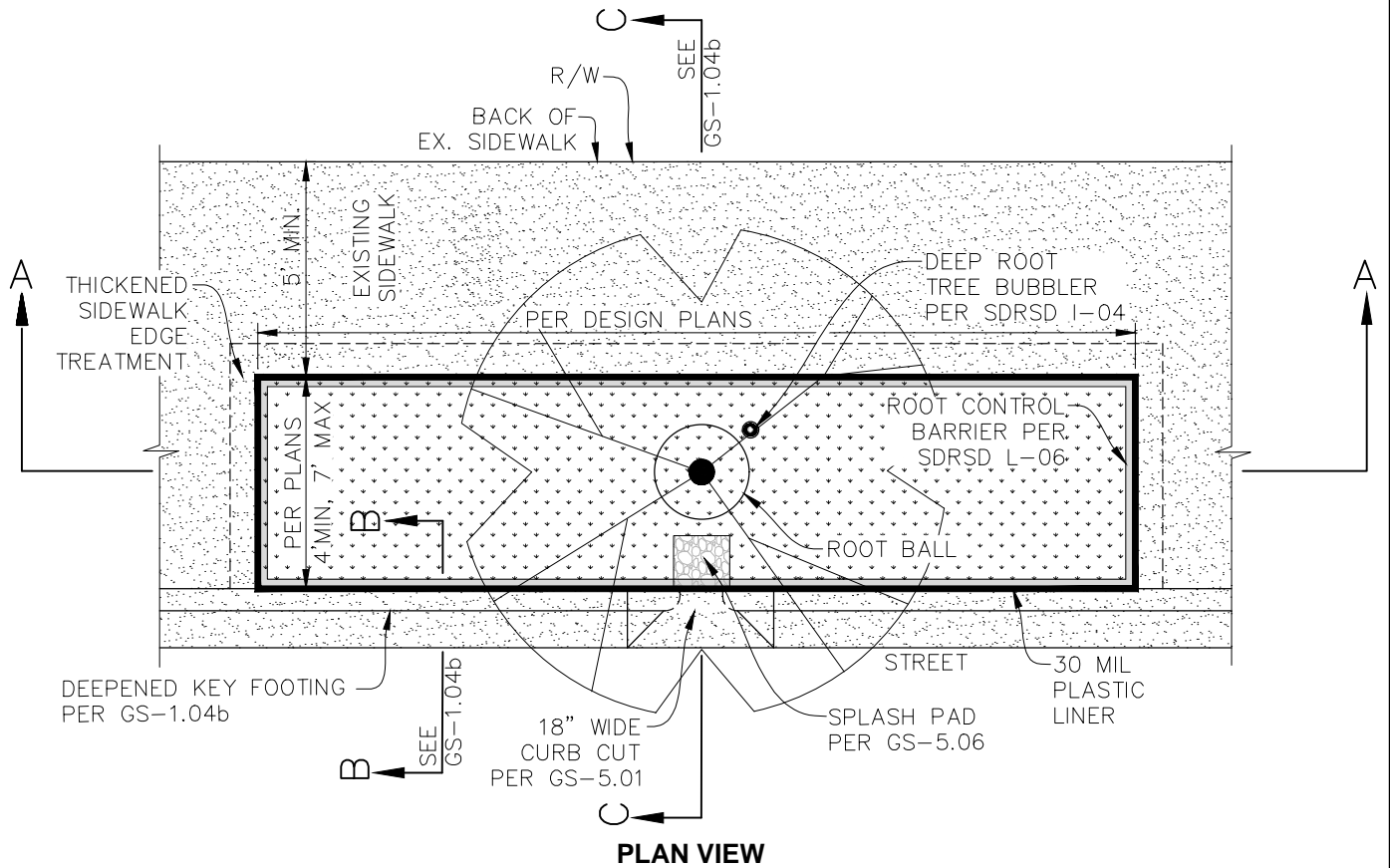
# **NOTES:**

1. REFER TO GS-1.00 FOR ALL DETAILS NOT SHOWN HERE.
2. TREE SIZE & TYPE PER DESIGN PLANS.

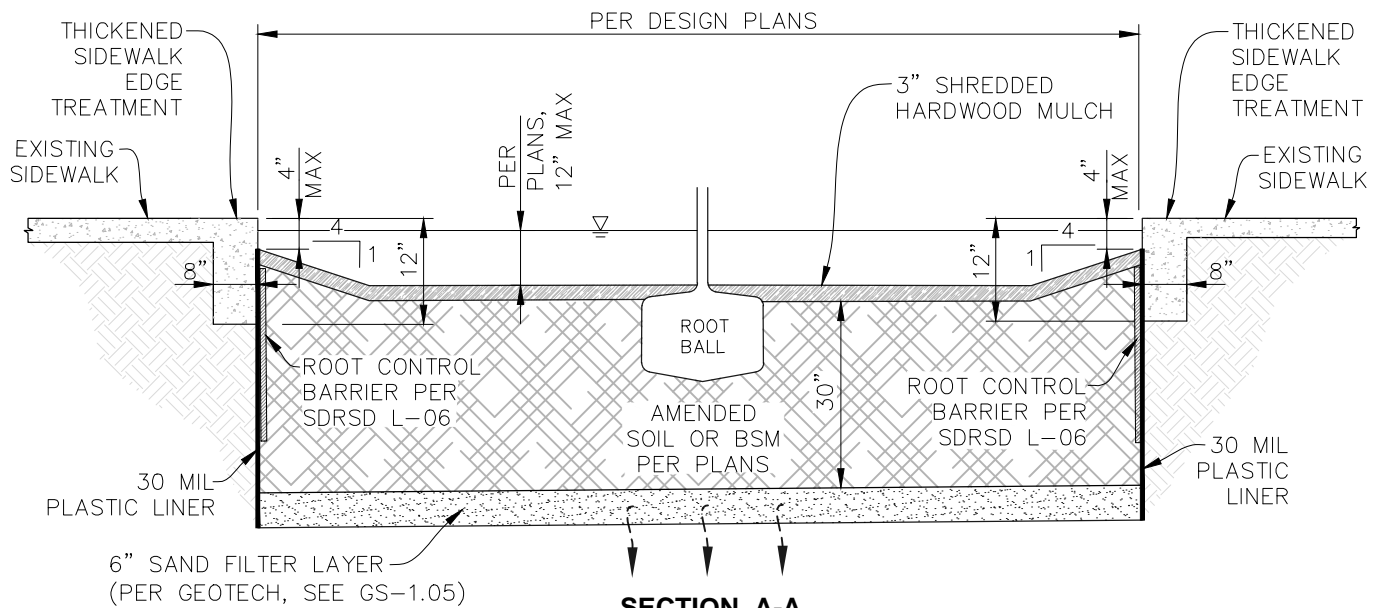
**DRAWING NOT TO SCALE**

|  |                        |                                       |           |                   |                |
|--|------------------------|---------------------------------------|-----------|-------------------|----------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD      | REVISIONS | APPROVED          | DATE           |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |                                       | ORIGINAL  |                   | 10-01-2019     |
| APPROVED BY COUNTY ENGINEER  |                        | TREE WELL ADJACENT<br>TO RIGHT-OF-WAY | REVISED   |                   | 03-08-2021     |
|  DATE: <u>3/15/21</u> |                        |                                       |           |                   |                |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452 EXP 9/30/2022  |                        |                                       |           | DRAWING<br>NUMBER | <b>GS-1.03</b> |





**PLAN VIEW**



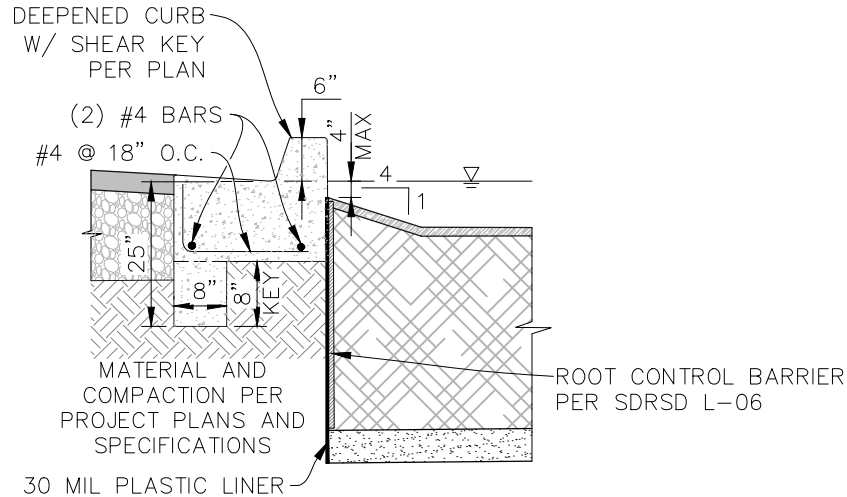
**SECTION A-A**

**NOTES:**

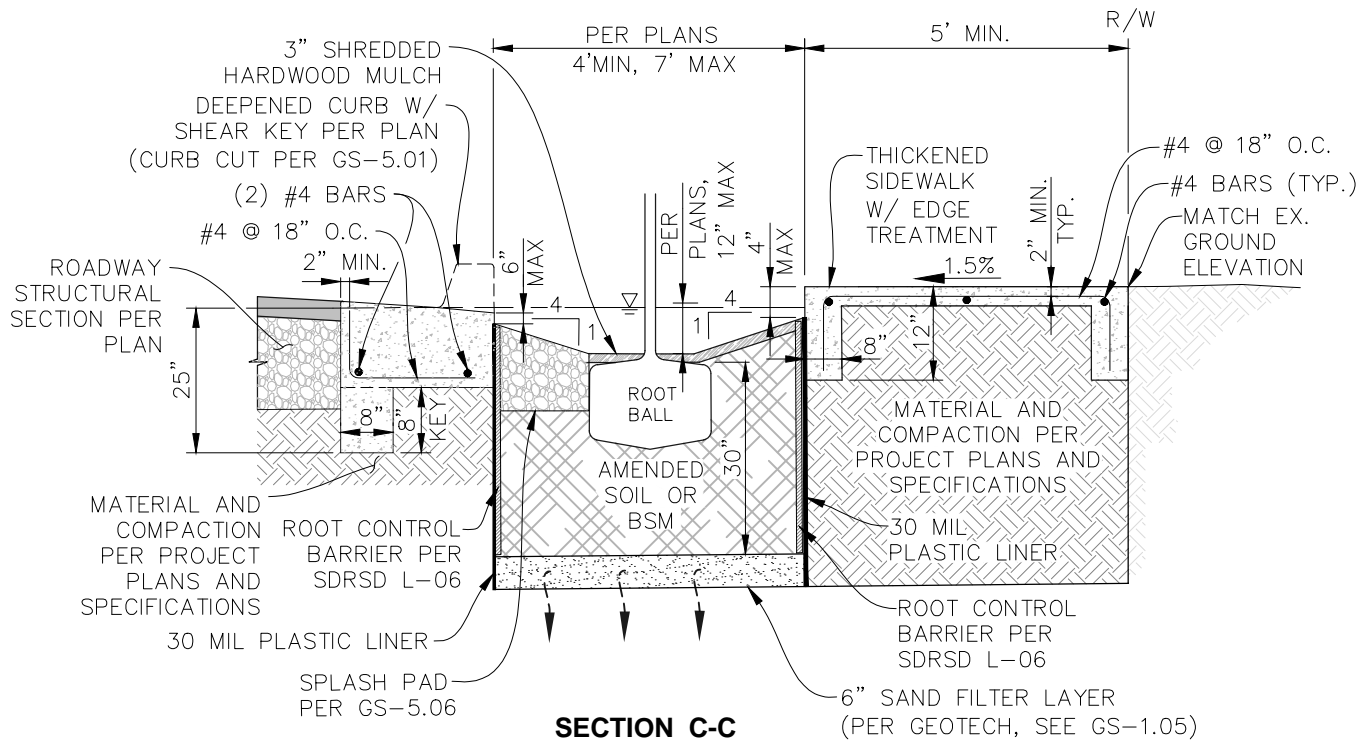
1. REFER TO GS-1.00 FOR ALL DETAILS NOT SHOWN HERE.
2. TREE SIZE & TYPE PER DESIGN PLANS.
3. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

**DRAWING NOT TO SCALE**

|  |                        |  |                                |          |            |
|--|------------------------|--|--------------------------------|----------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD             | REVISIONS                      | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |  | ORIGINAL                       |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | <b>TREE WELL WITHOUT<br/>STRUCTURAL SOIL</b> | REVISED                        |          | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |  |                                |          |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |  | DRAWING NUMBER <b>GS-1.04a</b> |          |            |



**SECTION B-B**



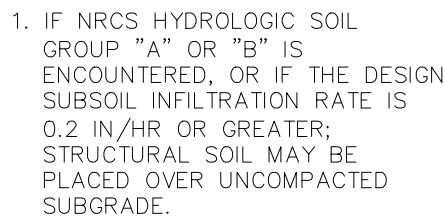
**SECTION C-C**

**NOTES:**

1. REFER TO GS-1.04d FOR ALL DETAILS NOT SHOWN HERE.
2. TREE SIZE & TYPE PER DESIGN PLANS.
3. AS AN ALTERNATIVE TO THE DEEPEMED SHEAR KEY/CUTOFF WALL, CONCRETE CHECK DAMS (DETAIL 5.14) AT 12' MAX INTERVALS MAY BE SUBSTITUTED.
4. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

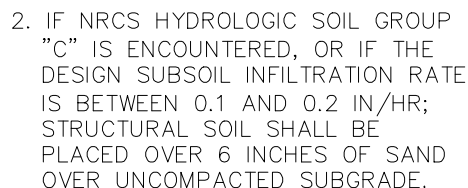
**DRAWING NOT TO SCALE**

|  |                        |                                      |                   |                 |            |
|--|------------------------|--------------------------------------|-------------------|-----------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD     | REVISIONS         | APPROVED        | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |                                      | ORIGINAL          |                 | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | TREE WELL WITHOUT<br>STRUCTURAL SOIL | REVISED           |                 | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |                                      |                   |                 |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |                                      | DRAWING<br>NUMBER | <b>GS-1.04b</b> |            |

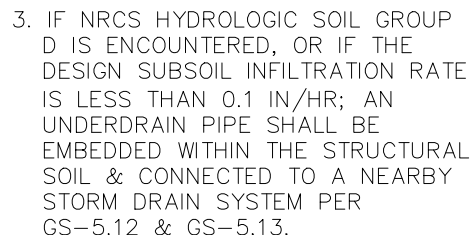


95% COMPACTION UNDER  
CONCRETE FRAME, TYP.

-PERMEABLE GEOTEXTILE FABRIC OR CHOKER  
LAYER BENEATH STRUCTURAL SOIL PER  
GEOTECHNICAL RECOMMENDATIONS

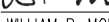


- WHERE IN-SITU SOILS ARE NOT CONDUCTIVE TO INFILTRATION OF DESIGN STORM VOLUMES WITHIN 96 HOURS; UNDERDRAIN SYSTEMS SHALL BE CONSIDERED THROUGH COORDINATION WITH THE COUNTY



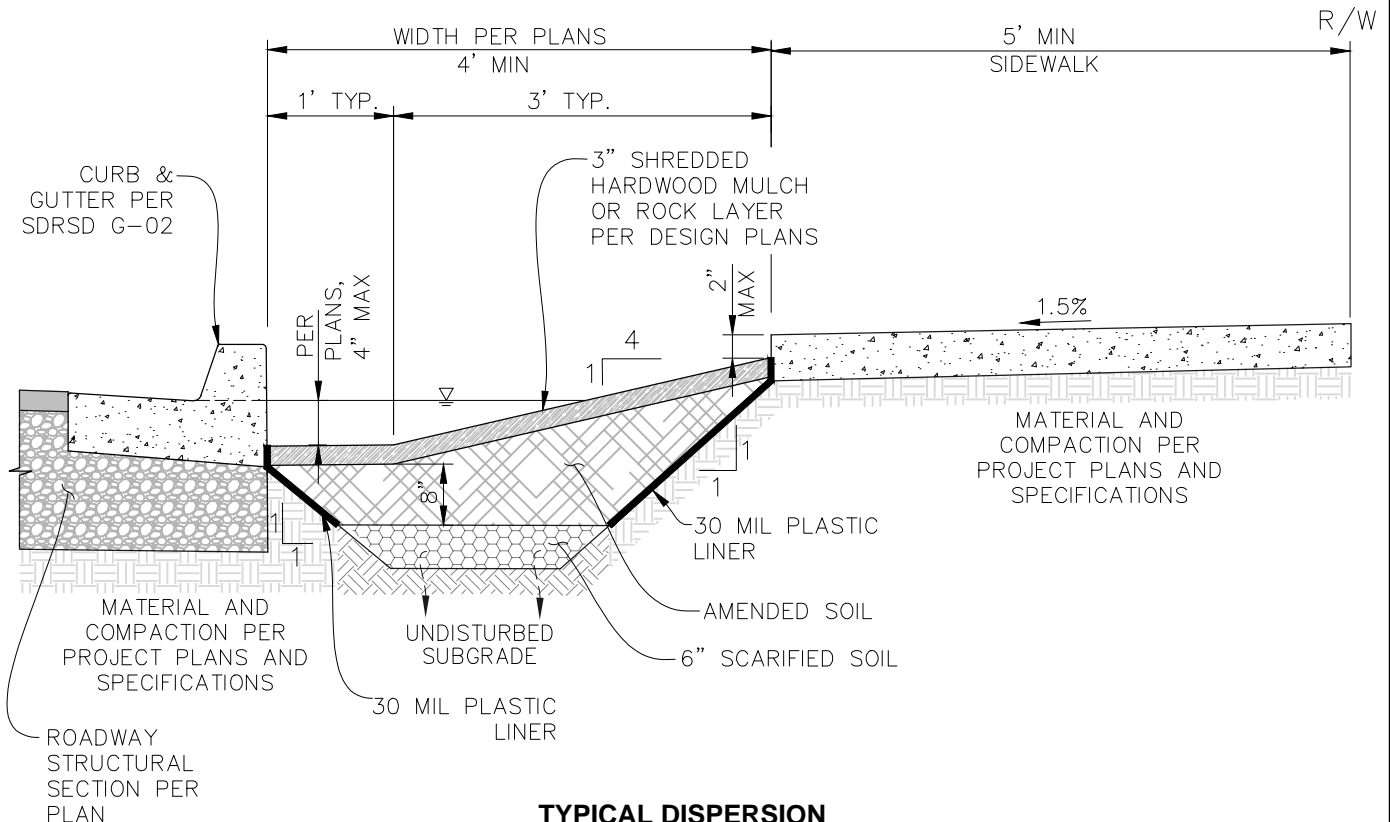
- WHERE IN-SITU SOILS ARE NOT CONDUCTIVE TO INFILTRATION OF DESIGN STORM VOLUMES WITHIN 96 HOURS; UNDERDRAIN SYSTEMS SHALL BE CONSIDERED THROUGH COORDINATION WITH THE COUNTY.

1. REFER TO GS-1.00 FOR ALL DETAILS NOT SHOWN HERE.
2. THE DESIGN SUBSOIL INFILTRATION RATE IS EQUAL TO THE MEASURED INFILTRATION RATE MULTIPLIED BY A FACTOR OF SAFETY. SEE COUNTY BMP DESIGN MANUAL APPENDIX D FOR FURTHER DETAILS.

|  |                        |
|--|------------------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |
| APPROVED BY COUNTY ENGINEER  |                        |
|  DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |

## TREE WELL SUBSURFACE DRAINAGE TYPES

|                   |          |                |
|-------------------|----------|----------------|
| REVISIONS         | APPROVED | DATE           |
| ORIGINAL          |          | 10-01-2019     |
| REVISED           |          | 03-08-2021     |
|                   |          |                |
| DRAWING<br>NUMBER |          | <b>GS-1.05</b> |



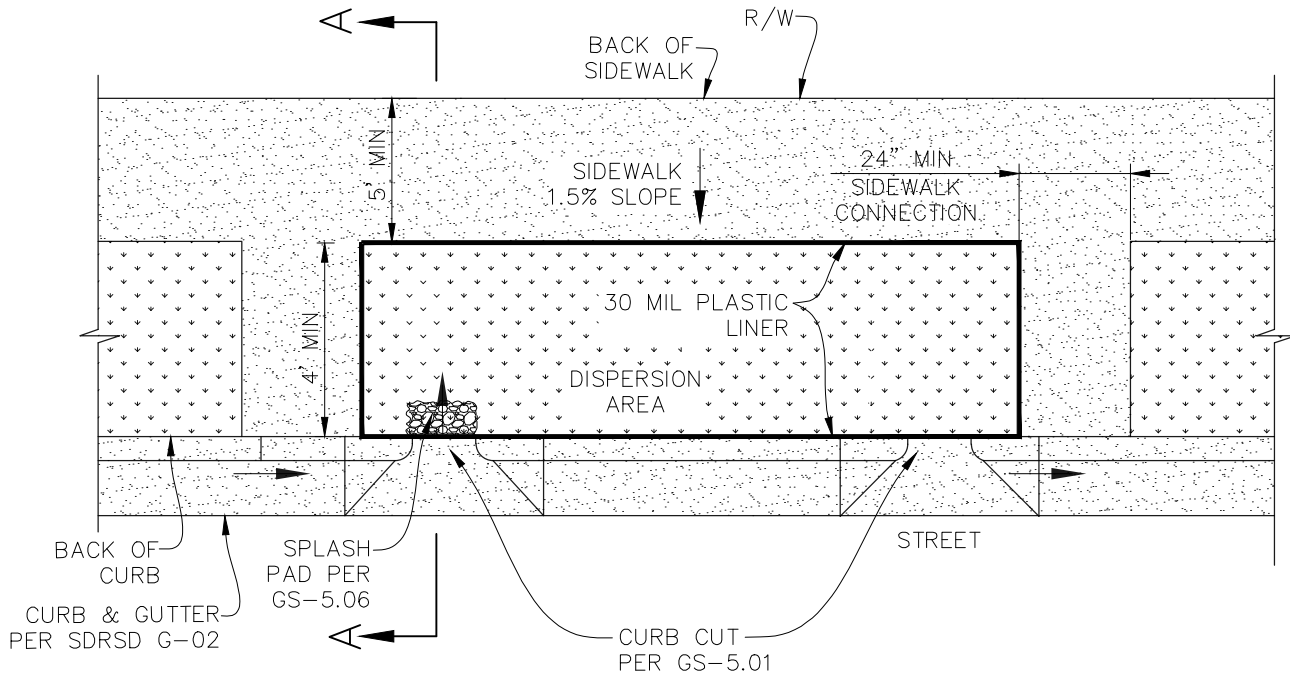
**TYPICAL DISPERSION  
AREA SECTION**

**NOTES:**

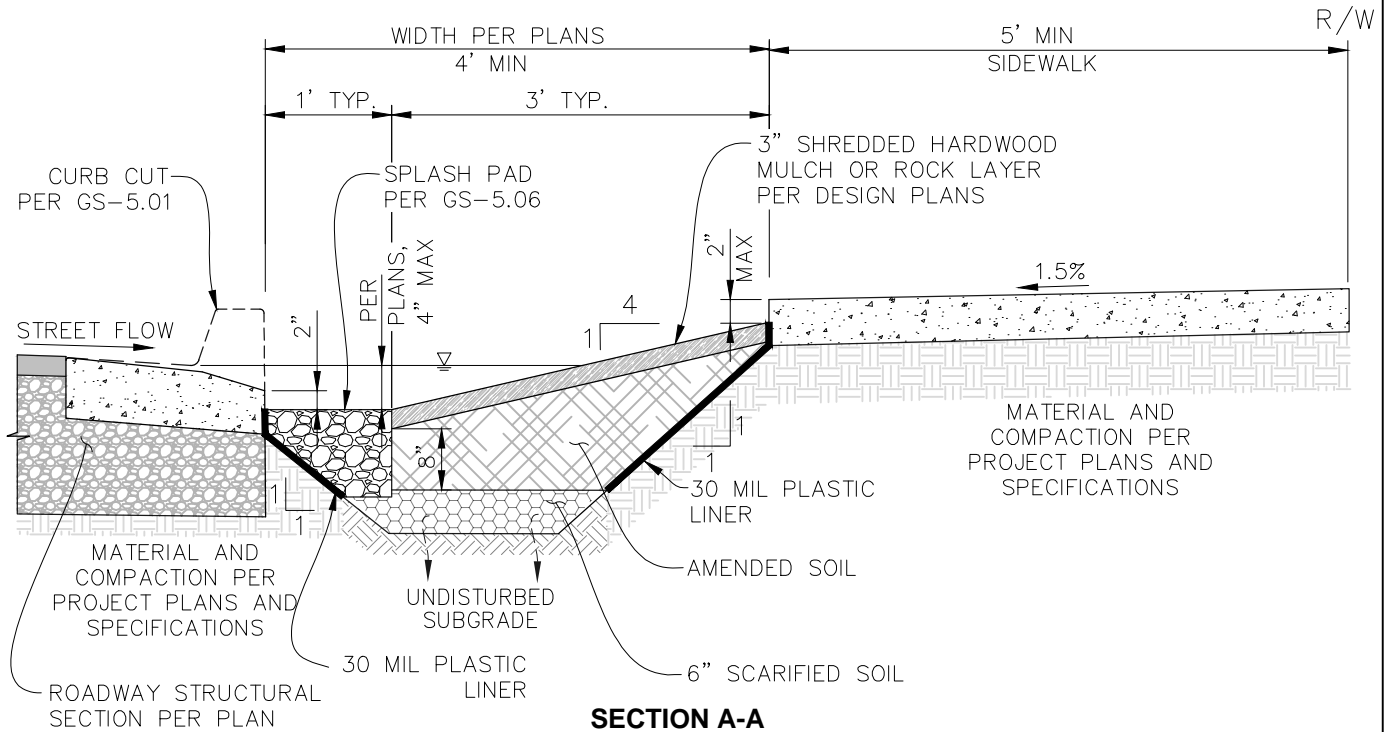
1. STREET IMPROVEMENTS AND DRAINAGE STRUCTURES SHALL BE CONSTRUCTED ACCORDING TO THE LATEST SAN DIEGO REGIONAL STANDARD DRAWINGS AND CALTRANS STANDARD PLANS.
2. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
3. SEAL PLASTIC LINER TO ADJACENT IMPROVEMENTS AND EDGE RESTRAINTS PER GS-5.15. LINER TO EXTEND THE FULL DEPTH OF THE BMP AS SHOWN.
4. BOTTOM OF DISPERSION AREA SHALL BE AT LEAST 10' ABOVE THE SEASONAL HIGH WATER TABLE OR 2' ABOVE THE BEDROCK ELEVATION (AS DETERMINED BY THE GEOTECHNICAL INVESTIGATION).
5. HYDRAULIC DESIGN MANUAL DESIGN CRITERIA SHOULD BE MET IN CONVENTIONAL CONVEYANCE, WHERE POSSIBLE.
6. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

**DRAWING NOT TO SCALE**

|  |                        |  |                   |                |            |
|--|------------------------|--|-------------------|----------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD           | REVISIONS         | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |  | ORIGINAL          |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | DISPERSION AREA<br>GENERAL DESIGN GUIDANCE | REVISED           |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |  |                   |                |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |  | DRAWING<br>NUMBER | <b>GS-2.00</b> |            |



**PLAN VIEW**



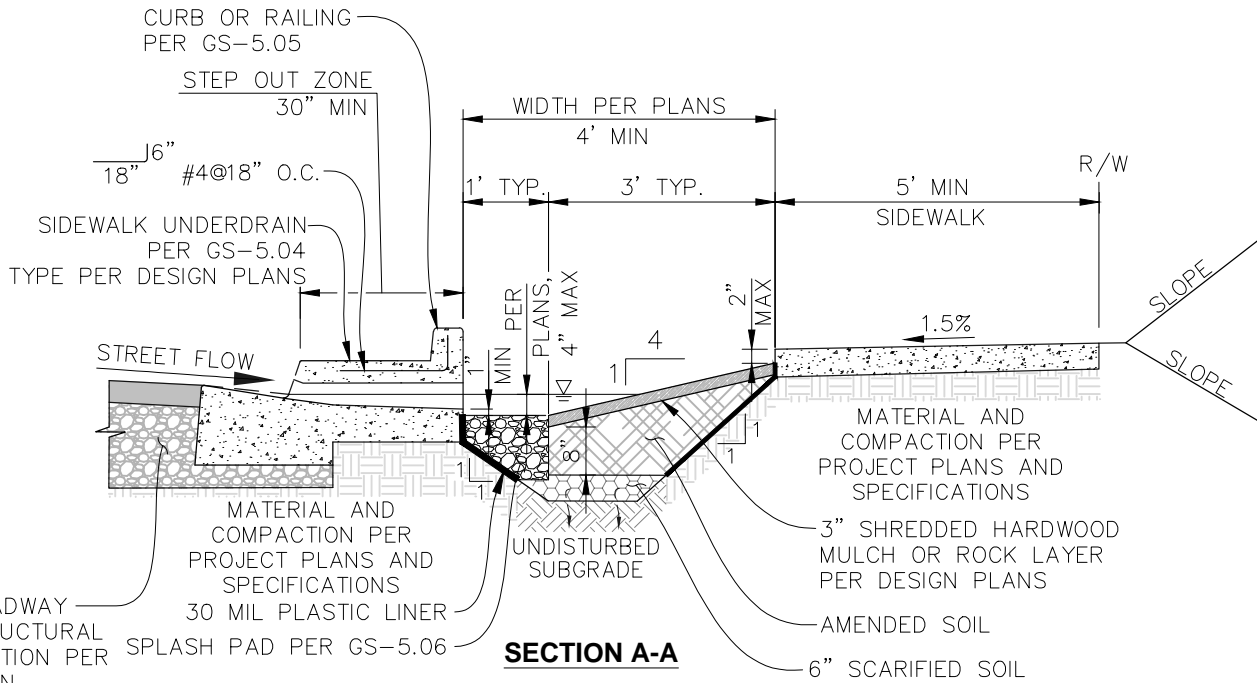
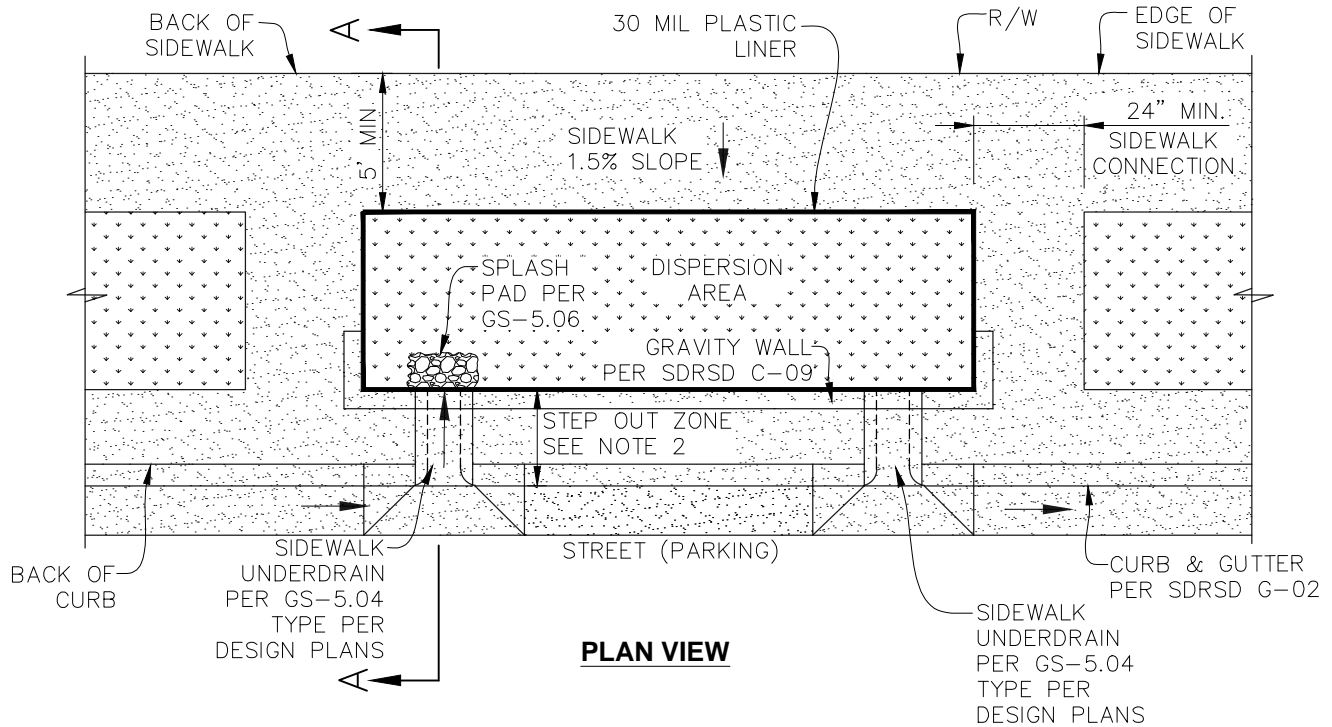
**SECTION A-A**

**NOTES:**

1. REFER TO GS-2.00 FOR ALL DETAILS NOT SHOWN HERE.
2. CURB CUT WIDTH PER DESIGN PLANS.
3. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

**DRAWING NOT TO SCALE**

|  |                        |   |                |                |            |
|--|------------------------|---|----------------|----------------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD  | REVISIONS      | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |   | ORIGINAL       |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | <div style="text-align: center;"> <b>DISPERSION AREA<br/>ADJACENT TO ROADWAY</b> </div> | REVISED        |                | 03-08-2021 |
| <i>W.P. Morgan</i><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 | DATE: <u>3/15/21</u>   |   |                |                |            |
|  |                        |   | DRAWING NUMBER | <b>GS-2.01</b> |            |



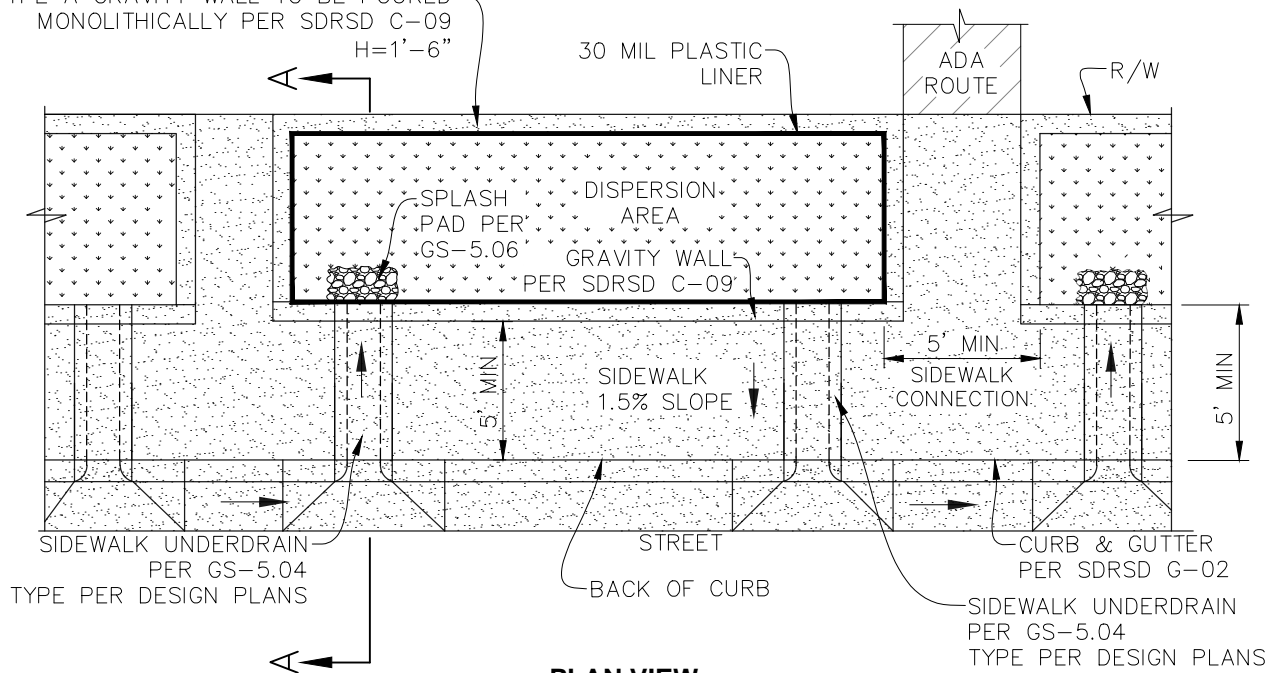
# **NOTES:**

1. REFER TO GS-2.00 FOR ALL DETAILS NOT SHOWN HERE.
2. STEP OUT ZONE DIMENSIONS TO MEET PROJECT-SPECIFIC REQUIREMENTS AND PARAMETERS RELATED TO ONSITE PARKING.
3. CURB CUT WIDTH PER DESIGN PLANS.

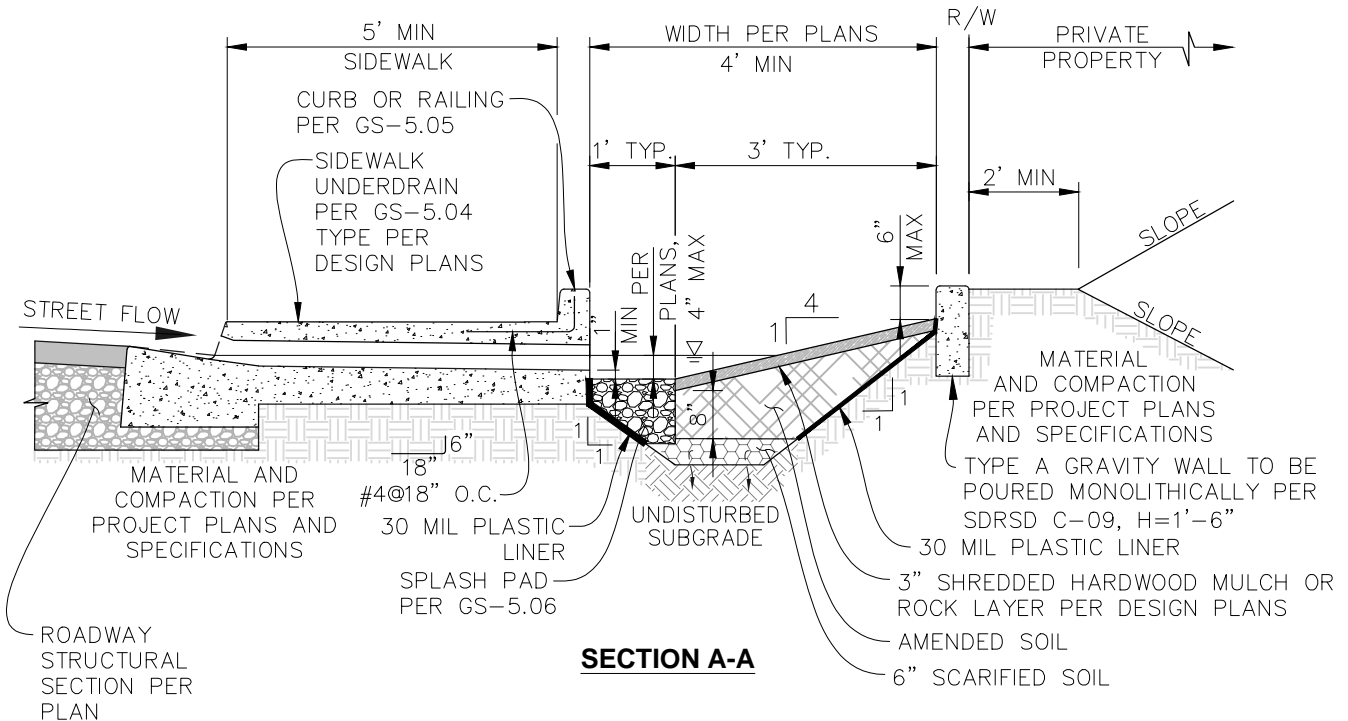
**DRAWING NOT TO SCALE**

|  |                        |                                       |                   |                |            |
|--|------------------------|---------------------------------------|-------------------|----------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD      | REVISIONS         | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |                                       | ORIGINAL          |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | DISPERSION AREA WITH<br>STEP OUT ZONE | REVISED           |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |                                       |                   |                |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |                                       | DRAWING<br>NUMBER | <b>GS-2.02</b> |            |

TYPE A GRAVITY WALL TO BE POURED MONOLITHICALLY PER SDRSD C-09  
H=1'-6"



**PLAN VIEW**



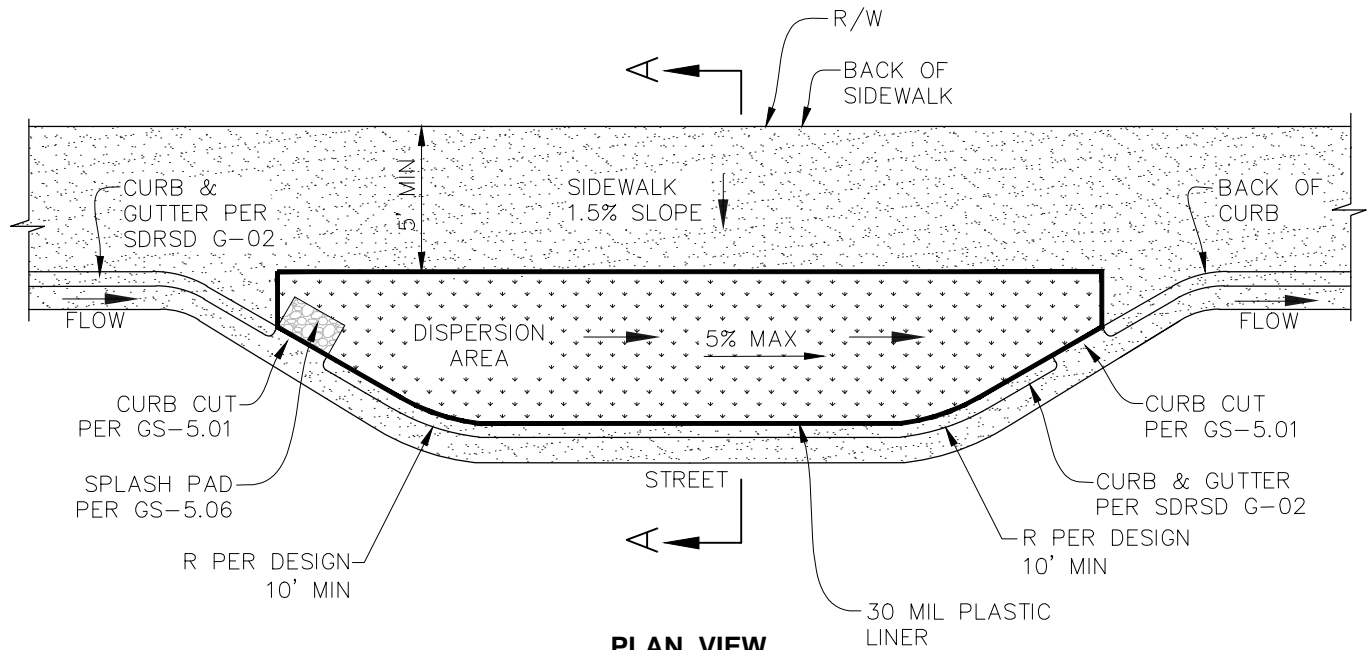
**SECTION A-A**

**NOTES:**

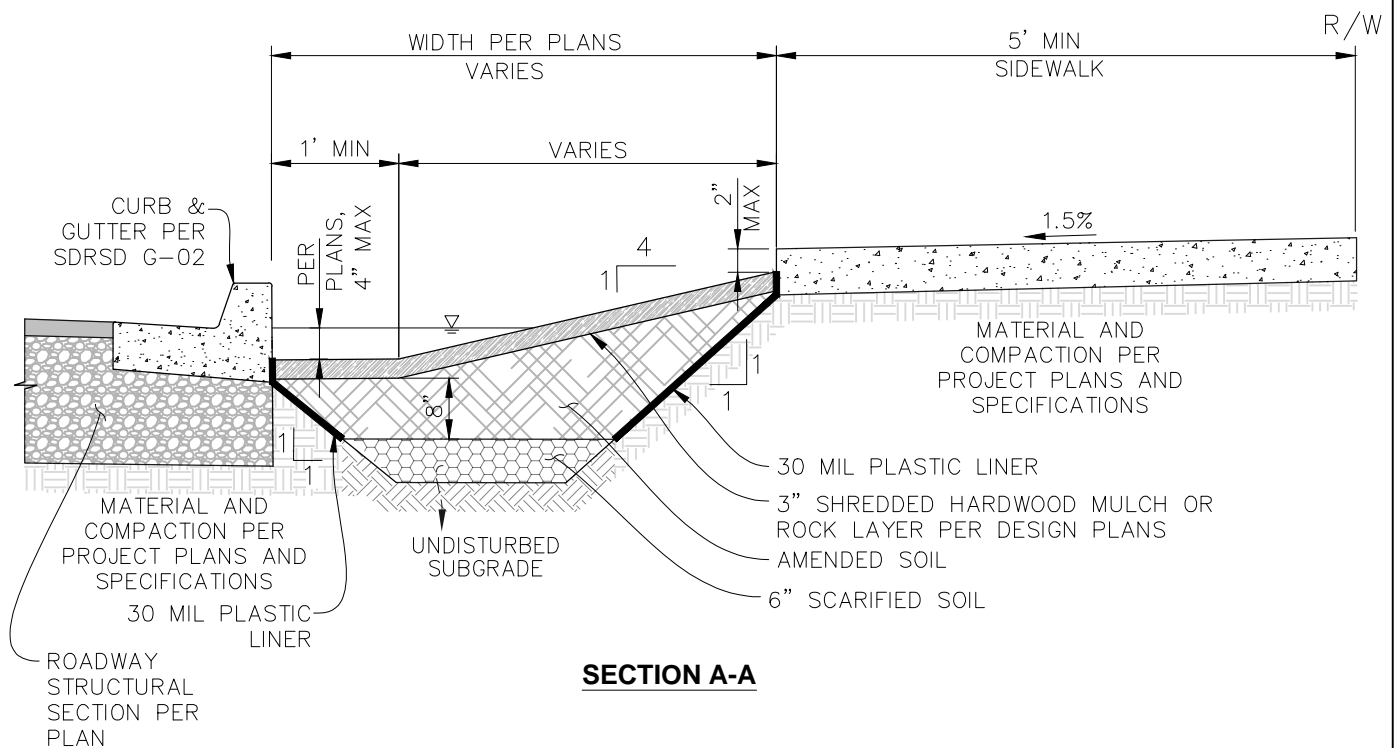
1. REFER TO GS-2.00 FOR ALL DETAILS NOT SHOWN HERE.
2. CURB CUT WIDTH PER DESIGN PLANS.

**DRAWING NOT TO SCALE**

|  |                        |   |           |                   |            |
|--|------------------------|---|-----------|-------------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD            | REVISIONS | APPROVED          | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |   | ORIGINAL  |                   | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | DISPERSION AREA ADJACENT<br>TO RIGHT-OF-WAY | REVISED   |                   | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |   |           |                   |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |   |           | DRAWING<br>NUMBER | GS-2.03    |



**PLAN VIEW**



**SECTION A-A**

**NOTES:**

1. REFER TO GS-2.00 FOR ALL DETAILS NOT SHOWN HERE.
2. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

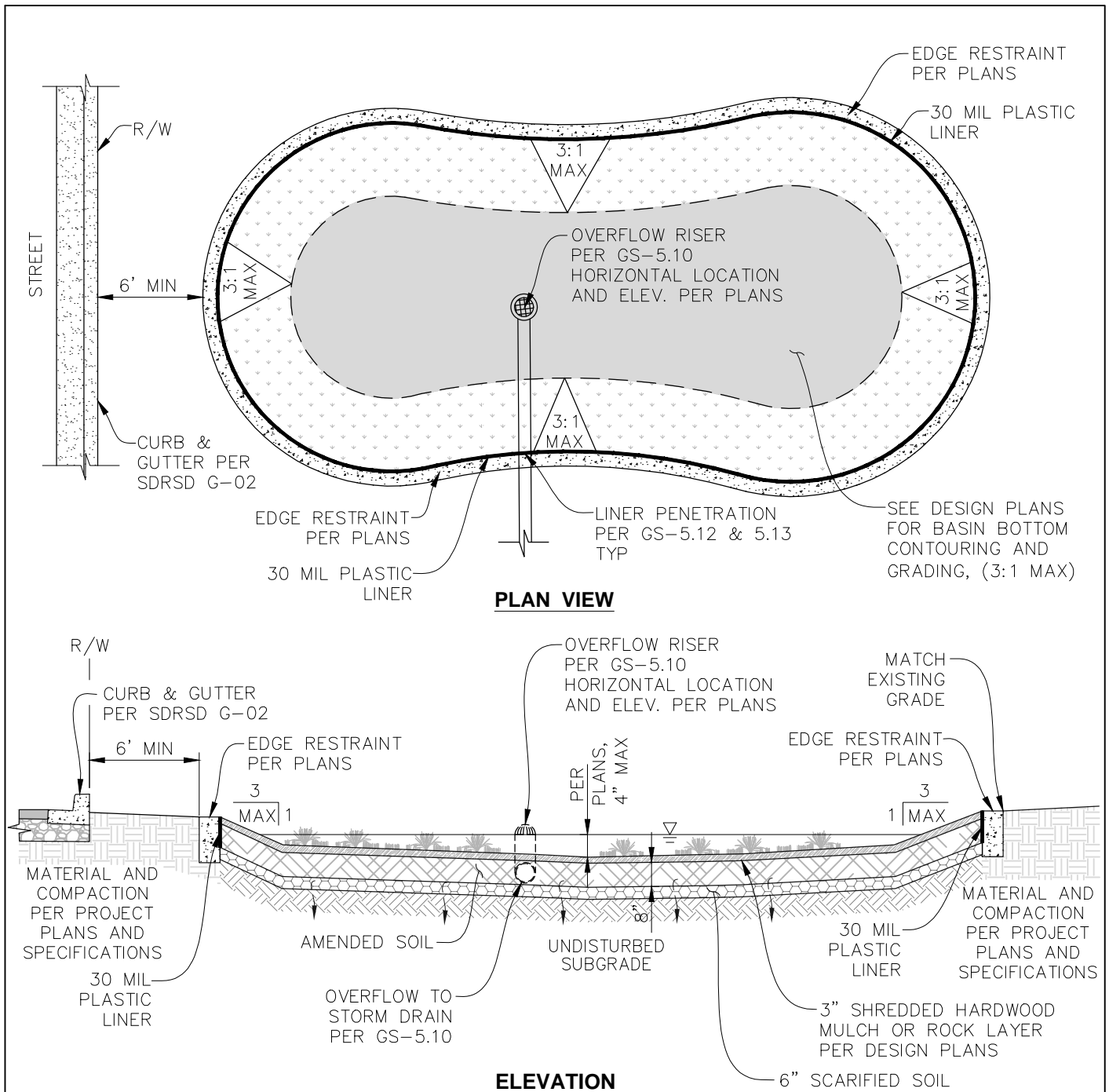
**DRAWING NOT TO SCALE**

|  |                        |  |                |                |            |
|--|------------------------|--|----------------|----------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD           | REVISIONS      | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |  | ORIGINAL       |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | <b>CURB EXTENSION ADJACENT TO SIDEWALK</b> | REVISED        |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |  |                |                |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |  | DRAWING NUMBER | <b>GS-2.04</b> |            |





|  |                        |   |                   |          |            |
|--|------------------------|---|-------------------|----------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD            | REVISIONS         | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |   | ORIGINAL          |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | CURB EXTENSION ADJACENT<br>TO PLANTER STRIP | REVISED           |          | 03-08-2021 |
|  DATE: <u>3/15/21</u> |                        |   |                   |          |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022   |                        |   | DRAWING<br>NUMBER | GS-2.05  |            |

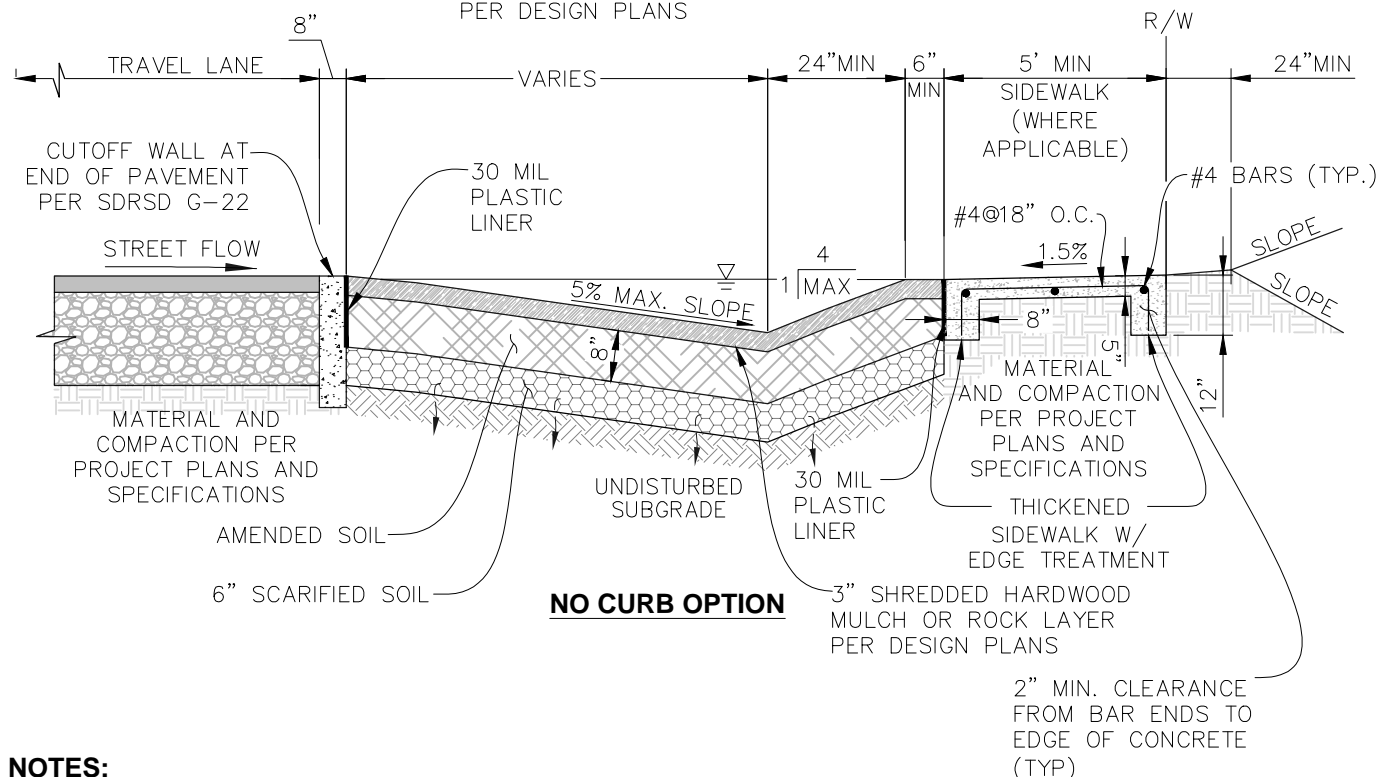
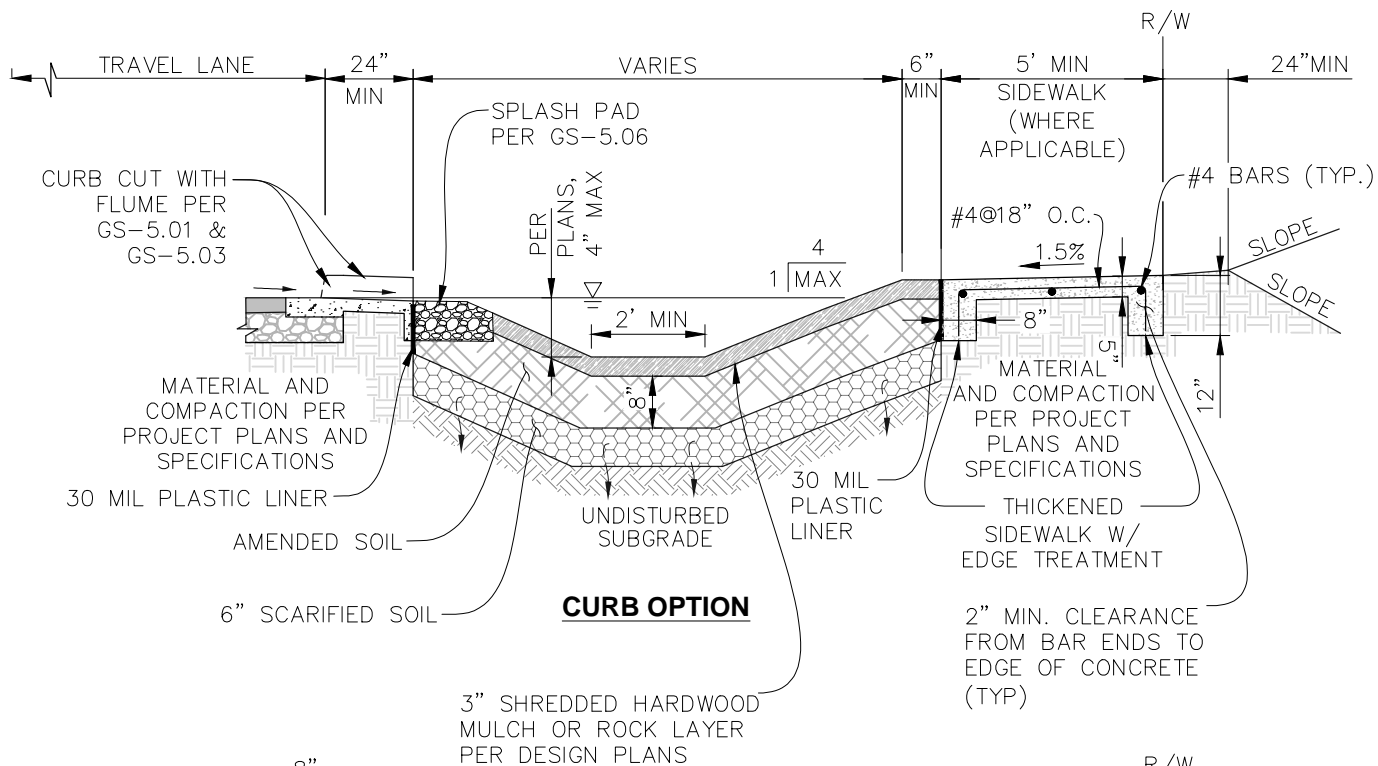


#### NOTES:

1. REFER TO GS-2.00 FOR ALL DETAILS NOT SHOWN HERE.
2. OVERFLOW ELEVATION IS REQUIRED TO BE 4" MIN BELOW RELATED SIDEWALK ELEVATION (WHERE APPLICABLE).
3. OPEN AREA PARAMETERS (I.E. GRADING AND SURFACE TREATMENT) TO BE PROJECT-SPECIFIC PER THE DESIGN ENGINEER'S RECOMMENDATIONS AND SPECIFICATIONS.

DRAWING NOT TO SCALE

|  |                        |                                  |                   |          |            |
|--|------------------------|----------------------------------|-------------------|----------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS         | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |                                  | ORIGINAL          |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | OPEN DISPERSION AREA             | REVISED           |          | 03-08-2021 |
|  DATE: <u>3/15/21</u> |                        |                                  |                   |          |            |
| WILLIAM P. MORGAN, P.E.  |                        |                                  | DRAWING<br>NUMBER | GS-2.06  |            |
| R.C.E. NO. 49452, EXP 9/30/2022  |                        |                                  |                   |          |            |

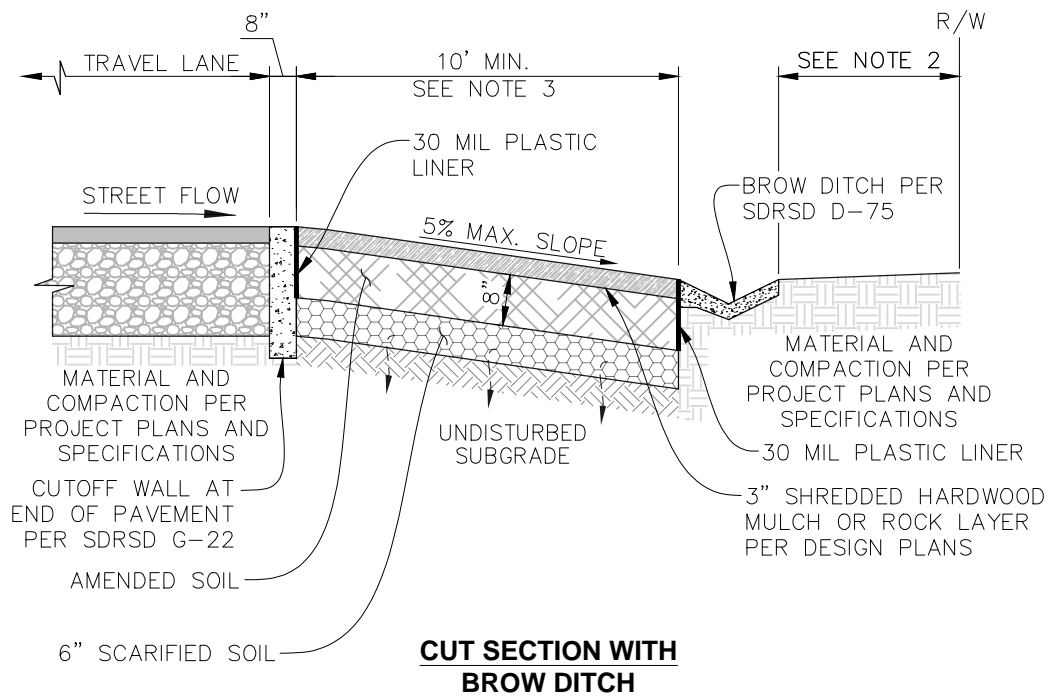


# NOTES:

1. REFER TO GS-2.00 FOR ALL DETAILS NOT SHOWN HERE.
2. CURB CUT WIDTH PER DESIGN PLANS.

DRAWING NOT TO SCALE

|  |                 |                                  |                |          |            |
|--|-----------------|----------------------------------|----------------|----------|------------|
| DRAWN BY: NWB                          | CHECKED BY: KBK | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS      | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E. |                 |                                  | ORIGINAL       |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER            |                 | DISPERSION SWALES                | REVISED        |          | 03-08-2021 |
| W.P. Morgan DATE: 3/15/21              |                 |                                  |                |          |            |
| WILLIAM P. MORGAN, P.E.                |                 |                                  | DRAWING NUMBER |          |            |
| R.C.E. NO. 49452, EXP 9/30/2022        |                 |                                  | GS-2.07        |          |            |

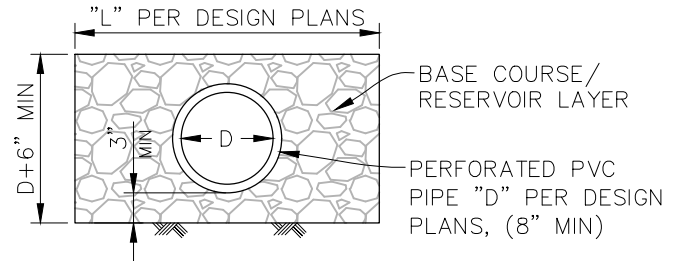


**NOTES:**

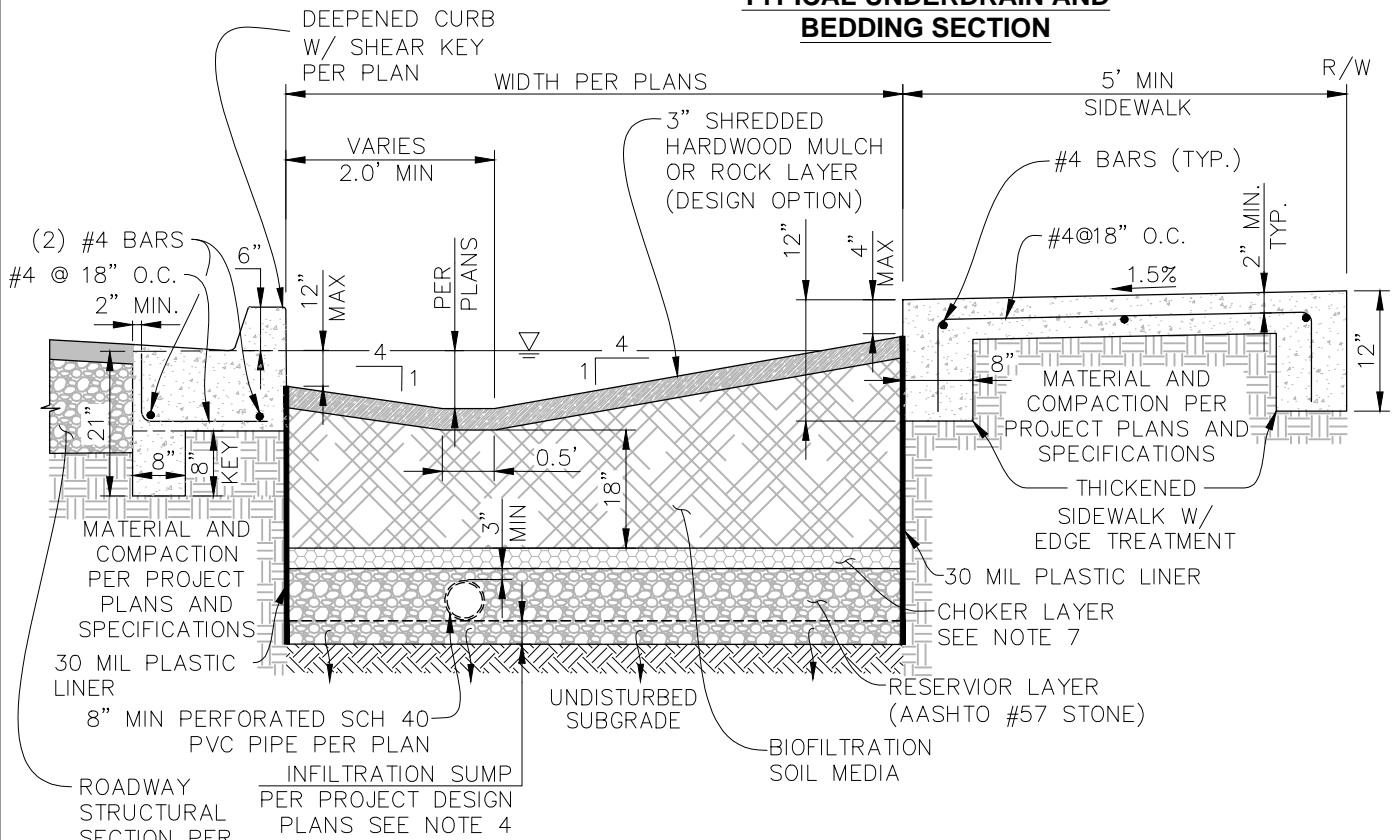
1. REFER TO GS-2.00 FOR ALL DETAILS NOT SHOWN HERE.
2. DESIGN BEYOND BROW DITCH PER PROJECT.
3. MINIMUM FILTER STRIP WIDTH IS 10 FEET PER FACT SHEET SD-B OF THE COUNTY BMP DESIGN MANUAL.

**DRAWING NOT TO SCALE**

|  |                        |                                  |                   |                |            |
|--|------------------------|----------------------------------|-------------------|----------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS         | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |                                  | ORIGINAL          |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | DISPERSION AREA<br>FILTER STRIP  | REVISED           |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |                                  |                   |                |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |                                  | DRAWING<br>NUMBER | <b>GS-2.08</b> |            |



**TYPICAL UNDERDRAIN AND BEDDING SECTION**



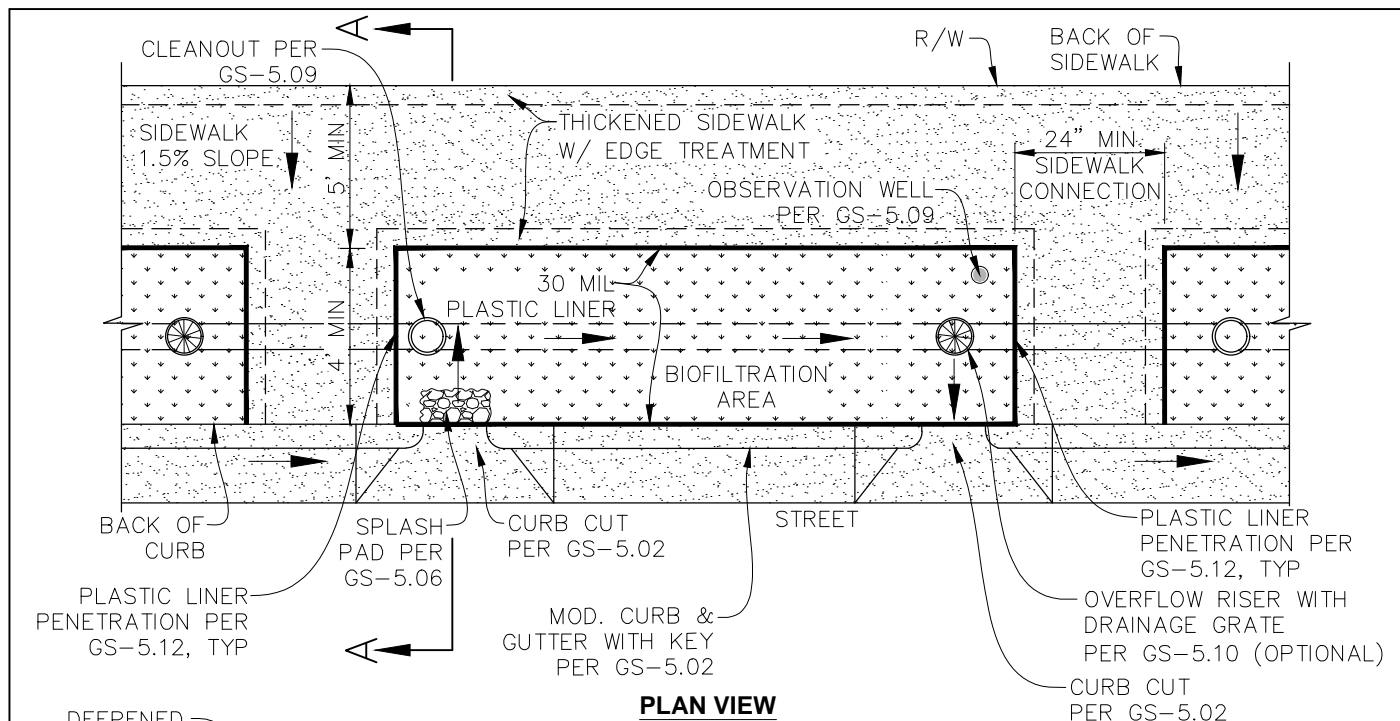
**TYPICAL BIOFILTRATION BASIN SECTION**

**NOTES:**

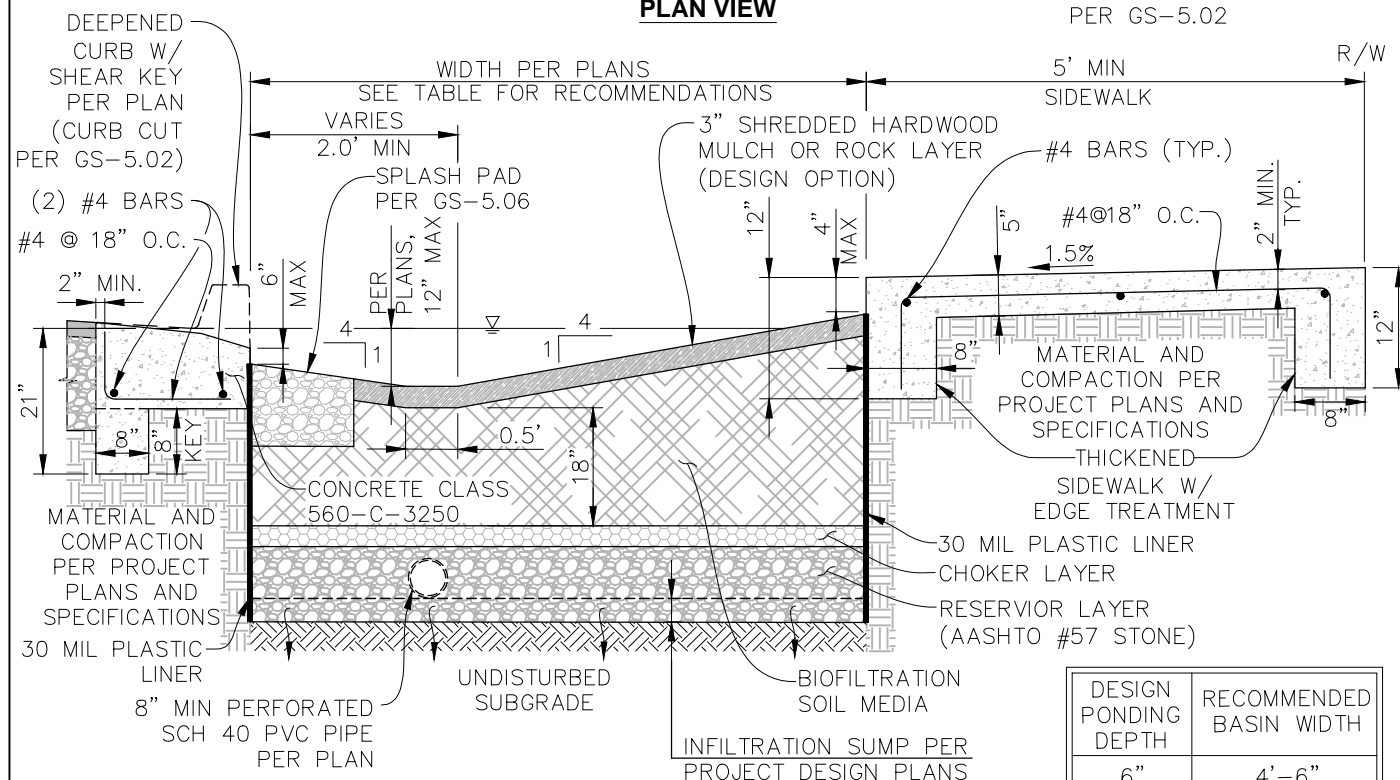
1. STREET IMPROVEMENTS AND DRAINAGE STRUCTURES PER PROJECT PLAN.
2. REFERENCE COUNTY BMP DESIGN MANUAL FACT SHEET BF-1 "BIOFILTRATION" FOR DESIGN APPROACH.
3. REFER TO GS-3.10 FOR BIOFILTRATION BASIN SUBSURFACE DRAINAGE TYPES.
4. DEPTH OF BIOFILTRATION SOIL MEDIA, RESERVOIR LAYER & INFILTRATION SUMP (PER THE DESIGN PLANS) SHALL ADDRESS STORMWATER RETENTION AND DRAW-DOWN REQUIREMENTS.
5. BOTTOM OF RESERVOIR LAYER SHALL BE AT LEAST 10' ABOVE THE SEASONAL HIGH WATER TABLE OR 2' ABOVE THE BEDROCK ELEVATION (AS DETERMINED BY THE GEOTECHNICAL INVESTIGATION).
6. SEAL PLASTIC LINER TO ADJACENT IMPROVEMENTS AND EDGE RESTRAINTS PER GS-5.15. LINER TO EXTEND THE FULL DEPTH OF THE BMP AS SHOWN.
7. DESIGN ENGINEER SHALL DETERMINE WHETHER A CHOKER LAYER IS REQUIRED BASED ON GEOTECHNICAL RECOMMENDATIONS AND SHALL SPECIFY THESE REQUIREMENTS IN THE PLANS.
8. HYDRAULIC DESIGN MANUAL DESIGN CRITERIA SHOULD BE MET IN CONVENTIONAL CONVEYANCE, WHERE POSSIBLE.
9. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
10. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

**DRAWING NOT TO SCALE**

|  |                        |  |           |                   |            |
|--|------------------------|--|-----------|-------------------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD         | REVISIONS | APPROVED          | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |  | ORIGINAL  |                   | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | BIOFILTRATION GENERAL<br>DESIGN GUIDANCE | REVISED   |                   | 03-08-2021 |
|  DATE: <u>3/15/21</u> |                        |  |           |                   |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022   |                        |  |           | DRAWING<br>NUMBER | GS-3.00    |



**PLAN VIEW**



**SECTION A-A**

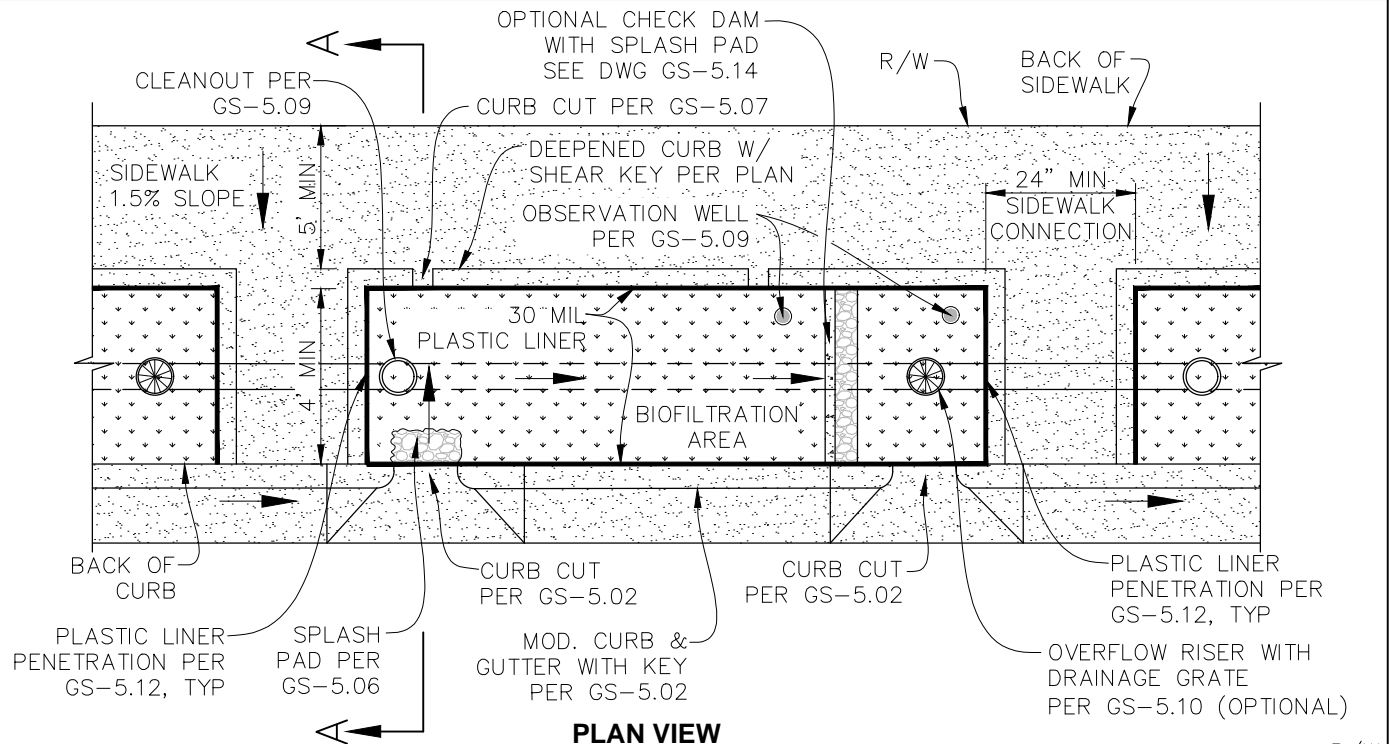
| DESIGN PONDING DEPTH | RECOMMENDED BASIN WIDTH |
|----------------------|-------------------------|
| 6"                   | 4'-6"                   |
| 9"                   | 5'-6"                   |
| 12"                  | 7'-0"                   |

**NOTES:**

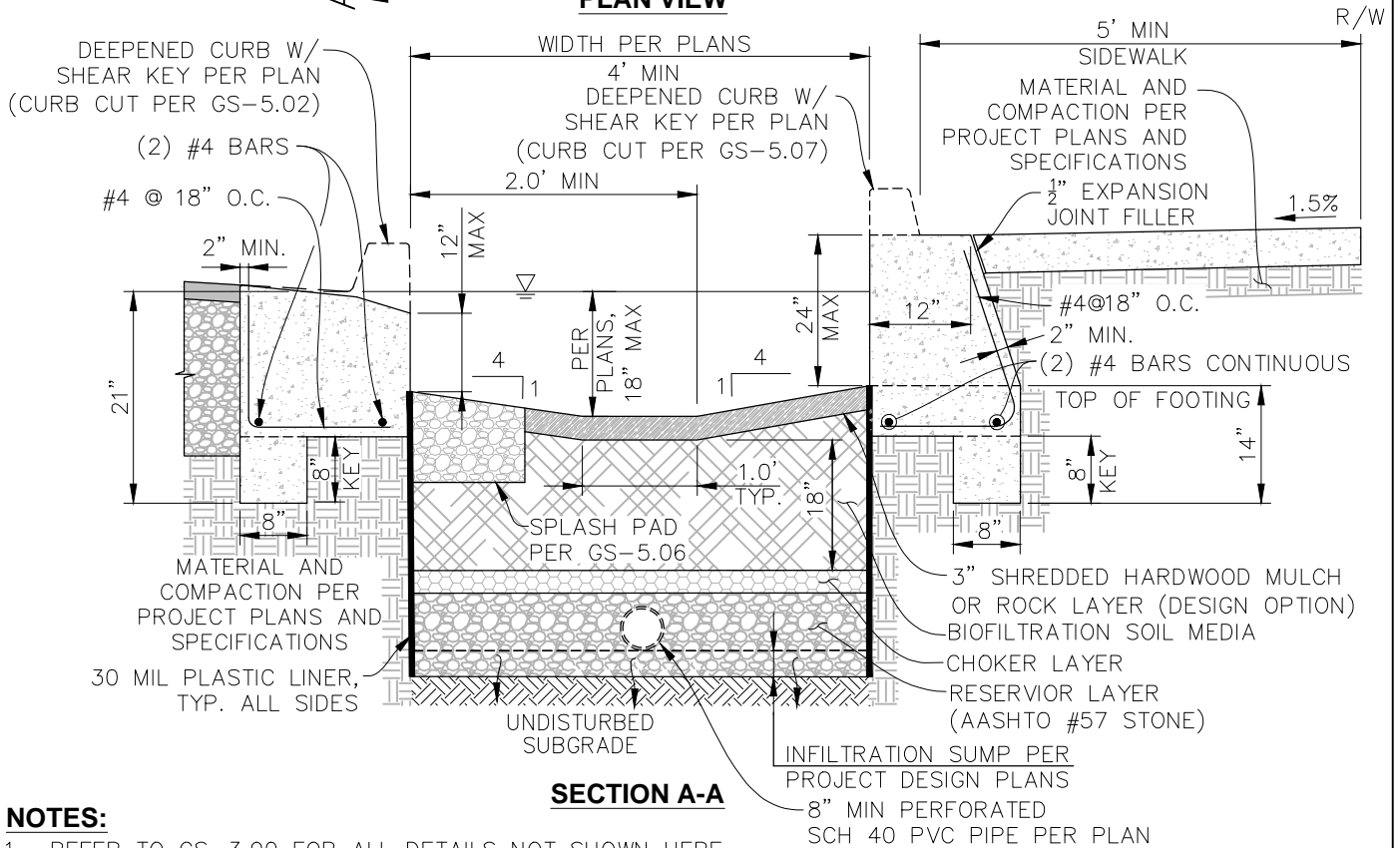
1. REFER TO GS-3.00 FOR ALL DETAILS NOT SHOWN HERE.
2. AS AN ALTERNATIVE TO THE DEEPENED SHEAR KEY/CUTOFF WALL, CONCRETE CHECK DAMS (DETAIL 5.14) AT 20' MAX INTERVALS MAY BE SUBSTITUTED.
3. IF SURFACE PONDING DEPTH EXCEEDS 12", REFER TO GS3.02 FOR RETAINING WALL ALTERNATIVE.
4. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

**DRAWING NOT TO SCALE**

|   |                        |  |                |                |            |
|---|------------------------|--|----------------|----------------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD   | REVISIONS      | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |  | ORIGINAL       |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | <b>BIOFILTRATION PLANTER<br/>ADJACENT TO ROADWAY<br/>(12" MAX PONDING DEPTH)</b> | REVISED        |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |  | DRAWING NUMBER | <b>GS-3.01</b> |            |



**PLAN VIEW**



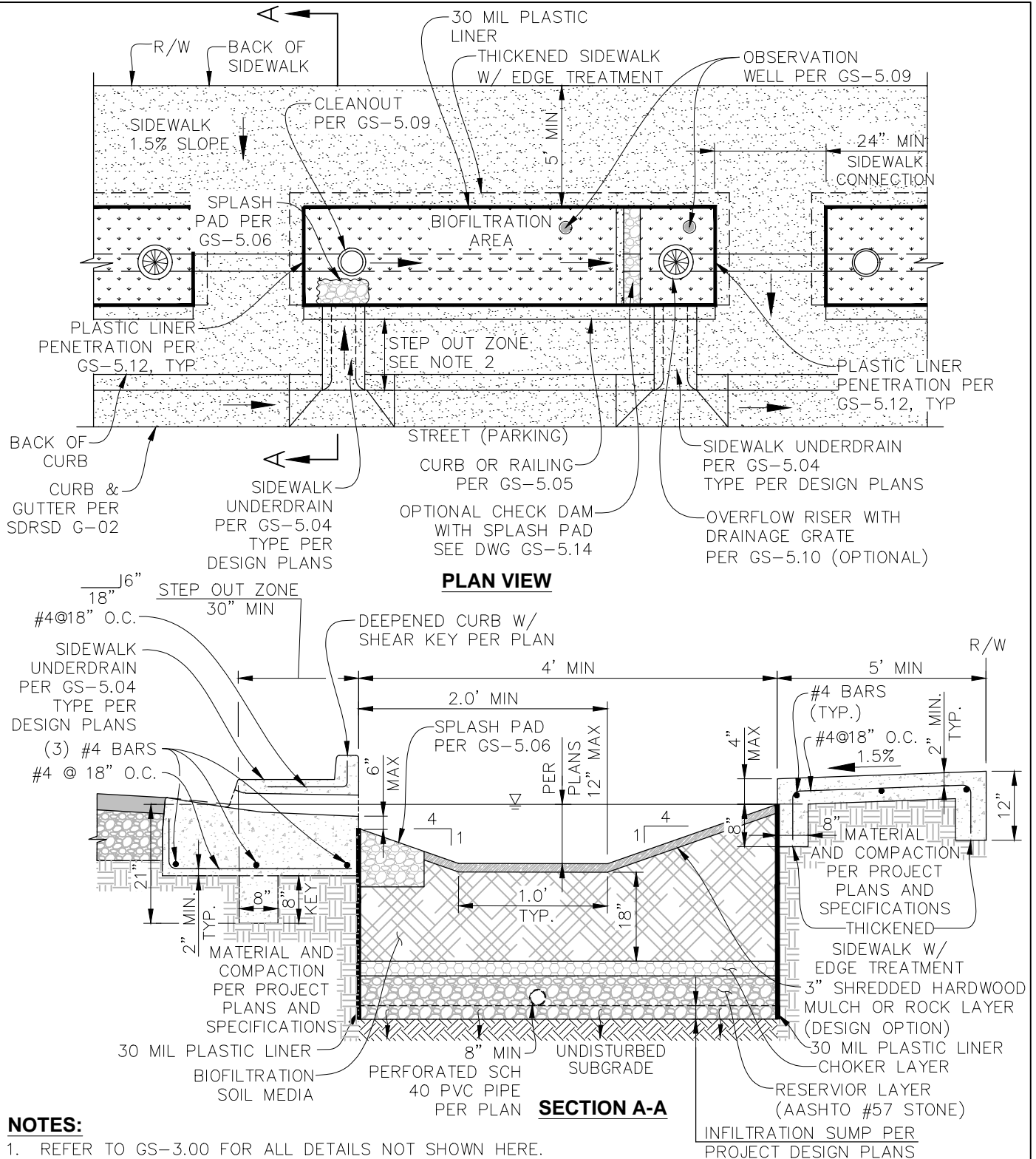
**SECTION A-A**

**NOTES:**

1. REFER TO GS-3.00 FOR ALL DETAILS NOT SHOWN HERE.
2. AS AN ALTERNATIVE TO THE DEEPEMED SHEAR KEY/CUTOFF WALL, CONCRETE CHECK DAMS (DETAIL 5.14) AT 20' MAX INTERVALS MAY BE SUBSTITUTED.
3. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

**DRAWING NOT TO SCALE**

|  |                        |   |           |                   |            |
|--|------------------------|---|-----------|-------------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD                                    | REVISIONS | APPROVED          | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |   | ORIGINAL  |                   | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | BIOFILTRATION PLANTER<br>ADJACENT TO ROADWAY<br>(PONDING DEPTH>12") | REVISED   |                   | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |   |           |                   |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |   |           | DRAWING<br>NUMBER | GS-3.02    |

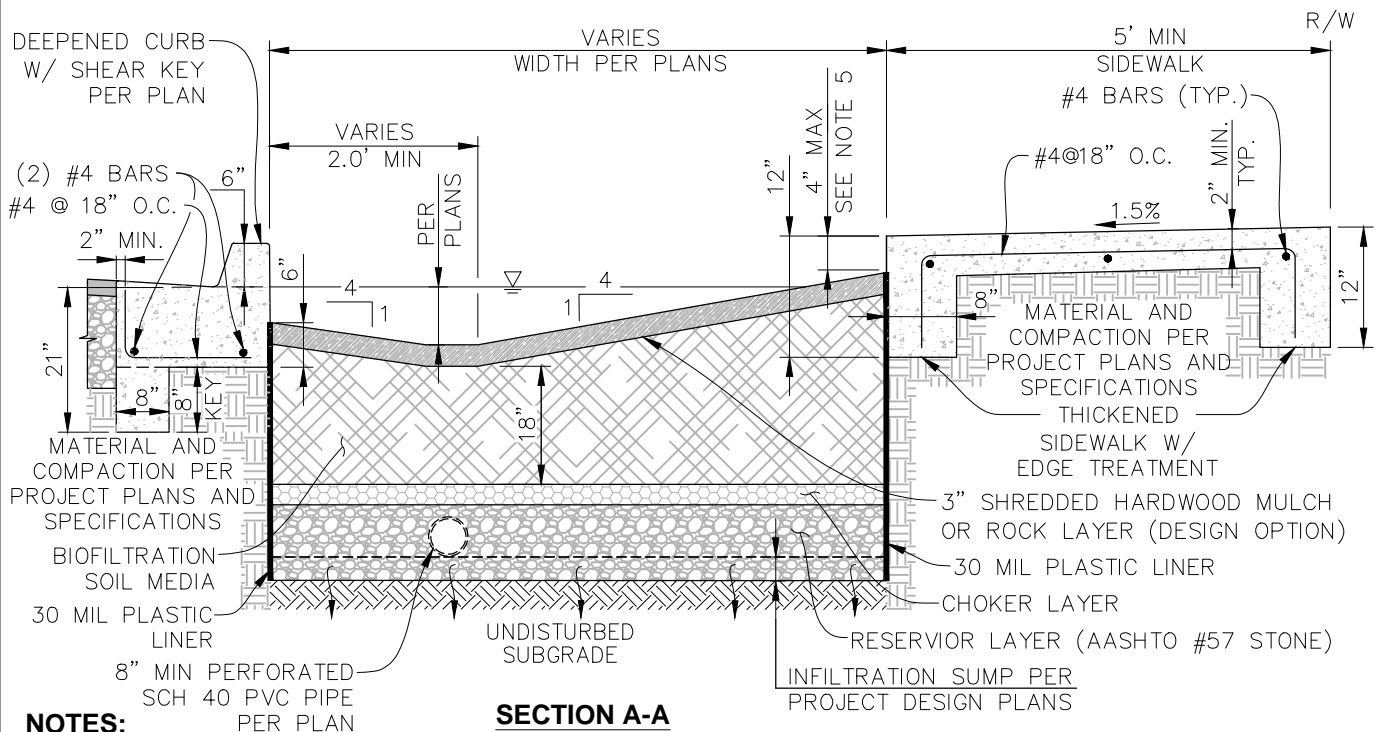
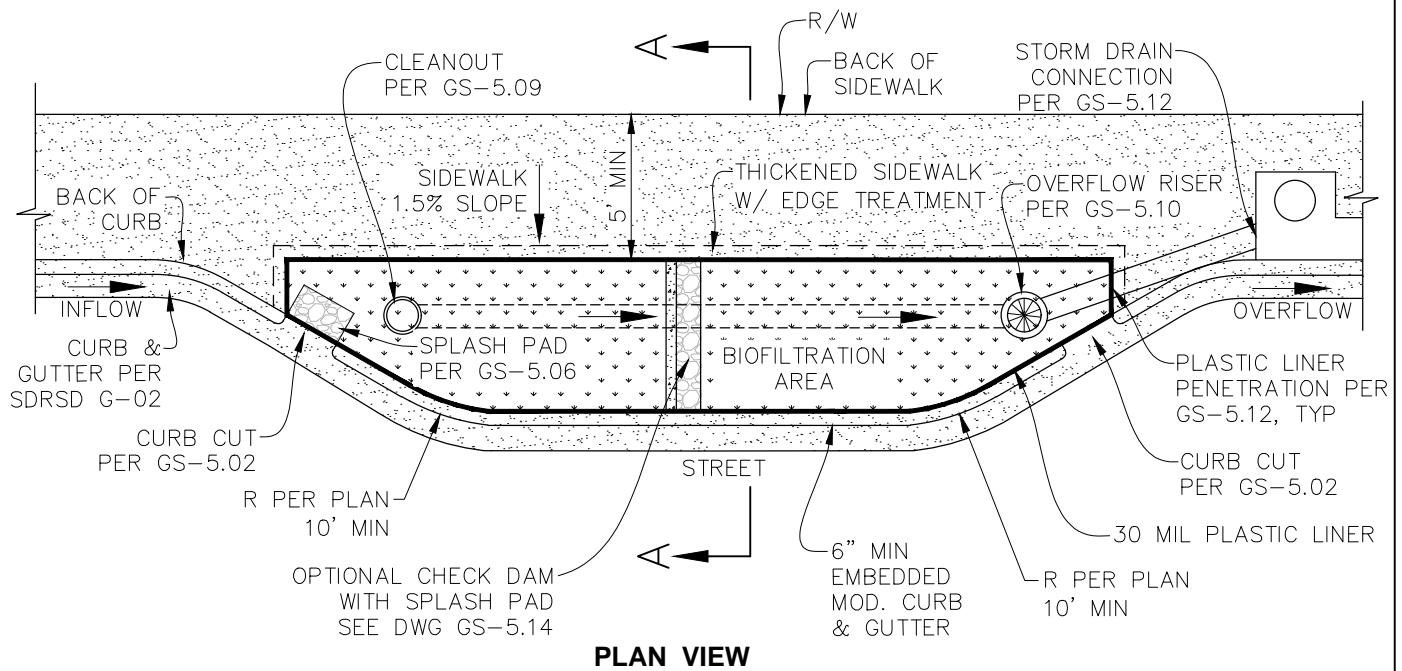


DRAWING NOT TO SCALE

|   |                        |   |                   |                |            |
|---|------------------------|---|-------------------|----------------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD<br><br><b>BIOFILTRATION ADJACENT<br/>TO ROADWAY<br/>(WITH STEP OUT ZONE)</b> | REVISIONS         | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |   | ORIGINAL          |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        |   | REVISED           |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |   | DRAWING<br>NUMBER | <b>GS-3.03</b> |            |





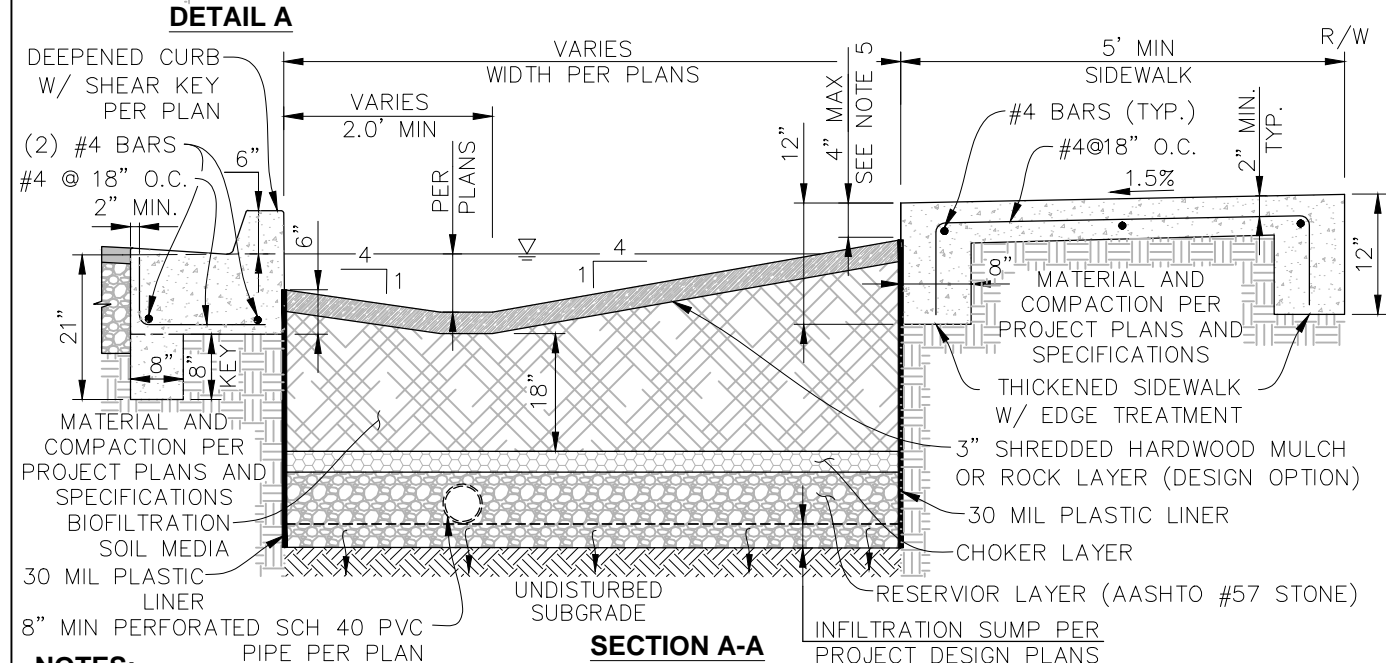
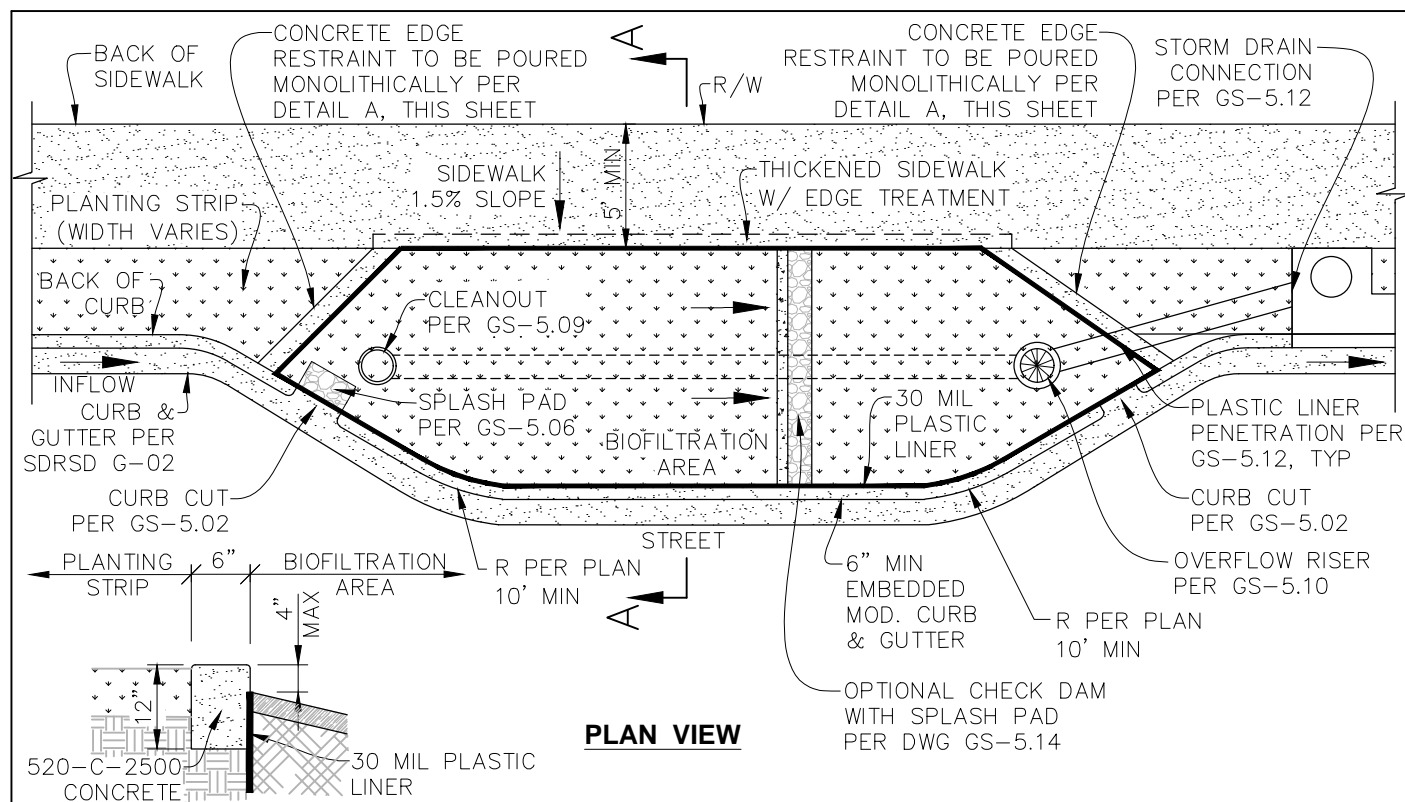


#### NOTES:

1. REFER TO GS-3.00 FOR ALL DETAILS NOT SHOWN HERE.
2. CURB EXTENSION SUBJECT TO APPROVAL OF TRAFFIC ENGINEERING.
3. REFER TO GS-5.08 FOR RELATED DETAIL AND REQUIRED DESIGN PLAN INFORMATION.
4. AS AN ALTERNATIVE TO THE DEEPENED SHEAR KEY/CUTOFF WALL, CONCRETE CHECK DAMS (DETAIL 5.14) AT 20' MAX INTERVALS MAY BE SUBSTITUTED.
5. DESIGNER SHALL VERIFY THAT SIDEWALK DOES NOT POND IN THE 100-YR STORM.
6. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

DRAWING NOT TO SCALE

|   |                        |   |                   |                |            |
|---|------------------------|---|-------------------|----------------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD                                | REVISIONS         | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |   | ORIGINAL          |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | <b>CURB EXTENSION ADJACENT TO<br/>SIDEWALK W/ BIOFILTRATION</b> | REVISED           |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |   | DRAWING<br>NUMBER | <b>GS-3.05</b> |            |



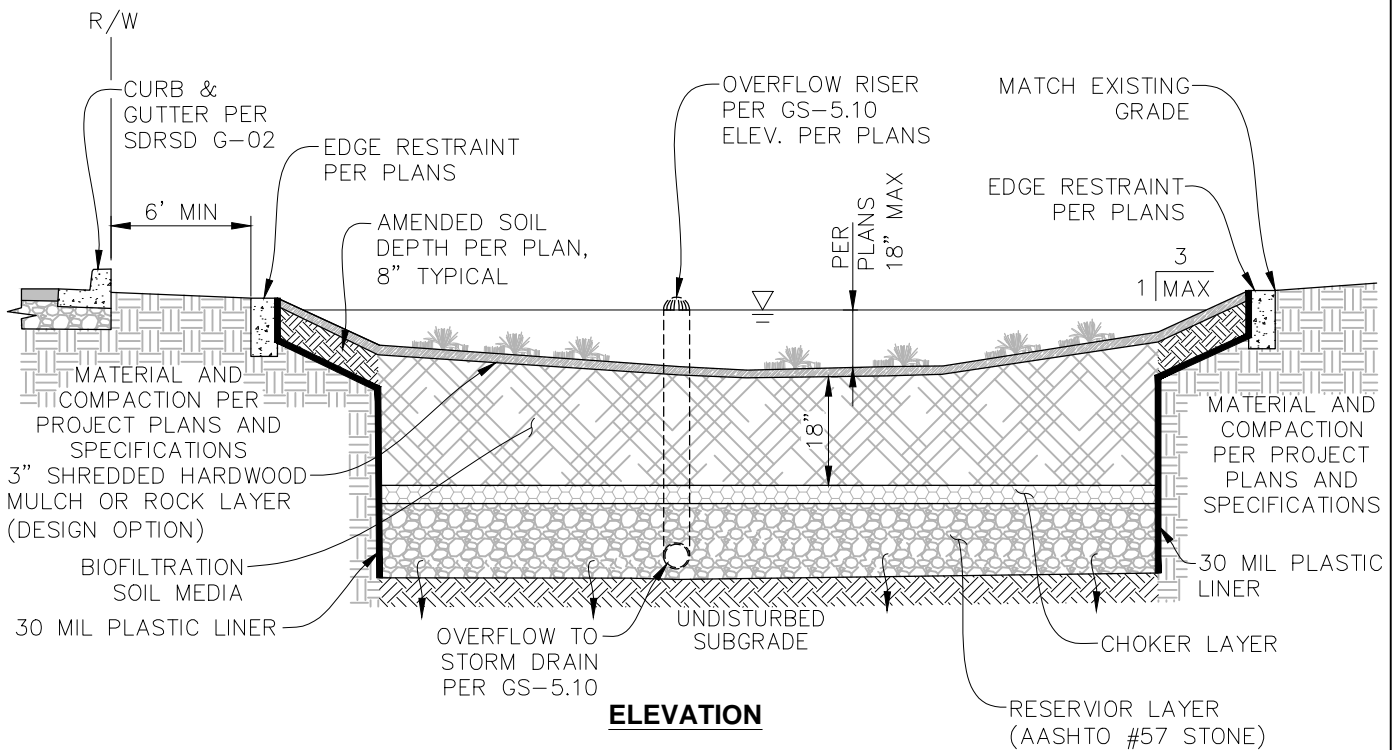
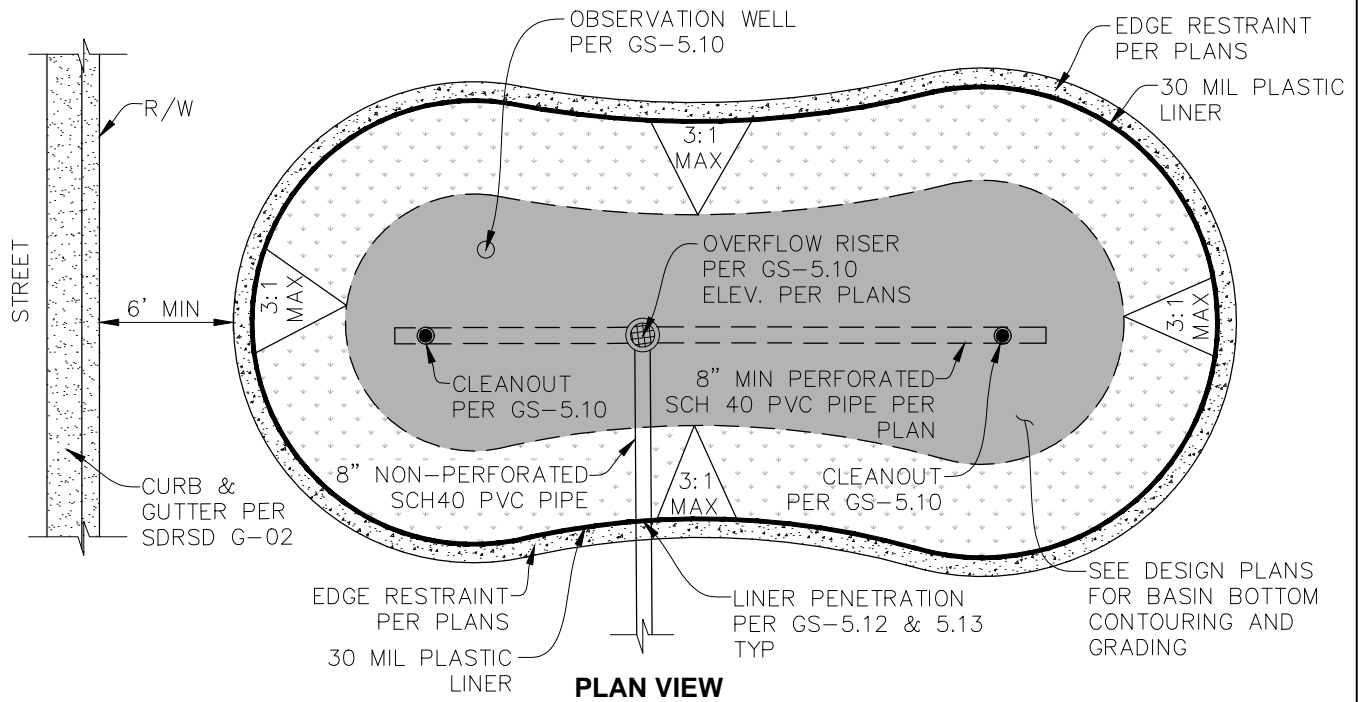
**NOTES:**

1. REFER TO GS-3.00 FOR ALL DETAILS NOT SHOWN HERE.
2. CURB EXTENSION, PER GS-2.04, SUBJECT TO APPROVAL OF TRAFFIC ENGINEERING.
3. REFER TO GS-5.08 FOR RELATED DETAIL AND REQUIRED DESIGN PLAN INFORMATION.
4. AS AN ALTERNATIVE TO THE DEEPENED SHEAR KEY/CUTOFF WALL, CONCRETE CHECK DAMS (DETAIL 5.14) AT 20' MAX INTERVALS MAY BE SUBSTITUTED.
5. DESIGNER SHALL VERIFY THAT SIDEWALK DOES NOT POND IN THE 100-YR STORM.
6. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

|  |  |                        |  |   |  |                   |                |            |
|--|--|------------------------|--|---|--|-------------------|----------------|------------|
| DRAWN BY: <u>NWB</u>   |  | CHECKED BY: <u>KBK</u> |  | SAN DIEGO COUNTY DESIGN STANDARD                              |  | REVISIONS         | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |  |                        |  |   |  | ORIGINAL          |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |  |                        |  | CURB EXTENSION ADJACENT TO<br>PLANTING STRIP W/ BIOFILTRATION |  | REVISED           |                | 03-08-2021 |
|  DATE: <u>3/15/21</u> |  |                        |  |   |  |                   |                |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022   |  |                        |  |   |  | DRAWING<br>NUMBER | <b>GS-3.06</b> |            |

CURB EXTENSION ADJACENT TO  
PLANTING STRIP W/ BIOFILTRATION

DRAWING NUMBER **GS-3.06**

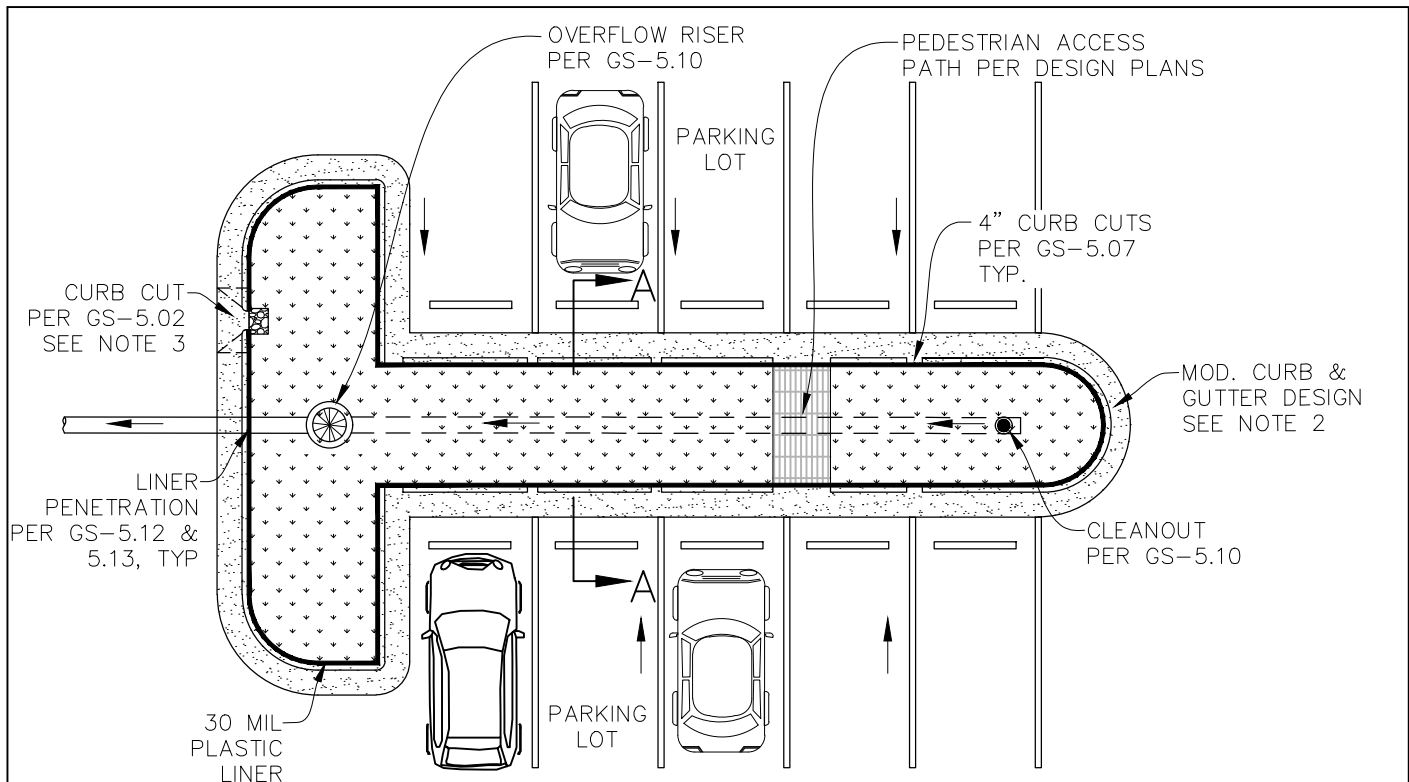


#### NOTES:

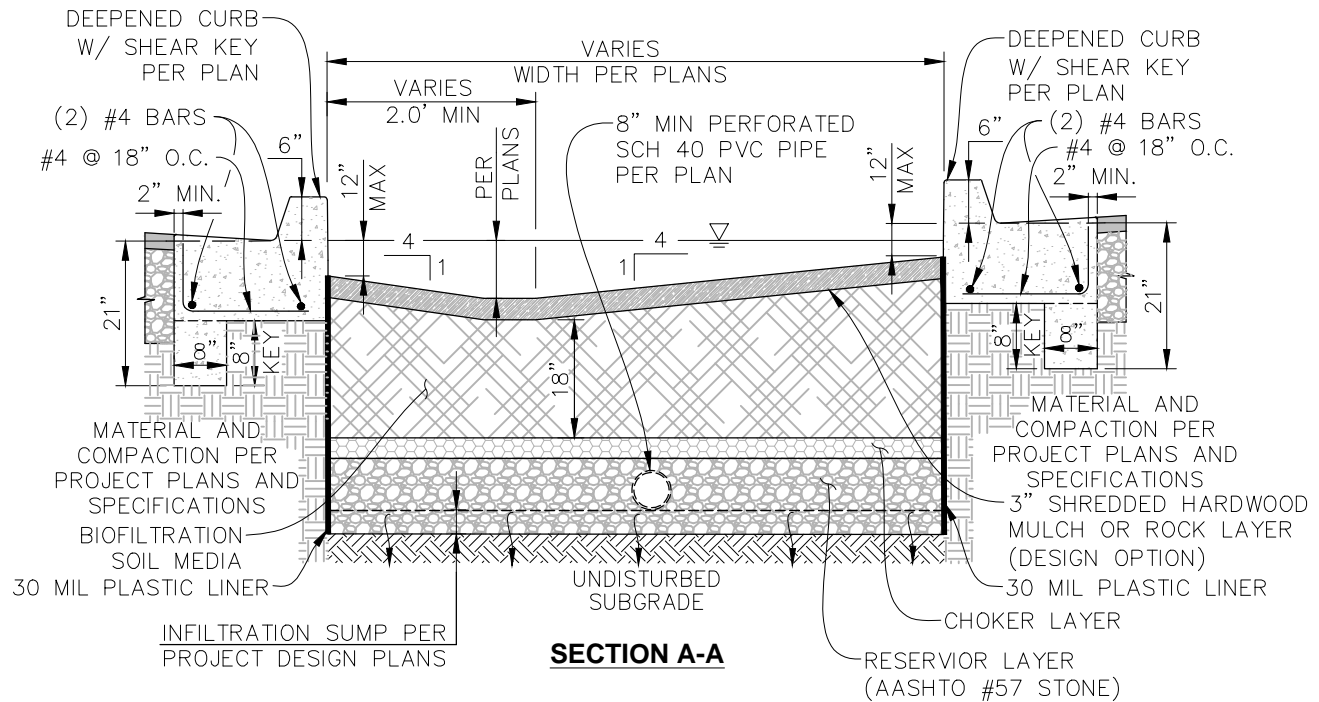
1. REFER TO GS-3.00 FOR ALL DETAILS NOT SHOWN HERE.
2. OVERFLOW ELEVATION IS REQUIRED TO BE 4" MIN BELOW RELATED SIDEWALK ELEVATION (WHERE APPLICABLE).
3. OPEN AREA PARAMETERS (I.E. GRADING AND SURFACE TREATMENT) TO BE PROJECT-SPECIFIC PER THE DESIGN ENGINEER'S RECOMMENDATIONS AND SPECIFICATIONS.

**DRAWING NOT TO SCALE**

|  |                        |                                  |           |                   |            |
|--|------------------------|----------------------------------|-----------|-------------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS | APPROVED          | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |                                  | ORIGINAL  |                   | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | BIOFILTRATION IN<br>OPEN AREA    | REVISED   |                   | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |                                  |           |                   |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |                                  |           | DRAWING<br>NUMBER | GS-3.07    |



**PLAN VIEW**




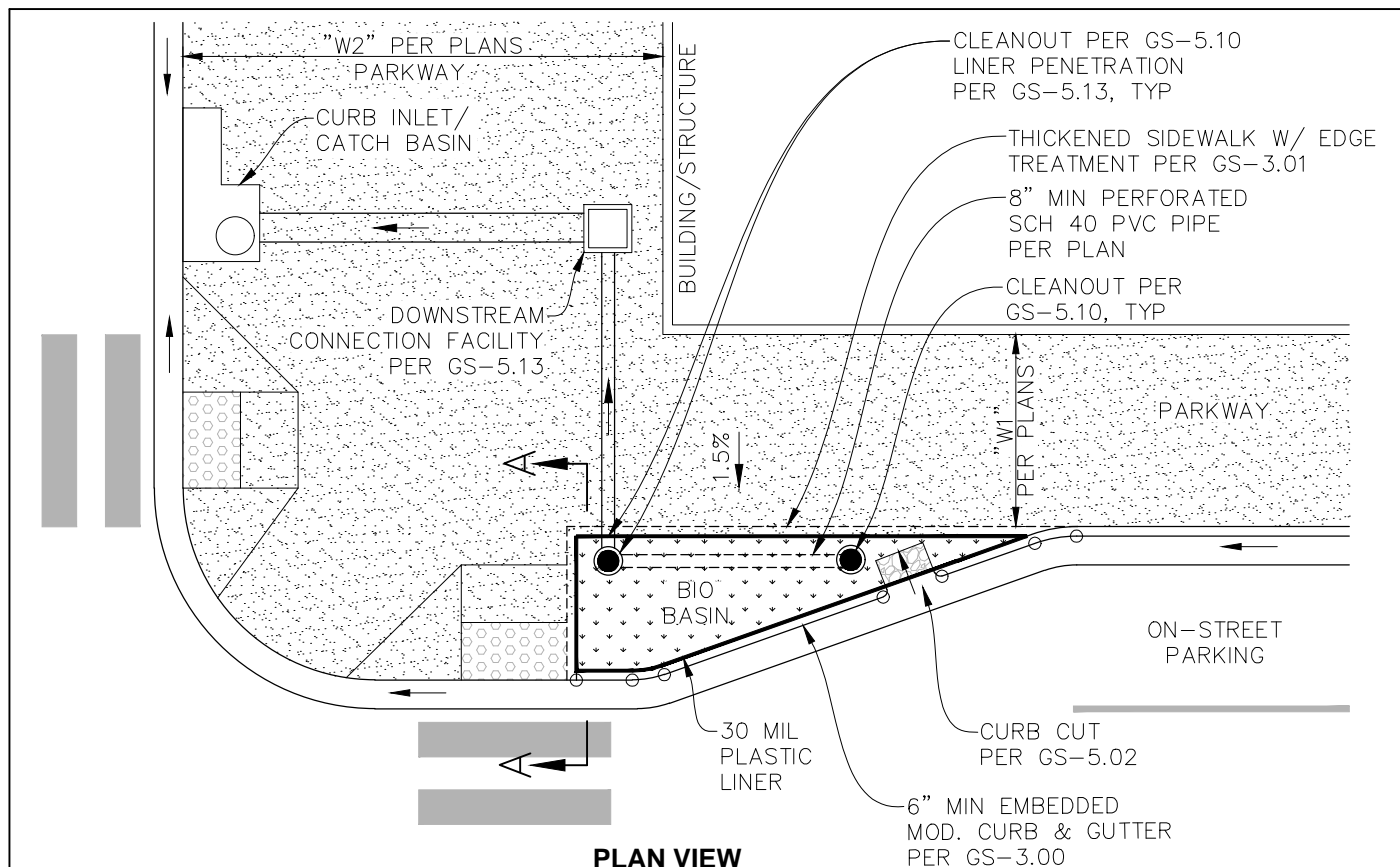
**SECTION A-A**

**NOTES:**

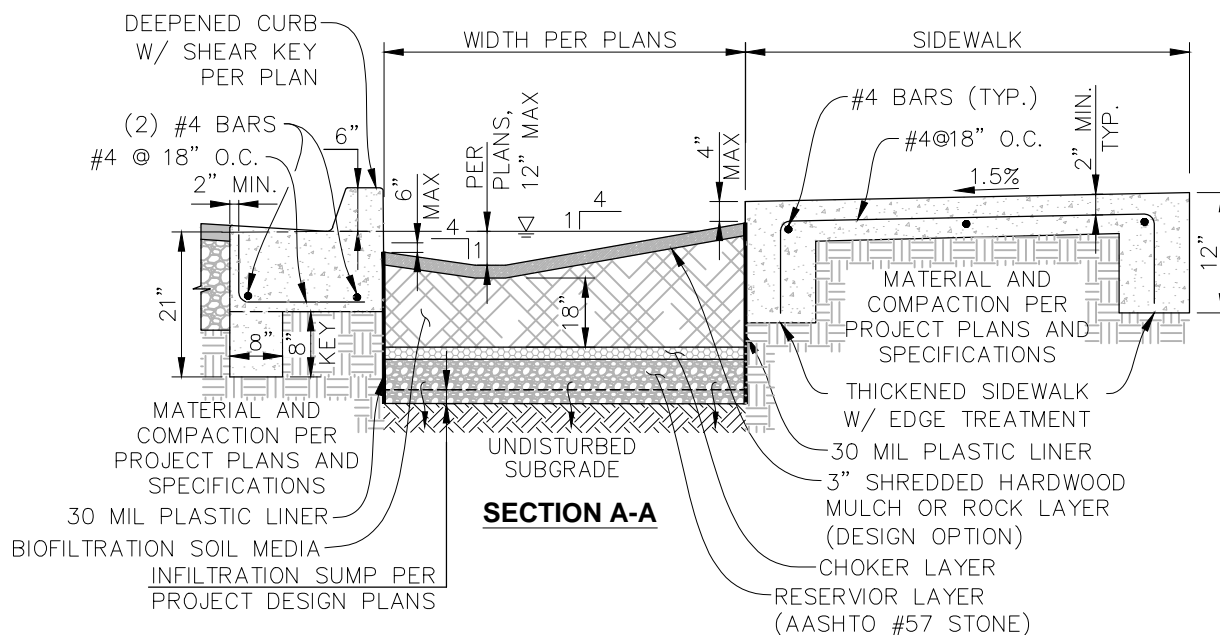
1. REFER TO GS-3.00 FOR ALL DETAILS NOT SHOWN HERE.
2. AS AN ALTERNATIVE TO THE DEEPEMED SHEAR KEY/CUTOFF WALL, CONCRETE CHECK DAMS (DETAIL 5.14) AT 20' MAX INTERVALS MAY BE SUBSTITUTED.

**DRAWING NOT TO SCALE**

|  |                        |                                    |                   |          |            |
|--|------------------------|------------------------------------|-------------------|----------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD   | REVISIONS         | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |                                    | ORIGINAL          |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | PARKING LOT<br>BIOFILTRATION BASIN | REVISED           |          | 03-08-2021 |
|  DATE: <u>3/15/21</u> |                        |                                    |                   |          |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022   |                        |                                    | DRAWING<br>NUMBER | GS-3.08  |            |




**PLAN VIEW**

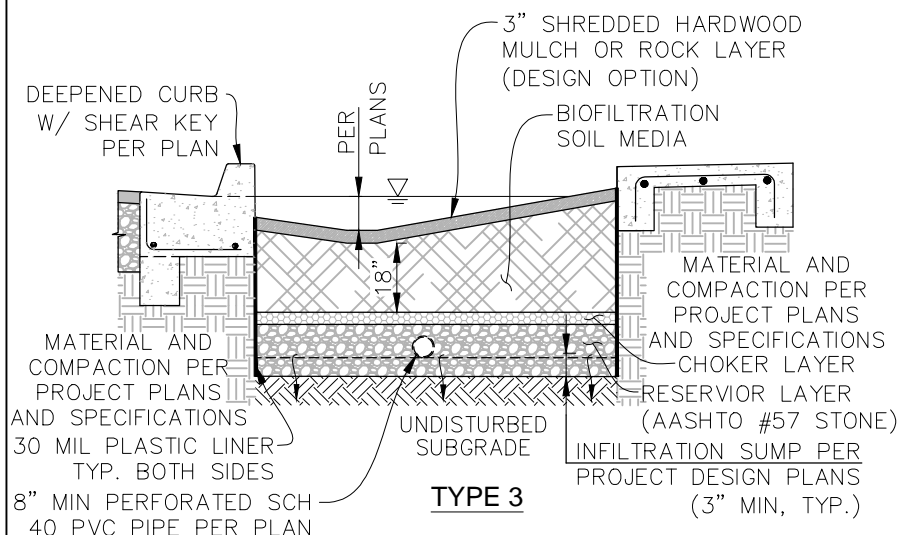
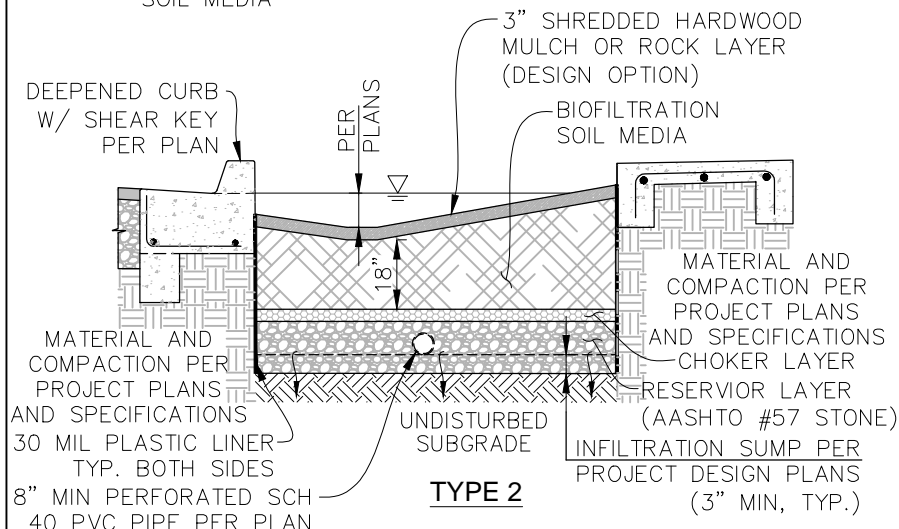
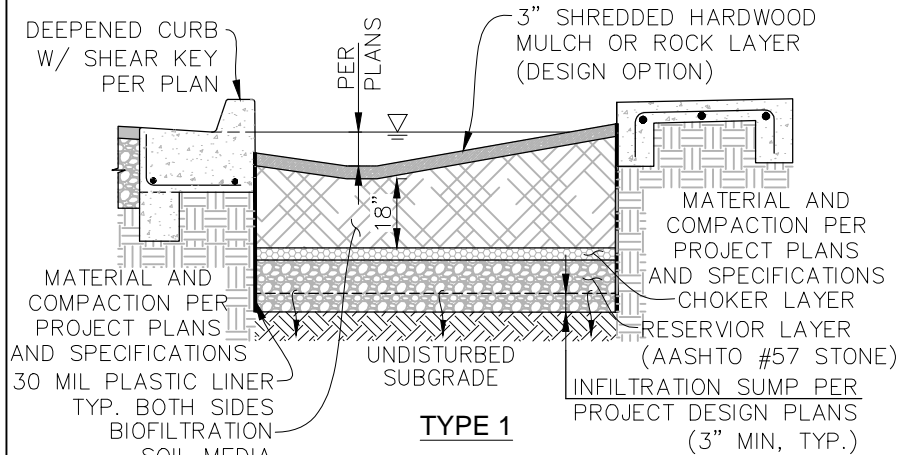


**NOTES:**

1. REFER TO GS-3.00 FOR ALL DETAILS NOT SHOWN HERE.
2. REFER TO GS-5.08 FOR RELATED DETAIL AND REQUIRED DESIGN PLAN INFORMATION.
3. CURB EXTENSION TRANSITION TAPER AND RADII TO BE DESIGNED PER SITE-SPECIFIC TRAFFIC PARAMETERS AND CONDITIONS; ALSO SUBJECT TO THE APPROVAL OF TRAFFIC ENGINEERING.
4. ELEVATIONS SHALL BE SHOWN ON PLANS WHERE INDICATED BY "O" SYMBOL.
5. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

**DRAWING NOT TO SCALE**

|  |                        |                                    |                   |          |            |
|--|------------------------|------------------------------------|-------------------|----------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD   | REVISIONS         | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |                                    | ORIGINAL          |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | CURB BULBOUT<br>WITH BIOFILTRATION | REVISED           |          | 03-08-2021 |
|  DATE: <u>3/15/21</u> |                        |                                    |                   |          |            |
| WILLIAM P. MORGAN, P.E.  |                        |                                    | DRAWING<br>NUMBER | GS-3.09  |            |
| R.C.E. NO. 49452, EXP 9/30/2022  |                        |                                    |                   |          |            |



1. IF NRCS HYDROLOGIC SOIL GROUP "A" OR "B" IS ENCOUNTERED, OR IF THE DESIGN SUBSOIL INFILTRATION RATE IS 0.2 IN/HR OR GREATER; SUBSURFACE LAYERS MAY BE PLACED OVER UNDISTURBED SUGRADE.
2. IF NRCS HYDROLOGIC SOIL GROUP "C" IS ENCOUNTERED, OR IF THE DESIGN SUBSOIL INFILTRATION RATE IS BETWEEN 0.1 AND 0.2 IN/HR; SUBSURFACE LAYERS SHALL BE PLACED OVER 6 INCHES OF SAND OVER UNDISTURBED SUGRADE.
  - WHERE IN-SITU SOILS ARE NOT CONDUCTIVE TO INFILTRATION OF DESIGN STORM VOLUMES WITHIN 96 HOURS; UNDERDRAIN SYSTEMS SHALL BE CONSIDERED THROUGH COORDINATION WITH THE COUNTY.
3. IF NRCS HYDROLOGIC SOIL GROUP "D" IS ENCOUNTERED, OR IF THE DESIGN SUBSOIL INFILTRATION RATE IS LESS THAN 0.1 IN/HR; AN UNDERDRAIN PIPE SHALL BE EMBEDDED WITHIN THE RESERVOIR LAYER & CONNECTED TO A NEARBY STORM DRAIN SYSTEM PER GS-5.12 & GS-5.13.
  - WHERE IN-SITU SOILS ARE NOT CONDUCTIVE TO INFILTRATION OF DESIGN STORM VOLUMES WITHIN 96 HOURS; UNDERDRAIN SYSTEMS SHALL BE CONSIDERED THROUGH COORDINATION WITH THE COUNTY.

#### NOTES:

1. REFER TO GS-3.00 FOR ALL DETAILS NOT SHOWN HERE.
2. THE DESIGN SUBSOIL INFILTRATION RATE IS EQUAL TO THE MEASURED INFILTRATION RATE MULTIPLIED BY A FACTOR OF SAFETY. SEE COUNTY BMP DESIGN MANUAL APPENDIX D FOR FURTHER DETAILS.

**DRAWING NOT TO SCALE**

|   |                        |  |           |                   |                |
|---|------------------------|--|-----------|-------------------|----------------|
| DRAWN BY: <u>NWB</u>                                      | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD           | REVISIONS | APPROVED          | DATE           |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                    |                        |  | ORIGINAL  |                   | 10-01-2019     |
| APPROVED BY COUNTY ENGINEER                               |                        | BIOFILTRATION SUBSURFACE<br>DRAINAGE TYPES | REVISED   |                   | 03-08-2021     |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                   |                        |  |           |                   |                |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452 EXP 9/30/2022 |                        |  |           | DRAWING<br>NUMBER | <b>GS-3.10</b> |

**TYPICAL PERMEABLE**

PAVER JOINT  
 $\frac{1}{4}$ " MIN,  $\frac{1}{2}$ " MAX GAPS  
 FILL WITH #8, #89 OR  
 #9 STONE PER  
 MANUFACTURER

BEDDING LAYER  
 (#8 STONE)

CHOKER LAYER  
 (CLASS 3 PERMEABLE  
 MATERIAL)

CONCRETE PAVER  
 TYP. DEPTH:  $3\frac{1}{8}$ "

CONCRETE EDGE  
 RESTRAINT  
 (560-C-3250)

6"

EXTEND TO DEPTH  
 OF CHOKER LAYER

LINER ATTACHMENT  
 PER GS-5.15

4"

12"

CLASS II  
 AGG. BASE

30 MIL PLASTIC  
 LINER

6"

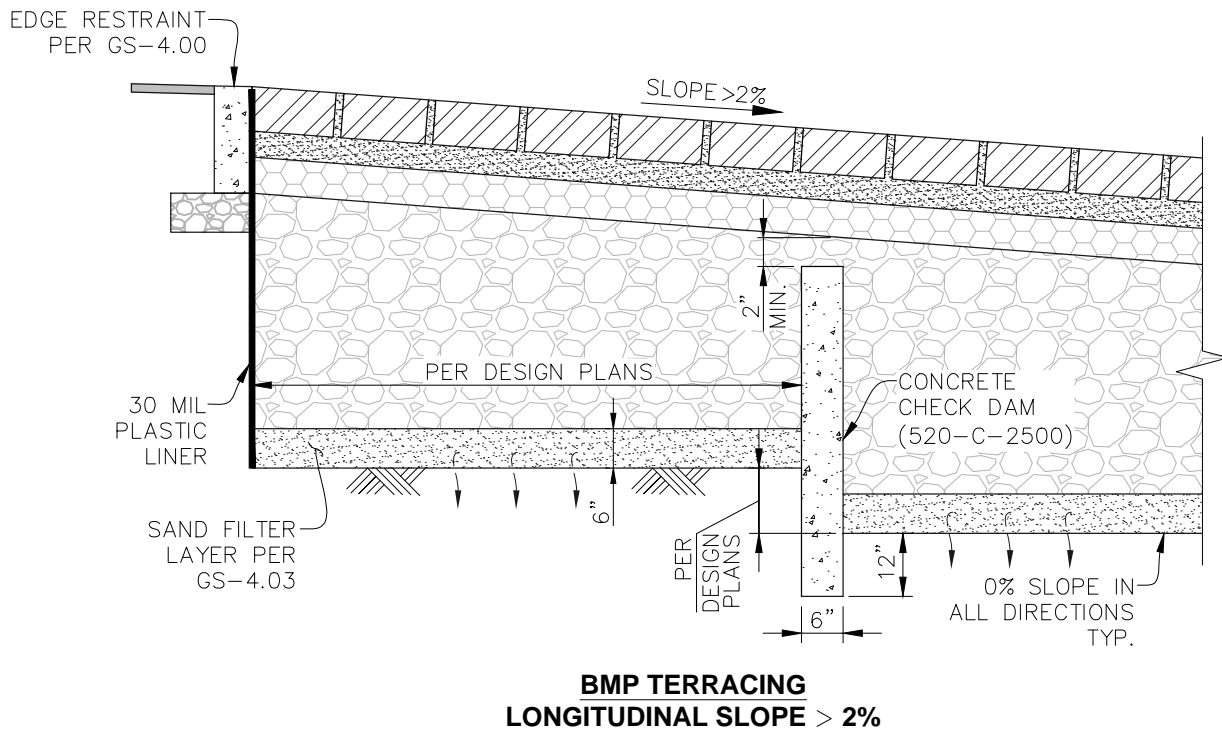
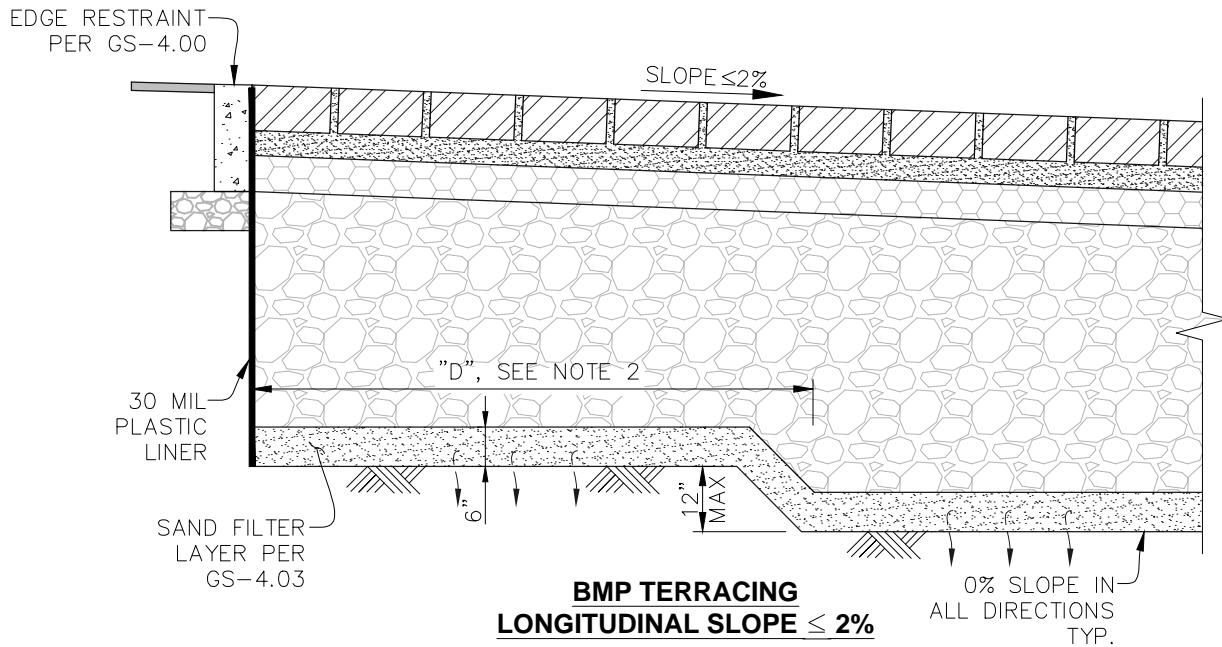
\* LAYER DEPTHS  
 VARY

RESERVOIR LAYER  
 (CLASS 4 AGG. BASE)

SAND FILTER  
 LAYER PER  
 GS-4.03

|   |   |                               |          |            |
|---|---|-------------------------------|----------|------------|
| DRAWN BY: <u>NWB</u><br>CHECKED BY: <u>KBK</u>  | SAN DIEGO COUNTY DESIGN STANDARD<br><br><b>PERMEABLE PAVEMENT<br/>GENERAL DESIGN GUIDANCE</b> | REVISIONS                     | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |   | ORIGINAL                      |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER<br> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |   | REVISED                       |          | 03-08-2021 |
|   |   |                               |          |            |
|   |   | DRAWING NUMBER <b>GS-4.00</b> |          |            |



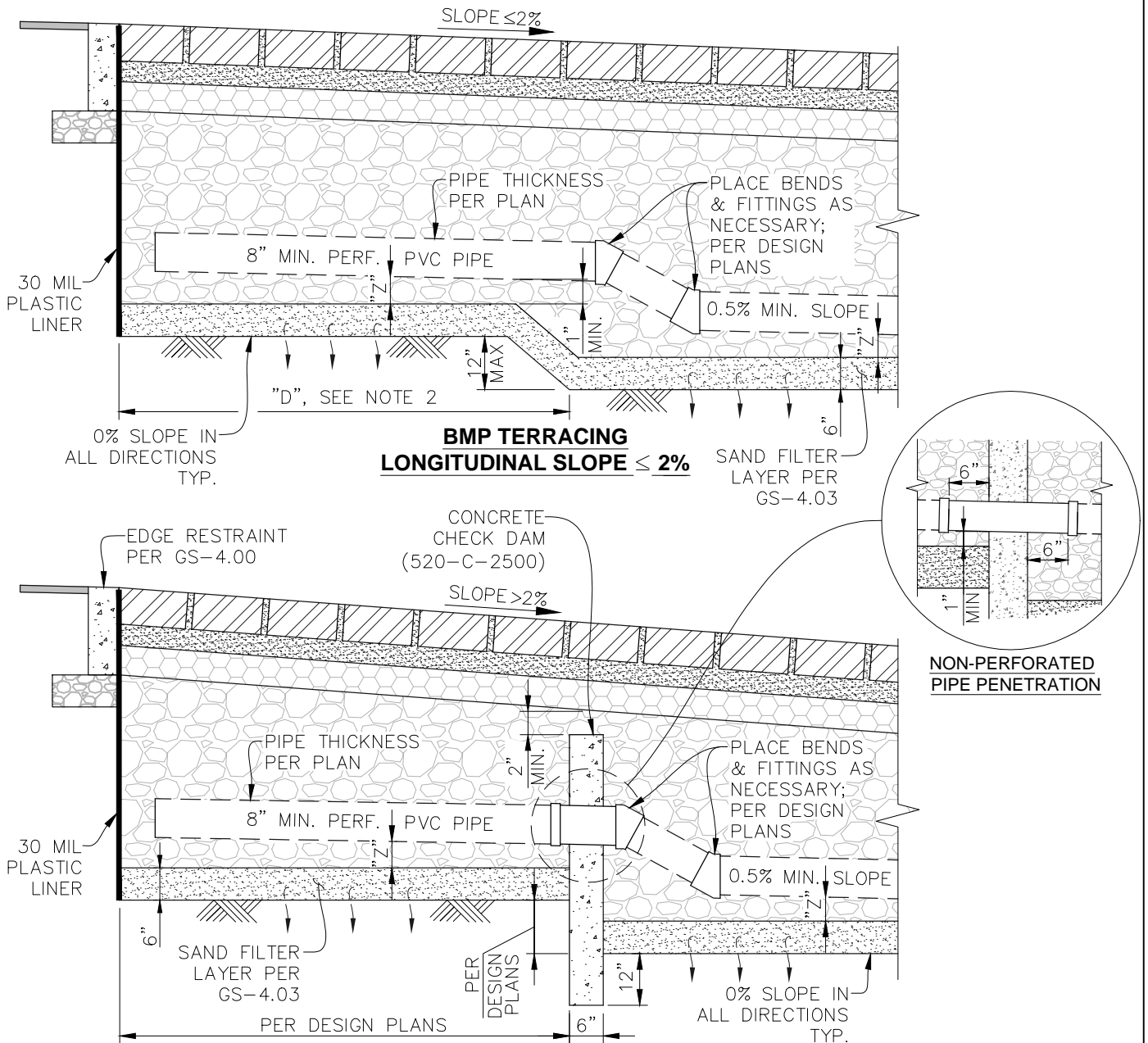


#### NOTES:

1. REFER TO GS-4.00 FOR ALL DETAILS NOT SHOWN HERE.
2. DISTANCE "D" IS DETERMINED BY THE SURFACE SLOPE, WHICH RESULTS IN 12" MAX STEPS.
3. CHECK DAMS TO BE USED FOR INSTALLATIONS WITH SURFACE SLOPES GREATER THAN 2% OR AS DIRECTED BY THE PROJECT-SPECIFIC DESIGN PLANS.
4. SURFACE SLOPES GREATER THAN 5% ARE NOT RECOMMENDED AND REQUIRE APPROVAL BY THE COUNTY.
5. ALTHOUGH PERVIOUS PAVERS ARE DEPICTED, THE SAME DESIGN CONCEPTS CAN BE UTILIZED FOR PERVIOUS ASPHALT & CONCRETE PAVEMENTS. REFERENCE THE CALTRANS PERVIOUS PAVEMENT DESIGN GUIDANCE DOCUMENT (DATED MAY 2016) WHERE APPROPRIATE.

DRAWING NOT TO SCALE


|   |                        |                                  |                   |                |            |
|---|------------------------|----------------------------------|-------------------|----------------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS         | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |                                  | ORIGINAL          |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | PERMEABLE PAVEMENT<br>ELEVATIONS | REVISED           |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |                                  | DRAWING<br>NUMBER | <b>GS-4.01</b> |            |

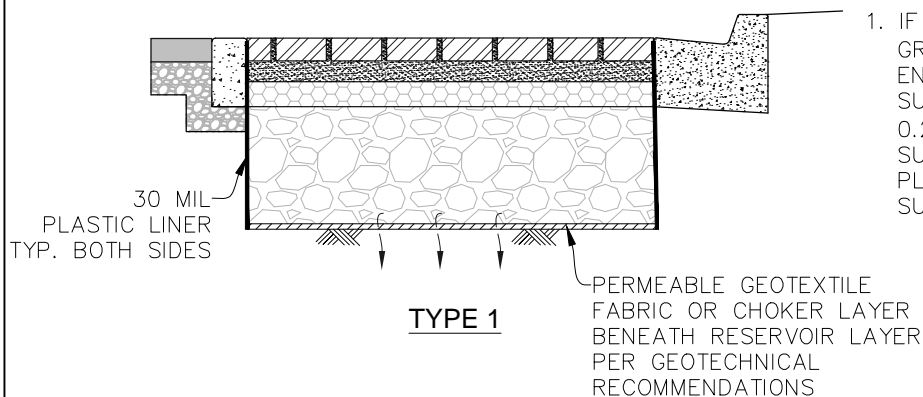


#### NOTES:

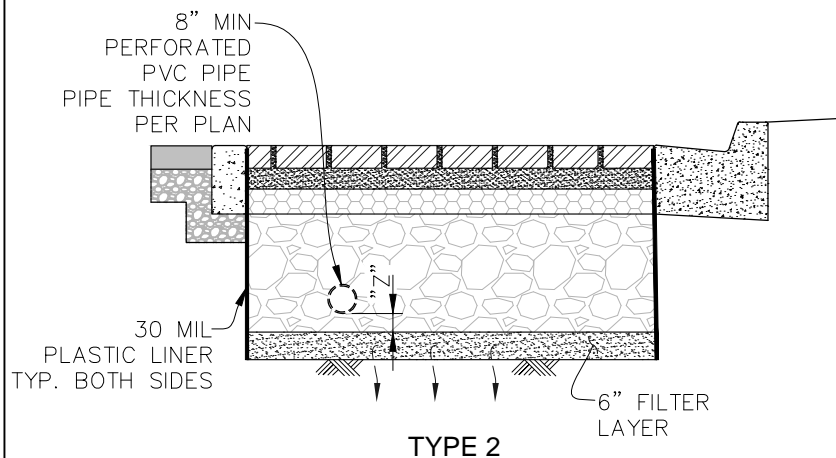
1. REFER TO GS-4.00 FOR ALL DETAILS NOT SHOWN HERE.
2. DISTANCE "D" IS DETERMINED BY THE SURFACE SLOPE, WHICH RESULTS IN 12" MAX STEPS.
3. CHECK DAMS TO BE USED FOR INSTALLATIONS WITH SURFACE SLOPES GREATER THAN 2% OR AS DIRECTED BY THE PROJECT-SPECIFIC DESIGN PLANS.
4. SURFACE SLOPES GREATER THAN 5% ARE NOT RECOMMENDED AND REQUIRE APPROVAL BY THE COUNTY.
5. ALTHOUGH PERVIOUS PAVERS ARE DEPICTED, THE SAME DESIGN CONCEPTS CAN BE UTILIZED FOR PERVIOUS ASPHALT & CONCRETE PAVEMENTS. REFERENCE THE CALTRANS PERVIOUS PAVEMENT DESIGN GUIDANCE DOCUMENT (DATED MAY 2016) WHERE APPROPRIATE.
6. AVERAGE STORAGE DEPTH "Z" SHALL BE MAINTAINED PER TERRACE ELEVATION TO ACHIEVE PROJECT-SPECIFIC STORMWATER RETENTION REQUIREMENTS.

DRAWING NOT TO SCALE

|  |                        |  |           |                   |                |
|--|------------------------|--|-----------|-------------------|----------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD               | REVISIONS | APPROVED          | DATE           |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |  | ORIGINAL  |                   | 10-01-2019     |
| APPROVED BY COUNTY ENGINEER  |                        | PERMEABLE PAVEMENT<br>ELEVATIONS W/ UNDERDRAIN | REVISED   |                   | 03-08-2021     |
|  DATE: <u>3/15/21</u> |                        |  |           |                   |                |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022   |                        |  |           | DRAWING<br>NUMBER | <b>GS-4.02</b> |

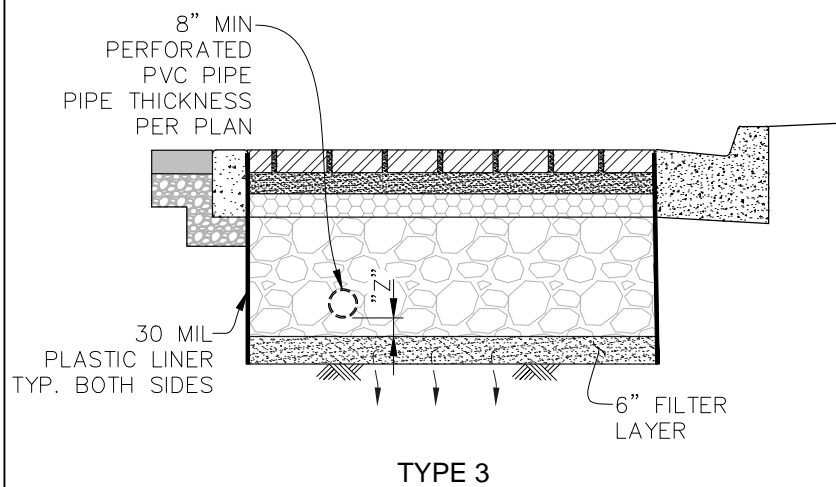


1. IF NRCS HYDROLOGIC SOIL GROUP "A" OR "B" IS ENCOUNTERED, OR IF THE DESIGN SUBSOIL INFILTRATION RATE IS 0.2 IN/HR OR GREATER; SUBSURFACE LAYERS MAY BE PLACED OVER UNCOMPACTED SUBGRADE.



2. IF NRCS HYDROLOGIC SOIL GROUP "C" IS ENCOUNTERED, OR IF THE DESIGN SUBSOIL INFILTRATION RATE IS BETWEEN 0.1 AND 0.2 IN/HR; SUBSURFACE LAYERS SHALL BE PLACED OVER 6 INCHES OF SAND OVER UNCOMPACTED SUBGRADE.

- WHERE IN-SITU SOILS ARE NOT CONDUCTIVE TO INFILTRATION OF DESIGN STORM VOLUMES WITHIN 96 HOURS; UNDERDRAIN SYSTEMS SHALL BE CONSIDERED THROUGH COORDINATION WITH THE COUNTY.
- INFILTRATION SUMP "Z" TO BE DESIGNED PER PLANS.




3. IF NRCS HYDROLOGIC SOIL GROUP D IS ENCOUNTERED, OR IF THE DESIGN SUBSOIL INFILTRATION RATE IS LESS THAN 0.1 IN/HR; AN UNDERDRAIN PIPE SHALL BE EMBEDDED WITHIN THE RESERVOIR LAYER & CONNECTED TO A NEARBY STORM DRAIN SYSTEM PER GS-5.12 & GS-5.13.

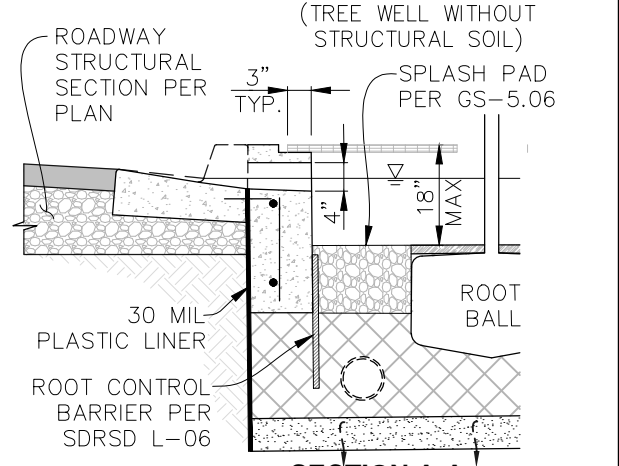
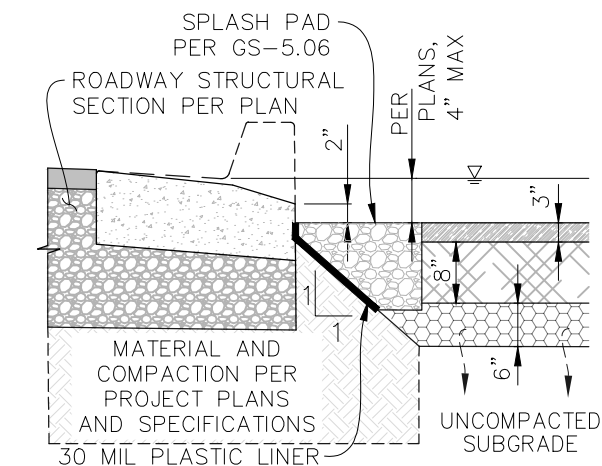
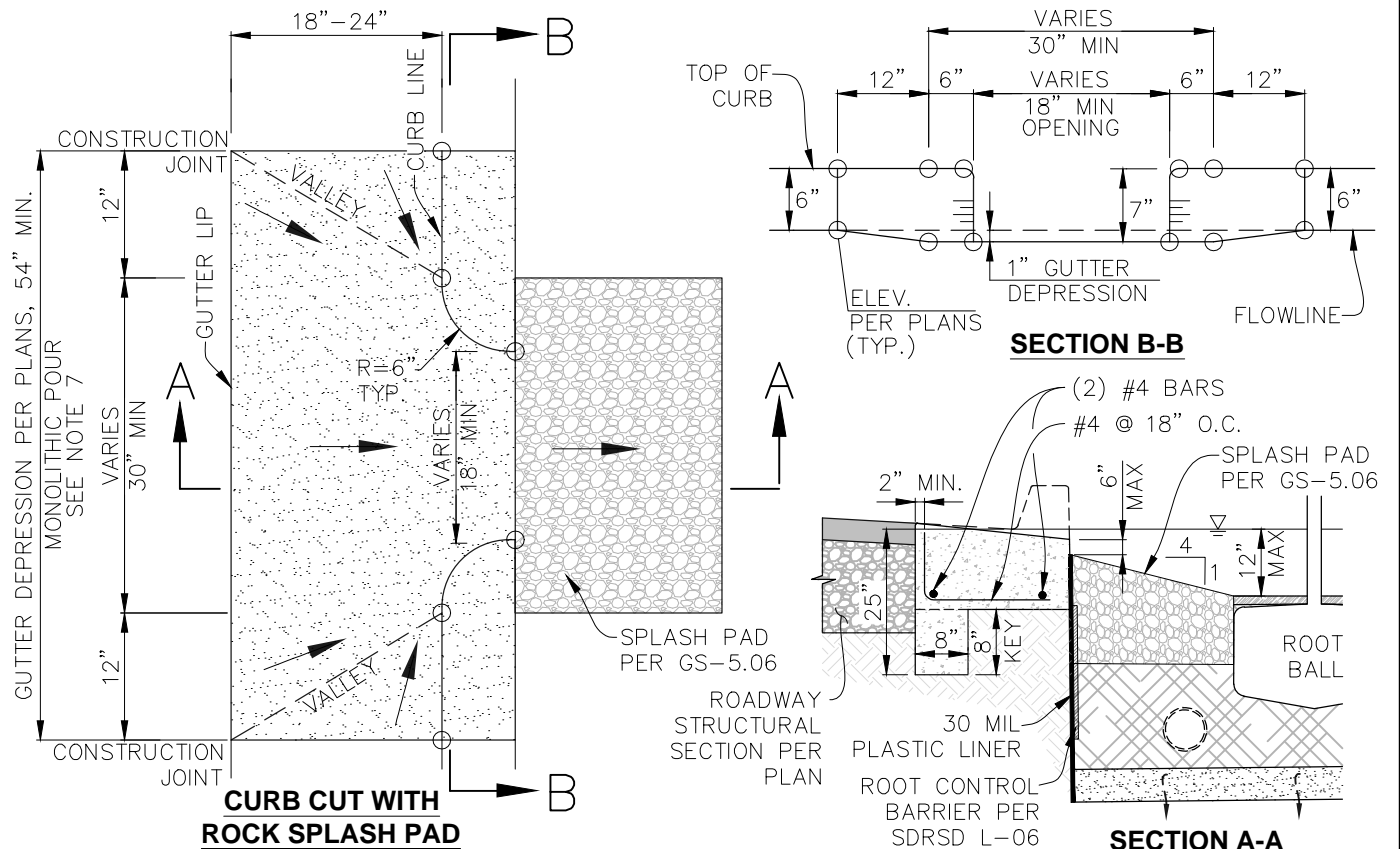
- WHERE IN-SITU SOILS ARE NOT CONDUCTIVE TO INFILTRATION OF DESIGN STORM VOLUMES WITHIN 96 HOURS; UNDERDRAIN SYSTEMS SHALL BE CONSIDERED THROUGH COORDINATION WITH THE COUNTY.
- INFILTRATION SUMP "Z" TO BE DESIGNED PER PLANS.

#### NOTES:

1. REFER TO GS-4.00 FOR ALL DETAILS NOT SHOWN HERE.
2. THE DESIGN SUBSOIL INFILTRATION RATE IS EQUAL TO THE MEASURED INFILTRATION RATE MULTIPLIED BY A FACTOR OF SAFETY. SEE COUNTY BMP DESIGN MANUAL APPENDIX D FOR FURTHER DETAILS.
3. FULLY-LINED PERMEABLE PAVEMENT SYSTEMS ARE CONSIDERED FLOW-THROUGH TREATMENT DEVICES AND CAN ONLY BE USED FOR HMP FLOW CONTROL. NO POLLUTANT CONTROL CREDITS CAN BE CLAIMED.

DRAWING NOT TO SCALE

|  |                        |   |                   |          |            |
|--|------------------------|---|-------------------|----------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD                | REVISIONS         | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |   | ORIGINAL          |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | PERMEABLE PAVEMENT<br>SUBSURFACE DRAINAGE TYPES | REVISED           |          | 03-08-2021 |
|  DATE: <u>3/15/21</u> |                        |   |                   |          |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022   |                        |   | DRAWING<br>NUMBER |          |            |
|  |                        |   | GS-4.03           |          |            |

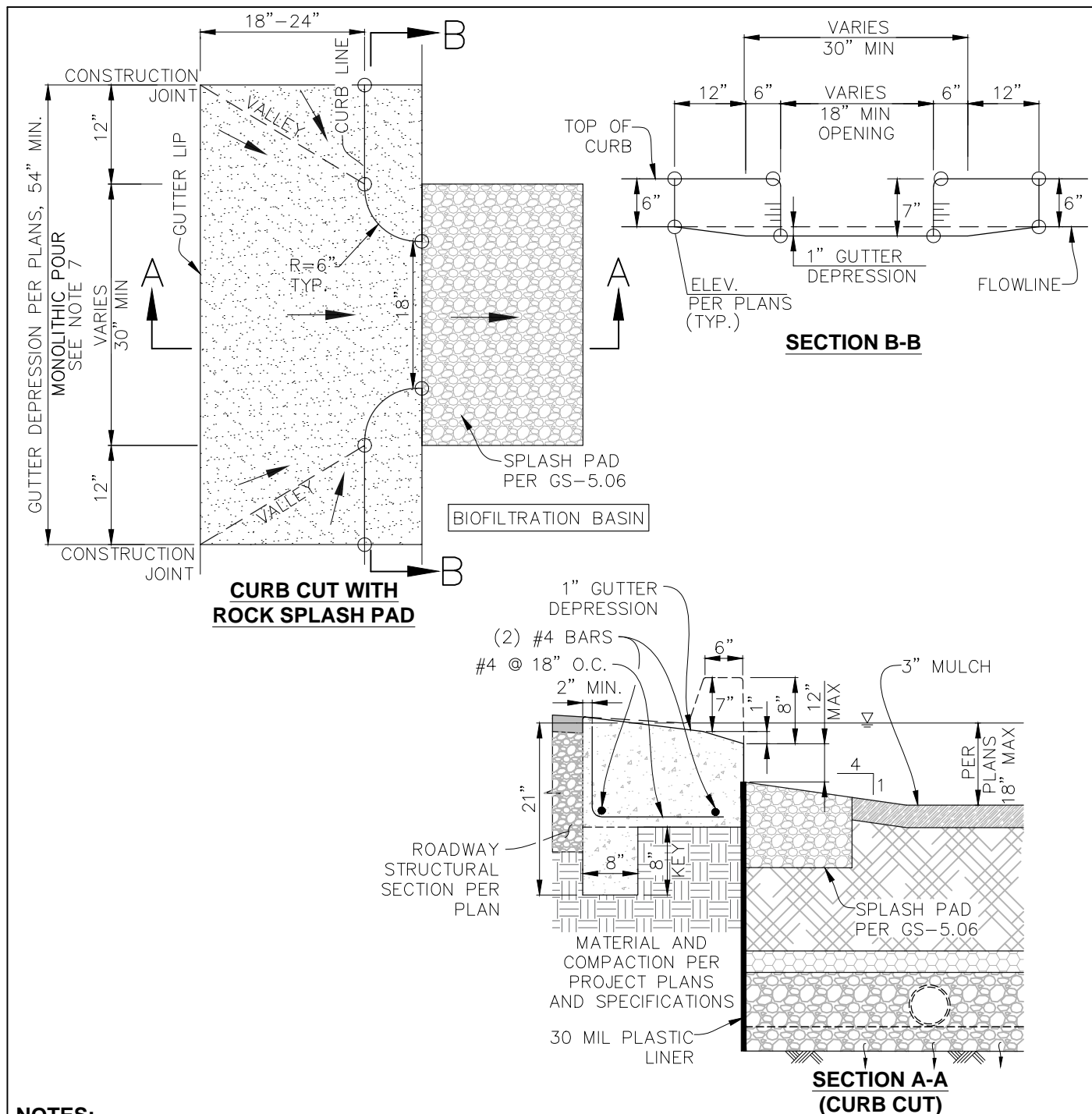


#### NOTES:

1. PONDING DEPTH PER DESIGN PLANS, 4" MAX.
2. WHERE APPLICABLE, REMOVE EXISTING CURB & GUTTER. CONSTRUCT CURB & GUTTER MONOLITHIC.
3. CURB & GUTTER TO BE CONSTRUCTED PER SDRSD G-02.
4. ELEVATIONS SHALL BE SHOWN ON PLANS WHERE INDICATED BY "O" SYMBOL.
5. SEAL PLASTIC LINER TO ADJACENT IMPROVEMENTS AND EDGE RESTRAINTS PER GS-5.15.
6. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
7. GUTTER TRANSITION LENGTH PER DESIGN PLANS; AN ADDITIONAL 2.5-FT CURB TRANSITION LENGTH IS RECOMMENDED FOR EVERY 1" OF ADDITIONAL GUTTER DEPRESSION.
8. PARALLEL STREET PARKING PROHIBITED FOR BMP'S WITH TREE WELL WITHOUT STRUCTURAL SOIL AND DISPERSION AREAS.

**DRAWING NOT TO SCALE**

|  |                        |  |           |                   |                |
|--|------------------------|--|-----------|-------------------|----------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD         | REVISIONS | APPROVED          | DATE           |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |  | ORIGINAL  |                   | 10-01-2019     |
| APPROVED BY COUNTY ENGINEER                                |                        | TREE WELL & DISPERSION<br>AREA CURB CUTS | REVISED   |                   | 03-08-2021     |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |  |           |                   |                |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |  |           | DRAWING<br>NUMBER | <b>GS-5.01</b> |



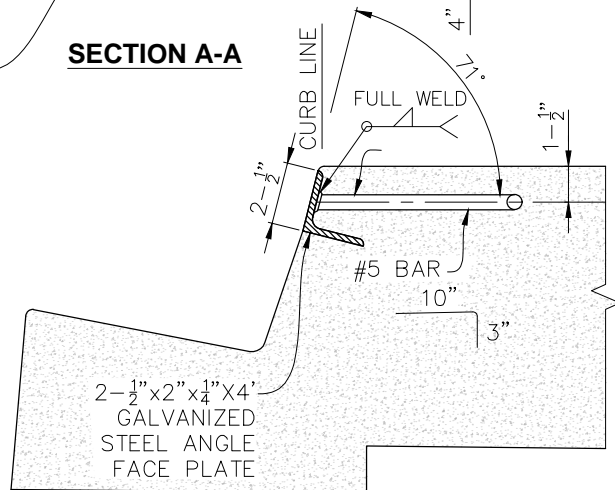
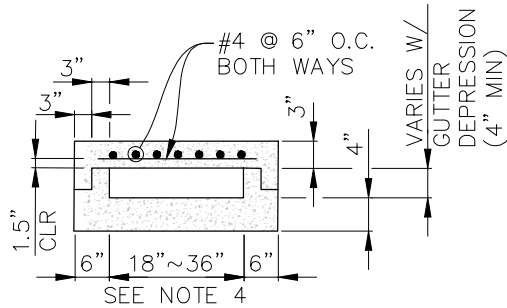
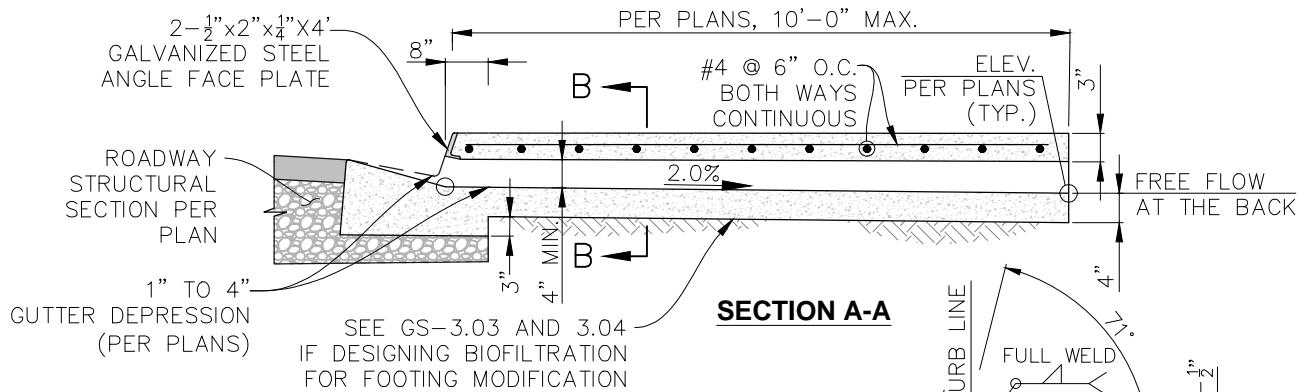
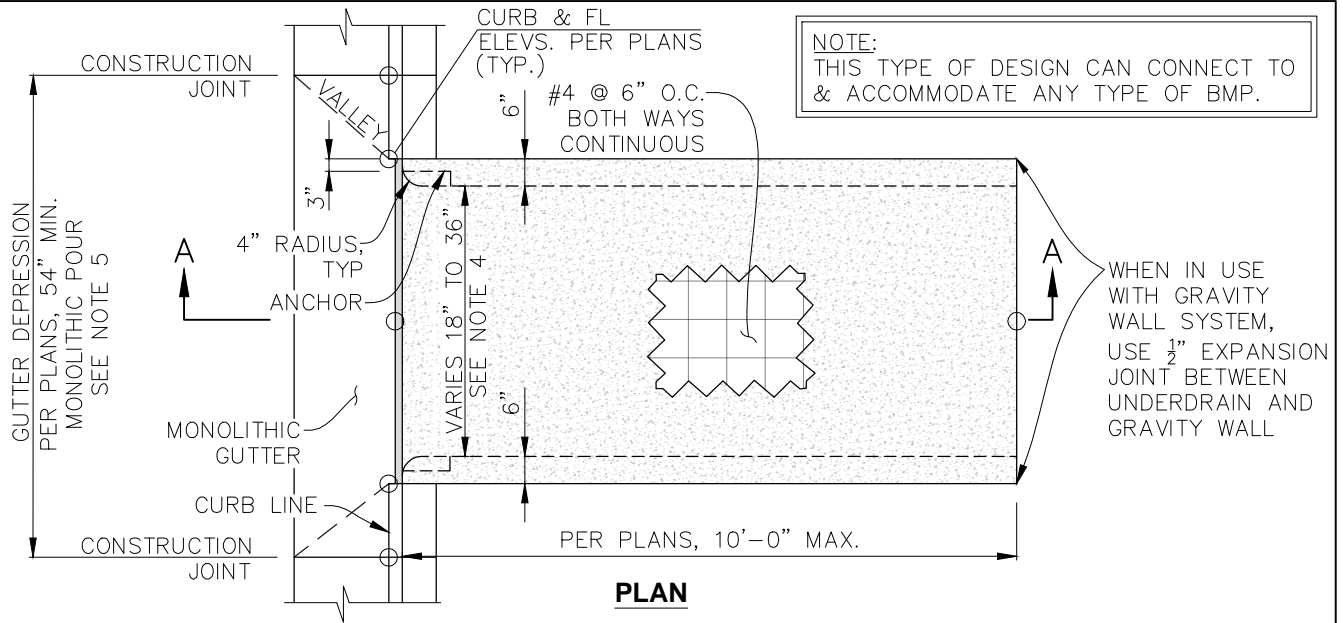
# NOTES:

1. PONDING DEPTH PER DESIGN PLANS.
2. WHERE APPLICABLE, REMOVE EXISTING CURB & GUTTER. CONSTRUCT CURB & GUTTER MONOLITHIC.
3. ELEVATIONS SHALL BE SHOWN ON PLANS WHERE INDICATED BY "O" SYMBOL.
4. SEAL PLASTIC LINER TO ADJACENT IMPROVEMENTS AND EDGE RESTRAINTS PER GS-5.15.
5. GUTTER TRANSITION LENGTH PER DESIGN PLANS; AN ADDITIONAL 2.5-FT CURB TRANSITION LENGTH IS RECOMMENDED FOR EVERY 1" OF ADDITIONAL GUTTER DEPRESSION.
6. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
7. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

DRAWING NOT TO SCALE

|   |                        |                                  |                |          |            |
|---|------------------------|----------------------------------|----------------|----------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS      | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |                                  | ORIGINAL       |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | BIOFILTRATION BASIN<br>CURB CUT  | REVISED        |          | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |                                  | DRAWING NUMBER | GS-5.02  |            |





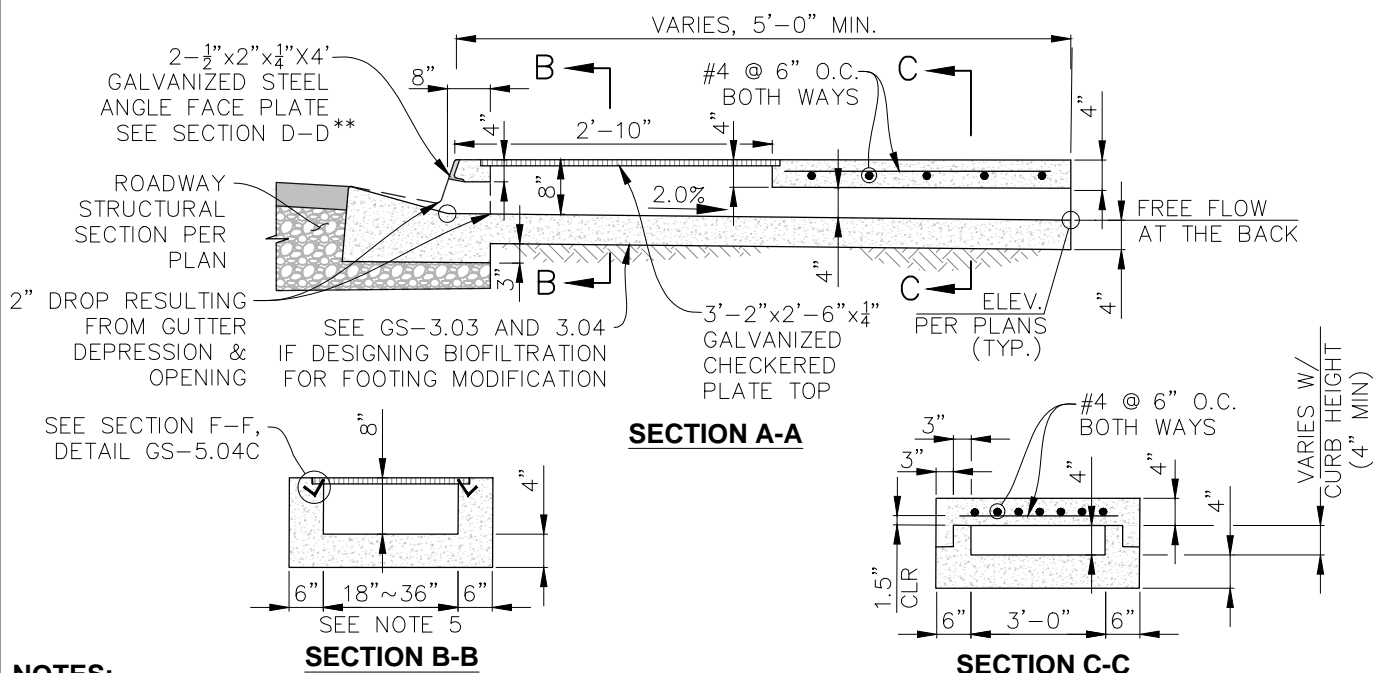
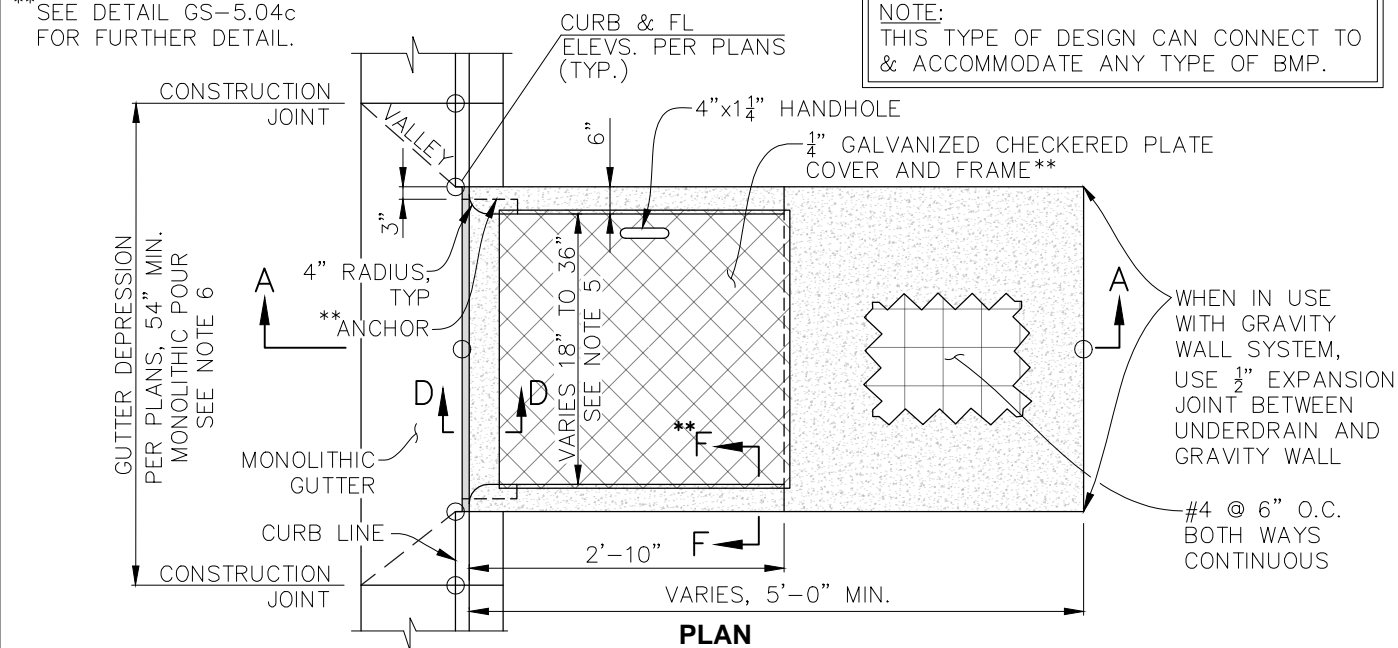
#### NOTES:

1. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
2. SECTION TO BE SLOPED Laterally WITH TOP CONFORMING TO GRADES OF THE EXISTING SIDEWALK & CURB.
3. TROWEL FINISH TOP SURFACE & FLOOR OUTELT. REPRODUCE MARKINGS OF EXISTING SIDEWALK AND CURB.
4. OPENING WIDTHS IN EXCESS OF 3-FT (TO CONVEY THE 10-YR STORM EVENT) SHALL REQUIRE APPROVED STRUCTURAL CALCULATIONS.
5. GUTTER TRANSITION LENGTH PER DESIGN PLANS; AN ADDITIONAL 2.5-FT CURB TRANSITION LENGTH IS RECOMMENDED FOR EVERY 1" OF ADDITIONAL GUTTER DEPRESSION.
6. ELEVATIONS SHALL BE SHOWN ON PLANS WHERE INDICATED BY "O" SYMBOL.

DRAWING NOT TO SCALE

|  |                        |                                  |                                   |          |            |
|--|------------------------|----------------------------------|-----------------------------------|----------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS                         | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |                                  | ORIGINAL                          |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | SIDEWALK<br>UNDERDRAIN           | REVISED                           |          | 03-08-2021 |
|  DATE: <u>3/15/21</u> |                        |                                  |                                   |          |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022   |                        |                                  | DRAWING<br>NUMBER <b>GS-5.04a</b> |          |            |

NOTE:  
THIS TYPE OF DESIGN CAN CONNECT TO  
& ACCOMMODATE ANY TYPE OF BMP.



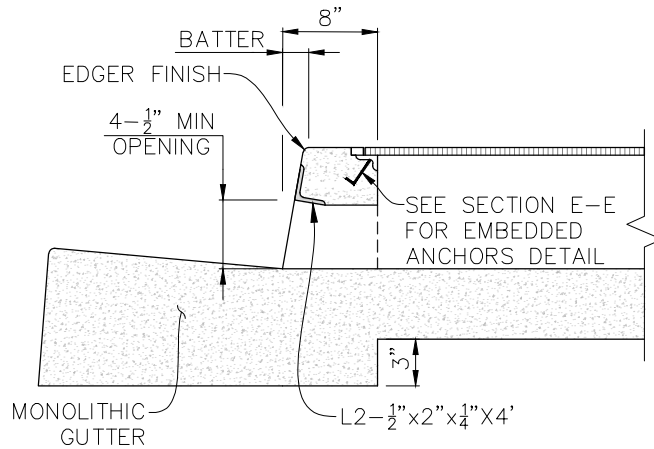
**NOTES:**

1. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
2. SECTION TO BE SLOPED Laterally WITH TOP CONFORMING TO THE GRADES OF THE EXISTING SIDEWALK AND CURB.
3. TROWEL FINISH TOP SURFACE & FLOOR OUTLET. REPRODUCE MARKINGS OF EXISTING SIDEWALK AND CURB.
4. STEEL PLATE MUST BE ADA COMPLIANT WHEN LOCATED WITHIN THE SIDEWALK.
5. OPENING WIDTHS IN EXCESS OF 3-FT (TO CONVEY THE 10-YR STORM EVENT) SHALL REQUIRE APPROVED STRUCTURAL CALCULATIONS.
6. GUTTER TRANSITION LENGTH PER DESIGN PLANS; AN ADDITIONAL 2.5-FT CURB TRANSITION LENGTH IS RECOMMENDED FOR EVERY 1" OF ADDITIONAL GUTTER DEPRESSION.
7. ELEVATIONS SHALL BE SHOWN ON PLANS WHERE INDICATED BY "O" SYMBOL.

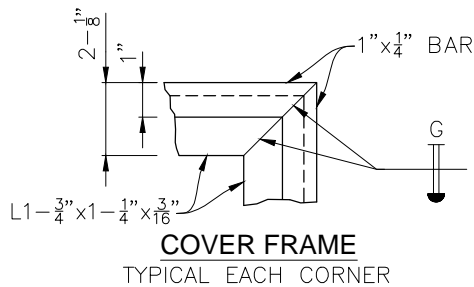
DRAWING NOT TO SCALE

|   |   |                                   |          |                    |
|---|---|-----------------------------------|----------|--------------------|
| DRAWN BY: <u>NWB</u><br>CHECKED BY: <u>KBK</u>  | SAN DIEGO COUNTY DESIGN STANDARD            | REVISIONS<br>ORIGINAL             | APPROVED | DATE<br>10-01-2019 |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |   | REVISED                           |          | 03-08-2021         |
| APPROVED BY COUNTY ENGINEER<br> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 | SIDEWALK UNDERDRAIN<br>WITH CHECKERED PLATE | DRAWING<br>NUMBER <b>GS-5.04b</b> |          |                    |



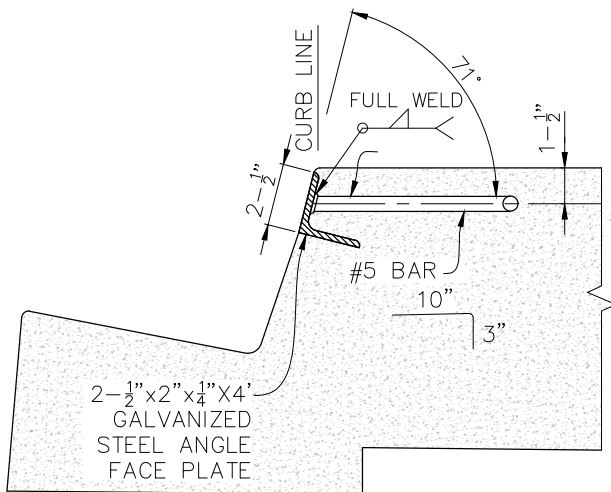


**SECTION D-D**

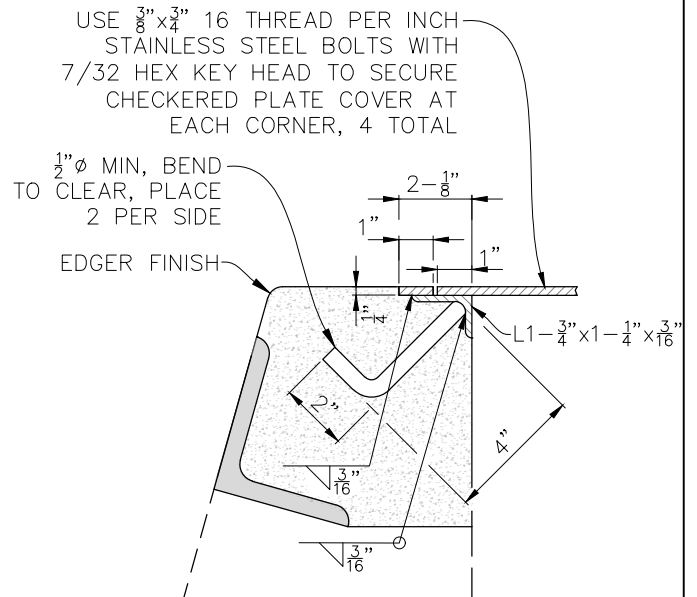


**COVER FRAME**

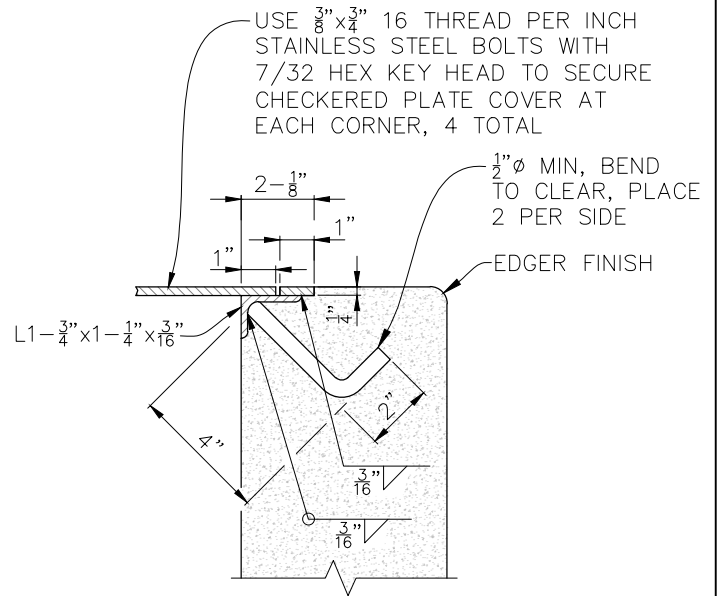
TYPICAL EACH CORNER



**ANCHOR DETAIL**



**SECTION E-E**



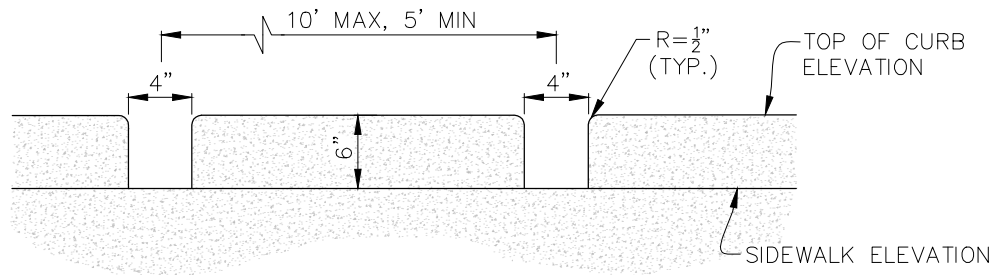
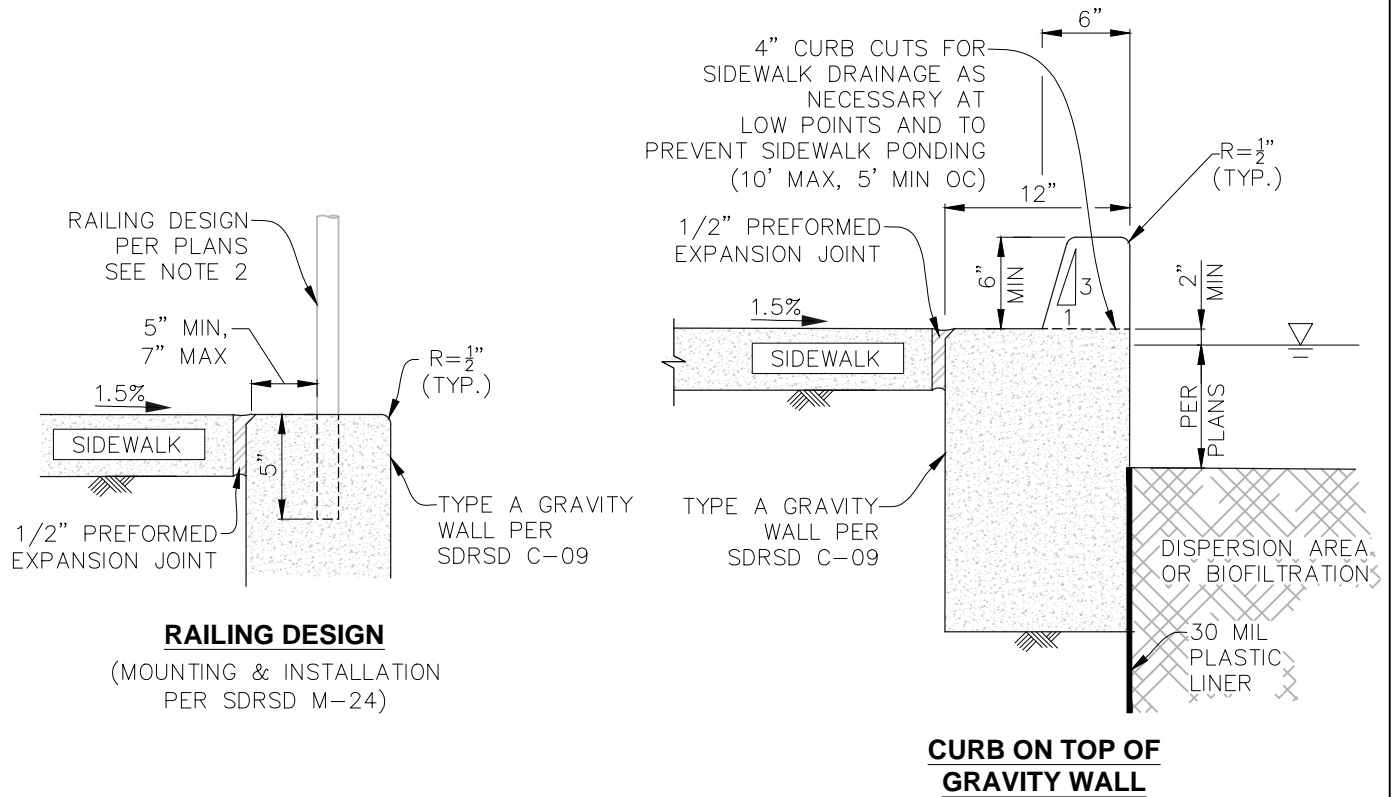
**SECTION F-F**

**NOTES:**

1. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
2. SECTION TO BE SLOPED Laterally WITH TOP CONFORMING TO THE GRADES OF THE EXISTING SIDEWALK AND CURB.
3. TROWEL FINISH TOP SURFACE AND REPRODUCE MARKING OF EXISTING SIDEWALK AND CURB.
4. TROWEL FINISH FLOOR OF OUTLET.
5. STEEL PLATE MUST BE ADA COMPLIANT WHEN LOCATED WITHIN THE SIDEWALK.

**DRAWING NOT TO SCALE**

|  |                        |   |           |                                   |            |
|--|------------------------|---|-----------|-----------------------------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD            | REVISIONS | APPROVED                          | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |   | ORIGINAL  |                                   | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | SIDEWALK UNDERDRAIN<br>WITH CHECKERED PLATE | REVISED   |                                   | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |   |           |                                   |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |   |           | DRAWING<br>NUMBER <b>GS-5.04c</b> |            |

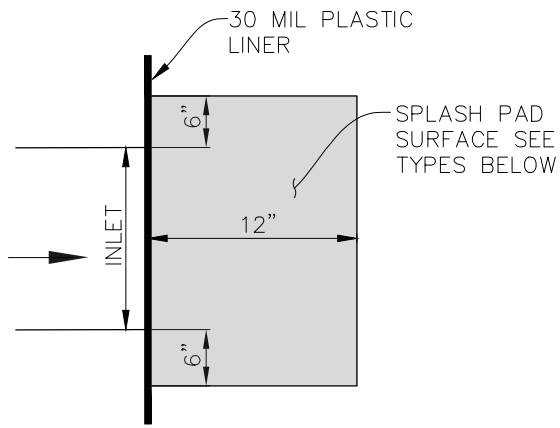


#### NOTES:

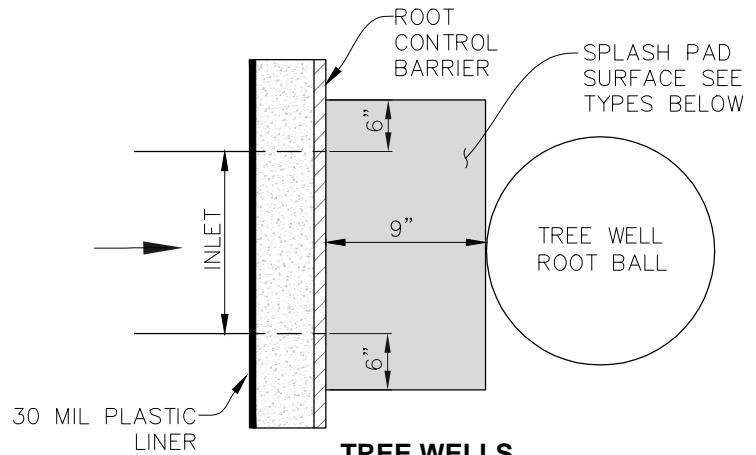
1. FOR ANY ELEVATION DIFFERENCES GREATER THAN 4 INCHES BETWEEN THE SOIL SURFACE AND THE SIDEWALK THAT ARE NOT CONSIDERED ISOLATED AREAS, PROVIDE CURB OR RAILING PER THE DESIGN PLANS. FENCE TYPE, MOUNTING, AND INSTALLATION REQUIREMENTS PER SDRSD M-24. OTHER DESIGNS ARE SUBJECT TO APPROVAL BY THE COUNTY.
2. OTHER EQUIVALENT WALL DESIGNS MAY BE ALLOWED. THE DESIGNER SHALL INCLUDE PROJECT-SPECIFIC DETAILS, STRUCTURAL CALCULATIONS, AND GEOTECHNICAL RECOMMENDATIONS WITH DESIGN PLAN SUBMITTAL.
3. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.

DRAWING NOT TO SCALE

|  |                        |                                  |                |          |            |
|--|------------------------|----------------------------------|----------------|----------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS      | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |                                  | ORIGINAL       |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | CURB & RAILING                   | REVISED        |          | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |                                  |                |          |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |                                  | DRAWING NUMBER | GS-5.05  |            |

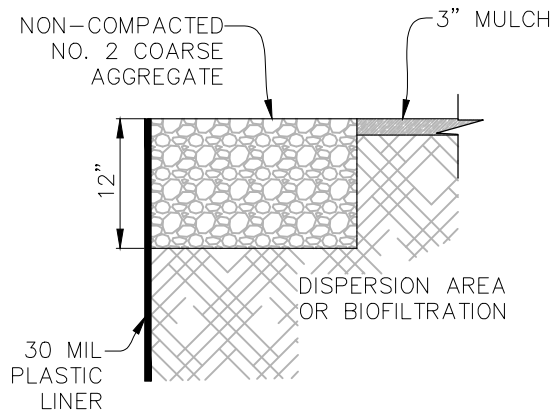


**BIOFILTRATION BASINS  
& DISPERSION AREAS**

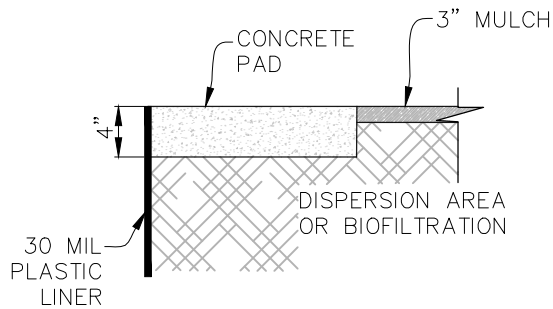
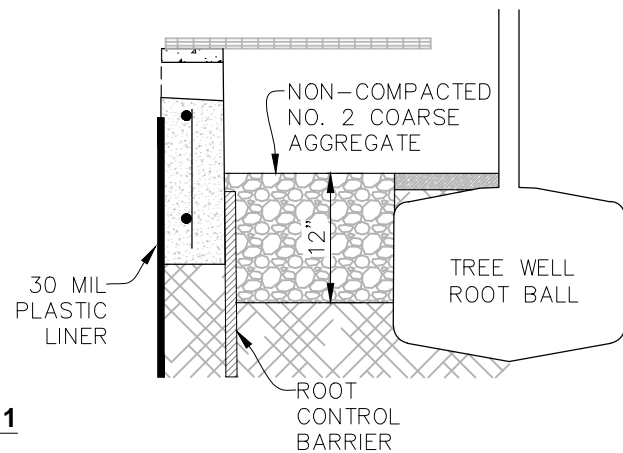


**TREE WELLS**

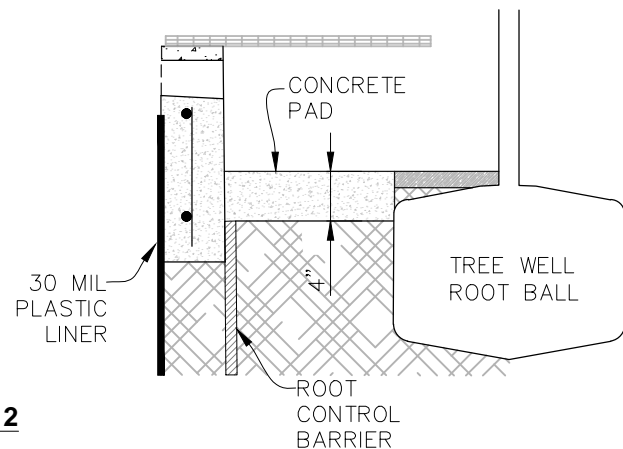
**PLAN VIEW**



**TYPE 1**



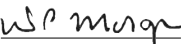
**TYPE 2**



**NOTES:**

- REGARDING TYPE 1 SPLASH PADS, THE STONE SHALL REQUIRE AN EPOXY/GROUT BINDING TO AVOID WASHOUT PER THE PROJECT-SPECIFIC DESIGN PLANS AND SPECIFICATIONS
- CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.

**DRAWING NOT TO SCALE**

|  |                        |  |                |                |            |
|--|------------------------|--|----------------|----------------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD                           | REVISIONS      | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |  | ORIGINAL       |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | <div style="text-align: center;"> <b>SPLASH PAD</b> </div> | REVISED        |                | 03-08-2021 |
|  DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |  |                |                |            |
|  |                        |  | DRAWING NUMBER | <b>GS-5.06</b> |            |

## RAILING DESIGN

(MOUNTING & INSTALLATION  
PER SDRSD M-24)

## SIDEWALK SIDE GRAVITY WALL WITH CURB

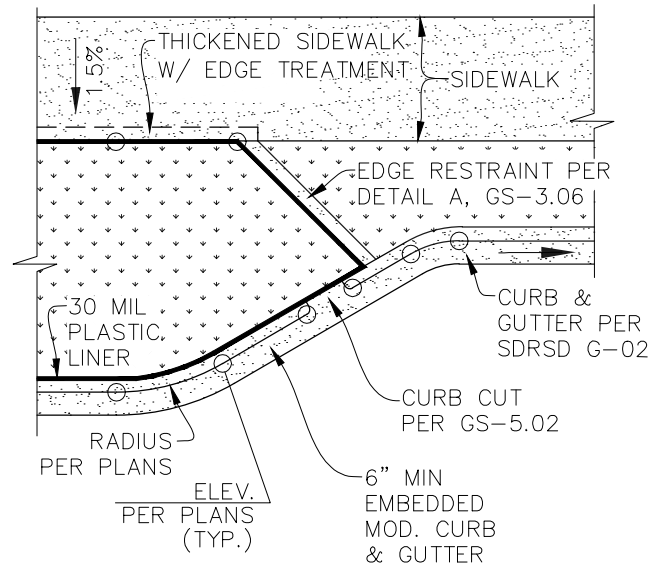
## CURB CUT ELEVATION

**NOTES:**

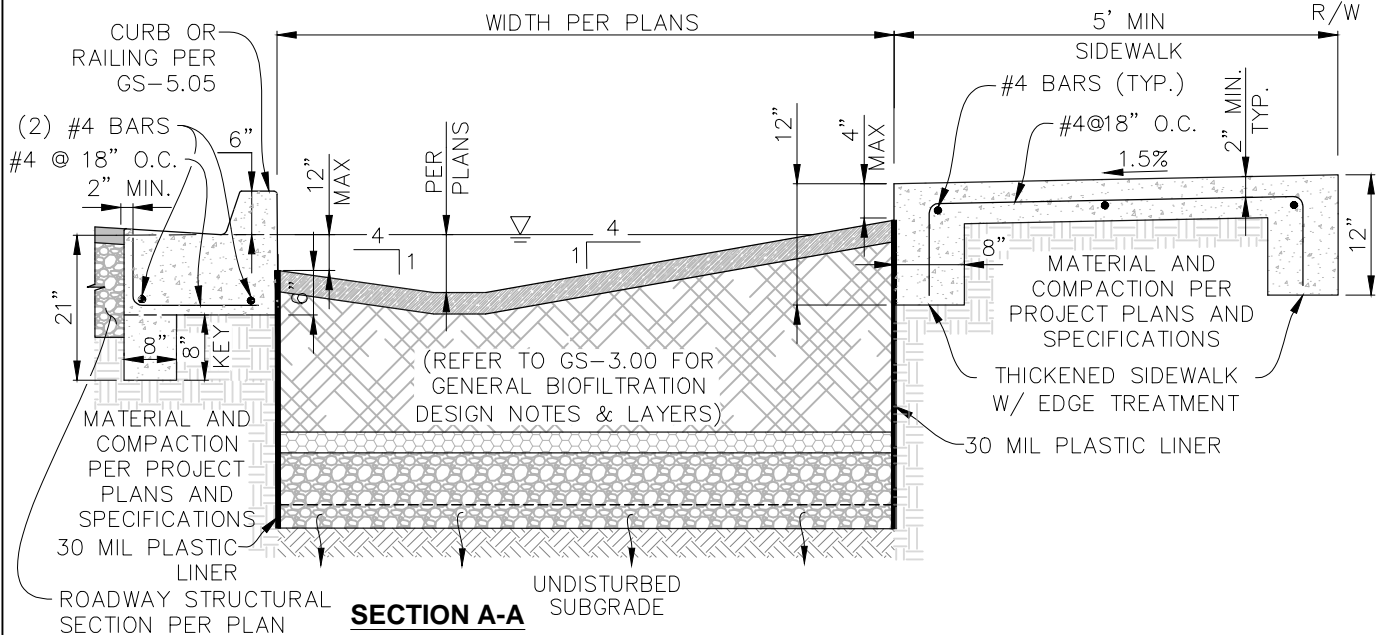
1. FOR ANY ELEVATION DIFFERENCES GREATER THAN 4 INCHES BETWEEN THE SOIL SURFACE AND THE SIDEWALK THAT ARE NOT CONSIDERED ISOLATED AREAS, PROVIDE CURB OR RAILING PER THE DESIGN PLANS. FENCE TYPE, MOUNTING, AND INSTALLATION REQUIREMENTS PER SDRSD M-24. OTHER DESIGNS ARE SUBJECT TO APPROVAL BY THE COUNTY.
2. OTHER EQUIVALENT WALL DESIGNS MAY BE ALLOWED. THE DESIGNER SHALL INCLUDE PROJECT-SPECIFIC DETAILS, STRUCTURAL CALCULATIONS, AND GEOTECHNICAL RECOMMENDATIONS WITH DESIGN PLAN SUBMITTAL.
3. SEAL PLASTIC LINER TO ADJACENT IMPROVEMENTS AND EDGE RESTRAINTS PER GS-5.15.
2. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.

DRAWING NOT TO SCALE

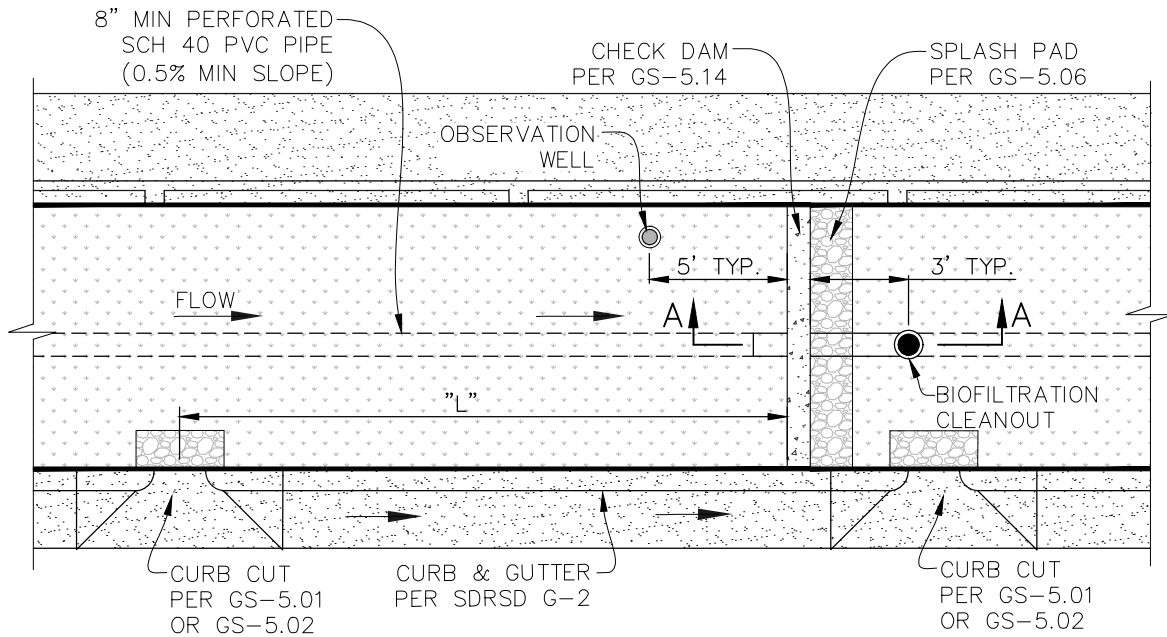
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|---|----------------------------------|----------------------------------|----------------------|----------------------------------|
| DRAWN BY: <u>NWB</u><br>CHECKED BY: <u>KBK</u>  | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS<br>ORIGINAL<br>REVISED | APPROVED<br><br><br> | DATE<br>10-01-2019<br>03-08-2021 |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                                  | GRAVITY WALL                     |                      |                                  |
| APPROVED BY COUNTY ENGINEER<br> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 | DRAWING NUMBER <b>GS-5.07</b>    |                                  |                      |                                  |



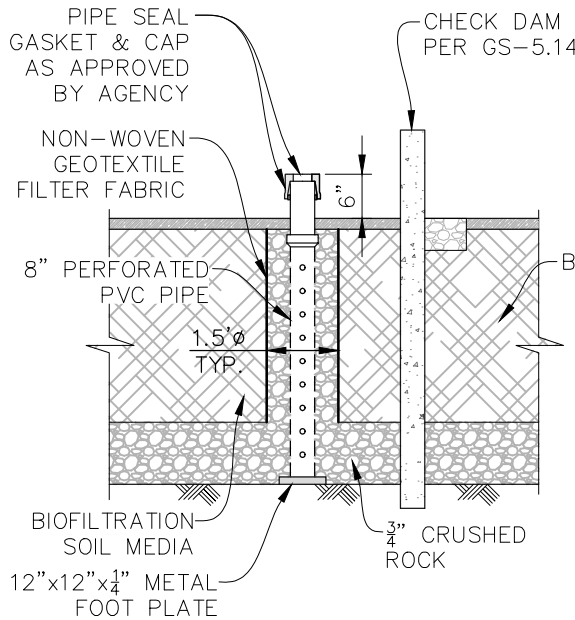
## OUTLET



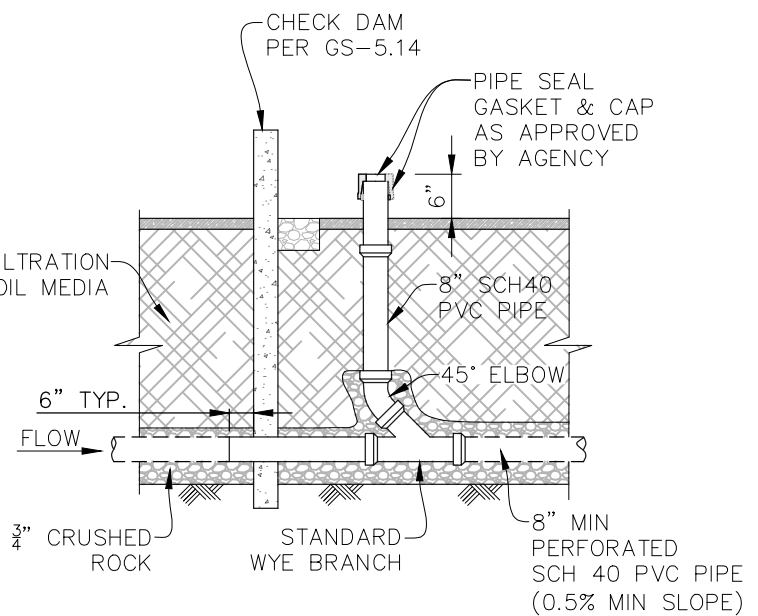
|   |  |                                      |                  |                                      |
|---|--|--------------------------------------|------------------|--------------------------------------|
| DRAWN BY: <u>NWB</u><br>CHECKED BY: <u>KBK</u>  | SAN DIEGO COUNTY DESIGN STANDARD<br><br><b>INLET AND OUTLET DETAILS<br/>FOR CURB EXTENSIONS &amp; BULBOUTS</b> | REVISIONS<br>ORIGINAL<br>REVISED<br> | APPROVED<br><br> | DATE<br>10-01-2019<br>03-08-2021<br> |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |  | DRAWING NUMBER <b>GS-5.08</b>        |                  |                                      |
| APPROVED BY COUNTY ENGINEER<br> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |  |                                      |                  |                                      |



**PLAN VIEW**



**OBSERVATION WELL**



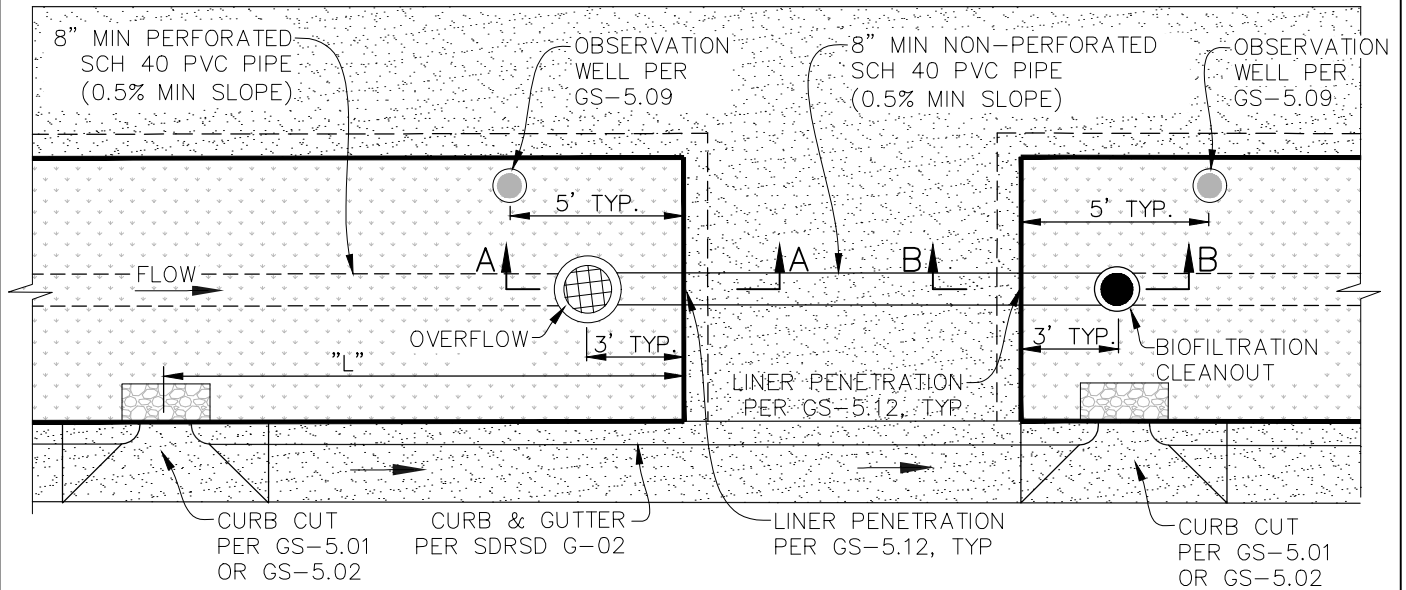
**SECTION A-A**

**NOTES:**

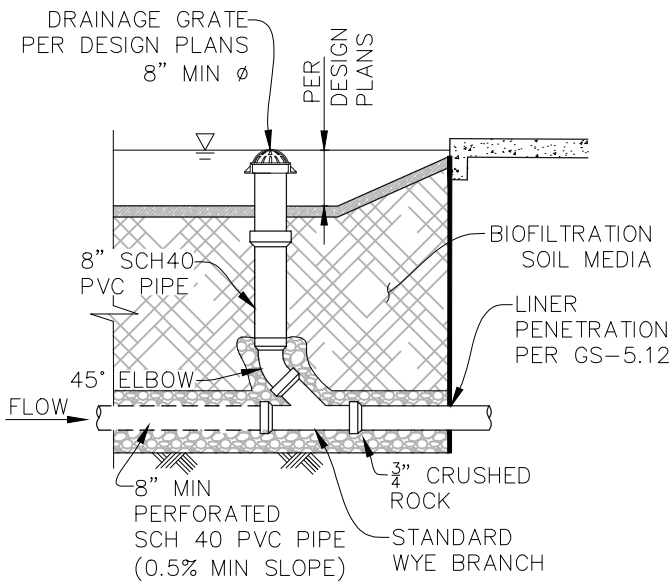
1. OBSERVATION WELL & CLEANOUT CAP ELEVATIONS ARE INDEPENDENT OF THE BMP PONDING DEPTHS.
2. REFER TO SDRSD SC-01 FOR ANY OMITTED DIMENSIONS OR CALLOUTS RELATED TO CLEANOUT DESIGN CRITERIA.
3. RECOMMENDED MAX CLEANOUT SPACING = 150-FT O.C.
4. PLACE OBSERVATION WELLS STRATEGICALLY AS TO MEASURE BMP PERFORMANCE; PER DESIGN PLANS.
5. DISTANCE "L" IS DEPENDENT ON STREET SLOPE AND DESIGN PONDING DEPTH; DESIGN ENGINEER SHALL SPECIFY THIS DIMENSION IN THE PROJECT-SPECIFIC PLANS.
6. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.

**DRAWING NOT TO SCALE**

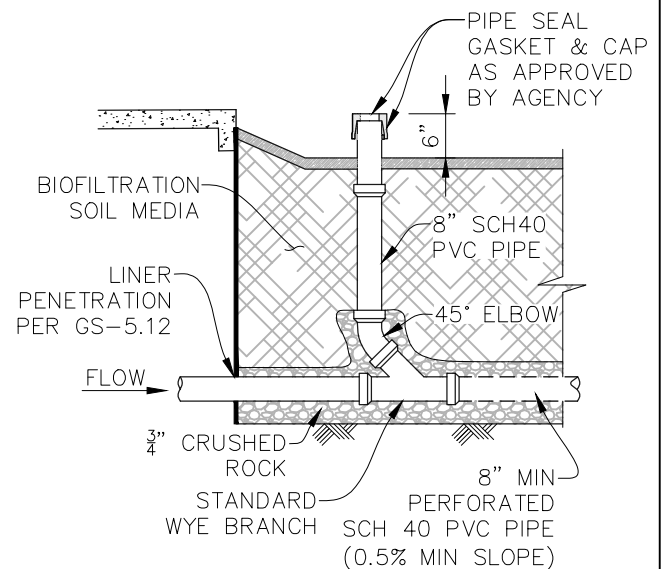
|   |                        |   |                   |                |            |
|---|------------------------|---|-------------------|----------------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD                                    | REVISIONS         | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |   | ORIGINAL          |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | <b>CLEANOUTS &amp; OBSERVATION<br/>WELLS ADJACENT TO CHECK DAMS</b> | REVISED           |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |   | DRAWING<br>NUMBER | <b>GS-5.09</b> |            |



**PLAN VIEW**



**SECTION A-A**



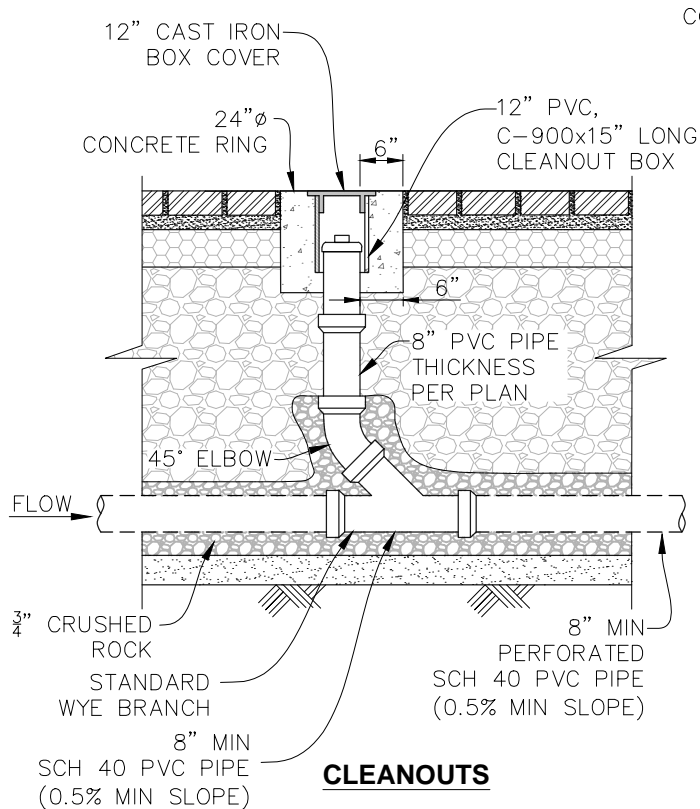
**SECTION B-B**

**NOTES:**

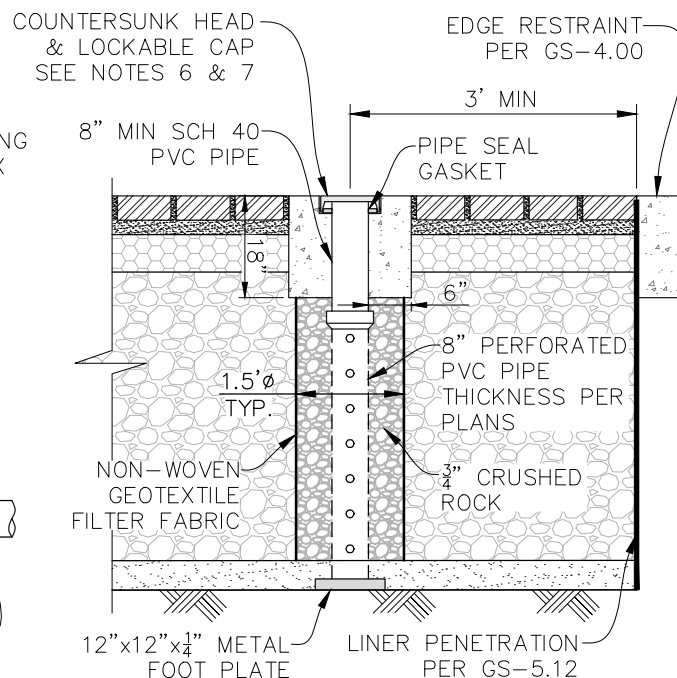
1. OBSERVATION WELL & CLEANOUT CAP ELEVATIONS ARE INDEPENDENT OF THE BMP PONDING DEPTHS.
2. REFER TO SDRSD SC-01 FOR ANY OMITTED DIMENSIONS OR CALLOUTS RELATED TO CLEANOUTS.
3. RECOMMENDED MAX CLEANOUT SPACING = 150-FT O.C.
4. PLACE OBSERVATION WELLS STRATEGICALLY AS TO MEASURE BMP PERFORMANCE; PER DESIGN PLANS.
5. OVERFLOW RISER MATERIAL AS SPECIFIED PER PROJECT-SPECIFIC DESIGN PLANS.
6. OVERFLOW RISERS LARGER THAN 12-INCH DIAMETER SHALL DRAIN DIRECTLY TO PUBLIC STREET FACILITIES PER GS-5.12 & GS-5.13 (WHERE APPLICABLE).
7. MINIMUM OVERFLOW RISER GRATE OPENING SIZE SHALL BE 1-1/4"; GRATE SHALL FIT SNUG AND BE REMOVABLE FOR MAINTENANCE PURPOSES.
8. DISTANCE "L" IS DEPENDENT ON STREET SLOPE AND DESIGN PONDING DEPTH; REFER TO PROJECT-SPECIFIC DESIGN PLANS FOR SAID DIMENSION.

**DRAWING NOT TO SCALE**

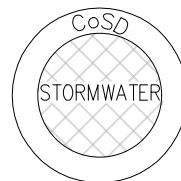
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|---|------------------------|----------------------------------|-------------------|----------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS         | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |                                  | ORIGINAL          |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        |                                  | REVISED           |          | 03-08-2021 |
|  DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452 EXP 9/30/2022 |                        |                                  |                   |          |            |
| CLEANOUTS, OBSERVATION WELLS,<br>& OVERFLOW RISERS ADJACENT<br>TO BMP LIMITS  |                        |                                  | DRAWING<br>NUMBER |          |            |
|   |                        |                                  | GS-5.10           |          |            |



**CLEANOUTS**



**OBSERVATION WELLS**



**OBSERVATION WELL  
CAP IDENTIFICATION**

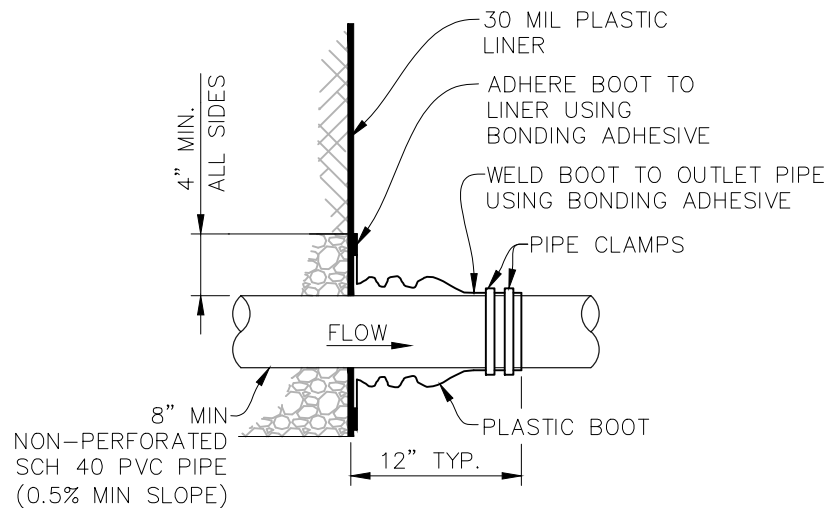
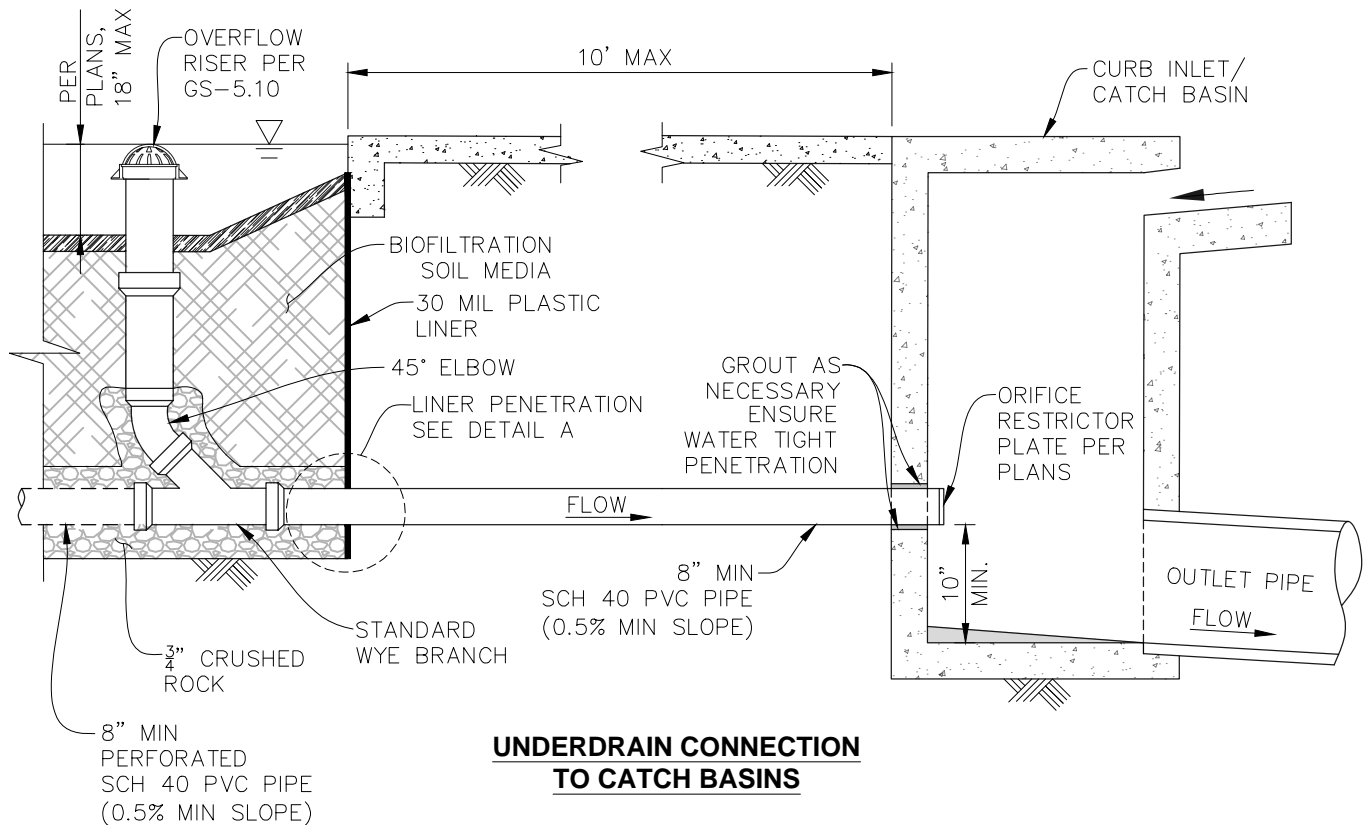
**NOTES:**

1. REFER TO SDRSD SC-01 FOR ANY OMITTED DIMENSIONS OR CALLOUTS RELATED TO CLEANOUT DESIGN CRITERIA.
2. RECOMMENDED MAX CLEANOUT SPACING = 150-FT O.C.
3. PLACE OBSERVATION WELLS STRATEGICALLY AS TO MEASURE BMP PERFORMANCE; PER DESIGN PLANS.
4. FIELD CUT PAVERS AS NECESSARY FOR PLACEMENT OF CONCRETE RINGS.
5. CONCRETE APRONS ARE RECOMMENDED TO BE INSTALLED AROUND CLEANOUTS AND OBSERVATION WELLS SUBJECT TO VEHICULAR LOADING; PER DESIGN PLANS.
6. FOR AREAS SUBJECT TO VEHICULAR TRAFFIC, LOCKABLE CAPS SHALL BE BRASS AND RATED FOR HS-20 LOADING.
7. LOCKABLE CAPS SHALL BE MOUNTED FLUSH TO GRADE, WITH MATERIAL AS APPROVED BY AGENCY.

**DRAWING NOT TO SCALE**

|   |                        |  |                |                |            |
|---|------------------------|--|----------------|----------------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD                               | REVISIONS      | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |  | ORIGINAL       |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | <b>PERMEABLE PAVEMENT CLEANOUTS<br/>AND OBSERVATIONS WELLS</b> | REVISED        |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |  | DRAWING NUMBER | <b>GS-5.11</b> |            |



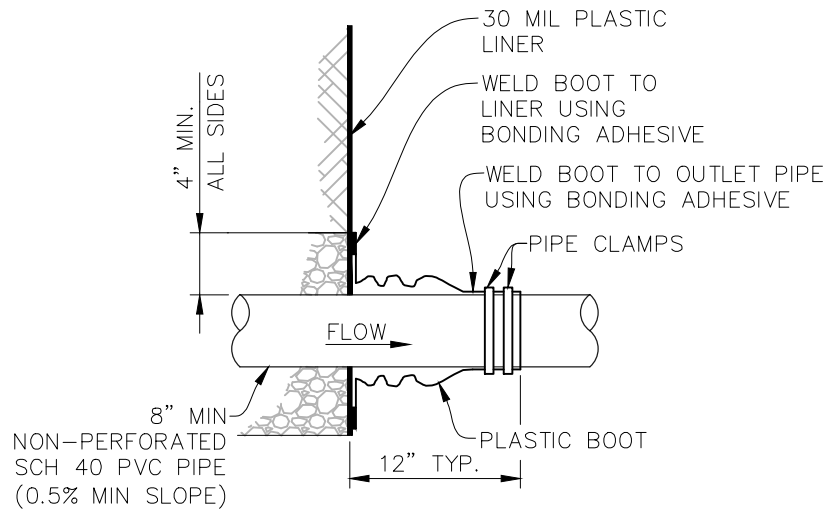
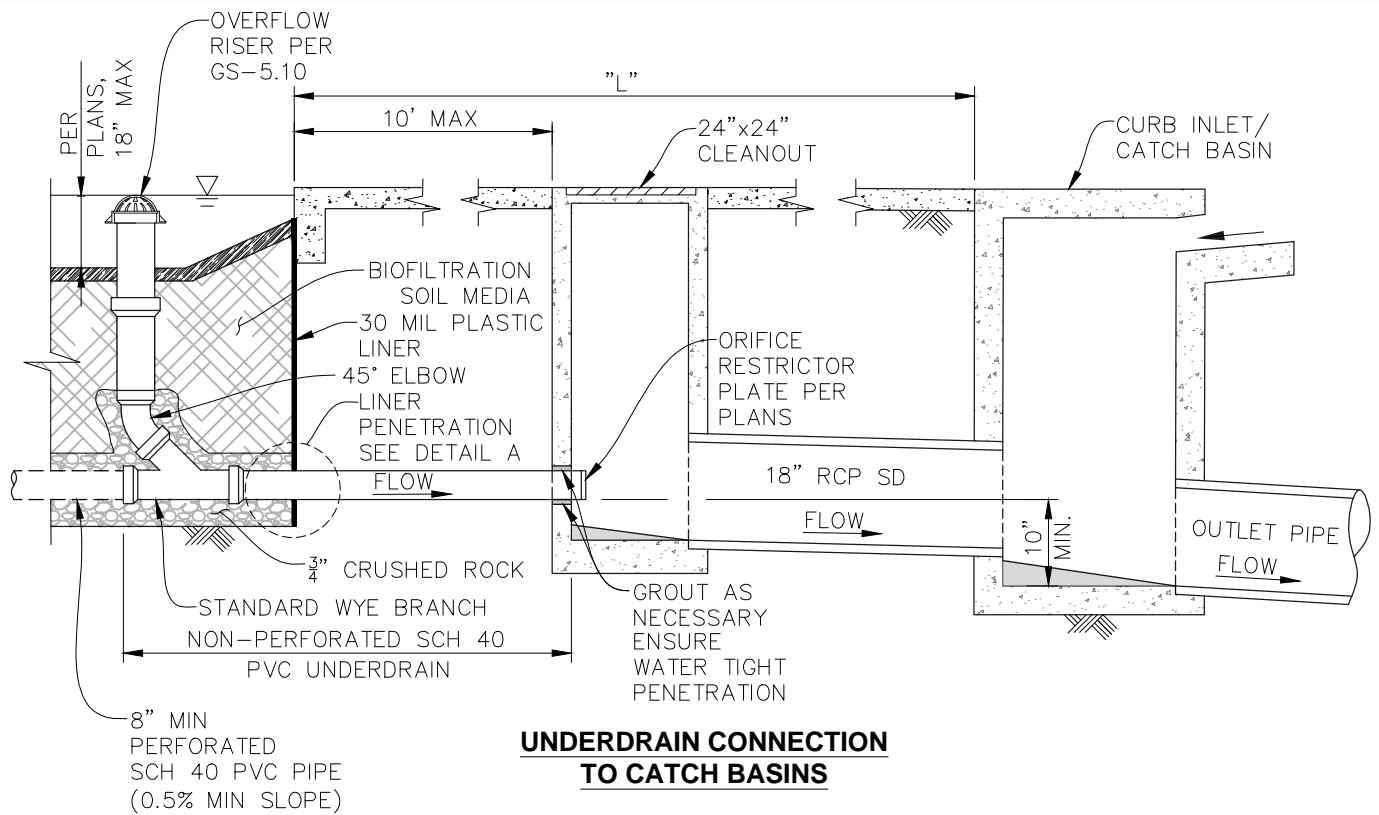


# **NOTES:**

1. STREET IMPROVEMENTS AND DRAINAGE STRUCTURES SHALL BE CONSTRUCTED ACCORDING TO THE LATEST SAN DIEGO REGIONAL STANDARD DRAWINGS AND CALTRANS STANDARD PLANS.
2. SEAL PLASTIC LINER TO ADJACENT IMPROVEMENTS AND EDGE RESTRAINTS PER GS-5.15.
3. LINER PENETRATION MATERIALS, MEANS & METHODS TO BE SPECIFIED PER PROJECT-SPECIFIC DESIGN PLANS & SPECIFICATIONS.

DRAWING NOT TO SCALE

|   |                        |  |                |                |            |
|---|------------------------|--|----------------|----------------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD                                     | REVISIONS      | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |  | ORIGINAL       |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | <b>DOWNSTREAM STORMWATER FACILITY<br/>CONNECTION DETAIL (L ≤ 10)</b> | REVISED        |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |  | DRAWING NUMBER | <b>GS-5.12</b> |            |

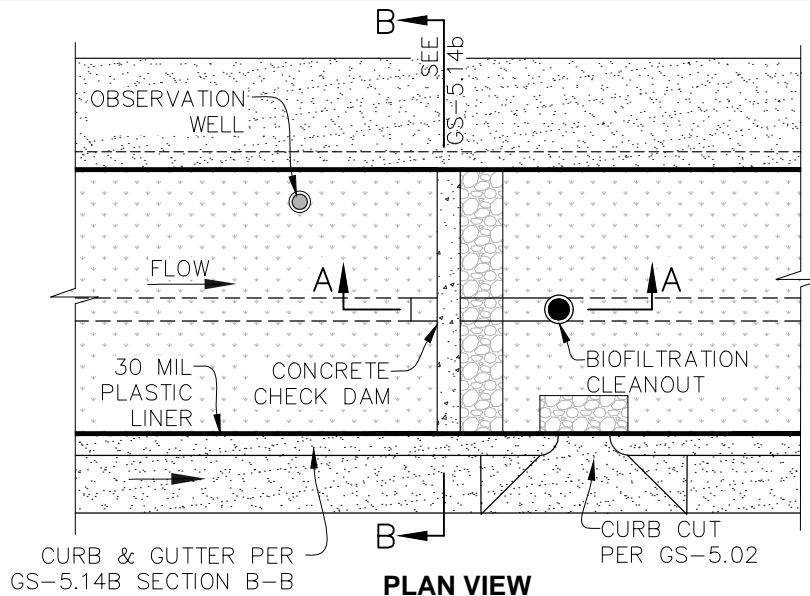


#### NOTES:

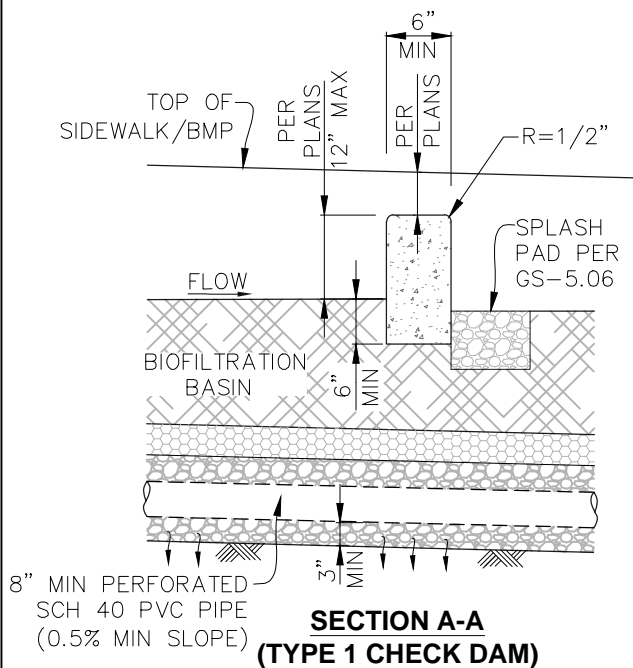
1. STREET IMPROVEMENTS AND DRAINAGE STRUCTURES SHALL BE CONSTRUCTED ACCORDING TO THE LATEST SAN DIEGO REGIONAL STANDARD DRAWINGS AND CALTRANS STANDARD PLANS.
2. SEAL PLASTIC LINER TO ADJACENT IMPROVEMENTS AND EDGE RESTRAINTS PER GS-5.15.
3. LINER PENETRATION MATERIALS, MEANS & METHODS TO BE SPECIFIED PER MANUFACTURER'S RECOMMENDATIONS.
4. WHEN "L" IS LESS THAN 20', PLACE CLEANOUT AT MIDWAY POINT (I.E. L/2).
5. WHEN "L" EXCEEDS 20', PLACE CLEANOUT 10' DOWNSTREAM OF STORMWATER BMP AND EXTEND 18" RCP SD TO CATCH BASIN CONNECTION POINT.

DRAWING NOT TO SCALE

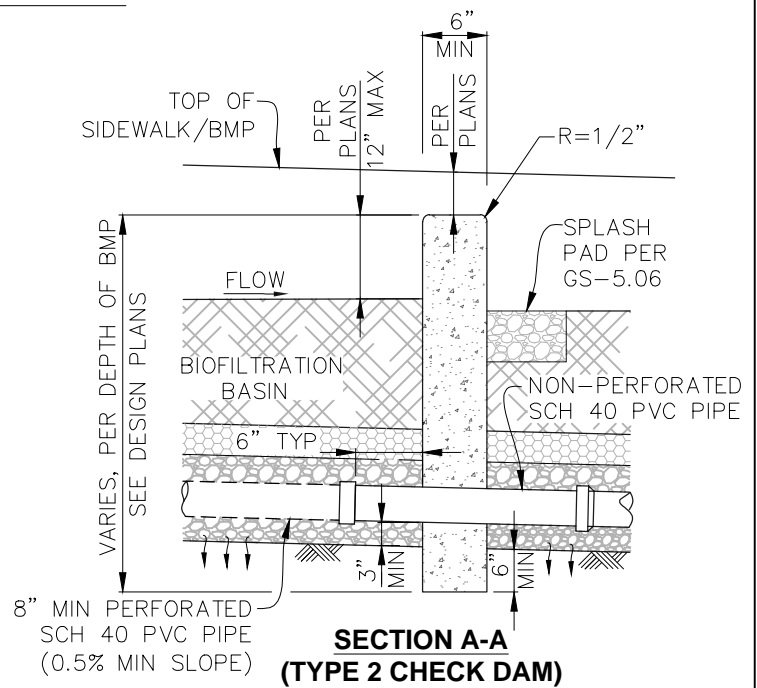
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|---|------------------------|---|----------------|----------------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD                                      | REVISIONS      | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |   | ORIGINAL       |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | <b>DOWNSTREAM STORMWATER FACILITY<br/>CONNECTION DETAIL (L&gt;10)</b> | REVISED        |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |   | DRAWING NUMBER | <b>GS-5.13</b> |            |



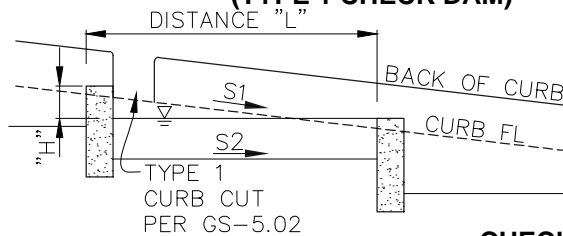
**PLAN VIEW**



**SECTION A-A  
(TYPE 1 CHECK DAM)**



**SECTION A-A  
(TYPE 2 CHECK DAM)**



$$\begin{aligned} S1 &= \text{STREET LONGITUDINAL SLOPE} \\ S2 &= \text{BIO BASIN LONGITUDINAL SLOPE, } (S2 \leq 0.5\% \text{ RECOMMENDED}) \\ H &= \text{CHECK DAM HEIGHT ABOVE DOWNSTREAM PONDING DEPTH} \\ L &= H / (S1 - S2) \end{aligned}$$

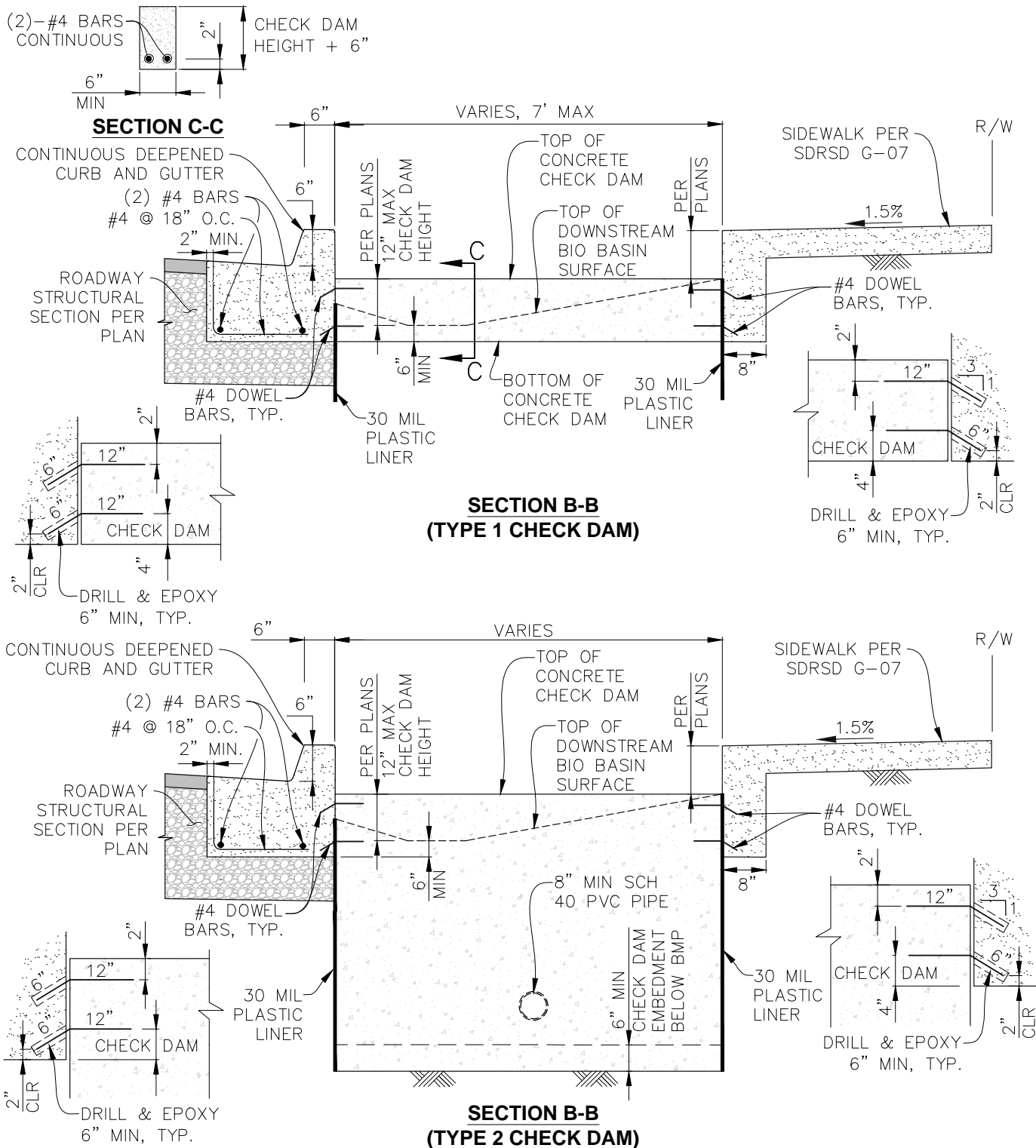
**CHECK DAM SPACING CRITERIA**

**NOTES:**

1. LOCATION, HEIGHT, AND WIDTH OF CHECK DAMS PER THE DESIGN PLANS.
2. CONCRETE CHECK DAM SHALL BE A CONTINUOUS POUR (NO JOINTS).
3. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
4. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

**DRAWING NOT TO SCALE**

|  |                        |                                  |                                |          |            |
|--|------------------------|----------------------------------|--------------------------------|----------|------------|
| DRAWN BY: <u>NWB</u>   | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS                      | APPROVED | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.   |                        |                                  | ORIGINAL                       |          | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER  |                        | CONCRETE CHECK DAM               | REVISED                        |          | 03-08-2021 |
|  DATE: <u>3/15/21</u> |                        |                                  |                                |          |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022   |                        |                                  | DRAWING NUMBER <b>GS-5.14a</b> |          |            |

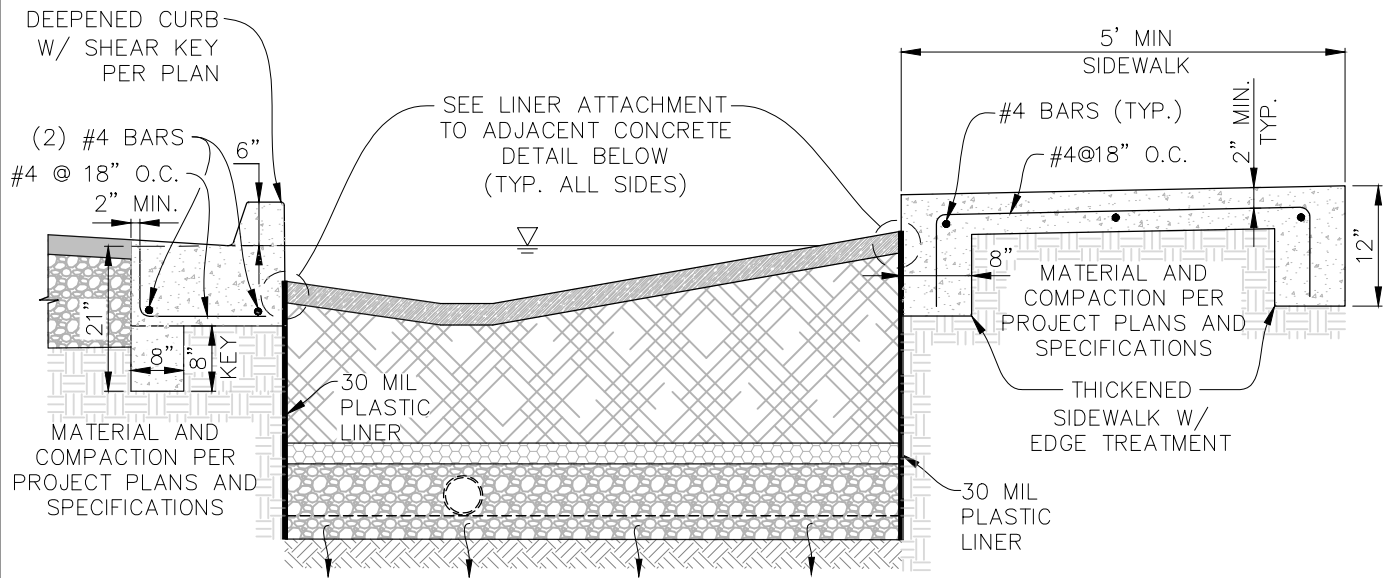


**NOTES:**

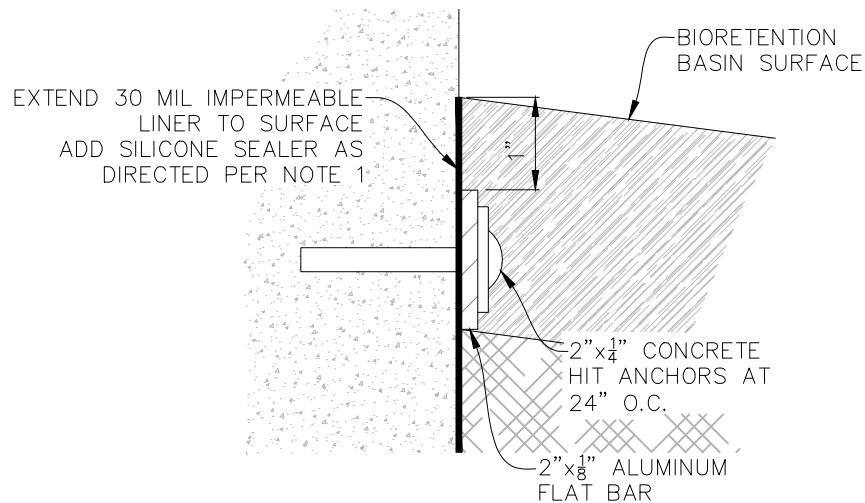
1. LOCATION, HEIGHT, AND WIDTH OF CHECK DAMS PER THE DESIGN PLANS.
2. CONCRETE CHECK DAM SHALL BE A CONTINUOUS POUR (NO JOINTS).
3. CONCRETE SHALL BE 520-C-2500 UNLESS OTHERWISE SPECIFIED.
4. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

DRAWING NOT TO SCALE

|  |                        |                                  |           |                                |            |
|--|------------------------|----------------------------------|-----------|--------------------------------|------------|
| DRAWN BY: <u>NWB</u>                                       | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD | REVISIONS | APPROVED                       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.                     |                        |                                  | ORIGINAL  |                                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER                                |                        | CONCRETE CHECK DAM               | REVISED   |                                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u>                    |                        |                                  |           |                                |            |
| WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |                                  |           | DRAWING NUMBER <b>GS-5.14b</b> |            |



**TYPICAL BIOFILTRATION  
BASIN SECTION**



**LINER ATTACHMENT TO  
ADJACENT CONCRETE DETAIL**

**NOTES:**

1. ON CLEAN CONCRETE SURFACE, ADHERE LINER TO CONCRETE WITH SILICONE SEALANT OR EQUIVALENT PER MANUFACTURER RECOMMENDATIONS TO TOP  $\frac{1}{2}$ " OF LINER.
2. SECURE LINER TO CONCRETE WITH 2" ALUMINUM OR STAINLESS STEEL FLAT BAR AS DIRECTED PER PLAN.
3. AS AN ALTERNATIVE, HIT ANCHORS CAN BE SUBSTITUTED WITH STAINLESS STEEL ANCHORS AT 24" O.C. OR POWDER ACTUATED FASTENERS AT 12" O.C.
4. TRIM EXCESS LINER TO BE FLUSH WITH SURFACE ELEVATION.
5. CONTRACTOR MEANS AND METHODS SHOULD AVOID/MINIMIZE WRINKLES TO THE LINER.
6. PARALLEL STREET PARKING PROHIBITED WITH THIS BMP.

**DRAWING NOT TO SCALE**

|   |                        |   |                   |                |            |
|---|------------------------|---|-------------------|----------------|------------|
| DRAWN BY: <u>NWB</u>  | CHECKED BY: <u>KBK</u> | SAN DIEGO COUNTY DESIGN STANDARD              | REVISIONS         | APPROVED       | DATE       |
| RECOMMENDED BY: CHARLES MOHRLOCK, P.E.  |                        |   | ORIGINAL          |                | 10-01-2019 |
| APPROVED BY COUNTY ENGINEER   |                        | <b>IMPERMEABLE LINER<br/>FASTENING DETAIL</b> | REVISED           |                | 03-08-2021 |
| <i>W.P. Morgan</i> DATE: <u>3/15/21</u><br>WILLIAM P. MORGAN, P.E.<br>R.C.E. NO. 49452, EXP 9/30/2022 |                        |   | DRAWING<br>NUMBER | <b>GS-5.15</b> |            |