



CITY OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF GREEN INFRASTRUCTURE

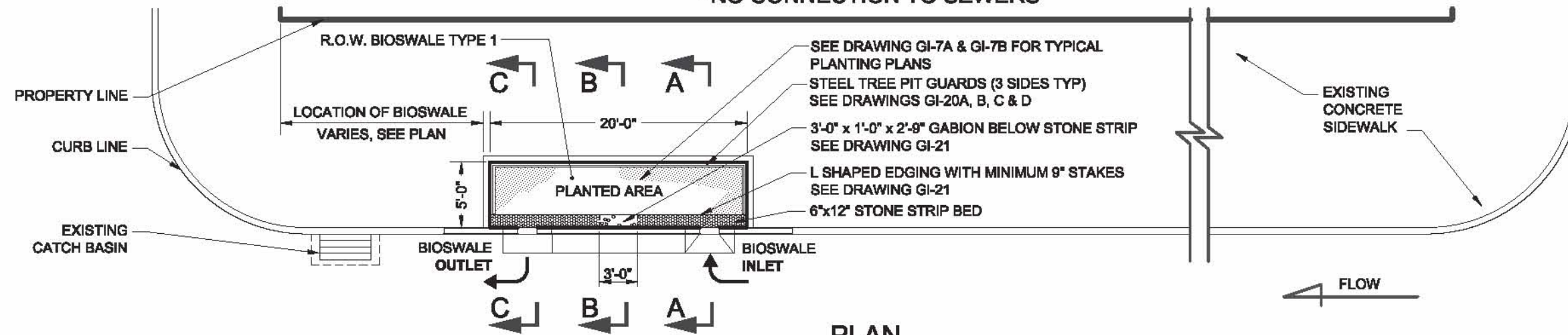
# STANDARDS FOR GREEN INFRASTRUCTURE

CITY OF NEW YORK  
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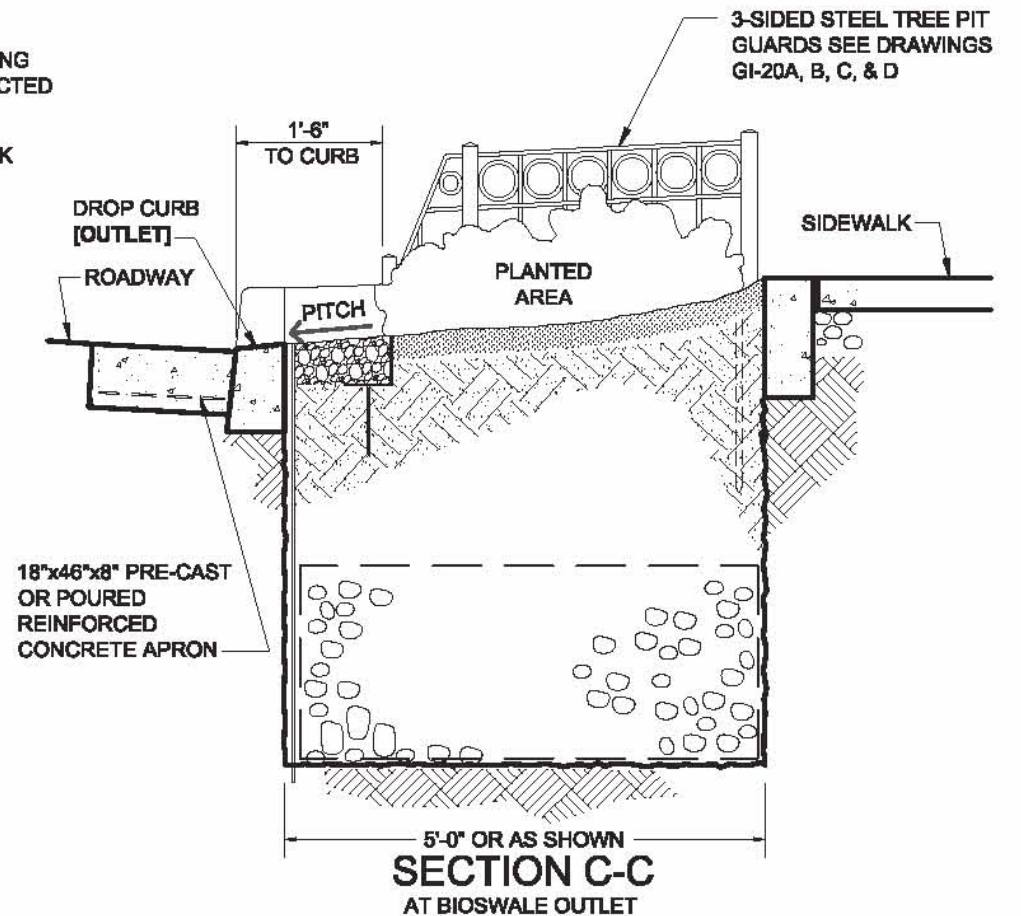
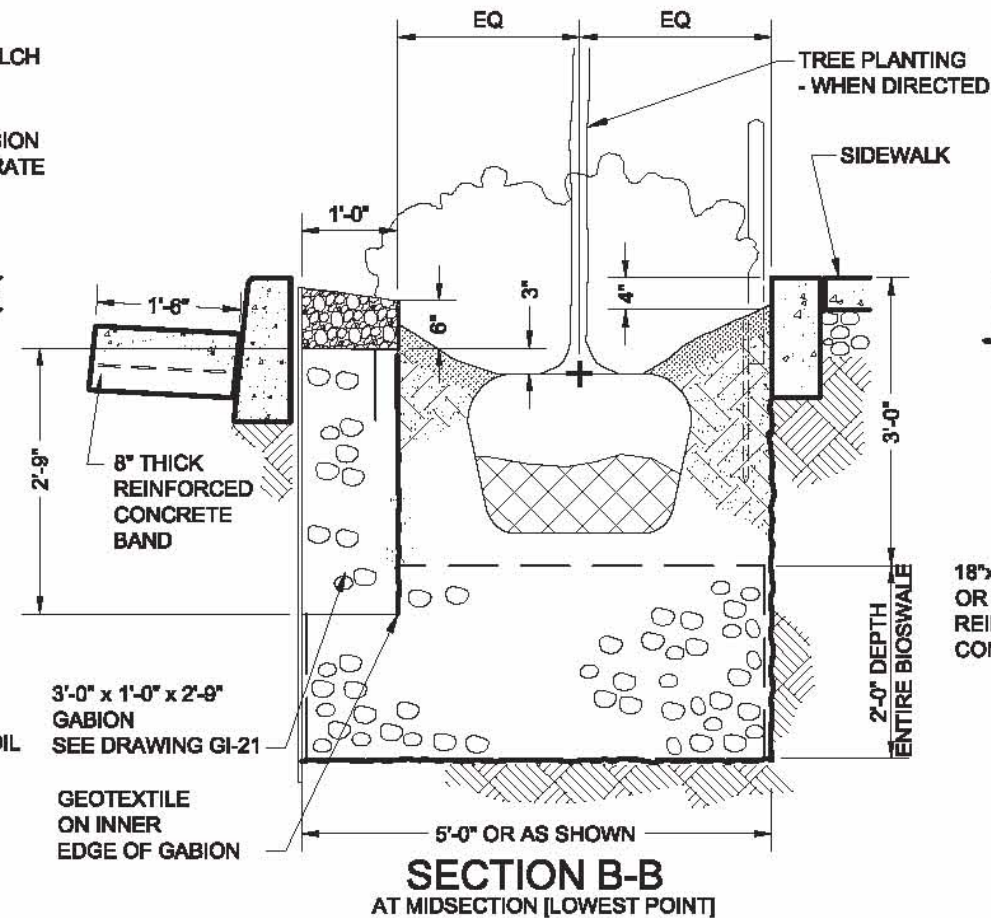
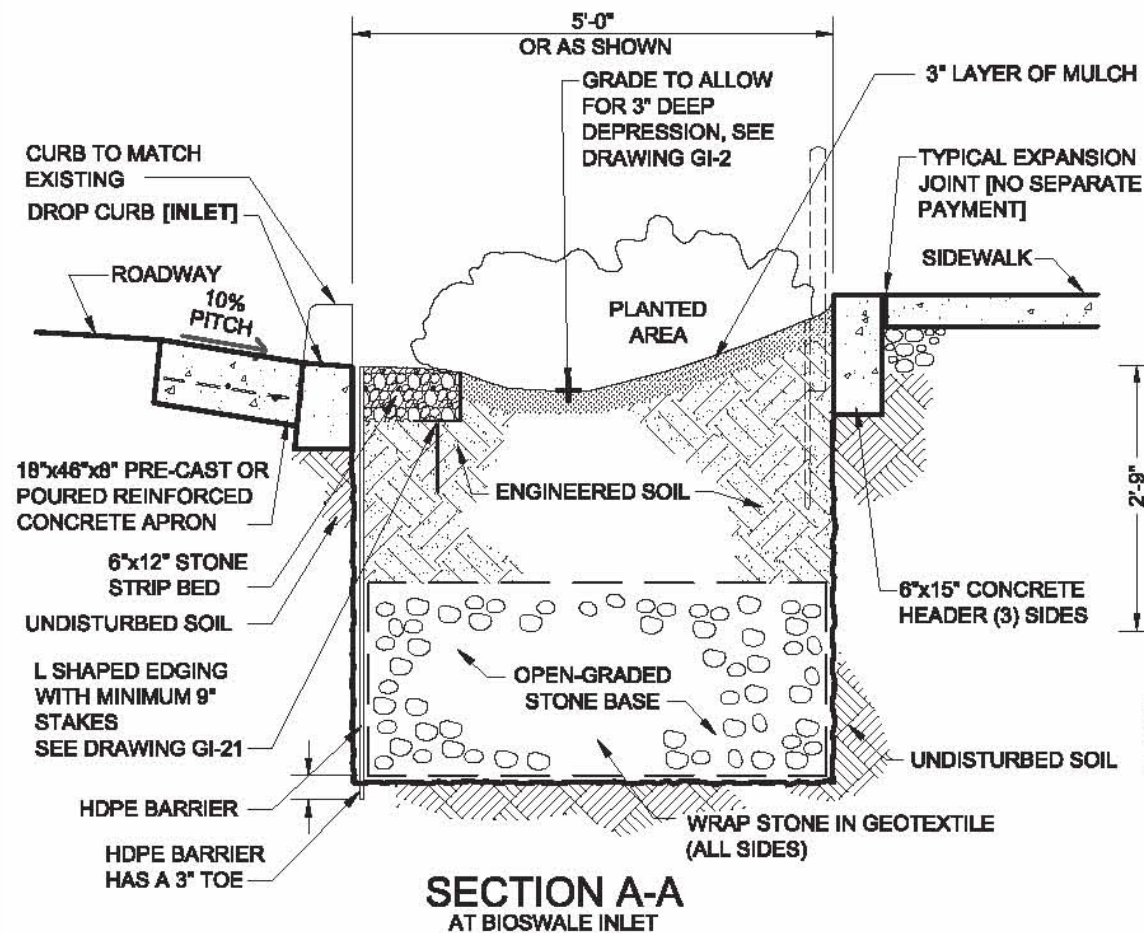
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CITY OF NEW YORK  
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OFFICE OF GREEN INFRASTRUCTURE  
**STANDARD FOR 20'x5' R.O.W. BIOSWALE TYPE 1**  
- NO CONNECTION TO SEWERS



PLAN  
[IN CONTEXT]

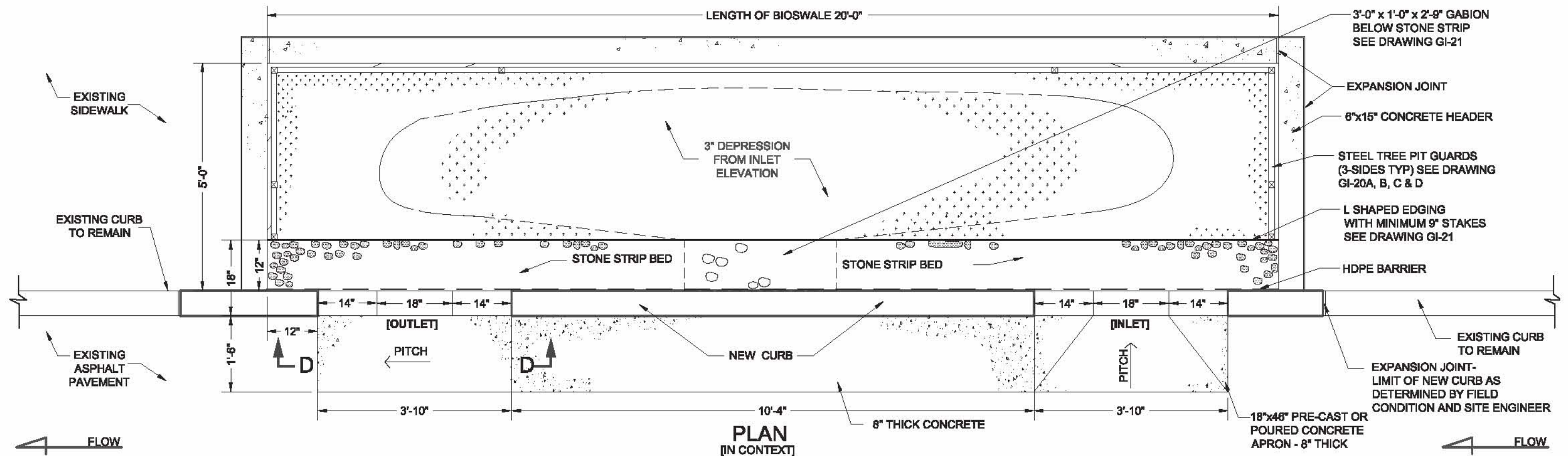


*Wendi Tana*  
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ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
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8/03/2012  
DATE

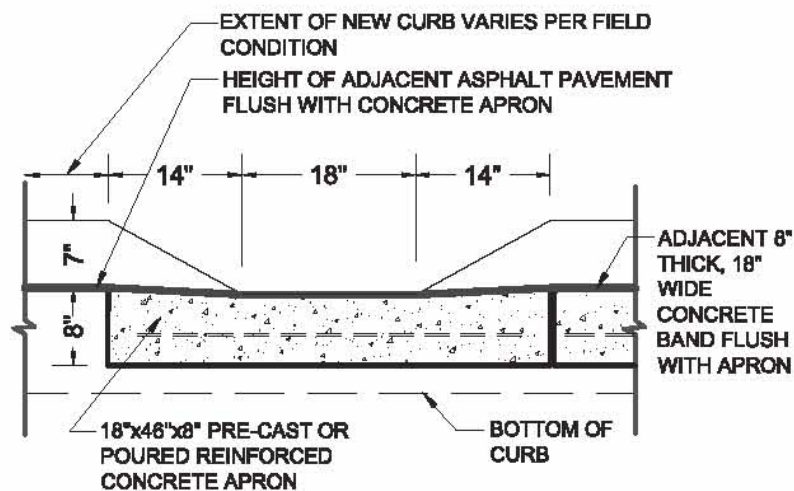


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**STANDARD FOR 20'x5' R.O.W. BIOSWALE TYPE 1**  
- NO CONNECTION TO SEWERS



## NOTES:

1. INCLUDED IN THE COST OF THE BIOSWALE, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE THE ADJACENT EXISTING SIDEWALK FLAG TO NEAREST SIDEWALK JOINT BEYOND THE LIMITS OF THE BIOSWALE. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE COST OF SAWCUTTING THE EXISTING SIDEWALK AT THE JOINT. REPLACING THAT SIDEWALK IN KIND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF STANDARD HIGHWAY SPECIFICATION SHALL BE PAID SEPARATELY.
2. WHEN RESTORING A TYPICAL CURB, THE COST OF REMOVAL OF [2'] FOOT WIDTH OF THE WEARING COURSE AND ONE (1') FOOT WIDTH OF ROADWAY CONCRETE PAVEMENT BASE ALONG THE CURB LINE AND ADJACENT TO THE CONCRETE APRONS, MAY BE REQUIRED. THE RESTORATION OF ALL REMOVED PAVEMENT IN KIND AND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF THE STANDARD HIGHWAY SPECIFICATIONS SHALL BE DEEMED TO BE INCLUDED IN THE UNIT PRICE OF THE BIOSWALE.
3. THE CONTRACTOR SHALL OBTAIN THE NECESSARY TREE PLANTING PERMIT FROM THE NYC DEPARTMENT OF PARKS AND RECREATION (DPR) PRIOR TO THE START OF WORK. ALL NECESSARY TREE PLANTING SHALL BE SUPERVISED BY CERTIFIED ARBORISTS.
4. NO TREE SHALL BE REMOVED BY THE CONTRACTOR UNTIL SPECIFICALLY ORDERED IN WRITING TO DO SO BY THE ENGINEER AND WITH APPROVAL FROM DPR.
5. TREES SHALL BE STAKED AS PER DOT STANDARD DETAIL H-1046. TREE STAKES ARE TO BE REMOVED BY THE CONTRACTOR NOT LESS THAN ONE YEAR AFTER PLANTING.
6. THE CONTRACTOR SHALL NOT BE PERMITTED TO OPERATE AUXILIARY EQUIPMENT WHICH GENERATES EXHAUST OR OTHER HEAT UPWARD (E.G., GENERATORS AND COMPRESSORS), UNDER THE BRANCHES OF TREES WHERE THE BRANCHES ARE LESS THAN 25' ABOVE THE GROUND, UNLESS APPROVED BY THE ENGINEER IN CONSULTATION WITH THE CERTIFIED ARBORIST.
7. THE CONTRACTOR SHALL NOT BE PERMITTED TO STORE, STOCKPILE, OR LAY DOWN, ANY CONSTRUCTION MATERIAL INCLUDING, BUT NOT LIMITED TO, LUMBER, FUEL, AND OIL CONTAINERS, PIPES, AND/OR PIPE FITTINGS, BARRICADES, HAND TOOLS, HOSES, RECEPTACLES, AND ASPHALT WITHIN ANY EXISTING TREE PIT OR R.O.W. BIOSWALE.
8. REPLACEMENT TREES SHALL BE PLANTED WITHIN THE PROJECT AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SECTION 4.16 OF STANDARD HIGHWAY SPECIFICATIONS.



*Heidi Farah*  
P.E.  
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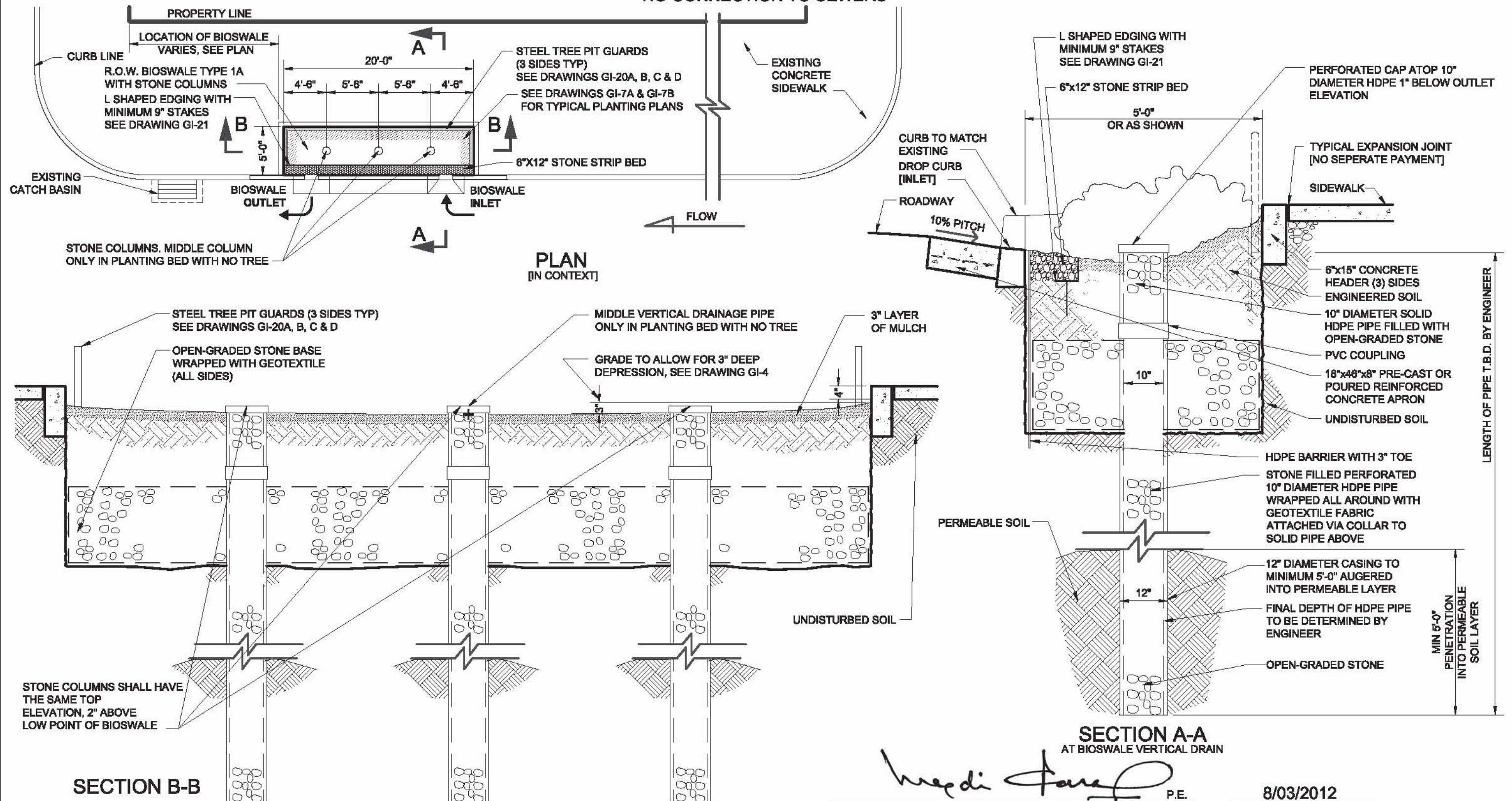
7/25/2012  
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OFFICE OF GREEN INFRASTRUCTURE

# STANDARD FOR 20'X5' R.O.W. BIOSWALE TYPE 1A - WITH STONE COLUMNS

- NO CONNECTION TO SEWERS



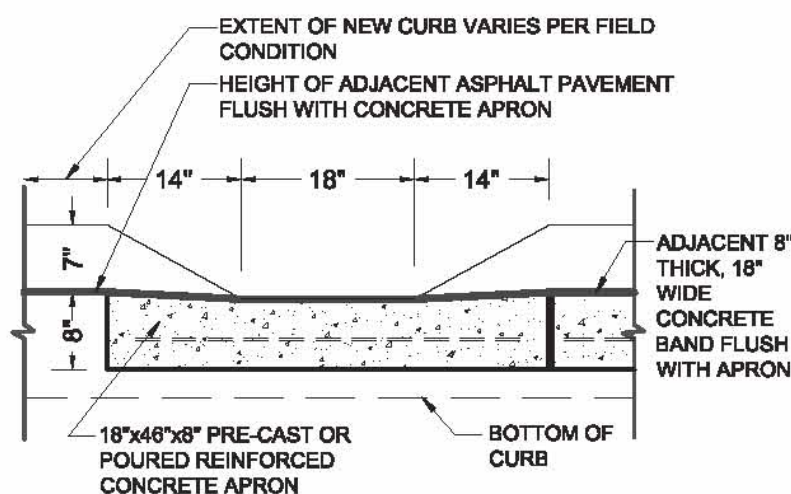
Heidi Fara  
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DEPARTMENT OF ENVIRONMENTAL PROTECTION

8/03/2012  
DATE



**- NO CONNECTION TO SEWERS**

— LENGTH OF BIOSWALE 20'-0"



### SECTION D-D

1. INCLUDED IN THE COST OF THE BIOSWALE, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE THE ADJACENT EXISTING SIDEWALK FLAG TO NEAREST SIDEWALK JOINT BEYOND THE LIMITS OF THE BIOSWALE. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE COST OF SAWCUTTING THE EXISTING SIDEWALK AT THE JOINT. REPLACING THAT SIDEWALK IN KIND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF STANDARD HIGHWAY SPECIFICATION SHALL BE PAID SEPARATELY.
2. WHEN RESTORING A TYPICAL CURB, THE COST OF REMOVAL OF [2'] FOOT WIDTH OF THE WEARING COURSE AND ONE (1') FOOT WIDTH OF ROADWAY CONCRETE PAVEMENT BASE ALONG THE CURB LINE AND ADJACENT TO THE CONCRETE APRONS, MAY BE REQUIRED. THE RESTORATION OF ALL REMOVED PAVEMENT IN KIND AND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF THE STANDARD HIGHWAY SPECIFICATIONS SHALL BE DEEMED TO BE INCLUDED IN THE UNIT PRICE OF THE BIOSWALE.
3. THE CONTRACTOR SHALL OBTAIN THE NECESSARY TREE PLANTING PERMIT FROM THE NYC DEPARTMENT OF PARKS AND RECREATION (DPR) PRIOR TO THE START OF WORK. ALL NECESSARY TREE PLANTING SHALL BE SUPERVISED BY CERTIFIED ARBORISTS.
4. NO TREE SHALL BE REMOVED BY THE CONTRACTOR UNTIL HE IS SPECIFICALLY ORDERED IN WRITING TO DO SO BY THE ENGINEER AND WITH APPROVAL FROM DPR.
5. TREES SHALL BE STAKED AS PER STANDARD DETAIL H-1046. TREE STAKES ARE TO BE REMOVED BY THE CONTRACTOR NOT LESS THAN ONE YEAR AFTER PLANTING.
6. THE CONTRACTOR SHALL NOT BE PERMITTED TO OPERATE AUXILIARY EQUIPMENT WHICH GENERATES EXHAUST OR OTHER HEAT UPWARD (E.G., GENERATORS AND COMPRESSORS), UNDER THE BRANCHES OF TREES WHERE THE BRANCHES ARE LESS THAN 25' ABOVE THE GROUND, UNLESS APPROVED BY THE ENGINEER IN CONSULTATION WITH THE CERTIFIED ARBORIST.
7. THE CONTRACTOR SHALL NOT BE PERMITTED TO STORE, STOCKPILE, OR LAY DOWN, ANY CONSTRUCTION MATERIAL INCLUDING, BUT NOT LIMITED TO, LUMBER, FUEL, AND OIL CONTAINERS, PIPES, AND/OR PIPE FITTINGS, BARRICADES, HAND TOOLS, HOSES, RECEPTACLES, AND ASPHALT WITHIN ANY EXISTING TREE PIT.
8. REPLACEMENT TREES SHALL BE PLANTED WITHIN THE PROJECT AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SECTION 4.16 OF STANDARD HIGHWAY SPECIFICATIONS.
9. 12" DIAMETER CASING TO BE AUGERED TO DEPTH AS PER ENGINEER. 10" DIAMETER HDPE PIPE WRAPPED ALL AROUND WITH GEOTEXTILE FABRIC INSERTED IN THE 12" CASING.

 P.E.  
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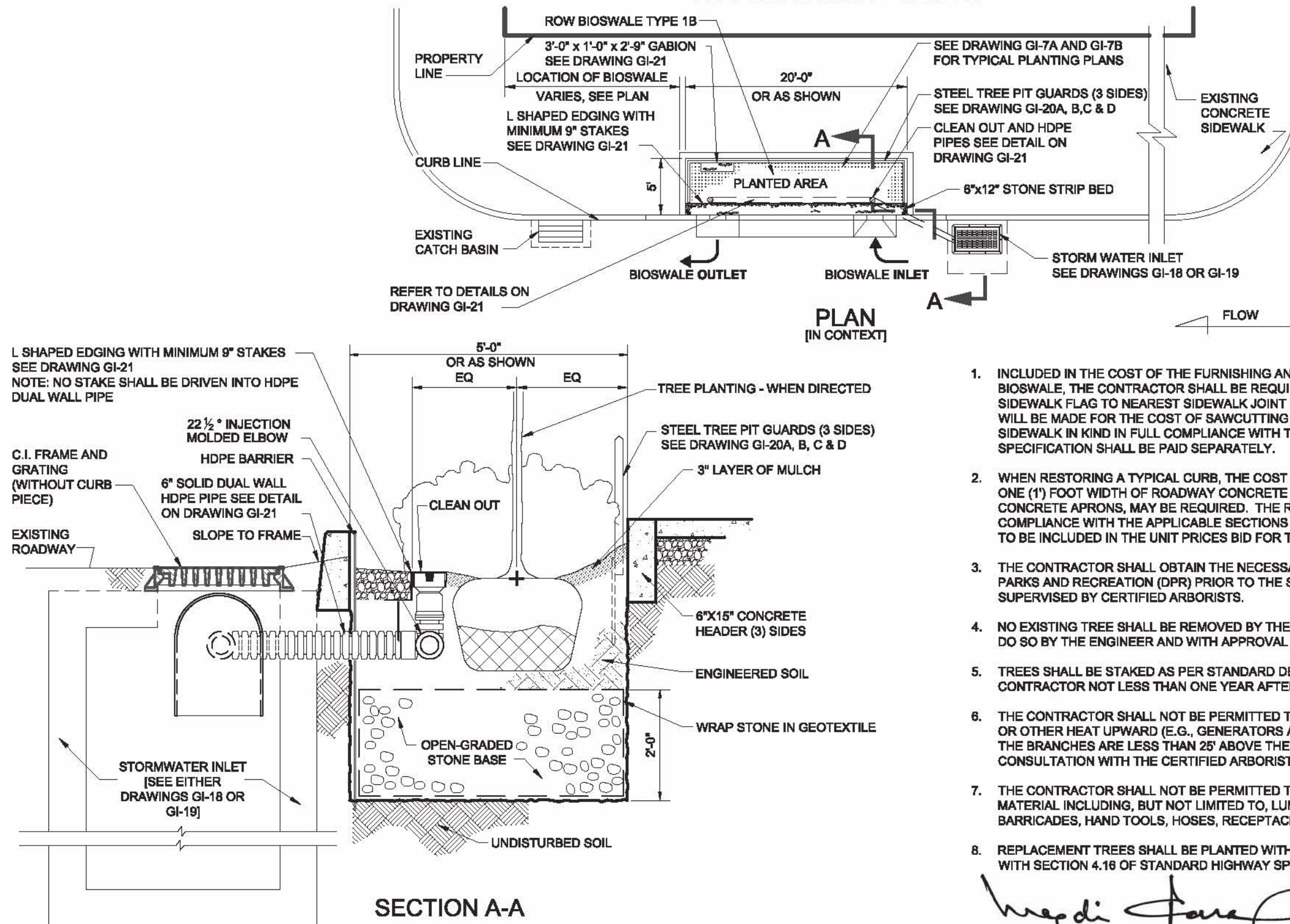
8/03/2012  
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# STANDARD FOR 20'X5' R.O.W. BIOSWALE TYPE 1B - WITH STORMWATER INLET

- NO CONNECTION TO SEWERS



1. INCLUDED IN THE COST OF THE FURNISHING AND INSTALLING THE CONCRETE HEADER ADJACENT TO THE BIOSWALE, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE THE ADJACENT EXISTING SIDEWALK FLAG TO NEAREST SIDEWALK JOINT BEYOND THE LIMITS OF THE BIOSWALE. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE COST OF SAWCUTTING THE EXISTING SIDEWALK AT THE JOINT. REPLACING THAT SIDEWALK IN KIND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF STANDARD HIGHWAY SPECIFICATION SHALL BE PAID SEPARATELY.
2. WHEN RESTORING A TYPICAL CURB, THE COST OF REMOVAL OF [2'] FOOT WIDTH OF THE WEARING COURSE AND ONE (1') FOOT WIDTH OF ROADWAY CONCRETE PAVEMENT BASE ALONG THE CURB LINE AND ADJACENT TO THE CONCRETE APRONS, MAY BE REQUIRED. THE RESTORATION OF ALL REMOVED PAVEMENT IN KIND AND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF THE STANDARD HIGHWAY SPECIFICATIONS SHALL BE DEEMED TO BE INCLUDED IN THE UNIT PRICES BID FOR THE CURB AND CONCRETE APRONS.
3. THE CONTRACTOR SHALL OBTAIN THE NECESSARY TREE PLANTING PERMIT FROM THE NYC DEPARTMENT OF PARKS AND RECREATION (DPR) PRIOR TO THE START OF WORK. ALL NECESSARY TREE PLANTING SHALL BE SUPERVISED BY CERTIFIED ARBORISTS.
4. NO EXISTING TREE SHALL BE REMOVED BY THE CONTRACTOR UNTIL HE IS SPECIFICALLY ORDERED IN WRITING TO DO SO BY THE ENGINEER AND WITH APPROVAL FROM DPR.
5. TREES SHALL BE STAKED AS PER STANDARD DETAIL H-1046. TREE STAKES ARE TO BE REMOVED BY THE CONTRACTOR NOT LESS THAN ONE YEAR AFTER PLANTING.
6. THE CONTRACTOR SHALL NOT BE PERMITTED TO OPERATE AUXILIARY EQUIPMENT WHICH GENERATES EXHAUST OR OTHER HEAT UPWARD (E.G., GENERATORS AND COMPRESSORS), UNDER THE BRANCHES OF TREES WHERE THE BRANCHES ARE LESS THAN 25' ABOVE THE GROUND, UNLESS APPROVED BY THE ENGINEER IN CONSULTATION WITH THE CERTIFIED ARBORIST.
7. THE CONTRACTOR SHALL NOT BE PERMITTED TO STORE, STOCKPILE, OR LAY DOWN, ANY CONSTRUCTION MATERIAL INCLUDING, BUT NOT LIMITED TO, LUMBER, FUEL, AND OIL CONTAINERS, PIPES, AND/OR PIPE FITTINGS, BARRICADES, HAND TOOLS, HOSES, RECEPTACLES, AND ASPHALT WITHIN ANY EXISTING TREE PIT.
8. REPLACEMENT TREES SHALL BE PLANTED WITHIN THE PROJECT AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SECTION 4.16 OF STANDARD HIGHWAY SPECIFICATIONS.

*Wesley J. Tavares* P.E.  
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DEPARTMENT OF ENVIRONMENTAL PROTECTION

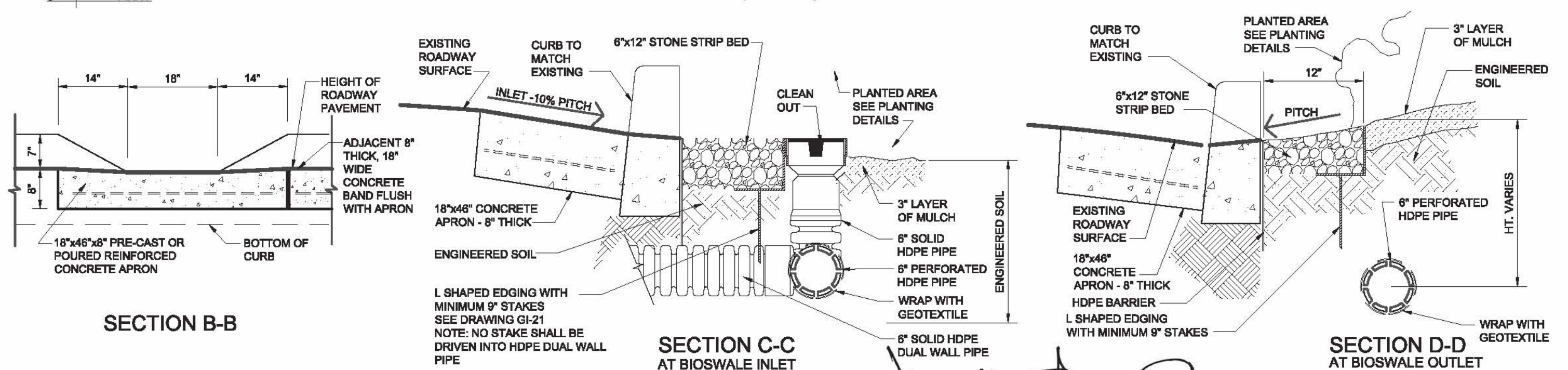
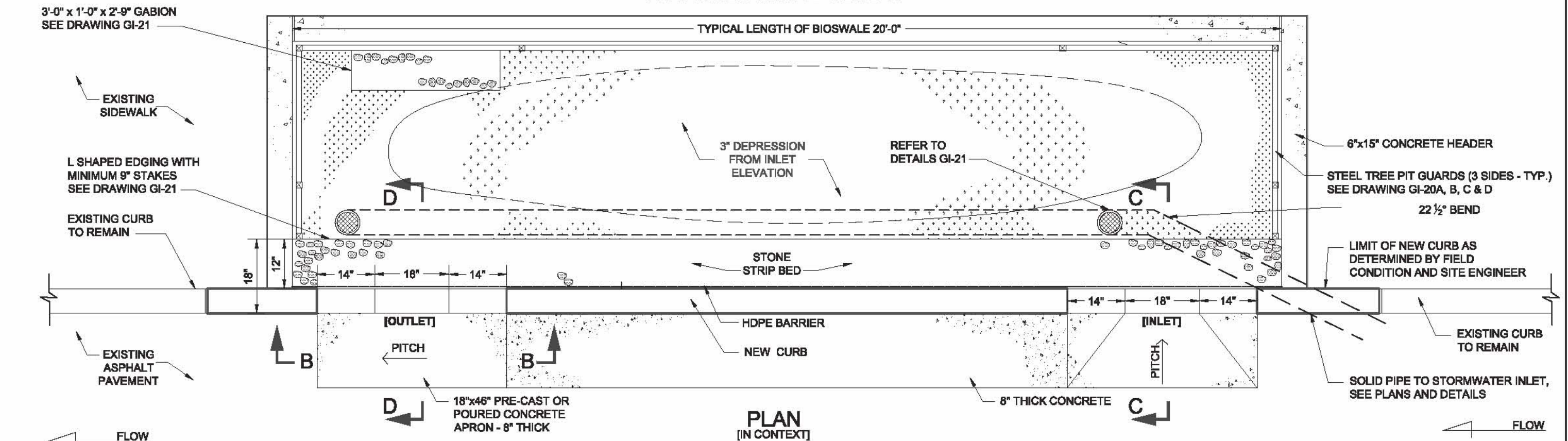
8/03/2012  
DATE



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# STANDARD FOR 20'X5' R.O.W. BIOSWALE TYPE 1B - WITH STORMWATER INLET

- NO CONNECTION TO SEWERS



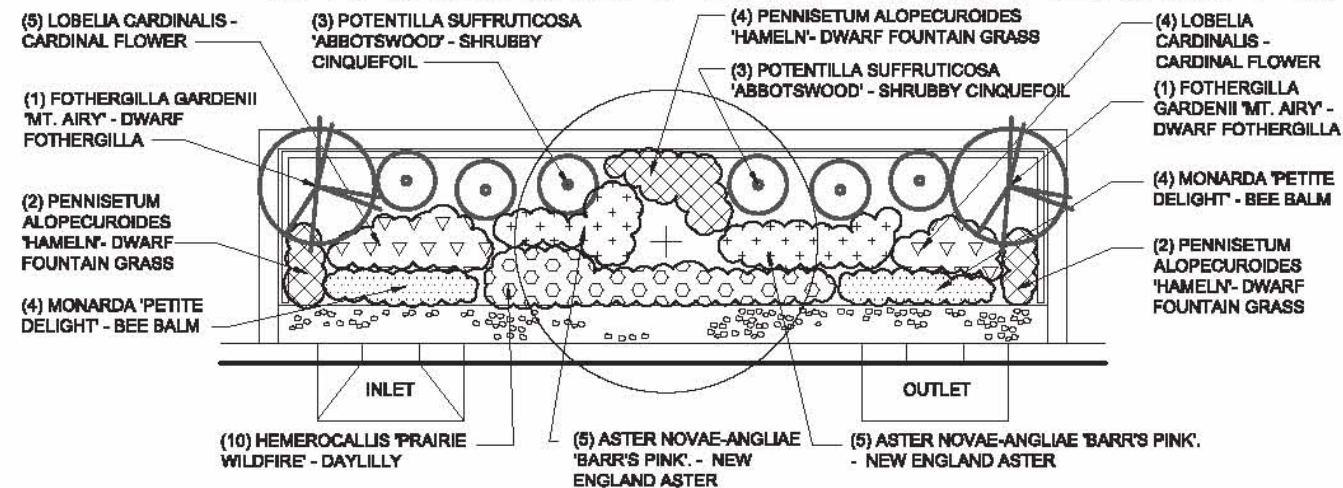
*Wendi Tareq* P.E.  
ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

7/25/2012  
DATE

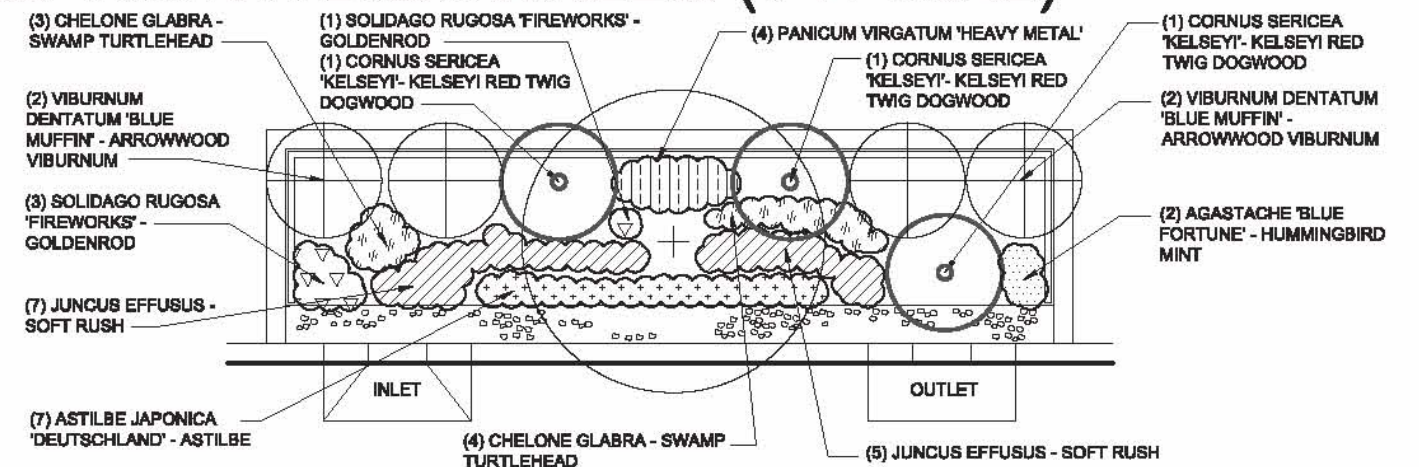


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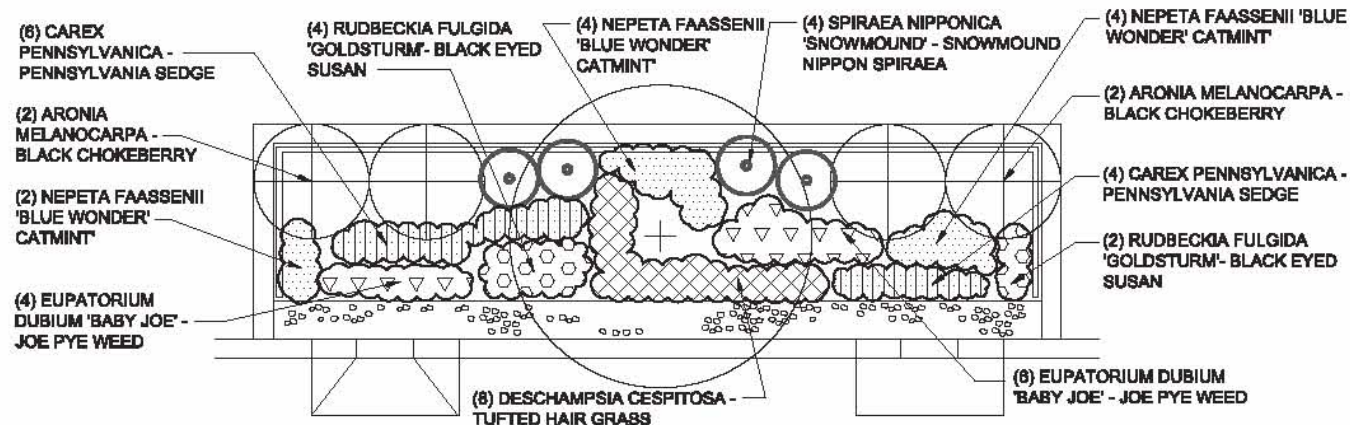
# STANDARD PLANTING PLANS FOR 20'x5' R.O.W. BIOSWALES (TYPICAL)



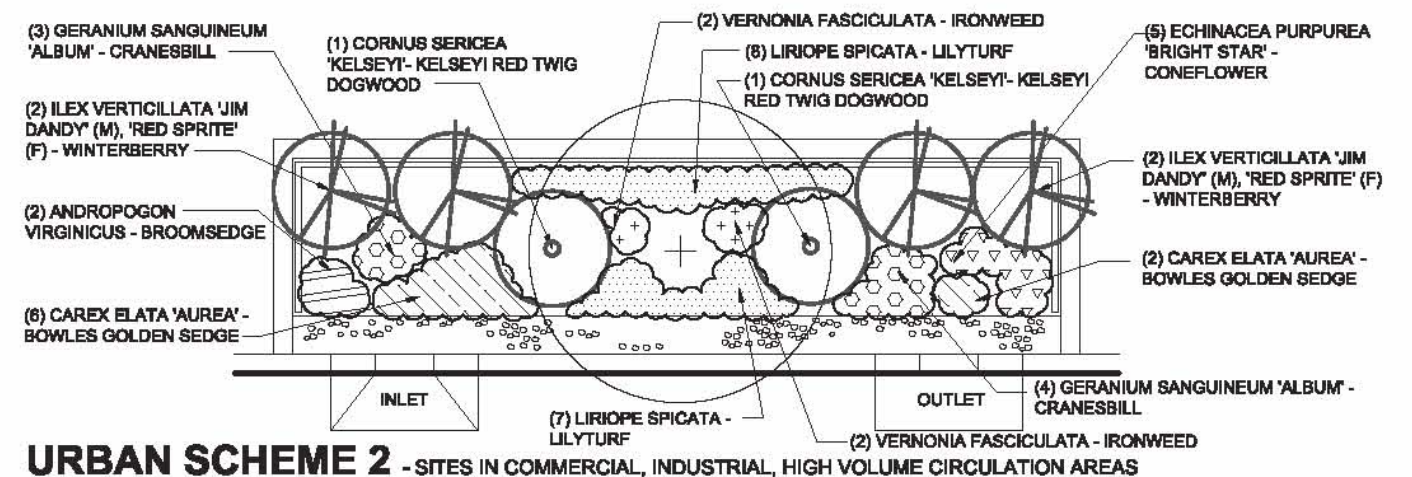
**RESIDENTIAL SCHEME 1** - SITES IN RESIDENTIAL NEIGHBORHOODS AND LOW VOLUME CIRCULATION AREAS



**RESIDENTIAL SCHEME 2** - SITES IN RESIDENTIAL NEIGHBORHOODS AND LOW VOLUME CIRCULATION AREAS



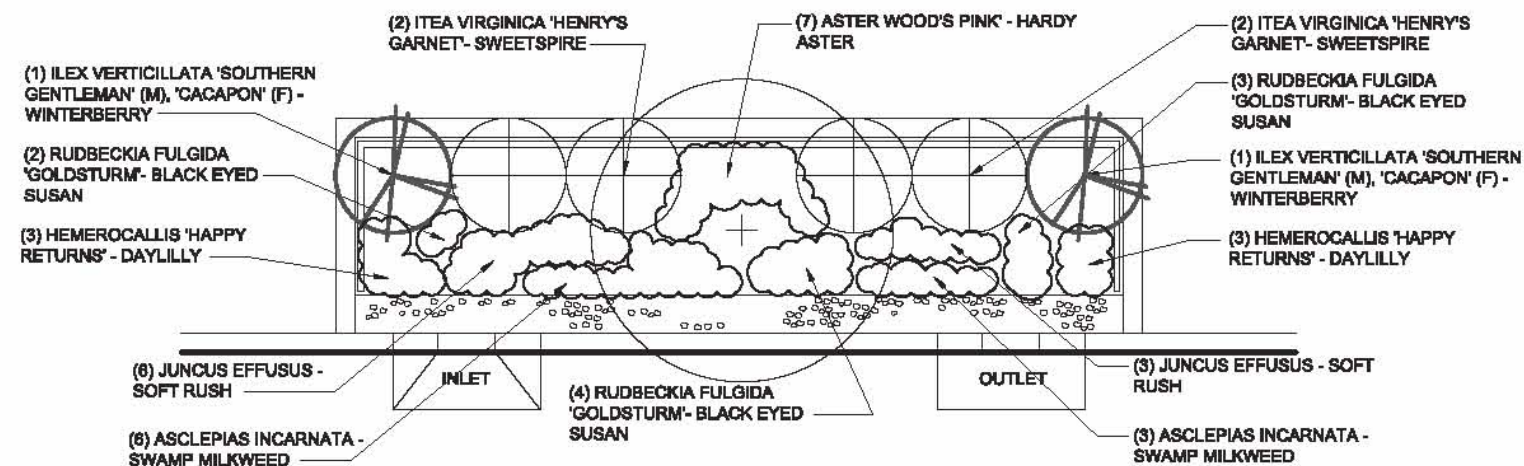
**URBAN SCHEME 1** - SITES IN COMMERCIAL, INDUSTRIAL, HIGH VOLUME CIRCULATION AREAS



**URBAN SCHEME 2** - SITES IN COMMERCIAL, INDUSTRIAL, HIGH VOLUME CIRCULATION AREAS

## NOTES:

1. EACH 20'x5' ROW BIOSWALE WILL INCLUDE THESE ADDITIONAL BULB PLANTINGS AND THEY SHALL BE LOCATED IN GROUPS OF 8-10, (SPACED 6" APART) AND THESE GROUPS SHALL BE RANDOMLY SPACED THROUGHOUT EACH BIOSWALE: (5) NARCISSUS, (5) CROCUS, (5) TULIPA SPP., AND (5) ALLIUM
2. TREE TO BE INCLUDED IN PLANTING PLANS UPON DIRECTION OF DPR



**URBAN SCHEME 3** - SITES IN COMMERCIAL, INDUSTRIAL, HIGH VOLUME CIRCULATION AREAS

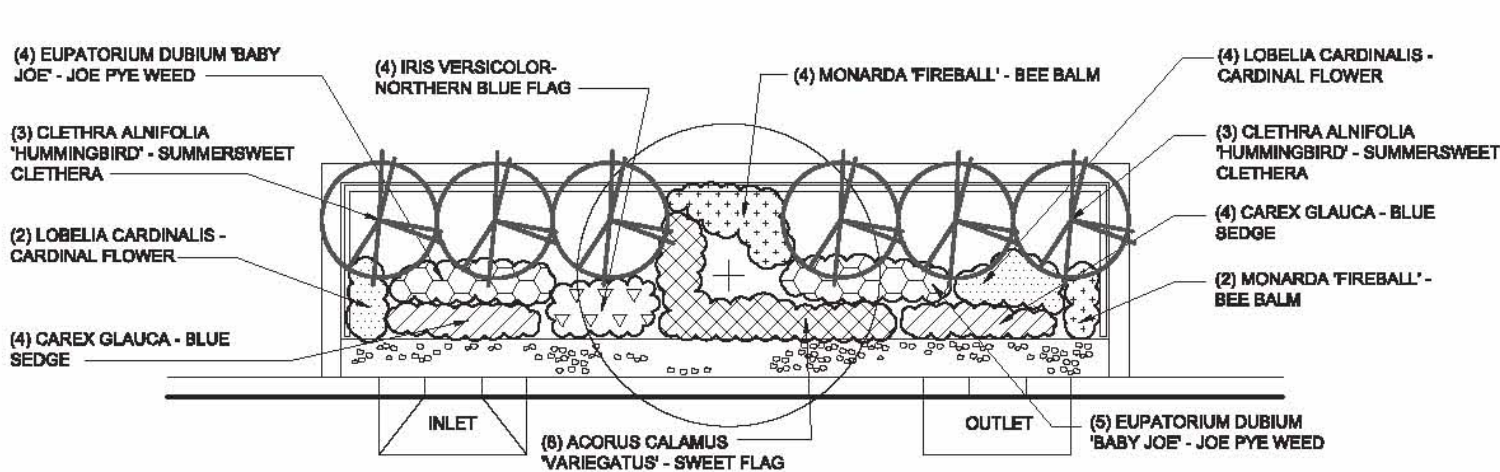
*Heidi Fara*  
P.E.  
ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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DATE

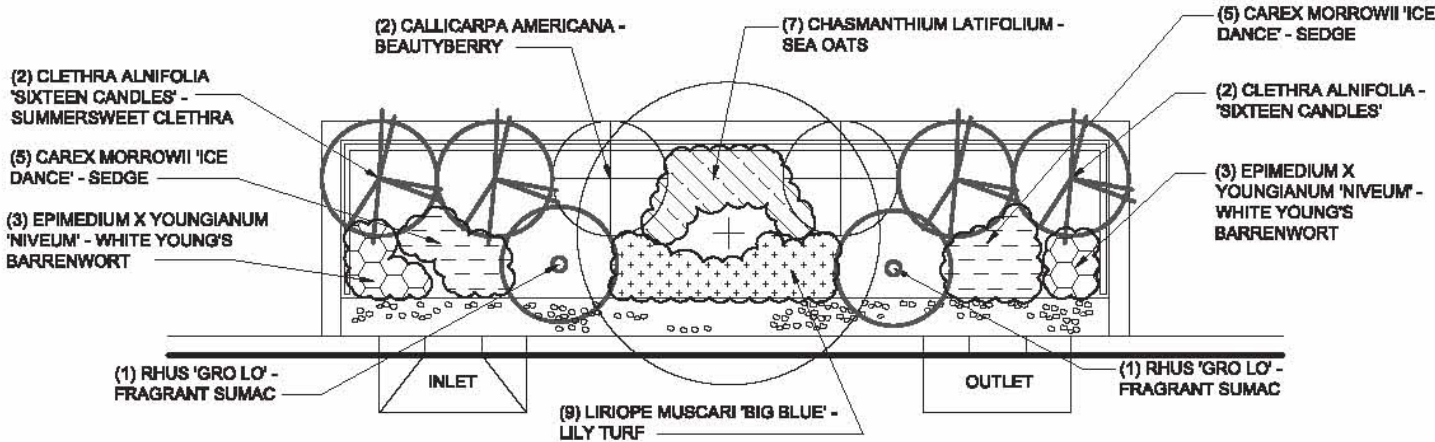


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STANDARD PLANTING PLANS FOR 20'x5' R.O.W. BIOSWALES (TYPICAL)

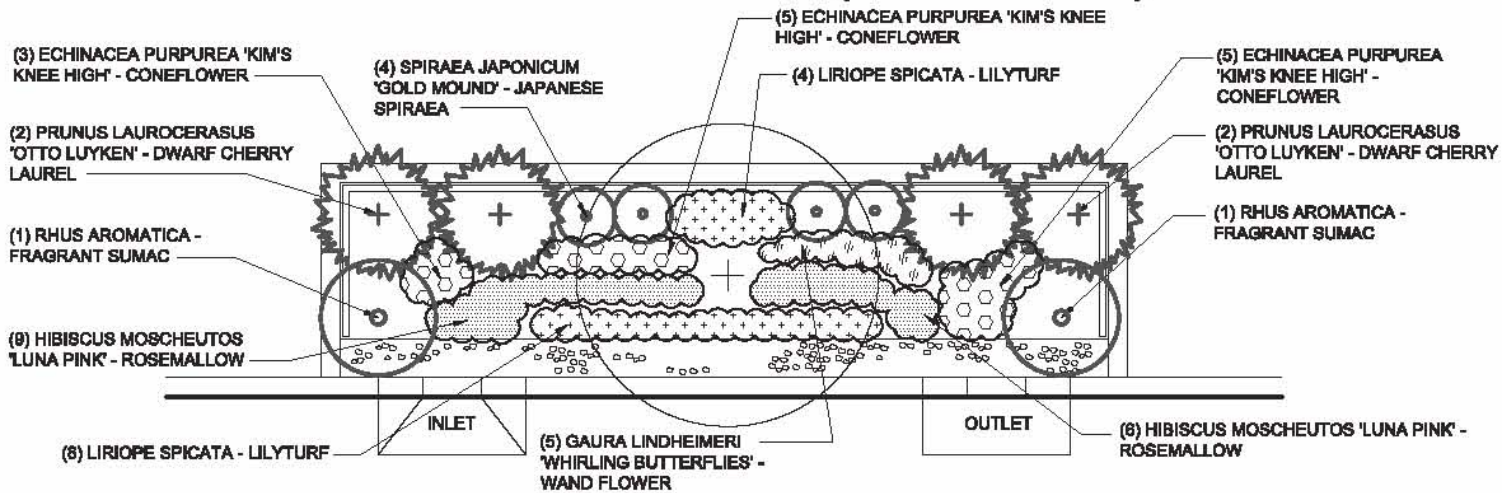


**ESPECIALLY WET** - SITES WITH GREATER THAN 20% IMPERVIOUS RUNOFF MANAGED

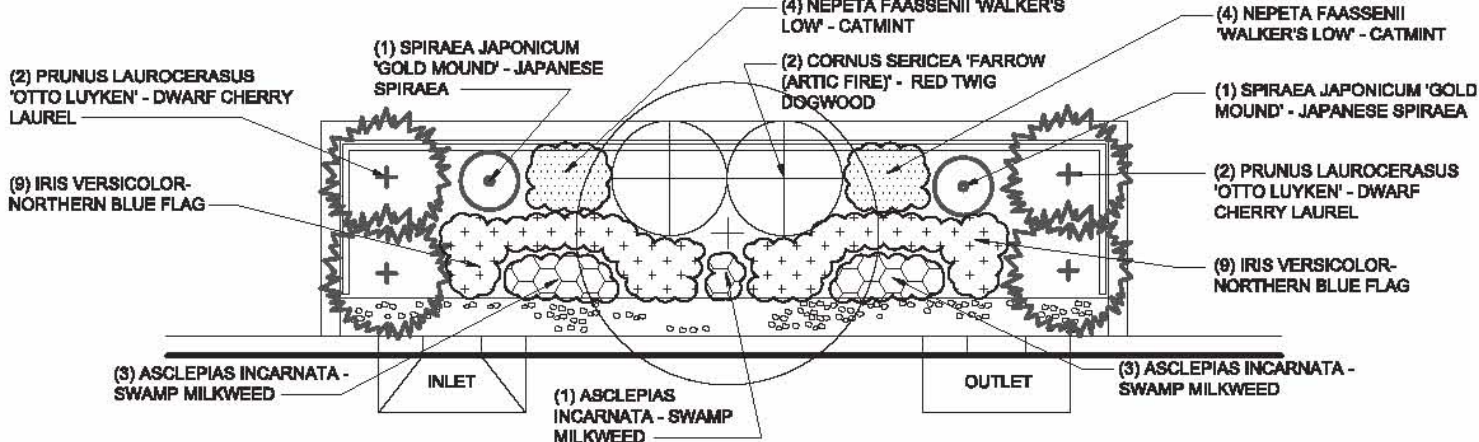


**ESPECIALLY SHADY** - SITES WITH LESS THAN 3 HOURS OF SUN PER DAY

- NOTES:**
1. EACH 20'x5' ROW BIOSWALE WILL INCLUDE THESE ADDITIONAL BULB PLANTINGS AND THEY SHALL BE LOCATED IN GROUPS OF 8-10, (SPACED 6" APART) AND THESE GROUPS SHALL BE RANDOMLY SPACED THROUGHOUT EACH BIOSWALE: (5) NARCISSUS, (5) CROCUS, (5) TULIPA SPP., AND (5) ALLIUM
  2. TREE TO BE INCLUDED IN PLANTING PLANS UPON DIRECTION OF DPR



**ESPECIALLY DRY** - SITES WITH LESS THAN 15% IMPERVIOUS RUNOFF MANAGED



**NO GRASS SCHEME** - SITES IN ANY BOROUGH

*Heidi Fara*  
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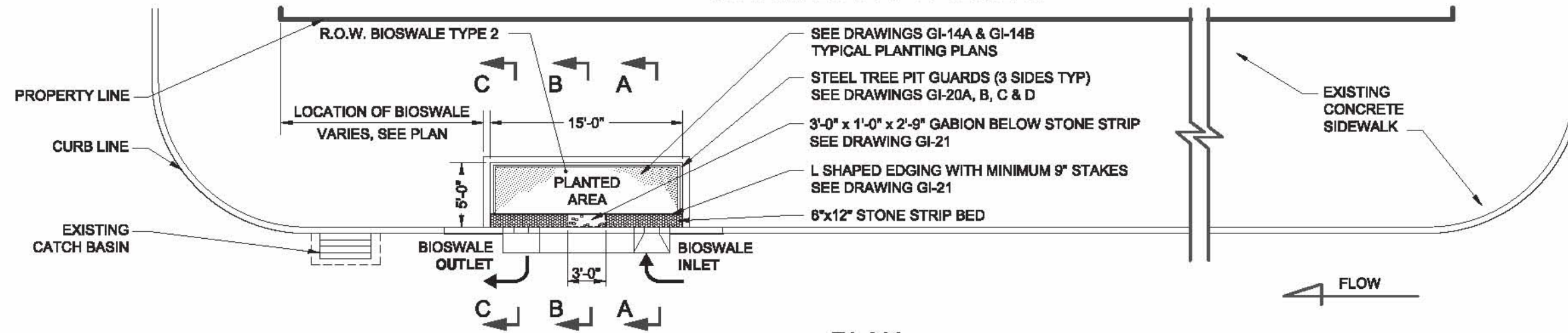
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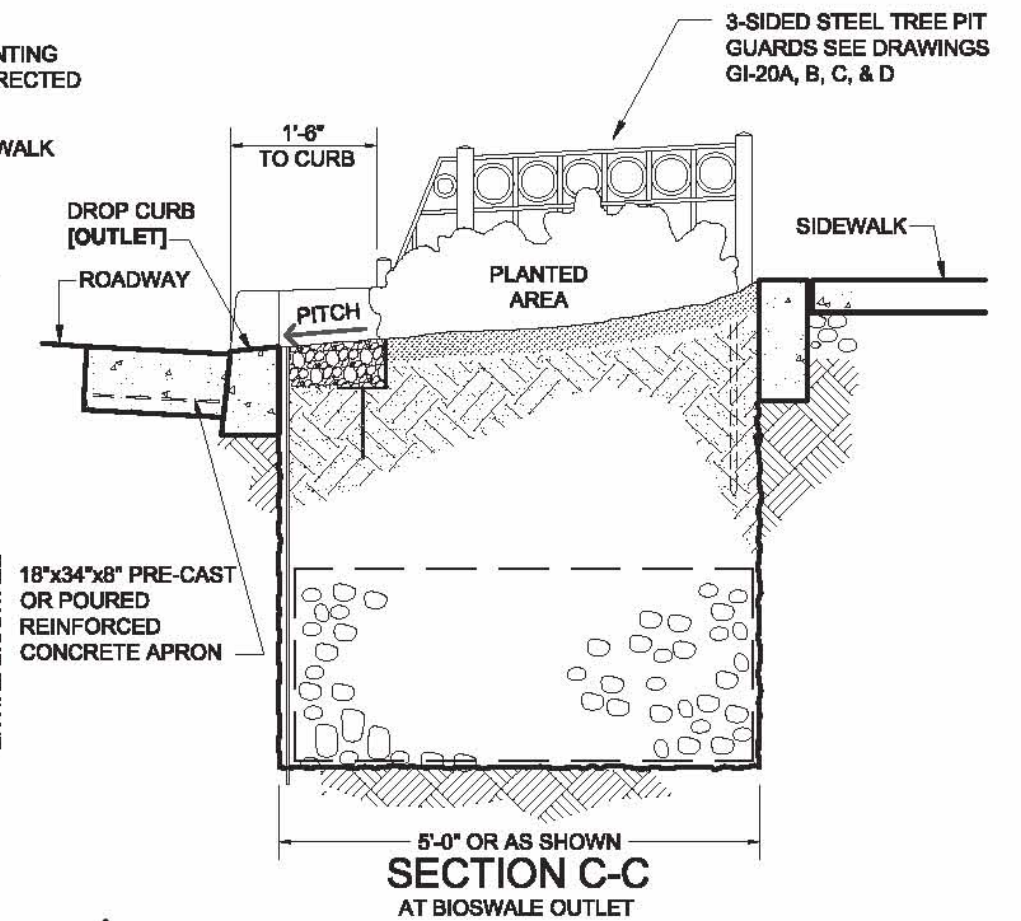
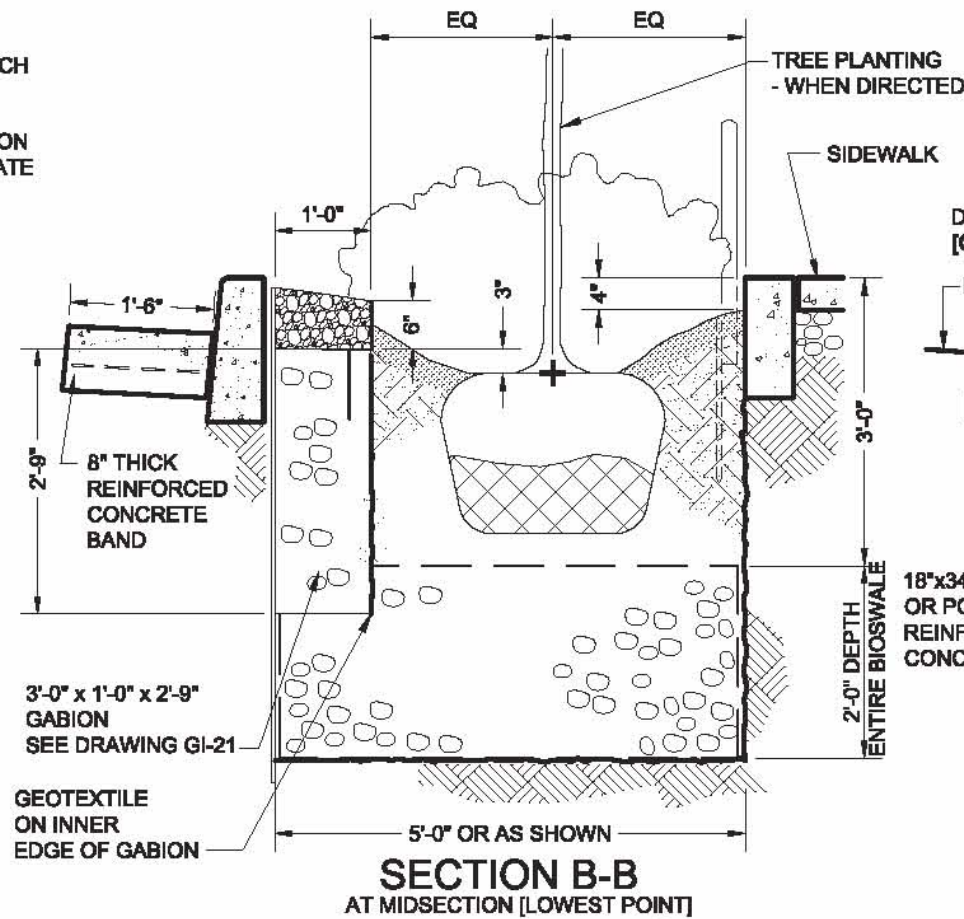
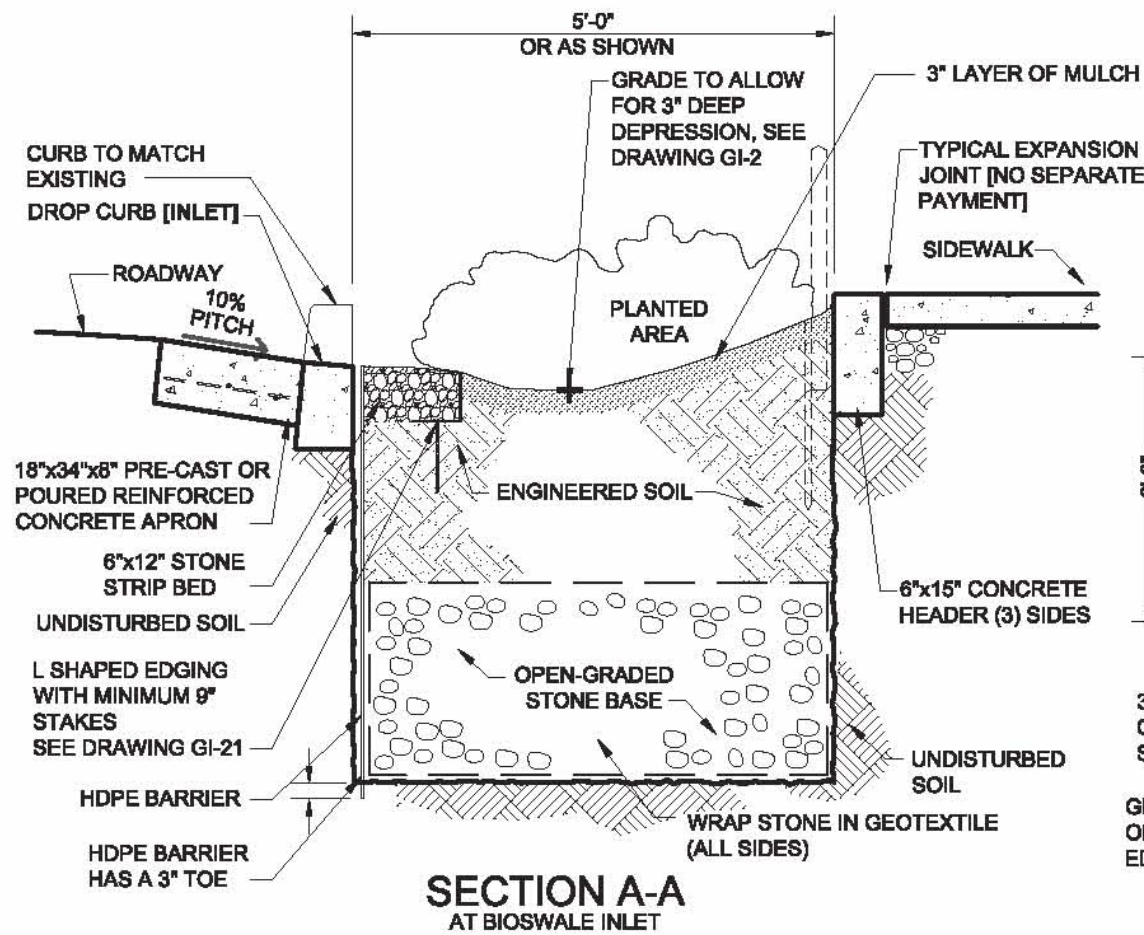


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OFFICE OF GREEN INFRASTRUCTURE

**STANDARD FOR 15'X5' R.O.W. BIOSWALE TYPE 2**  
- NO CONNECTION TO SEWERS



**PLAN**  
[IN CONTEXT]



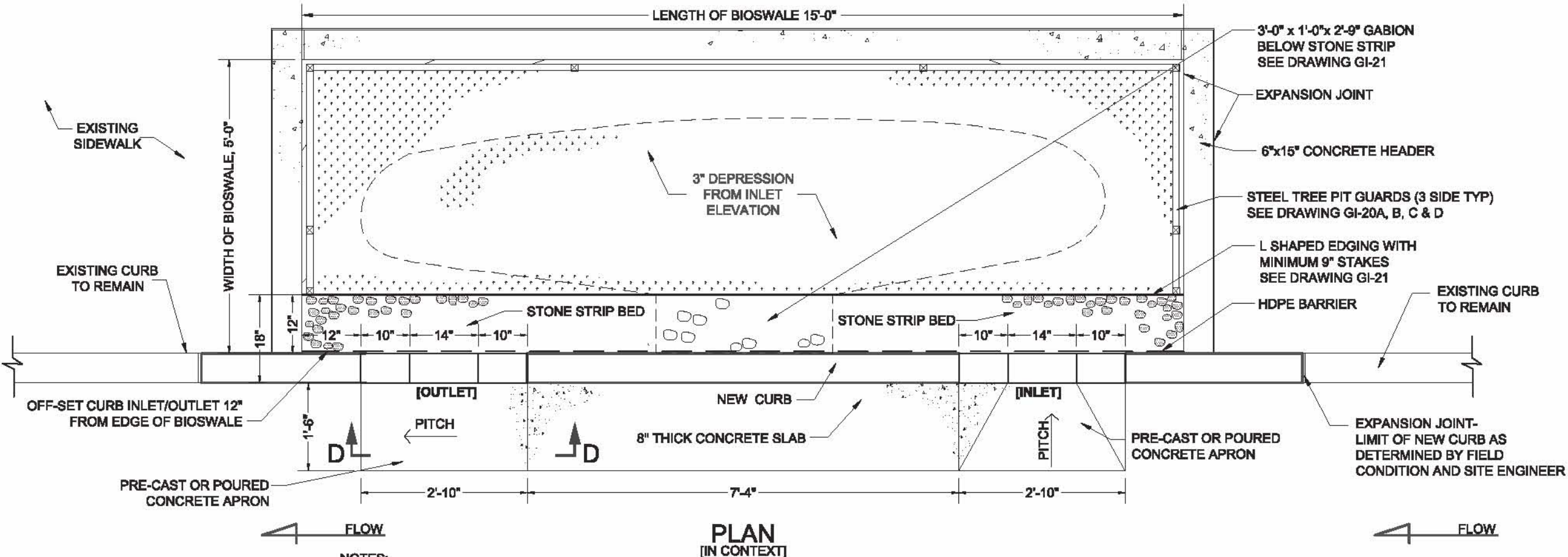
*Mehdi Farah*  
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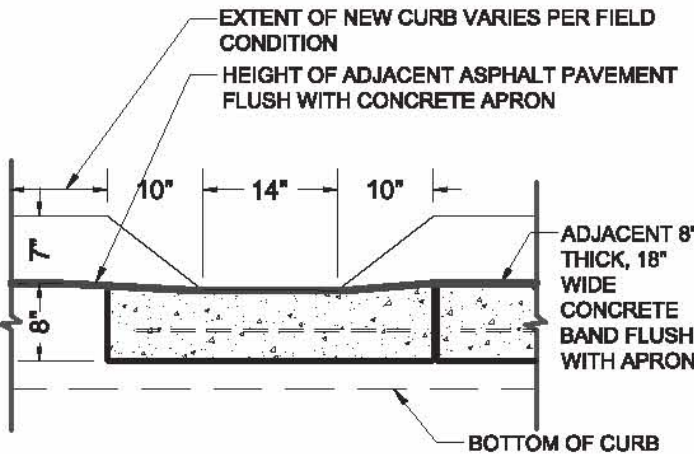
STANDARD FOR 15'X5' R.O.W. BIOSWALE TYPE 2  
- NO CONNECTION TO SEWERS



PLAN  
[IN CONTEXT]

NOTES:

1. INCLUDED IN THE COST OF THE BIOSWALE, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE THE ADJACENT EXISTING SIDEWALK FLAG TO NEAREST SIDEWALK JOINT BEYOND THE LIMITS OF THE BIOSWALE. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE COST OF SAWCUTTING THE EXISTING SIDEWALK AT THE JOINT. REPLACING THAT SIDEWALK IN KIND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF STANDARD HIGHWAY SPECIFICATION SHALL BE PAID SEPARATELY.
2. WHEN RESTORING A TYPICAL CURB, THE COST OF REMOVAL OF [2] FOOT WIDTH OF THE WEARING COURSE AND ONE (1') FOOT WIDTH OF ROADWAY CONCRETE PAVEMENT BASE ALONG THE CURB LINE AND ADJACENT TO THE CONCRETE APRONS, MAY BE REQUIRED. THE RESTORATION OF ALL REMOVED PAVEMENT IN KIND AND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF THE STANDARD HIGHWAY SPECIFICATIONS SHALL BE DEEMED TO BE INCLUDED IN THE UNIT PRICE OF THE BIOSWALE.
3. THE CONTRACTOR SHALL OBTAIN THE NECESSARY TREE PLANTING PERMIT FROM THE NYC DEPARTMENT OF PARKS AND RECREATION (DPR) PRIOR TO THE START OF WORK. ALL NECESSARY TREE PLANTING SHALL BE SUPERVISED BY CERTIFIED ARBORISTS.
4. NO TREE SHALL BE REMOVED BY THE CONTRACTOR UNTIL HE IS SPECIFICALLY ORDERED IN WRITING TO DO SO BY THE ENGINEER AND WITH APPROVED FROM DPR.
5. TREES SHALL BE STAKED AS PER STANDARD DETAIL H-1046. TREE STAKES ARE TO BE REMOVED BY THE CONTRACTOR NOT LESS THAN ONE YEAR AFTER PLANTING.
6. THE CONTRACTOR SHALL NOT BE PERMITTED TO OPERATE AUXILIARY EQUIPMENT WHICH GENERATES EXHAUST OR OTHER HEAT UPWARD (E.G., GENERATORS AND COMPRESSORS), UNDER THE BRANCHES OF TREES WHERE THE BRANCHES ARE LESS THAN 25' ABOVE THE GROUND, UNLESS APPROVED BY THE ENGINEER IN CONSULTATION WITH THE CERTIFIED ARBORIST.
7. THE CONTRACTOR SHALL NOT BE PERMITTED TO STORE, STOCKPILE, OR LAY DOWN, ANY CONSTRUCTION MATERIAL INCLUDING, BUT NOT LIMITED TO, LUMBER, FUEL, AND OIL CONTAINERS, PIPES, AND/OR PIPE FITTINGS, BARRICADES, HAND TOOLS, HOSES, RECEPTACLES, AND ASPHALT WITHIN ANY EXISTING TREE PIT OR R.O.W. BIOSWALE.
8. REPLACEMENT TREES SHALL BE PLANTED WITHIN THE PROJECT AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SECTION 4.16 OF STANDARD HIGHWAY SPECIFICATIONS.



SECTION D-D

*Wesley J. Jara*  
P.E.  
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DEPARTMENT OF ENVIRONMENTAL PROTECTION

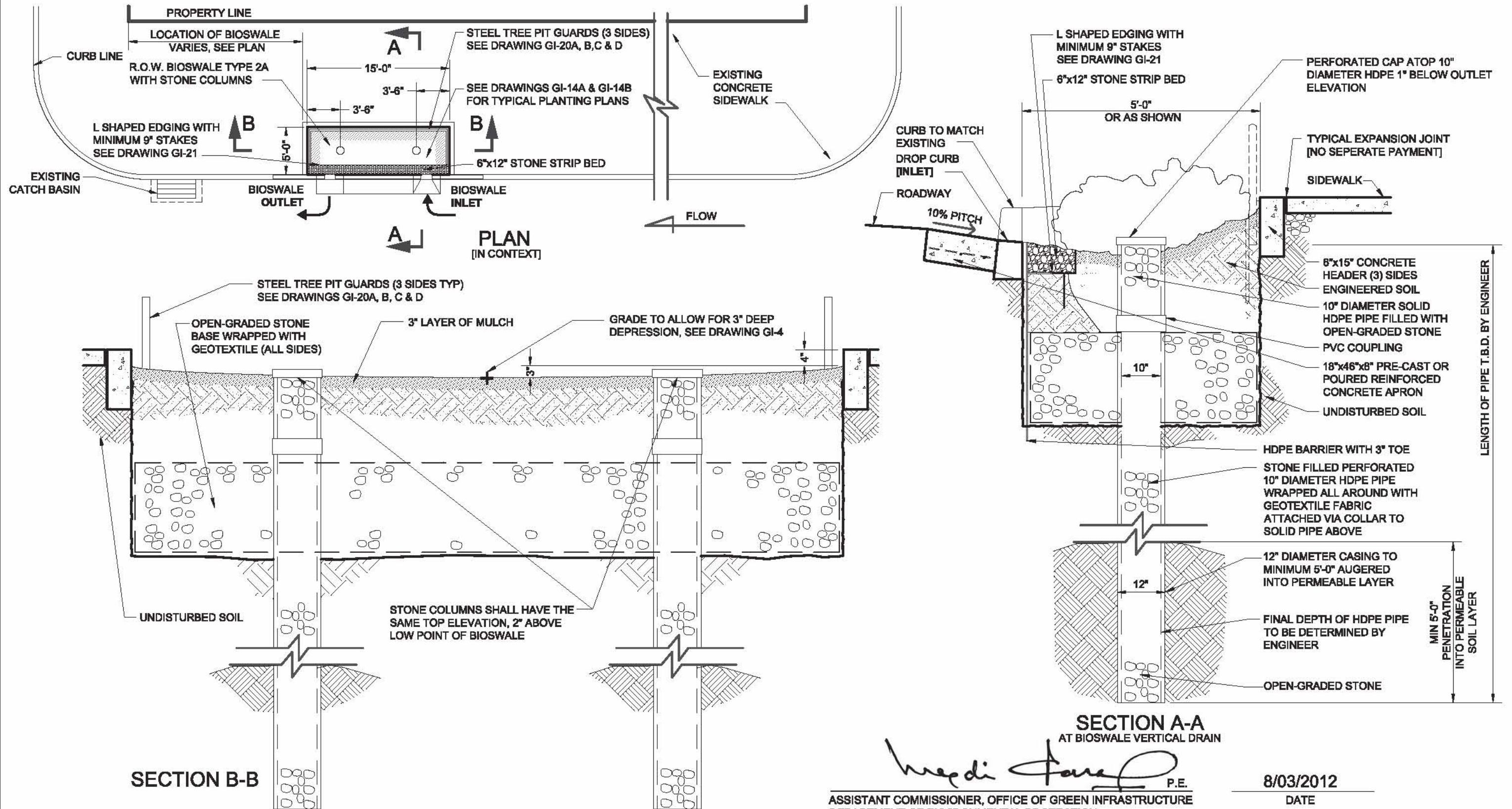
7/25/2012  
DATE



CITY OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF GREEN INFRASTRUCTURE

# STANDARD FOR 15'X5' R.O.W. BIOSWALE TYPE 2A - WITH STONE COLUMNS

- NO CONNECTION TO SEWERS



*Wendi Fara* P.E.  
ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

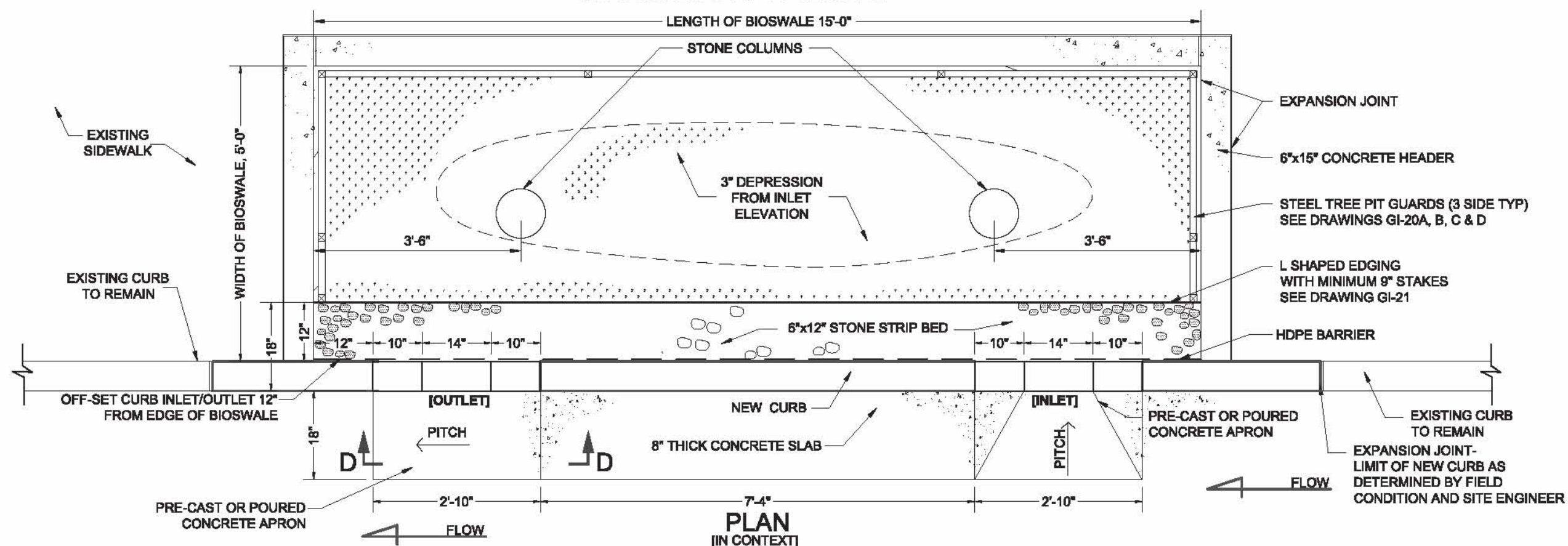
8/03/2012  
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DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF GREEN INFRASTRUCTURE

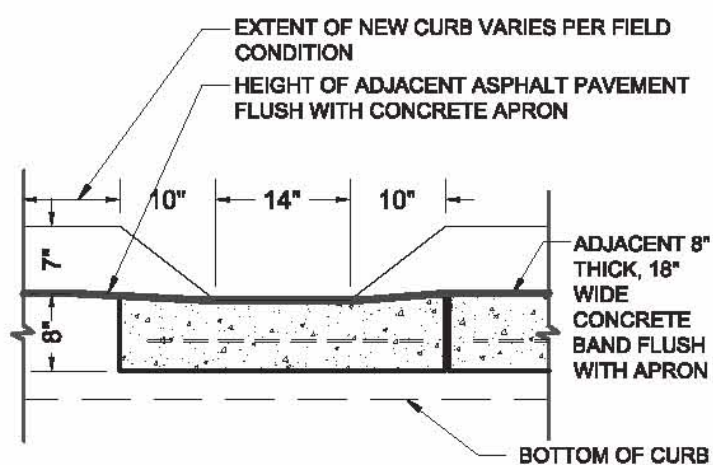
# STANDARD FOR 15'X5' R.O.W. BIOSWALE TYPE 2A - WITH STONE COLUMNS

- NO CONNECTION TO SEWERS



## NOTES:

1. INCLUDED IN THE COST OF THE BIOSWALE, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE THE ADJACENT EXISTING SIDEWALK FLAG TO NEAREST SIDEWALK JOINT BEYOND THE LIMITS OF THE BIOSWALE. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE COST OF SAWCUTTING THE EXISTING SIDEWALK AT THE JOINT. REPLACING THAT SIDEWALK IN KIND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF STANDARD HIGHWAY SPECIFICATION SHALL BE PAID SEPARATELY.
2. WHEN RESTORING A TYPICAL CURB, THE COST OF REMOVAL OF [2'] FOOT WIDTH OF THE WEARING COURSE AND ONE (1') FOOT WIDTH OF ROADWAY CONCRETE PAVEMENT BASE ALONG THE CURB LINE AND ADJACENT TO THE CONCRETE APRONS, MAY BE REQUIRED. THE RESTORATION OF ALL REMOVED PAVEMENT IN KIND AND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF THE STANDARD HIGHWAY SPECIFICATIONS SHALL BE DEEMED TO BE INCLUDED IN THE UNIT PRICE OF THE BIOSWALE.
3. THE CONTRACTOR SHALL OBTAIN THE NECESSARY TREE PLANTING PERMIT FROM THE NYC DEPARTMENT OF PARKS AND RECREATION (DPR) PRIOR TO THE START OF WORK. ALL NECESSARY TREE PLANTING SHALL BE SUPERVISED BY CERTIFIED ARBORISTS.
4. NO TREE SHALL BE REMOVED BY THE CONTRACTOR UNTIL HE IS SPECIFICALLY ORDERED IN WRITING TO DO SO BY THE ENGINEER AND WITH APPROVAL FROM DPR.
5. TREES SHALL BE STAKED AS PER STANDARD DETAIL H-1046. TREE STAKES ARE TO BE REMOVED BY THE CONTRACTOR NOT LESS THAN ONE YEAR AFTER PLANTING.
6. THE CONTRACTOR SHALL NOT BE PERMITTED TO OPERATE AUXILIARY EQUIPMENT WHICH GENERATES EXHAUST OR OTHER HEAT UPWARD (E.G., GENERATORS AND COMPRESSORS), UNDER THE BRANCHES OF TREES WHERE THE BRANCHES ARE LESS THAN 25' ABOVE THE GROUND, UNLESS APPROVED BY THE ENGINEER IN CONSULTATION WITH THE CERTIFIED ARBORIST.
7. THE CONTRACTOR SHALL NOT BE PERMITTED TO STORE, STOCKPILE, OR LAY DOWN, ANY CONSTRUCTION MATERIAL INCLUDING, BUT NOT LIMITED TO, LUMBER, FUEL, AND OIL CONTAINERS, PIPES, AND/OR PIPE FITTINGS, BARRICADES, HAND TOOLS, HOSES, RECEPTACLES, AND ASPHALT WITHIN ANY EXISTING TREE PIT.
8. REPLACEMENT TREES SHALL BE PLANTED WITHIN THE PROJECT AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SECTION 4.16 OF STANDARD HIGHWAY SPECIFICATIONS.
9. 12" DIAMETER CASING TO BE AUGERED TO DEPTH AS PER ENGINEER. 10" DIAMETER HDPE PIPE WRAPPED ALL AROUND WITH GEOTEXTILE FABRIC INSERTED IN THE 12" CASING.



*Wendi Tana*  
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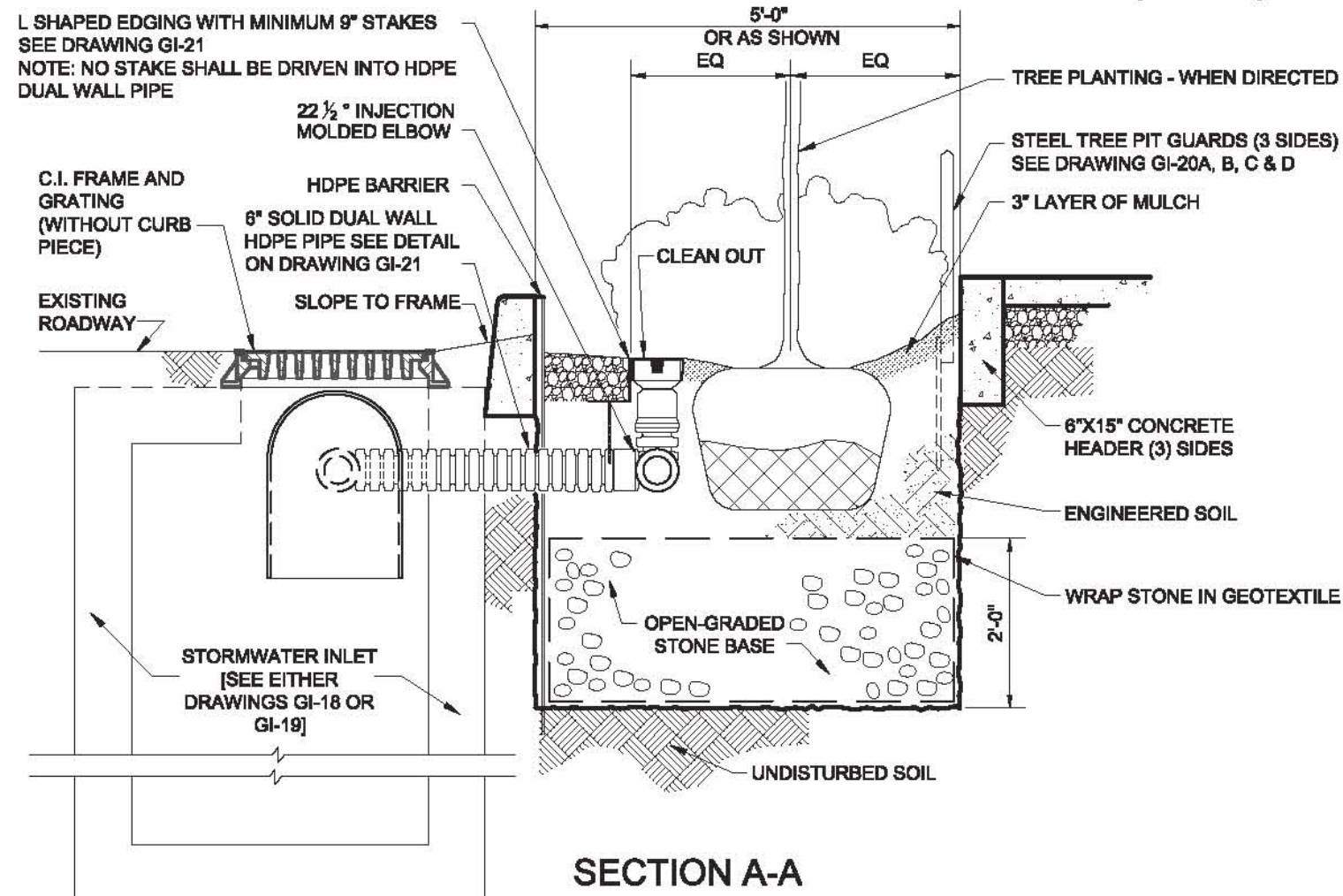
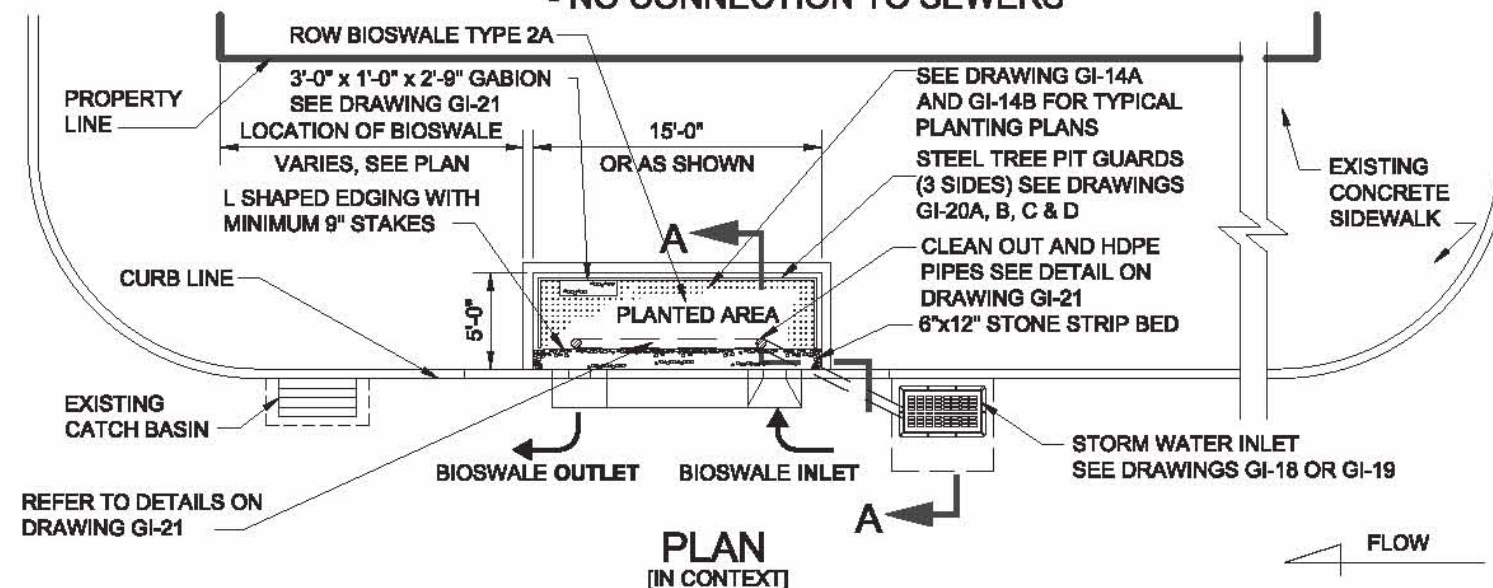
8/03/2012  
DATE



CITY OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF GREEN INFRASTRUCTURE

# STANDARD FOR 15'X5' R.O.W. BIOSWALE TYPE 2B - WITH STORMWATER INLET

- NO CONNECTION TO SEWERS



1. INCLUDED IN THE COST OF THE FURNISHING AND INSTALLING THE CONCRETE HEADER ADJACENT TO THE BIOSWALE, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE THE ADJACENT EXISTING SIDEWALK FLAG TO NEAREST SIDEWALK JOINT BEYOND THE LIMITS OF THE BIOSWALE. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE COST OF SAWCUTTING THE EXISTING SIDEWALK AT THE JOINT. REPLACING THAT SIDEWALK IN KIND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF STANDARD HIGHWAY SPECIFICATION SHALL BE PAID SEPARATELY.
2. WHEN RESTORING A TYPICAL CURB, THE COST OF REMOVAL OF [2] FOOT WIDTH OF THE WEARING COURSE AND ONE (1) FOOT WIDTH OF ROADWAY CONCRETE PAVEMENT BASE ALONG THE CURB LINE AND ADJACENT TO THE CONCRETE APRONS, MAY BE REQUIRED. THE RESTORATION OF ALL REMOVED PAVEMENT IN KIND AND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF THE STANDARD HIGHWAY SPECIFICATIONS SHALL BE DEEMED TO BE INCLUDED IN THE UNIT PRICES BID FOR THE CURB AND CONCRETE APRONS.
3. THE CONTRACTOR SHALL OBTAIN THE NECESSARY TREE PLANTING PERMIT FROM THE NYC DEPARTMENT OF PARKS AND RECREATION (DPR) PRIOR TO THE START OF WORK. ALL NECESSARY TREE PLANTING SHALL BE SUPERVISED BY CERTIFIED ARBORISTS.
4. NO EXISTING TREE SHALL BE REMOVED BY THE CONTRACTOR UNTIL HE IS SPECIFICALLY ORDERED IN WRITING TO DO SO BY THE ENGINEER AND WITH APPROVAL FROM DPR.
5. TREES SHALL BE STAKED AS PER STANDARD DETAIL H-1046. TREE STAKES ARE TO BE REMOVED BY THE CONTRACTOR NOT LESS THAN ONE YEAR AFTER PLANTING.
6. THE CONTRACTOR SHALL NOT BE PERMITTED TO OPERATE AUXILIARY EQUIPMENT WHICH GENERATES EXHAUST OR OTHER HEAT UPWARD (E.G., GENERATORS AND COMPRESSORS), UNDER THE BRANCHES OF TREES WHERE THE BRANCHES ARE LESS THAN 25' ABOVE THE GROUND, UNLESS APPROVED BY THE ENGINEER IN CONSULTATION WITH THE CERTIFIED ARBORIST.
7. THE CONTRACTOR SHALL NOT BE PERMITTED TO STORE, STOCKPILE, OR LAY DOWN, ANY CONSTRUCTION MATERIAL INCLUDING, BUT NOT LIMITED TO, LUMBER, FUEL, AND OIL CONTAINERS, PIPES, AND/OR PIPE FITTINGS, BARRICADES, HAND TOOLS, HOSES, RECEPTACLES, AND ASPHALT WITHIN ANY EXISTING TREE PIT.
8. REPLACEMENT TREES SHALL BE PLANTED WITHIN THE PROJECT AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SECTION 4.16 OF STANDARD HIGHWAY SPECIFICATIONS.

*Mehdi Farah* P.E.  
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DEPARTMENT OF ENVIRONMENTAL PROTECTION

8/03/2012  
DATE



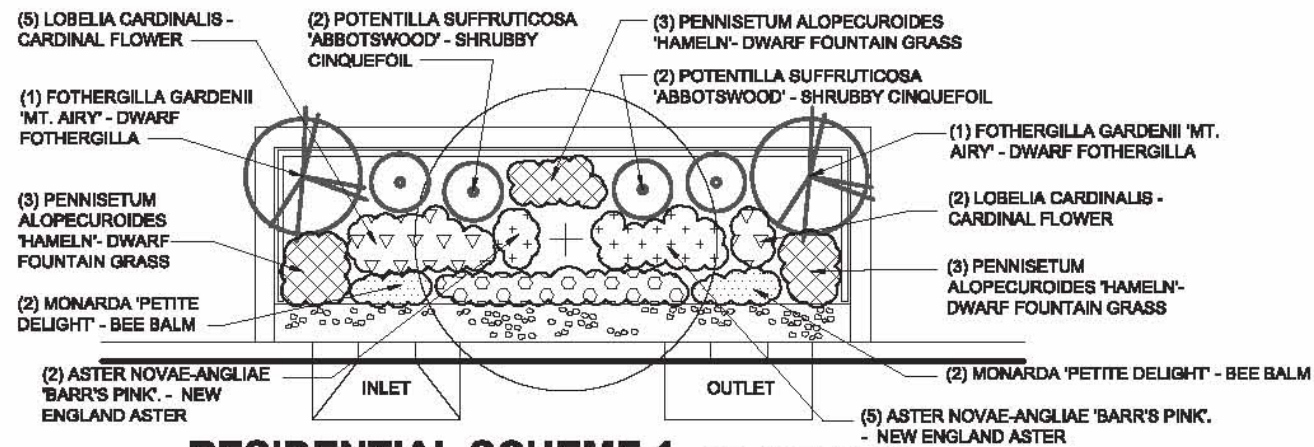
**- NO CONNECTION TO SEWERS**



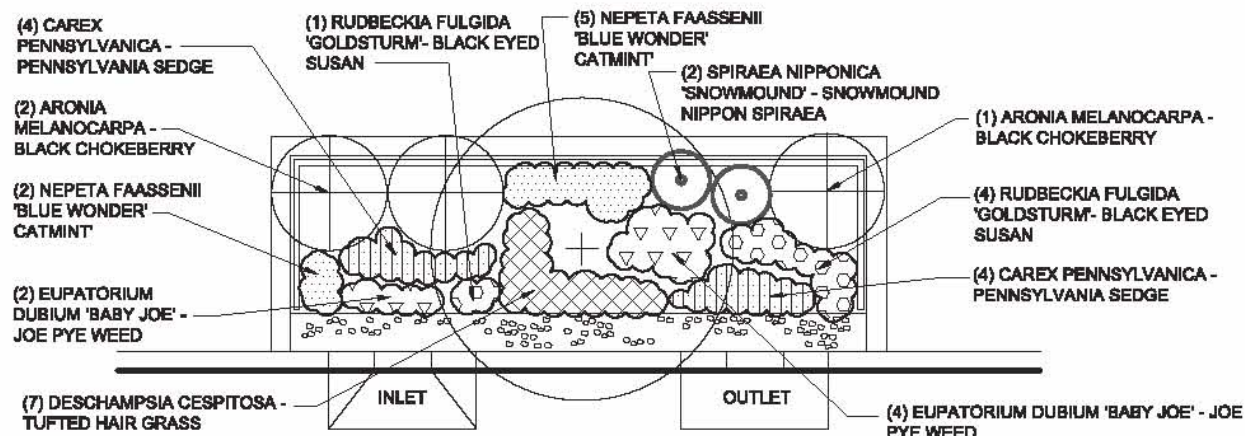


CITY OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF GREEN INFRASTRUCTURE

# STANDARD PLANTING PLANS FOR 15'x5' R.O.W. BIOSWALES (TYPICAL)

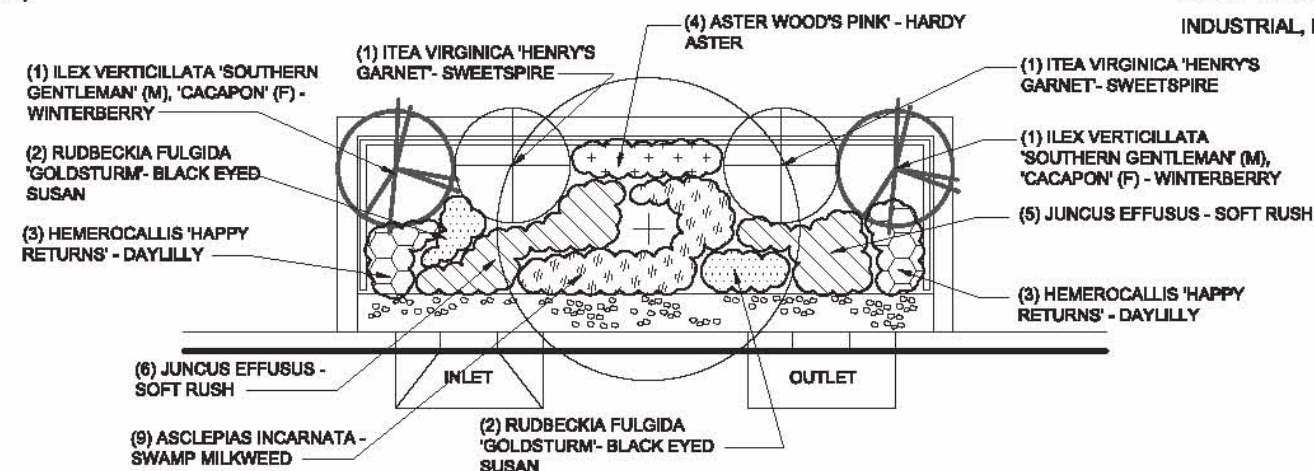


**RESIDENTIAL SCHEME 1** - SITES IN RESIDENTIAL NEIGHBORHOODS AND LOW VOLUME CIRCULATION AREAS

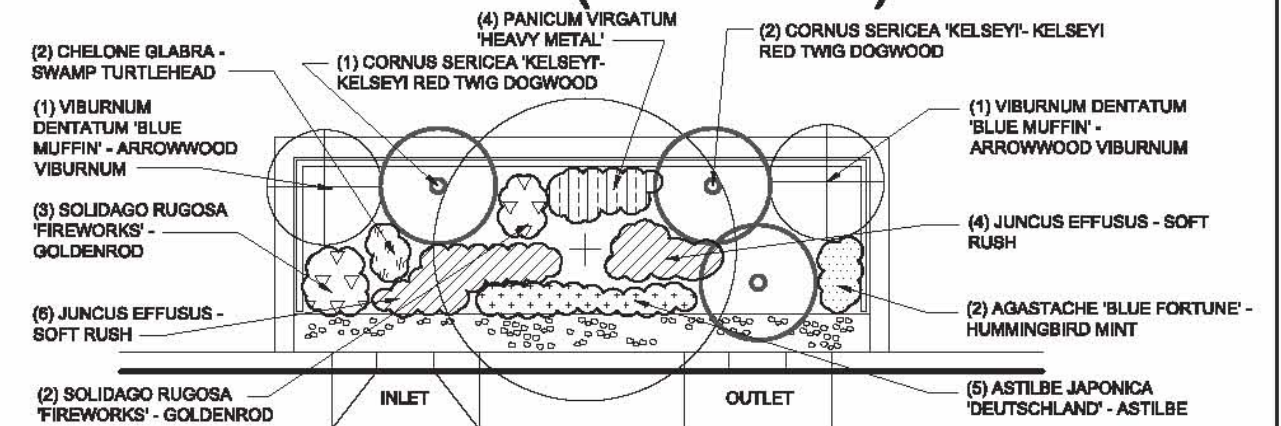


**URBAN SCHEME 1** - SITES IN COMMERCIAL, INDUSTRIAL, HIGH VOLUME CIRCULATION AREAS

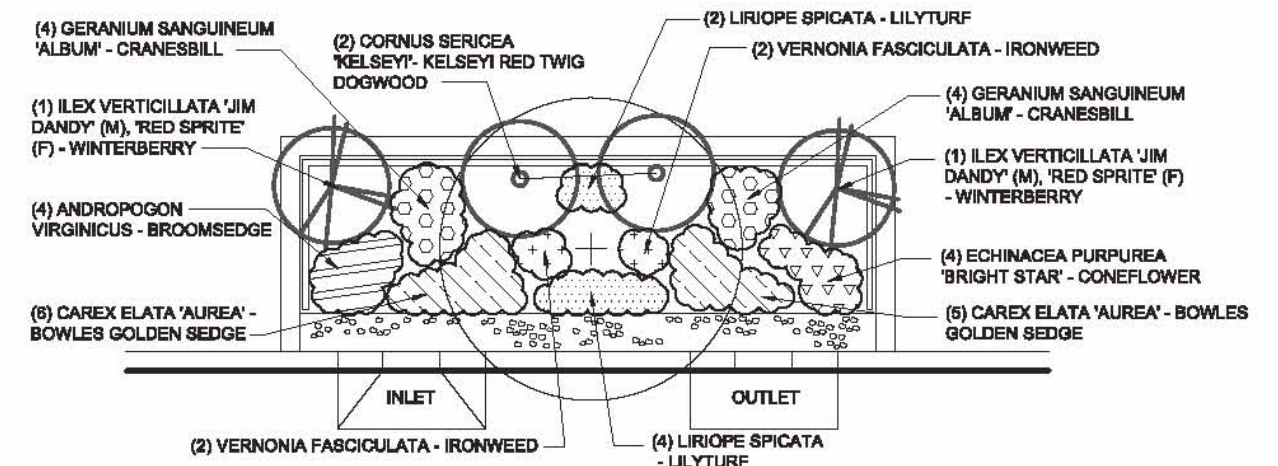
- NOTES:**
1. EACH 15'x5' ROW BIOSWALE WILL INCLUDE THESE ADDITIONAL BULB PLANTINGS AND THEY SHALL BE LOCATED IN GROUPS OF 8-10, (SPACED 6" APART) AND THESE GROUPS SHALL BE RANDOMLY SPACED THROUGHOUT EACH BIOSWALE: (4) NARCISSUS, (4) CROCUS, (4) TULIPA SPP., AND (4) ALLIUM
  2. TREE TO BE INCLUDED IN PLANTING PLANS UPON DIRECTION OF DPR



**URBAN SCHEME 3** - SITES IN COMMERCIAL, INDUSTRIAL, HIGH VOLUME CIRCULATION AREAS



**RESIDENTIAL SCHEME 2** - SITES IN RESIDENTIAL NEIGHBORHOODS AND LOW VOLUME CIRCULATION AREAS



**URBAN SCHEME 2** - SITES IN COMMERCIAL, INDUSTRIAL, HIGH VOLUME CIRCULATION AREAS

*Wendi Tarsa*  
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DEPARTMENT OF ENVIRONMENTAL PROTECTION

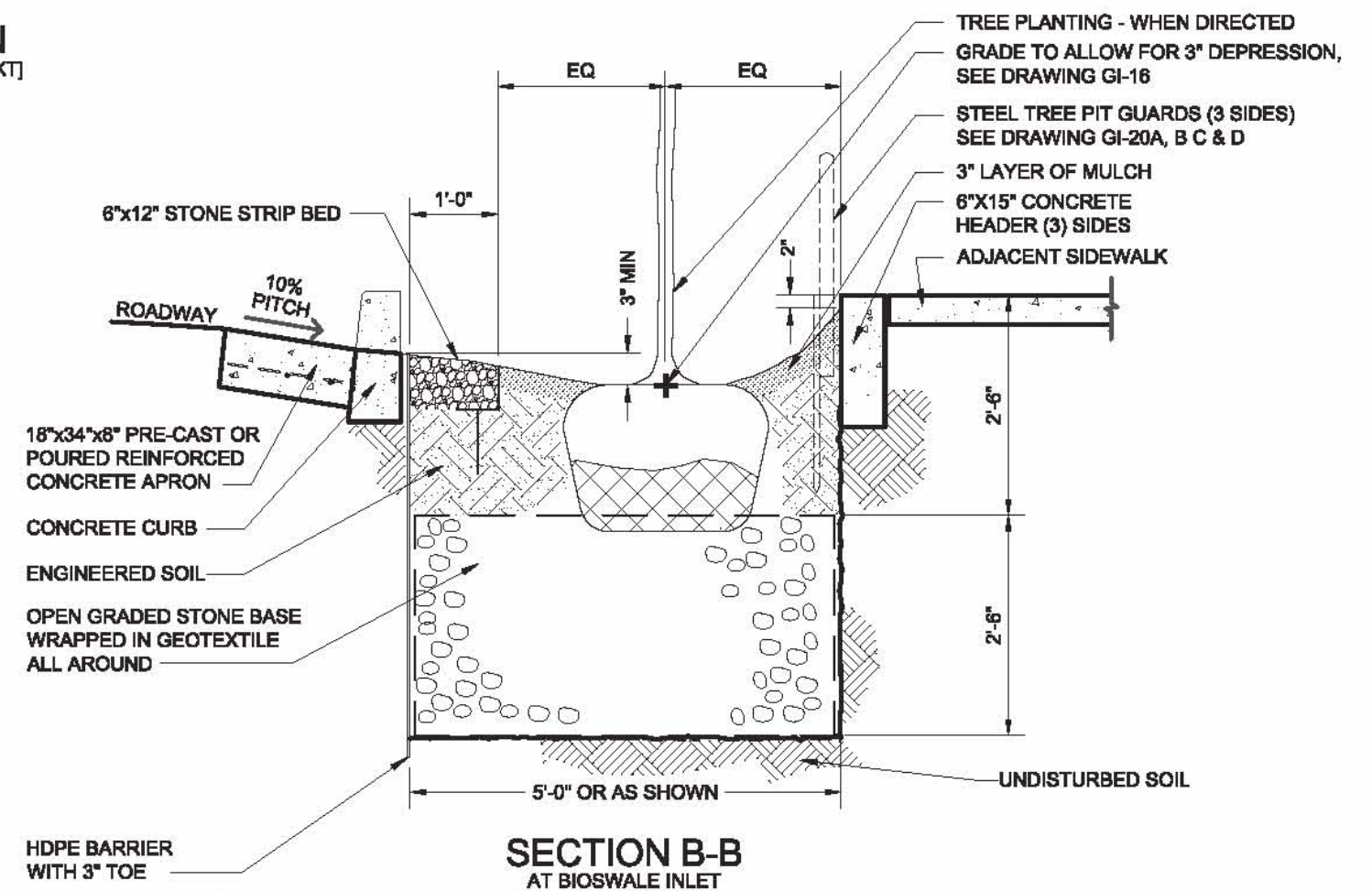
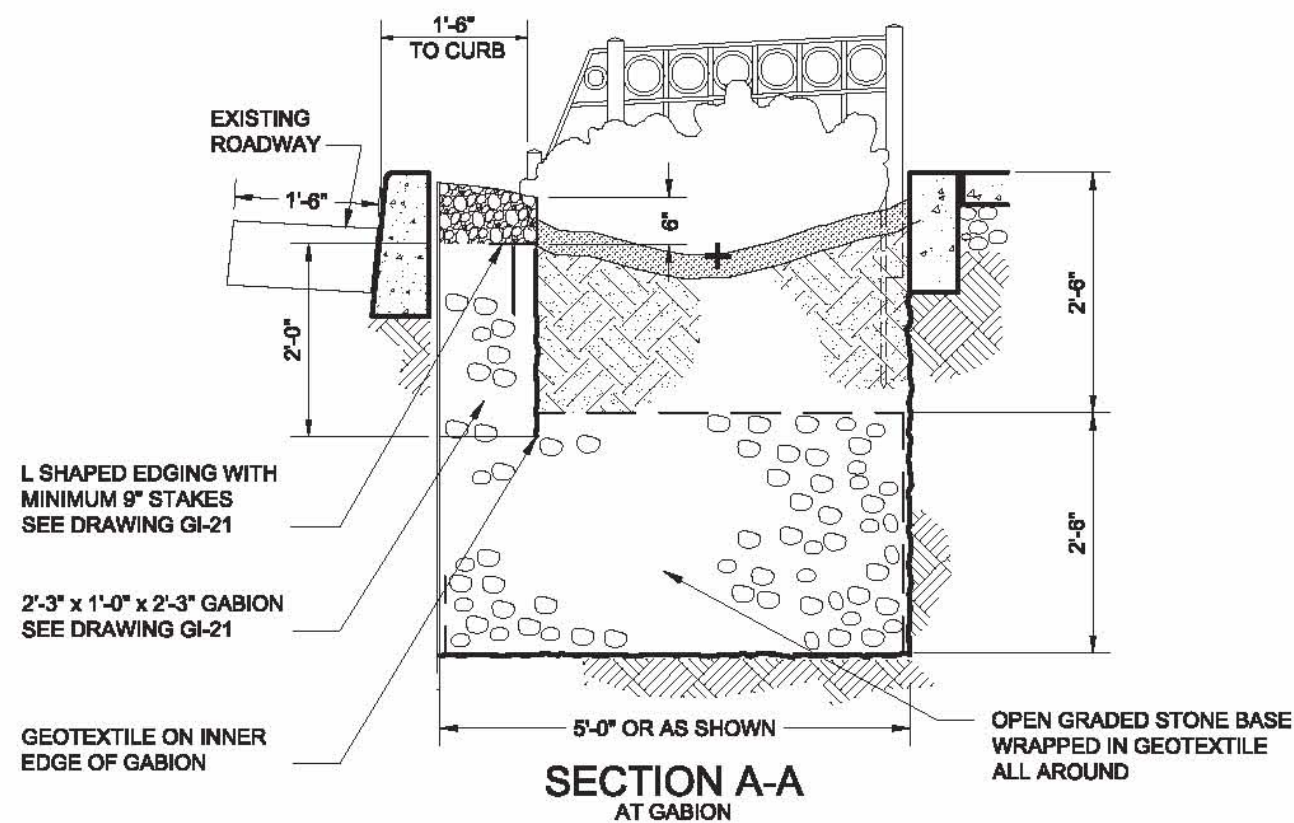
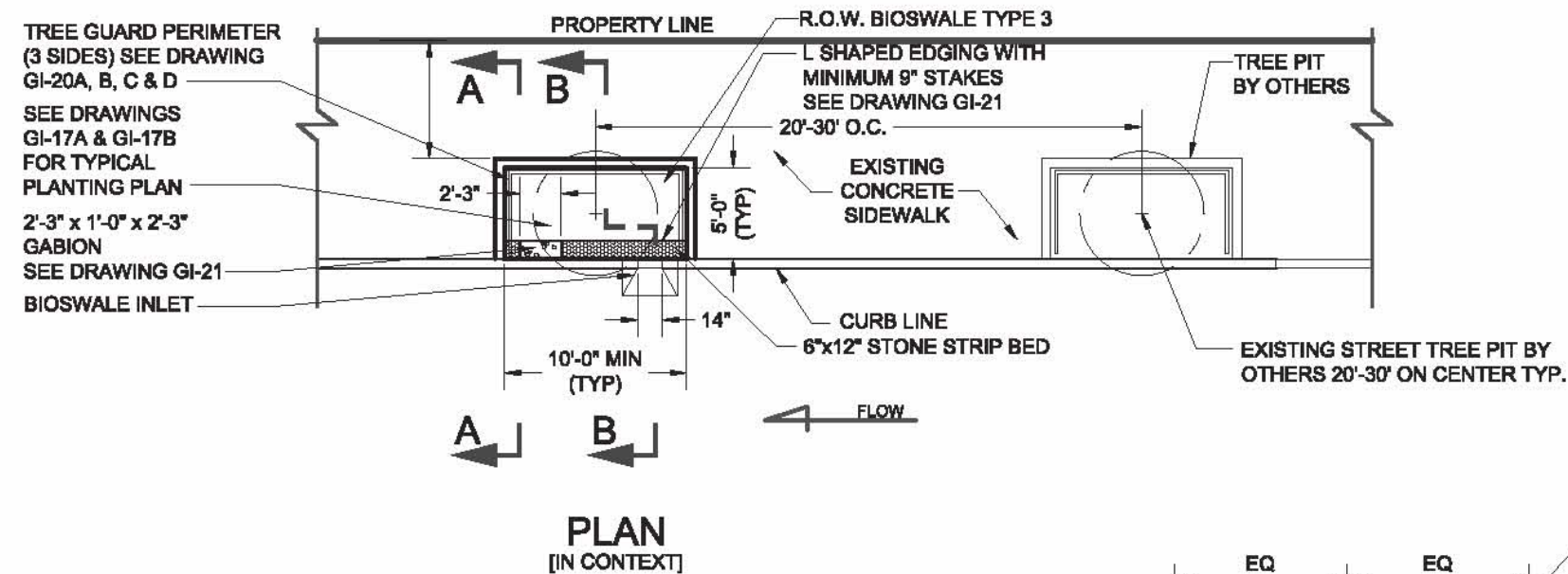
7/25/2012  
DATE



8/03/2012  
DATE



CITY OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF GREEN INFRASTRUCTURE  
**STANDARD FOR 10'x5' R.O.W. BIOSWALE TYPE 3**  
- NO CONNECTION TO SEWERS

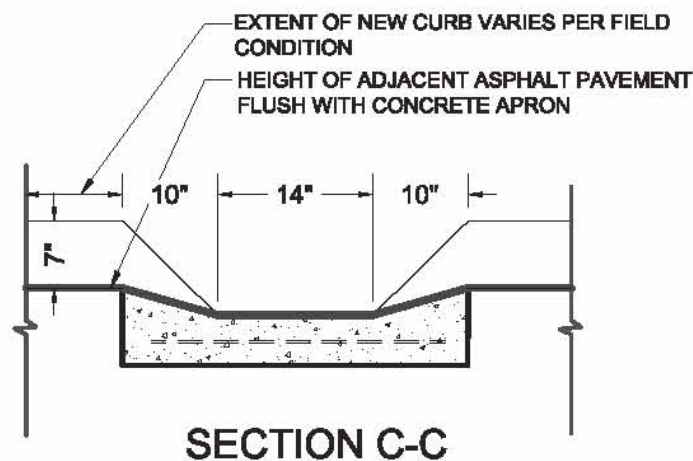
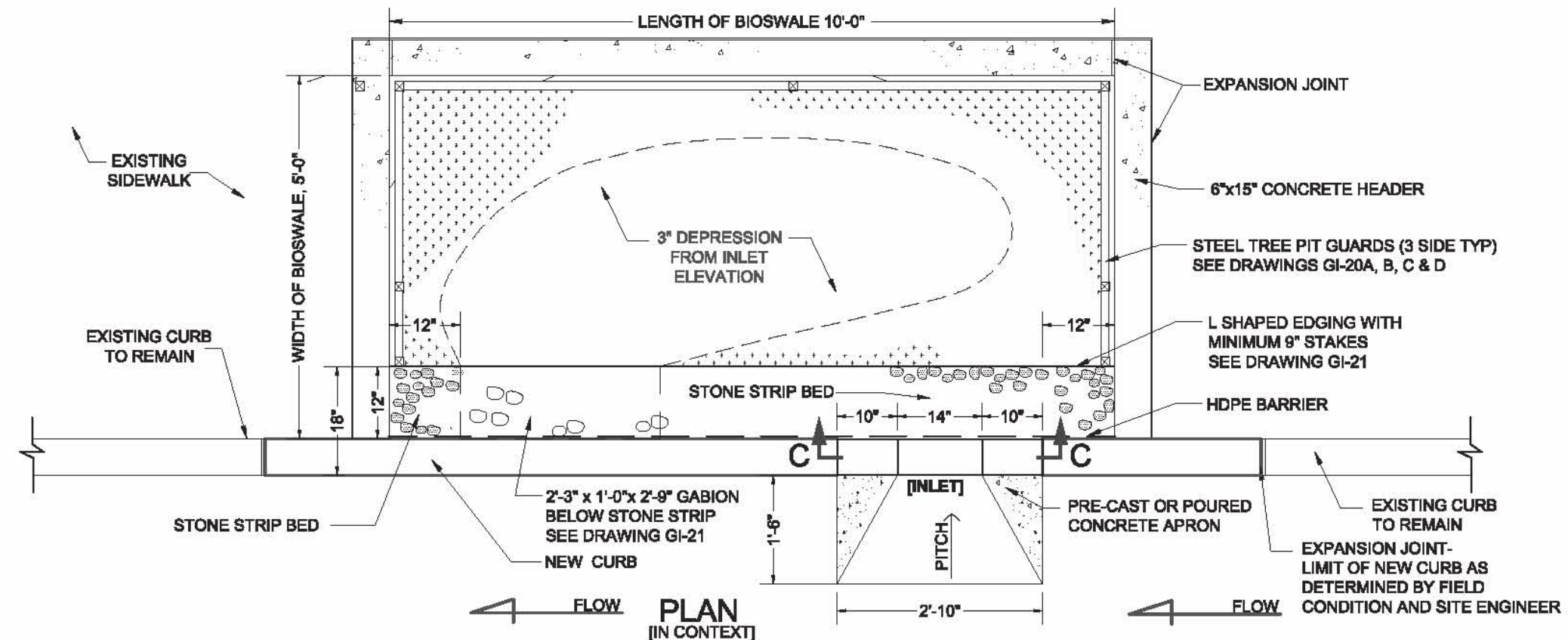


*Wesley T. Farah*  
P.E.  
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DEPARTMENT OF ENVIRONMENTAL PROTECTION

8/03/2012  
DATE



CITY OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF GREEN INFRASTRUCTURE  
**STANDARD FOR 10'x5' R.O.W. BIOSWALE TYPE 3**  
- NO CONNECTION TO SEWERS



## NOTES:

1. INCLUDED IN THE COST OF THE FURNISHED AND INSTALLING THE CONCRETE HEADER ADJACENT TO THE BIOSWALE, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE THE ADJACENT EXISTING SIDEWALK FLAG TO NEAREST SIDEWALK JOINT BEYOND THE LIMITS OF THE BIOSWALE. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE COST OF SAWCUTTING THE EXISTING SIDEWALK AT THE JOINT.
2. WHEN RESTORING A TYPICAL CURB, THE COST OF REMOVAL OF [2'] FOOT WIDTH OF THE WEARING COURSE AND ONE (1') FOOT WIDTH OF ROADWAY CONCRETE PAVEMENT BASE ALONG THE CURB LINE AND ADJACENT TO THE CONCRETE APRONS, MAY BE REQUIRED. THE RESTORATION OF ALL REMOVED PAVEMENT IN KIND AND IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF THE STANDARD HIGHWAY SPECIFICATIONS SHALL BE DEEMED TO BE INCLUDED IN THE UNIT PRICE BID FOR THE CURB AND CONCRETE APRON.
3. THE CONTRACTOR SHALL OBTAIN THE NECESSARY TREE PLANTING PERMIT FROM THE NYC DEPARTMENT OF PARKS AND RECREATION (DPR) PRIOR TO THE START OF WORK. ALL NECESSARY TREE PLANTING SHALL BE SUPERVISED BY CERTIFIED ARBORIST.
4. NO TREE SHALL BE REMOVED BY THE CONTRACTOR UNTIL SPECIFICALLY ORDERED IN WRITING TO DO SO BY THE ENGINEER AND WITH APPROVAL FROM DPR.
5. TREES SHALL BE STAKED AS PER STANDARD DETAIL H-1046. TREE STAKES ARE TO BE REMOVED BY THE CONTRACTOR NOT LESS THAN ONE YEAR AFTER PLANTING.
6. THE CONTRACTOR SHALL NOT BE PERMITTED TO OPERATE AUXILIARY EQUIPMENT WHICH GENERATES EXHAUST OR OTHER HEAT UPWARD (E.G., GENERATORS AND COMPRESSORS), UNDER THE BRANCHES OF TREES WHERE THE BRANCHES ARE LESS THAN 25' ABOVE THE GROUND, UNLESS APPROVED BY THE ENGINEER IN CONSULTATION WITH CERTIFIED ARBORIST.
7. THE CONTRACTOR SHALL NOT BE PERMITTED TO STORE, STOCKPILE, OR LAY DOWN, ANY CONSTRUCTION MATERIAL INCLUDING, BUT NOT LIMITED TO, LUMBER, FUEL, AND OIL CONTAINERS, PIPES, AND/OR PIPE FITTINGS, BARRICADES, HAND TOOLS, HOSES, RECEPTACLES, AND ASPHALT WITHIN ANY EXISTING TREE PIT OR R.O.W. BIOSWALE.
8. REPLACEMENT TREES SHALL BE PLANTED WITHIN THE PROJECT AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SECTION 4.16 OF STANDARD HIGHWAY SPECIFICATIONS.

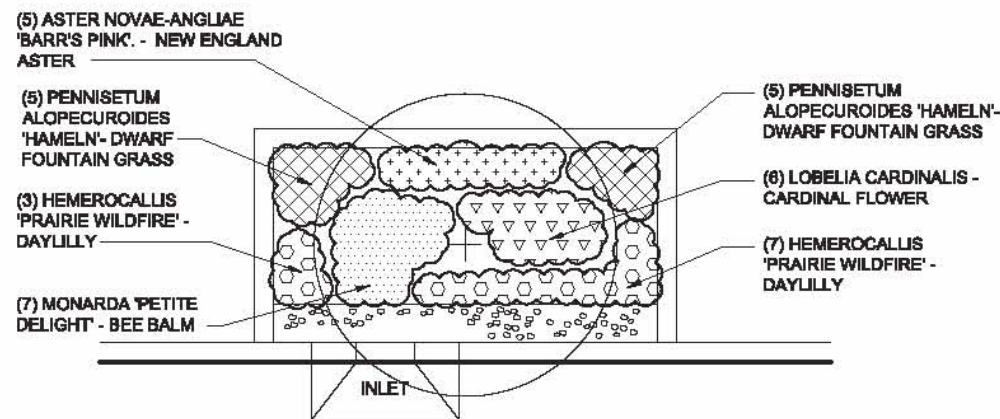
*Needi Fara*  
P.E.  
ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

7/25/2012  
DATE

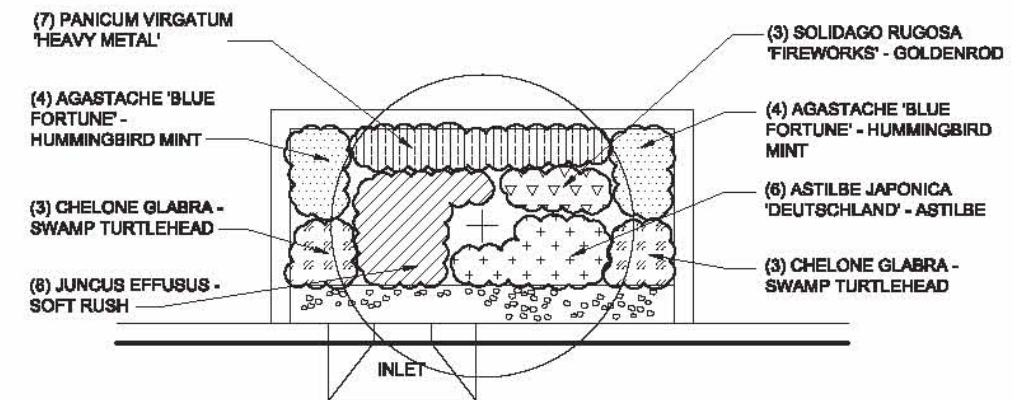


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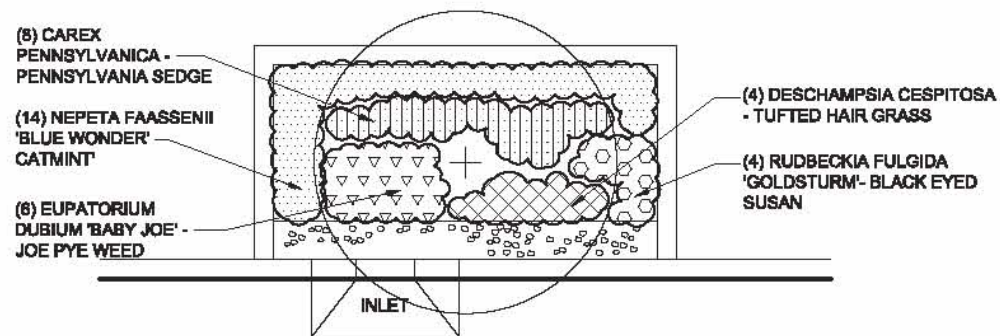
# STANDARD PLANTING PLANS FOR 10'x5' R.O.W. BIOSWALES (TYPICAL)



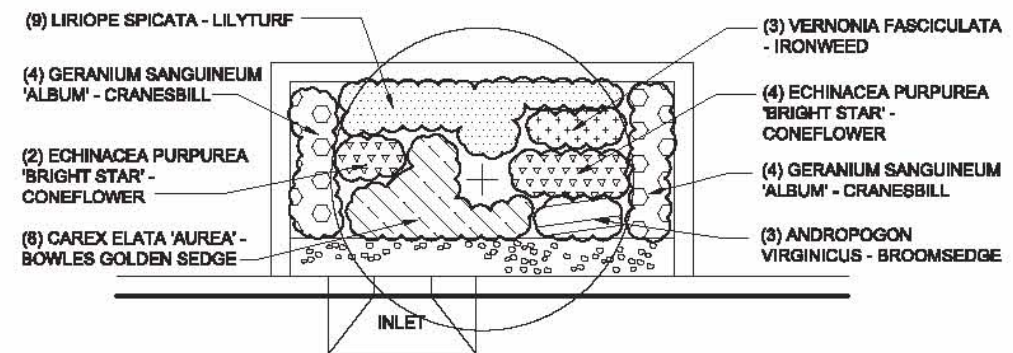
**RESIDENTIAL SCHEME 1** - SITES IN RESIDENTIAL NEIGHBORHOODS AND LOW VOLUME CIRCULATION AREAS



**RESIDENTIAL SCHEME 2** - SITES IN RESIDENTIAL NEIGHBORHOODS AND LOW VOLUME CIRCULATION AREAS



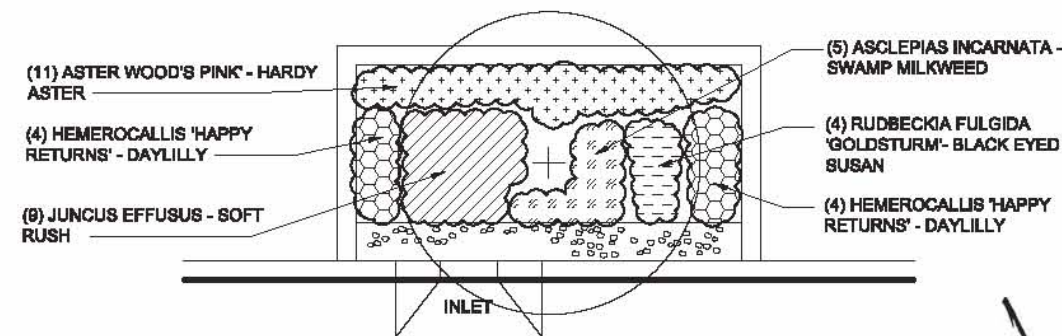
**URBAN SCHEME 1** - SITES IN COMMERCIAL, INDUSTRIAL, HIGH VOLUME CIRCULATION AREAS



**URBAN SCHEME 2** - SITES IN COMMERCIAL, INDUSTRIAL, HIGH VOLUME CIRCULATION AREAS

**NOTES:**

1. EACH 10'x5' ROW BIOSWALE WILL INCLUDE THESE ADDITIONAL BULB PLANTINGS AND THEY SHALL BE LOCATED IN GROUPS OF 4-6, (SPACED 6" APART) AND THESE GROUPS SHALL BE RANDOMLY SPACED THROUGHOUT EACH BIOSWALE: (3) NARCISSUS, (3) CROCUS, (3) TULIPA SPP., AND (3) ALLIUM
2. TREE TO BE INCLUDED IN PLANTING PLANS UPON DIRECTION OF DPR

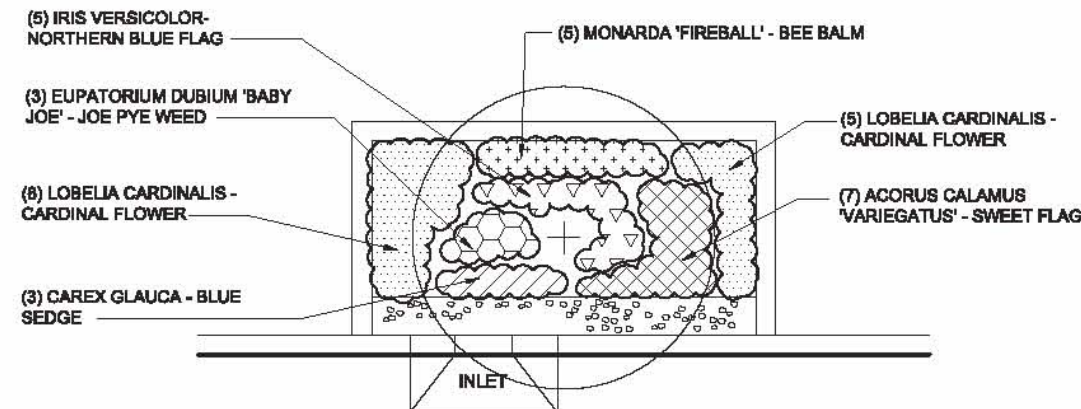


*Wendi Tavares*  
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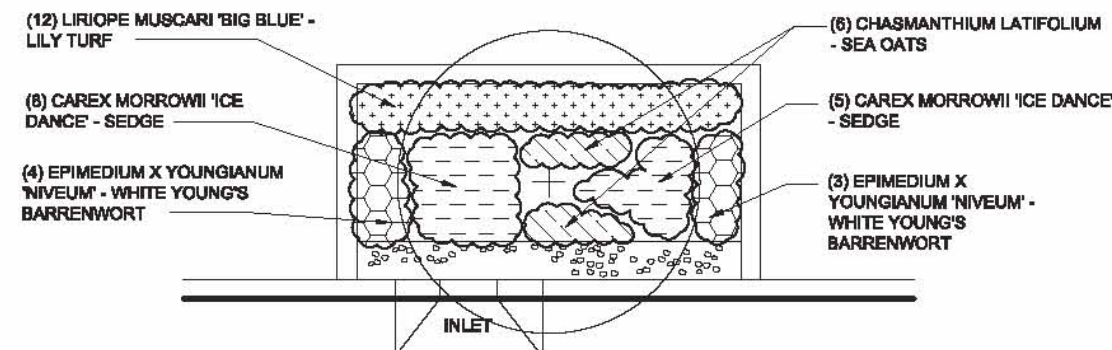
7/25/2012  
DATE



# STANDARD PLANTING PLANS FOR 10'x5' R.O.W. BIOSWALES (TYPICAL)



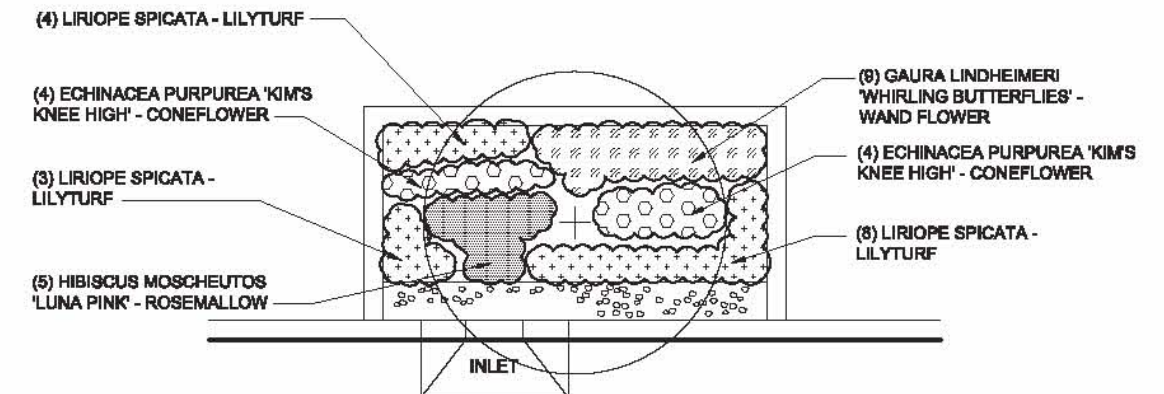
**ESPECIALLY WET** - SITES WITH GREATER THAN 20% IMPERVIOUS RUNOFF MANAGED



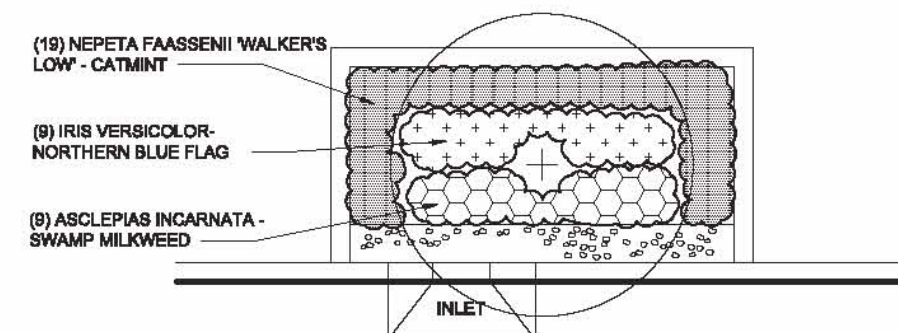
**ESPECIALLY SHADY** - SITES WITH LESS THAN 3 HOURS OF SUN PER DAY

## NOTES:

1. EACH 10'x5' ROW BIOSWALE WILL INCLUDE THESE ADDITIONAL BULB PLANTINGS AND THEY SHALL BE LOCATED IN GROUPS OF 4-6, (SPACED 6" APART) AND THESE GROUPS SHALL BE RANDOMLY SPACED THROUGHOUT EACH BIOSWALE: (3) NARCISSUS, (3) CROCUS, (3) TULIPA SPP., AND (3) ALLIUM
2. TREE TO BE INCLUDED IN PLANTING PLANS UPON DIRECTION OF DPR



**ESPECIALLY DRY** - SITES WITH LESS THAN 15% IMPERVIOUS RUNOFF MANAGED



**NO GRASS SCHEME** - SITES IN ANY BOROUGH

*Wendi Tavares*  
P.E.

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8/03/2012  
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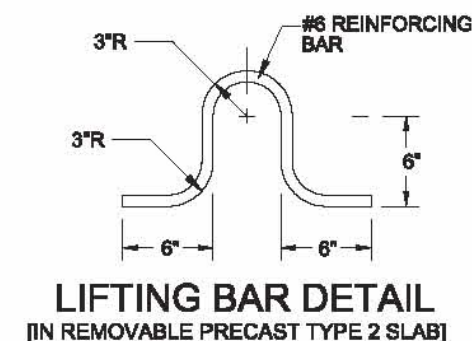
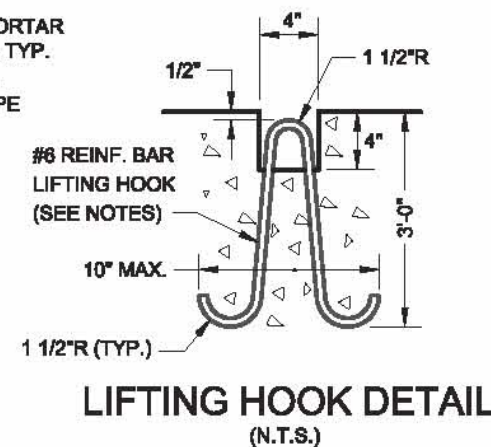
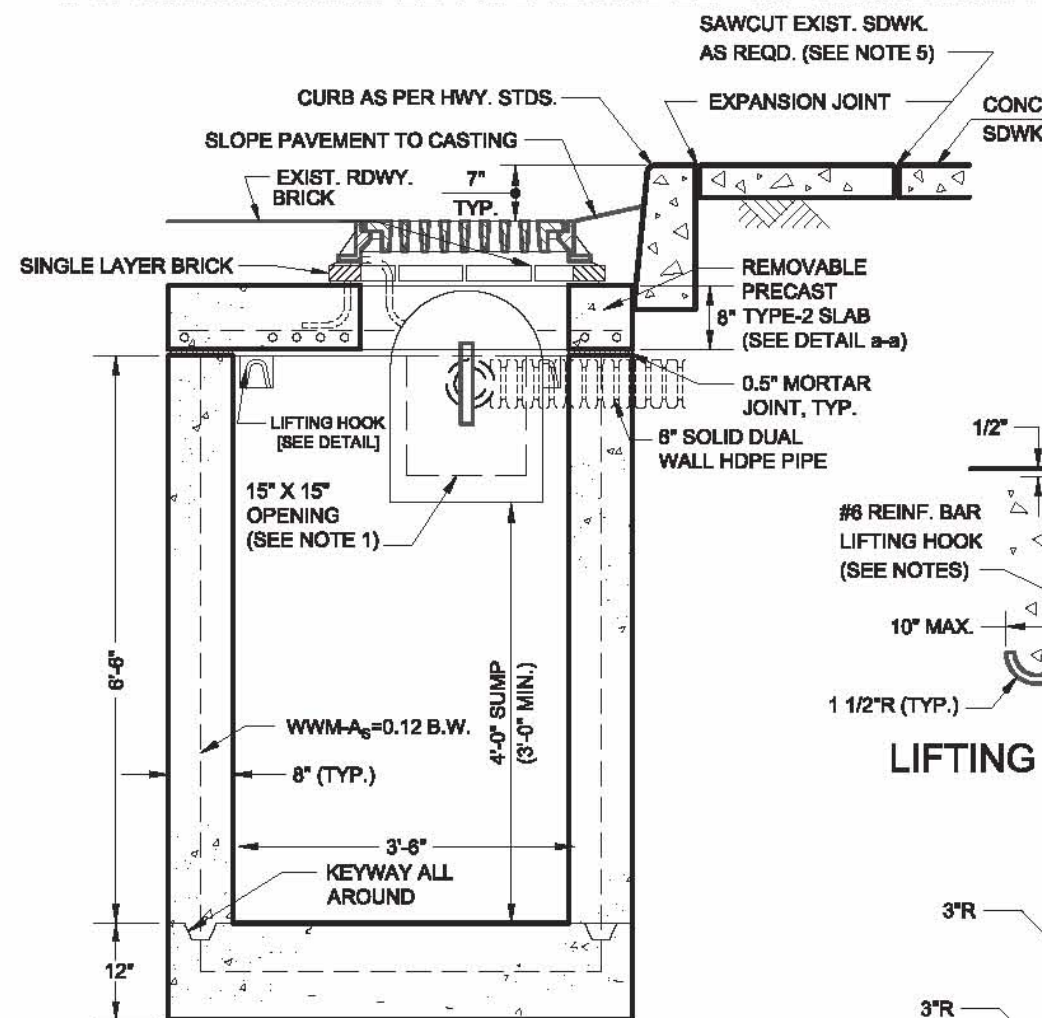
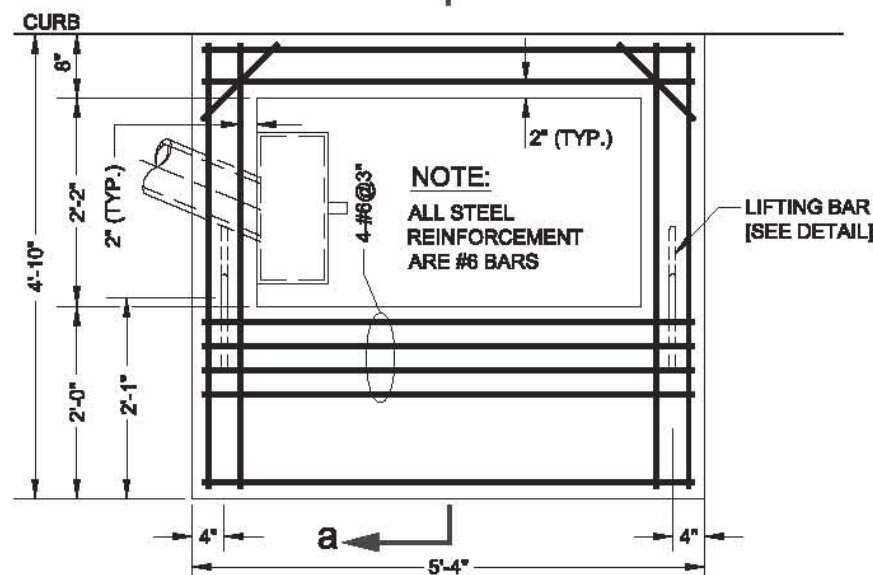
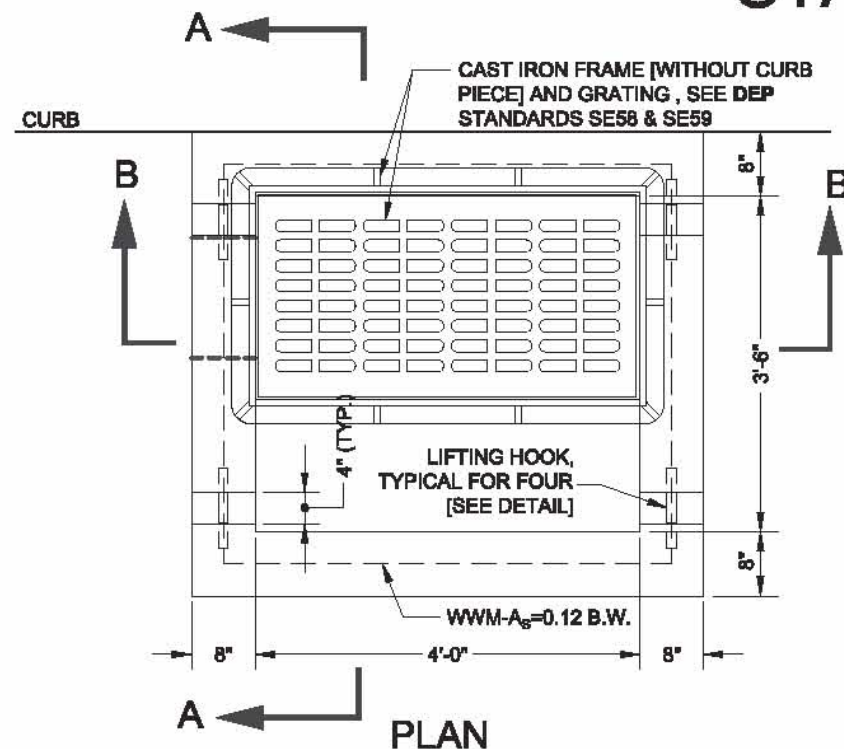
  
P.E.  
ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
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OFFICE OF GREEN INFRASTRUCTURE

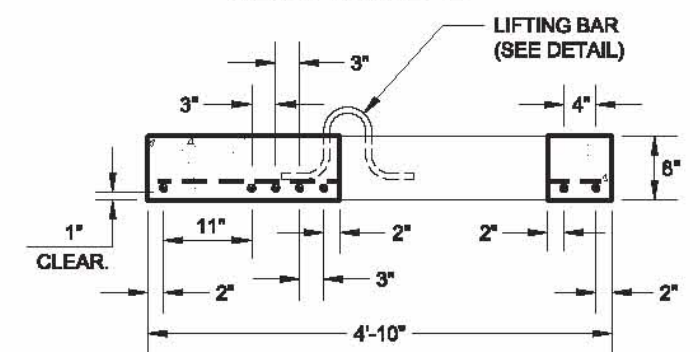
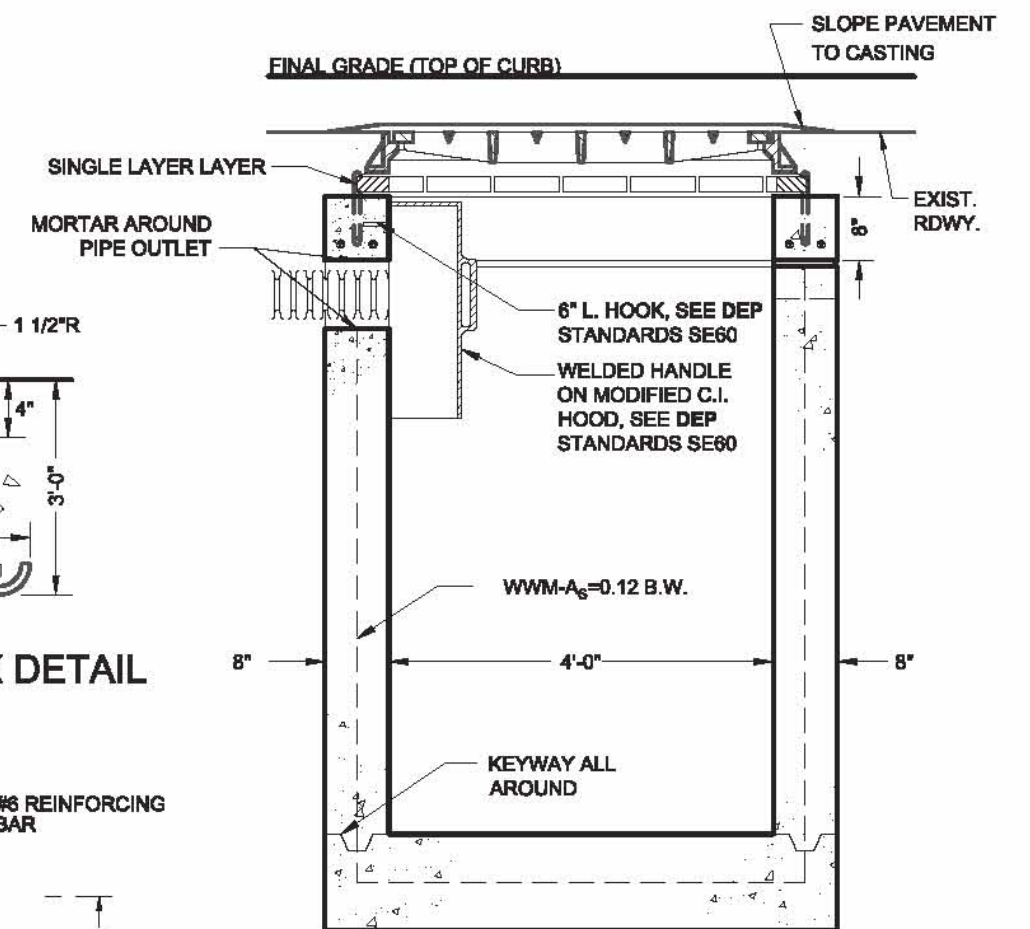
# STANDARD FOR PRECAST STORMWATER INLET

FOR R.O.W. BIOSWALE TYPE 1B AND 2B - NO CONNECTION TO SEWERS



## NOTES:

- (1) LOCATION OF OPENING SHALL BE DETERMINED PRIOR TO THE MANUFACTURING OF BASIN BY FIELD MEASUREMENTS.
- (2) LOCATION OF CURB SHALL BE AS SHOWN UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- (3) LOCATION AND ANGLE OF 6" PVC OUTLET PIPE MAY BE VARIED TO SUIT FIELD CONDITIONS.
- (4) LIFTING HOOKS SHALL BE LOCATED IN THE SECTION AS PER MANUFACTURERS RECOMMENDATIONS AND GROUTED PRIOR TO BACKFILLING. (FOUR (4) LIFTING HOOKS SHALL BE PROVIDED FOR EACH SECTION AND SHALL BE PLACED SYMMETRICALLY AND IN SUCH A MANNER AS TO PROVIDE FOR THE EVEN LIFTING OF THE SECTION.)
- (5) LIFTING BAR TO BE CUT FLUSH TO SURFACE AFTER PLACEMENT OF PRECAST TYPE 2 SLAB.
- (6) CONCRETE IS TO BE CLASS 40 AND 5% AIR ENTRAINED. REBARS-GRADE 60. WWM-F<sub>8</sub>=65,000 PSI.
- (7) MODIFY STANDARD CAST IRON HOOD AND HOOKS [SE60] AS PER DRAWING



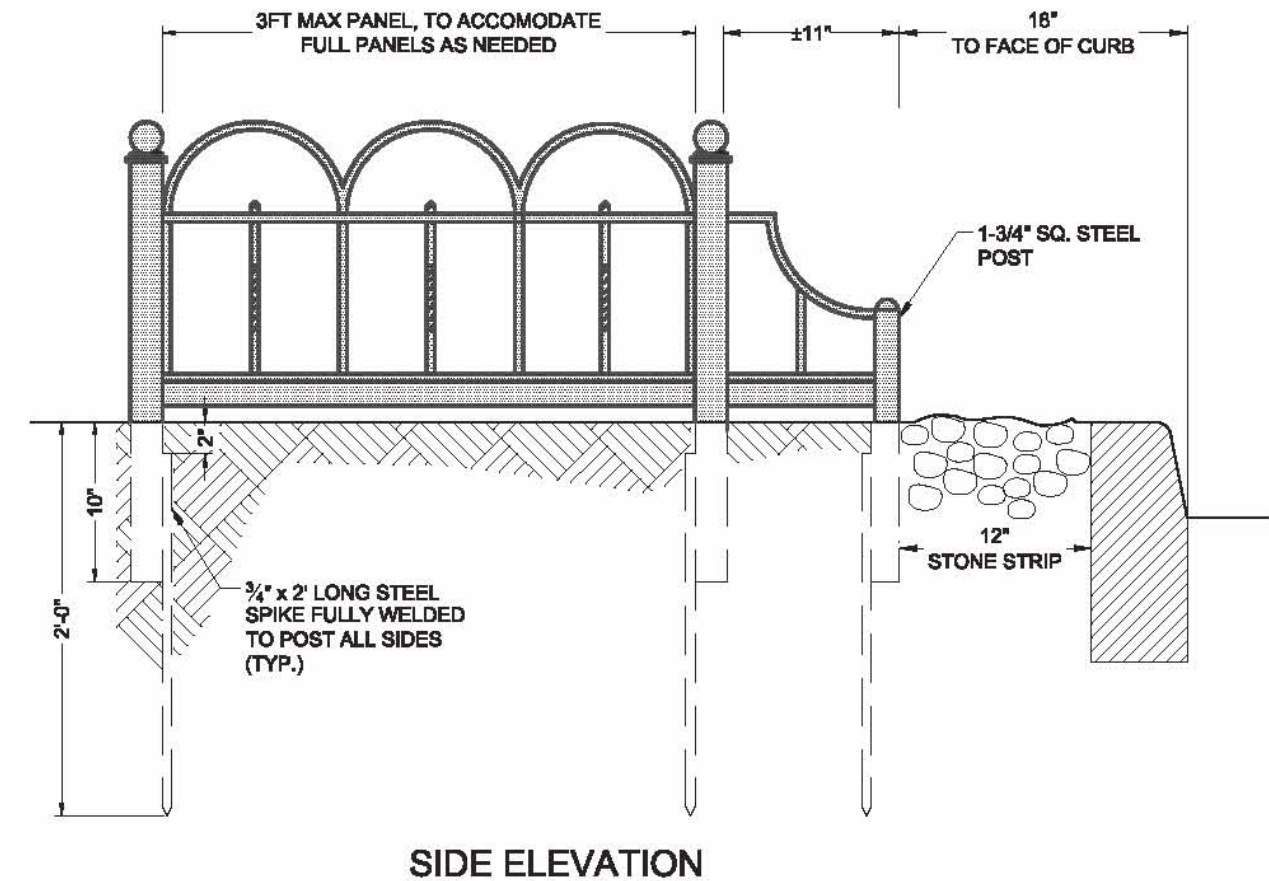
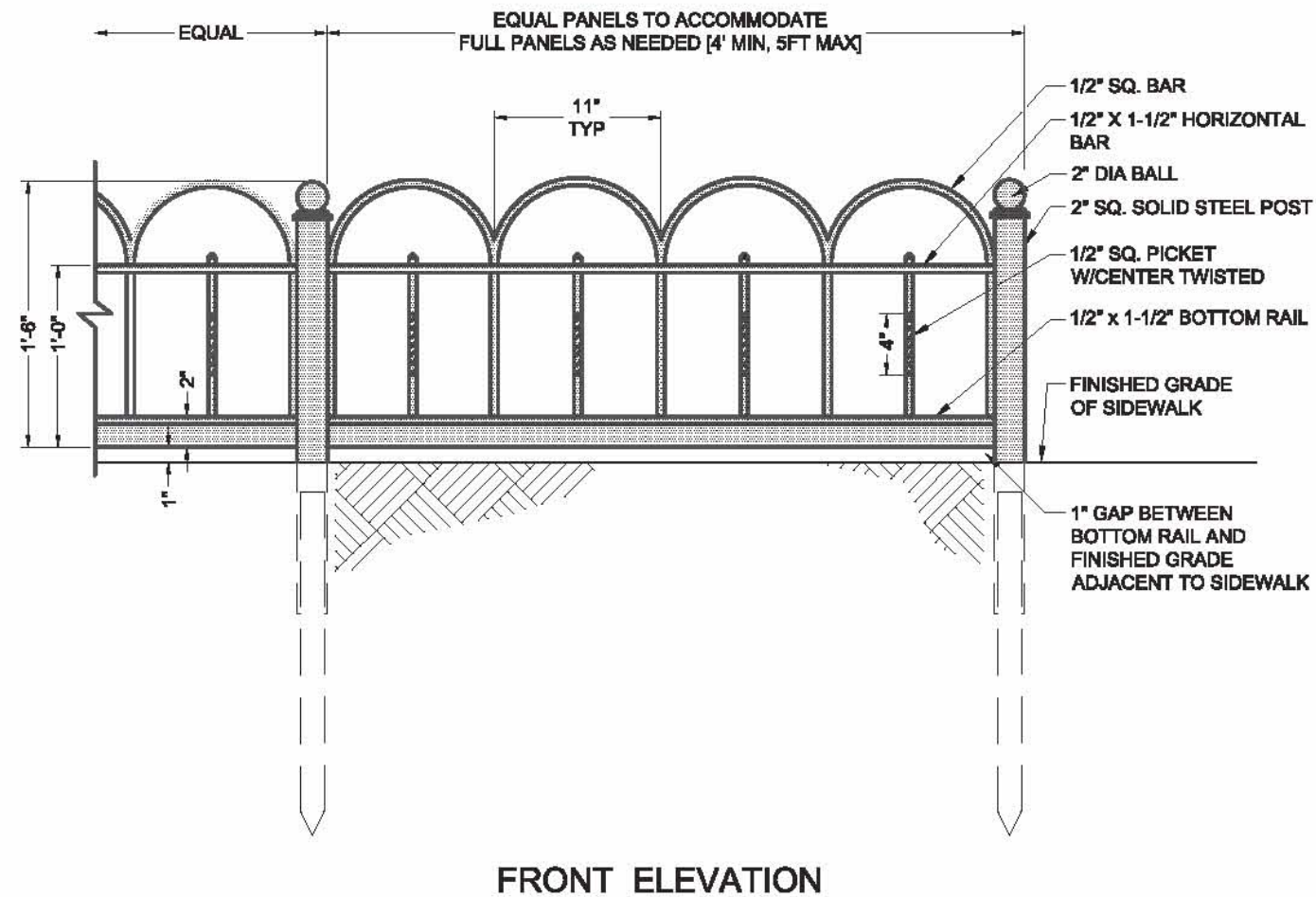
*Megdi Farah* P.E.  
ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

7/25/2012  
DATE



CITY OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF GREEN INFRASTRUCTURE

# STANDARD FOR R.O.W. BIOSWALE - TYPE 'A' STEEL GUARD



## NOTES

\*\* FINAL DESIGN OF GUARDS TO BE SELECTED BY DPR/DOT UPON REVIEW OF NEIGHBORHOOD'S CONTEXT

1. FIELD MEASUREMENTS MUST BE TAKEN PRIOR TO FABRICATION.
2. ALL STEEL SHALL CONFORM TO SPECIFICATION C1015 OF THE A.I.S.I.
3. ALL JOINTS TO BE WELDED UNLESS NOTED OTHERWISE.
4. ALL STEEL TO BE PAINTED WITH ONE (1) SHOP COAT OF PRIMER AND ONE (1) SHOP COAT OF INTERMEDIATE AND ONE (1) SHOP COAT (OR ROLLED FIELD COAT) OF FINISH TOP COAT IN COMPLIANCE WITH THE REQUIREMENTS OF SUBSECTION 2.13.4 OF THE NYC DOT STANDARD HIGHWAY SPECIFICATIONS. THE COLOR OF TOP COAT SHALL BE BLACK.
5. RAILS TO FOLLOW LINE OF GRADE.
6. ALL STEEL TO BE SOLID STEEL.

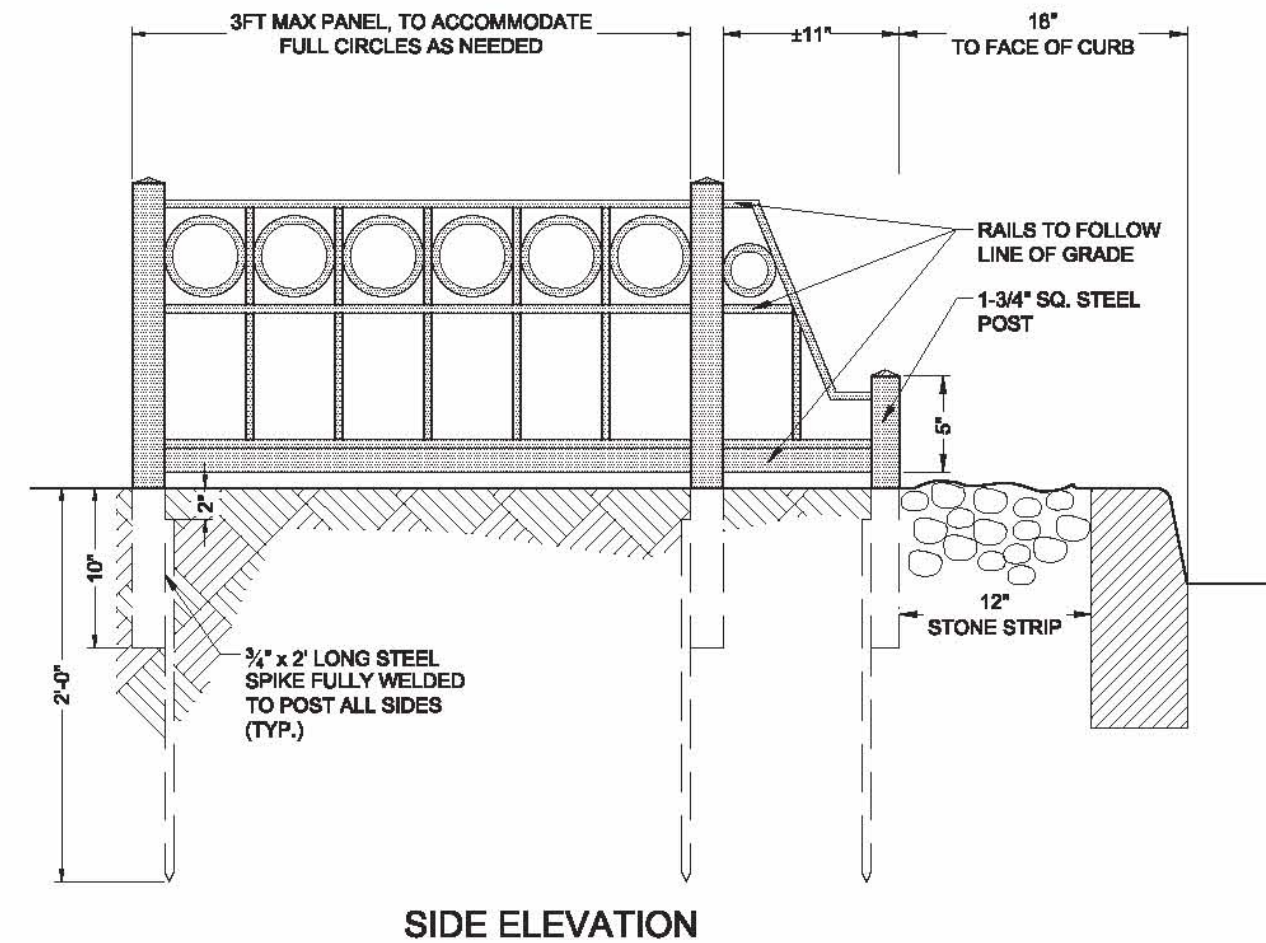
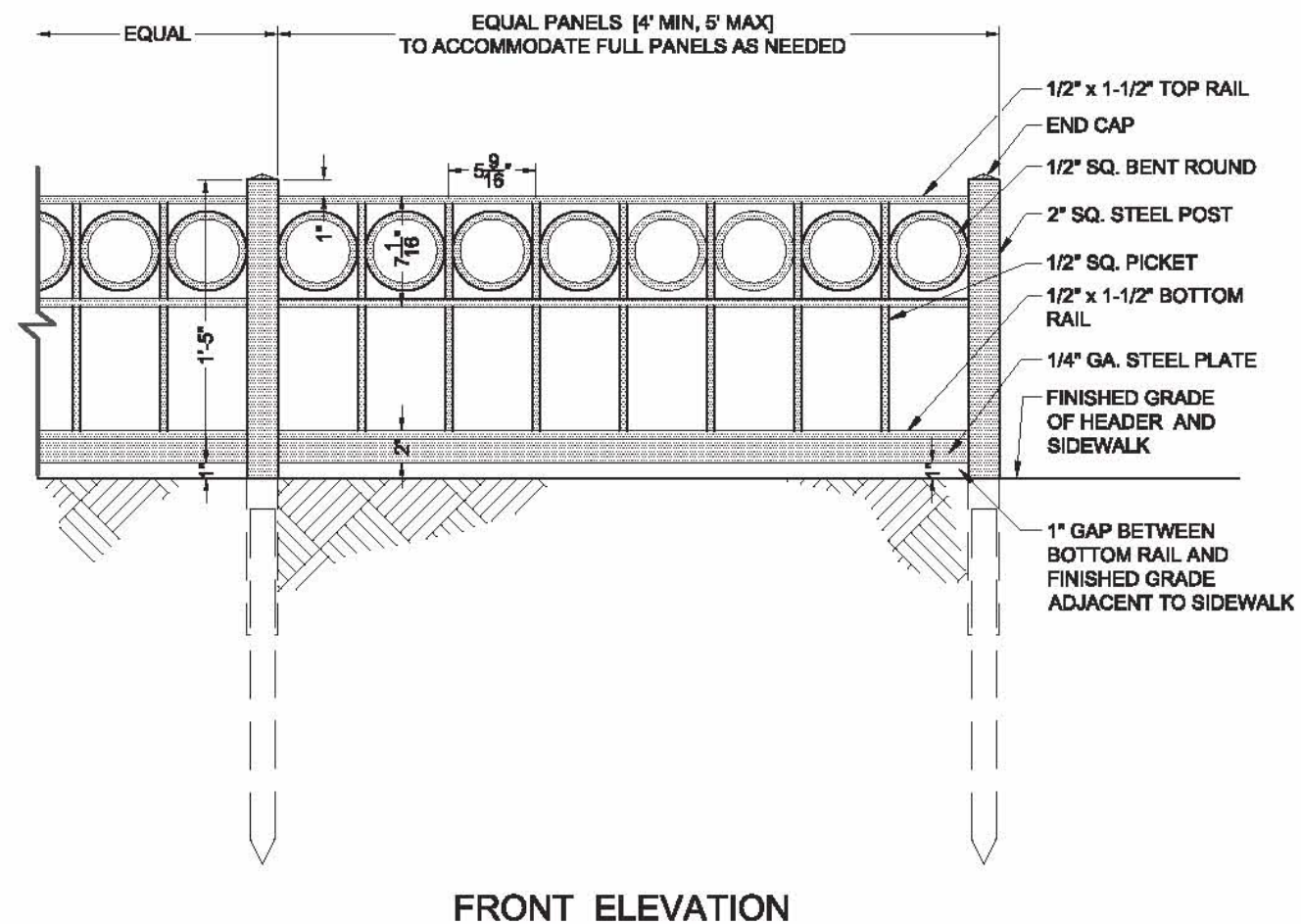
*Wendi Fane*  
P.E.  
ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

7/25/2012  
DATE



CITY OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF GREEN INFRASTRUCTURE

# STANDARD FOR R.O.W. BIOSWALE - TYPE 'B' STEEL GUARD



## NOTES

\*\* FINAL DESIGN OF GUARDS TO BE SELECTED BY DPR/DOT UPON REVIEW OF NEIGHBORHOOD'S CONTEXT

1. FIELD MEASUREMENTS MUST BE TAKEN PRIOR TO FABRICATION.
2. ALL STEEL SHALL CONFORM TO SPECIFICATION C1015 OF THE A.I.S.I.
3. ALL JOINTS TO BE WELDED UNLESS NOTED OTHERWISE.
4. ALL STEEL TO BE PAINTED WITH ONE (1) SHOP COAT OF PRIMER AND ONE (1) SHOP COAT OF INTERMEDIATE AND ONE (1) SHOP COAT (OR ROLLED FIELD COAT) OF FINISH TOP COAT IN COMPLIANCE WITH THE REQUIREMENTS OF SUBSECTION 2.13.4 OF THE NYC DOT STANDARD HIGHWAY SPECIFICATIONS. THE COLOR OF TOP COAT SHALL BE BLACK.
5. RAILS TO FOLLOW LINE OF GRADE.
6. ALL STEEL TO BE SOLID STEEL.

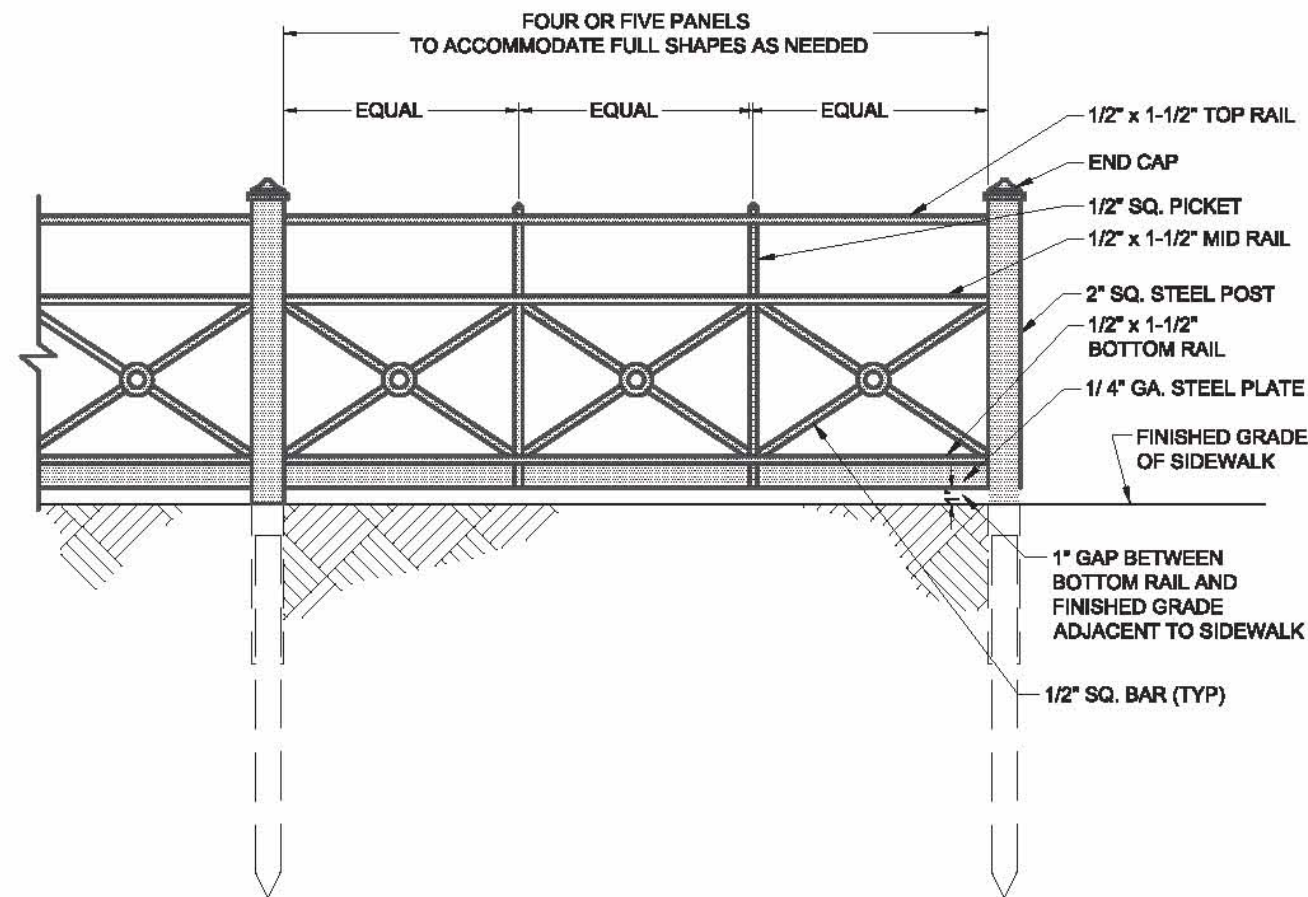
*Wesley T. Tare*  
P.E.  
ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
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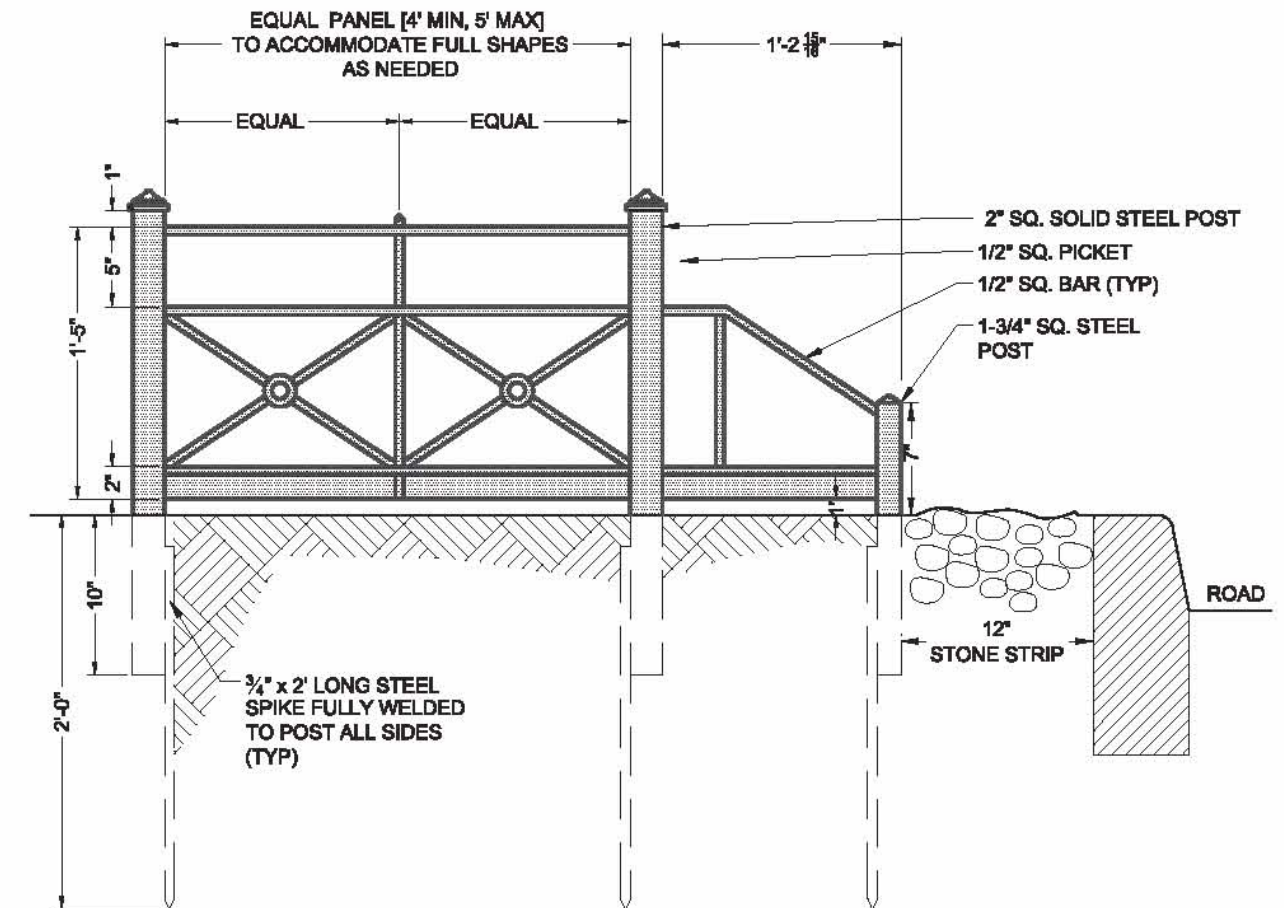
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# STANDARD FOR R.O.W. BIOSWALE - TYPE 'C' STEEL GUARD



FRONT ELEVATION

EQUAL PANEL 4' MIN. 5' MAX



SIDE ELEVATION

## NOTES

\*\* FINAL DESIGN OF GUARDS TO BE SELECTED BY DPR/DOT UPON REVIEW OF NEIGHBORHOOD'S CONTEXT

1. FIELD MEASUREMENTS MUST BE TAKEN PRIOR TO FABRICATION.
2. ALL STEEL SHALL CONFORM TO SPECIFICATION C1015 OF THE A.I.S.I.
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5. RAILS TO FOLLOW LINE OF GRADE.
6. ALL STEEL TO BE SOLID STEEL.

*Mehdi Farah* P.E.

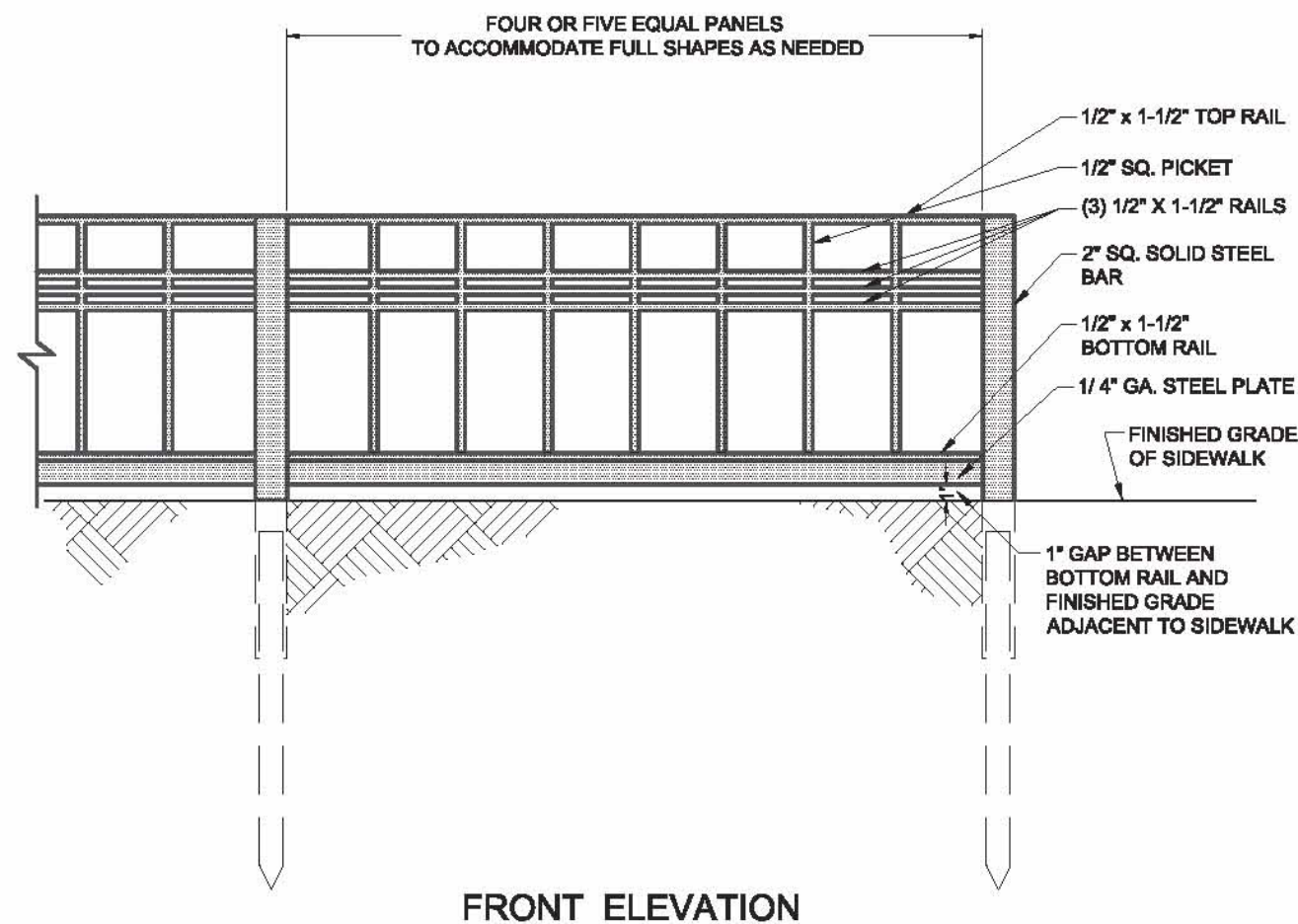
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7/25/2012  
DATE

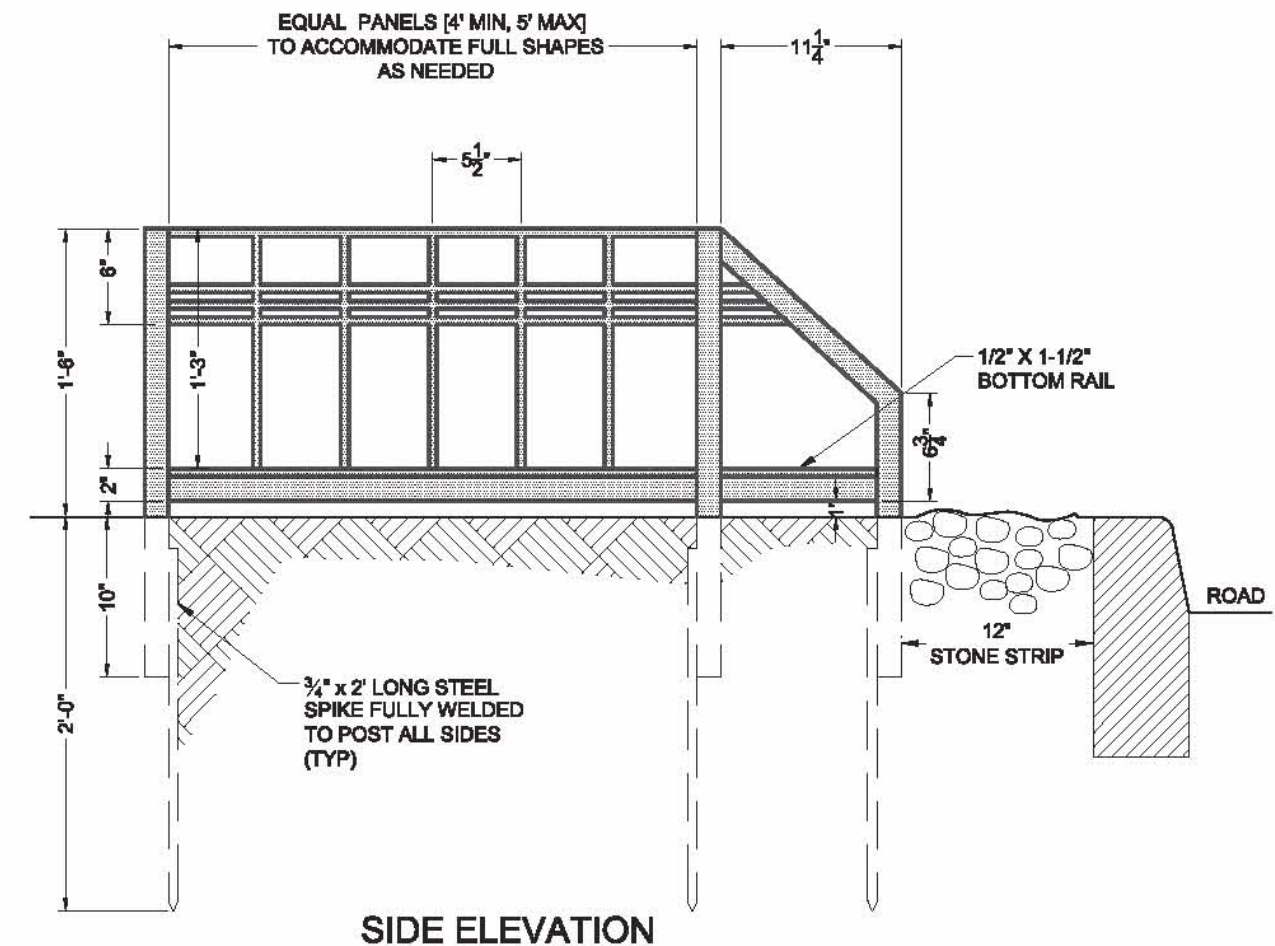


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# STANDARD FOR R.O.W. BIOSWALE - TYPE 'D' STEEL GUARD



FRONT ELEVATION



SIDE ELEVATION

## NOTES

\*\* FINAL DESIGN OF GUARDS TO BE SELECTED BY DPR/DOT UPON REVIEW OF NEIGHBORHOOD'S CONTEXT

1. FIELD MEASUREMENTS MUST BE TAKEN PRIOR TO FABRICATION.
2. ALL STEEL SHALL CONFORM TO SPECIFICATION C1015 OF THE A.I.S.I.
3. ALL JOINTS TO BE WELDED UNLESS NOTED OTHERWISE.
4. ALL STEEL TO BE PAINTED WITH ONE (1) SHOP COAT OF PRIMER AND ONE (1) SHOP COAT OF INTERMEDIATE AND ONE (1) SHOP COAT (OR ROLLED FIELD COAT) OF FINISH TOP COAT IN COMPLIANCE WITH THE REQUIREMENTS OF SUBSECTION 2.13.4 OF THE NYC DOT STANDARD HIGHWAY SPECIFICATIONS. THE COLOR OF TOP COAT SHALL BE BLACK.
5. RAILS TO FOLLOW LINE OF GRADE.
6. ALL STEEL TO BE SOLID STEEL.

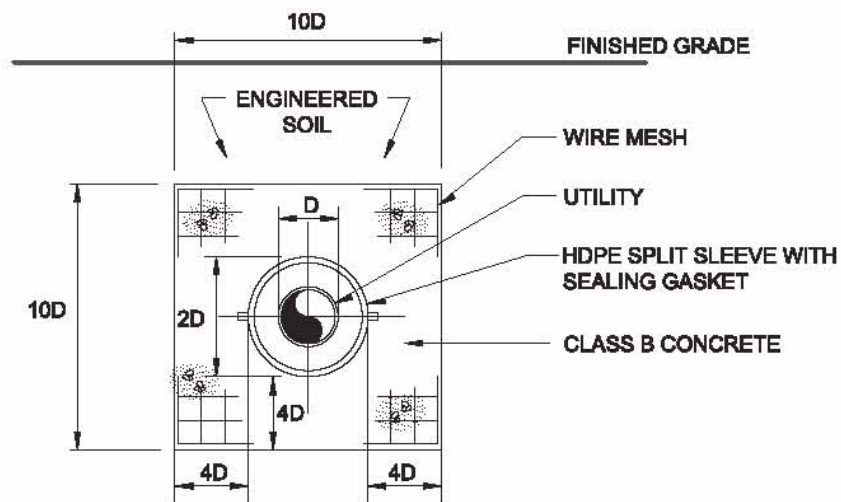
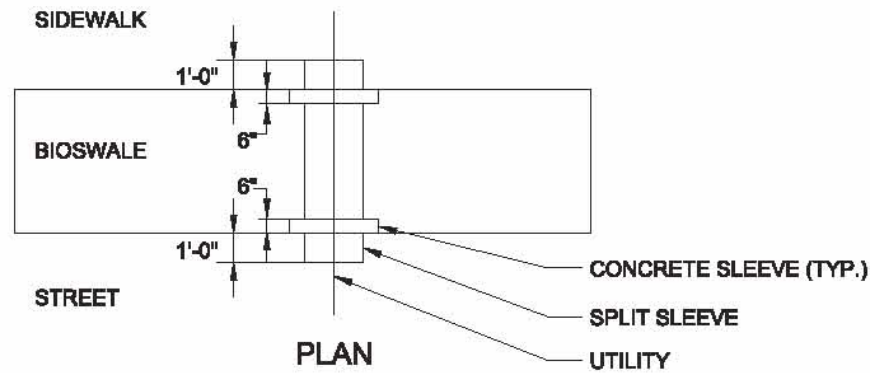
*Mehdi Farah*  
P.E.

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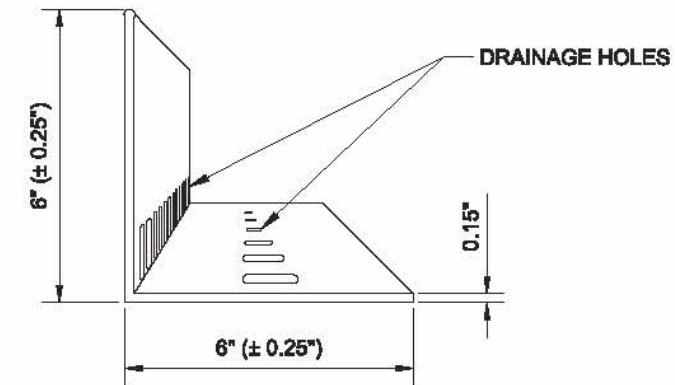
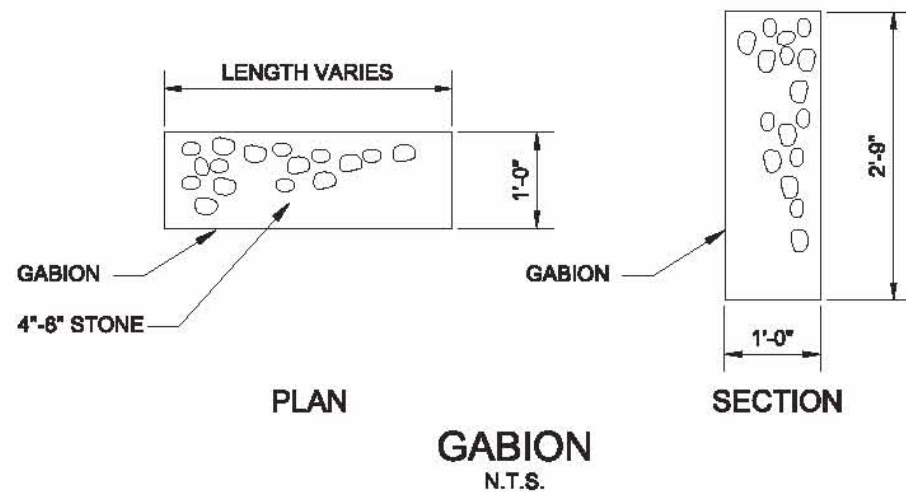


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**STANDARD R.O.W. BIOSWALE DETAILS**

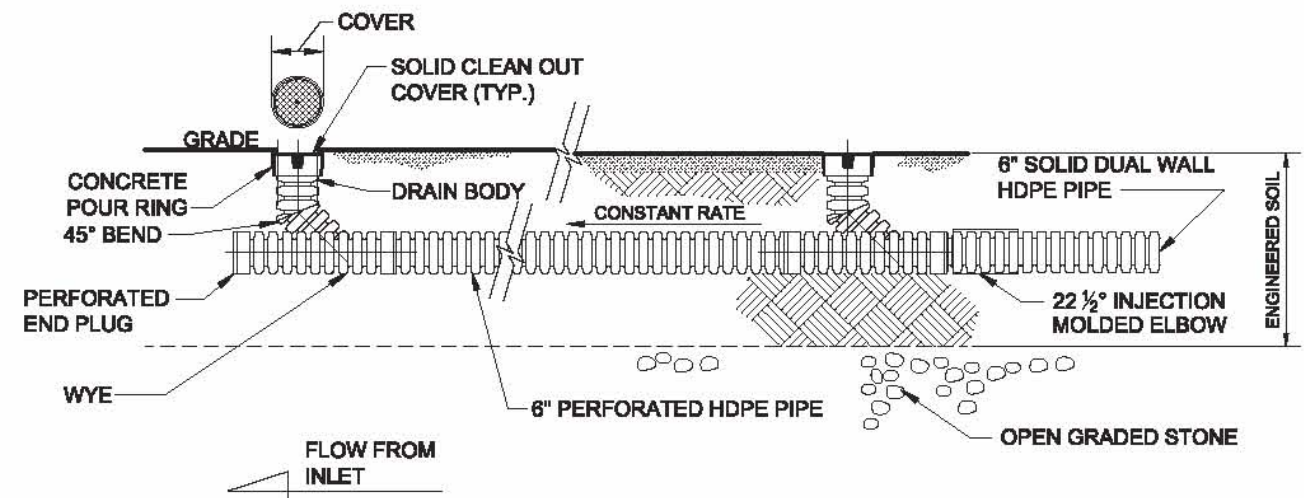


NOTE:  
TO BE USED FOR UTILITY CROSSING

**CONCRETE ENCASED PIPE**  
N.T.S.



**L SHAPED EDGING**  
N.T.S.



**CLEAN OUT DETAIL**  
N.T.S.

*Heidi Fane*  
P.E.

ASSISTANT COMMISSIONER, OFFICE OF GREEN INFRASTRUCTURE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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