Mill Street Partners LLC
42 West 39th Street 15th Floor
New York NY 10018
212 253 7820 t 212 253 1276 f

September 8, 2016

Jason C. Morris, P.E.
City Engineer
City of Newburgh Office of the Engineer
83 Broadway
Newburgh, NY 12550

Re: Mid-Broadway Redevelopment, AKA 140 Broadway

Dear Mr. Morris:

Thank you for your comments on the Mid-Broadway Redevelopment project. This letter and the updated drawings dated September 7, 2016 are in response to your letter dated August 16, 2016. Please reach out if you have further questions or comments.

Drawing Review responses:

Comment 1. Issuing along with these comments

Comment 2. Satisfied

Comment 3. Satisfied

Comment 4. The plans were previously updated to include detail sheets C206 & C207 that contained the City-adopted standard streetscape details. Cross-references to project-specific details have been added as requested.

Comment 5. The landscape plan has been updated to reflect the City's comments elsewhere herein.

Comment 6. Satisfied

Comment 7. Satisfied

Comment 8. Satisfied

Comment 9. Satisfied

Comment 10. Satisfied

Comment 11. The intersections at Lander & Johnston provide the required 26' width at the fire hydrants and the required aerial apparatus width of 26' along the Lander façade. If the City obtains permission from the State of New York to waive applicable requirements of the Fire Code, the Applicant is willing to modify the curbline geometry and on-street parking configuration. Design vehicles can navigate the current configuration without mountable concrete curbing, but the feature has been added as requested and the radius increased to 24'.

Comment 12. Satisfied

Comment 13. Satisfied

Comment 14. Satisfied

Comment 15. Satisfied

Comment 16. Satisfied

Comment 17. Satisfied

Comment 18. Satisfied

Comment 19. The crosswalk detail has been updated to reflect the latest design requested.

Comment 20. Satisfied

Comment 21. Satisfied

Comment 22. Satisfied

Comment 23. Satisfied

Comment 24. The previously submitted SWPPP, including the items listed in Appendix E of the NYSSDM, has been updated pursuant to the applicable City comments below.

Comment 25. The stormwater analysis has been revised to reflect the City's time limit determination for redevelopment activity. The previously-demolished impervious areas have now been included in the calculations as pervious areas and computed under the new development-portion of the project analysis.

Comment 26. Satisfied

Comment 27. Sheet C-103 of the plans and Section 4.4.1 of the SWPPP include updated notes regarding the provision of underdrains and the performance of infiltration testing witnessed by a city representative in the areas where permeable pavement is proposed. Green infrastructure is provided on this project to assist the City with their future plan to implement same under the LTCP. The contribution of RRv applies only to the selection of a representative program of green infrastructure practices for the project.

Comment 28. Satisfied

Comment 29. Satisfied

Comment 30. Satisfied

Comment 31. Satisfied

Comment 32. The language in the Ownership and Maintenance of the Permanent Structure Section, Section 10 of the SWPPP, has been updated to include "and/or the current property owner". Catch basin maintenance, salt usage, and general on-site housekeeping items have been added to the Maintenance Plan in Appendix F of the SWPPP.

Comment 33. Notes regarding the as-built plans, easement agreements and maintenance responsibilities have been added to C-103. An agreement between the Applicant and the City can be developed at an appropriate future date.

Comment 34. Satisfied

Comment 35. The note on C-100 has been revised to include the language in the comment.

Comment 36. The note on C-101 has been revised to include the language in the comment.

Comment 37. The note on C-103 has been revised to include the language in the comment.

Comment 38. The notes on C-102 have been revised to indicate stamped, colored concrete within the City ROW. Driveway aprons and sidewalk ramps at the intersections remain uncolored as requested.

Comment 39. The existing inlet at the west corner of Lander/Broadway is noted to be reconstructed and a new curb inlet installed adjacent to it. Detail 11/C-203 is provided to outline the parameters of proposed reconstruction.

Comment 40. The hydrodynamic separator should capture the sediments as the pretreatment device. As a reserve, the first chamber row is accessible to a vactor truck via the outlet structure should sediment pass the hydrodynamic device. Thus the proposed observation ports should remain appropriate as specified. Additional detail on how the Underground Storage System shall be maintained has been added to the Maintenance Plan, Appendix F of the SWPPP.

Comment 41. A bench & channel detail has been added as detail 10/C-203.

Comment 42. The duplicate note has been deleted.

Comment 43. A note has been added to 4/C-204 that the cover shall be bolted to the frame.

Comment 44. A trench detail for on-site trenching has been added back to complement the City detail for work in the right of way. Details 8-11 include cross-references to those details.

Comment 45. The Concrete Wash Detail, 8/C-205, has been revised on the plans to reflect the guidance in the SWPPP.

Comment 46. The plans were previously updated to include detail sheets C206 & C207 that contained the City-adopted standard streetscape details. Cross-references to project-specific details have been added as requested.

Comment 47. The lighting schedule on Drawing L-3.1 has been updated to include the House Shield in the model number and fixtures that will have the House Shield have been identified on the lighting plan on Drawing L-1.1. A note has been added to the light fixture detail on Drawing L-2.1.

Comment 48. A photocell has been added to each light fixture to turn on the fixtures at night. We are not in favor of dimming or turning off lighting at night.

If you have any questions or concerns please feel free to contact me.

Sincerely,

Magnus Magnusson
Member

Mill Street Partners LLC
42 West 39th Street 15th Floor
New York NY 10018
212 253 7820 t 212 253 1276 f

September 8, 2016

Alexandra Church, AICP
City Planner
City of Newburgh
83 Broadway
Newburgh, NY 12550

Re: Mid-Broadway Redevelopment, AKA 140 Broadway

Dear Alexandra:

Thank you for your comments on the Mid-Broadway Redevelopment project. A set of drawings dated July 29, 2016 were mailed to your attention. This is in response to your letter dated August 16, 2016. Please reach out if you have further questions or comments.

Drawing Review responses:

Comment 1. Responses to City's Engineering Office comments provided in alternate letter.

Comment 2. Responses to City of Newburgh Fire Department comments provided in alternate letter.

Comment 3. Comments from City of Newburgh Conservation Advisory Council not yet provided.

Comment 4. Satisfied

Comment 5. Satisfied

Comment 6. Satisfied

Comment 7. Satisfied

Comment 8. Satisfied

Comment 9. Satisfied

Comment 10. Satisfied

Comment 11. Satisfied

Comment 12. Satisfied

Comment 13. Satisfied

Comment 14. Satisfied

Comment 15. Satisfied

Comment 16. Letter from traffic consultant has been submitted to clarify the parking and travel lane on Landers Street.

Comment 17. Noted. All proposed plantings are water-efficient. Notes regarding initial establishment of the vegetation and water use are provided on the Landscape plans.

If you have any questions or concerns please feel free to contact me.

Sincerely,

Magnus Magnusson
Member

Mid-Broadway Development -

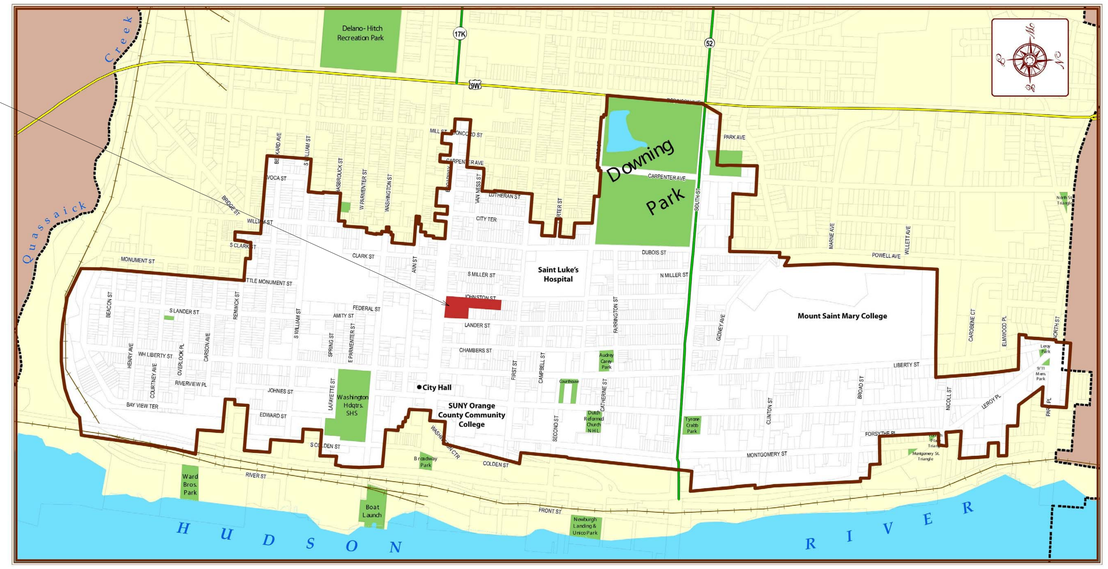
91-Unit Affordable Family Housing & Retail

Planning Board Submission 07/29/16

140 Broadway, Newburgh, NY

Site Planning Drawing List	
Sheet Number	**Sheet Name**
A-00	Cover Sheet
A-01	Site Survey*For Information Only*
A-01a	Building On Survey
A-02	Site Plan
A-02A	Parking Site Plan
A-03	Zoning Analysis
A-03a	Fema Map
A-04	Cellar Plan
A-05	First Floor Plan
A-06	Second Floor Plan
A-07	Third Floor Plan
A-08	Fourth Floor Plan
A-09	Fifth Floor Plan
A-10	Roof & Bulkhead Plan
A-11	South & North Elevations
A-12	East & West Elevations
A-13	Courtyard Elevations
A-13a	Broadway Façade Studies
A-14	Building Sections
A-15	Wall Section
A-16	Unit Plans
A-17	Renderings
B-4	Site Photos
C-100.00	Civil General Notes
C-101.00	Civil - Demolition
C-102.00	Civil - Site Plan
C-103.00	Civil - Grading, Drainage & Utility
C-104.00	Civil - Erosion Control
C-201.00	Civil - Detail
C-202.00	Civil - Detail
C-203.00	Civil - Detail
C-204.00	Civil - Detail
C-205.00	Civil - Detail
C-206.00	Civil - Detail
C-207.00	Civil - Detail
L-1.1	Landscape Plan
L-2.1	Landscape Details
L-3.1	Lighting Plan

PROJECT SITE



Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

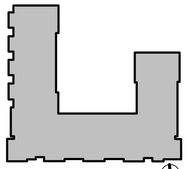
Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

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	04/19/13	HFA Submission
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	07/29/16	Planning Board Submission

Revisions:

Architect:

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New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
COVER

Project Number: 12008
Date: 04/30/16 Drawing #:
Scale:
Drawn by: Author
Checked by: Checker
A-00

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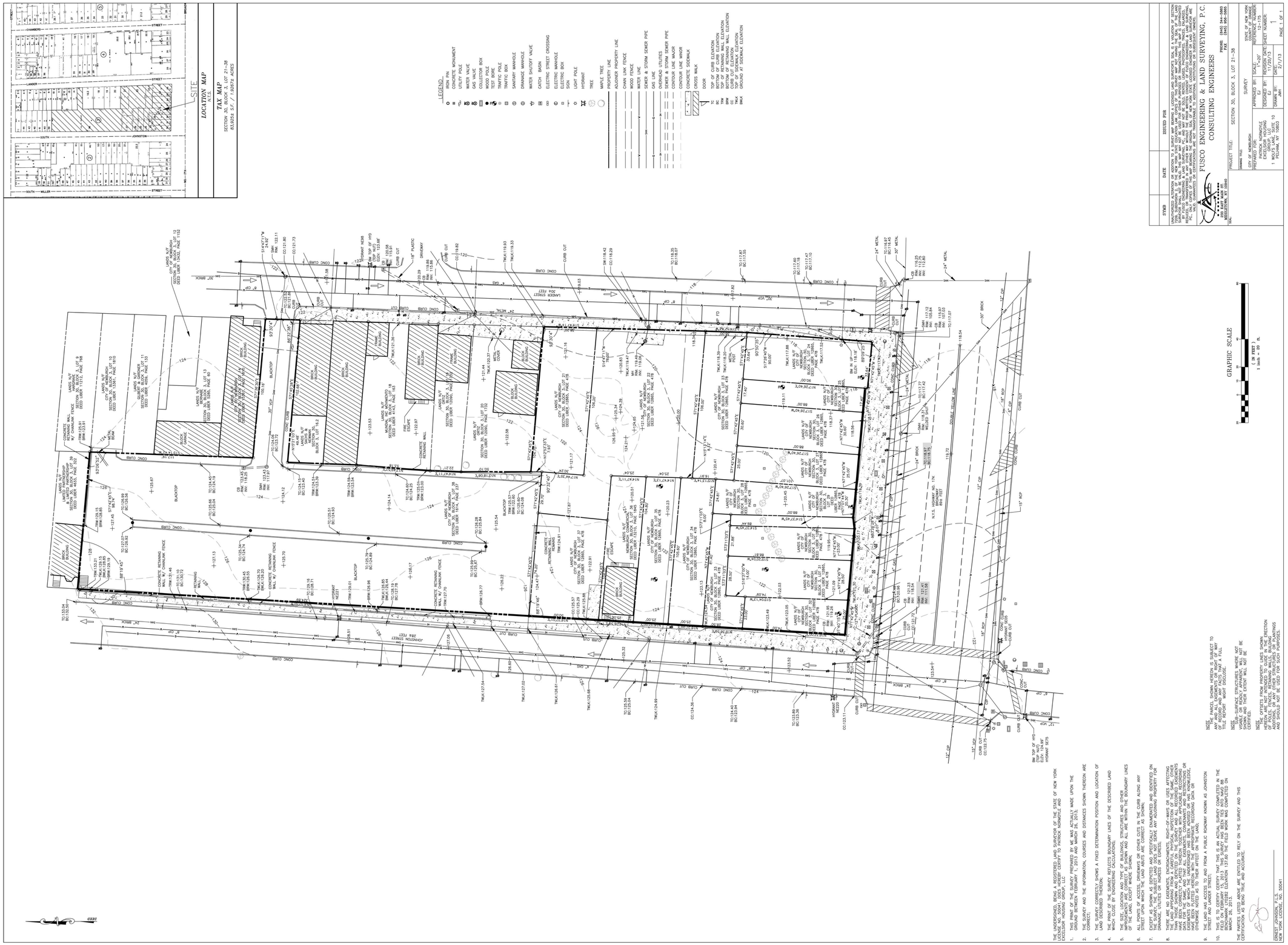

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Seal:

Drawing Title:

SITE SURVEY "FOR INFORMATION ONLY"

Project Number: 12008
Date: 04/30/16 Drawing #:
Scale:
Drawn by: Author
Checked by: Checker

A-01

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Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:

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SUSTAINABILITY TARGET:
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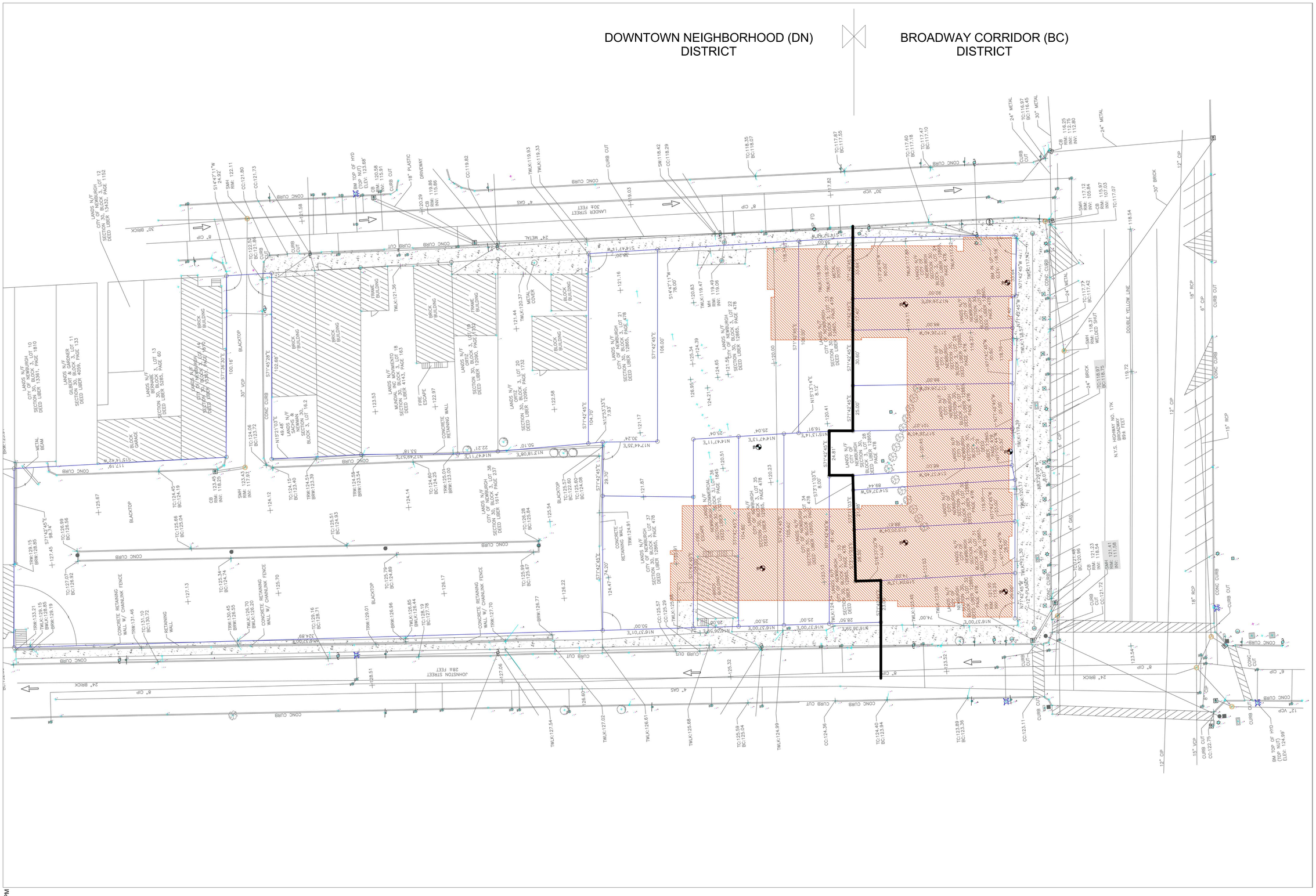

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	07/29/16	Planning Board Submission

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Architect:

MAP

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Seal:

REGISTERED ARCHITECT MARIUS MAGNUSSON 14660 STATE OF NEW YORK

Drawing Title:

SURVEY/PROPOSED BUILDING OVERLAY

Project Number: 12008

Date: 04/30/16 Drawing #:

Scale:

Drawn by: Author

Checked by: Checker

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PROJECT SUMMARY								
FLR	Retail SF	Residentail SF	Total FA	0BR	1BR	2BR	3BR	TOTAL DU
C	0	3,370	3,370					
1	13,800	8,940	22,740	0	0	1	3	4
2	0	22,750	22,750	2	7	10	3	22
3	0	22,300	22,300	3	9	9	4	25
4	0	22,200	22,200	2	10	10	3	25
5	0	14,000	14,000	1	7	5	2	15
R	0	1,270	1,270					
	13,800	**94,830**	**108,630**	**8**	**33**	**35**	**15**	**91**

SITE			
BC District	18,735 SF		
DN District	65,190 SF		
TOTAL	**83,925 SF**		
15% SF of DN District	9,779 SF		
15% SF of SITE	12,589 SF		
Current Landscaped area in DN District	15,382 SF	=	24%
Current Landscaped area in SITE	18,851 SF		22%

	Broadway Corridor BC	Downtown Neighborhood DN	
	Required	Required	Proposed
Lot width	20'	20'	209' 8 ½ "
Lot Depth	75'	75'	392' 1" (mean)
Front setback	0 min; 0/10 max	0/10 max	0
Side setback	0	0 max	0
Rear setback	none on Broadway	20'	along Johnston: 362'1 ½ ' along Lander: 98' 4 ½ '
Landscaped area	none on Broadway	15%	19% of DN lot area
Frontage occupancy	80%	80%	100%
Height	-3 st/35 ft min -5 st/65 ft max -6th st if front setback ≥15 ft	Shopfront & Midrise: - 3 st/35 ft min - 6 st/75 ft max	5 st/ 60 ft
Parking Spaces	*No parking required except "Parking dependent" uses as determined by the planning board -* *Retail*: 1/300sf Retail in BC = 12,383SF=41 *Residential* = 0 *Total* = 0 to 41	*Retail*: 1st 5,000 sf = none; Retail in DN 1,417 Sf =0 *Residential*: 1/unit Number of units 38 in DN = 38 *Total* = 38	*On-site*: 111 *Adjoining public street frontages*: Broadway= 18 Johnston St.= 19 Additional spaces available within 500 ft. including in Lander St. municipal lot

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:

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SUSTAINABILITY TARGET:
LEED FOR HOMES

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Revisions:

Architect:

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228 Merryall Road
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Do Not Scale Plans
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Seal:

REGISTERED ARCHITECT MARIUS MAGNUSSON 14683 STATE OF NEW YORK

Drawing Title:

SITE PLAN

Project Number:	12008
Date: 04/30/16	Drawing #:
Scale: 1" = 20'-0"	A-02
Drawn by: Author	
Checked by: Checker	

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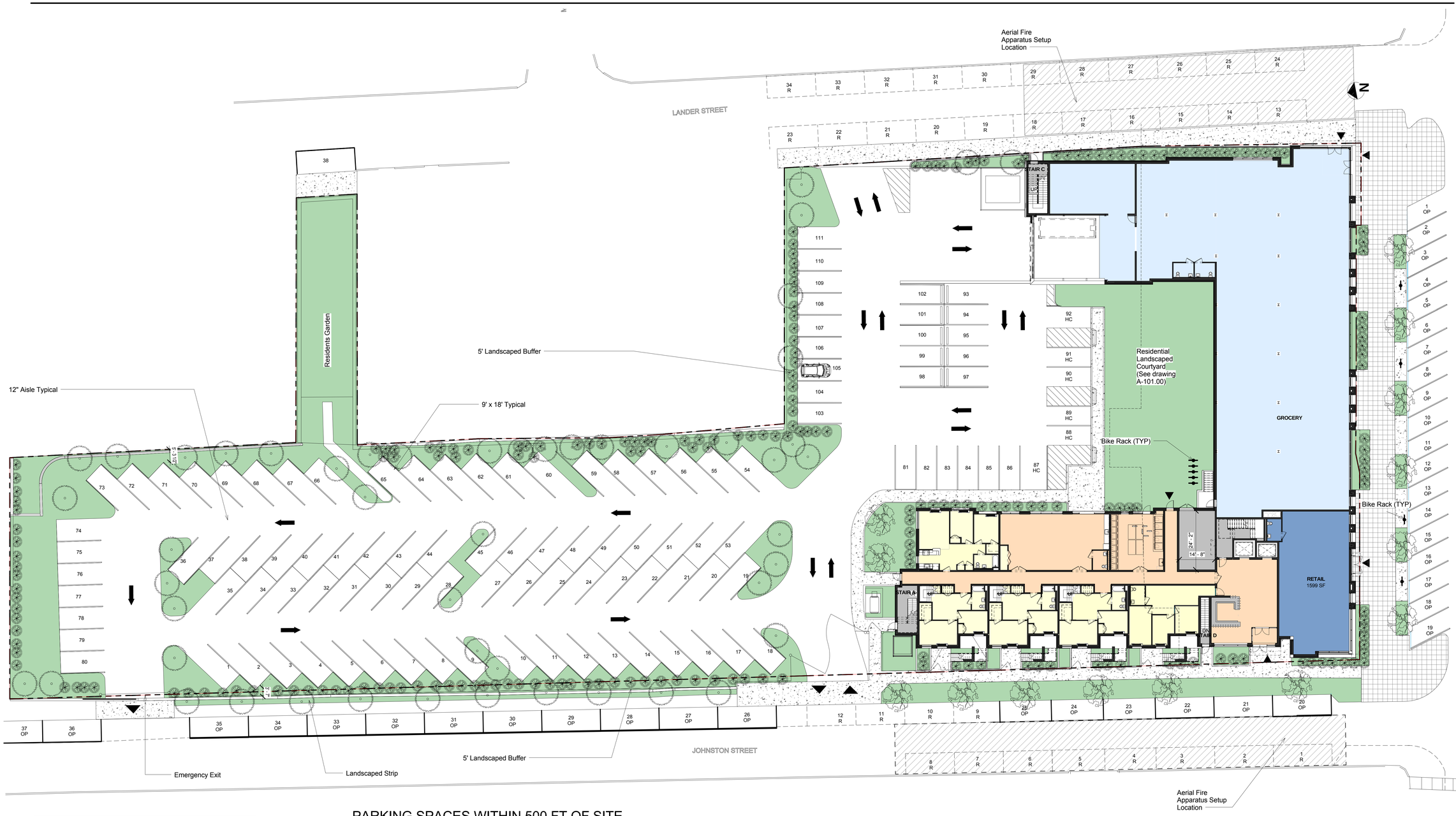
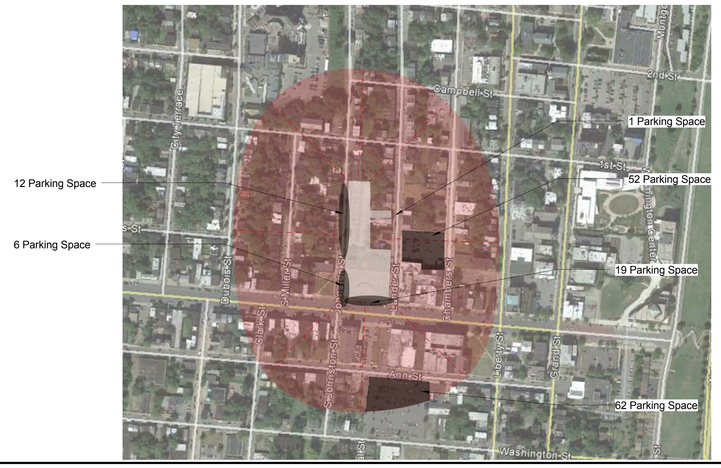


PARKING	
On Site Parking	111
On Street Parking (Broadway St.)	19
On Street Parking (Johnston St.)	18
On Street Parking (Lander St.)	1
Lander's St. Municipal Parking	52
Ann's St. Municipal Parking	62
TOTAL	**263**
Total On-Site and-Off Site	149
Total 500 ft Parking Lots	114

PARKING SPACES WITHIN 500 FT OF SITE



TOTAL ON SITE PARKING: 111 CARS

TOTAL STREET PARKING: 38 CARS

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

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MILL STREET PARTNERS

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SUSTAINABILITY TARGET:
LEED FOR HOMES

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	07/29/16	Planning Board Submission

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Seal:

REGISTERED ARCHITECT MARCUS MAGNUSSON 14000 STATE OF NEW YORK

Drawing Title:

VEHICLE AND BICYCLE PARKING

Project Number: 12008
Date: 04/30/16
Scale: 1/16" = 1'-0"
Drawn by: Author
Checked by: Checker
Drawing #: A-02a

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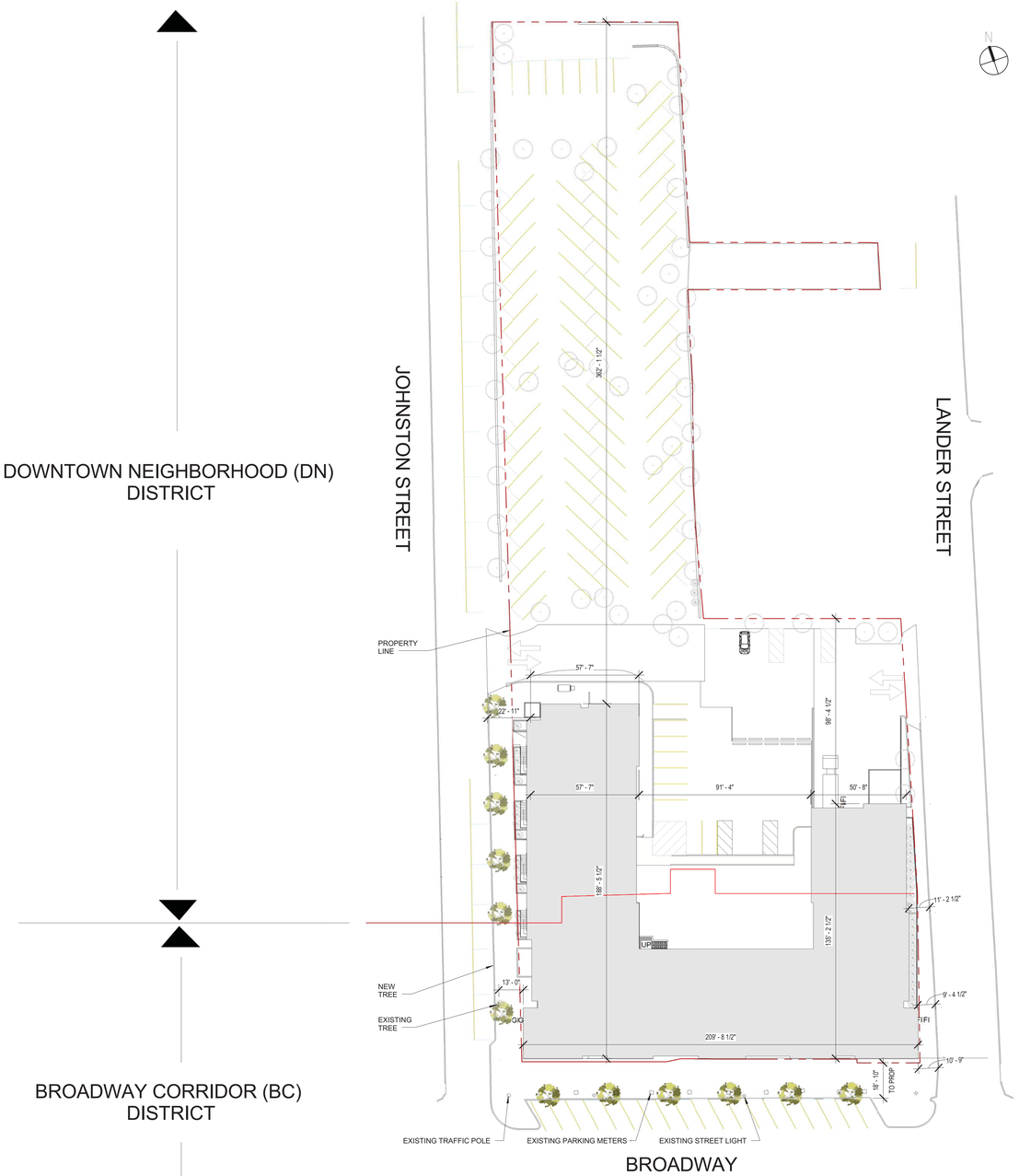
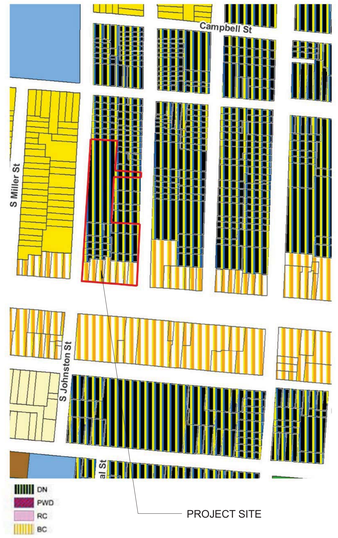
7/28/2016 3:15:46 PM

"The final drawings will include all items necessary to be in compliance with LEED for Homes provisions indicated in Attachment B9 Green Building Criteria Checklists included with this Unified Funding 2013 application for Mid-Broadway Redevelopment"



1 ZONING ANALYSIS - MASSING & SETBACKS
1" = 30'-0"



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2	0	22,750	22,750	2	7	10	3	22
3	0	22,300	22,300	3	9	9	4	25
4	0	22,200	22,200	2	10	10	3	25
5	0	14,000	14,000	1	7	5	2	15
R	0	1,270	1,270					
	13,800	**94,830**	**108,630**	**8**	**33**	**35**	**15**	**91**

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Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:

NEWBURGH ZONING INFO

Project Number: 12008
Date: 04/30/16
Drawing #: A-03
Scale: 1" = 30'-0"
Drawn by: Author
Checked by: Checker

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7/26/2016 5:06:18 PM

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0144E

FIRM

FLOOD INSURANCE RATE MAP

for ORANGE COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
NEWBURGH, CITY OF	360626
NEWBURGH, TOWN OF	360627

PANEL 144 OF 630
MAP SUFFIX: E
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
36071C0144E

EFFECTIVE DATE
AUGUST 3, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

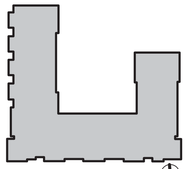
Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
	04/19/13	HFA Submission
	07/19/13	Site Plan Re-Submission
	12/05/13	HCR Submission
	11/20/15	Workshop Submission
	01/08/16	Planning Board Submission
	04/26/16	Planning Board Submission
	06/02/16	Planning Board Submission

Revisions:

Architect:
Magnusson Architecture & Planning PC
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

Civil Engineer:
Tectonic
Corporate Office
PO Box 37, Pleasant Hill Rd 70 Mountainville, NY 10953
Tel (845) 534 5959

Structural Engineer:
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20 S. Maple Street, Suite 150
Ambler, PA 19002
Tel (215) 646 8001 Fax (215) 646 8310

MEP Engineer:
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Tel (732) 772 1500 Fax (732) 772 1515

Energy Consultant:
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307 Seventh Avenue, Suite 1701,
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Tel (212) 254 5800

Landscape Architect:
Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

REGISTERED ARCHITECT MARCUS MAGNUSSON 16995 STATE OF NEW YORK

Drawing Title:
FLOOD INSURANCE RATE MAP

Project Number: 12008
Date: 01/08/16
Drawing #: A-03a
Scale:
Drawn by: Author
Checked by: Checker

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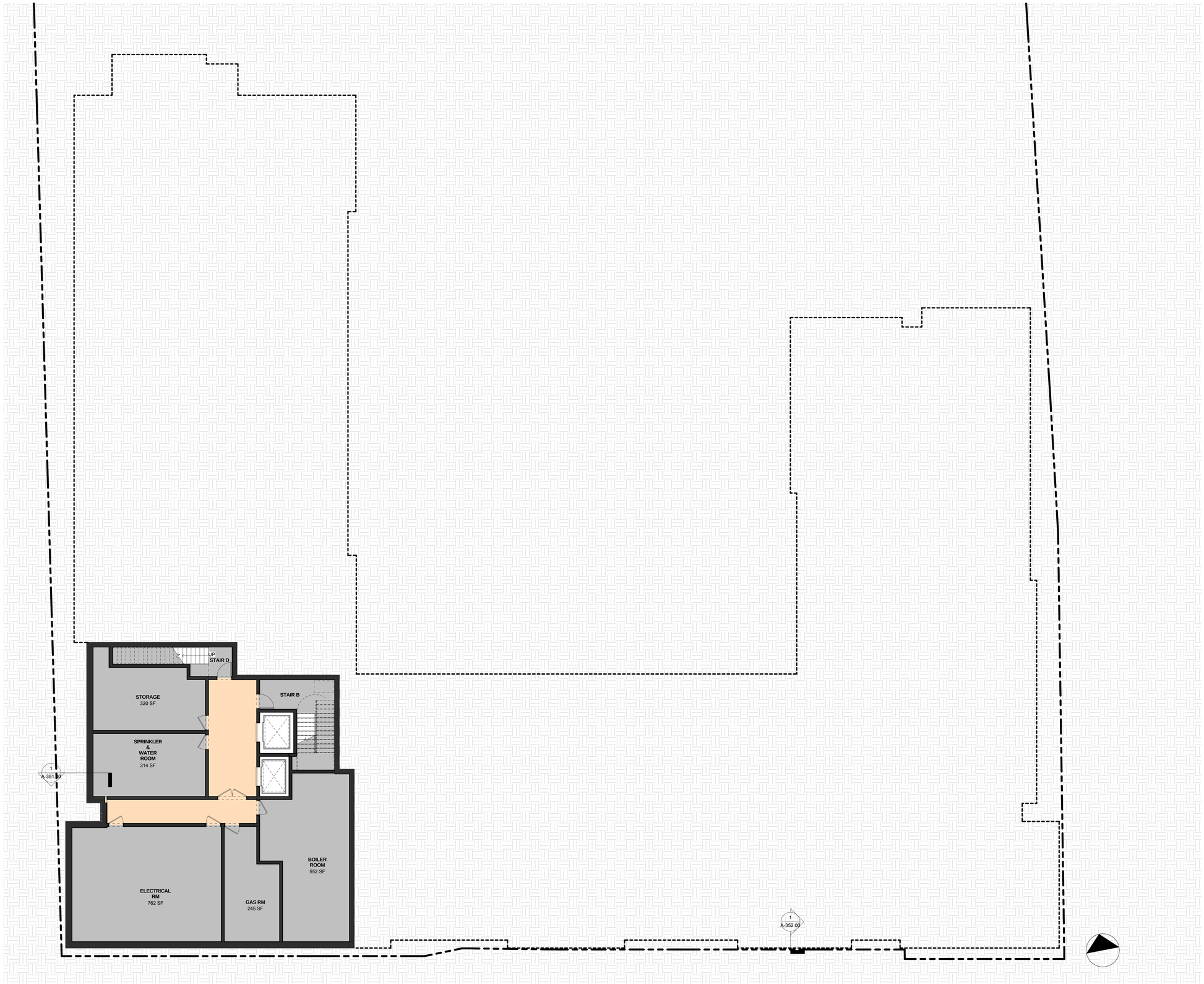
2/18/2016 4:58:09 PM



Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:

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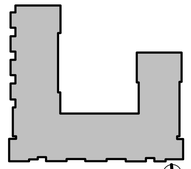
SUSTAINABILITY TARGET:
LEED FOR HOMES



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	06/03/16	Planning Board Submission
	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

Revisions:

Architect:

MAP

Magnusson Architecture & Planning PC
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Energy Consultant:

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Landscape Architect:

Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
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Seal:

Drawing Title:

CELLAR PLAN

Project Number:	12008
Date: 04/30/16	Drawing #:
Scale: 1/8" = 1'-0"	A-04
Drawn by: Author	
Checked by: Checker	

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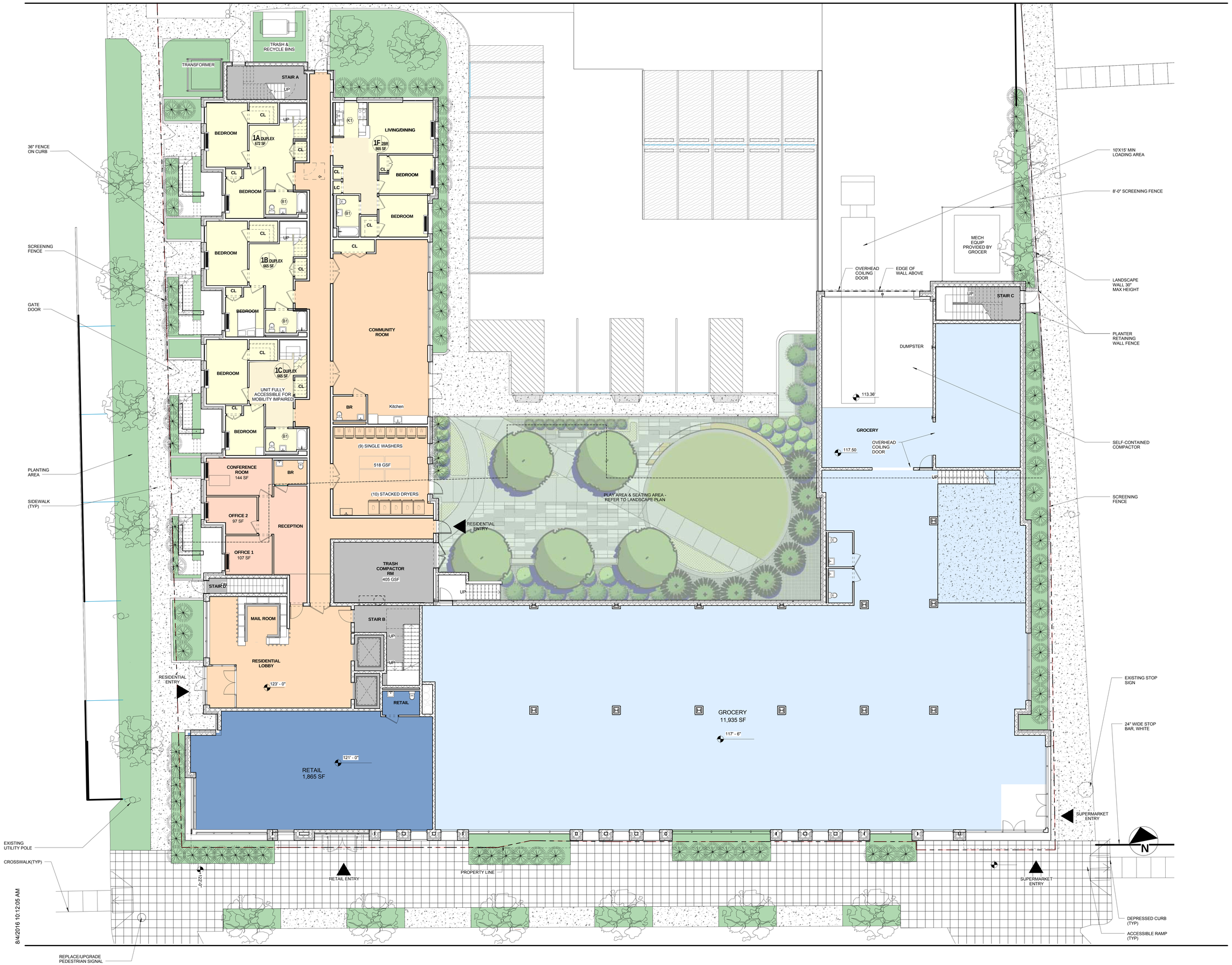
7/26/2016 5:35:28 PM



8/4/2016 10:12:05 AM

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
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	07/29/16	Planning Board Submission

Revisions:

Architect:

MAP

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Tel (212) 254 5800

Landscape Architect:

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228 Merryall Road
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Tel (860) 779 7612

Do Not Scale Plans
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Seal:

REGISTERED ARCHITECT MARIUS MAGNUSSON 14683 STATE OF NEW YORK

Drawing Title:

1st FLOOR PLAN

Project Number: 12008
Date: 04/30/16
Scale: 1/8" = 1'-0"
Drawn by: Author
Checked by: Checker
Drawing #: A-05

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1 2ND FLOOR
1/8" = 1'-0"

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

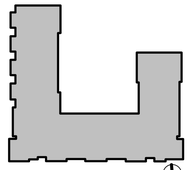
Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



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	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

Revisions:

Architect:

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Do Not Scale Plans
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Seal:

Drawing Title:
2nd FLOOR PLAN

Project Number: 12008
Date: 04/30/16
Scale: 1/8" = 1'-0"
Drawn by: Author
Checked by: Checker
Drawing #: A-06

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7/27/2016 9:24:00 AM

1 3RD FLOOR
1/8" = 1'-0"

Mid-Broadway Redevelopment

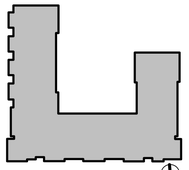
Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

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	06/03/16	Planning Board Submission
	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

Revisions:

Architect:

MAP
Magnusson Architecture & Planning PC
42 West 39th Street 15th Floor,
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Tel (212) 253 7820 Fax (212) 253 1276

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Landscape Architect:
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Do Not Scale Plans
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Seal:

REGISTERED ARCHITECT MARIO MAGNUSSON 14693 STATE OF NEW YORK

Drawing Title:
3rd FLOOR PLAN

Project Number: 12008
Date: 04/30/16
Scale: 1/8" = 1'-0"
Drawn by: Author
Checked by: Checker
Drawing #: A-07

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7/27/2016 9:05:21 AM

1 4TH FLOOR
1/8" = 1'-0"

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

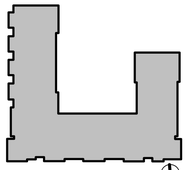
Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

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	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

Revisions:

Architect:

Magnusson Architecture & Planning PC
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

Civil Engineer:

Tectonic
Corporate Office
PO Box 37, Pleasant Hill Rd 70 Mountainville, NY 10953
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Energy Consultant:

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307 Seventh Avenue, Suite 1701,
New York, NY 10001
Tel (212) 254 5800

Landscape Architect:

Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:

4th FLOOR PLAN

Project Number:	12008
Date: 04/30/16	Drawing #:
Scale: 1/8" = 1'-0"	A-08
Drawn by: Author	
Checked by: Checker	

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7/27/2016 10:00:02 AM

1 5TH FLOOR
1/8" = 1'-0"

7/27/2016 10:09:45 AM

Mid-Broadway Redevelopment

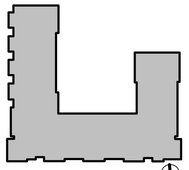
Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

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	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

Revisions:

Architect:

Magnusson Architecture & Planning PC
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

Civil Engineer:

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Landscape Architect:

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228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
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Seal:

REGISTERED ARCHITECT MORRIS MAGNUSSON 14683 STATE OF NEW YORK

Drawing Title:

5th FLOOR PLAN

Project Number: 12008
Date: 04/30/16
Scale: 1/8" = 1'-0"
Drawn by: Author
Checked by: Checker

Drawing #:

A-09

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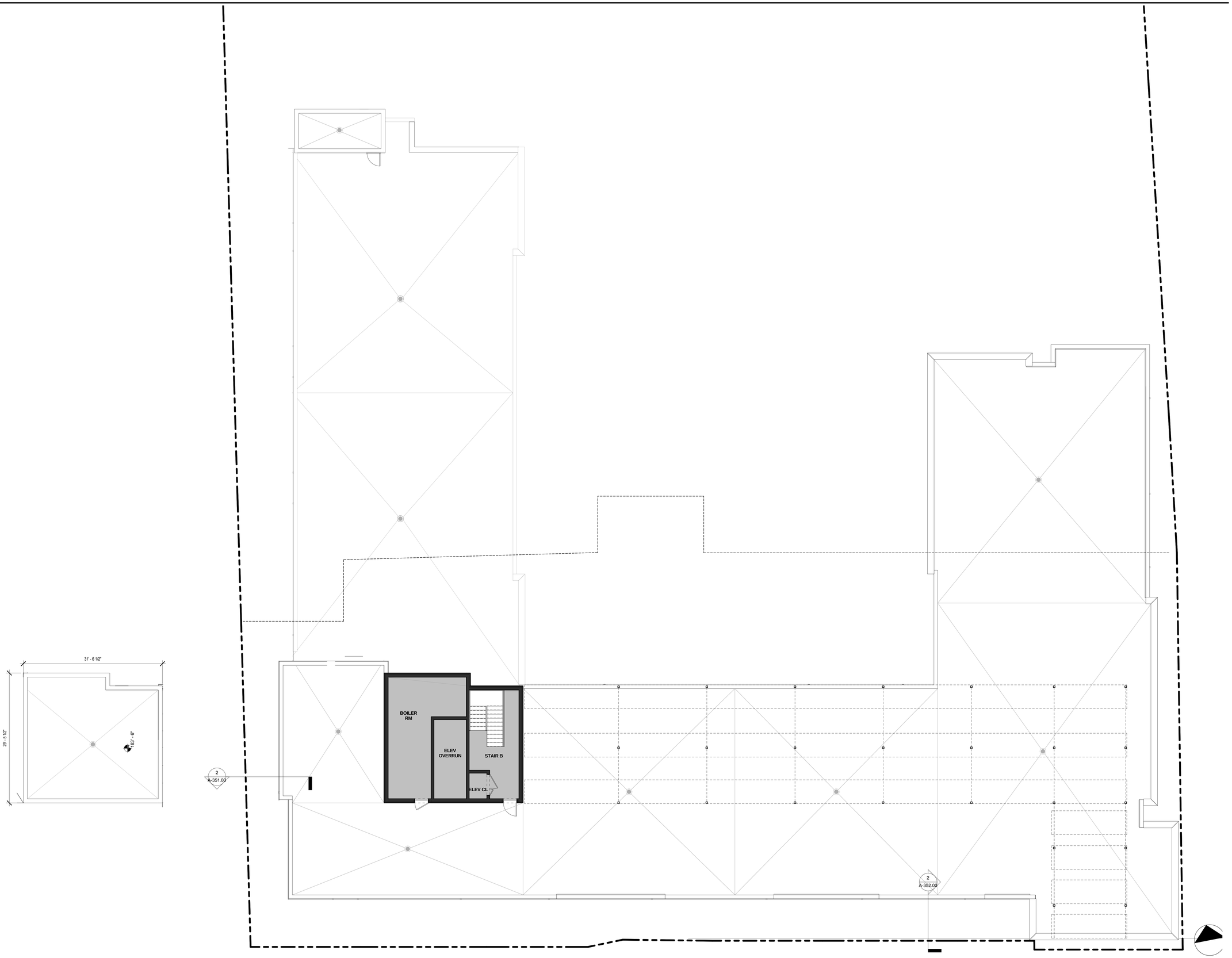

2 BULKHEAD PLAN
1/8" = 1'-0"

1 ROOF
1/8" = 1'-0"

7/27/2016 10:16:26 AM

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

Issued:

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	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

Revisions:

Architect:

MAP

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42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

Civil Engineer:

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Tel (845) 534 5959

Structural Engineer:

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Tel (212) 254 5800

Landscape Architect:

Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

REGISTERED ARCHITECT
MARIUS MAGNUSSON
16680
STATE OF NEW YORK

Drawing Title:

ROOF & BULKHEAD PLANS

Project Number: 12008

Date: 04/30/16 Drawing #:

Scale: 1/8" = 1'-0"

Drawn by: Author

Checked by: Checker

A-10

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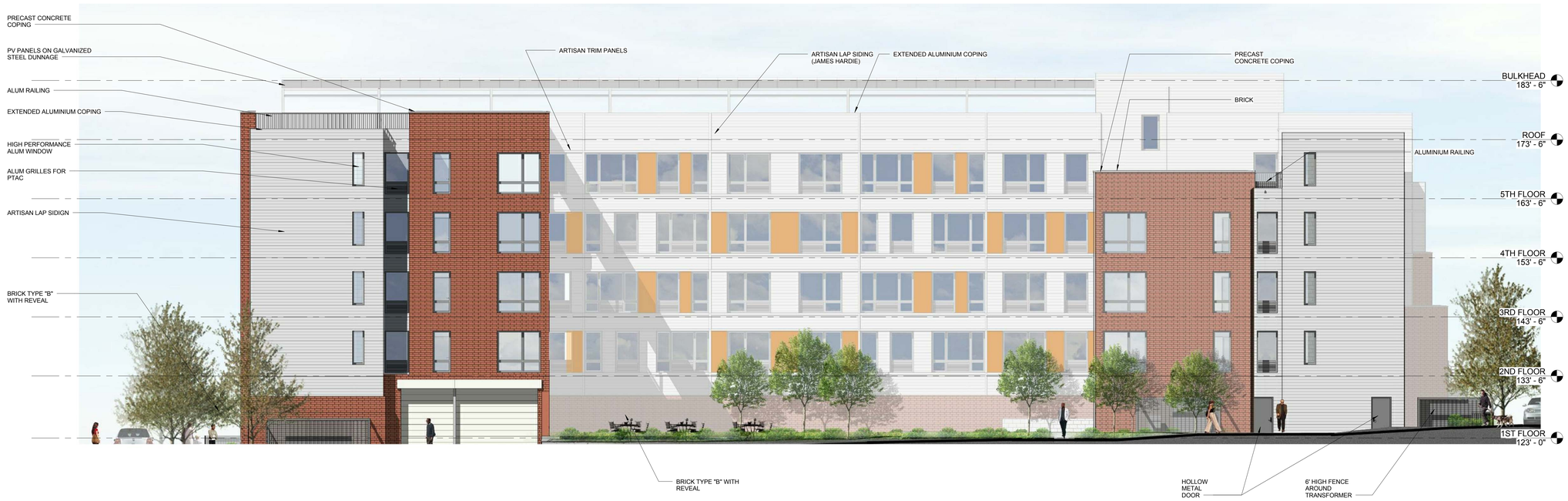


1 North Elevation
1/8" = 1'-0"

2 BROADWAY - SOUTH ELEVATION
1/8" = 1'-0"

7/28/2016 4:57:06 PM

Mid-Broadway Redevelopment

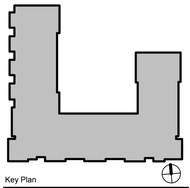
Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

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	07/29/16	Planning Board Submission

Revisions:

Architect:

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228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
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Seal:

Drawing Title:

SOUTH & NORTH ELEVATIONS

Project Number:	12008
Date: 04/30/16	Drawing #:
Scale: 1/8" = 1'-0"	A-11
Drawn by: Author	
Checked by: Checker	

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1 LANDER ST - EAST ELEVATION
1/8" = 1'-0"

2 JOHNSTON ST - WEST ELEVATION
1/8" = 1'-0"

7/28/2016 4:52:24 PM

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
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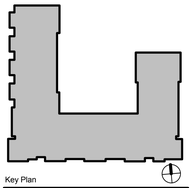

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	01/08/16	Planning Board Submission
	04/26/16	Planning Board Submission
	06/02/16	Planning Board Submission
	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

Revisions:

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Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:

EAST & WEST ELEVATIONS

Project Number: 12008
Date: 04/30/16
Scale: 1/8" = 1'-0"
Drawn by: Author
Checked by: Checker

Drawing #: A-12

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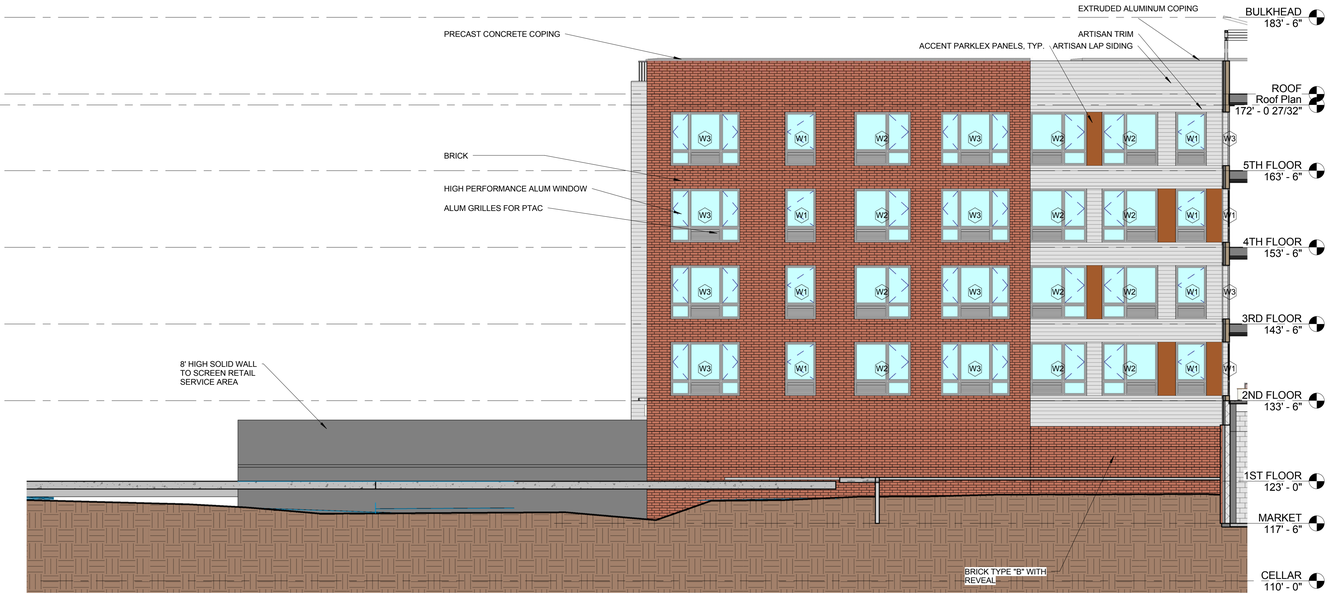
1 WEST COURTYARD ELEVATION
1/8" = 1'-0"



2 East Courtyard Elevation
1/8" = 1'-0"

SOUTH ELEVATION IN BROADWAY STREET CONTEXT

7/28/2016 4:54:52 PM

Mid-Broadway Redevelopment

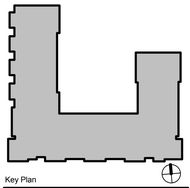
Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

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	07/19/13	Site Plan Re-Submission
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	06/02/16	Planning Board Submission
	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

Revisions:

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Seal:

Drawing Title:
COURTYARD ELEVATIONS

Project Number:	12008
Date: 04/30/16	Drawing #:
Scale: 1/8" = 1'-0"	A-13
Drawn by: Author	
Checked by: Checker	

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WEST

EAST

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

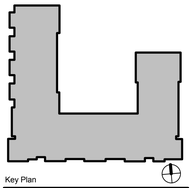
Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



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	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

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Seal:

Drawing Title:

BROADWAY ELEVATION STUDY

Project Number: 12008
Date: 04/30/16
Drawing #: A-13a
Scale:
Drawn by: Author
Checked by: Checker

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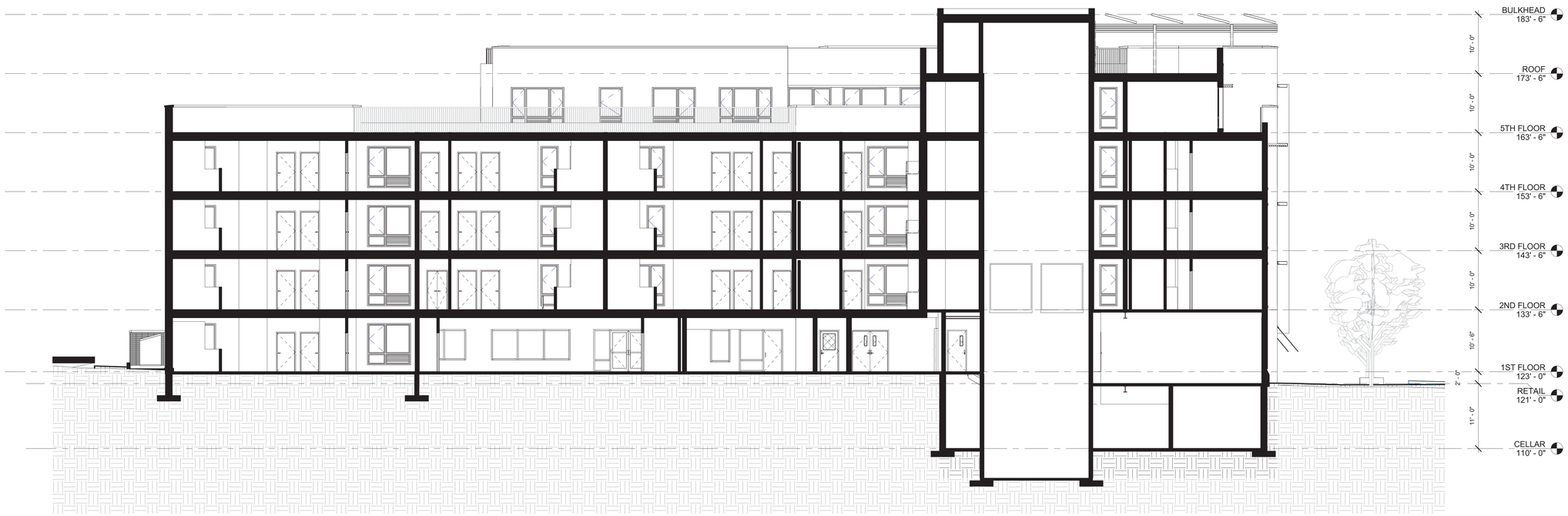
7/29/2016 3:45:15 PM

1 EAST-WEST SECTION
1/8" = 1'-0"



2 NORTH-SOUTH SECTION
1/8" = 1'-0"

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

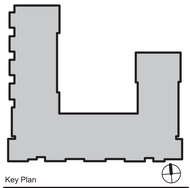
Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



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Seal:

Drawing Title:

BUILDING SECTIONS

Project Number:	12008
Date: 01/08/16	Drawing #:
Scale: 1/8" = 1'-0"	A-14
Drawn by: Author	
Checked by: Checker	

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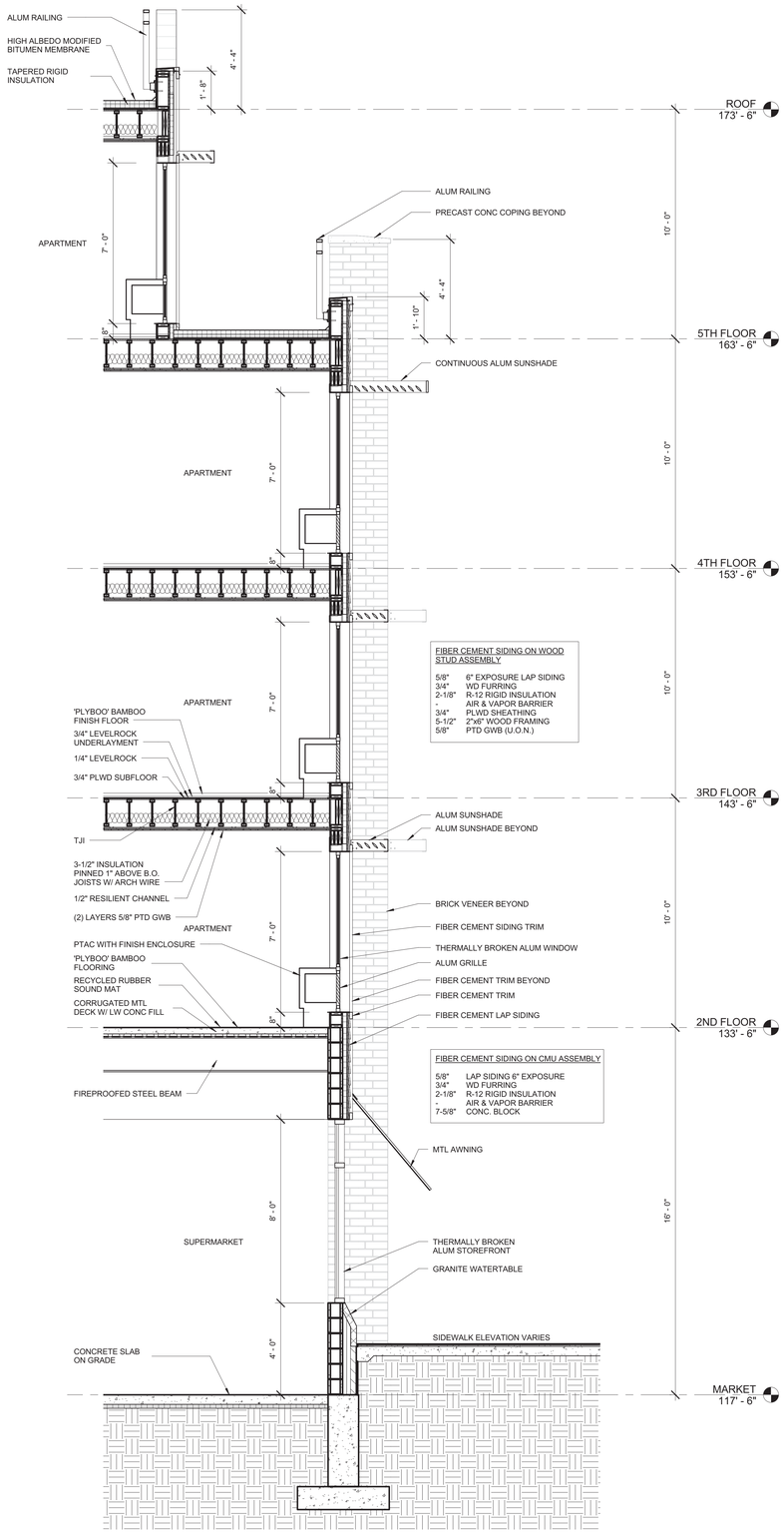
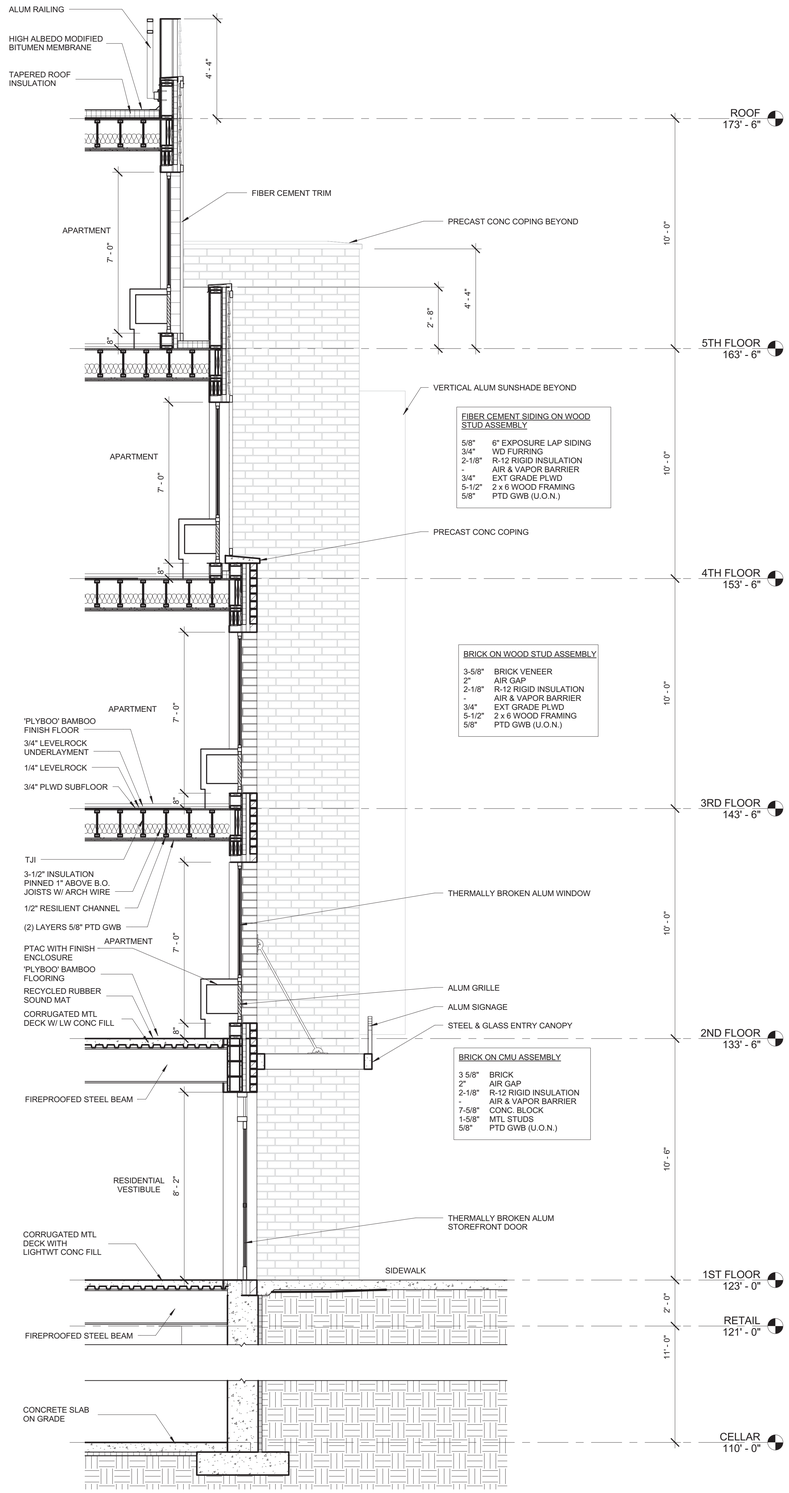


2 WALL SECTION THRU BROADWAY RETAIL
3/8" = 1'-0"



1 WALL SECTION THRU RESIDENTIAL ENTRY
3/8" = 1'-0"

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

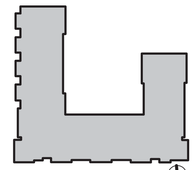
Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



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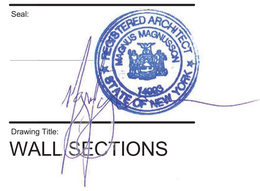
Seal:



Drawing Title:

WALL SECTIONS

Project Number:	12008
Date: 01/08/16	Drawing #:
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Drawn by: Author	
Checked by: Checker	

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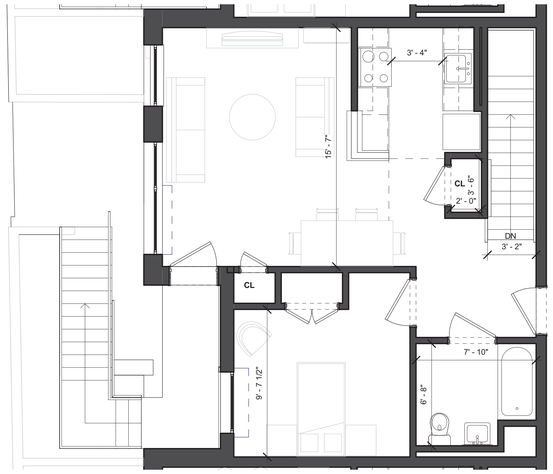
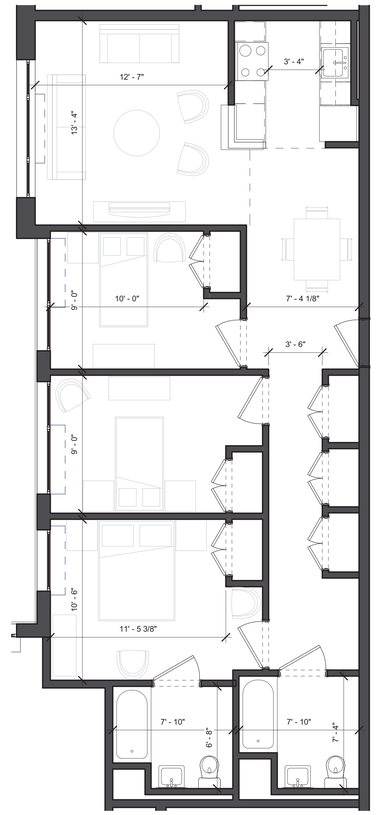
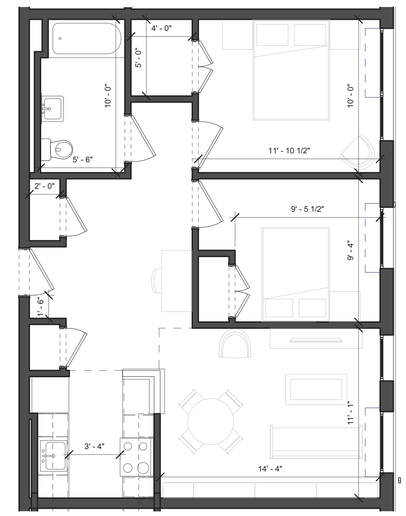


5 DUPLEX - 2ND FLOOR
1/4" = 1'-0"

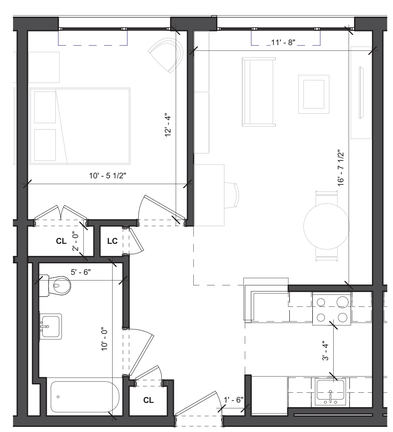


6 3 BEDROOM (01) 1077 SF
1/4" = 1'-0"

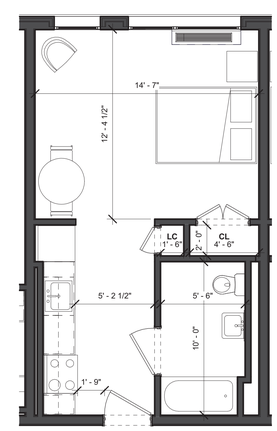


2 2 BEDROOM--740 SF
1/4" = 1'-0"

7 Unit Plan Duplex - 1st Floor (1270 SF)
1/4" = 1'-0"



1 1 BEDROOM--590 SF
1/4" = 1'-0"



3 Unit Plan 0 BR
1/4" = 1'-0"

FURNITURE N.I.C. - SHOWN FOR REFERENCE

4/25/2016 12:29:17 PM

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
	04/19/13	HFA Submission
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	07/07/16	Planning Board Submission
	07/29/16	Planning Board Submission

Revisions:

Architect:

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Landscape Architect:

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Seal:

Drawing Title:

UNITS PLANS

Project Number:	12008
Date: 04/30/16	Drawing #:
Scale: 1/4" = 1'-0"	A-16
Drawn by: Author	
Checked by: Checker	

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VIEW LOOKING EAST DOWN BROADWAY

VIEW LOOKING WEST UP BROADWAY

7/27/2016 10:38:03 AM

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

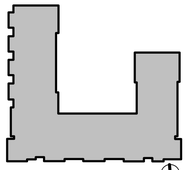
Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



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Seal:

Drawing Title:

RENDERED PERSPECTIVE STUDIES

Project Number: 12008

Date: 04/30/16 Drawing #:

Scale:

Drawn by: Author

Checked by: Checker

A-17

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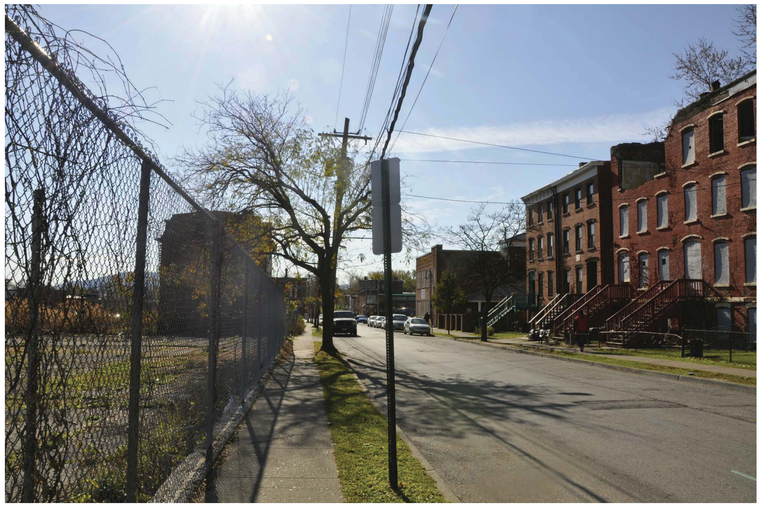
1) VIEW OF THE SITE LOOKING NORTH ON BROADWAY

2) VIEW OF THE SITE CORNER OF JOHNSTON AND BROADWAY LOOKING EAST

3) VIEW OF THE SITE LOOKING SOUTH ON LANDER



4) STREET VIEW OF THE SITE LOOKING SOUTH ON JOHNSTON

5) STREET VIEW OF THE SITE LOOKING SOUTH ON JOHNSTON

KEY MAP & AERIAL VIEW LOOKING NORTH

6) STREET VIEW OF THE SITE LOOKING EAST ON BROADWAY

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

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Revisions:

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MAP

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Seal:

Drawing Title:
Site Photographs

Project Number: 12008
Date: 01/08/16
Drawing #: B4
Scale:
Drawn by: Author
Checked by: Checker

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4/18/2016 3:43:07 PM

GENERAL NOTES

A. SITE CONDITIONS

1. ALL ELEVATIONS SHOWN ARE FINISHED GRADE ELEVATIONS UNLESS OTHERWISE NOTED.
2. ALL INFORMATION SHOWN OR NOTED FOR EXISTING FACILITIES, GRADES, ROADWAYS, AND MATERIALS IS APPROXIMATE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL INFORMATION WHICH MAY AFFECT HIS WORK.
3. TEST PITS SHALL BE CONSTRUCTED BY THE CONTRACTOR AT ALL PIPE CROSSINGS AS REQUIRED TO COMPLETE THE WORK OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE PROVISION OF ALL MATERIALS, LABOR AND INSTALLATION OF ALL ITEMS OF CONSTRUCTION FOR THE SUCCESSFUL COMPLETION AND OPERATION OF THE PROJECT SATISFACTORY TO THE OWNER AND THEIR REPRESENTATIVE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. THE CONTRACTOR SHALL PROVIDE HIS OWN LAYOUT AND STAKEOUT OF ALL PROPOSED IMPROVEMENTS. OFFSET LINES WITH STAKES SHALL BE SET AT APPROPRIATE INTERVALS TO FACILITATE CONSTRUCTION. CUT SHEETS SHALL BE SUBMITTED FOR APPROVAL TO THE OWNERS' REPRESENTATIVE AND TO THE WORK CREWS IN THE TIME IDENTIFIED IN SPECS PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL VERIFY ALL BENCHMARKS PRIOR TO THE START OF CONSTRUCTION.
7. THE CONTRACTOR SHALL PROTECT ALL BENCH MARKS AND MONUMENTS FROM DAMAGE AND SHALL ESTABLISH OFFSET POINTS AS REQUIRED FOR THIS WORK.
8. ALL STATIONS SHOWN ON PLANS ARE MEASURED ALONG THE VARIOUS CONSTRUCTION BASELINES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY THROUGHOUT THE DURATION OF THE PROJECT AND SHALL PROVIDE AND MAINTAIN SECURITY FENCING, MEASURES, AND PERSONNEL AS REQUIRED AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
10. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE SAFETY REQUIREMENTS AS OUTLINED IN THE GENERAL CONDITIONS OF THE CONSTRUCTION SPECIFICATIONS. THE OWNER AND ENGINEER SHALL ASSUME NO RESPONSIBILITY AND/OR LIABILITY FOR THE SAFETY OF THE WORKERS WHERE THE WORK IS BEING PERFORMED.
11. CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND ALL CODES, ORDINANCES, RULES AND REGULATIONS OF HEALTH, PUBLIC OR OTHER AUTHORITIES CONTROLLING OR LIMITING THE METHODS, MATERIAL TO BE USED, OR THE ACTIONS OF THOSE EMPLOYED IN WORK OF THIS KIND. ALL WORK, LABOR OR MATERIAL NECESSARY TO COMPLY WITH THESE LAWS, CODES, ORDINANCES, RULES AND REGULATIONS SHALL BE PERFORMED AND FURNISHED BY THE CONTRACTOR.
12. THE MUNICIPAL AND COUNTY DEPARTMENT OF PUBLIC WORKS AS WELL AS THE STATE DOT (WHERE STATE ROADS ARE INVOLVED) SHALL BE NOTIFIED 72 HOURS IN ADVANCE OF ANY ROAD OPENING OF ANY STREET.
13. THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL NECESSARY PERMITS AND LICENSES REQUIRED TO CARRY OUT HIS WORK IN FULL ACCORDANCE WITH REQUIREMENTS OF ALL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
14. AT LEAST ONE WEEK PRIOR TO THE COMMENCEMENT OF ANY WORK, INCLUDING THE INSTALLATION OF EROSION CONTROL DEVICES OR THE REMOVAL OF TREES AND VEGETATION, A PRE-CONSTRUCTION MEETING MUST BE HELD WITH MUNICIPAL REPRESENTATIVES. IT IS THE RESPONSIBILITY AND OBLIGATION OF THE PROPERTY OWNER TO ARRANGE SUCH A MEETING.

B. SOIL EROSION, SEDIMENT, AND DUST CONTROL

1. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO MAINTAIN DUST CONTROL AS REQUIRED OR DIRECTED BY THE ENGINEER. ALL VEHICLES SHALL BE CLEAN AND ALL ROADWAYS SHALL BE MAINTAINED FREE OF CONSTRUCTION DEBRIS AND SOIL.
2. ALL SEDIMENT AND SOIL EROSION CONTROLS PRACTICES ARE TO BE INSTALLED IN CONFORMANCE WITH STATE AND LOCAL STANDARDS PRIOR TO ANY MAJOR SOIL DISTURBANCES. ALL WORK SHALL BE COMPLETED IN PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
3. THE SOIL EROSION AND SEDIMENT CONTROL PLAN SHEET INCLUDES ADDITIONAL NOTES WHICH SHALL BE ADHERED TO BY THE CONTRACTOR.

C. UTILITIES

1. THE LOCATION OF EXISTING UTILITIES, AS MAY BE SHOWN ON THE CONTRACT DRAWINGS, ARE NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. ALL EXISTING UTILITIES ARE SHOWN FOR INFORMATION ONLY. THE CONTRACTOR SHALL CONTACT THE DIG SAFELY NEW YORK (UFPO) SHOWN BELOW. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE, IDENTIFY AND PROTECT UTILITIES WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL DIG TEST PITS TO LOCATE UTILITIES WITHIN THE PROJECT LIMITS.
2. DIG SAFELY NEW YORK (UFPO), PHONE # 1-800-962-7962.
3. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES TEN (10) DAYS PRIOR TO CONSTRUCTION, OF THEIR ANTICIPATED START DATE.
4. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES TO DETERMINE THEIR SCHEDULE FOR PERFORMING UTILITY RELOCATION AND INSTALLATION WORK AND HE SHALL SCHEDULE HIS WORK ACCORDINGLY SO AS NOT TO INTERFERE WITH THE WORK OF THE UTILITY COMPANIES.
5. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AT LEAST 72 HOURS IN ADVANCE OF ANY WORK ON THEIR FACILITIES.
6. EXISTING UTILITY FACILITIES THAT MAY HAVE TO BE RELOCATED ARE TO BE MOVED BY THE RESPECTIVE UTILITY COMPANY UNLESS OTHERWISE NOTED. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND SHALL NOT CLAIM ANY DELAYS TO HIS CONSTRUCTION SCHEDULE.
7. ALL PROPOSED UTILITIES SHALL BE INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED AND SHALL BE LOCATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY. THE CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH THESE UTILITIES FOR THE PROJECT, BOTH ON AND OFF SITE. SAID UTILITIES INCLUDE POTABLE WATER, TELEPHONE, ELECTRIC, GAS, CABLE, AND SANITARY SEWER SERVICES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL REQUIRED UTILITY CONNECTIONS WITH THE RESPECTIVE UTILITY COMPANY.
9. ALL TRENCHES SHALL BE BACK FILLED WITHOUT DELAY. OPEN TRENCHES SHALL BE KEPT TO A MINIMUM. OPEN TRENCHES SHALL BE TEMPORARILY SUPPORTED AND STEEL PLATED WHEN WORK IS NOT IN PROGRESS. NO EXCAVATION AREAS SHALL REMAIN OPEN OVERNIGHT. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF STEEL PLATES THAT ARE CAPABLE OF SAFELY SUPPORTING THE LOADS THEY WILL BE SUBJECTED TO.
10. ANY DAMAGE TO UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, AND ALL COST FOR REPAIRS SHALL BE BORNE BY THE CONTRACTOR.
11. ALL GAS VALVES, MARKERS, VENTS AND BOXES WITHIN THE CONSTRUCTION LIMITS SHALL BE RESET BY THE RESPECTIVE UTILITY COMPANIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY EACH UTILITY COMPANY AND SCHEDULE THE WORK ACCORDINGLY.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COSTS INCURRED IN TEMPORARY SUPPORT OF UTILITY POLES NEAR EXCAVATION THAT DO NOT REQUIRE RELOCATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE APPROPRIATE UTILITY COMPANY FOR UTILITY POLE RELOCATION.
13. ALL PROPOSED WATER SERVICES SHALL BE LOCATED A MINIMUM SEPARATION DISTANCE OF 10 HORIZONTAL FEET AND 1.5 VERTICAL FEET FROM ALL SANITARY SEWER FACILITIES. A MINIMUM 4.5 FEET OF COVER SHALL BE PROVIDED OVER ALL WATER AND SANITARY SEWER LINES.
14. ALL EXCAVATIONS MADE TO REMOVE EXISTING UNDERGROUND UTILITIES/STRUCTURES, INSTALL NEW UNDERGROUND UTILITIES/STRUCTURES, WITHIN FIVE (5) FEET OUTSIDE OF THE BUILDING, OR WITHIN ROADWAYS SHALL BE BACKFILLED IN ACCORDANCE WITH THE PLAN DETAILS AND SPECIFICATIONS AND UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE.
15. UNDERGROUND IMPROVEMENTS IF ANY AND NOT VISIBLE AT THE TIME OF THE SURVEY, HAVE NOT BEEN LOCATED IN THE FIELD OR SHOWN HEREON. TO THE BEST OF OUR BELIEF, UNDERGROUND IMPROVEMENTS FROM AVAILABLE DOCUMENTATION HAVE BEEN SHOWN.

D. PEDESTRIAN AND TRAFFIC FLOW

1. THE CONTRACTOR MUST PROVIDE A MEANS OF SAFE INGRESS AND EGRESS AT ALL TIMES TO THE PUBLIC. THIS SHALL INCLUDE RIGHTS OF WAYS AS WELL AS INDIVIDUAL RESIDENCES AND/OR BUSINESSES WITHIN THE PROJECT AREA.
2. CONTRACTOR IS REQUIRED TO ENSURE THE SAFE, ORDERLY AND EXPEDITIOUS FLOW OF TRAFFIC AT ALL TIMES. SAID TRAFFIC FLOW IS TO BE MAINTAINED IN ACCORDANCE WITH RECOGNIZED TRAFFIC CONTROL STANDARDS AND IS TO BE ENSURED, THROUGH THE USE OF, BUT NOT LIMITED TO, FLAGMAN, SIGNING, BARRICADES, FLASHING LIGHTS, CONES, BARRELS, ETC. AS SHOWN ON THE CONTRACT PLANS, AND APPROVED BY THE OWNER'S REPRESENTATIVE.
3. FLAGMAN SHALL BE USED FOR THE PROTECTION OF ANY EQUIPMENT ENTERING, LEAVING OR CROSSING ACTIVE TRAFFIC LANES, OR AS MAY BE REQUIRED FOR THE ROUTING OF ANY TRAFFIC AROUND OR THROUGH THE CONSTRUCTION. FLAGMAN SHALL BE EMPLOYED BY THE CONTRACTOR.
4. DURING THE WINTER MONTHS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW AND ICE REMOVAL AND THE COMPLETE MAINTENANCE OF EXISTING ROADWAYS UTILIZED FOR CONSTRUCTION PURPOSES BY ALL TRADES. THE ROADWAYS SHALL BE KEPT FREE OF ALL OBSTRUCTIONS AND KEPT IN A SMOOTH RIDING CONDITION AT ALL TIMES. ALL POT HOLES, WASHOUTS, CAVE-INS, ETC., DEVELOPING DURING THIS PERIOD SHALL BE PROPERLY FILLED IN WITH MATERIAL BY METHOD APPROVED BY THE OWNER'S REPRESENTATIVE. HOWEVER, THE CONTRACTOR SHALL NOT BE REQUIRED TO REMOVE SNOW FROM ROADS OVER WHICH TRAFFIC IS BEING MAINTAINED.
5. BEFORE BEGINNING WORK ON ANY STAGE OF THE PROJECT, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIFIED WARNING SIGNS, BARRICADES, LIGHTS, AND OTHER DEVICES AS SHOWN ON THE CONTRACT PLANS, OR DEEMED NECESSARY, IN THE OPINION OF THE OWNERS REPRESENTATIVE, TO PROTECT THE PUBLIC DURING THAT PHASE OF HIS OPERATIONS.
6. ALL NECESSARY REGULATORY AND WARNING SIGNS SHALL BE IN ACCORDANCE WITH THE FHWA MUTCD WITH THE NYS SUPPLEMENT, LATEST EDITION, AND STANDARD HIGHWAY SIGNS, LATEST EDITION AND SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR AS INDICATED ON PLANS. WHEN SUCH SIGNS ARE NO LONGER REQUIRED, THE CONTRACTOR SHALL IMMEDIATELY AND CAREFULLY REMOVE AND STORE THEM ON THE PROJECT SITE AT LOCATIONS APPROVED BY THE OWNERS REPRESENTATIVE UNTIL THEY ARE REUSED ON THE PROJECT OR REMOVED BY THE CONTRACTOR.
7. DURING CONSTRUCTION, ALL EXISTING ROADS AND RAMPS SHALL REMAIN OPEN AND BE PROPERLY MAINTAINED TO ACCOMMODATE EMERGENCY VEHICLES AT ALL TIMES.

E. CONSTRUCTION

1. EXISTING ASPHALT PAVEMENT SHALL BE SAWCUT AND REMOVED IN SUCH A MANNER SO AS NOT TO TEAR, BULGE OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO THE DIRECTION OF TRAFFIC.
2. ALL ADJACENT CONCRETE AND BUILDING SURFACES SHALL BE PROTECTED WHEN TACK COAT AND/OR PRIME COAT IS APPLIED.
3. WHERE UNSTABLE SUBGRADE IS ENCOUNTERED DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE COMPLETE EXTENT OF THE FAILED AREA AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL REPLACE THE UNSUITABLE SOILS WITH SUBBASE, COMPACT THE AREA IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AND PROOF ROLL THE AREA TO THE SATISFACTION OF THE OWNERS REPRESENTATIVE.
4. WHERE UNSTABLE OR WEAK AREAS OF PAVEMENT ARE ENCOUNTERED DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE COMPLETE EXTENT OF THE FAILED AREA AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL REPLACE THE FAILED PAVEMENT WITH HMA BASE COURSE PLACED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
5. ONCE THE CONTRACTOR HAS COMMENCED CONSTRUCTION, THE WORK SHALL CONTINUE ON A DAILY BASIS WITHOUT INTERRUPTION UNTIL ALL OF THE WORK HAS BEEN COMPLETED.
6. MAILBOXES, STREET SIGNS, OR TRAFFIC SIGNS REMOVED FOR CONSTRUCTION PURPOSES MUST BE REPLACED BY THE CONTRACTOR WITHIN 24 HOURS.
7. ALL NEW SURFACE CONCRETE SHALL BE PROTECTED FROM DE-ICING SALTS FOR AT LEAST 60 DAYS AFTER THE POUR DATE.
8. ALL UNUSED SIGNS, SIGN POSTS, STORM SEWER CASTINGS AND GRATES REMOVED DURING CONSTRUCTION AND NOT REPLACED ELSEWHERE ON THIS PROJECT SHALL BECOME THE PROPERTY OF THE OWNER. IF THE OWNER DECLINES OWNERSHIP OF THE MATERIALS, THE CONTRACTOR SHALL REMOVE THE MATERIALS FROM THE SITE AT NO ADDITIONAL COST TO THE OWNER.
9. DEPRESSED CURBING SHALL BE CONSTRUCTED AT ALL WALKWAY CROSSINGS. DEPRESSED CURBS FOR HANDICAP ACCESS SHALL BE FLUSH WITH PAVEMENT. ALL HANDICAP ACCESS FACILITIES SHALL COMPLY WITH CURRENT A.D.A. REGULATIONS AND NEW YORK STATE BUILDING CODE, CHAPTER 11.
10. THE CONTRACTOR SHALL MAINTAIN SUFFICIENT COVER (TEMPORARY AND PERMANENT) OVER ALL PIPES DURING THE CONSTRUCTION OF THE PROJECT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
11. WHERE CONCRETE PIPE IS PROPOSED, ALL PIPE SHALL BE CLASS III WITH O-RING GASKETS, UNLESS OTHERWISE INDICATED.
12. UNLESS OTHERWISE NOTED, ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS OF THE STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION", LATEST EDITION.

F. SITE CLEARING AND GRADING

1. SITE CLEARING SHALL INCLUDE, BUT IS NOT LIMITED TO, THE REMOVAL OF ALL DEBRIS, RUBBLE, FENCES, TREES, EXISTING UTILITIES, EXISTING STRUCTURES, FOUNDATIONS, SUBSURFACE STRUCTURES, UNSUITABLE MATERIALS, EXISTING PAVEMENT, THE COORDINATION OF THE RELOCATION OF EXISTING UTILITIES, GRUBBING, ETC. AND ALL OTHER WORK REQUIRED TO COMPLETE THE PROJECT FOR WHICH THERE IS NO SPECIFIC PAY ITEM OR CALLOUT.
2. ALL DEMOLITION ACTIVITIES TO BE IN ACCORDANCE WITH ALL APPLICABLE AUTHORITIES INCLUDING BUT NOT LIMITED TO COUNTY RULES AND REGULATIONS, THE MUNICIPAL ORDINANCE, NYSDEC RULES AND REGULATIONS, AND NEW YORK STATE BUILDING CODE.
3. ALL REMEDIAL ACTIONS OUTLINED IN THE PHASE II ENVIRONMENTAL SITE ASSESSMENT, MID-BROADWAY PROJECT, DATED 06/10/2013, PREPARED BY ECOSYSTEMS STRATEGIES, INC., SHALL BE CONDUCTED, AS REQUIRED. FOLLOWING NYCRR 613 PETROLEUM BULK STORAGE AND DER-10 TECHNICAL GUIDANCE FOR SITE INVESTIGATION AND REMEDIATION, THE ACTIONS INCLUDE BUT ARE NOT LIMITED TO:

   THIS REPORT CONCLUDES THAT SEVERAL REMEDIAL ACTIONS SHOULD BE PREFORMED AS FOLLOWS:

   - REMOVAL OF UST (UNDERGROUND STORAGE TANKS) AND CONTAMINATED SOILS FROM THE SITE.
   - INSTALLATION OF GROUNDWATER MONITORING WELLS WITHIN THE VICINITY OF ANY UST.
   - PROPER OFF-SITE DISPOSAL OF ALL REGULATED MATERIALS.
   - NOTIFICATION OF THIRD PARTIES DURING CONSTRUCTION TO FACILITATE DEVELOPMENT OF SITE-SPECIFIC HEALTH AND SAFETY PLAN, PROPER SAMPLING OF SOILS AND DUST/RUNOFF CONTROL.
   - SEGREGATION OF DEBRIS MATERIALS INTO APPROPRIATE WASTE STREAMS.
   - ADDITIONAL INVESTIGATION OF SOIL GAS PRIOR TO DEVELOPMENT.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL UNUSABLE MATERIALS EXCAVATED OF WHATEVER NATURE AT HIS OWN EXPENSE. THE OWNER IS NOT OBLIGATED TO SUPPLY A DISPOSAL SITE. THE CONTRACTOR MUST NOT DEPOSIT THE EXCESS MATERIALS WITHIN THE MUNICIPALITY LIMITS WITHOUT EXPRESS PERMISSION OF THE MUNICIPALITY. MATERIALS MUST BE DISPOSED OF IN ACCORDANCE WITH APPROVED NYSDEC METHODS AND MEANS.
5. ANY EXISTING AND NEW CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE AND LAWFULLY DISPOSED OF BY THE CONTRACTOR.
6. EXISTING ONSITE SUITABLE SOIL SHALL BE EXCAVATED, TRANSPORTED, SPREAD, GRADED, AND COMPACTED AS REQUIRED BY THE PROPOSED GRADES. ALL EARTHWORK OPERATIONS INVOLVING ONSITE SOILS SHALL BE COMPLETED PRIOR TO IMPORTING ANY OFFSITE MATERIALS. ALL IMPORTED FILL REQUIRED TO ACHIEVE THE PROPOSED GRADES SHALL BE INCLUDED IN THE PROPOSAL. IMPORTED SOIL SHALL BE FREE OF WASTE OR HAZARDOUS MATERIAL AND SHALL COMPLY WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
7. THE CONTRACTOR SHALL NOT REMOVE ANY MATERIALS FROM THE SITE FOR DISPOSAL WITHOUT THE PERMISSION OF THE ENGINEER. EXCESS ROAD MATERIALS MAY BE USED FOR EMBANKMENT OR SUBBASE ONLY ON AN IF AND WHERE DIRECTED BASIS.
8. ALL AREAS UNDERGOING REGRADING SHOULD BE SLOPED TO PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES AND BUILDINGS.
9. NO TOPSOIL IS TO BE REMOVED FROM THE PROJECT SITE.
10. THE CONTRACTOR SHALL EXERCISE PARTICULAR CARE, ESPECIALLY AT INTERSECTIONS AND GUTTER LINES, IN THE PLACING OF PAVEMENT TO PROVIDE POSITIVE DRAINAGE. ANY AREAS WHERE WATER IS IMPOUNDED SHALL BE CORRECTED BY THE CONTRACTOR.
11. NO MATERIAL SHALL BE PLACED OR ANY DISTURBANCE PERMITTED BEYOND THE PROJECT PROPERTY LINE OR RIGHT OF WAY WITHOUT THE WRITTEN PERMISSION OF THE PROPERTY OWNER DIRECTLY INVOLVED.
12. ALL PRIVATE PROPERTY THAT MAY BE DISTURBED OR DAMAGED BY ANY CONSTRUCTION ACTIVITY SHALL BE RELOCATED, RESTORED, REPAIRED AND/OR REPLACED BY THE CONTRACTOR AT NO COST TO EITHER THE OWNER OR THE OWNER OF THE PROPERTY. THERE WILL BE NO SEPARATE PAYMENT FOR THIS WORK OR MATERIALS.

LIST OF ABBREVIATIONS

AH., BK.	AHEAD, BACK
B.C.T.	BARRIER CURB TRANSITION
B, B.L.	BASELINE
B.M.	BENCHMARK
BIT., BITUM.	BITUMINOUS
BLDG.	BUILDING
C , C.L.	CENTERLINE
C.I.P.	CAST IRON PIPE
CLF	CHAIN LINK FENCE
C.M.P.	CORRUGATED METAL PIPE
CO , C.O.	CLEANOUT
CONC.	CONCRETE
CULV.	CULVERT
D, DIA.	DIAMETER
D.C.	DROP CURB
DE	DITCH EXCAVATION
DEP., DP	DEPRESSED CURB
DH	DRILL HOLE
D.S.	DOWNSTREAM
DWY	DRIVEWAY
E.B, W.B, N.B, S.B.,	EASTBOUND, WESTBOUND NORTHBOUND, SOUTHBOUND
EL., ELEV.	ELEVATION
EXIST., EX.	EXISTING
FC	FOOT CANDLES
GR., GRT	GRATE
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
HT.	HEIGHT
H.W.	HEADWALL
HYD.	HYDRANT
INV	INVERT
IP	IRON PIN
J.B.	JUNCTION BOX
LT., RT.,	LEFT, RIGHT
LOP	LIMIT OF PAVEMENT (PAVING)
LOM	LIMIT OF MILLING
M.B.	MAILBOX
M.P.	MILE POST
MAX, MAX.	MAXIMUM
MIN, MIN.	MINIMUM
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NTS, N.T.S.	NOT TO SCALE
PAV'T	PAVEMENT
P.G.L.	PROFILE GRADE LINE
PERF.	PERFORATED
L.O.D.	LIMIT OF DISTURBANCE
P, P.L.	PROPERTY LINE, PROFILE LINE
PK	PARKER KAYLON MASONRY NAIL
PCC	POINT OF COMPOUND CURVATURE
POC, P.O.C.	POINT ON CURVE
POL, P.O.L.	POINT ON LINE
POT, P.O.T.	POINT ON TANGENT
PRC, P.R.C.	POINT OF REVERSE CURVE
PROP	PROPOSED
PT., P.T.	POINT OF TANGENCY
PVC, P.V.C.	POLYVINYL CHLORIDE PIPE POINT OF VERTICAL CURVATURE
PVI, P.V.I.	POINT OF VERTICAL INTERSECTION
PVT, P.V.T	POINT OF VERTICAL TANGENCY, PAVEMENT
R	RADIUS
RCCP, R.C.C.P.	REINFORCED CONCRETE CULVERT PIPE
RCP, R.C.P.	REINFORCED CONCRETE PIPE
RMC, R.M.C.	RIGID METALLIC CONDUIT
RNMC, R.N.M.C.	RIGID NON-METALLIC CONDUIT
ROW, R.O.W.	RIGHT OF WAY
R.R.	RAILROAD
RTE., RT.	ROUTE
SAN.	SANITARY
SDWK.	SIDEWALK
S.H.D.	STATE HIGHWAY DEPARTMENT
SHLD.	SHOULDER
S , S.L.	SURVEY LINE
S.O.D.	SUBBASE OUTLET DRAIN
STY.	STORY
T	TANGENT
TBA	TO BE ABANDONED
TBR	TO BE REMOVED
TEL.	TELEPHONE
TEMP.	TEMPORARY
THK., TH.	THICK
T.O.S.	TOE OF SLOPE
TYP, TYP.	TYPICAL
U.D.	UNDERDRAIN
UP, U.P.	UTILITY POLE
U.S.	UPSTREAM
VAR.	VARIABLE, VARIES
V.C.T.	VERTICAL CURB TRANSITION
W.C.V.C.	WHITE CONCRETE VERTICAL CURB
WM	WATER METER
X-SECT	CROSS SECTION
XS	CROSS SECTION

LIST OF DRAWINGS

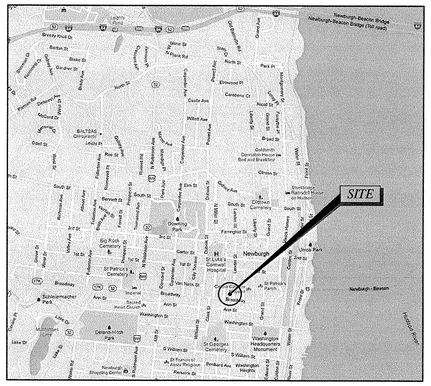
C-100	GENERAL NOTES & LEGEND
C-101	DEMOLITION PLAN
C-102	SITE PLAN
C-103	GRADING, DRAINAGE & UTILITY PLAN
C-104	EROSION CONTROL PLAN
C-201	DETAILS
C-202	DETAILS
C-203	DETAILS
C-204	DETAILS
C-205	DETAILS
C-206	CITY DETAILS
C-207	CITY DETAILS

LEGEND

- 128 / 130 — EXISTING CONTOUR LINE
- EXISTING INDEX CONTOUR LINE
- EXISTING RUNWAY
- EXISTING SIDEWALK
- 128 / 130 — PROPOSED CONTOUR LINE
- PROPOSED INDEX CONTOUR LINE
- PROPOSED DRAINAGE PIPE
- S — PROPOSED SANITARY LINE
- W — PROPOSED WATER LINE
- PROPOSED SILT FENCE
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED SAWCUT LINE
- PROPOSED FENCE
- PROPOSED EDGE OF PAVEMENT WITH CONCRETE CURB
- PROPOSED EDGE OF PAVEMENT WITH MOUNTABLE CURB
- PROPOSED DEPRESSED CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED BUILDING
- PROPOSED RETAINING WALL
- ×123.00 — PROPOSED SPOT ELEVATION
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE MANHOLE
- PROPOSED INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- SOIL STOCK PILE
- CONCRETE WASHOUT
- PROPOSED RAMP
- 9 — PROPOSED PARKING COUNT
- PROPOSED TRAFFIC ARROW
- PROPOSED DRAINAGE FLOW ARROW
- PROPOSED PERMEABLE PAVER AREA

NOTES

SEE SHEET A-03 FOR ZONING ANALYSIS



LOCATION MAP

SCALE: NTS

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

TECTONIC WORK ORDER NO.: 6660.01

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Phone: (845) 534-5959
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Mid-Broadway Redevelopment

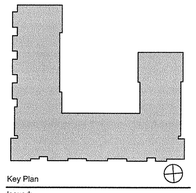
Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/16	SUBMISSION
2	06/01/16	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD COMMENTS
4	09/07/16	PER CITY ENGINEERS COMMENTS DATED-8/16/16

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Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
GENERAL NOTES & LEGEND

Project Number: 12008
Date: 06/01/16
Drawing #: C-100
Scale: AS NOTED
Drawn by: DNW
Checked by: WM

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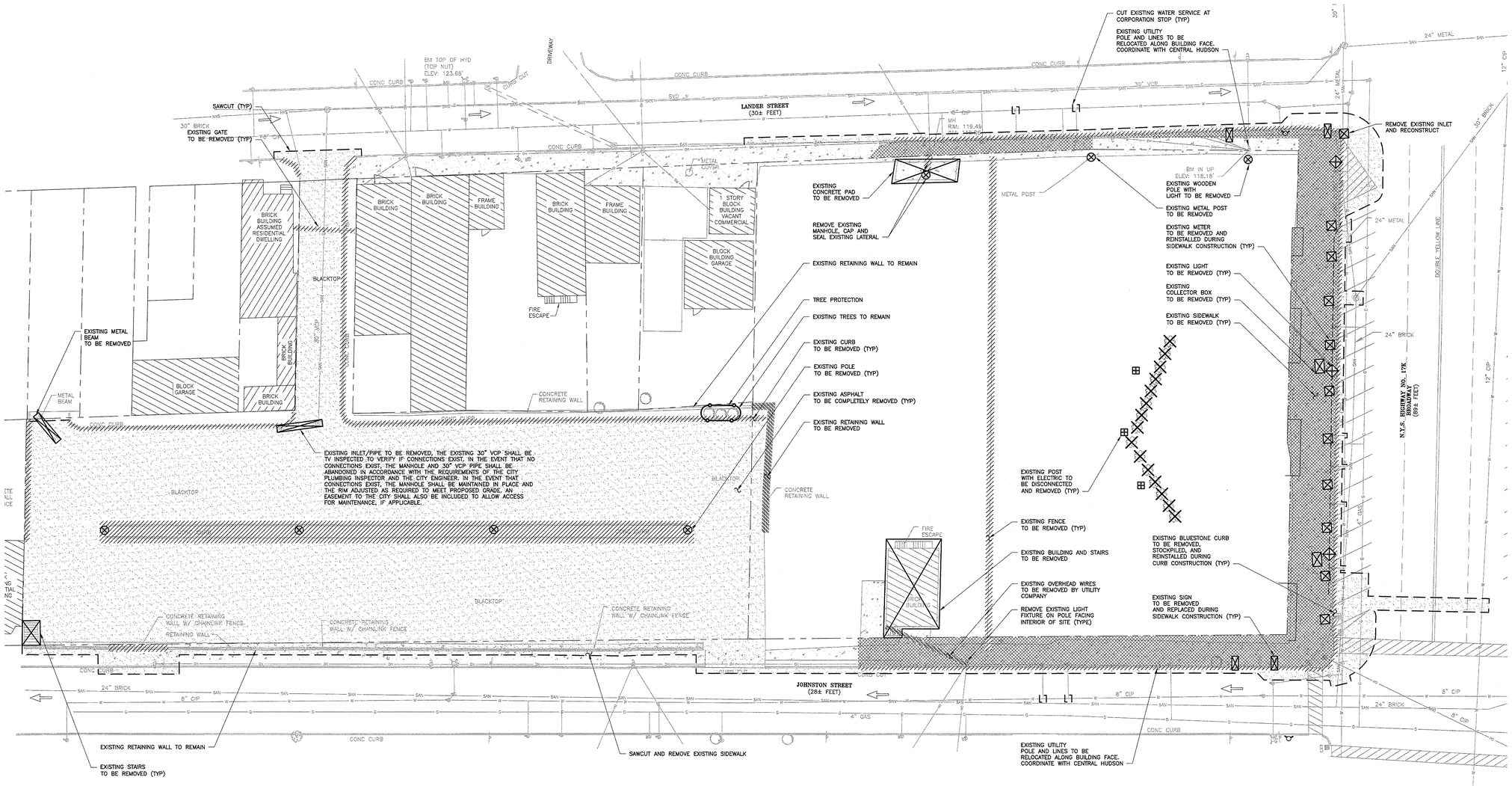
UTILITY NOTES

1. ALL EXISTING UTILITY LATERALS NOT IN SERVICE TO BE CAPPED AND SEALED IN ACCORDANCE WITH THE APPLICABLE UTILITY REQUIREMENTS.
2. EXISTING WATER SERVICE CONNECTIONS TO BE CUT AT THE CORPORATION STOP ON THE MAIN AND SEALED IN ACCORDANCE WITH THE CITY PLUMBING INSPECTOR'S REQUIREMENTS.

SITE MATERIAL DISPOSAL NOTES

1. ALL MATERIALS REMOVED FROM THE SITE SHALL BE DISPOSED OF IN AN APPROPRIATE MANNER BY A LICENSED FACILITY.
2. NO MATERIAL SHALL BE LEFT FOR DISPOSAL BY THE CITY, NOR DUMPED ELSEWHERE IN THE CITY.



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TECTONIC WORK ORDER NO.: 6660.01

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Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
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4	09/07/16	PER CITY ENGINEERS COMMENTS DATED-8/16/16

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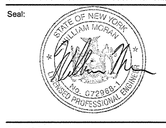

Drawing Title:
DEMOLITION PLAN

Project Number: 12008
Date: 06/01/16
Drawing #: C-101
Scale: 1" = 20'
Drawn by: DNW
Checked by: WM

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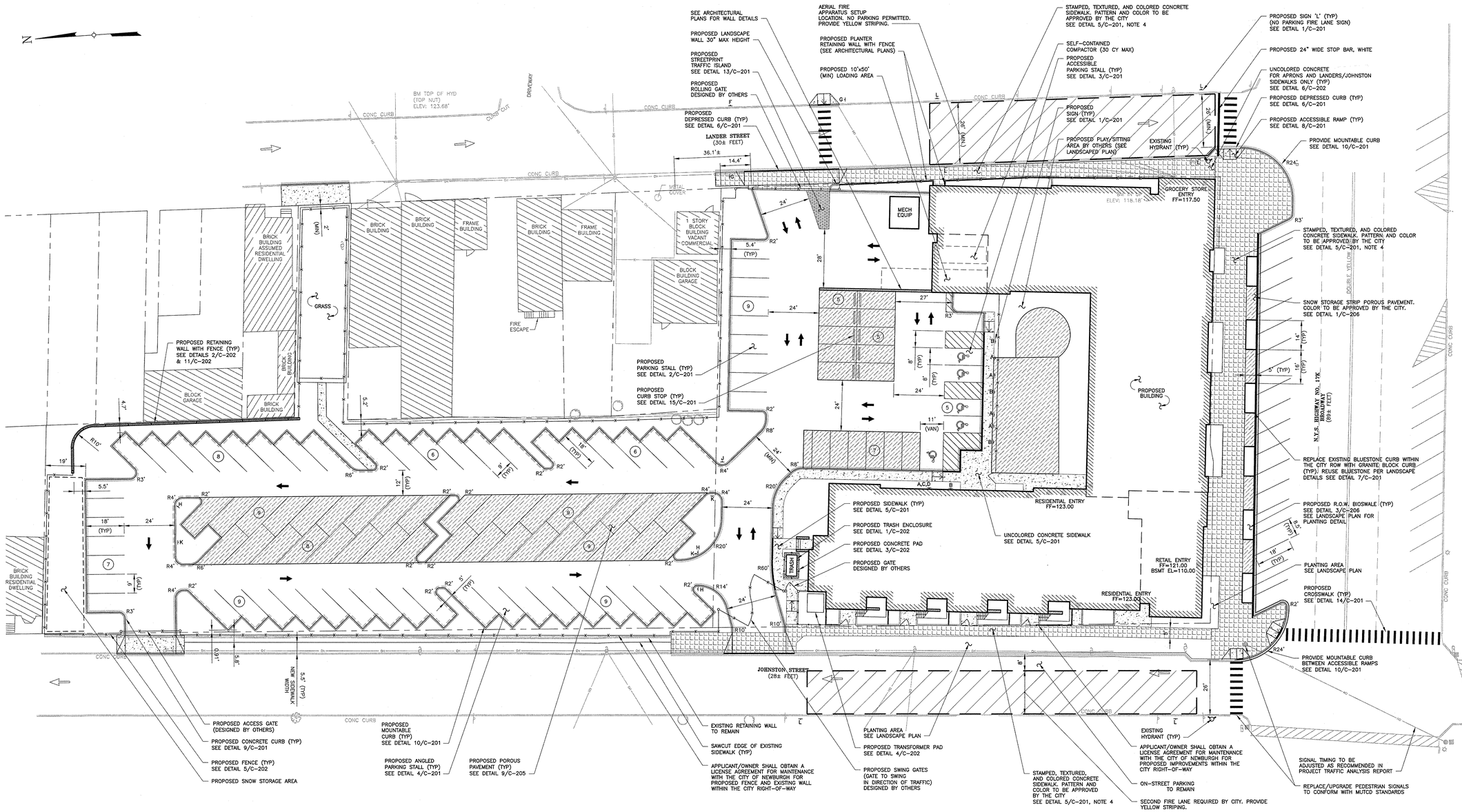
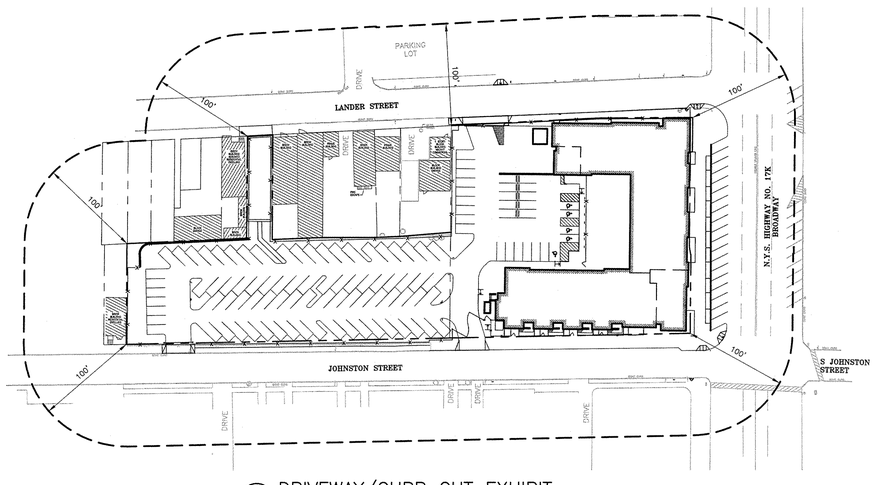


1 C-102 SITE PLAN
SCALE: 1" = 20'



2 C-102 DRIVEWAY/CURB CUT EXHIBIT
SCALE: 1" = 60'

GATE/FENCE NOTES

1. FENCE TO BE 6' HIGH MAX.
2. FENCING MATERIAL TO BE APPROVED BY NEWBURGH ARCHITECTURAL REVIEW BOARD.
3. ROLLING GATE TO BE OPEN DURING BUSINESS HOURS OF THE GROCERY STORE AND REMAIN CLOSED THE REMAINDER OF THE TIME.
4. SWING GATES WILL BE ELECTRONICALLY ACTIVATED BY RESIDENT VEHICLES AS THEY APPROACH GATES.
5. ALL GATES WILL BE ALARM ACTIVATED TO REMAIN OPEN FOR EMERGENCY RESPONDERS.
6. FOR FENCE ALONG JOHNSON STREET, EXISTING FENCE POSTS TO BE CUT FLUSH WITH TOP OF RETAINING WALL AND REMOVED. PROPOSED FENCE AND POSTS TO UTILIZE EMBEDDED EXISTING POSTS AS SLEEVE. (SEE ARCHITECTURAL DRAWINGS FOR DETAILS)

SNOW REMOVAL NOTE

ALL SNOW THAT CANNOT BE STOCKPILED ON SITE IS TO BE REMOVED FROM SITE AT THE CONCLUSION OF THE SNOWFALL/WINTER WEATHER EVENT.

SUPPLEMENTAL PARKING REQUIREMENTS*

PARKING AREA	REQUIRED	PROVIDED
AREA OF PAVEMENT / PROVIDED PARKING SPACES (37,404 SF / 111 SPACES)	300	337 SF
ACCESSIBLE PARKING		
FEDERAL ADA STANDARDS	5 SPACES FOR 101-150 SPACES	5 SPACES FOR 111 SPACES
NEW YORK STATE BUILDING CODE	5 SPACES FOR 101-150 SPACES	5 SPACES FOR 111 SPACES
HUD REQUIREMENTS	1 SPACE PER ACCESSIBLE RESIDENTIAL UNIT (5% OF TOTAL UNITS)	5 SPACES FOR 5 UNITS

* SEE A-02 AND A-02A FOR PARKING CALCULATIONS

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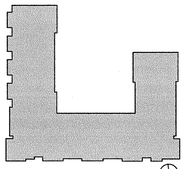

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Seal:

Drawing Title:
SITE PLAN

Project Number:	12008
Date: 06/01/16	Drawing #: C-102
Scale: AS NOTED	
Drawn by: DNW	
Checked by: WM	

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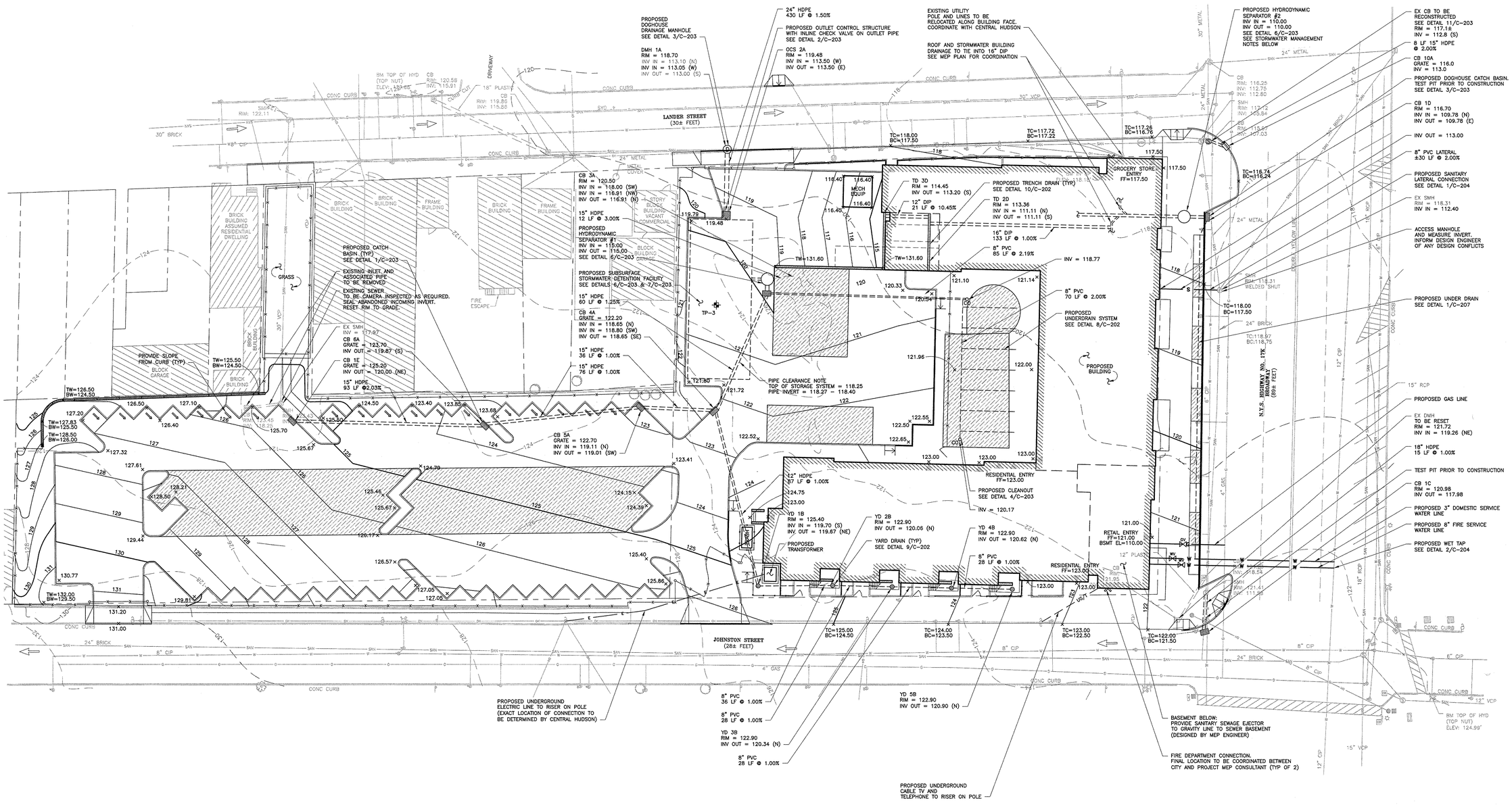

WATER CONNECTION NOTES

1. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPARTMENT, AUTHORIZED BY THE PLUMBING INSPECTOR.
2. A CITY OF NEWBURGH LICENSED PLUMBER MUST BE RETAINED TO INSTALL THE WATER CONNECTIONS.
3. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
4. THE CITY OF NEWBURGH WATER SUPERINTENDENT SHALL BE NOTIFIED, VIA A CORPORATION TAP REQUEST, PRIOR TO MAKING CONNECTION TO THE MUNICIPAL WATER SYSTEM.
5. THE CITY OF NEWBURGH WATER DEPARTMENT SHALL INSTALL THE CORPORATION TAP INTO THE MUNICIPAL WATER SYSTEM, UP TO A ONE (1) INCH SERVICE. CORPORATION TAPS ABOVE ONE (1) INCH IN SIZE SHALL BE DONE BY THE APPLICANT'S CONTRACTOR SPECIALIZING IN LARGE DIAMETER TAPPING.
6. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL.

SEWER CONNECTION NOTES

1. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPARTMENT, AUTHORIZED BY THE PLUMBING INSPECTOR.
2. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
3. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL.

GENERAL UTILITY NOTES

1. ALL EXISTING UTILITY LATERALS NOT IN SERVICE TO BE CAPPED AND SEALED IN ACCORDANCE WITH THE APPLICABLE UTILITY REQUIREMENTS.
2. EXISTING WATER SERVICE CONNECTIONS TO BE CUT AT THE CORPORATION STOP ON THE MAIN AND SEALED IN ACCORDANCE WITH THE CITY PLUMBING INSPECTOR'S REQUIREMENTS.
3. DOMESTIC WATER AND FIRE SUPPRESSION SIZE CALCULATIONS SHALL BE PROVIDED BY THE PROJECT MEP CONSULTANT FOR REVIEW AND APPROVAL WITH THE BUILDING PERMIT APPLICATION.
4. SUBMIT FOR REVIEW AND APPROVAL A MAINTENANCE AND PROTECTION OF TRAFFIC PLAN FOR ALL WORK THAT WILL BE CONDUCTED WITHIN CITY STREETS DURING THE BUILDING PERMIT APPLICATION PROCESS.

TEST PIT NOTE

1. TEST PIT CONDUCTED ON 11/11/2013, WITNESSED BY SESI.
2. TP-3 SOIL LOG:

0' - 6'-1/2"	SAND, COARSE TO FINE GRAVEL, CONSTRUCTION DEBRIS, FILL
6'-1/2" - 9'	SAND, COARSE TO FINE, SOME COARSE TO FINE GRAVEL, NO GROUNDWATER, NO ROCK/LEDGE ENCOUNTERED

INFILTRATION TESTING NOTE

1. INFILTRATION TESTING SHALL BE PERFORMED, AND WITNESSED BY THE CITY, IN PROPOSED PERMEABLE PAVEMENT AREAS IN ACCORDANCE WITH APPENDIX D OF THE NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL.

STORMWATER MANAGEMENT FACILITIES NOTES

1. ALL STORMWATER MANAGEMENT FACILITIES SHALL BE MAINTAINED BY THE OWNER IN ACCORDANCE WITH THE APPROVED PLANS AND SWPPP.
2. EASEMENTS FOR ACCESS TO STORMWATER MANAGEMENT FACILITIES SHALL BE PREPARED AND APPROVED BY THE CITY.
3. AS-BUILT PLAND SHALL BE PREPARED BY A LICENSED NYS SURVEYOR FOR ALL STORMWATER MANAGEMENT IMPROVEMENTS AND SUBMITTED TO THE CITY ENGINEER.

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Seal:

Drawing Title:
GRADING, DRAINAGE & UTILITY PLAN

Project Number:	12008
Date: 06/01/16	Drawing #:
Scale: 1" = 20'	C-103
Drawn by: DNW	
Checked by: WM	

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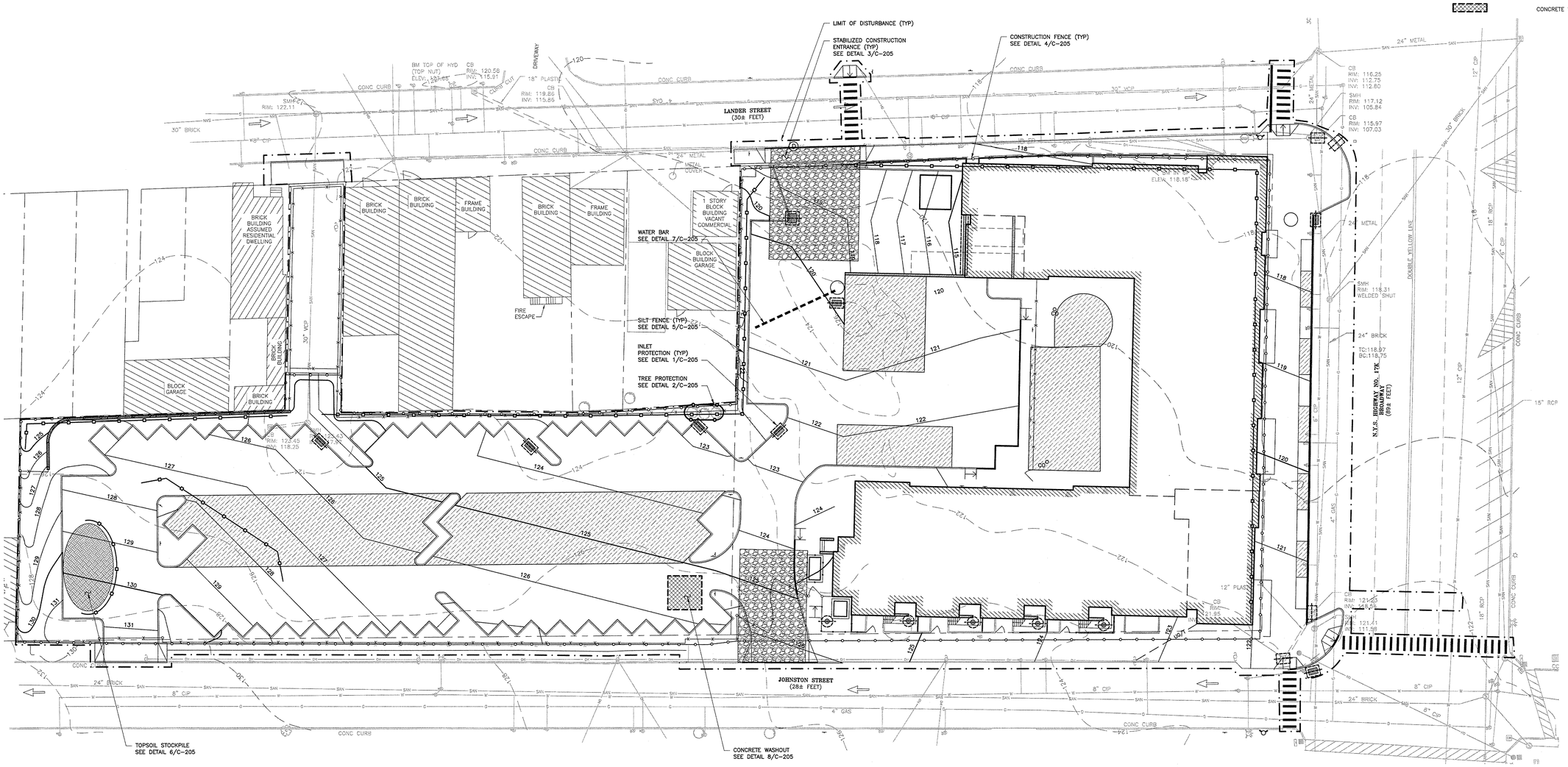

LEGEND

- SILT FENCE LINE
- LIMIT OF DISTURBANCE LINE
- CONSTRUCTION FENCE
- WATER BAR LINE
- INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- SOIL STOCK PILE
- CONCRETE WASHOUT

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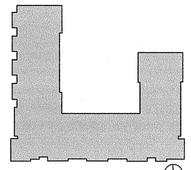

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Seal:

Drawing Title:
EROSION CONTROL PLAN

Project Number: 12008
Date: 06/01/16
Drawing #: C-104
Scale: 1" = 20'
Drawn by: DNW
Checked by: WM

EROSION AND SEDIMENT CONTROL NOTES

1. SITE DISTURBANCE SHALL BE LIMITED TO THE MINIMUM NECESSARY GRADING AND VEGETATION REMOVAL REQUIRED FOR CONSTRUCTION.
2. ACTIVE DISTURBANCE SHALL BE LIMITED TO A 5 AC MAXIMUM AT ANY TIME WITHOUT TEMPORARY STABILIZATION.
3. TEMPORARY EROSION CONTROL MEASURES, INCLUDING SILT FENCES AND/OR STRAW BALE DIKES, DRAINAGE STRUCTURES, SEDIMENTATION BASINS, DIVERSION SWALES/DIKES, AND RIP-RAP PROTECTION SHALL BE INSTALLED PRIOR TO GROUND DISTURBANCE FOR GRADING AND CONSTRUCTION.
4. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS SOON AS PRACTICAL FOLLOWING DISTURBANCE TO STABILIZE BARE SOIL AND PROMOTE THE PROMPT RE-ESTABLISHMENT OF VEGETATION:
   - A. AN ADEQUATE SEEDBED SHALL BE PREPARED BY SCARIFYING SOIL AND REMOVING SURFACE DEBRIS AND OBSTACLES WITHIN THE DISTURBED AREA TO A DEPTH OF 4".
   - B. LIME SHALL BE APPLIED SUFFICIENTLY TO ATTAIN A SOIL ACIDITY Ph OF 5.5.
   - C. FERTILIZER (10-20-10 MIXTURE OR EQUIVALENT) SHALL BE APPLIED PER SOIL TEST RESULTS OR AT A RATE OF 15 LBS. PER 1000 SQFT.
   - D. DISTURBED AREAS WHICH WILL REMAIN TEMPORARILY FALLOW FOR PERIODS GREATER THAN 14 DAYS SHALL BE SEEDED AT THE FOLLOWING RATE TO PRODUCE TEMPORARY GROUND COVER: 30 LBS. RYEGRASS (ANNUAL) PER ACRE. DURING THE WINTER, USE 100 LBS. CERTIFIED "AROOSTOOK" WINTER RYE CEREAL RYE) PER ACRE.
   - E. AREAS USED FOR CONSTRUCTION ACCESS AND STORAGE/STOCKPILING OF CONSTRUCTION MATERIALS SHALL BE DECOMPACTED USING THE PROCEDURES OUTLINED IN THE NYSDEC PUBLICATION "DEEP RIPPING AND DECOMPACTION", APRIL 2008 OR AS CURRENTLY AMENDED THIS DOCUMENT IS INCLUDED WITHIN THE PROJECT SWPPP.
   - F. PERMANENT SEEDING SHALL BE APPLIED ON 4" MIN TOPSOIL AND IN ACCORDANCE WITH LANDSCAPE PLAN.
   - G. ALL SEEDING SHALL BE PERFORMED USING HYDROSEEDING. HYDROSEEDING SLURRY SHALL BE COMPRISED OF A HOMOGENEOUS MIX OF SEED AND FERTILIZER IN WATER. VARIOUS SPECIFIED SEED MIXES SHALL BE INDEPENDENTLY MIXED AND APPLIED.
   - H. ALL DISTURBED AREAS SHALL BE STABILIZED SUBSEQUENT TO SEEDING BY APPLYING 2 TONS OF STRAW MULCH PER ACRE. STRAW MULCH SHALL BE ANCHORED BY APPLYING 750 LBS OF WOOD FIBER MULCH PER ACRE WITH A HYDROSEEDER. HYDROMULCHING SLURRY SHALL BE COMPRISED OF A HOMOGENEOUS MIX OF NON-ASPHALTIC TACKIFIER AND FIBER MULCH IN WATER.
5. ALL EROSION AND SEDIMENTATION CONTROL MEASURES AND DRAINAGE STRUCTURES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND FOLLOWING EVERY SITE RAINFALL EVENT, AND MAINTENANCE AND REPAIRS SHALL BE PERFORMED PROMPTLY TO MAINTAIN PROPER FUNCTION. TRAPPED SEDIMENT SHALL BE REMOVED AND DEPOSITED IN A PROTECTED AREA IN A PROPER MANNER WHICH WILL NOT RESULT IN EROSION. THE CONTRACTOR SHALL REPLACE ANY PRACTICE THAT IS NO LONGER PERFORMING AS DESIGNED OR INTENDED. TEMPORARY CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED AND GROUND COVER IS COMPLETELY REESTABLISHED. FOLLOWING STABILIZATION, TEMPORARY MEASURES SHALL BE REMOVED TO AVOID INTERFERENCE WITH DRAINAGE.
6. ALL STORM INLETS TO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION.
7. SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN SUFFICIENT QUANTITIES.
8. MULCH NETTING SUCH AS PAPER, JUTE, EXCELSIOR, COTTON OR PLASTIC MAY BE USED. STAPLE IN PLACE OVER HAY OR STRAW MULCH. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.
10. OPTIMUM SEEDING PERIODS ARE 3/15-5/15 AND 8/15-10/15.

EROSION AND SEDIMENT CONTROL SCHEDULE

CONSTRUCTION SCHEDULE

1. ALL APPROVALS AND PERMITS SHALL BE SECURED.
2. A PRE-CONSTRUCTION MEETING WITH OWNER, OWNER'S REPRESENTATIVE, MUNICIPAL REPRESENTATIVE AND CONTRACTOR PRESENT WILL BE HELD.
3. CERTIFICATIONS OBTAINED FROM CONTRACTORS, SUBCONTRACTORS AND ANY OTHERS PERFORMING SITE DISTURBANCES INCLUDING UNDERGROUND UTILITY CONTRACTORS BE SIGNED AND MAINTAINED ON SITE.
4. CONSTRUCTION ENTRANCE, SILT FENCE, STRAW BALE DIKE, DIVERSION SWALES/DIKES, SEDIMENTATION TRAPS, SEDIMENTATION BASIN, STORM DRAIN INLET PROTECTION, CONSTRUCTION FENCE AND OTHER TEMPORARY EROSION CONTROL MEASURES WILL BE INSTALLED PRIOR TO ANY CONSTRUCTION INCLUDING CLEARING, GRUBBING, AND DEMOLITION OF THE SITE IN ACCORDANCE WITH THE NYS STANDARDS AND SPECIFICATIONS FOR EROSION CONTROL AUGUST 2005.
5. INSTALL PROVISIONS FOR PROTECTION OF EXISTING FACILITIES WHERE INDICATED ON THE PLANS AND DETAILS
6. ACTIVE DISTURBANCE SHALL BE LIMITED TO A 2 AC MAXIMUM AT ANY TIME WITHOUT TEMPORARY STABILIZATION. ALL NON-ACTIVE DISTURBED AREAS SHALL RECEIVE TEMPORARY OR PERMANENT STABILIZATION. NON-ACTIVE DISTURBED AREAS SHALL NOT REMAIN FALLOW FOR LONGER THAN 14 DAYS WITHOUT BEING STABILIZED.
7. ANY BORROW OR WASTE FITS LOCATED ON OR OFF-SITE MUST IMMEDIATELY RECEIVE TEMPORARY STABILIZATION, SHALL NOT BE LEFT UNSTABILIZED, AND BE MAINTAINED PER THE REQUIREMENT OF THE GENERAL CONSTRUCTION PERMIT AND THE SWPPP FOR THIS PROJECT.
8. DRAINAGE STRUCTURES AND PIPES SHALL BE INSTALLED ALONG WITH ENERGY DISSIPATERS. SWALES SHALL BE IMMEDIATELY STABILIZED.
9. ROADWAYS SHALL BE GRADED AND IMMEDIATELY STABILIZED WITH PROPOSED STONE SURFACE.
10. UPON UTILITY COMPLETION, FINAL GRADING WILL BEGIN.
11. DECOMPACT ACCESS AND STORAGE/STOCKPILE AREAS.
12. ALL LANDSCAPED/GRASSED AREAS WILL BE SEEDED AND MULCHED IN A TWO STEP HYDRAULIC PROCESS TO PROMOTE GROWTH AS SOON AS POSSIBLE.
13. ALL SLOPES GREATER THAN 3:1 OR WHERE RILLS FORM SHALL BE STABILIZED WITH ROLLED EROSION CONTROL PRODUCTS. INSTALL PER MANUFACTURER'S INSTRUCTION.
14. TO FACILITATE FINAL STABILIZATION, INTERMEDIATE SILT FENCES/DIKES/DIVERSIONS MAY BE REMOVED UPON INITIAL CATCH OF UPSLOPE FINAL SEEDING/MULCHING. PERIMETER AND BASE OF SLOPE SILT FENCES/DIKES SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION IS ACHIEVED TO PROTECT OFFSITE DISCHARGE POTENTIAL.
15. UPON STABILIZATION, ALL TEMPORARY MEASURES WILL BE REMOVED.
16. ALL SWALES AND DRAINAGE LINES ARE TO BE FLUSHED CLEAN OF ALL SILT AND SEDIMENT AFTER ALL CONSTRUCTION DISTURBANCE HAS BEEN STABILIZED. REMOVE ALL SILT FROM PERMANENT STORM WATER CONTROL STRUCTURES.
17. REMOVE ALL SILT AND SEDIMENT FROM SITE.
18. ALL DEBRIS, SILT, AND OTHER OBSTRUCTIONS ARE TO BE REMOVED FROM THE END OF THE DRAINAGE STRUCTURES AFTER ALL ON SITE WORK IS COMPLETE AND ALL DISTURBED AREAS HAVE BEEN STABILIZED.

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

TECTONIC WORK ORDER NO.: 6660.01

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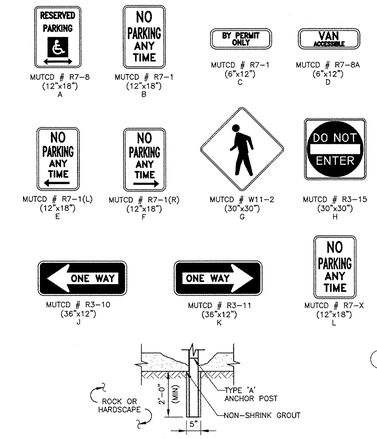
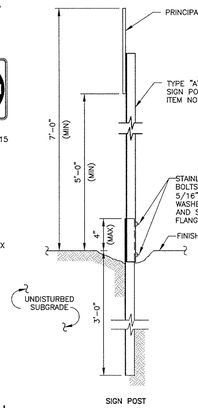
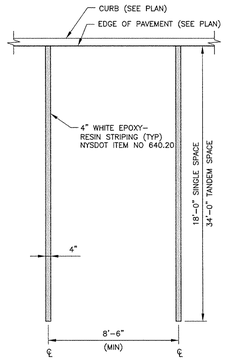


NOTES:

1. OFFSET POST 3'-0" FROM EDGE OF PAVEMENT.
2. INSERT 3/16" THREADED SPACER BETWEEN POSTS AT CONNECTION.

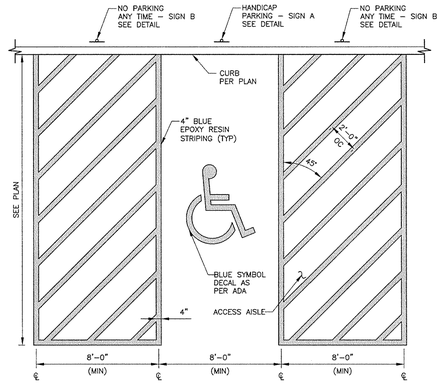


1 C-201 SIGN
SCALE: NTS

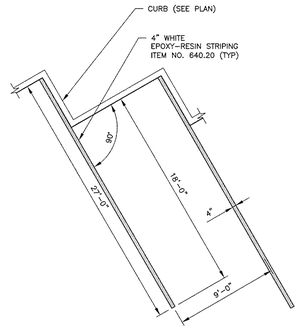


NOTE:
ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS.

2 C-201 PARKING SPACE
SCALE: 1/4" = 1'-0"

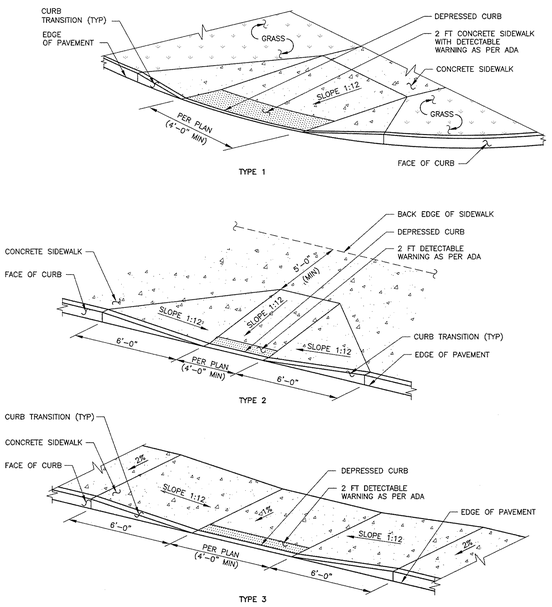


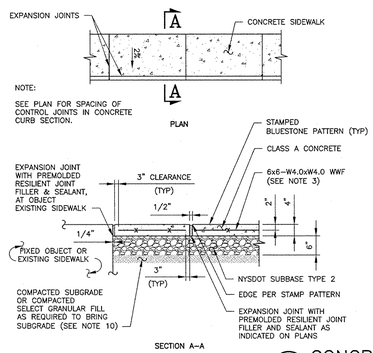
3 C-201 HANDICAP PARKING SPACES
SCALE: 1/4" = 1'-0"



NOTE:
ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS

4 C-201 ANGLED PARKING SPACE
SCALE: 3/16" = 1'-0"



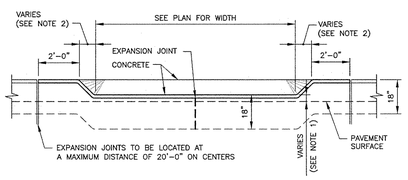


NOTE:
SEE PLAN FOR SPACING OF CONTROL JOINTS IN CONCRETE CURB SECTION.

SIDEWALK NOTES:

1. MATERIAL AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JANUARY 1, 2016 AND AS AMENDED THEREAFTER; THE ONLY EXCEPTION BEING THAT THE WORK OF THIS CONTRACT SHALL BE MEASURED IN ENGLISH UNITS.
2. ALL CONCRETE SHALL BE 4000 PSI CLASS A CONCRETE. CONCRETE MATERIALS, PLACEMENT, AND CONSTRUCTION SHALL CONFORM WITH SECTION 500 OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS.
3. REINFORCING STEEL FOR CONCRETE SHALL CONFORM WITH SECTION 556 – REINFORCING STEEL. CONCRETE STRUCTURES OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS AND AS SPECIFICALLY CALLED OUT IN THE DRAWINGS.
4. CONCRETE TEXTURE AND STAMP PATTERN SHALL BE 18"x36" BLUESTONE BY BUTTERFIELD COLOR (PRODUCT NO. BST4210) OR APPROVED EQUAL, WHERE INDICATED. COLOR TO BE SELECTED BY THE CITY.
5. EXPANSION JOINTS SHALL BE LOCATED A MAXIMUM OF 20'–0" ON CENTER, OR AS INDICATED ON PLANS.
6. JOINTS SHALL NOT BE SAW CUT.
7. SUBBASE MATERIAL SHALL CONFORM WITH THE SECTION 304 OF THE ABOVE REFERENCED NYSDOT STANDARD.
8. WHERE IT IS NECESSARY TO PLACE FILL FOR PURPOSED OF BRINGING THE SUBGRADE ELEVATION UP TO A SPECIFIED GRADE, THE FILL MATERIAL PLACED SHALL BE IN CONFORMATION WITH SECTION 203–EXCAVATION AND EMBANKMENT OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS.
9. ALL WORK SHALL CONFORM WITH SECTION 608–SIDEWALK, DRIVEWAYS, AND BICYCLE PATHS OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS.

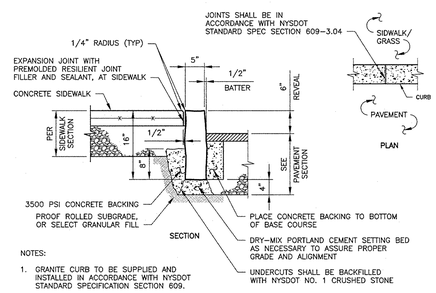
5 C-201 CONCRETE SIDEWALK
SCALE: NTS



NOTES:

1. UP DIMENSION SHALL BE 1.5 INCHES FOR DRIVEWAYS, AND 0 – INCHES FOR HANDICAP ACCESS RAMPS.
2. RAMP DIMENSION SHALL BE 2 FEET FOR DRIVEWAYS AND 4.5 FEET FOR 6" EXPOSED FACE CURBS.

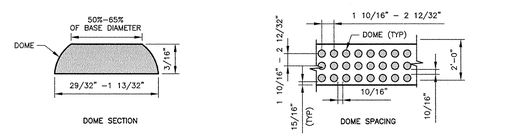
6 C-201 DEPRESSED CURB
SCALE: NONE



NOTES:

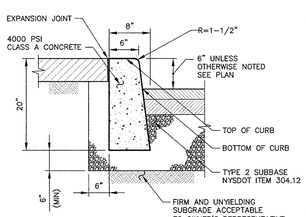
1. GRANITE CURB TO BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH NYSDOT STANDARD SPECIFICATION SECTION 609.
2. FOR NEW CONSTRUCTION, A 6" CURB REVEAL SHALL BE MAINTAINED FOR CURB REPLACEMENT OR RESETTING, MATCH EXISTING REVEAL.

7 C-201 GRANITE CURB
SCALE: NTS



NOTE:
DETECTABLE WARNING SHALL BE RED COLORED, PRECAST CONCRETE TILES (SAFE STEP) MANUFACTURED BY TRANSPO (914–636–1000).

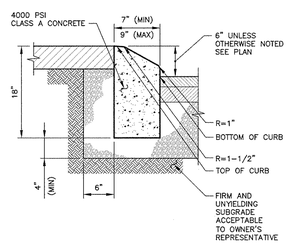
8 C-201 ACCESSIBLE RAMP
SCALE: NTS



NOTES:

1. CURB SHALL BE CAST IN PLACE, 4,000 PSI @ 28 DAYS CONCRETE WITH RUBBED FINISH.
2. USE CONVENTIONALLY FORMED CLASS A PORTLAND CEMENT CONCRETE.
   A. FORMS SHALL BE FREE FROM WARP AND OF SUCH CONSTRUCTION THAT THERE WILL BE NO INTERFERENCE TO INSPECTION FOR GRADE AND ALIGNMENT. ALL FORMS SHALL EXTEND TO THE FULL CURB DEPTH AND BE SECURED SO NO DISPLACEMENT WILL OCCUR DURING THE PLACEMENT OF CONCRETE.
   B. CURB SHALL BE CAST IN SEGMENTS HAVING A UNIFORM LENGTH OF APPROXIMATELY TEN (10) FEET. THE JOINTS BETWEEN SEGMENTS SHALL NOT EXCEED 1/4" IN WIDTH.
   C. EXPANSION JOINTS SHALL BE 3/4" WIDE AND CONTAIN PRE–MOULDED RESILIENT JOINT FILLER. THE FILLER SHALL BE CUT TO CONFORM TO THE CROSS SECTION OF THE CURB. EXPANSION JOINTS SHALL BE LOCATED AT ALL IMMOVABLE OBJECTS, ADJACENT TO EXPANSION JOINTS IN THE PAVEMENT, OR WHERE DIRECTED BY THE ENGINEER.
3. ALL CONSTRUCTION AND MATERIALS USED SHALL MEET THE REQUIREMENTS OF SECTION 14K OF THE TOWN OF NEWBURGH ROAD SPECIFICATIONS.

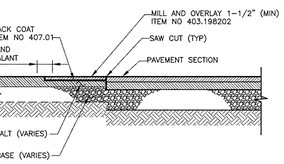
9 C-201 CONCRETE CURB
SCALE: NTS



NOTES:

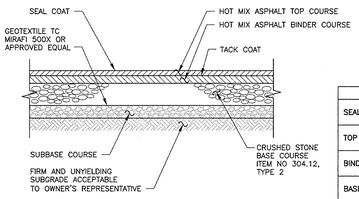
1. CURB SHALL BE CAST IN PLACE, 4,000 PSI @ 28 DAYS CONCRETE WITH RUBBED FINISH.
2. USE CONVENTIONALLY FORMED CLASS A PORTLAND CEMENT CONCRETE.
   A. FORMS SHALL BE FREE FROM WARP AND OF SUCH CONSTRUCTION THAT THERE WILL BE NO INTERFERENCE TO INSPECTION FOR GRADE AND ALIGNMENT. ALL FORMS SHALL EXTEND TO THE FULL CURB DEPTH AND BE SECURED SO NO DISPLACEMENT WILL OCCUR DURING THE PLACEMENT OF CONCRETE.
   B. CURB SHALL BE CAST IN SEGMENTS HAVING A UNIFORM LENGTH OF APPROXIMATELY TEN (10) FEET. THE JOINTS BETWEEN SEGMENTS SHALL NOT EXCEED 1/4" IN WIDTH.
   C. EXPANSION JOINTS SHALL BE 3/4" WIDE AND CONTAIN PRE–MOULDED RESILIENT JOINT FILLER. THE FILLER SHALL BE CUT TO CONFORM TO THE CROSS SECTION OF THE CURB. EXPANSION JOINTS SHALL BE LOCATED AT ALL IMMOVABLE OBJECTS, ADJACENT TO EXPANSION JOINTS IN THE PAVEMENT, OR WHERE DIRECTED BY THE ENGINEER.

10 C-201 MOUNTABLE CURB
SCALE: 1" = 1'-0"



NOTE:
ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS.

11 C-201 PAVEMENT TRANSITION
SCALE: 1/2" = 1'-0"

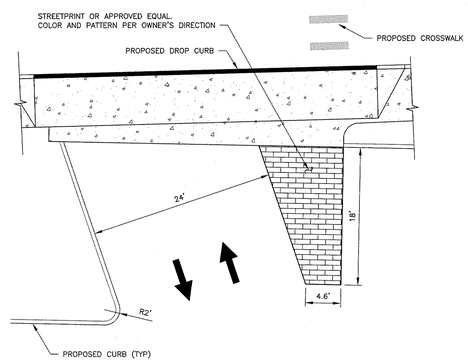


NOTES:

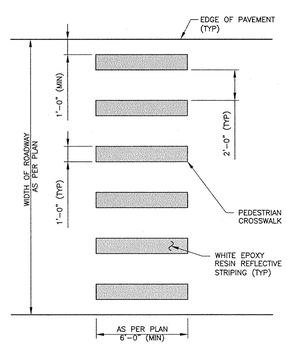
1. ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS.
2. PARKING PAVEMENT SECTION MINIMIZED: 4" CRUSHED STONE SUBBASE.

	CITY ROAD	HEAVY SECTION	LIGHT SECTION
SEAL COAT	3/8"	–	–
TOP COURSE	1" TYPE 6F ITEM NO. 403.178202	1–1/2" TYPE 7F2 ITEM NO. 403.198202	1–1/2" TYPE 7F2 ITEM NO. 403.198202
BINDER COURSE	2–1/2" ITEM NO. 403.138902	2–1/2" ITEM NO. 403.138902	2" ITEM NO. 403.138902
BASE COURSE	8"	8"	4"
SUBBASE	12"	–	–

12 C-201 PAVEMENT SECTION
SCALE: NTS

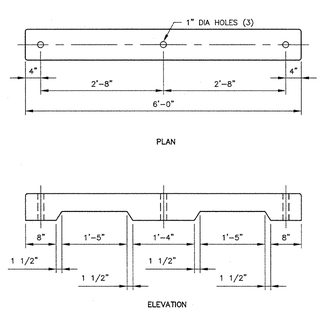


13 C-201 STREETPRINT ENLARGEMENT
SCALE: 1–1/2" = 1'-0"



LADDER BAR – TYPE L

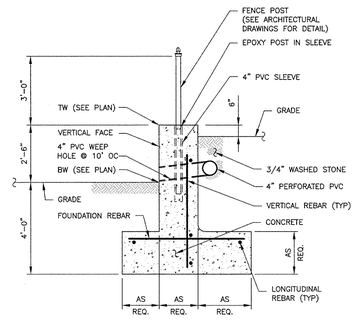
14 C-201 PEDESTRIAN CROSSWALK
SCALE: 1/4" = 1'-0"



NOTES:

1. CONCRETE USED TO HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.
2. UNIT TO BE PINNED TO SURFACE WITH 3 – 3/4" DIA.
3. STEEL RODS, 24" MINIMUM IN LENGTH.
4. ALL BEVELS TO BE 1/2". ALL ANGLES TO BE 45° .

15 C-201 PRECAST CONCRETE CURB STOP
SCALE: 3/4" = 1'-0"



NOTE:
SHOP DRAWING OF WALL TO BE DESIGNED BY A NYS PROFESSIONAL ENGINEER AND APPROVED FOR CONSTRUCTION PRIOR TO COMMENCING WORK ON THE WALL.

16 C-201 CONCRETE RETAINING WALL
SCALE: 3/8" = 1'-0"

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

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Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/16	SUBMISSION
2	06/01/16	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD COMMENTS
4	09/07/16	PER CITY ENGINEERS COMMENTS DATED-8/16/16

Revisions:

Architect:
Magnusson Architecture & Planning PC
42 West 39th Street 15th Floor,
New York, NY 10003
Tel (212) 253 7820 Fax (212) 253 1276
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Tectonic
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Tel (845) 534 5959
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MEP Engineer:
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Holmdel, NJ 07733
Tel (732) 772 1500 Fax (732) 772 1515
Energy Consultant:
Steven Winters Associates
307 Seventh Avenue, Suite 1701,
New York, NY 10001
Tel (212) 254 5800
Landscape Architect:
Pouder Design Group PC
228 Perryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
DETAILS

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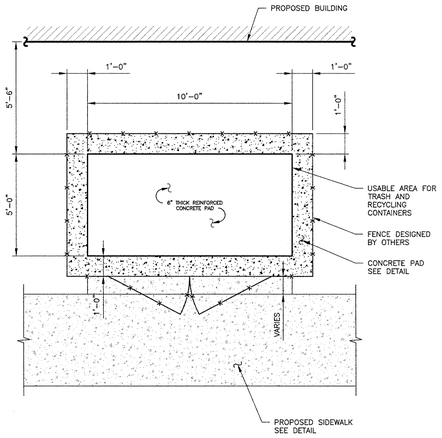
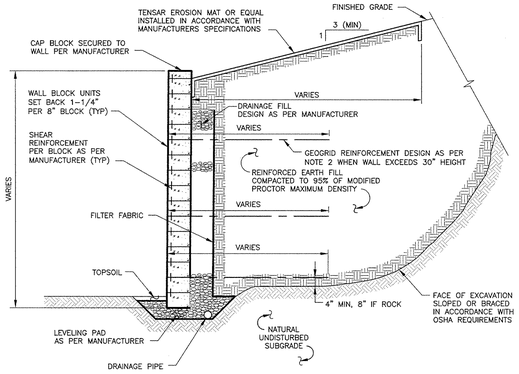
Date: 06/01/16	Drawing #:
Scale: AS NOTED	C-201
Drawn by: DNW	
Checked by: WM	



1 C-202 TRASH ENCLOSURE

SCALE: NTS

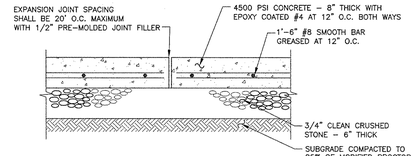


NOTES:

1. PROPOSED RETAINING WALL SHALL BE DESIGNED AS PER THE MANUFACTURER.
2. PRIOR TO CONSTRUCTION, DETAILED SHOP DRAWINGS AND DESIGNS SIGNED AND SEALED BY A NY STATE PROFESSIONAL ENGINEER MUST BE SUBMITTED TO THE CITY ENGINEER AND THE CODES DEPARTMENT FOR EACH SEPARATE WALL STRUCTURE. WALLS SHALL NOT BE CONSTRUCTED WITHOUT THE MUNICIPALITY'S AUTHORIZATION TO PROCEED.
3. CONSTRUCTION OF THE WALLS SHALL BE OBSERVED ON A FULL TIME BASIS BY A QUALIFIED INSPECTOR UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER.
4. COMPLETED WALLS SHALL BE CERTIFIED BY A NEW YORK STATE PROFESSIONAL ENGINEER TO HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS.
5. WALLS IN EXCESS OF 30" EXPOSED HEIGHT SHALL HAVE SAFETY FENCING INSTALLED.

2 C-202 SEGMENTAL RETAINING WALL

SCALE: NTS

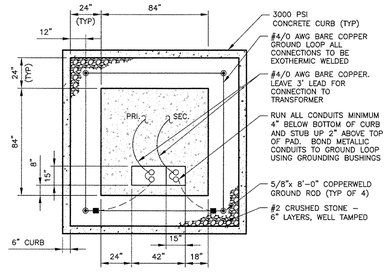


NOTES:

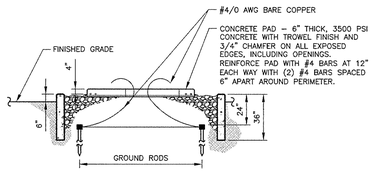
1. SUBGRADE IS TO BE COMPACTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. THE CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS AND BE PROPORTIONED AS FOLLOWS:
   A. PROVIDE DCIS CORROSION INHIBITOR (BY GRACE CONSTRUCTION PRODUCT OR EQUIVALENT) IN THE CONCRETE MIX AT A RATE OF 4 GALLONS PER CUBIC YARD.
   B. 6% ENTRAINED AIR.
   C. MAXIMUM 4" SLUMP AT TIME OF PLACEMENT.
   D. MAXIMUM WATER-CEMENT RATIO = 0.48
   E. COARSE AGGREGATE: MINIMUM 1450 LBS OF 1-1/2" CLEAN, CRUSHED, DURABLE STONE CONFORMING TO THE REQUIREMENTS OF ASTM C33 FOR SIZE 57 OR 467 COARSE STONE AGGREGATE.
3. PLACEMENT AND FINISHING SHALL BE IN A CONTINUOUS OPERATION.
4. THE CONCRETE SHALL BE FOGGED AND COVERED WITH POLYETHYLENE AND WET CURED, MAINTAINING MOISTURE CONTENT WHILE COVERED FOR AT LEAST 5 DAYS.
5. CONCRETE SHALL BE PROTECTED FROM BOTH FREEZING AND LOSS OF MOISTURE FOR A PERIOD OF 7 DAYS FROM TIME OF PLACEMENT.
6. CONCRETE SHALL NOT BE PLACED ON FROZEN SUBGRADE SOILS.
7. ALL EDGES SHALL BE ROUNDED AND GIVEN A STEEL TROWEL FINISH.
8. EXPANSION JOINTS ARE TO BE 1/2" WIDE AND FILLED WITH PREFORMED BITUMINOUS TYPE JOINT FILLER. THE TOP OF ALL JOINT FILLER SHALL BE BELOW THE TOP OF THE SURFACE. EXPANSION JOINTS SHALL BE LOCATED 24" (MAX) ON CENTER.
9. STEEL SHALL HAVE A YIELD STRENGTH OF 60,000 PSI.

3 C-202 CONCRETE PAD

SCALE: 1" = 1'-0"



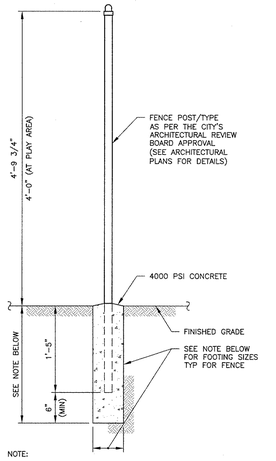
PLAN



SECTION

4 C-202 TRANSFORMER PAD

SCALE: 1/4" = 1'-0"



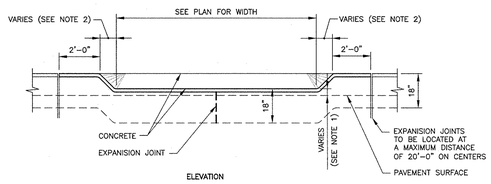
NOTE:

FOOTING SIZES:

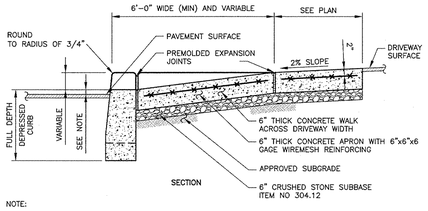
A. LINE POSTS - 12" DIA. x 24" DP.
B. CORNER AND TERMINAL POSTS - 12" DIA. x 36" DP.

5 C-202 TYPICAL FENCE

SCALE: NTS



ELEVATION



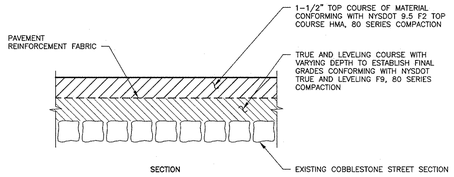
SECTION

NOTE:

ALL CONCRETE TO BE 4000 PSI (MIN), UNCOLORED.

6 C-202 DEPRESSED CURB AND APRON

SCALE: NTS



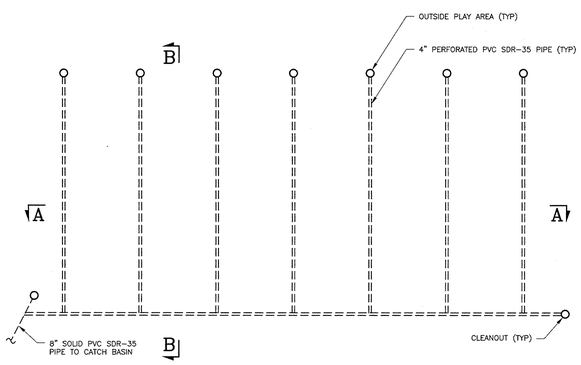
SECTION

NOTES:

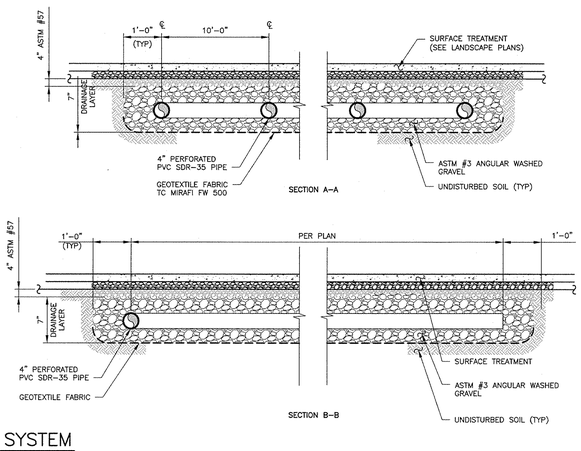
1. MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JANUARY 1, 2016, AND ALL ADDENDA THERETO; THE ONLY EXCEPTION BEING THAT THE WORK OF THIS CONTRACT SHALL BE MEASURED IN ENGLISH UNITS.
2. HOT MIX ASPHALT (HMA) PAVEMENT SHALL CONFORM WITH SECTION 400-HOT MIX ASPHALT OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS AND THE TYPOE CALLED OUT IN THESE DRAWINGS. ALTHOUGH SECTION 400 IN ITS ENTIRETY IS REFERENCED, THE HOT MIX ASPHALT (HMA) PAVEMENT(S) SPECIFIED FOR THIS CONTRACT SHALL BE AS SPECIFIED UNDER SECTION 402-HOT MIX ASPHALT (HMA) PAVEMENTS.
3. TACK COAT MATERIAL AND APPLICATION RATE WHEN SPECIFIED OR CALLED OUT IN THESE DRAWINGS OR REQUIRED BY THE REFERENCED SPECIFICATIONS SHALL CONFORM WITH SECTION 407-TACK COAT OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS.
4. PAVEMENT REINFORCEMENT FABRIC SHALL BE TENSAR GLASGRID 8501 OR APPROVED EQUIVALENT. PRODUCT SHALL BE INSTALLED PER MANUFACTURES SPECIFICATIONS.

7 C-202 TYPICAL CITY OF NEWBURGH, NY ASPHALT PAVEMENT RESTORATION

SCALE: NTS

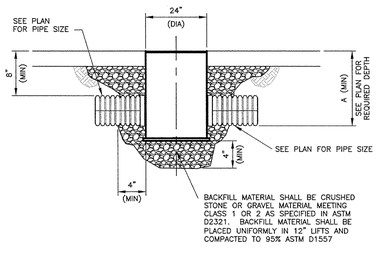


PLAN



8 C-202 UNDERDRAIN SYSTEM

SCALE: NTS



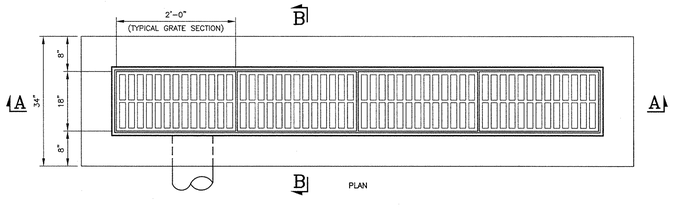
PIPE SIZE	A (ADS N-12 PIPE)
4"	12"±
6"	14"±
8"	16"±
10"	18"±
12"	20"±
15"	23"±
18"	26"±

NOTES:

1. BASIN SHALL BE NYLOPLAST™ AS MANUFACTURED BY ADS, OR APPROVED EQUAL.
2. GRATE SHALL BE DUCTILE IRON, DROP-IN TYPE, COMPATIBLE WITH THE BASIN.

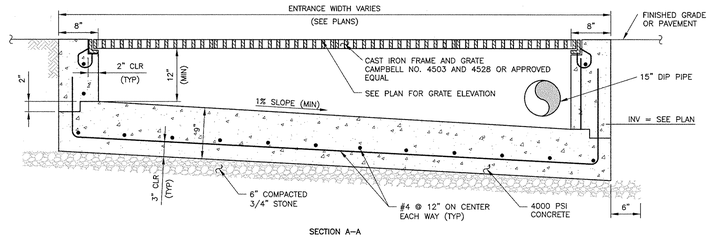
9 C-202 YARD DRAIN

SCALE: NTS

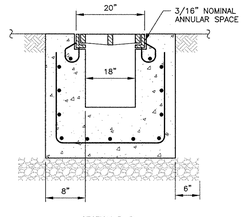


NOTE:

THE TRENCH DRAIN FRAME AND GRATE MUST BE CAPABLE OF SUSTAINING HS-25 LOADING.



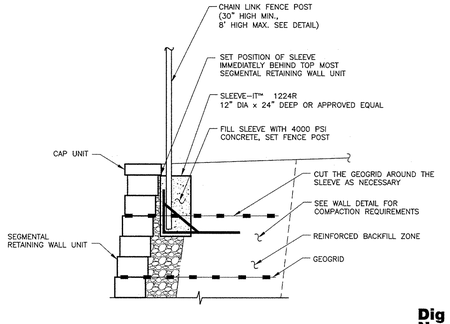
SECTION A-A



SECTION B-B

10 C-202 TRENCH DRAIN

SCALE: NTS



11 C-202 FENCE POST INSTALLATION AT SEGMENTAL RETAINING WALL

SCALE: NTS

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

TECTONIC WORK ORDER NO.: 6660.01

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Mountainville, NY 10953
Phone: (845) 534-5959
Fax: (845) 534-5999
www.tectonicengineering.com

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

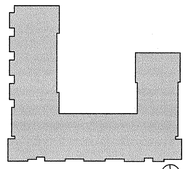
Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/16	SUBMISSION
2	06/01/16	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD COMMENTS
4	09/07/16	PER CITY ENGINEERS COMMENTS DATED-8/16/16

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42 West 39th Street 15th Floor,
New York, NY 10003
Tel (212) 253 7820 Fax (212) 253 1276

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Tectonic
Corporate Office
POBox 37, Pleasant Hill Rd 70 Mountainville, NY 10953
Tel (845) 534 5959

Structural Engineer:
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Ambler, PA 19002
Tel (215) 646 8001 Fax (215) 646 8310

MEP Engineer:
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Holmdel, NJ 07733
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307 Seventh Avenue, Suite 1701,
New York, NY 10001
Tel (212) 254 5800

Landscape Architect:
Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:

DETAILS

Project Number:	12008
Date: 06/01/16	Drawing #:
Scale: AS NOTED	C-202
Drawn by: DNW	
Checked by: WM	

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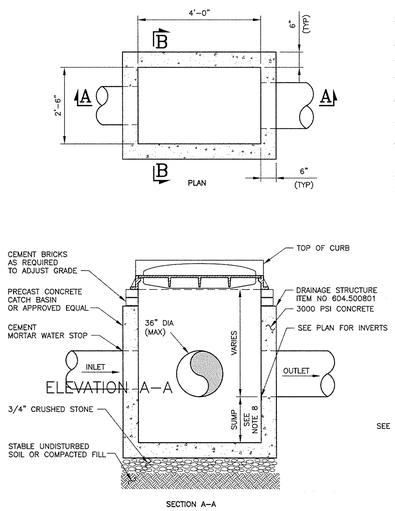
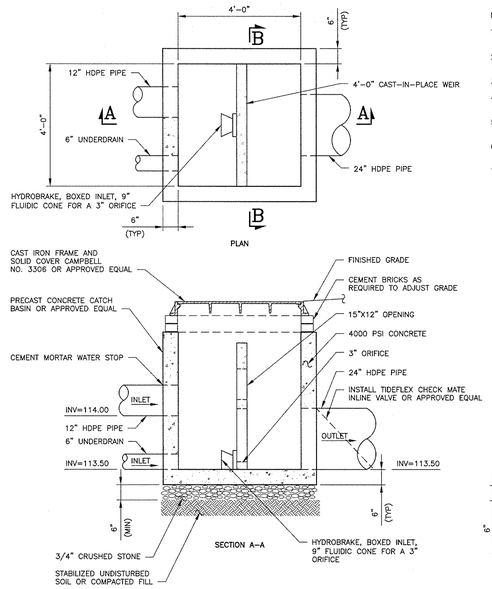


NOTES:

1. BACKFILL AROUND CATCH BASIN TO BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY (ASTM D1557) IN MAX 9" LIFTS.
2. PRECAST STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC STEPS SHALL BE PROVIDED FOR ALL BASINS GREATER THAN FOUR FEET IN DEPTH.
3. CATCH BASIN SHALL BE CAPABLE TO WITHSTAND HS-25 LOADING.
4. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. REINFORCEMENT TO BE IN CONFORMANCE WITH ASTM A615 GRADE 60 AND ASTM A185 GRADE 65.
6. CONTRACTOR TO ORDER SECTIONS FROM MANUFACTURER TO MATCH REQUIRED ELEVATIONS AND INVERTS PER PLAN.
7. PRECAST CONCRETE COMPONENTS BY WOODARDS OR EQUAL.
8. 12" UNLESS ROCK IS ENCOUNTERED PRIOR TO ACHIEVING THE FULL 12" DEEP SUMP. FOR THAT CASE, CARRY THE SUMP TO THE ROCK DEPTH, BUT IN NO CASE LESS THAN 6".
9. GRATE FRAME SHALL BE STENCILED, "DUMP NO WASTE. DRAINS TO RIVER".
10. ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS.

1 C-203 CATCH BASIN WITH CURB BOX

SCALE: 1/2" = 1'-0"

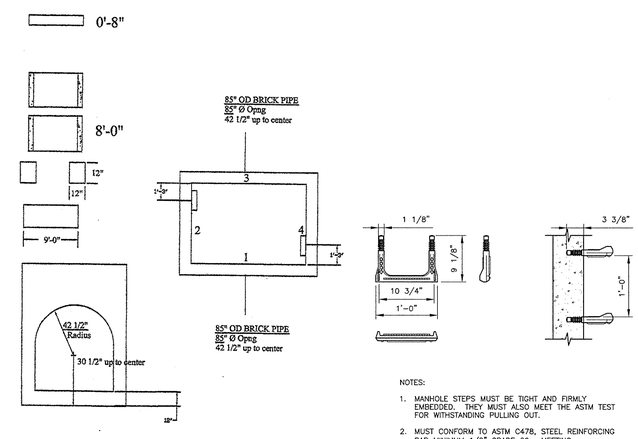


NOTES:

1. BACKFILL AROUND STRUCTURE TO BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY (ASTM D1557) IN MAX 8" LIFTS.
2. PRECAST STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC STEPS SHALL BE PROVIDED.
3. STRUCTURE SHALL BE CAPABLE TO WITHSTAND HS-25 LOADING.
4. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. REINFORCEMENT TO BE IN CONFORMANCE WITH ASTM A615 GRADE 60 AND ASTM A185 GRADE 65.
6. CONTRACTOR TO ORDER SECTIONS FROM MANUFACTURER TO MATCH REQUIRED ELEVATIONS AND INVERTS PER PLAN.
7. PRECAST CONCRETE COMPONENTS BY FORT MILLER OR EQUAL.

2 C-203 OUTLET CONTROL STRUCTURE

SCALE: NTS



NOTE:
EXACT DIMENSIONS TO BE FIELD VERIFIED PRIOR TO FABRICATION.

NOTES:

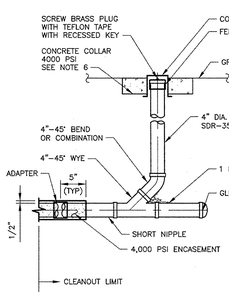
1. MANHOLE STEPS MUST BE TIGHT AND FIRMLY EMBEDDED. THEY MUST ALSO MEET THE ASTM TEST FOR WITHSTANDING PULLING OUT.
2. MUST CONFORM TO ASTM C478, STEEL REINFORCING BAR MINIMUM 1/2" GRADE 60. MEETING REQUIREMENTS OF ASTM 1615 ENCAPSULATED WITH INJECTION MOLDED COPOLYMER POLYPROPYLENE WITH SERRATED SURFACES.

3 C-203 TYPICAL PRECAST DOGHOUSE STRUCTURE

SCALE: NTS

5 C-203 STEP

SCALE: 1" = 1'-0"

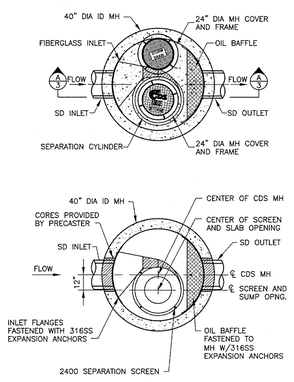


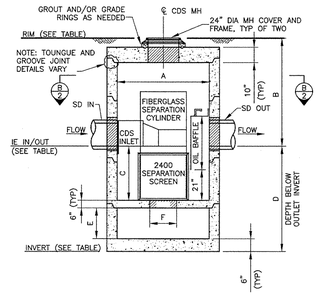
NOTES:

1. TOP OF CLEANOUT STACK/PLUG/CAP ASSEMBLY SHALL BE RECESSED 1/8" BELOW BELOW FINISHED GRADE.
2. ADAPTORS FOR TRANSITION BETWEEN DIFFERENT PIPE MATERIALS SHALL BE SUBJECT TO APPROVAL BY THE OWNER'S REPRESENTATIVE.
3. ALL CONCRETE SHALL HAVE THE MINIMUM ULTIMATE COMPRESSION STRENGTH AS INDICATED WITHIN 28 DAYS.
4. BEDDING BENEATH BASE OF DEEP CONNECTION SHALL BE EQUAL TO THAT PROVIDED FOR REMAINDER OF SEWER MAIN.
5. ADAPTORS FOR DISSIMILAR MATERIALS AND/OR SIZES SHALL BE PROVIDED AS REQUIRED.
6. ALL CLEANOUTS SHALL BE PROVIDED WITH A 18 1/2"x18"x13" DEEP CAST IN PLACE CLEANOUT COLLAR WITH CAMPBELL CASTING 4130 CLEANOUT BOX.
7. THE USE OF FLEXIBLE ADAPTORS (FERNCO) IS ABSOLUTELY PROHIBITED.
8. CLEANOUTS SHALL BE PROVIDED AT ALL BENDS, ENDS, BUILDING LINE CONNECTIONS, AND AT 100' INTERVALS ON LINEAR RUNS EXCEEDING 200' IN LENGTH.

4 C-203 CLEANOUT ASSEMBLIES

SCALE: NTS





6 C-203 HYDRODYNAMIC SEPARATOR

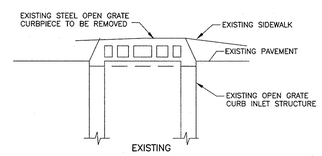
SCALE: NTS

TABLE: CDS UNIT DETAIL INFORMATION

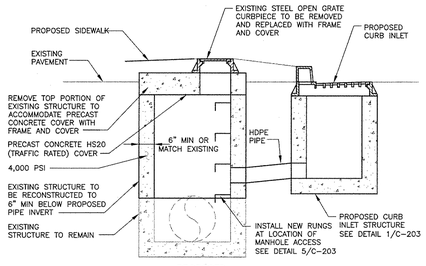
	MODEL	RIM	INV IN/OUT	INV SUMP	A	B	C	D	E
#1	CDS UNIT MODEL # CDS 2015-4	120.5	115.0	109.0	4 FT	5 FT	2 FT	6 FT	2 FT
#2	CDS UNIT MODEL # CDS 2015-4	117.2	110.0	104.0	4 FT	5 FT	2 FT	6 FT	2 FT

CONSTRUCTION NOTES:

1. APPLY BUTYL MASTIC AND/OR GROUT TO SEAL JOINTS OF MANHOLE STRUCTURE. APPLY LOAD TO MASTIC SEAL IN JOINTS OF MH SECTIONS TO COMPRESS SEALANT IF NECESSARY. UNIT MUST BE WATER TIGHT, HOLDING WATER UP TO FLOWLINE INVERT (MINIMUM).
2. IF SEPARATION SLAB IS NON-INTEGRAL TO THE SEPARATION SECTION OF THE UNIT, SET AND VERIFY TOP ELEVATION BEFORE PLACING MORE PRECAST COMPONENTS OR BACKFILLING. ENSURE 35" FROM TOP OF SEPARATION SLAB TO PIPE INVERT.
3. GROUT PIPE CONNECTIONS TO SEAL JOINT.
4. SET BOTTOM OF OIL BAFFLE 21" ABOVE SEPARATION SLAB FLOOR; DRILL AND INSERT A MINIMUM OF TEN (10) 3/8" x 3 3/4" SS EXPANSION BOLTS @ 12" O.C. EQUALLY SPACED TO SECURE FIBERGLASS OIL BAFFLE FLANGE TO RISER WALL-(HARDWARE SUPPLIED BY CDS TECHNOLOGIES).
5. FASTEN FIBERGLASS CYLINDER/INLET TO SCREEN ASSEMBLY USING FOUR (4) SETS OF 1/2" x 1 1/2" SS HEX HEAD BOLTS W/ NUTS AND WASHERS; IN THE LEFT-HANDED CONFIGURATION THE "RED" COLORED FLANGE SHOULD FACE UP; IN THE RIGHT-HANDED CONFIGURATION, THE "GREEN" COLORED FLANGE SHOULD FACE UP-(HARDWARE SUPPLIED BY CDS TECHNOLOGIES).
6. CENTER SCREEN ASSEMBLY OVER SUMP OPENING AND POSITION FIBERGLASS INLET AGAINST RISER WALL WITH INLET PIPE REASONABLY CENTERED WITHIN THE CDS INLET ORIFICE; FASTEN SCREEN TO SEPARATION SLAB USING FOUR (4) 3/8" x 3 3/4" SS EXPANSION BOLTS-(HARDWARE SUPPLIED BY CDS TECHNOLOGIES); IF STAINLESS STEEL SEPARATION PLATE (SEE INSET) IS PROVIDED, PLACE PLATE WITHIN THE SCREEN CYLINDER AND OVER THE 21"ø SUMP ACCESS HOLE (NO FASTENING REQUIRED).
7. VERIFY THAT SCREEN ASSEMBLY IS CENTERED OVER SUMP ACCESS HOLE AND ADJUST IF NECESSARY; DRILL AND INSERT A MINIMUM OF SIX (6) 3/8" x 3 3/4" SS EXPANSION BOLTS EQUALLY SPACED TO SECURE FIBERGLASS INLET FLANGE TO RISER WALL-(HARDWARE SUPPLIED BY CDS TECHNOLOGIES).
8. BLOCK AND/OR GROUT TO MATCH FINISHED GRADE ELEVATION AS NEEDED.

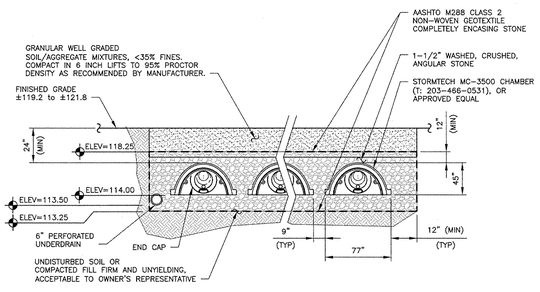


NOTE: CONTRACTOR TO SUBMIT A SHOP DRAWING TO THE CITY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND INSTALLATION.



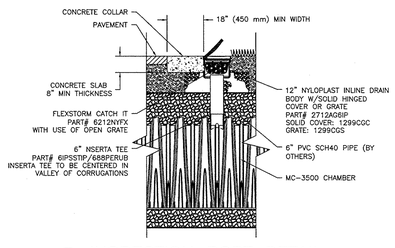
11 C-203 SKETCH OF CURB INLET REPLACEMENT AT LANDER/BROADWAY INTERSECTION

SCALE: NTS



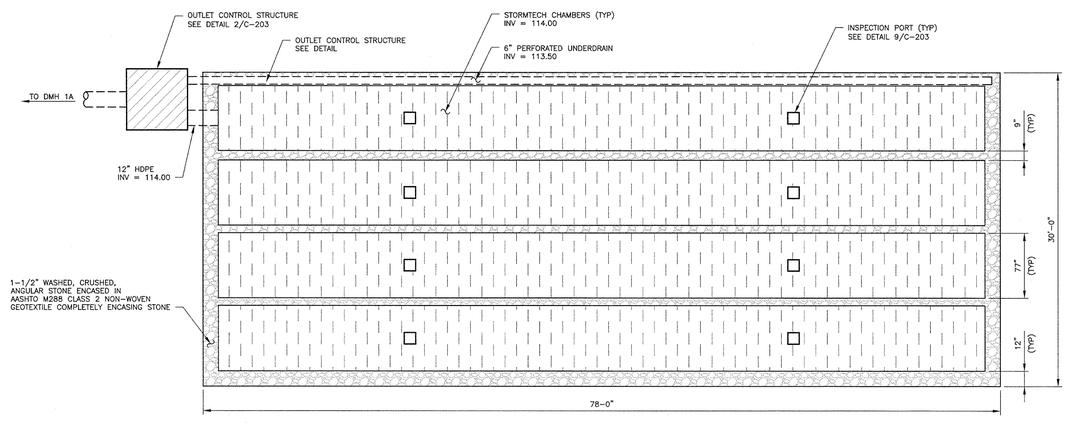
8 C-203 UNDERGROUND DETENTION CROSS SECTION

SCALE: NTS



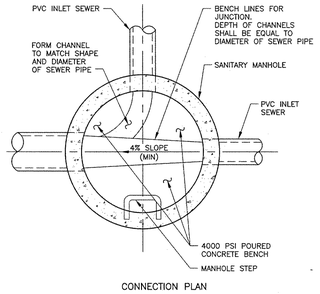
9 C-203 INSPECTION PORT DETAIL

SCALE: NTS



7 C-203 UNDERGROUND DETENTION PLAN LAYOUT

SCALE: NTS



10 C-203 BENCH & CHANNEL

SCALE: NTS

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Mid-Broadway Redevelopment

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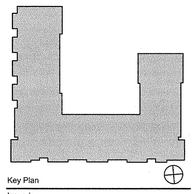

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2	06/01/16	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD COMMENTS
4	09/07/16	PER CITY ENGINEERS COMMENTS DATED-8/16/16

Revisions:

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Landscape Architect:
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Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
DETAILS

Project Number: 12008
Date: 06/01/16
Drawing #: C-203
Scale: AS NOTED
Drawn by: DNW
Checked by: WM

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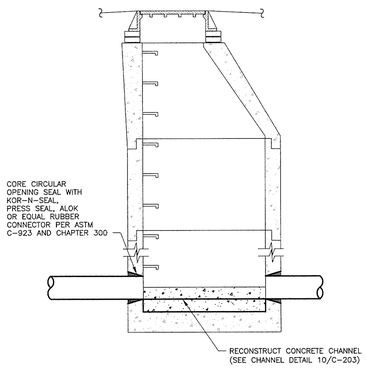
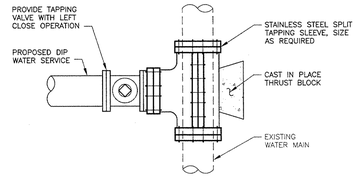


NOTES:

1. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPARTMENT, AUTHORIZED BY THE PLUMBING INSPECTOR.
2. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
3. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL.

1 C-204 CONNECTION TO SEWER MANHOLE

SCALE: 1/2" = 1'-0"

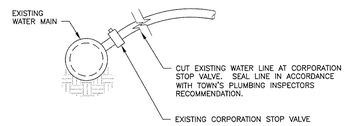


NOTES:

1. WET TAP DRILLING TO BE PERFORMED BY THE CONTRACTOR. THE LOCAL WATER UTILITY SHALL HAVE A REPRESENTATIVE ON-SITE.
2. CONTRACTOR TO CONTACT THE LOCAL WATER UTILITY FOR INSTALLATION REQUIREMENTS.
3. EXPOSE MAIN TO DETERMINE SIZE OF MAIN PRIOR TO ORDERING TAPPING SLEEVE.
4. RESTRAIN ALL PROPOSED JOINTS IN ACCORDANCE WITH PIPE RESTRAINT DETAIL.
5. ALL COORDINATION, EXCAVATION, BACKFILL, RESTORATION, SHORING/BRACING AND MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR.
6. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPARTMENT, AUTHORIZED BY THE PLUMBING INSPECTOR.
7. A CITY OF NEWBURGH LICENSED PLUMBER MUST BE RETAINED TO INSTALL THE WATER CONNECTIONS.
8. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
9. THE CITY OF NEWBURGH WATER SUPERINTENDENT SHALL BE NOTIFIED, VIA A CORPORATION TAP REQUEST, PRIOR TO MAKING CONNECTION TO THE MUNICIPAL WATER SYSTEM.
10. THE CITY OF NEWBURGH WATER DEPARTMENT SHALL INSTALL THE CORPORATION TAP INTO THE MUNICIPAL WATER SYSTEM, UP TO A ONE (1) INCH SERVICE. CORPORATION TAPS ABOVE ONE (1) INCH IN SIZE SHALL BE DONE BY A CONTRACTOR SPECIALIZING IN LARGE DIAMETER TAPPING.
11. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL.

2 C-204 WET TAP

SCALE: 1" = 1'-0"

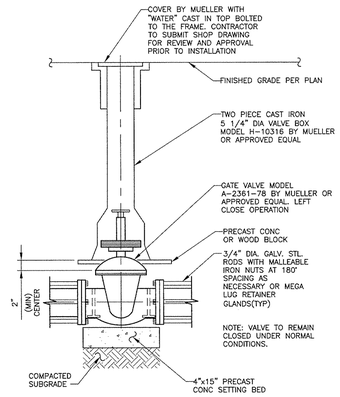


NOTES:

1. LOCATE SERVICE TO BE ABANDONED.
2. DETERMINE THE EXCAVATION AREA IN THE STREET OVER THE SERVICE CORPORATION.
3. NOTIFY WATER DEPARTMENT PRIOR TO EXCAVATION.
4. PERFORM EXCAVATION.
5. EXISTING CORPORATION STOP SHALL BE COMPLETELY CLOSED BEFORE THE WATER SERVICE LINE IS DISCONNECTED AT THE EXISTING CORPORATION STOP.
6. AFTER REMOVAL OF THE SERVICE LINE FROM THE CORPORATION STOP, A BRONZE CAP OR PLUG SHALL BE INSTALLED ON THE OUTLET SIDE OF THE CORPORATION STOP.
7. IF THE WATER SERVICE LINE CANNOT BE REMOVED WITHOUT DAMAGING THE EXISTING CORPORATION STOP AND/OR CREATING A LEAK, THE WATER SERVICE LINE SHALL BE SAWED OFF AT THE EXISTING CORPORATION STOP.
8. NUT ON THE BOTTOM OF THE EXISTING CORPORATION STOP, IF PRESENT SHALL BE COMPLETELY TIGHTENED.
9. IF THE EXISTING CORPORATION STOP LEAKS WHEN FULLY CLOSED OR AFTER BEING TIGHTENED, THE EXISTING CORPORATION STOP SHALL BE COMPLETELY PLUGGED AS APPROVED BY THE WATER DEPARTMENT REPRESENTATIVE.
10. BACKFILL IN ACCORDANCE WITH TRENCH BACKFILL DETAIL 7/C-204.
11. RESTORE PAVEMENT IN ACCORDANCE WITH PAVEMENT SECTION DETAIL 9/C-201.

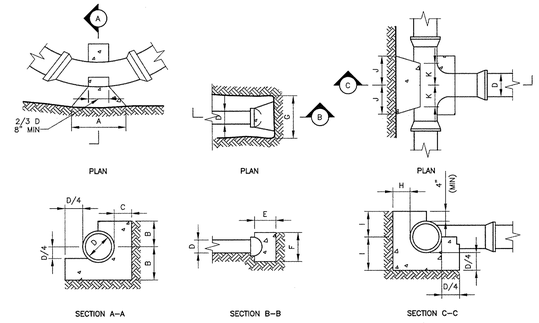
3 C-204 EXISTING WATER SERVICE DISCONNECTION

SCALE: NTS



4 C-204 VALVE AND VALVE BOX

SCALE: 1" = 1'-0"



HORIZONTAL BEND

BEND		4"*	6"	8"	10"
11 1/4° BEND	A	6"	8"	10"	12"
	B	7"	8"	9"	10"
	C	7"	7"	8"	8"
22 1/2° BEND	A	9"	12"	18"	21"
	B	7"	8"	9"	10"
	C	8"	9"	10"	11"
45° BEND	A	15"	15"	25"	30"
	B	7"	8"	9"	10"
	C	8"	9"	10"	11"
90° BEND	A	24"	30"	36"	42"
	B	6"	9"	12"	15"
	C	22"	21"	20"	19"

* SEE NOTE 4

CAP

D	6"*	8"
E	6"	8"
F	12"	16"
G	17"	23"

* SEE NOTE 4

TEE

	4"*	6"	8"	10"
H	8"	9"	10"	12"
I	8"	10"	12"	15"
J	7"	9"	12"	14"
K	6"	8"	8"	8"

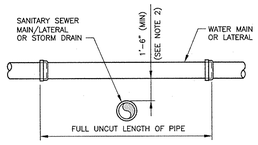
* SEE NOTE 4

NOTES:

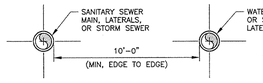
1. ALL CONCRETE TO BE 3000 PSI.
2. ALL THRUST BLOCKS TO BE CARRIED TO UNDISTURBED EARTH.
3. THRUST BLOCK DIMENSIONS SHOWN ARE MINIMUM.
4. MINIMUM DIMENSION FOR PIPES LESS THAN 4" DIAMETER.

5 C-204 THRUST BLOCK

SCALE: NTS



VERTICAL SEPARATION



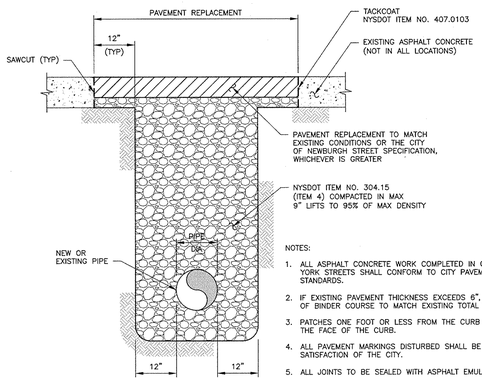
HORIZONTAL SEPARATION

NOTES:

1. NO DEVIATION (EXCEPT AS SPECIFICALLY INDICATED ON THE PLANS) IN THE SEPARATION REQUIREMENTS WILL BE PERMITTED WITHOUT APPROVAL OF THE JURISDICTIONAL AUTHORITY.
2. WHERE WATER AND SANITARY OR STORM SEWER MAINS ARE LESS THAN 10' APART HORIZONTAL OR PROVIDE LESS THAN 18" SEPARATION BETWEEN PIPES, CONCRETE ENCASE WATER MAIN PER ENCASEMENT DETAIL.

6 C-204 WATER/SEWER SEPARATION REQUIREMENTS

SCALE: NTS

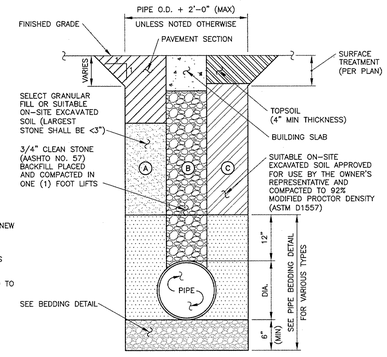


NOTES:

1. ALL ASPHALT CONCRETE WORK COMPLETED IN CITY OF NEWBURGH, NEW YORK STREETS SHALL CONFORM TO CITY PAVEMENT SECTION STANDARDS.
2. IF EXISTING PAVEMENT THICKNESS EXCEEDS 6", INCREASE THICKNESS OF BINDER COURSE TO MATCH EXISTING TOTAL THICKNESS.
3. PATCHES ONE FOOT OR LESS FROM THE CURB SHALL BE EXTENDED TO THE FACE OF THE CURB.
4. ALL PAVEMENT MARKINGS DISTURBED SHALL BE RESTORED TO THE SATISFACTION OF THE CITY.
5. ALL JOINTS TO BE SEALED WITH ASPHALT EMULSION (AS-20).

7 C-204 TRENCH EXCAVATION WITHIN CITY RIGHT-OF-WAY

SCALE: NTS



CONSTRUCTION CASES:

A. TRENCH UNDER ROADWAY (EXTEND 5' OUTSIDE CURB/EDGE OF PAVEMENT)

B. TRENCH UNDER BUILDING SLAB/FOOTING (EXTEND 5' OUTSIDE BUILDING LINE)

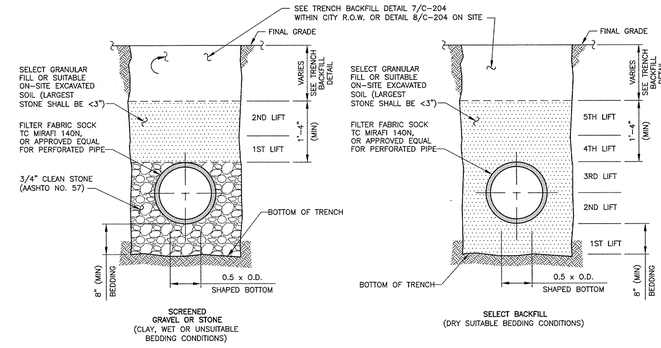
C. TRENCH UNDER OFF-ROAD AREAS

NOTES:

1. ALL COSTS ASSOCIATED WITH THE PROVISION TRENCH BACKFILL IN ACCORDANCE WITH THIS DETAIL SHALL BE INCLUDED IN THE PRICE BID FOR THE PROJECT.
2. ALL EXCAVATION AND TRENCHING MEET OSHA REQUIREMENTS.
3. BACKFILL WITH EXCAVATED TRENCH MATERIAL FREE OF DELETERIOUS MATERIAL AND STONES OVER 6" DIAMETER (UNLESS OTHERWISE NOTED). BACKFILL TO BE PLACED IN 8" (MAX) LIFTS AND COMPACTED TO 95% MODIFIED PROCTOR DENSITY (ASTM D1557) (UNLESS OTHERWISE NOTED).

8 C-204 TRENCH BACKFILL ON SITE

SCALE: NTS

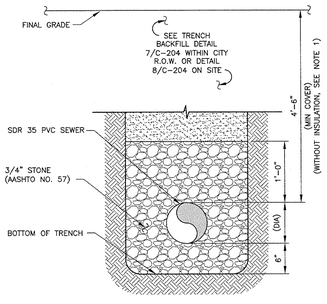


NOTES:

1. SELECT FILL TO BE THOROUGHLY COMPACTED IN 6" LAYERS BY APPROVED TAMPING MACHINE.
2. SELECT FILL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY (ASTM D1557)
3. APPROVED BACKFILL COMPACTED AS PER SPECIFICATIONS.
4. TRENCH WIDTH TO BE THE LESSER OF (O.D.+2*O.D.) OR (O.D.+2*0.5FT)
5. PVC SEWER PIPE AND FITTINGS, NPS 15 AND SMALLER SHALL BE ASTM D 3034, SDR-35 FOR SANITARY APPLICATIONS, AND SCHEDULE 40 FOR DRAINAGE APPLICATIONS FOR SOLVENT-CEMENTED OR GASKETED JOINTS. IF GASKETS ARE PROVIDED, GASKETS SHALL MEET ASTM F 477 FOR ELASTOMERIC SEALS.
6. HDPE STORM SEWER PIPE AND FITTINGS SHALL COMPLY WITH THE REQUIREMENTS FOR TEST METHODS, DIMENSIONS AND MARKINGS FOUND IN AASHTO DESIGNATIONS M252, AND M294. PIPE AND FITTINGS SHALL BE MADE FROM VIRGIN PE COMPOUNDS WHICH CONFORM TO THE APPLICABLE CURRENT EDITION OF THE AASHTO MATERIAL SPECIFICATIONS FOR CELL CLASSIFICATION AS DEFINED AND DESCRIBED IN ASTM D3350. STORM SEWER PIPING GREATER THAN EIGHT (8) INCHES IN DIAMETER SHALL BE SMOOTH INTERIOR/CORRUGATED EXTERIOR PIPE FITTED WITH WATERTIGHT JOINTS MEETING OR EXCEEDING ASTM 3212 LAB TEST AND ASTM 1417 WATERTIGHT FIELD TEST. N-12 IB WT™PRODUCT AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC. (ADS), COLUMBUS, OH, (614) 457-3051 OR APPROVED EQUAL. STORM SEWER PIPING LESS THAN OR EQUAL TO EIGHT (8) INCHES IN DIAMETER SHALL BE SINGLE WALL, CORRUGATED PIPE FITTED WITH SNAP OR SPLIT COUPLINGS, AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC. (ADS), COLUMBUS, OH, (614) 457-3051 OR APPROVED EQUAL. PERFORATIONS APPLIED BY THE MANUFACTURER TO THE PIPE SHALL BE PROVIDED WERE INDICATED ON THE PROJECT PLANS.
7. FILTER FABRIC SHALL BE AASHTO M288 CLASS 2 NON-WOVEN, TC MIRAFI 170N OR APPROVED EQUAL, UNLESS OTHERWISE INDICATED.
8. BEDDING CONDITION SHALL BE DETERMINED BY OWNER'S REPRESENTATIVE.

9 C-204 STANDARD BEDDING FOR PVC/HDPE PIPE

SCALE: NTS



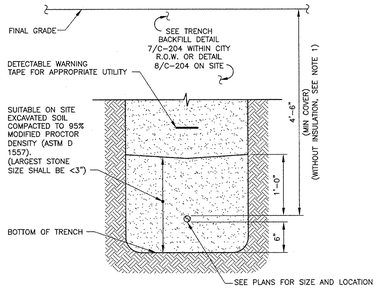
NOTE:

WHEN SITE CONDITIONS DICTATE COVER REQUIREMENTS LESS THAN THOSE DIMENSIONED, 4 FT WIDE POLYSTYRENE FOAM INSULATION SHALL BE PROVIDED APPROXIMATELY 1 FT BELOW THE GROUND SURFACE ALONG THE CENTERLINE OF THE PIPE AS FOLLOWS:

COVER PROVIDED	SURFACE CONDITIONS	INSULATION THICKNESS
<4'-6", >3'-0"	PAVEMENT	2"
<4'-6", >2'-0"	TURF	2"
<2'-0", >1'-6"	TURF	4"

10 C-204 SEWER PIPE BEDDING

SCALE: 1" = 1'-0"



NOTES:

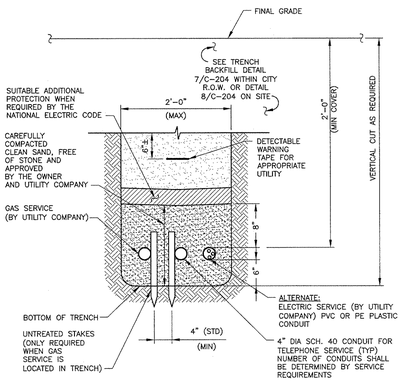
1. WHEN SITE CONDITIONS DICTATE COVER REQUIREMENTS LESS THAN THOSE DIMENSIONED, 4 FT WIDE POLYSTYRENE FOAM INSULATION SHALL BE PROVIDED APPROXIMATELY 1 FT BELOW THE GROUND SURFACE ALONG THE CENTERLINE OF THE PIPE AS FOLLOWS:

COVER PROVIDED	SURFACE CONDITIONS	INSULATION THICKNESS
<4'-6", >3'-0"	PAVEMENT	2"
<4'-6", >2'-0"	TURF	2"
<2'-0", >1'-6"	TURF	4"

2. IN CASE OF ROCK EXCAVATION OR ROCKY TERRAIN, A SAND BALLAST OF FOUR (4) INCHES SHALL BE PLACED BELOW THE SERVICE LINE AND COVERED WITH NO LESS THAN TWELVE (12) INCHES OF CLEAN SAND. NO TRENCH SHALL BE BACKFILLED ON ANY SERVICE LINE UNTIL THE SAME HAS BEEN INSPECTED BY THE DISTRICT OR ITS REPRESENTATIVE AND TESTED FOR LEAKS, AND NO WATER SERVICE WILL BE FURNISHED UNTIL THE DISTRICT OR ITS REPRESENTATIVE HAS MADE SUCH INSPECTION.

11 C-204 WATER PIPE BEDDING

SCALE: 1" = 1'-0"



NOTE:

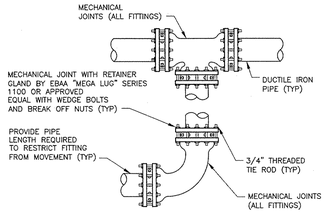
ALL WORK SHALL BE PERFORMED TO THE SATISFACTION OF THE LOCAL UTILITY COMPANIES.

12 C-204 UTILITY BEDDING

SCALE: NTS

TABLE A – REQUIRED RESTRAINED LENGTH FOR DUCTILE IRON PIPE

PIPE SIZE		8"							
BEND ANGLE		45 DEGREE			22.5 DEGREE	11.25 DEGREE	TEE (8x8)	TEE (8x6)	CAP
TYPE OF TEE		H BEND	V BEND (UP)	V BEND (DN)	H BEND	H BEND			
SOIL (UNIFIED CLASSIFICATION)	CL, >75% PASSING NO. 200	13'	13'	28'	6'	3'	28'	18'	34'
	ML, >75% PASSING NO. 200	12'	12'	30'	6'	3'	58'	36'	73'
	CL, >50-75% PASSING NO. 200	12'	12'	28'	6'	3'	27'	17'	34'
	ML, >50-75% PASSING NO. 200	11'	11'	30'	5'	3'	55'	33'	73'
	GC, SC	10'	10'	32'	5'	2'	40'	22'	56'
	GM, SM	10'	10'	29'	5'	2'	53'	30'	71'
	SW, SP, GW	7'	7'	20'	3'	2'	31'	14'	48'



NOTES:

1. THRUST BLOCKING IS NOT PERMITTED.
2. PIPE RESTRAINING TO BE USED FOR VERTICAL DEFLECTIONS ALSO.
3. SEE TABLE A FOR REQUIRED RESTRAINED LENGTH FOR DUCTILE IRON PIPE.
4. PIPE BEDDING SHALL BE IN ACCORDANCE WITH WATER PIPE TRENCH DETAIL.
5. THE CONTRACTOR SHALL PERFORM SOIL TEST TO DETERMINE SOIL TYPE(S) INDICATED ON TABLE A.

13 C-204 PIPE RESTRAINT

SCALE: 1"=1'-0"

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Mountainville, NY 10953
Phone: (845) 534-5959
Fax: (845) 534-5999
www.tectonicengineering.com

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

TECTONIC WORK ORDER NO.: 6660.01

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0 1 2 3
ORIGINAL SIZE IN INCHES

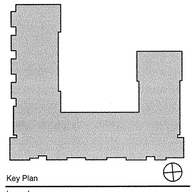
Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/16	SUBMISSION
2	06/01/16	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD COMMENTS
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Tel (845) 534 5959
Structural Engineer:
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20 S. Maple Street, Suite 150
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53 Main Street
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Steven Winters Associates
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Tel (212) 254 5800
Landscape Architect:
Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
DETAILS

Project Number:	12008
Date: 06/01/16	Drawing #: C-204
Scale: AS NOTED	
Drawn by: DNW	
Checked by: WM	

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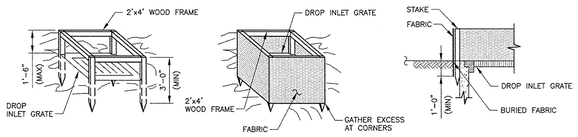
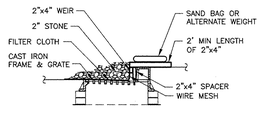


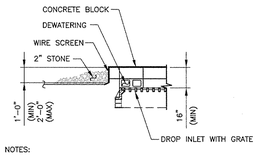
NOTES:

1. FILTER FABRIC SHALL HAVE AN EOS OF 40–85.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2"x4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2'x4' WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.
7. DRAINAGE AREA LIMITED TO 1 ACRE.



NOTES:

1. FILTER FABRIC SHALL HAVE AN EOS OF 40–85.
2. WIRE MESH SHALL BE BETWEEN THE GRATE AND FILTER FABRIC.
3. WOODEN FRAME SHALL BE CONSTRUCTED OF 2"x4" CONSTRUCTION GRADE LUMBER.
4. WIRE MESH ACROSS THROAT SHALL BE A CONTINUOUS PIECE 30" MIN WIDTH WITH A LENGTH OF 4' LONGER THAN THE THROAT. IT SHALL BE SHAPED AND SECURELY NAILED TO A 2"x4" WEIR.
5. THE WEIR SHALL BE SECURELY NAILED TO 2"x4" SPACERS 9" LONG SPACED NO MORE THAT 6' APART.
6. THE ASSEMBLY SHALL BE PLACED AGAINST THE INLET AND SECURED BY 2"x4" ANCHORS 2' LONG EXTENDING ACROSS THE TOP OF THE INLET AND HELD IN PLACE BY SAND BAGS OR ALTERNATE WEIGHTS.
7. DRAINAGE AREA LIMITED TO 1 ACRE.

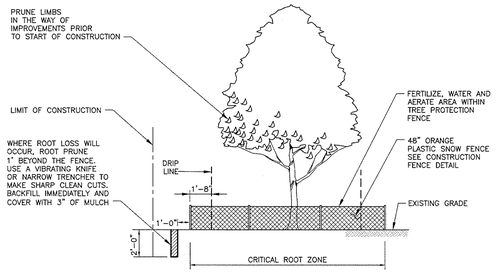


NOTES:

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2" MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2" – 3/4" DIA PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1' THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3" STONE AS SHOWN ON THE DRAWINGS.
5. DRAINAGE AREA LIMITED TO 1 ACRE.

1 / C-205 INLET PROTECTION

SCALE: 1/4" = 1'-0"



NOTE:

NO ENTRY, STORAGE, DISTURBANCE OR ALTERATION TO AREA WITHIN TREE PROTECTION FENCE.

TREE PROTECTION NOTES:

THE TREE PROTECTION AND PRESERVATION GUIDELINES ADOPTED PURSUANT TO THE LAND DEVELOPMENT REGULATIONS OF THE MUNICIPALITY WILL BE IMPLEMENTED IN ORDER TO PROTECT AND PRESERVE BOTH INDIVIDUAL SPECIMEN TREES AND BUFFER AREA WITH MANY TREES. STEPS THAT WILL BE TAKEN TO RESERVE AND PROTECT EXISTING TREES TO REMAIN ARE AS FOLLOWS:

A. NO CONSTRUCTION EQUIPMENT SHALL BE PARKED UNDER THE TREE CANOPY.

B. THERE WILL BE NO EXCAVATION OR STOCKPILING OF EARTH UNDERNEATH THE TREES.

C. TREES DESIGNATED TO BE PRESERVED SHALL BE MARKED CONSPICUOUSLY ON ALL SIDES AT A 5 TO 10 FOOT HEIGHT.

D. THE TREE PROTECTION ZONE FOR TREES DESIGNATED TO BE PRESERVED WILL BE ESTABLISHED BY ONE OF THE FOLLOWING METHODS:

ONE (1) FOOT RADIUS FROM TRUNK PER INCH DBH

DRIP LINE OF THE TREE CANOPY. THE METHOD CHOSEN SHOULD BE BASED ON PROVIDING THE MAXIMUM PROTECTION ZONE POSSIBLE. A BARRIER OF F. SNOW FENCE OR EQUAL IS TO BE PLACED AND MAINTAINED ONE YARD BEYOND THE ESTABLISHED TREE PROTECTION ZONE. IF IT IS AGREED THAT THE TREE PROTECTION ZONE OF A SELECTED TREE MUST BE VIOLATED, ONE OF THE FOLLOWING METHODS MUST BE EMPLOYED TO MITIGATE THE IMPACT:

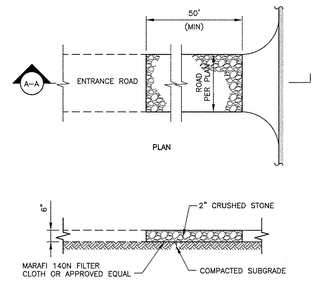
LIGHT TO HEAVY IMPACTS – MINIMUM OF EIGHT INCHES OF WOOD CHIPS INSTALLED IN THE AREAS TO BE PROTECTED. CHIPS SHALL BE REMOVED UPON COMPLETION OF WORK.

LIGHT IMPACTS ONLY – INSTALLATION OF 3/4 INCH OF PLYWOOD OR BOARDS, OR EQUAL OVER THE AREA TO BE PROTECTED.

E. SEPARATE PAYMENT WILL NOT BE MADE FOR THIS WORK

2 / C-205 TREE PROTECTION AND PRUNING

SCALE: NTS

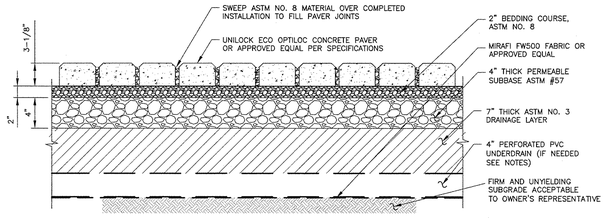


NOTES:

1. STONE SIZE – USE 2 1/4" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – NOT LESS THAN 50 FEET.
3. THICKNESS – NOT LESS THAN SIX INCHES.
4. WIDTH – 12 FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24 FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRED PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODICIALLY INSPECTS AND NEEDED MAINTENANCE SHALL BE PROVIDED.

3 / C-205 STABILIZED CONSTRUCTION ENTRANCE

SCALE: 3/8" = 1'-0"

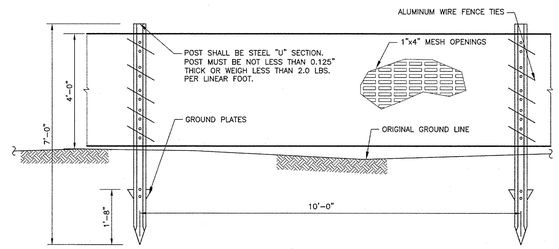


9 / C-205 PERMEABLE CONCRETE PAVER BEDDING

SCALE: NTS

NOTES:

1. IF UNDERLYING SOILS DO NOT MEET MINIMUM INFITRATION RATE OF 0.5 IN/HR PER APPENDIX D OF THE SWDM, THAN AN UNDERDRAIN MUST BE INSTALLED.
2. UNDERDRAIN TO CONSIST OF 4–INCH PERFORATED PVC (AASHTO M252) PIPE, WITH 3/8–INCH PERFORATIONS AT 6 INCHES ON CENTER WITH SOLID SCH. 40 PVC CONNECTORS EXTENDED TO THE NEAREST CATCH BASIN.
3. UNDERDRAINS SHALL BE INSTALLED AT A MINIMUM SLOPE OF 0.5%.
4. EXTEND CLEANOUT PIPES TO SURFACE WITH VENTED CAPS AT T OR Y CONNECTIONS. CAST WITH CONCRETE 12"x 12"x 12" COLLARS WITHIN PAVER PATTERN.

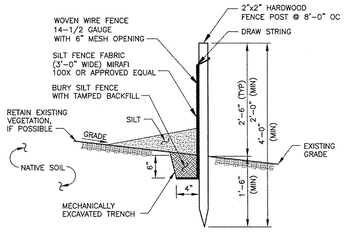


NOTES:

1. FENCING TO BE PLACED LINEARLY ALONG LIMIT OF CLEARING, AND AS SHOWN ON PLAN AND AS REQUIRED BY REFERRING DETAILS.
2. MESH COLOR TO BE BLAZE ORANGE

4 / C-205 CONSTRUCTION FENCE (PLASTIC)

SCALE: NTS

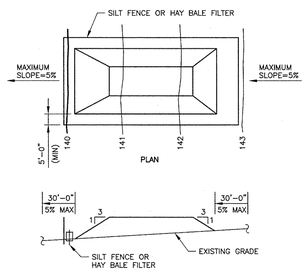


NOTES:

1. WOVEN WIRE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLED.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOODEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID–SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6 INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" FORM IN SILT FENCE.
5. SILT FENCE TO BE MAINTAINED IN PLACE DURING CONSTRUCTION AND SOIL STABILIZATION PERIOD.
6. SILT FENCE SHALL BE INSTALLED PARALLEL TO CONTOURS.

5 / C-205 SILT FENCE

SCALE: NTS

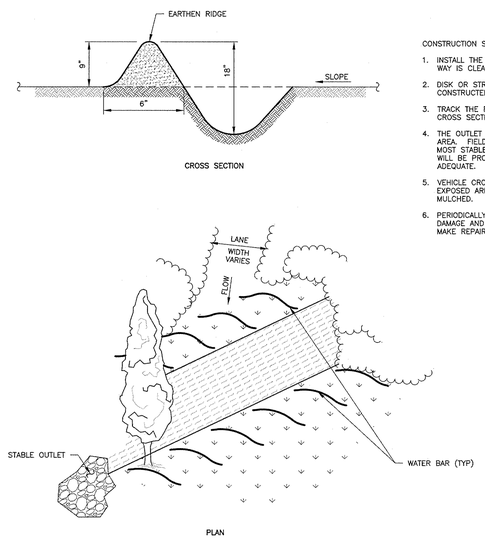


NOTES:

1. PLACE STOCKPILES AT LOCATIONS AS SHOWN ON THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
2. ALL SIDE SLOPES SHALL BE 3 TO 1 OR FLATTER.
3. STOCKPILE SURFACE SHALL SEALED WITH A ROLLER TO PREVENT SATURATION
4. STOCKPILE SHALL RECEIVE A VEGETATIVE COVER IN ACCORDANCE WITH MINIMUM STABILIZATION REQ.
5. SILT FENCE OR HAY BALE FILTER SHALL BE INSTALLED AS DETAILED HEREON.

6 / C-205 TOPSOIL STOCKPILE

SCALE: NTS

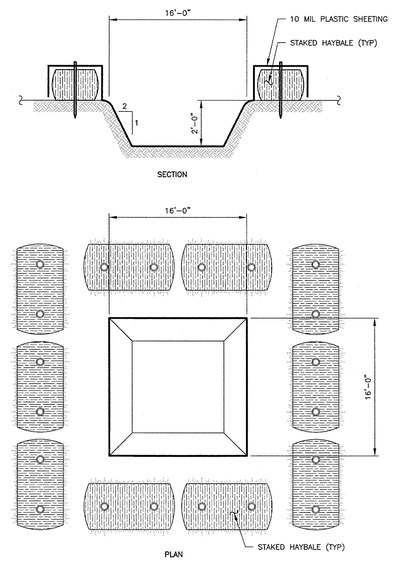


CONSTRUCTION SPECIFICATIONS:

1. INSTALL THE WATER BAR AS SOON AS THE RIGHT OF WAY IS CLEARED AND GRADED.
2. DISK OR STRIP THE SOD FROM THE BASE FRO THE CONSTRUCTED RIDGE BEFORE PLACING FILL.
3. TRACK THE RIDGE TO COMPACT IT TO THE DESIGN CROSS SECTION.
4. THE OUTLET SHALL BE LOCATED ON AN UNDISTURBED AREA. FIELD SPACING WILL BE ADJUSTED TO USE THE MOST STABLE OUTLET AREAS. OUTLET PROTECTION WILL BE PROVIDED WHEN NATURAL AREAS ARE NOT ADEQUATE.
5. VEHICLE CROSSING SHALL BE STABILIZED WITH GRAVEL. EXPOSED AREAS SHALL BE IMMEDIATELY SEEDED AND MULCHED.
6. PERIODICALLY INSPECT WATER BARS FOR EROSION DAMAGE AND SEDIMENT. CHECK OUTLET AREAS AND MAKE REPAIRS AS NEEDED TO RESTORE OPERATION.

7 / C-205 WATER BARS

SCALE: NTS



8 / C-205 TEMPORARY CONCRETE WASH

SCALE: NTS

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TECTONIC WORK ORDER NO.: 6660.01

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www.tectonicengineering.com

Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

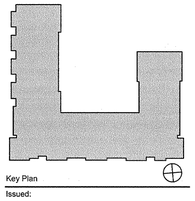
Application #:

Clients:

MILL STREET PARTNERS

42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/16	SUBMISSION
2	06/01/16	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD COMMENTS
4	09/07/16	PER CITY ENGINEERS COMMENTS DATED-8/16/16

Revisions:

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Tel (215) 646 8001 Fax (215) 646 8310

MEP Engineer:
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Energy Consultant:
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Tel (212) 254 5800

Landscape Architect:
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228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:

DETAILS

Project Number:	12008
Date: 06/01/16	Drawing #:
Scale: AS NOTED	C-205
Drawn by: DNW	
Checked by: WM	

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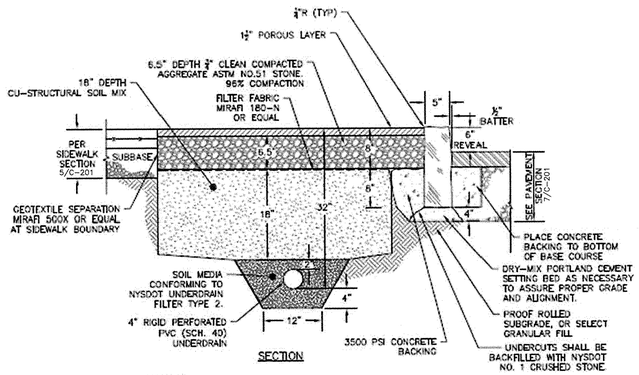
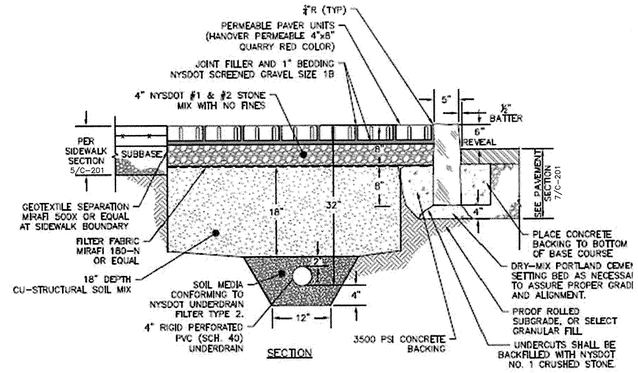
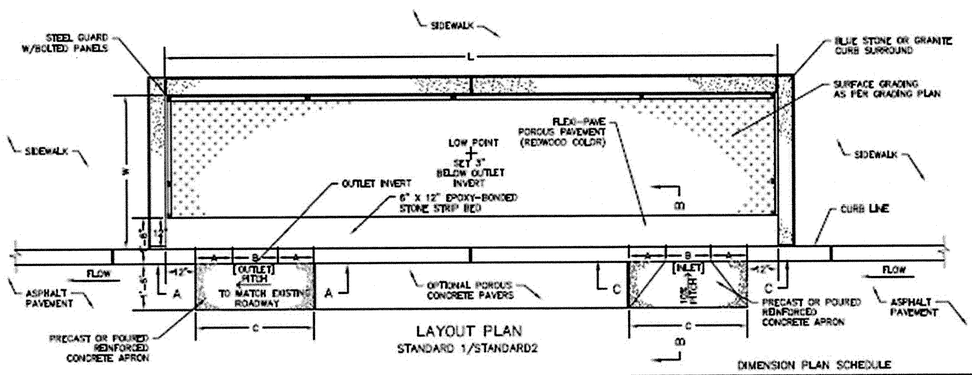


NOTES:
1. POROUS PAVEMENT SHALL BE FLEXI-PAVE BY K.B.INDUSTRIES, INC. REDWOOD COLORED OR APPROVED EQUIVALENT.
2. STRUCTURAL SOIL MIX SHALL CONFORM TO CU-STRUCTURAL SOIL BY CORNELL UNIVERSITY OR APPROVED EQUIVALENT.

1 / C-206 POROUS FLEXIBLE PAVEMENT
SCALE: NOT TO SCALE

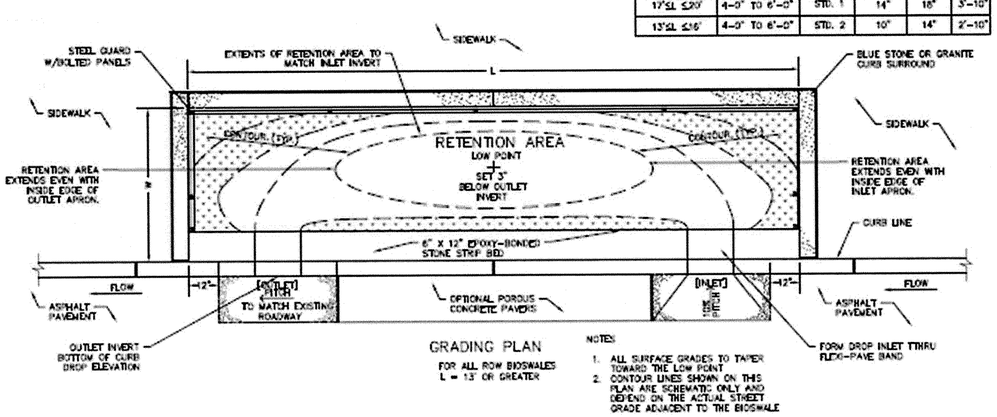


1 / C-206 PERMEABLE PAVERS IN CITY R.O.W.
SCALE: NOT TO SCALE



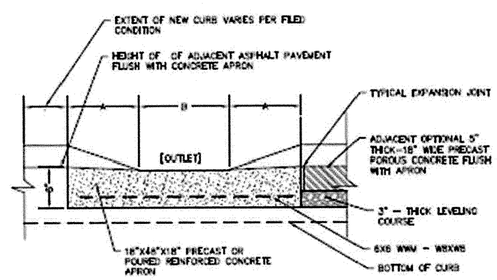
DIMENSION PLAN SCHEDULE

R.O.W BIOSWALE			INLET/OUTLET DIMENSIONS		
LENGTH (L) 1FT.INCREMENT	WIDTH (W) 6 IN.INCREMENT	STANDARD	A	B	C
12'≤L ≤20'	4-0" TO 6'-0"	STD. 1	14"	18"	3'-10"
13'≤L ≤16'	4-0" TO 6'-0"	STD. 2	10"	14"	2'-10"

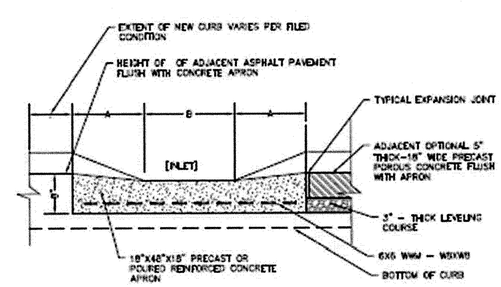


NOTES
1. ALL SURFACE GRADES TO TAPER TOWARD THE LOW POINT.
2. CONTOUR LINES SHOWN ON THIS PLAN ARE SCHEMATIC ONLY AND DEPEND ON THE ACTUAL STREET GRADE ADJACENT TO THE BIOSWALE

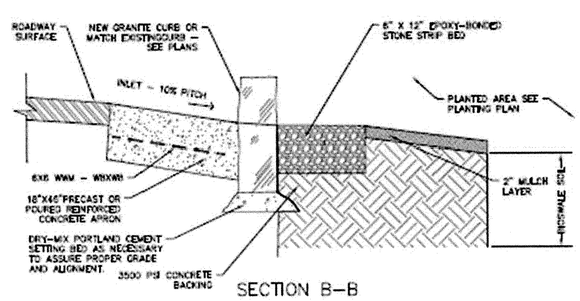
3 / C-206 R.O.W. BIOSWALE
SCALE: NOT TO SCALE



SECTION A–A



SECTION C–C



SECTION B–B

REFERENCE: BIOSWALE DETAILS, LIBERTY STREET CDBG SIDEWALKS, CITY OF NEWBURGH; DATED 6/24/216; PREPARED BY GPI. SUPPLIED BY CITY OF NEWBURGH.

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TECTONIC WORK ORDER NO.: 6660.01

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Corporate Office
POBox 37, Pleasant Hill Rd 70 Mountainville, NY 10953
Tel (845) 534 5959
Structural Engineer:
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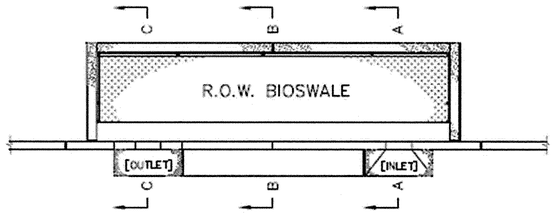
Ambler, PA 19002
Tel (215) 646 8001 Fax (215) 646 8310
MEP Engineer:
Johnson & Urban, LLC
53 Main Street
Holmdel, NJ 07733
Tel (732) 772 1500 Fax (732) 772 1515
Energy Consultant:
Steven Winters Associates
307 Seventh Avenue, Suite 1701,
New York, NY 10001
Tel (212) 254 5800
Landscape Architect:
Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

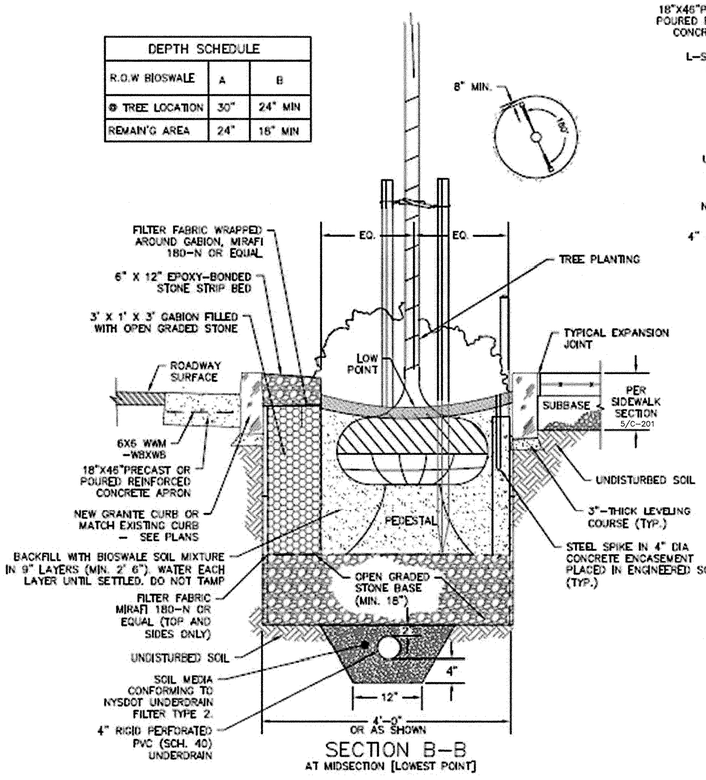
Seal:

Drawing Title:
CITY DETAILS

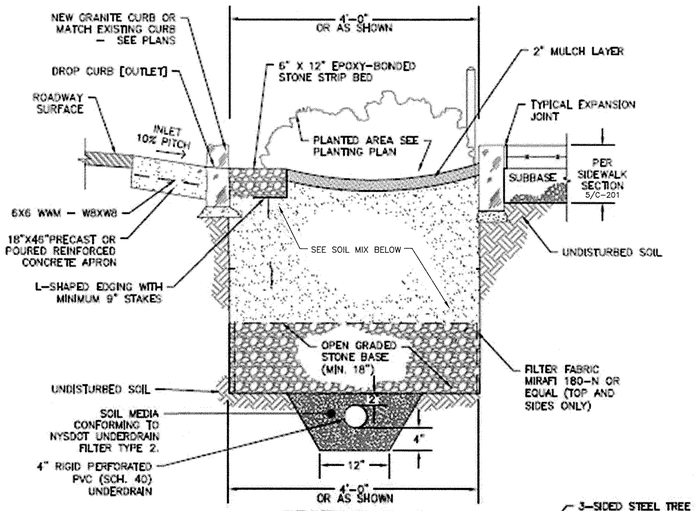
Project Number:	12008
Date: 06/01/16	Drawing #: C-206
Scale: AS NOTED	
Drawn by: DNW	
Checked by: WM	



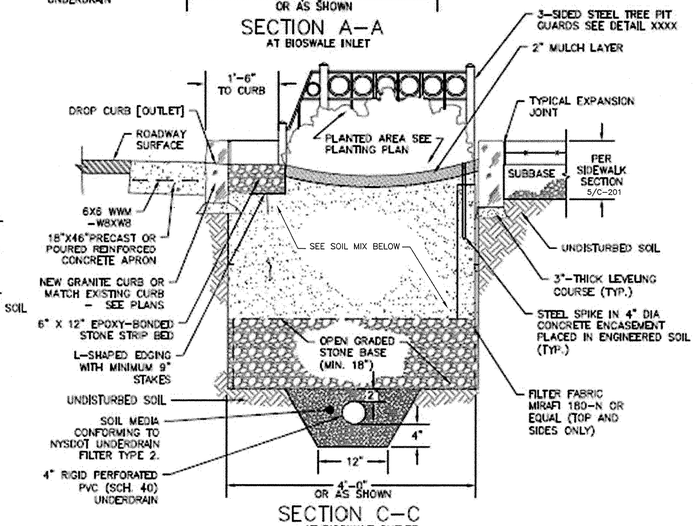
DEPTH SCHEDULE		
R.O.W BIOSWALE	A	B
@ TREE LOCATION	30"	24" MIN
REMAIN'G AREA	24"	18" MIN



SECTION B-B
AT MIDSECTION [LOWEST POINT]



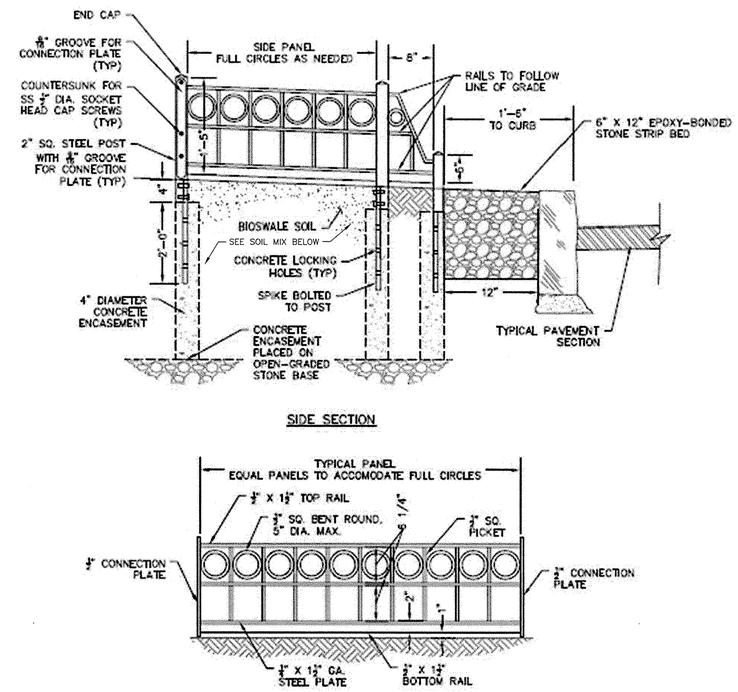
SECTION A-A
AT BIOSWALE INLET



SECTION C-C
AT BIOSWALE OUTLET

1 C-207 R.O.W. BIOSWALE SECTIONS

SCALE: SCALE: NOT TO SCALE



SIDE SECTION

TYPICAL SECTION

NOTES:

1. ALL STEEL SHALL CONFORM TO ASTM-A36 SPECIFICATION.
2. ALL JOINTS TO BE WELDED UNLESS NOTED OTHERWISE.
3. ALL POST AND GROOVE CONNECTIONS TO BE BOLTED.
4. ALL VISIBLE BOLTS TO BE COUNTERSUNK AND FLUSHED WITH THE POSTS.
5. ALL STEEL TO BE PAINTED WITH ONE SHOP COAT OF PRIMER AND ONE SHOP COAT OF INTERMEDIATE AND ONE SHOP COAT (OR ROLLED FIELD COAT) OF FINISH TOP COAT. THE COLOR OF TOP COAT SHALL BE BLACK. ALL COMPONENTS OF PAINT SHALL BE COMPATIBLE AND SUPPLIED BY A SINGLE MANUFACTURER. ALL PAINT SHALL BE APPLIED IN COMPLIANCE WITH MANUFACTURER'S DATA SHEETS. PRIOR TO FIELD PAINTING, THE SURFACES TO BE PAINTED SHALL BE CLEAN, DRY AND LIGHTLY SANDPAPERED.
6. RAILS TO FOLLOW LINE OF GRADE.
7. ALL SPIKES OF TREE FENCING TO BE EMBEDDED IN CONCRETE PER DETAIL.

2 C-207 R.OW. BIOSWALE FENCE

SCALE: SCALE: NOT TO SCALE

BIOSWALE SOIL MIX

THE PLANTING SOIL SHALL BE A SANDY LOAM, LOAMY SAND, LOAM (USDA), OR A LOAM/SAND MIX (SHOULD CONTAIN A MINIMUM 35 TO 60% SAND, BY VOLUME). THE CLAY CONTENT FOR THESE SOILS SHOULD BY LESS THAN 25% BY VOLUME. SOILS SHOULD FALL WITHIN THE SM, OR ML CLASSIFICATIONS OF THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). A PERMEABILITY OF AT LEAST 1.0 FEET PER DAY (0.5"/HR) IS REQUIRED. THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OTHER WOODY MATERIAL OVER 1" IN DIAMETER, BRUSH, OR SEEDS FROM NOXIOUS WEEDS. PLACEMENT OF THE PLANTING SOIL SHALL BE IN LIFTS OF 12 TO 18", LOOSELY COMPACTED (TAMPED LIGHTLY WITH A DOZER OR BACKHOE BUCKET), UNLESS OTHERWISE SPECIFIED. THE SPECIFIC CHARACTERISTICS SHALL BE:

PH RANGE: 5.2 TO 7.00
ORGANIC MATTER: 1.5 TO 4.0%
MAGNESIUM: 35 LBS. PER ACRE, MINIMUM
PHOSPHORUS (P_2O_5): 75 LBS. PER ACRE, MINIMUM
POTASSIUM (K_2O): 85 LBS. PER ACRE, MINIMUM
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

REFERENCE: BIOSWALE DETAILS, LIBERTY STREET CDBG SIDEWALKS, CITY OF NEWBURGH; DATED 6/24/216; PREPARED BY GPI. SUPPLIED BY CITY OF NEWBURGH.

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

TECTONIC WORK ORDER NO.: 6680.01

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• PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT

TECTONIC Engineering & Surveying Consultants P.C.
P.O. Box 37, 70 Pleasant Hill Road
Mountainville, NY 10953
Phone: (845) 534-5959
Fax: (845) 534-5999
www.tectonicengineering.com

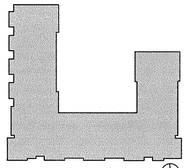
Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/16	SUBMISSION
2	06/01/16	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD COMMENTS
4	09/07/16	PER CITY ENGINEERS COMMENTS DATED-8/16/16

Revisions:

Architect:
Magnusson Architecture & Planning PC
42 West 39th Street 15th Floor,
New York, NY 10003
Tel (212) 253 7820 Fax (212) 253 1276

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Corporate Office
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Tel (845) 534 5959

Structural Engineer:
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Ambler, PA 19002
Tel (215) 646 8001 Fax (215) 646 8310

MEP Engineer:
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Holmdel, NJ 07733
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Energy Consultant:
Steven Winters Associates
307 Seventh Avenue, Suite 1701,
New York, NY 10001
Tel (212) 254 5800

Landscape Architect:
Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
CITY DETAILS

Project Number: 12008
Date: 06/01/16
Scale: AS NOTED
Drawn by: DNW
Checked by: WM
Drawing #: C-207

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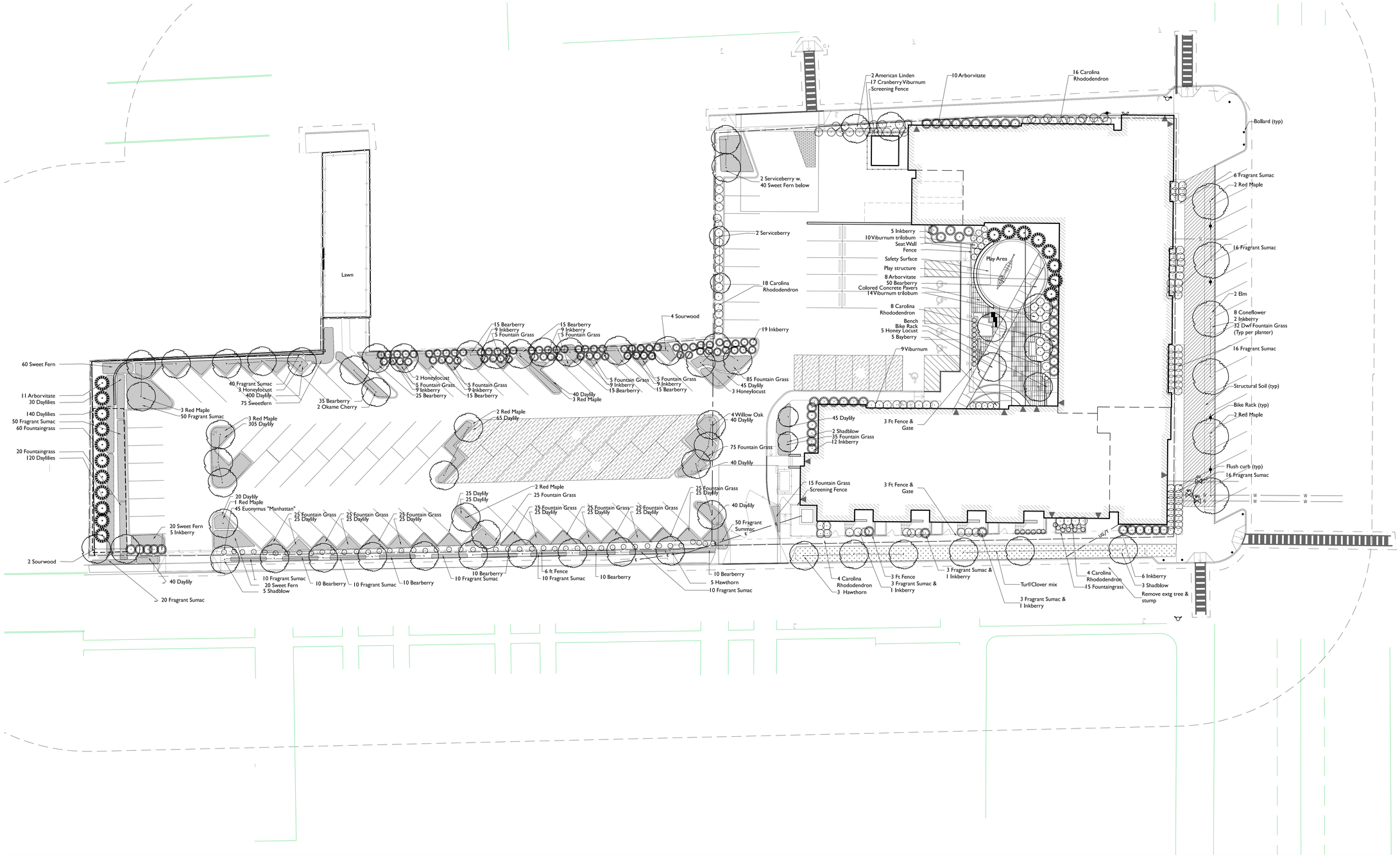

Mid-Broadway Mixed Use

Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS

853 Broadway, New York, NY 10003

SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	7-19-2013	Site Plan Resubmission
2	8-7-2013	Site Plan Resubmission
3	8-30-2013	8/20/13 memo revisions
4	10-18-2013	Per City comments
5	12-4-2013	HCR Submission
6	4-22-2016	Revised Site Plan
7	6-2-2016	Revised Site Plan
8	6-9-2016	Revised Lighting
9	7-29-2016	Revised Planting
10	9-8-2016	Planning Board Submittal

Revisions:

Architect:

Magnusson Architecture & Planning PC
853 Broadway Suite 800
New York NY 10003
Tel (212) 253 7820 Fax (212) 253 1276

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845.534.5959

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215.646.8001

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New York, NY 10001
Tel (212) 254 5800

Landscape Architect::

Pouder Design Group, P.C.
228 Merryall Rd.
New Milford, CT 06776
860.799.7612

Do Not Scale Plans
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Seal:

Drawing Title:

Landscape Plan

Project Number: 12008

Date: 07/19/13 Drawing #:

Scale: 1" = 20'-0"

Drawn by: MC

Checked by: NAP

L-1.1

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Plant Schedule

Quantity	Botanical Name	Common Name	Size	Native	Mature Width	Remarks
18	Acer rubrum 'Autumn Flame'	Red Maple	2.5 inch cal	Native	25 ft	B&B
14	Amelanchier canadensis	Shadblow Serviceberry	10-12 ft	Native	15-25 ft	Single Stem
235	Arctostaphylos uva-ursi	Bearberry	2 gal	Native		
8	Crataegus crus-galli 'Cruzam'	Crusader Thornless Hawthorn	2.5 inch cal	Native	20 ft	
48	Echinacea 'Wild Berry'	Coneflower, dwarf	1 gal	Native		
45	Euonymus 'Manhattan'	Manhattan Euonymus	5 gal	no		
13	Gleditsia tricanthos "Shademaster"	Thornless Honeylocust	2.5 inch cal	Native	35 ft	B&B
1320	Hemerocallis 'Hyperion'	Yellow Daylily	2 gal	Native		
97	Ilex glabra	Inkberry	30-36"	Native		
215	Myrica gale	Sweetfern	2 gal	Native		
5	Myrica pennsylvanica	Bayberry	5 gal	Native		
6	Oxydendron arboreum	Sourwood	2.5 inch cal	Native	20ft	B&B
532	Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	2 gal	no		
2	Prunus 'Okame'	Okame Cherry	2.5 inch cal	no	20 ft	
4	Quercus phellos	Willow Oak	2.5 inch cal	Native	30 ft	B&B
50	Rhododendron carolinianum	Carolina Rhododendron	30-36"	Native		
248	Rhus aromatica 'Low Gro"	Fragrant Sumac	2 gal	Native		
29	Thuja occidentalis	Arborvitae	6 ft ht.	Native	10-15 ft	
2	Tilia americana	Basswood	2.5 inch cal	Native	30 ft	B&B
2	Ulmus 'Princeton Sentry'	American Elm	3 inch	Native	40 ft	B&B
50	Viburnum trilobum	American Cranberrybush Viburnum	30-36"	Native		

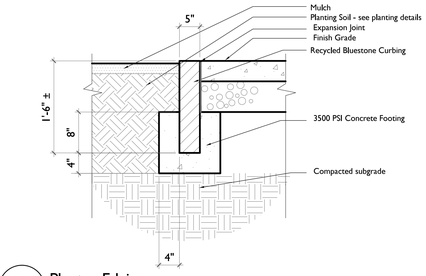
revised 7-27-16

NOTES:
Establishment of Planting: Maintain plantings immediately following planting operations and continue throughout the two-year guarantee period. Establishment of plantings shall consist of keeping plants in healthy, growing conditions by watering, weeding, cultivating, pruning, spraying, tightening of guys, remulching and by any other necessary operations of establishment. For the first growing season, water all plants at least once a week between April 1 and October 31 with approximately 5 gallons per square yard (1 inch layer of water) per watering unless otherwise directed. Provide additional watering during periods of dry weather when required or when directed. Treat plants with good horticultural preventative or remedial measures to control insects, diseases or rodents.

Johnston Street Turf Bed: Provide 80% Truffa 'Grid Iron' grass seed with 20% Dutch White Clover.

Provide an alternative to the City's water supply as necessary to comply with water conservation measures related to the Stage 3 water conservation emergency and/or drought conditions.

Not for Construction



1 Planter Edging

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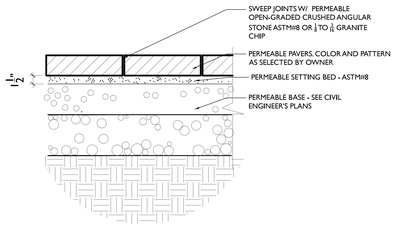
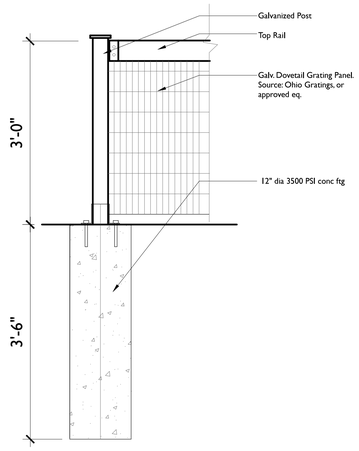


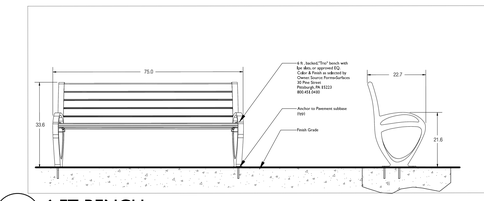
2 CONCRETE UNIT PAVERS ON PERMEABLE BASE

Not to Scale



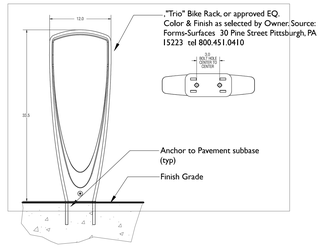
3 3 FT FENCE

SCALE: 1"=1'-0"



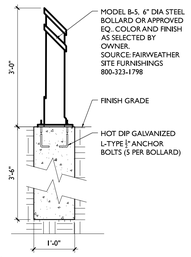
4 6 FT BENCH

SCALE: 1/2"=1'-0"



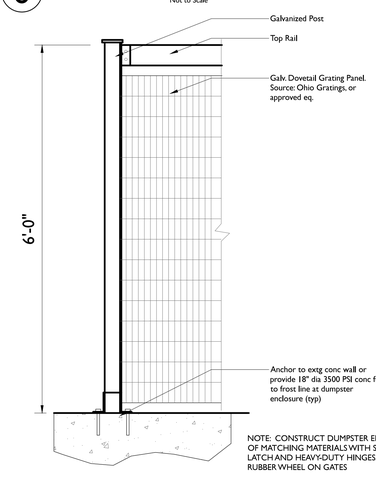
5 BIKE RACK

SCALE: 1/2"=1'-0"



6 BOLLARD

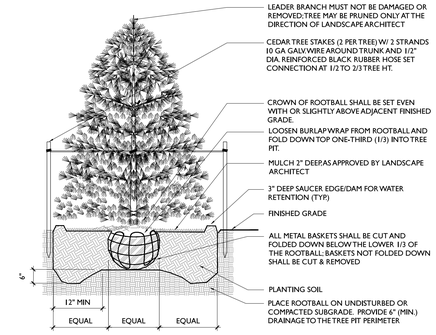
Not to Scale



NOTE: CONSTRUCT DUMPSTER ENCLOSURE GATE OF MATCHING MATERIALS WITH SELF-CLOSING LATCH AND HEAVY-DUTY HINGES. PROVIDE RUBBER WHEEL ON GATES

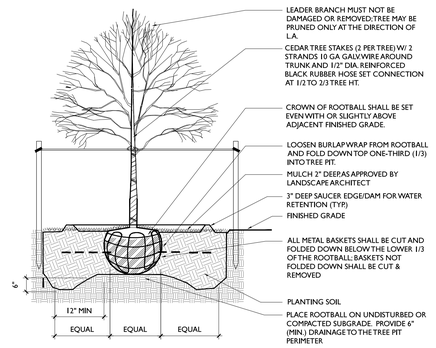
7 6 FT SCREENING FENCE

SCALE: 1"=1'-0"



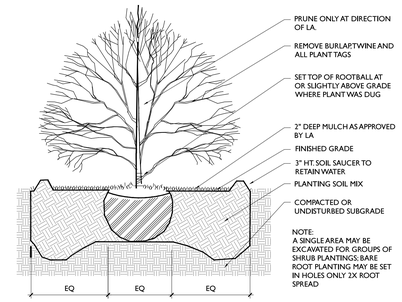
8 EVERGREEN TREE

NTS



9 DECIDUOUS TREE PLANTING

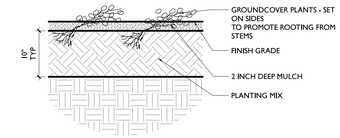
NTS



10 SHRUB PLANTING

NTS

INSERT AT 1/8 SCALE (.0104166)



11 GROUNDCOVER PLANTING

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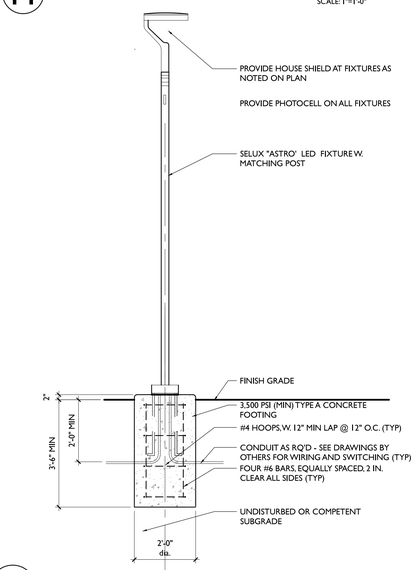
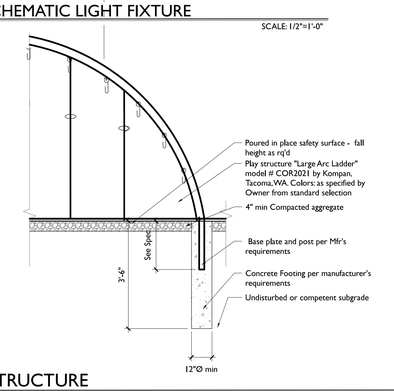


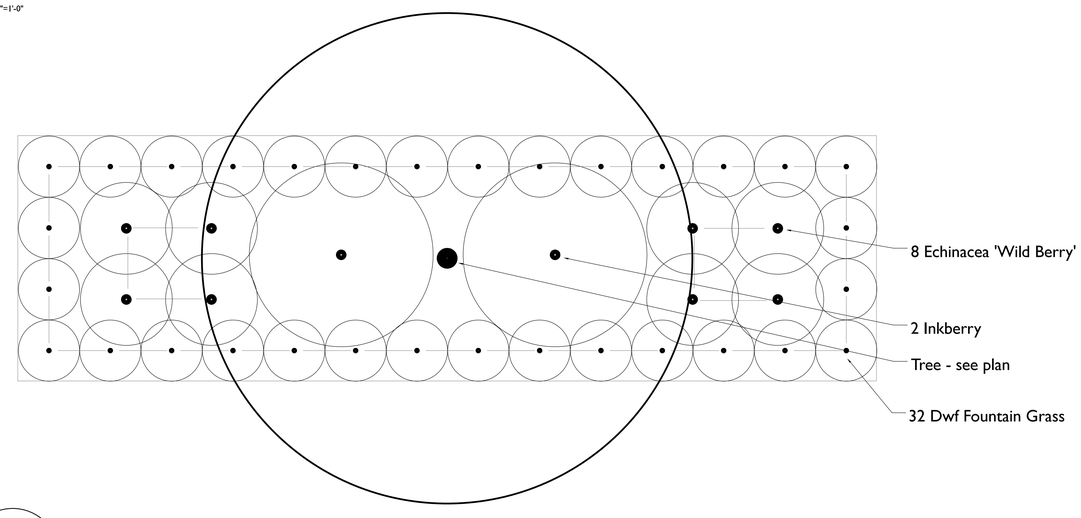
12 SCHEMATIC LIGHT FIXTURE

SCALE: 1/2"=1'-0"



13 PLAY STRUCTURE

Not to Scale



14 Bioswale Planting Detail

1/2"=1'-0"

Mid-Broadway Mixed Use

Block: 3 Lot: 21-38

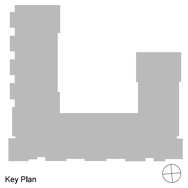
Application #:

Clients:

MILL STREET PARTNERS

853 Broadway, New York, NY 10003

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	7-19-2013	Site Plan Resubmission
3	8-30-2013	8/20/13 memo revisions
4	10-18-2013	Per City comments
5	12-4-2013	HCR Submission
6	6-2-2016	Planning Bd submission
7	6-9-2016	Planning Bd submission
8	7-29-2016	Planning Bd submission
9	9-8-2016	Revised light detail

Revisions:

Architect:

MAP

Magnusson Architecture & Planning PC
853 Broadway Suite 800
New York NY 10003
Tel (212) 253 7820 Fax (212) 253 1276

Civil Engineer:

Tectonic
Corporate Office
POBox 37, Pleasant Hill Rd 70 Mountainville, NY 10953
845.534.5959

Structural Engineer:

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Tel (212) 254 5800

Landscape Architect::

Pouder Design Group, P.C.
228 Merryall Rd.
New Milford, CT 06776
860.799.7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:

Landscape Details

Project Number: 12008

Date: 07/19/13 Drawing #:

Scale: As Noted

Drawn by: MC

Checked by: NAP

L-2.1

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Mid-Broadway Mixed Use

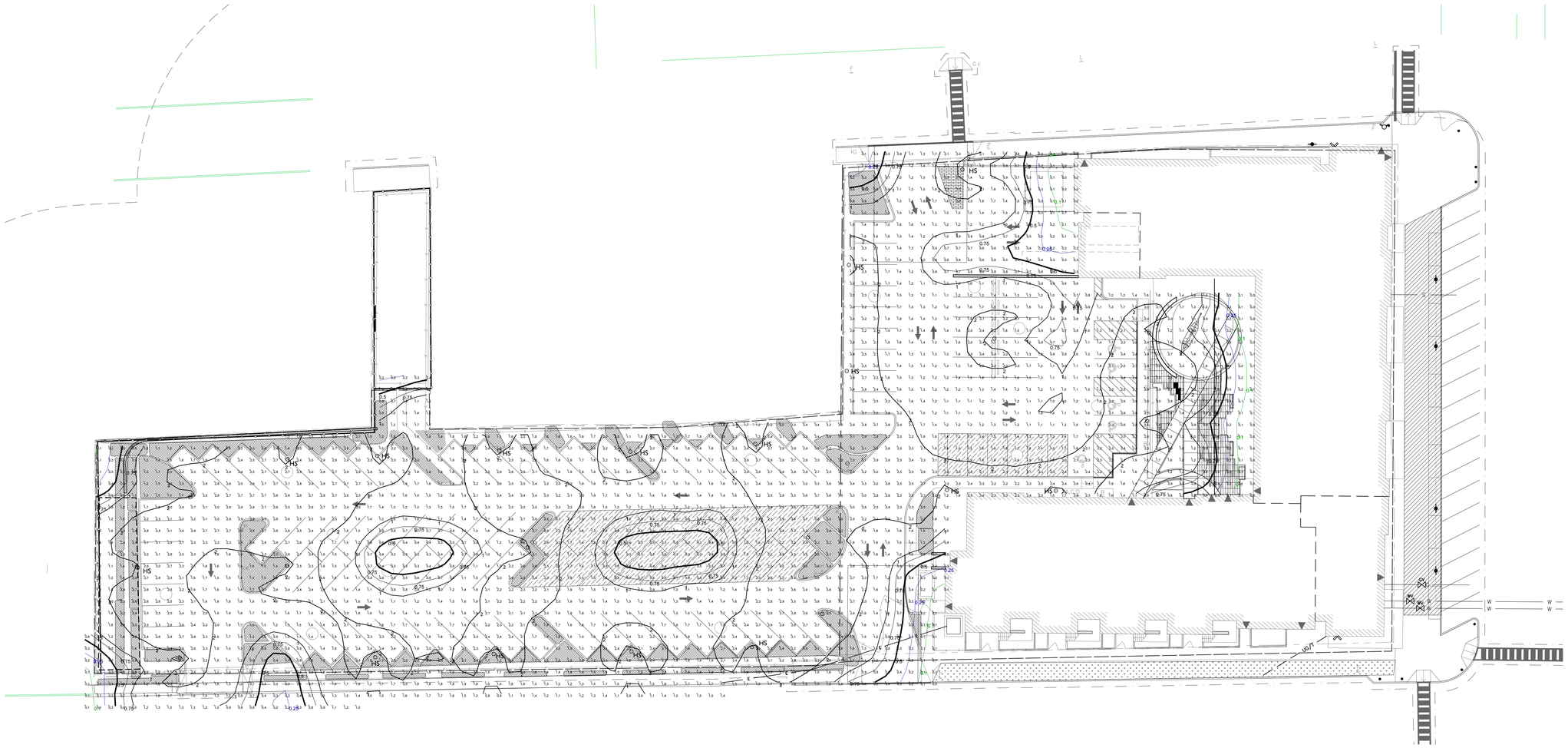
Block: 3 Lot: 21-38

Application #:

Clients:

MILL STREET PARTNERS

853 Broadway, New York, NY 10003



SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	8-9-2013	Site Plan Submission
3	8-30-2013	8/20/13 memo revisions
4	10-18-2013	Per City comments
5	12-4-2013	HCR Submission
6	6-9-2016	Revised Lighting
7	9-8-2016	Added Lighting Shields

Revisions:

Architect:

MAP

Magnusson Architecture & Planning PC
853 Broadway Suite 800
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Tel (212) 253 7820 Fax (212) 253 1276

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Seal:

Drawing Title:

Lighting Plan

Project Number: 12008

Date: 07/19/13 Drawing #:

Scale: 1" = 20'-0"

Drawn by: MC

Checked by: NAP

L-3.1

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Luminaire Schedule						
Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description
	10	AST1-1-LG4700-R5-30-120-DS-PS	SINGLE	N.A.	0.900	AST1-1-LG4700-R5-30-120-DS-PS
HS	15	AST1-1-LG4700-R5-30-120-DS-HS-PS	SINGLE	N.A.	0.900	AST1-1-LG4700-R5-30-120-DS-HS -PS (SHIELDED FIXTURE)

Provide house shields for fixtures
along property lines
Provide photocells on all fixtures

Luminaire Location Summary						
LumNo	Label	X	Y	Z	Orient	Tilt
26	AST1-1-LG4700-R5-30-120-DS	-214.919	-581.658	15	3.931	0
27	AST1-1-LG4700-R5-30-120-DS	-151.143	-535.633	15	268.571	0
28	AST1-1-LG4700-R5-30-120-DS	-113.125	-534.153	15	268.303	0
30	AST1-1-LG4700-R5-30-120-DS	-151.518	-580.858	15	1.869	0
31	AST1-1-LG4700-R5-30-120-DS	-113.931	-619.655	15	91.424	0
32	AST1-1-LG4700-R5-30-120-DS	-63.594	-618.28	15	88.499	0
33	AST1-1-LG4700-R5-30-120-DS	-5.098	-617.208	15	91.707	0
34	AST1-1-LG4700-R5-30-120-DS	46.128	-615.321	15	90.244	0
35	AST1-1-LG4700-R5-30-120-DS	-61.235	-531.906	15	270.93	0
36	AST1-1-LG4700-R5-30-120-DS	-5.577	-532.393	15	270.401	0
37	AST1-1-LG4700-R5-30-120-DS	47.502	-529.074	15	267.457	0
38	AST1-1-LG4700-R5-30-120-DS	86.637	-537.353	15	0	0
39	AST1-1-LG4700-R5-30-120-DS	76.015	-601.242	15	1.45	0
40	AST1-1-LG4700-R5-30-120-DS	69.887	-568.724	15	181.193	0
41	AST1-1-LG4700-R5-30-120-DS	128.94	-548.599	15	90.573	0
42	AST1-1-LG4700-R5-30-120-DS	214.04	-519.395	15	180	0
43	AST1-1-LG4700-R5-30-120-DS	214.876	-482.027	15	180	0
47	AST1-1-LG4700-R5-30-120-DS	135.521	-412.626	15	180.279	0
50	AST1-1-LG4700-R5-30-120-DS	-192.501	-551.594	15	0	0
51	AST1-1-LG4700-R5-30-120-DS	-196.875	-620.017	15	7.143	0
52	AST1-1-LG4700-R5-30-120-DS	175.202	-548.974	15	90.359	0
53	AST1-1-LG4700-R5-30-120-DS	149.103	-484.354	15	179.812	0
54	AST1-1-LG4700-R5-30-120-DS	86.353	-498.101	15	0.153	0
56	AST1-1-LG4700-R5-30-120-DS	87.29	-453.11	15	359.936	0
57	AST1-1-LG4700-R5-30-120-DS	-49.154	-573.046	15	359.037	0

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

MID-BROADWAY REDEVELOPMENT

CITY OF NEWBURGH
ORANGE COUNTY
NEW YORK

PREPARED BY:

TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C.
70 PLEASANT HILL ROAD - PO BOX 37
MOUNTAINVILLE, NEW YORK 10953

AUGUST 2016
SEPTEMBER 2016

STATE OF NEW YORK
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SITE CONTACT INFORMATION

(To be completed upon assignment)

SITE OWNER	PHONE/FAX/MOBILE	ADDRESS
	Phone:( ) - Fax:( ) - Mobile:( ) -	
SWPPP COORDINATOR		
	Phone:( ) - Fax:( ) - Mobile:( ) -	
PROJECT CONTRACTOR		
	Phone:( ) - Fax:( ) - Mobile:( ) -	
PROJECT EROSION LEAD	24-HOUR CONTACT	
	Phone:( ) - Fax:( ) - Mobile:( ) -	

ADDITIONAL SWPPP TEAM MEMBERS	PHONE/FAX/MOBILE	RESPONSIBILITIES
1. Tectonic Mark A. Lukasik, PE	Phone:(845) 534 - 5959 Fax:(845) 534 - 5999 Mobile:( ) -	Project Manager
2. Tectonic Casey C. O'Mara, PE	Phone:(845) 534 - 5959 Fax:(845) 534 - 5999 Mobile:( ) -	SWPPP Engineer
3. Tectonic Robert Ciralli,, EIT	Phone:(845) 534 - 5959 Fax:(845) 534 - 5999 Mobile:( ) -	SWPPP Author
4.		

REVISION SCHEDULE

This Stormwater Pollution Prevention Plan (SWPPP) should be revised and updated to address changes in site conditions, new or revised government regulations, and additional on-site stormwater pollution controls.

All revisions to the SWPPP must be documented on the SWPPP Revision Documentation Form, which should include the information shown below. The authorized facility representative who approves the SWPPP should be an individual at or near the top of the facility's management organization, such as the president, vice president, construction manager, site supervisor, or environmental manager. The signature of this representative attests that the SWPPP revision information is true and accurate. Previous authors and facility representatives are not responsible for the revisions.

SWPPP REVISION DOCUMENTATION FORM

Rev.	Date	Author	Company Representative Signature	Notes
0	AUG 2016	C O'Mara		Original submission
1	SEPT 2016	C O'Mara		Revision per City comments
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1.0 INTRODUCTION

This SWPPP has been developed in compliance with all NYSDEC technical standards for the construction of the proposed site. The primary purposes for this plan are to:

- Identify the SWPPP coordinator and their duties;
- Identify any SWPPP team members that will assist in the implementation of the SWPPP during construction;
- Define the site characteristics and type of construction;
- Identify the receiving bodies of water for the site's stormwater;
- Introduce the site plan for the proposed site;
- Identify potential pollutants and sources within the site's drainage area;
- Describe practices that will be implemented for erosion and sediment control;
- Describe any temporary or permanent, structural or non-structural, BMPs (Best Management Practices) that will be utilized to manage stormwater quality and quantity.
- Create an implementation schedule for the practices within this SWPPP;
- Outline a monitoring plan to ensure this plans effectiveness and provide provisions for necessary revisions; and

Describe and provide support for the final stabilization design to ensure water quality and quantity management after the construction of the site.

This SWPPP evaluates the existing (pre-construction) and proposed (post-construction) conditions and recommends measures to mitigate stormwater quantity and quality impacts that will result from the proposed site during construction and upon final stabilization. Review of this plan should be in conjunction with the engineering drawings for this project prepared by Tectonic Engineering & Surveying Consultants, P.C.

2.0 SWPPP COORDINATOR AND DUTIES

Information for the construction site SWPPP Coordinator may be found at the beginning of this plan under the heading, Site Contact Information. Duties of the SWPPP Coordinator include the following:

- Implement the SWPPP plan with the aid of the SWPPP team; oversee maintenance of the practices identified as BMPs (Best Management Practices) in the SWPPP;

- Conduct or provide for inspection and monitoring activities;
- Identify other potential pollutant sources and ensure they are added to the plan;
- Identify any deficiencies in the SWPPP and make sure they are corrected; and
- Ensure that any changes in construction plans are addressed in the SWPPP.

Information for SWPPP Team members that will aid in the implementation of the SWPPP may also be found in the Site Contact Information.

3.0 PROJECT BACKGROUND

3.1 SITE LOCATION

The proposed project site is located on the north side of Broadway, between Johnston Street and Lander Street in the City of Newburgh, New York. The site, consisting of multiple tax parcels on Block 3, Lots 21-38. The multiple parcels, with the exception of one parcel, is currently owned by the City of Newburgh. The site is located within a combined sewer area and therefore is not subject to MS4 jurisdiction. The city does require similar standards to the SPDES general permit in order to remain complaint with the City's SPDES permit and the Long Term Control Plan.

3.2 SOILS AND SURFACE COVER

The soils of the site consist of approximately sixty percent (60%) Mardin gravelly silt loam, hydrologic group "D," and forty percent (40%) Urban land according to the United States Department of Agriculture (USDA), Soil Conservation Service's Soil Survey of Orange County, New York. To determine the hydrologic characteristics of the soils described as Urban Land, the Geotechnical Report for the project was reviewed. Based on the boring log description of the sandy soils, this area is considered to be hydrologic group "B." The Soil Web Survey Report and the boring logs from the Geotechnical Report have been included in Appendix B.

3.3 POST DEVELOPMENT SITE CONDITIONS

The proposed project consists of the redevelopment of the site with a mixed-use building consisting of 13,800 square feet of retail and residential space. Stormwater quality improvements and underground detention are proposed to mitigate the increase in impervious cover in the proposed condition.

4.0 POST-CONSTRUCTION STORMWATER MANAGEMENT

The approach to the stormwater management design includes compliance with the City's SPDES permit NY0026310, requiring compliance with the New York State Standards for Erosion and Sediment Control and the quantity control requirements included in the New York State Stormwater Management Design Manual (SWDM). The stormwater management design also includes green infrastructure practices for consistency with the City's Long Term Control Plan for Combined Sewer Flow. Long Term Control Plans (LTCPs) are required under the Environmental Protection Agency's combined sewer overflow (CSO) Control Policy and part of the NYSDEC's CSO control strategy to reduce the frequency, duration, and intensity of CSO events.

4.1 EXISTING HYDROLOGY

The site has been analyzed as one drainage area under current conditions and is shown on the Existing Drainage Area Map included in Appendix A. The area is composed of existing buildings, an existing parking lot and open space. Hydrologic calculations have been performed for this drainage area and are included in Appendix C.

The peak runoff flows were calculated for the existing conditions of the site at the point where the flow combines within the combined sewer, DP-1. The methodology utilized for this analysis is based upon the USDA, Soil Conservation Service's Technical Release No. 20 and Technical Release No. 55, as utilized by the software entitled Hydraflow Hydrographs version 9.21. Hydraflow Hydrographs, developed by Intelisolve of Alpharetta, Georgia, is a Microsoft Windows based program for analyzing the hydrology and hydraulics of stormwater runoff. It utilizes the latest techniques to predict the consequences of a given storm event. Hydraflow Hydrographs has the capability of computing hydrographs (representing discharge rates characteristic of specific watershed conditions, precipitation and geologic factors), combining hydrographs, and routing flows through pipes and detention. For this analysis, the property was analyzed for both the existing and proposed conditions.

Rainfall data utilized in the analysis was taken from the data published in the NYSDEC Stormwater Management Design Manual (SWDM). A summary of the parameters results is tabulated below in Table 1.

Table 1 : Existing Hydrology Parameters

Drainage Area	Area (acres)	Tc (min)	CN	Existing Impervious Area (acres)
EDA-1	2.25	12	86	1.15

4.2 PROPOSED HYDROLOGY

The site, under proposed conditions, will include a multi-story residence and associated driveway which divide two of the drainage areas each into two sub-areas which are depicted on a Proposed Drainage Area Map included in the Appendix A. The proposed sub-drainage area combines and drain to DP-1 Hydrologic calculations have been performed for each drainage area as described in the prior section and are included in the appendices. A summary of the results is tabulated below in Table 2.

Table 2: Proposed Hydrology Parameters

Drainage Area	Area (acres)	Tc (min)	CN	Description
PDA 1	1.00	6	91	Areas Not Captured: Building, Park lot and Sidewalk Areas
PDA 2	1.25	6	91	Areas Captured: Parking Lot and Sidewalk Areas

4.3 WATER QUANTITY CONTROL

Water quantity control, as outlined in the SWDM, were designed to mitigate the impacts of the increased runoff from the site resulting from the increase in impervious cover. An underground, extended detention system with an outlet control structure was sized to detain the runoff off for up to the 1-year storm event behind a 3-inch, low flow orifice with a hydro-brake installation to further reduce discharge. The proposed peak discharge for the 10-year and 100-year storms were also reduced from the existing peak discharge through the underground detention system and outlet control structure.

Although the proposed permeable pavement will also reduce flows, the storage provided by the permeable pavement was not included in the hydraulic modeling to determine a conservative sizing estimate of the underground system. Losses from infiltration were also not included in the hydraulic modeling to provide a conservative storage estimate.

The existing peak flows and the proposed peak flows leaving the site are summarized in Table 3. The peak discharges have been reduced in the proposed condition for all of the design storms.

Table 3: Existing and Proposed Peak Flows

Design Storm	EDA Peak Flow (cfs)	PDA Peak Flow (cfs)
1-Year	3.089	2.120
10-Year	7.539	6.722
100-Year	15.36	15.06

4.4 GREEN INFRASTRUCTURE

The NYSDEC outlines in the SWDM the approach to size green infrastructure practices for the Water Quality Volume (WQv). The WQv is representative of the size needed for a practice to capture and treat 90% of all 24-hour rain events. The SWDM defines the WQv treated through green infrastructure as the Runoff Reduction Volume (RRv). The RRv is provided on site through tree plantings and permeable pavement.

The proposed site is considered a combination of new development and redevelopment for the purposes of calculating the WQv per the SWDM. A breakdown of the WQv calculated for the proposed development is summarized in Table 4.

Table 4: Water Quality Summary

Type	Total Area (acres)	WQv/RRv	
New Development	1.10	3,207 ft^3	0.074 ac-ft
Re-development	1.15	4,164 ft^3	0.096 ac-ft
Total	2.25	7,371 ft^3	0.170 ac-ft

4.4.1 PERMEABLE PAVERS

Permeable Pavers, consisting of interlocking concrete modules, and brick pavers, provide openings for surface drainage to infiltrate into the storage layers below. There are materials specified as layers and depths under a permeable pavement top layer.

Permeable paving can have been known to have many benefits when applied to redevelopment and infill projects in urban centers. Benefits of permeable pavers include groundwater recharge augmentation, runoff reduction to ease

capacity constraints in storm drain networks, effective pollutant treatment for solids, metals, nutrients, and hydrocarbons. A summary of the permeable paver areas is tabulated in Table 5.

Table 5: Permeable Pavers Summary

Permeable Paver Area	Impervious Drainage to Pavers (ft^2)	Pavers Area (ft^2)	Combined Area (ft^2)	RRv Credit (ft^3)
1	2,500	900	3,400	377
2	6,584	7,210	13,794	1,530
3	3,850	1,530	5,380	596
4	1,400	940	2,340	256
5	460	2,030	2,490	276
Total	14,794	12,610	27,404	3,039

Infiltration testing is required in accordance with Appendix D of the SWDM. In the event the minimum infiltration rate of 0.5 inches per hour is not achieved an underdrain will be installed in accordance with the SWDM. The underdrain piping will connect to the stormwater conveyance system.

4.4.2 TREE PLANTINGS

The planting of trees is proposed throughout the proposed parking lot and sidewalks of the site. Tree planting can reduce stormwater volumes and velocities discharging from impervious areas through rainfall interception and evapotranspiration. The runoff reduction credit is based on the mature canopy diameter of the tree. A summary of the tree planting is tabulated below in Table 6.

Table 6: Tree Plantings Summary

Type of Trees	Number of Trees Counted Towards RRv	Size of Canopy Range (ft)	Area Reduction per Tree (ft^2)	Total Area Reduction for RRv (ft^2)
Large	41	25-35	100	4,000
Medium	20	15-25	75	1,725
Total	61	-	-	5,725

The total RRv provided through the tree plantings and permeable pavers is summarized in Table 7. The total RRv provided is greater than the calculated RRv for the proposed site.

Table 7: RRv Summary

RRv Calculated (ft^3)	RRv from Permeable Pavers (ft^3)	RRv from Tree Plantings (ft^3)	Total RRv Provided (ft^3)
3,207	3,039	623	3,662

4.5 REMAINING WATER QUALITY

The balance of the WQv was provided through the use of alternative stormwater management practices sized to treat 75% of the water quality volume from the disturbed, impervious area as well as any additional runoff from tributary areas that are not within the disturbed, impervious area. The water quality calculated for the redevelopment portion of the property is equal to 4,164 ft^3, and the proposed green infrastructure already provides 455 ft^3 of surplus water quality.

Hydrodynamic separators, such as a CDS unit, will be provided for the treatment redeveloped areas. Hydrodynamic separators use swirl concentration and continuous deflective separation to screen, separate and trap trash, debris, sediment, and hydrocarbons from stormwater runoff. Hydrodynamic separators achieve the LTCP best management practice of controlling floatable and settable solids.

The drainage from the parking lot not being treated by permeable pavers, 0.37 acres, will drain to Hydrodynamic Separator #1. The drainage from the roof and back loading area, equal to 0.58 acres, will drain to Hydrodynamic Separator #2. The areas provide a total WQv of 4,586 ft^3 which is more than the calculated WQv of 4,164 ft^3. The peak WQv flow was calculated using Appendix B of the SWDM to determine the required capacity of the CDS unit. The calculations are included in Appendix C. The results are summarized below in Table 8.

Table 8: Redevelopment WQv Summary

Parameter	Hydrodynamic Separator #1 (Parking Lot)	Hydrodynamic Separator #2 (Building & Loading Area)

Total Impervious Drainage Area (acres)	0.37	0.58
Water Quality Volume (cf)	1,786	2,800
Peak WQv Flow (cfs)	0.09	0.21
CDS Flow Capacity (cfs)	0.7	0.7

5.0 IDENTIFICATION OF POTENTIAL STORMWATER CONTAMINANTS

The purpose of this section is to identify pollutants that could impact stormwater during construction of the site.

5.1 SIGNIFICANT MATERIAL INVENTORY

Pollutants resulting from clearing, grading, excavation, storage areas, and building materials, which have the potential to be present in stormwater runoff, are listed in Table 9 on the following page. This table includes information regarding material type, chemical and physical description, potential sources and the specific regulated storm water pollutants associated with each material.

Table 9: Potential Construction Site Stormwater Pollutants:

Trade Name Material	Chemical / Physical Description	Potential Source	Stormwater Pollutants
Pesticides	Various colored to colorless liquid, powder, pellets, or grains	Landscaped areas	Chlorinated hydrocarbons, organophosphates, carbonates, arsenic
Fertilizer	Liquid or solid grains	Landscaped areas	Nitrogen, phosphorous
Plaster	White granules or powder	Building construction	Calcium sulphate, calcium carbonate, sulfuric acid
Cleaning solvents	Colorless, blue, or yellow-green liquid	Building construction	Percholoroethylene, methylene chloride, trichloroethylene, petroleum distillates
Asphalt	Black solid	Parking lot construction	Oil, petroleum distillates, solids
Concrete	White solid	Building/parking lot const.	Limestone, sand
Glue, adhesives	White or yellow liquid	Building construction	Polymers, epoxies
Paint	Various colored liquid	Building construction and parking lot markings	Metal oxides, Stoddard solvent, talc, calcium carbonate, arsenic
Curing compounds	Creamy white liquid	Building construction, curbing and structures	Naphtha
Wastewater from equipment	Water	On-site equipment	Soil, oil and grease, solids
Wood preservatives	Clear amber or dark brown liquid	Building construction	Stoddard solvent, petroleum distillates, arsenic, copper, chromium
Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	On-site equipment	Mineral oil
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	On-site equipment	Benzene, ethyl benzene, toluene, xylene, MTBE
Diesel Fuel	Clear, blue-green to yellow liquid	On-site equipment	Petroleum distillate, oil and grease, naphthalene, xylenes
Kerosene	Pale yellow liquid petroleum hydrocarbon	On-site equipment	Coal oil, petroleum distillates
Antifreeze / coolant	Clear green/yellow liquid	On-site equipment	Ethylene glycol, propylene glycol, heavy metals
Erosion	Solid particles	Cleared and graded areas and tree removal areas	Soil, sediment

5.2 POTENTIAL AREAS FOR STORMWATER CONTAMINATION

There are five main potential sources for stormwater contamination: the existing abandoned residence on site, the construction debris from past demolitions, on site and new building construction, the parking lot construction, the sidewalk construction and landscaped areas. During construction all of the five areas mentioned will also contain the potential containment sources of cleared and graded areas, and on-site equipment. These main sources are located within the limits of disturbance and are shown on the Erosion Control Plan.

5.3 SUMMARY OF AVAILABLE STORMWATER SAMPLING DATA

There is no existing stormwater sampling data available.

6.0 SOIL EROSION AND SEDIMENT CONTROLS

The soil erosion and sediment control measures outlined herein are incorporated into the project site plans. Additionally, a construction schedule and phasing plan to aid in the proper implementation of erosion and sediment controls has been included with the Erosion Control Plan. General measures that will be implemented are as follows:

6.1 GENERAL MEASURES

a. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions. There shall be no increase in suspended, colloidal and settleable solids that will cause deposition or impair the waters for their best usage. There shall be no residue from oil and floating substances, or visible oil film, or globules of grease

b. Site preparation activities shall be planned to minimize the area and duration of soil disruption.

c. All facilities and systems of treatment and control shall be operated and maintained at all times to achieve compliance with the SWPPP.

d. In no case shall erodible materials be stockpiled within 25 feet of any wetland, stream or other surface water body.

e. All unnecessary removal of healthy trees shall be avoided. Materials shall not be stored nor machinery operated within the drip-line of the trees to remain.

f. To facilitate final stabilization, intermediate silt fences/dikes/diversions may be removed upon initial catch of upslope final seeding/mulching. Perimeter and base of slope silt fences/dikes shall remain in place until final stabilization is achieved to protect offsite discharge potential.

g. The site shall be inspected daily by the Contractor and every seven (7) days by the Owner's Representative as a minimum. They shall inspect and maintain the integrity and function of all temporary erosion control measures throughout the duration of the development process.

h. To assure proper function, siltation barriers shall be maintained in good condition and reinforced, extended, repaired or replaced as necessary. All accumulated sediment shall be removed and contained in appropriate spoil areas.

6.2 TEMPORARY STRUCTURAL MEASURES

Temporary structural practices are used during construction to prevent offsite sedimentation. The length of time that temporary practices are functional varies from project to project, since the sediment control strategy may change as construction activity progresses. Runoff control measures should be the first items constructed when grading begins, and be completely functional before downslope land disturbance takes place. Only after the runoff control structures are operational and sediment control measures are in place, should clearing and grading on the rest of the construction site begin.

a. Silt Fence- A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil. The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment load. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used (approximately one year).

b. Water Bar- The A ridge or ridge and channel constructed diagonally across a sloping road or utility right-of-way that is subject to erosion. The purpose is to limit the accumulation of erosive velocity of water by diverting surface runoff at pre-designed intervals.

c. Straw Bale Dike- A temporary barrier of straw, or similar material, used to intercept sediment laden runoff from small drainage areas of disturbed soil. The purpose of a bale dike is to reduce runoff velocity and effect deposition

of the transported sediment load. Straw bale dikes have an estimated design life of three (3) months.

d. Sediment Trap- The purpose of a sediment trap is to intercept sediment laden runoff and trap the sediment in order to protect drainage ways, properties, and rights-of-way below the sediment trap from sedimentation.

e. Stabilization Construction Entrance- A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of way or streets.

f. Concrete Truck Washout- A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil. The washout is required to have a minimum depth of 2-feet and 8-feet by 8-feet dimensions. The location of the washout should be sufficiently (minimum of 100 feet) from drainage structures and close to the gravel access drive.

g. Dust Control- The control of dust resulting from land-disturbing activities. The purpose of dust control is to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

6.3 VEGETATIVE MEASURES

a. As much as practical, existing vegetation shall be preserved. Following the completion of construction activities in any portion of the site, permanent vegetation shall be established on all exposed soils.

b. Permanent vegetative cover: Immediately following the completion of construction activity in any portion of the site, permanent vegetation shall be established on all exposed soils.

c. Washouts shall be immediately repaired, re-seeded and protected from further erosion.

d. An adequate seedbed shall be prepared by scarifying soil and removing surface debris and obstacles within the disturbed area to a depth of 4 inches.

e. All landscaped/grassed areas will be seeded and mulched in a two-step hydraulic process to promote growth as soon as possible.

f. All seeding shall be performed using hydroseeding. Hydroseeding slurry shall be comprised of a homogeneous mix of seed and fertilizer in water. Various specified seed mixes shall be independently mixed and applied.

g. All disturbed areas shall be stabilized subsequent to seeding by applying 2 tons of straw mulch per acre. Straw mulch shall be anchored by applying 750 lbs of wood fiber mulch per acre with a hydroseeder. Hydromulching slurry shall be comprised of a homogeneous mix of non-asphaltic tackifier and fiber mulch in water.

h. Deep ripping and Decompaction are key factors which help in restoring soil pore space and permeability for water infiltration. Conversely, the physical actions of cut-and-fill work, land grading, the ongoing movement of construction equipment and the transport of building materials throughout a site alter the architecture and structure of the soil, resulting in: the mixing of layers (horizons) of soil materials, compression of those materials and diminished soil porosity which, if left unchecked, severely impairs the soil's water holding capacity and vertical drainage (rainfall infiltration), from the surface downward. The two-phase practice of 1) "Deep Ripping;" and 2) "Decompaction" (deep subsoiling), of the soil material as a step in the cleanup and restoration/landscaping of a construction site, helps mitigate the physically induced impacts of soil compression; i.e.: soil compaction or the substantial increase in the bulk density of the soil material.

6.4 SWPPP MEASURES

a. The owner and their contractor and sub-contractors shall modify the on-site SWPPP.

b. When there is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for discharge of pollutant to the waters of the United States and which has not otherwise been addressed in the SWPPP.

c. If the SWPPP proves to be ineffective in eliminating or significantly minimizing pollutants identified in the SWPPP, or achieving the general objectives of controlling pollutants in stormwater discharged from construction activities.

d. To identify any contractor or sub-contractor that will implement any measure of the SWPPP.

e. All contractors and sub-contractors identified in the SWPPP as outlined above shall sign a copy of the Certification Statement before undertaking any construction activity at the site identified in the SWPPP.

f. The developer/contractor or his builder shall have the site inspected and a log kept on site. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or a mailbox with lock; that is accessible during normal working hours to an individual performing a compliance inspection.

To effectively control wind erosion, water shall be applied to all exposed soils as necessary of the project site as designed.

7.0 CONSTRUCTION SEQUENCE

Sequence of Construction Activities: The Contractor's work schedule and methods shall be consistent with the SWPPP or amended SWPPP. Once approved, the progress schedule shall become a part of the SWPPP.

The following list is a suggested sequence of major construction activities for the project to meet the NYSDEC erosion control requirements:

1. All approvals and permits shall be secured.
2. A pre-construction meeting with owner, owner's representative, municipal representative and contractor present will be held.
3. Certifications obtained from contractors, subcontractors and any others performing site disturbances including underground utility contractors be signed and maintained on site.
4. Construction entrance, silt fence, straw bale dike, diversion swales/dikes, sedimentation traps, sedimentation basin, storm drain inlet protection, construction fence and other temporary erosion control measures will be installed prior to any construction including clearing, grubbing, and demolition of the site in accordance with the NYS Standards and Specifications for Erosion Control August 2005.
5. Install provisions for protection of existing facilities where indicated on the plans and details
6. Active disturbance shall be limited to a 2 ac maximum at any time without temporary stabilization. All non-active disturbed areas shall receive temporary or permanent stabilization. Non-active disturbed areas shall not remain fallow for longer than 14 days without being stabilized.

7. Any borrow or waste pits located on or off-site must immediately receive temporary stabilization, shall not be left unstabilized, and be maintained per the requirement of the SWPPP for this project.
8. Drainage structures and pipes shall be installed along with energy dissipaters. Swales shall be immediately stabilized.
9. Roadways shall be graded and immediately stabilized with proposed stone surface.
10. Upon utility completion, final grading will begin.
11. Decompact access and storage/stockpile areas.
12. All landscaped/grassed areas will be seeded and mulched in a two-step hydraulic process to promote growth as soon as possible.
13. To facilitate final stabilization, intermediate silt fences/dikes/diversions may be removed upon initial catch of upslope final seeding/mulching. Perimeter and base of slope silt fences/dikes shall remain in place until final stabilization is achieved to protect offsite discharge potential.
14. Upon stabilization, all temporary measures will be removed.
15. All swales and drainage lines are to be flushed clean of all silt and sediment after all construction disturbance has been stabilized. Remove all silt from permanent storm water control structures.
16. Remove all silt and sediment from site.
17. All debris, silt, and other obstructions are to be removed from the end of the drainage structures after all on site work is complete and all disturbed areas have been stabilized.

8.0 NONSTRUCTURAL BMPS

There are nonstructural BMPs that are included as parts of this plan to prevent the introduction of pollutants into stormwater.

8.1 GOOD HOUSEKEEPING

All exposed areas of the site with the potential for stormwater pollutants must be kept clean and orderly. Specific areas of concern for this site include, but are not limited to: storage areas, fueling areas, and equipment storage and cleaning areas. A schedule for Good Housekeeping practices should be created prior to construction and followed and altered as necessary throughout the project.

8.2 MINIMIZING EXPOSURE

The exposure of pollutants to rain, ice, snow, and snowmelt should be minimized by utilizing practices to limit such exposure. For example, when possible, storm and water resistant coverings should be used to minimize exposure.

8.3 DUST CONTROL

Dust Control measures help to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems. Dust Control measures should be installed on construction roads, access points, and other disturbed, areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the local permitting authority.

8.4 NON-DRIVING AREAS

These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

a. Vegetative Cover- For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control
b. Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

8.5 DRIVING AREAS

These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Provision shall be made to control the amount of airborne dust released off site from construction operations, by wetting the construction material as necessary, provided wetting will not damage utility infrastructure or create any safety hazards. All construction material shall be sufficiently wetted to prevent dust from becoming airborne before loading into trucks, vehicles or other containers. During transport, such material shall be enclosed or covered to prevent dust dispersion.

Trucks and other vehicles used to transport particulate matter shall be covered and any particulate matter kept on site shall be sufficiently wetted or stored to prevent particulate matter from becoming airborne.

8.6 SPILL PREVENTION AND RESPONSE PROCEDURES

All potential pollutants other than sediment will be handled and disposed of in a manner that does not cause contamination of stormwater. Non-sediment pollutants that may be present during construction activities have been identified in Section 4.0 of this report. These materials, and other materials used during construction with the potential to impact stormwater, will be stored, managed, used, and disposed of in a manner that minimizes the potential for release into the environment. Emergency contacts for the project will be posted at the project office, and are included at the end of this section.

8.7 GENERAL MATERIAL AND HANDLING PRACTICES

The following general practices will be used throughout construction to reduce the potential for spills.

- Potential pollutants will be stored and used in a manner consistent with the manufacturer's instructions in a secure location. To the extent practicable, material storage areas should not be located near storm drain inlets and should be equipped with covers, roofs, or secondary containment as needed to prevent stormwater from contacting stored materials. Chemicals that are not compatible shall be stored in segregated areas so that spilled materials cannot combine and react.
- Materials disposal will be in accordance with the manufacturer's instructions and applicable local, state, and federal regulations.
- Materials no longer required for construction will be removed from the site as soon as practicable.
- Adequate garbage, construction waste, and sanitary waste handling and disposal facilities will be provided to the extent necessary to keep the site clear of obstruction and BMPs clear and functional.

8.8 SPECIFIC MATERIAL AND HANDLING PRACTICES

All pollutants, including waste materials and demolition debris, that occur on-site during construction will be handled in a way that does not contaminate stormwater.

a. All chemicals including liquid products, petroleum products, water treatment chemicals, and wastes stored on site will be covered and contained and protected from vandalism.
b. Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release

of contaminants, will be conducted under cover during wet weather and on an impervious surface to prevent the release of contaminants onto the ground. Materials spilled during maintenance operations will be cleaned up immediately and properly disposed of.

c. Equipment wash wastewater will be settled and discharged on site by infiltration in a designated area setback from the wetlands and controlled by erosion measures.
d. Application of agricultural chemicals, including fertilizers and pesticides, will be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations will be followed for application rates and procedures.
e. pH-modifying sources will be managed to prevent contamination of runoff and stormwater collected on site. The most common sources of pH-modifying materials are bulk cement, cement kiln dust (CKD), fly ash, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, and concrete pumping and mixer washout waters.

8.9 SPILL RESPONSE

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize their migration into stormwater runoff and conveyance systems. If the release has impacted on-site stormwater, it is critical to contain the released materials on site and prevent their release into receiving waters.

a. If a spill of pollutants threatens stormwater at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.
b. The site superintendent will be notified immediately when a spill, or the threat of a spill, is observed. The superintendent will assess the situation and determine the appropriate response.
c. If spills represent an imminent threat of escaping facilities and entering the receiving waters, facility personnel will respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
d. Spill kits containing materials and equipment for spill response and cleanup will be maintained at the site. Each spill kit may contain:
e. Oil absorbent pads (one bale)
f. Oil absorbent booms (40 feet)
g. 55-gallon drums (2)
h. 9-mil plastic bags (10)

i. Personal protective equipment including gloves and goggles
j. If an oily sheen is observed on surface water (e.g., settling ponds, detention pond, and swales), absorbent pads and/or booms will be applied to contain and remove the oil. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
k. The site superintendent, or his designee, will be responsible for completing the spill reporting form and for reporting the spill to the appropriate state or local agency.
l. Facility personnel with primary responsibility for spill response and cleanup will receive training from the site superintendent. This training will include identifying the location of spill kits and other spill response equipment and the use of spill response materials.
m. Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

8.10 NOTIFICATION

In the event of a spill, make the appropriate notification(s) consistent with the following procedures:

a. Any spill of oil which a) violates water quality standards, b) produces a “sheen” on a surface water, or c) causes a sludge or emulsion must be reported immediately by telephone to the **National Response Center Hotline at (800) 424-8802**.

b. Any oil, hazardous substance, or hazardous waste release which exceeds the reportable quantity must be reported immediately by telephone to the **National Response Center Hotline at (800) 424-8802**.

c. Any spill of oil or hazardous substance to waters of the state must be reported immediately by telephone to the **NYSDEC spill hotline at (800) 457-7362**.

d. Any release of a hazardous substance that may be a threat to human health or the environment must be reported to the **NYSDEC spill hotline at (800) 457-7362** immediately upon discovery.

8.11 SITE INSPECTIONS

Site inspections should be performed every seven (7) calendar days. Any deficiencies in the implementation of the SWPPP must be corrected as soon as practicable, but not later than within 14 days from the inspection. Inspection should

be photo documented along with any corrective actions taken in response to deficiencies or opportunities for improvement.

Inspections for specific elements of the SWPPP in addition to the weekly site inspection are in accordance with New York State Standards and Specifications for Erosion and Sediment control. Copies of the applicable standards and specifications are included in Appendix E and sample logs and checklist in Appendix G.

8.12 EMPLOYEE TRAINING

Employee training must be provided for all employees prior to their first day on site. Training must inform employees of components and goals of the SWPPP, such as: spill response, good housekeeping, material management practices, disposal and control of waste, equipment fueling, and proper storage, washing, maintenance, and inspection procedures.

9.0 MONITORING, REPORTING AND RETENTION OF RECORDS

The owner and contractor is required to read, understand and comply with all monitoring, reporting and retention of records required by the SWPPP.

10.0 OWNERSHIP AND MAINTENANCE OF PERMANENT STRUCTURES

The permanent stormwater structures will be owned and maintained by Mill Street Partners and/or the current property owner in accordance with the approved plans and this SWPPP. Procedures for maintenance are included in Appendix F.

ACRONYMS

BMP: Best Management Practice

CWA: Clean Water Act

DPW: Department of Public Works

EPA: Environmental Protection Agency

ECL: Environmental Conservation Law

NOI: Notice of Intent

NOT: Notice of Termination

NPDES: National Pollution Discharge Elimination System

NYSDEC: New York State Department of Environmental Conservation

SWDM: : Stormwater Management Design Manual

SPDES: State Pollution Discharge Elimination System

SWPPP: Storm Water Pollution Prevention Plan

GLOSSARY

Commencement of Construction – the initial disturbance of soils associated with clearing, grading, or excavating activities, or other construction activities.

Existing – for purposes of site conditions "existing" refers to the site prior to renovation.

Facility – the proposed addition.

Final Stabilization – all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 80% has been established, or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the construction activity is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

Proposed – for the purposes of site conditions "proposed" refers to the site post renovation.

Qualified professional – means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, licensed Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics in order to prepare a SWPPP that conforms to the Department's technical standard. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

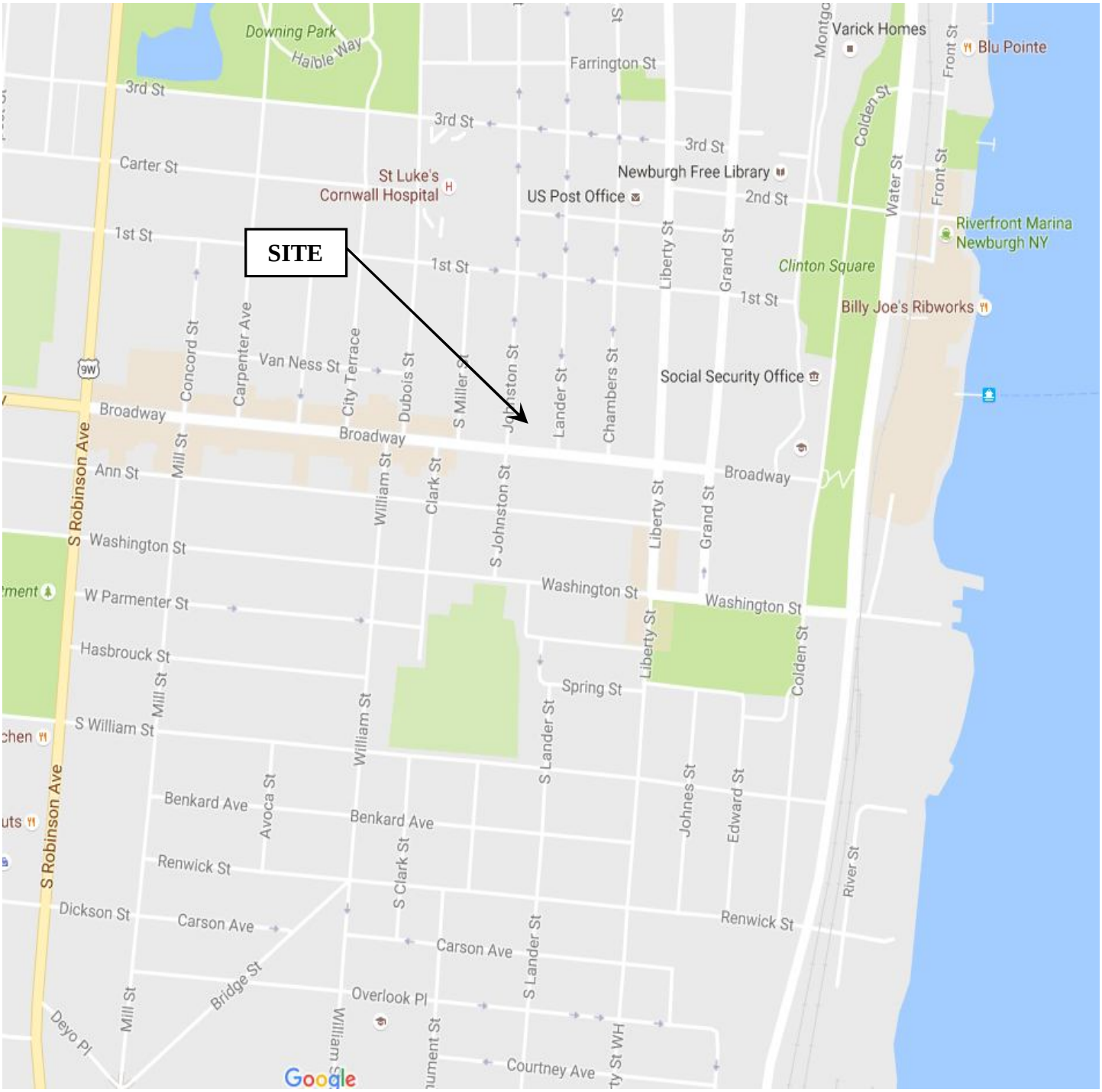
Stabilization – covering or maintaining an existing cover over soil. Cover can be vegetative (e.g. grass, trees, seed and mulch, shrubs, or turf) or non-vegetative (e.g. geotextiles, riprap, or gabions).

Trained Individual – means an employee from a contracting (construction) firm that has received four (4) hours of training, which has been endorsed by the Department, from a Soil and Water Conservation District, CPESC, Inc. or other Department endorsed entity,

in proper erosion and sediment control principles no later than two (2) years from the date of project approval. After receiving the initial training, the trained individual shall receive four (4) hours of training every three (3) years. This individual will be responsible for implementation of the SWPPP.

Proposed – for the purposes of site conditions "proposed" refers to the site post

APPENDIX A: MAPS



APPROXIMATE SITE LOCATION INDICATED ON THE MAP FOR ORANGE COUNTY

SW-101: LOCATION MAP

NORTH

MID-BROADWAY REDEVELOPMENT
CITY OF NEWBURGH, ORANGE COUNTY NEW YORK

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SCALE	DATE	DRAWN BY	WORK ORDER
NTS	7/26/2016	RCC	6660.01

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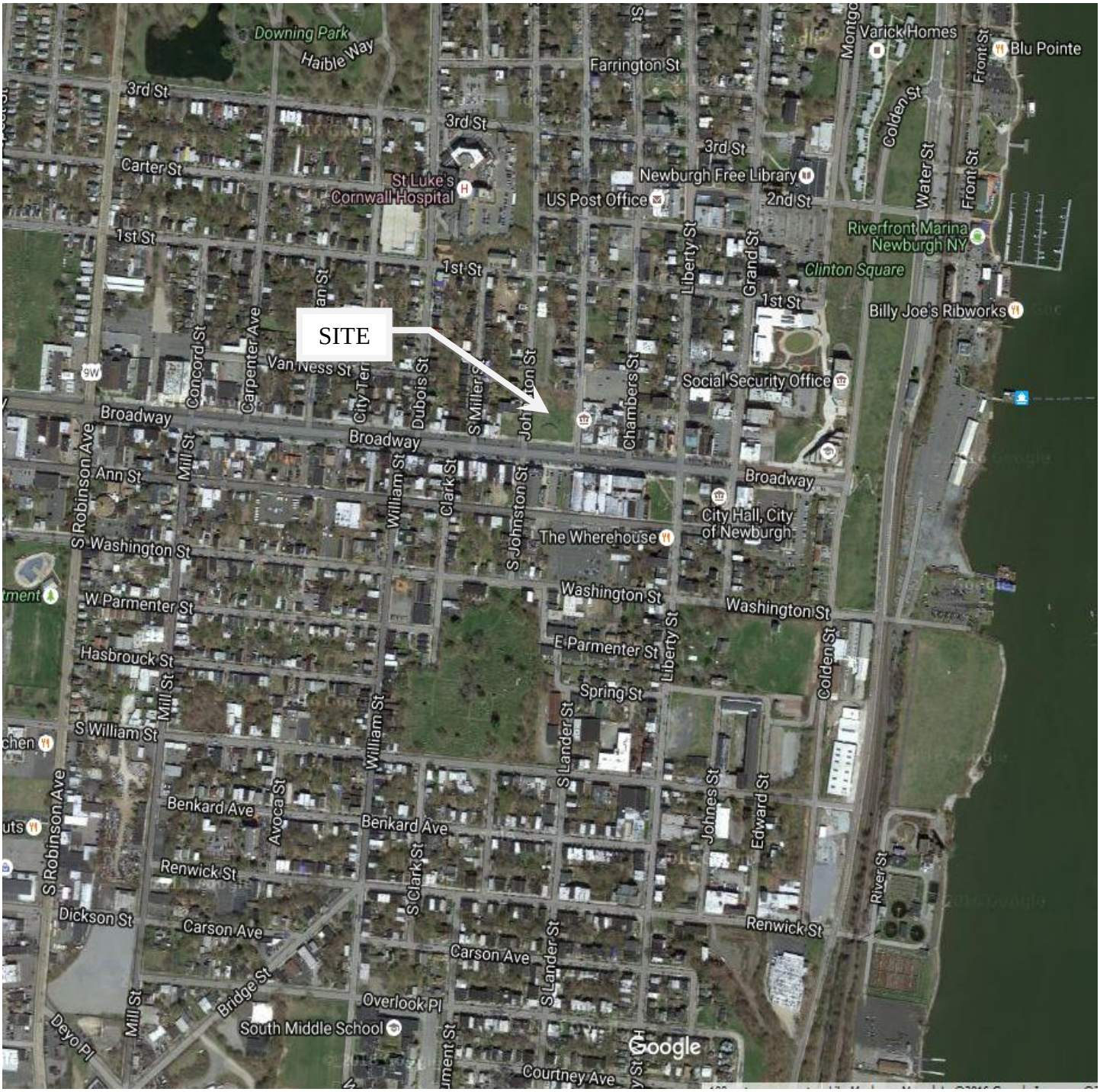

APPROXIMATE SITE LOCATION INDICATED ON THE MAP FOR ORANGE COUNTY

SW-102: AERIAL MAP

NORTH

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CITY OF NEWBURGH, ORANGE COUNTY NEW YORK

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SCALE	DATE	DRAWN BY	WORK ORDER
NTS	7/26/2016	RCC	6660.01

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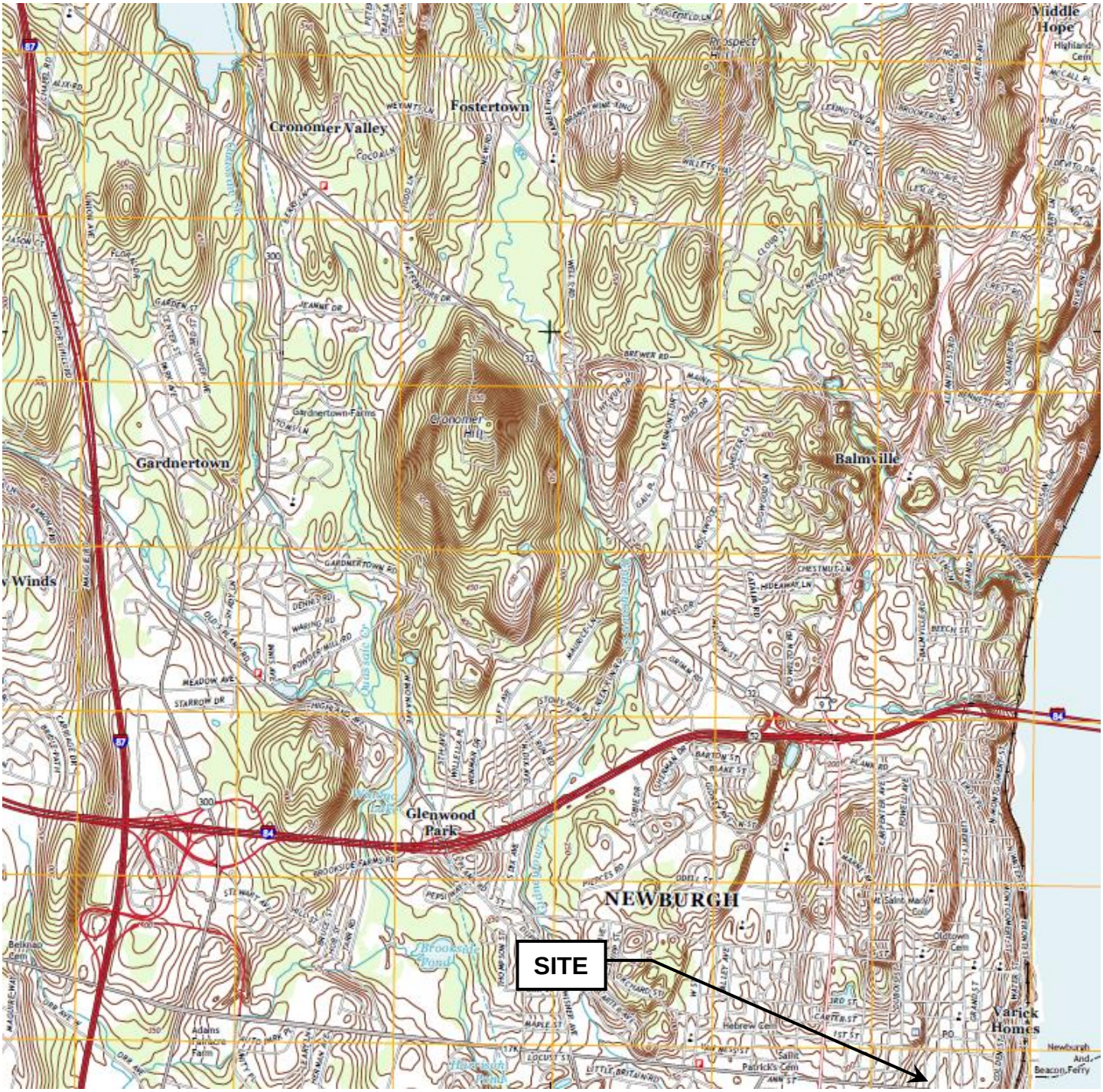

APPROXIMATE SITE LOCATION INDICATED ON THE USGS TOPOGRAPHIC MAP

SW-103: USGS MAP

NORTH

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CITY OF NEWBURGH, ORANGE COUNTY NEW YORK

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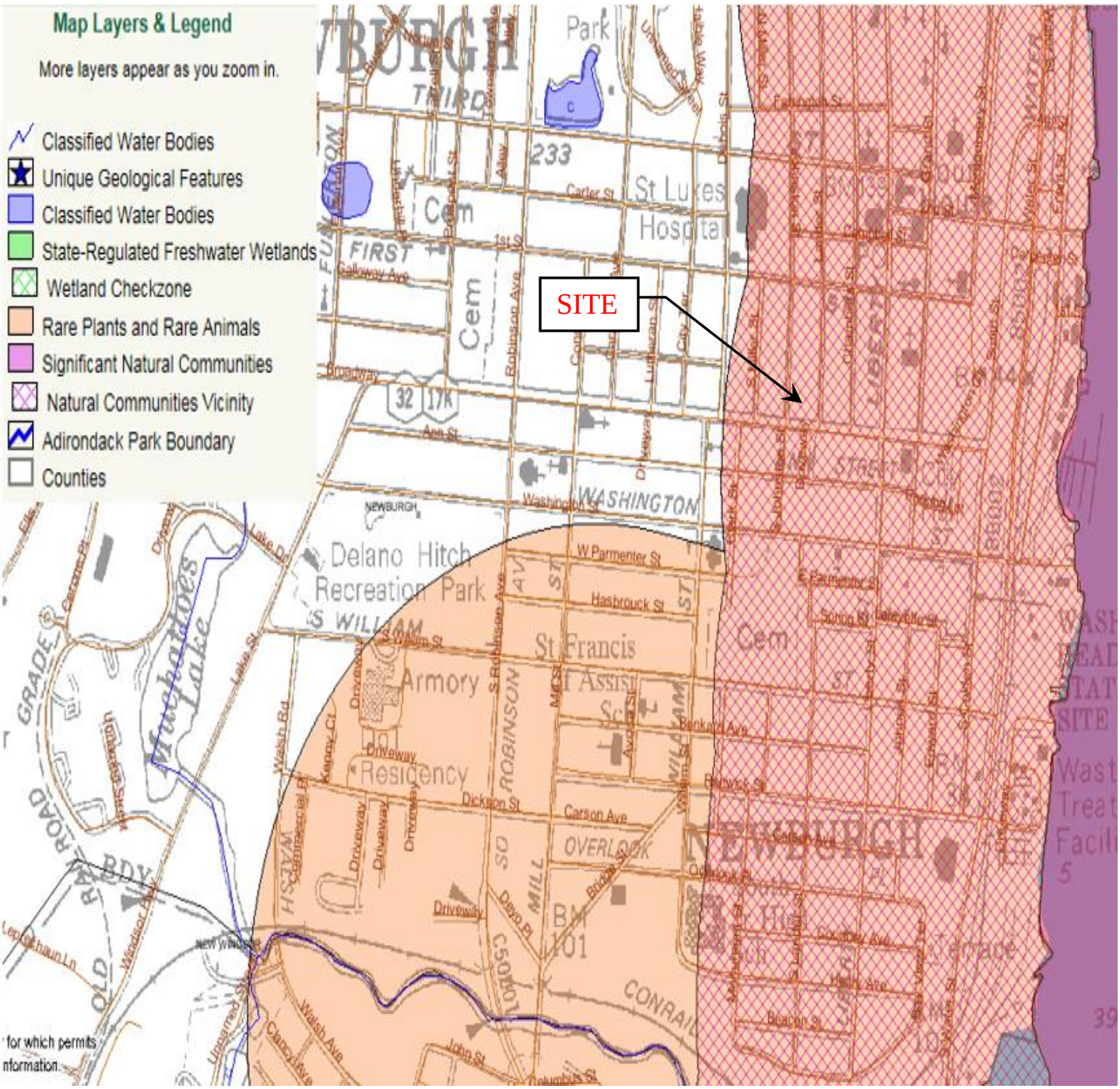
SCALE	DATE	DRAWN BY	WORK ORDER
NTS	7/26/2016	RCC	6660.01



POTENTIAL RESOURCES INDICATED ON THE NYSDEC ENVIROMENTAL RESOURCE MAP FOR ORANGE COUNTY

SW-104: NYSDEC ERM MAP

NORTH

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CITY OF NEWBURGH, ORANGE COUNTY NEW YORK

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NTS	7/26/2016	RCC	6660.01

NORTH

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LARGE- SCALE MIXED-USE
DEVELOPMENT
140 BROADWAY
CITY OF NEWBURGH
NEW YORK

Existing Drainage Area

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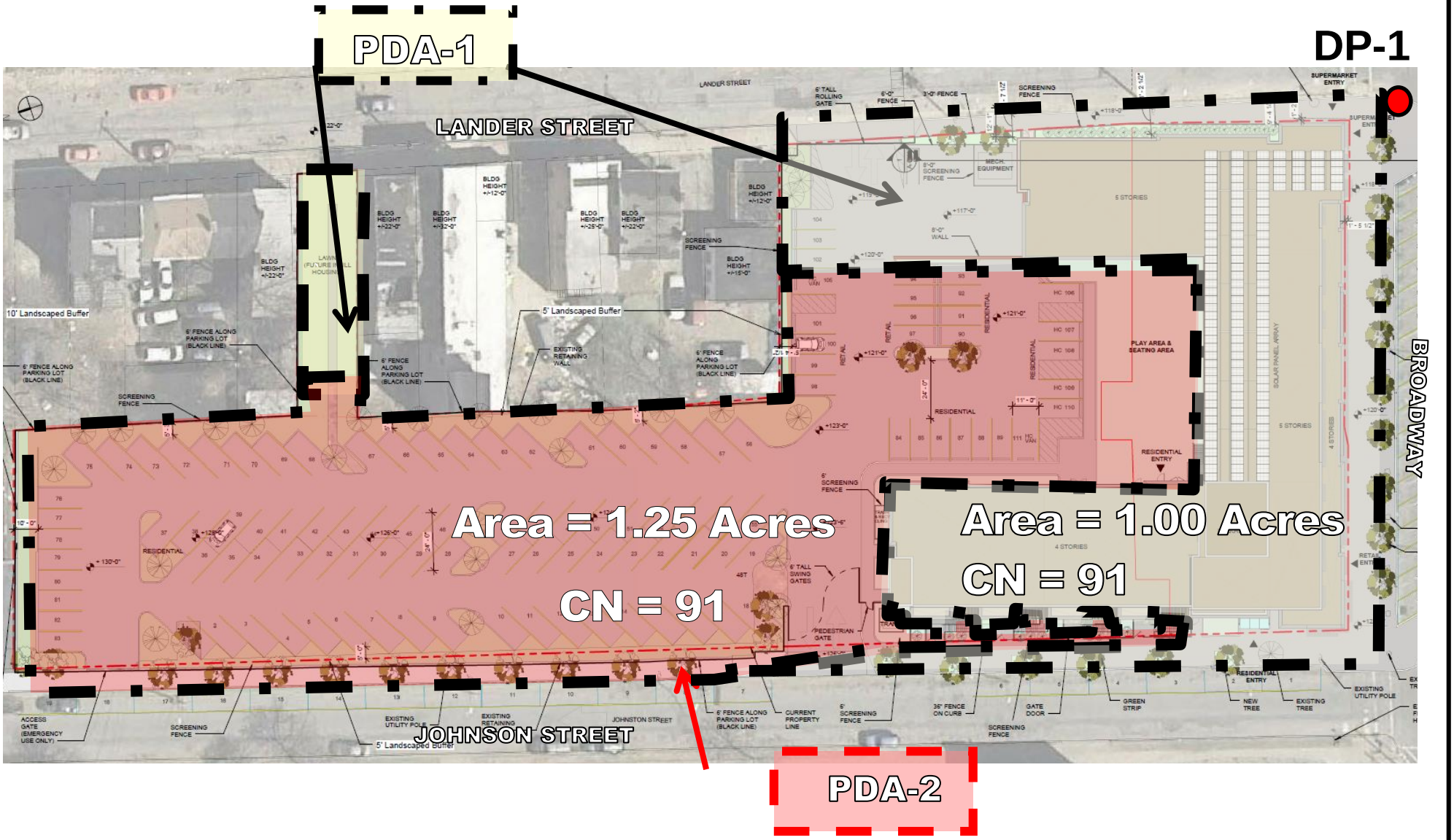
SCALE	DATE	DRAWN BY	WORK ORDER
NTS	05/09/13	CCO	6660.01



NORTH

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DEVELOPMENT
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CITY OF NEWBURGH
NEW YORK

Proposed Drainage Areas

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NTS	07/23/16	CCO	6660.01

APPENDIX B: SOILS

Hydrologic Soil Group—Orange County, New York
(Mid Broadway)

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:1,390 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Orange County, New York
Survey Area Data: Version 13, Sep 21, 2012

Date(s) aerial images were photographed: 11/6/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Orange County, New York (NY071)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	D	3.5	57.2%
Ur	Urban land		2.6	42.9%
Totals for Area of Interest			**6.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

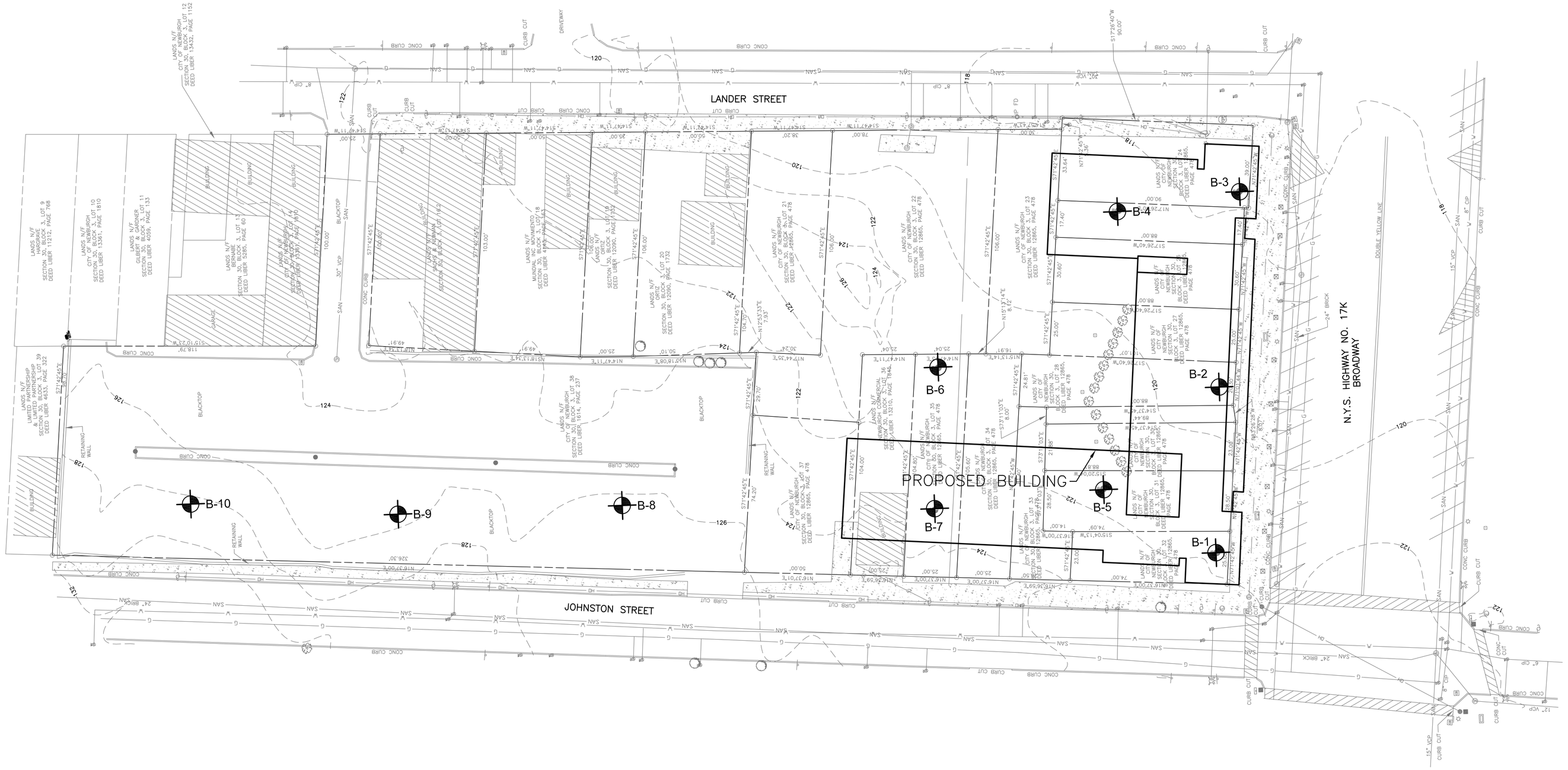
The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.



NOTE:

THIS PLAN IS FOR LOCATING BORINGS ONLY. OTHER SITE WORK SHOWN HERE IS NOT INTENDED FOR CONSTRUCTION.

LEGEND

B-1 BORING NO. & APPROX. LOCATION

REFERENCES:

1. EXIST CONDITIONS & TOPOGRAPHY ARE TAKEN FROM DRAWING ENTITLED "SURVEY", PREPARED BY FUSCO ENGINEERING & LAND SURVEYING, P.C. CONSULTING ENGINEERS, DATED 2/1/13.
2. PROPOSED BUILDING TAKEN FROM DRAWING PREPARED BY MAGNUSSON ARCHITECTURE AND PLANNING PC. DATED 11/30/12.

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rev	date	description

drawn by: yy
checked by: MSP
scale: 1"=30'
date: 2/27/13

SESI CONSULTING ENGINEERS, PC
SOILS / FOUNDATIONS
SITE DESIGN
ENVIRONMENTAL
12A MAPLE AVE. PINE BROOK, N.J. 07058 PH: 973-808-9050

project: MID - BROADWAY MIXED - USE DEVELOPMENT NEWBURGH, N. Y.

drawing title: BORING LOCATION PLAN

job no. 8441
drawing no.

FIG-1

N:\ACAD\8441\8441 BORING LOCATION PLAN.dwg, 3/1/2013 2:28:51 PM, CutePDF Writer

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-1
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	122+/-
BORING BY: GBI	DATE STARTED: 2/12/2013	GROUNDWATER TABLE DEPTH	
INSPECTOR: MBA	DATE COMPLETED: 2/12/2013	0 Hr. 9' 3" / 3. Hr. 9' 3" / 4 Hr. 9'	Date 2/12/13

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0	S-1	12	0		7	6				FILL: Brown/ gray medium to fine SAND, some Silt, little medium Gravel, trace Brick	
				2			9	12	15		
	S-2	6	2		4	3					
				4			5	5	8		
5											
	S-3	3	5		5	9					
				7			7	6	16	Light brown coarse to fine Sand and coarse to fine Gravel, little Silt	
	S-4	16	7		9	9					
				9			6	8	15	Light Brown/gray/red-brown medium to fine SAND and Silt, trace Gravel (mottled)	
10											
	S-5	12	10		5	19				Brown silty CLAY, little medium to fine Sand, trace Gravel	
				12			26	17	45		
										Brown/gray coarse to fine Gravel, some coarse to fine Sand, little Silt	
15											
	S-6	6	15	15.8	18	50/4"				Brown/gray coarse to fine SAND, some medium to fine Gravel, little clayey Silt	
20											
	S-7		20	20.75	40	53/3"				Gray coarse to fine SAND, some medium to fine Gravel, little Silt ...hit boulder at 22'	
25											
	S-8	5	25	25.75	20	50/3"					
										Boring Complete at 25.75 Feet	
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #2

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-2
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	119.5+/-
BORING BY: GBI	DATE STARTED: 2/12/2013	GROUNDWATER TABLE DEPTH	
INSPECTOR: MBA	DATE COMPLETED: 2/12/2013	0 Hr. 9' 6" / 1. Hr. 9' 7" / N/A N/A / Date 2/12/13	

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0											
	S-1		0		9	16				FILL: Dark Brown/ gray Silt, some medium to fine Gravel,	
				2			11	8	27	some coarse to fine Sand	
	S-2	2	2		10	5					
				4			3	3	8	...with concrete and Brick	
5											
	S-3	4	5		3	3				FILL: Red brown/ gray coarse to fine Gravel, and coarse	
				7			1	3	4	to fine Sand, little Silt with Brick	
	S-4	3	7		3	2				FILL: Gray coarse to fine Sand and Silt, trace Gravel with Brick	
				9			3	7	5		
10											
	S-5	14	10		10	19					
				12			18	29	37	Gray coarse to fine Sand and coarse to fine Gravel,	
										little Silt	
15											
	S-6	4	15		7	20				Gray coarse to fine SAND, little Silt, trace Gravel	
				17			35	29	55		
20											
	S-7	8	20	20.75	17	50/3"				Light brown medium to fine SAND, little Silt, trace Gravel	
										Boring complete at 20.75 Feet	
25											
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #3

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-3
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	118.0+/-
BORING BY: GBI	DATE STARTED: 2/12/2013	GROUNDWATER TABLE DEPTH	
INSPECTOR: MBA	DATE COMPLETED: 2/12/2013	0 Hr. 10' 3" / 1. Hr. 9' 8" / N/A N/A / Date 2/12/13	

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0											
	S-1	8	0		5	4			9	FILL: Brown/ gray Sand, Silt, Gravel with Brick	
				2			5	6			
	S-2	0	2		4	1					
				4			1	1	2		
5											
	S-3	8	5		3	3					
				7			1	3	4		
	S-4	11	7		3	2					
				9			2	2	4	Brown/ gray coarse to fine SAND and Silt	
10											
	S-5	8	10		18	11					
				12			12	13	23	Brown/ gray coarse to fine SAND, some Silt, little Gravel	
15											
	S-6	8	15		25	39				Light brown coarse to fine SAND, little Silt, little Gravel	
				16.4			50/5"		89	with Rock fragments	
20											
	S-7	6	20	20.25	52.5	50/2"				Gray coarse to fine Sand and coarse to fine Gravel, little Silt	
										Auger Refusal at 22'	
										Boring complete at 22 Feet	
25											
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #4

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-4
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	119.0+/-
BORING BY: GBI	DATE STARTED: 2/12/2013	GROUNDWATER TABLE DEPTH	
NSPECTOR: MBA	DATE COMPLETED: 2/12/2013	0 Hr. 10+/- N/A N/A N/A N/A	Date 2/12/13

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0											
	S-1	8	0		11	7				FILL: Brown/ gray medium to fine SAND and clayey Silt	
				2			6	5	13	with Brick W.C. = 18.8% (-200) = 38.9%	
	S-2	6	2		13	6				FILL: Brown/ gray coarse to fine SAND, some Gravel, little	
				4			6	7	12	Silt with Brick	
5										Gray/ red-brown medium to fine SAND, some Silt, trace	
	S-3	19	5		4	6				Gravel	
				7			6	5	12		
	S-4	22	7		6	6				Gray/ red- brown SILT and medium to fine Sand	
				9			9	13	15		
10											
	S-5	5	10	10.75	22	50/3"				... little Gravel	
15											
	S-6	13	15	16.3	28	35					
							55/4"		90	Gray medium to fine SAND and Silt, trace Gravel	
20											
	S-7	8	20	20.9	34	54/5"				Gray coarse to fine SAND, some Silt., some Gravel	
										Boring complete at 20.9 Feet	
25											
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
'eight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #5

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-5
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	121.5+/-
BORING BY: GBI	DATE STARTED: 2/12/2013	GROUNDWATER TABLE DEPTH	
NSPECTOR: MBA	DATE COMPLETED: 2/12/2013	0 Hr. N/A / N/A N/A / N/A N/A	Date 2/12/13

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0											
	S-1	8	1		18	16				FILL: Gray/ brown coarse to fine SAND, and Silt	
				2			8	16	24		
	S-2	4	2		10	16				FILL: Gray/ red-brown coarse to fine SAND and Silt, trace	
				4			8	12	24	Gravel	
5											
	S-3	4	5		19	10				FILL: Gray coarse to fine SAND and Gravel, little Silt (wet)	
				7			16	23	26		
	S-4	17	7		23	21					
				9			26	23	47	Gray/ brown coarse to fine SAND, little Silt, little	
10										medium to fine Gravel	
	S-5	0	10		15	23					
				12			26	50	49		
15										Gray coarse to fine SAND, little Silt, little medium to fine	
	S-6	15	15		15	47				Gravel	
				16.8			50	50/4"	97		
										Auger refusal at 17' 6"	
20										Boring complete at 17.5 Feet	
25											
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
'eight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #6

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-6
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	121+/-
BORING BY: GBI	DATE STARTED: 2/13/2013	GROUNDWATER TABLE DEPTH	
INSPECTOR: MBA	DATE COMPLETED: 2/13/2013	0 Hr. 8' +/- / N/A N/A / N/A N/A	Date 2/13/13

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0											
	S-1	8	0		2	8				4" Topsoil	
				2			6	6	14	Red-brown coarse to fine SAND, Silt, Gravel with Brick	
	S-2	9	2		3	3				FILL: Gray/ brown coarse to fine SAND, some Silt, trace	
				4			4	6	7	Gravel with Brick	
5											
	S-3	17	5		7	12				Gray/ red-brown SILT, trace Sand with Brick	
				7			11	15	22		
	S-4	12	8		14	18					
				9			22	30	40	Gray coarse to fine SAND and Silt, trace Gravel(wet)	
10											
	S-5	10	10	11.25	7	17				Gray coarse to fine SAND, some Silt, some Gravel	
							50/3"		67		
15											
	S-6	4	15	15.5	25	50/8"				Gray coarse to fine SAND, and Silt, trace Gravel	
20											
	S-7	9	20	21	40	70					
							50/1"		120		
25											
										Auger refusal at 24.5'	
										Boring complete at 24.5 Feet	
										\	
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #7

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-7
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	123+/-
BORING BY: GBI	DATE STARTED: 2/13/2013	GROUNDWATER TABLE DEPTH	
INSPECTOR: MBA	DATE COMPLETED: 2/13/2013	0 Hr. 10' +/-	N/A N/A N/A N/A Date 2/13/13

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0	S-1	12	0		7	7				FILL: Brown/ gray coarse to fine SAND, some Silt, little	
				2			9	5	16	Gravel with Brick	
	S-2	15	2		6	8				FILL: Brown/ gray SILT, some medium to fine Sand, little	
				4			7	8	15	Gravel W.C. = 24.5% (-200) = 71.23%	
5											
	S-3	10	5		12	14				FILL: Brown/ gray coarse to fine SAND and Silt, little Gravel	
				7			13	12	27		
	S-4	22	8		13	9				Brown/ gray coarse to fine SAND, some Silt, some	
				9			13	28	22	Gravel	
10											
	S-5	18	10		14	24				Brown coarse to fine Sand, some Silt, some medium to	
				11.75			53	50/3"	77	fine Gravel	
15										Auger refusal at 14'	
										Boring complete at 14 Feet	
20											
25											
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #8

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-8
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	126+/-
BORING BY: GBI	DATE STARTED: 2/13/2013	GROUNDWATER TABLE DEPTH	
INSPECTOR: MBA	DATE COMPLETED: 2/13/2013	0 Hr. N/A / N/A N/A / N/A N/A	Date 2/13/13

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0	S-1	6	0		20	46				1" Asphalt	
				2			4	7	50	FILL: Brown coarse to fine Sand, Gravel, Silt with Brick	
	S-2	8	3		4	3				FILL: Brown/ gray coarse to fine Sand, Silt, Gravel with Brick	
5				5			1	2	4		
	S-3	13	5		2	3					
				7			4	9	7		
		0	7		19	13					
				9			15	20	28	Gray/ red-brown SILT, some medium to fine Sand, trace Gravel	
10											
	S-4		10	11	9	13				Brown SILT, some medium to fine Sand	
	S-5	24	11	12			12	14	25	Gray coarse to fine Sand, some Silt, some medium to fine Gravel (wet)	
15											
	S-6	17	15		14	35					
				17			40	45	75		
20										Gray coarse to fine SAND and medium to fine Gravel, some Silt	
		6	20	20.75	41	50/3"					
										Boring complete at 20.9 Feet	
25											
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
/eight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #9

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-9
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	126+/-
BORING BY: GBI	DATE STARTED: 2/13/2013	GROUNDWATER TABLE DEPTH	
INSPECTOR: MBA	DATE COMPLETED: 2/13/2013	0 Hr. 9.5+/- N/A N/A N/A N/A Date 2/13/13	

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0	S-1	8	0		6	4				FILL: Gray coarse to fine SAND, some Silt	
				2			4	3	8	FILL: Topsoil- Brown coarse to fine Sand and Silt, little Gravel with Brick	
	S-2	10	2		2	4					
				4			2	2	6	Brown coarse to fine SAND, some Silt, trace Gravel	
5										Brown/ gray clayey SILT, little Sand	
	S-3	12	5		6	8					
				7			8	7	16		
	S-4	13	7		11	16					
				9			16	13	32	Brown / gray coarse to fine SAND, some Silt, trace Gravel (wet)	
10											
	S-5	9	10	11.5	3	9				Light Brown coarse to fine SAND, some Silt, little medium to	
							65		74	fine Gravel	
15										Auger refusal at 14'	
										Boring complete at 14 Feet	
20											
25											
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #10

SESI CONSULTING ENGINEERS

PROJECT NAME:	Mid-Broadway Mixed-Use	BORING NO.	B-10
LOCATION:	Newburgh, NY	JOB NO.	N 8441
METHOD	Hollow Stem Auger	GROUND ELEVATION:	128+/-
BORING BY: GBI	DATE STARTED: 2/13/2013	GROUNDWATER TABLE DEPTH	
INSPECTOR: MBA	DATE COMPLETED: 2/13/2013	0 Hr. N/A / N/A N/A / N/A N/A	Date 2/13/13

DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH FROM (ft)	DEPTH TO (ft)	Blows on Spoon 0/6	6/12	12/18	18/24	N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol USCS
0											
	S-1	8	0		28	12				1.5" Asphalt	
				2			11	12	23	FILL: Brown coarse to fine SAND and clayey Silt with Brick	
	S-2	10	2		7	6					
				4			2	2	8	FILL: Gray/ brown coarse to fine SAND, little Silt with Brick	
5											
	S-3	11	5		7	4				Gray/ brown medium to fine SAND and Silt, trace Gravel	
				7			5	8	9		
	S-4	15	7		10	8				Gray/ brown SILT, little medium to fine Sand	
				9			10	12	18		
10											
	S-5	9	10		7	10				Brown coarse to fine SAND, some Silt, little Gravel (wet)	
				12			27	37	37		
15											
	S-6	15	15		17	33					
				17			21	33	54		
20											
										Auger refusal at 20'	
										Boring complete at 20 Feet	
25											
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1⅜ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE #11

Definitions of Identification Terms for Granular Soils

Our experience has shown that the following field identification system, which is patterned somewhat after the Burmister System, permits a more detailed breakdown of the components within a soil sample than other identification systems allow. It also compels the supervising technician to examine a sample quite closely in order to accurately describe the components within the sample.

Principal Component (All Capitalized)

- GRAVEL — More than 50% of the sample by weight is Gravel
- SAND — More than 50% of the sample by weight is Sand
- SILT — More than 50% of the sample by weight is Silt

Minor Component (Proper Case)

- Gravel — Less than 50% of the sample by weight is Gravel
- Sand — Less than 50% of the sample by weight is Sand
- Silt — Less than 50% of the sample by weight is Silt

Proportion Terms

- and — Component ranges from 35% to 50% of the sample by weight
- some — Component ranges from 20% to 35% of the sample by weight
- little — Component ranges from 10% to 20% of the sample by weight
- trace — Component ranges from 0% to 10% of the sample by weight

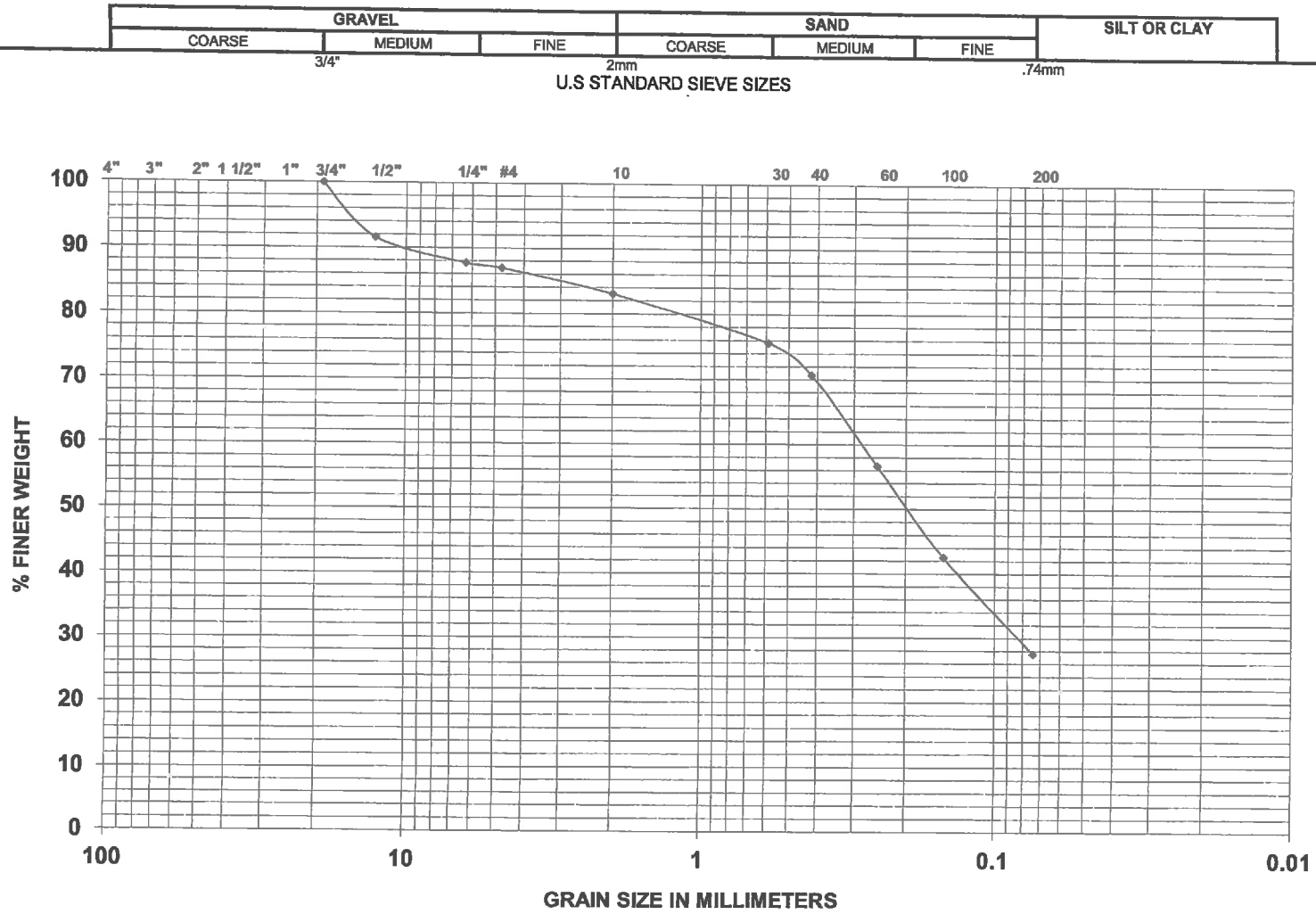
Size of Soil Components

- Gravel
  - Coarse gravel ranges from 3 inches to 1 inch
  - Medium gravel ranges from 1 inch to 3/8 inch
  - Fine gravel ranges from 3/8 inch to No. 10 sieve
- Sand
  - Coarse sand ranges from No. 10 sieve to No. 30 sieve
  - Medium sand ranges from No. 30 sieve to No. 60 sieve
  - Fine sand ranges from No. 60 sieve to No. 200 sieve
- Silt
  - Material which passes the No. 200 sieve
- Clay
  - Material which passes the No. 200 sieve
  - Exhibits varying degrees of plasticity

Gradation Designations

- Coarse to fine (c-f) — All fractions greater than 10%of the component
- Coarse to medium (c-m) — Less than 10% of the component is fine
- Medium to fine (m-f) — Less than 10% of the component is coarse
- Coarse (c) — Less than 10% of the component is medium and fine
- Medium (m) — Less than 10% of the component is coarse and fine
- Fine (f) — Less than 10% of the component is coarse and medium

Fig. 12



Symbol	◆
Boring	B-1
Sample	S-2
Depth	2-4'
% +3"	
% Gravel	16.92
% Sand	55.51
% Fines	27.56
% Silt	
% Clay	
Sp.G	
LL	
PL	
PI	
W (%)	12.50%

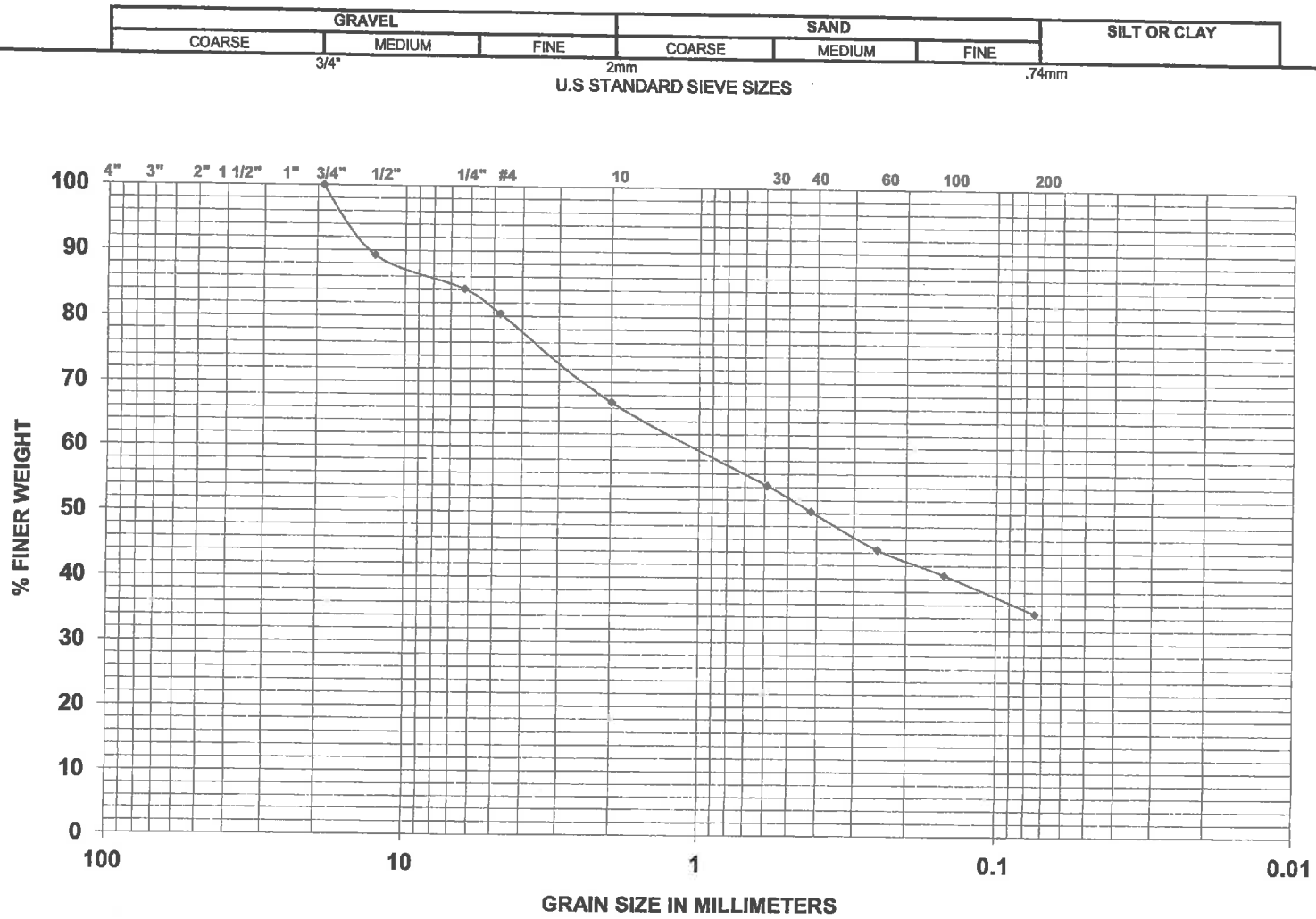
Particle Size Sieve #	Percent Finer Than
3"	-
1 1/2"	-
1"	-
3/4"	100.00
1/2"	91.59
1/4"	87.72
4	86.94
10	83.08
30	75.63
40	70.70
60	56.67
100	42.55
200	27.56

PARTICLE SIZE DISTRIBUTION

CLIENT: Mill Street Partners, LLC
PROJECT: Newburgh, NY
DATE: February 25, 2013
JOB NO. 8441 FIGURE No 13

SYMBOL	DESCRIPTION AND REMARKS
◆	Gray medium to fine SAND, some Silt, little medium Gravel

SESI CONSULTING ENGINEERS



Symbol	◆
Boring	B-2
Sample	S-1
Depth	0-2'
% +3"	
% Gravel	33.07
% Sand	32.22
% Fines	34.70
% Silt	
% Clay	
Sp.G	
LL	
PL	
PI	
W (%)	25.50%

Particle Size Sieve #	Percent Finer Than
3"	-
1 1/2"	-
1"	-
3/4"	100.00
1/2"	89.31
1/4"	84.21
4	80.45
10	66.93
30	54.25
40	50.28
60	44.48
100	40.58
200	34.70

PARTICLE SIZE DISTRIBUTION

CLIENT: Mill Street Partners, LLC
PROJECT: Newburgh,NY
DATE: February 25, 2013
JOB NO. 8441 FIGURE No 14

SYMBOL	DESCRIPTION AND REMARKS
◆	Dark Brown/ Gray Silt, some medium to fine Gravel, some medium to fine Sand

SESI CONSULTING ENGINEERS

APPENDIX C: CALCULATIONS

TECTONIC

Practical Solutions, Exceptional Service

CURVE NUMBER WORKSHEET

WO. NO.	DATE	SHEET
6660.01	7/19/2016	1 OF 3

PROJECT TITLE	LOCATION
Mid-Broadway Redevelopment	City of Newburgh, Orange County, New York

ESTIMATED BY	APPROVED BY	REF DRAWING(S)
RCC	CO	

1. Runoff curve number (CN) Present Developed Area: **EDA-1**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
D	Impervious	98	0.86	84.60
Urban Land (B soils)	Grass (good condition)	69	0.63	43.78
Urban Land (B soils)	Impervious	98	0.29	28.33
Urban Land (B soils)	Grass (poor condition)	79	0.46	36.60
		TOTAL =	2.25	193.31

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{193.31}{2.25}$$

CN (weighted) = 85.91 Use **CN = 86**

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CURVE NUMBER WORKSHEET

WO. NO.	DATE	SHEET 2 OF 3
6660.01	7/19/2016	

PROJECT TITLE	LOCATION
Mid-Broadway Redevelopment	City of Newburgh, Orange County, New York

ESTIMATED BY	APPROVED BY	REF DRAWING(S)
RCC	CO	

1. Runoff curve number (CN) Present **Developed** Area: **PDA-1**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
D	Impervious	98	0.02	2.35
D	Grass (good condition)	80	0.09	7.56
Urban Land (B soils)	Grass (good condition)	61	0.10	6.10
Urban Land (B soils)	Impervious	98	0.68	67.03
	Gravel	85	0.09	7.91
	TOTAL =		1.00	90.95

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{90.95}{1.00}$$

CN (weighted) = 91.36 Use **CN = 91**

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CURVE NUMBER WORKSHEET

WO. NO.	DATE	SHEET 3 OF 3
6660.01	7/19/2016	

PROJECT TITLE	LOCATION
Mid-Broadway Redevelopment	City of Newburgh, Orange County, New York

ESTIMATED BY	APPROVED BY	REF DRAWING(S)
RCC	CO	

1. Runoff curve number (CN) Present **Developed** Area: **PDA-2**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
D	Impervious	98	0.44	43.01
D	Grass (good condition)	80	0.14	11.55
D	Permeable Pavement (Gravel)	91	0.17	15.06
Urban Land (B soils)	Impervious	98	0.29	28.79
Urban Land (B soils)	Grass (good condition)	61	0.10	6.10
Urban Land (B soils)	Permeable Pavement (Gravel)	85	0.11	8.93
	TOTAL =		1.25	113.43

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{113.43}{1.25}$$

CN (weighted) = 90.93 Use **CN = 91**

S= 0.99

TECTONIC
Practical Solutions, Exceptional Service

STORMWATER QUALITY- NEW DEVELOPMENT TOTAL WQv CALC AND PERMEABLE PAVERS

WO. NO.	DATE:	PROJECT TITLE:	LOCATION:
6660.01	7/20/2016	Mid-Broadway	City of Newburgh, NY

NYSDEC Stormwater Manual Chapter 5- New Development- RRV

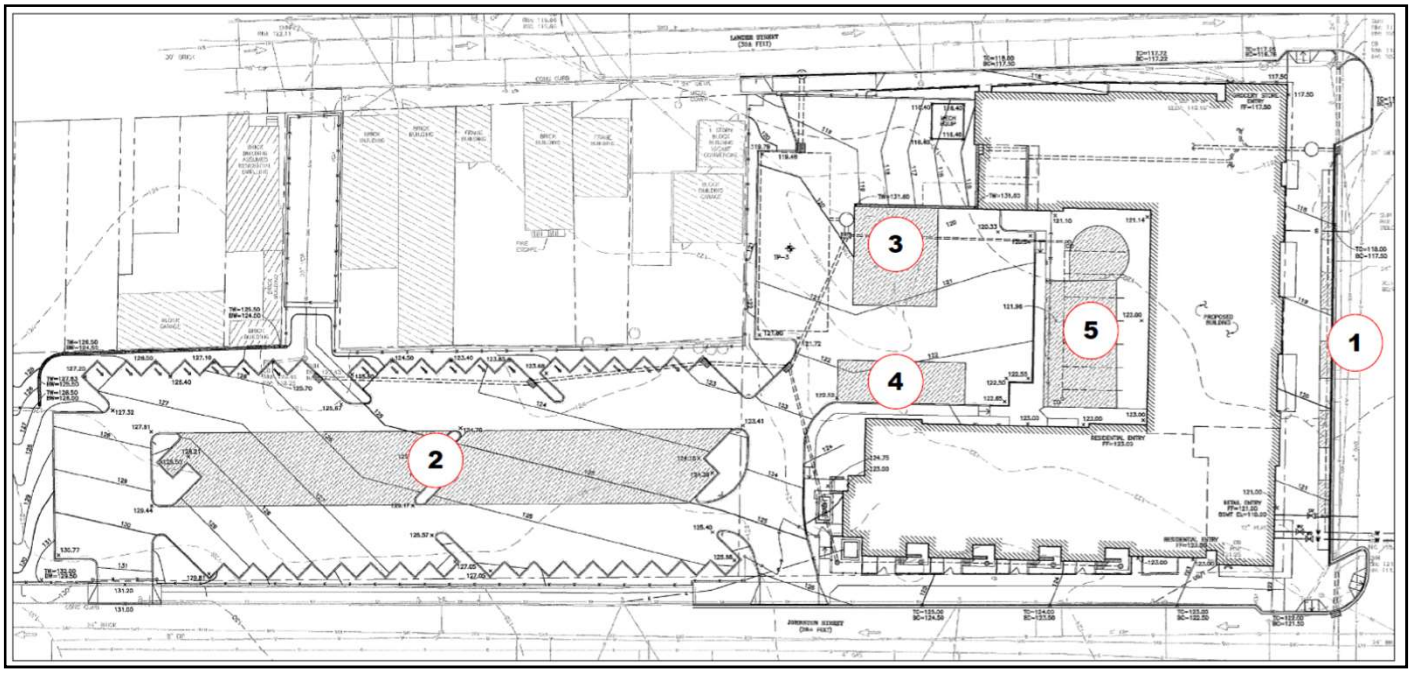
Total Water Quality for the Site:

$$W_{qv} = \frac{(p)(R_v)(A_T)}{12}$$

90% Rainfall Event Number (Fig 4.1)	P =	1.40	in
0.05+0.009(I) (minimum Rv = 0.2)	R_v =	0.574	
Total Drainage Area	A_T =	1.10	Ac
Impervious Area	A_I =	0.64	Ac
Impervious Area Percentage	I =	58	%
90% Rule	Wqv =	**3,207**	**ft^3**

RRV Provided from Permeable Pavement

1	Street Improvement	Imp Drainage to:	2,500	ft^2		
		Surface Area of PP	900	ft^2	=	3,400 ft^2
2	Parking Lot (Rear Aisle)	Imp Drainage to:	6,584	ft^2		
		Surface Area of PP	7,210	ft^2	=	13,794 ft^2
3	Parking Lot	Imp Drainage to:	3,850	ft^2		
		Surface Area of PP	1,530	ft^2	=	5,380 ft^2
4	Parking Lot	Imp Drainage to:	1,400	ft^2		
		Surface Area of PP	940	ft^2	=	2,340 ft^2
5	Playground Area	Imp Drainage to:	460	ft^2		
		Surface Area of PP	2,030	ft^2	=	2,490 ft^2
		Area Reduction	**27,404**	**ft^2**		
			0.629	**Ac**		

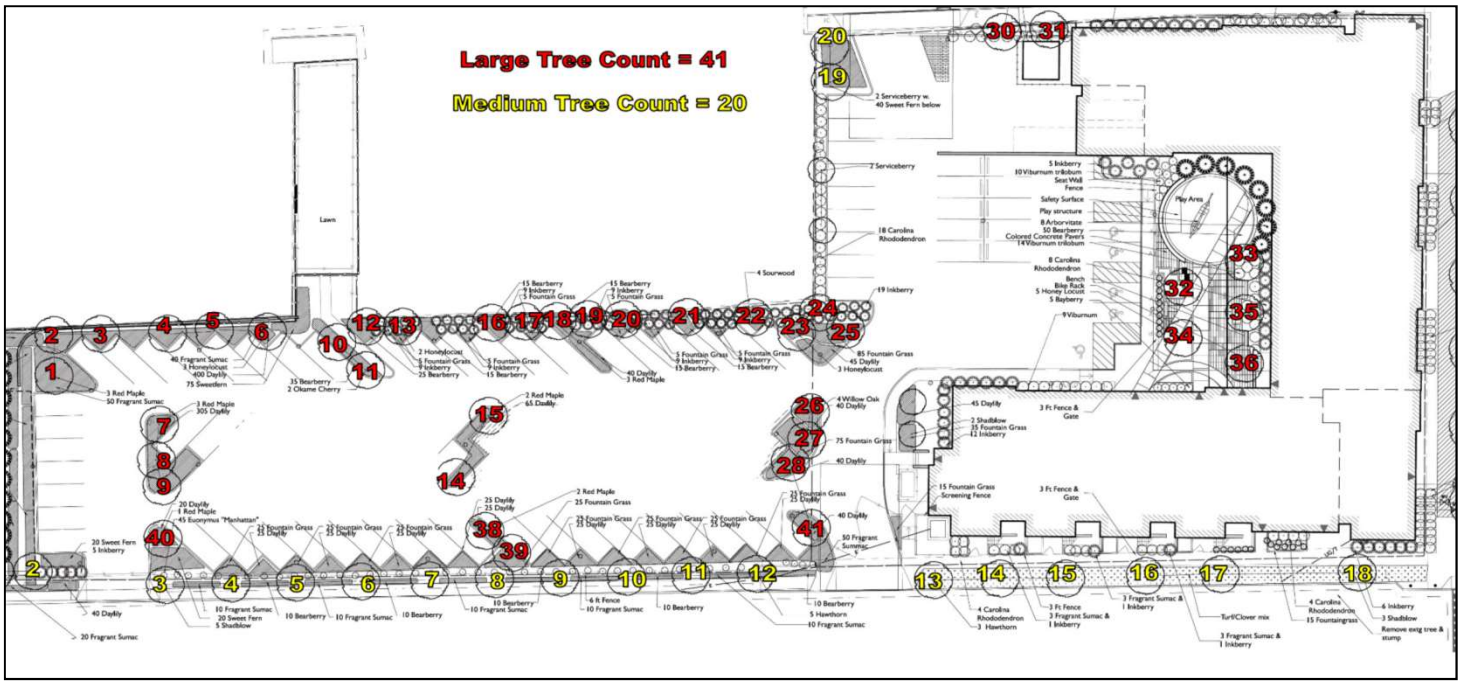


TECTONIC Practical Solutions, Exceptional Service	STORMWATER QUALITY- NEW DEVELOPMENT TREE PLANTINGS AND TOTAL			
	WO. NO. 6660.01	DATE: 7/20/2016	PROJECT TITLE: Mid-Broadway	LOCATION: City of Newburgh, NY

NYSDEC Stormwater Manual Chapter 5- New Development- RRV

RRV Provided at the Site- Tree Planting

Number of Large Trees Proposed	**41**		(25-35 ft diameter canopy)
Water Quality Reduction Per Large Trees	**100**	**ft^2/Tree**	
Water Quality Reduction for Large Trees	**4,100**	**ft^2**	
Number of Medium Proposed	**20**		(15 - 25 ft diameter canopy)
Water Quality Reduction Per Medium Trees	**75**	**ft^2/Tree**	
Water Quality Reduction for Medium Trees	**1,500**	**ft^2**	
Total WQv Reduction	**5,600**	**ft^2**	
	0.129	**Ac**	



Permeable Pavers Area Reduction	**0.63**	**Ac**
Tree-Planitngs Reduction	**0.13**	**Ac**
Total Area Reduction	**0.76**	**Ac**

P =	1.40	in
R_v =	0.950	
A_T =	0.76	Ac
A_I =	0.76	Ac
I =	100	%
W_{qv} =	0.084	Ac-ft
Wqv =	3,658	ft^3
Total RRv Provided	**3,658**	**ft^3**

$$W_{qv} = \frac{(p)(R_v)(A_T)}{12}$$

TECTONIC Practical Solutions, Exceptional Service	STORMWATER QUALITY - REDEVELOPMENT			
	WO. NO. 6660.01	DATE: 7/25/2016	PROJECT TITLE: Mid-Broadway	LOCATION: City of Newburgh, NY

NYSDEC Stormwater Manual Chapter 9- Redevelopment

Total Redevelopment Water Quality for the Site:

90% Rainfall Event Number (Fig 4.1)	P =	1.40	in
0.05+0.009(I) (minimum Rv = 0.2)	R_v =	0.9500	
Total Drainage Area	A_T =	1.15	Ac
Impervious Area	A_I =	1.15	Ac
Impervious Area Percentage	I =	100	%
90% Rule	Wqv =	**5,552**	**ft^3**

$$W_{qv} = \frac{(p)(R_v)(A_T)}{12}$$

75% of the Re-development Water Quality	**4,164**	**ft^3**

Parking Lot Draiange to Hydrodynamic Separator #1

90% Rainfall Event Number (Fig 4.1)	P =	1.40	in
0.05+0.009(I) (minimum Rv = 0.2)	R_v =	0.9500	
Total Drainage Area	A_T =	0.37	Ac
Impervious Area	A_I =	0.37	Ac
Impervious Area Percentage	I =	100	%
	W_{qv} =	0.041	Ac-ft
90% Rule	Wqv =	**1,786**	**ft^3**

Building and Loading Area to Hydrodynamic Separator #2

90% Rainfall Event Number (Fig 4.1)	P =	1.40	in
0.05+0.009(I) (minimum Rv = 0.2)	R_v =	0.9500	
Total Drainage Area	A_T =	0.58	Ac
Impervious Area	A_I =	0.58	Ac
Impervious Area Percentage	I =	100	%
	W_{qv} =	0.064	Ac-ft
90% Rule	Wqv =	**2,800**	**ft^3**

Total WQv provided by CDS units=	**4,587**	**ft^3**

Redevelopment WQv is achieved because 4,587 ft^3 > 4,164 ft^3.

TECTONIC Practical Solutions, Exceptional Service	Water Quality Peak Flow Calculation to Hydrodynamic Separator #1		
	WO. NO. 6660.01	DATE 7/20/2016	SHEET 1 OF 2
PROJECT TITLE Mid-Broadway		LOCATION City of Newburgh, Orange County, NY	

Worksheet based upon NYSDEC Design Manual, August 2005 Appendix B

Area based on WQv Credit

90% Rainfall Event Number (Fig 4.1)	P =	1.40	in
area	A =	0.37	Ac
Water Quality Volume	WQv =	1,786	ft^3
runnoff volume	Q =	1.33	in
Curve Number	CN =	99	
Ia = (200/CN) - 2	I_a =	0.01	
Ia/P	I_a/P =	0.01	
qu (From Exhibits 4-I to 4-III)*	q_u =	650	
$Q_p = q_u * A * WQ_v$	**Qp =**	**0.09**	**cfs**

The CDS unit must have a peak capacity of 0.09 cfs to achieve WQv.

TECTONIC Practical Solutions, Exceptional Service	Water Quality Peak Flow Calculation to Hydrodynamic Separator #2		
	WO. NO. 6660.01	DATE 7/20/2016	SHEET 2 OF 2
PROJECT TITLE Mid-Broadway		LOCATION City of Newburgh, Orange County, NY	

Worksheet based upon NYSDEC Design Manual, August 2005 Appendix B

Building Area and Loading Dock Area

90% Rainfall Event Number (Fig 4.1)	P =	1.40	in
area	A =	0.58	Ac
Water Quality Volume	WQv =	2800	ft^3
runnoff volume	Q =	1.33	in
Curve Number	CN =	99	
Ia = (200/CN) - 2	I_a =	0.01	
Ia/P	I_a/P =	0.01	
qu (From Exhibits 4-I to 4-III)*	q_u =	650	
$Q_p = q_u * A * WQ_v$	**Qp =**	**0.21**	**cfs**

The CDS unit must have a peak capacity of 0.21 cfs to achieve WQv.

Porous Pavement Worksheet

Ap = Vw / (n x dt)

Ap	Required porous pavement surface area	*ft2*	
Vw	Design Volume	*ft3*	
n	porosity of gravel bed/resevoir		*Assume .4 for gravel*
dt	depth of gravel bed/resevoir		

Design Point:	

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	0.08	0.08	1.00	0.95	376.83	1.40	Porous Pavement

Enter Soil Infiltration Rate			
Soil Inflitration Rate		*in/hour*	*Infiltration rate should be a minimum of 0.5 in/hr.*

Calculate Required Surface Area				
Design Volume	Vw	377	*ft^3*	
Are underdrains being used?		No	-	
Porosity of Gravel Bed	*n*	0.40	-	
Gravel Bed Depth	dt	1.08	*ft*	
Required Surface Area	Ap	870	*sf*	
Surface Area Provided		900	*sf*	*Dimensions of pavement can be provided here*
Storage Volume Provided		390	*ft^3*	

Determine the Runoff Reduction			
RRv	**377**	***ft^3***	

Porous Pavement Worksheet

Ap = Vw / (n x dt)

Ap	Required porous pavement surface area	*ft2*	
Vw	Design Volume	*ft3*	
n	porosity of gravel bed/resevoir		*Assume .4 for gravel*
dt	depth of gravel bed/resevoir		

Design Point:	

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	0.32	0.32	1.00	0.95	1530.44	1.40	Porous Pavement

Enter Soil Infiltration Rate			
Soil Inflitration Rate		*in/hour*	*Infiltration rate should be a minimum of 0.5 in/hr.*

Calculate Required Surface Area				
Design Volume	Vw	1,530	*ft^3*	
Are underdrains being used?		No	-	
Porosity of Gravel Bed	*n*	0.40	-	
Gravel Bed Depth	dt	1.08	*ft*	
Required Surface Area	Ap	3,532	*sf*	
Surface Area Provided		7,210	*sf*	*Dimensions of pavement can be provided here*
Storage Volume Provided		3,124	*ft^3*	

Determine the Runoff Reduction			
RRv	**1,530**	***ft^3***	

Porous Pavement Worksheet

Ap = Vw / (n x dt)

Ap	Required porous pavement surface area	*ft2*	
Vw	Design Volume	*ft3*	
n	porosity of gravel bed/resevoir		*Assume .4 for gravel*
dt	depth of gravel bed/resevoir		

Design Point:	

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
3	0.12	0.12	1.00	0.95	596.28	1.40	Porous Pavement

Enter Soil Infiltration Rate			
Soil Inflitration Rate		*in/hour*	*Infiltration rate should be a minimum of 0.5 in/hr.*

Calculate Required Surface Area				
Design Volume	Vw	596	*ft^3*	
Are underdrains being used?		No	-	
Porosity of Gravel Bed	*n*	0.40	-	
Gravel Bed Depth	dt	1.08	*ft*	
Required Surface Area	Ap	1,376	*sf*	
Surface Area Provided		1,530	*sf*	*Dimensions of pavement can be provided here*
Storage Volume Provided		663	*ft^3*	

Determine the Runoff Reduction			
RRv	**596**	***ft^3***	

Porous Pavement Worksheet

Ap = Vw / (n x dt)

Ap	Required porous pavement surface area	*ft2*	
Vw	Design Volume	*ft3*	
n	porosity of gravel bed/resevoir		*Assume .4 for gravel*
dt	depth of gravel bed/resevoir		

Design Point:	

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
4	0.05	0.05	1.00	0.95	259.35	1.40	Porous Pavement

Enter Soil Infiltration Rate			
Soil Inflitration Rate		*in/hour*	*Infiltration rate should be a minimum of 0.5 in/hr.*

Calculate Required Surface Area				
Design Volume	Vw	259	*ft^3*	
Are underdrains being used?		No	-	
Porosity of Gravel Bed	*n*	0.40	-	
Gravel Bed Depth	dt	1.08	*ft*	
Required Surface Area	Ap	599	*sf*	
Surface Area Provided		940	*sf*	*Dimensions of pavement can be provided here*
Storage Volume Provided		407	*ft^3*	

Determine the Runoff Reduction			
RRv	**259**	***ft^3***	

Porous Pavement Worksheet

Ap = Vw / (n x dt)

Ap	Required porous pavement surface area	*ft2*	
Vw	Design Volume	*ft3*	
n	porosity of gravel bed/resevoir		*Assume .4 for gravel*
dt	depth of gravel bed/resevoir		

Design Point:	

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
5	0.06	0.06	1.00	0.95	275.98	1.40	Porous Pavement

Enter Soil Infiltration Rate			
Soil Inflitration Rate		*in/hour*	*Infiltration rate should be a minimum of 0.5 in/hr.*

Calculate Required Surface Area				
Design Volume	Vw	276	*ft^3*	
Are underdrains being used?		No	-	
Porosity of Gravel Bed	*n*	0.40	-	
Gravel Bed Depth	dt	1.08	*ft*	
Required Surface Area	Ap	637	*sf*	
Surface Area Provided		2,030	*sf*	*Dimensions of pavement can be provided here*
Storage Volume Provided		880	*ft^3*	

Determine the Runoff Reduction			
RRv	**276**	***ft^3***	

TECTONIC Practical Solutions, Exceptional Service	RATIONAL METHOD & MANNINGS FORMULA PIPE FLOW WORKSHEET	PROJECT TITLE:	Mid-Broadway Multi-Use Development
		LOCATION	City of Newburgh, NY
		DATE	7/21/2016
		WO. NO.	6660.01

Drainage to CB-1E

Rational Method

C = Runoff Coefficent	=	**0.86**
I = Rainfall Intensity (in/hr)	=	**7.5**
(25 yr @ 5 min/ Orange County, NY's Rainfall Intensity Curves)		
A = Drainage Area (acres)	=	**0.22**
Q = Peak Flow Rate (cfs) =	=	**1.4**

Mannings

V = velocity (ft/sec)	=	8.06	
k = unit system factor	=	1.49	
n = manning's roughness coeff.	=	**0.012**	HDPE
R = hydraulic radius (ft)	=	0.31	
S = Slope (ft/ft)	=	**0.02**	
P = Pipe Size (in)	=	**15**	
Q = Capacity (cfs)	=	**9.90**	

Capacity (Is Capacity > Peak flow?) **TRUE**

Drainage to CB-6A

Rational Method

C = Runoff Coefficent	=	**0.99**
I = Rainfall Intensity (in/hr)	=	**7.5**
(25 yr @ 5 min/ Orange County, NY's Rainfall Intensity Curves)		
A = Drainage Area (acres)	=	**0.50**
Q = Peak Flow Rate (cfs) =	=	**3.7**

Mannings

V = velocity (ft/sec)	=	5.70	
k = unit system factor	=	1.49	
n = manning's roughness coeff.	=	**0.01**	
R = hydraulic radius (ft)	=	0.31	HDPE
S = Slope (ft/ft)	=	**0.01**	
P = Pipe Size (in)	=	**15**	
Q = Capacity (cfs)	=	**7.00**	

Capacity (Is Capacity > Peak flow?) **TRUE**

Drainage to CB-5A

Rational Method

C = Runoff Coefficent	=	**0.99**
I = Rainfall Intensity (in/hr)	=	**7.5**
(25 yr @ 5 min/ Orange County, NY's Rainfall Intensity Curves)		
A = Drainage Area (acres)	=	**0.72**
Q = Peak Flow Rate (cfs) =	=	**5.4**

Mannings

V = velocity (ft/sec)	=	5.70	
k = unit system factor	=	1.49	
n = manning's roughness coeff.	=	**0.01**	
R = hydraulic radius (ft)	=	0.31	HDPE
S = Slope (ft/ft)	=	**0.01**	
P = Pipe Size (in)	=	**15**	
Q = Capacity (cfs)	=	**7.00**	

Capacity (Is Capacity > Peak flow?) **TRUE**

Drainage to CB-4A

Rational Method

C = Runoff Coefficent	=	**0.95**
I = Rainfall Intensity (in/hr)	=	**7.5**
(25 yr @ 5 min/ Orange County, NY's Rainfall Intensity Curves)		
A = Drainage Area (acres)	=	**0.86**
Q = Peak Flow Rate (cfs) =	=	**6.1**

Mannings

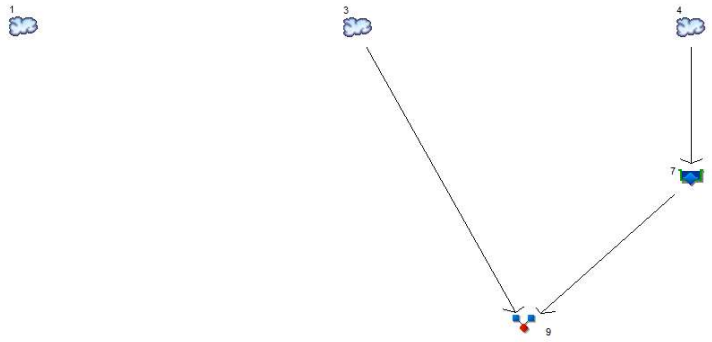
V = velocity (ft/sec)	=	5.70	
k = unit system factor	=	1.49	
n = manning's roughness coeff.	=	**0.01**	
R = hydraulic radius (ft)	=	0.31	HDPE
S = Slope (ft/ft)	=	**0.01**	
P = Pipe Size (in)	=	**15**	
Q = Capacity (cfs)	=	**7.00**	

Capacity (Is Capacity > Peak flow?) **TRUE**

APPENDIX D: HYDRAFLOW MODELING OUTPUT

Watershed Model Schematic

Hydraflow Hydrographs by Intelisolve v9.1



Legend

Hyd.	Origin	Description
1	SCS Runoff	EDA
3	SCS Runoff	PDA-1
4	SCS Runoff	PDA-2
7	Reservoir	Underground Detention
9	Combine	Total PDA

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	3.089	-------	-------	-------	7.539	-------	-------	15.36	EDA
3	SCS Runoff	-------	2.020	-------	-------	-------	4.319	-------	-------	8.242	PDA-1
4	SCS Runoff	-------	2.524	-------	-------	-------	5.398	-------	-------	10.30	PDA-2
7	Reservoir	4	0.129	-------	-------	-------	3.347	-------	-------	7.639	Underground Detention
9	Combine	3, 7,	2.120	-------	-------	-------	6.722	-------	-------	15.06	Total PDA

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	3.089	2	728	11,865	----	------	------	EDA
3	SCS Runoff	2.020	2	724	6,103	----	------	------	PDA-1
4	SCS Runoff	2.524	2	724	7,629	----	------	------	PDA-2
7	Reservoir	0.129	2	864	7,624	4	115.79	4,154	Underground Detention
9	Combine	2.120	2	724	13,727	3, 7,	------	------	Total PDA

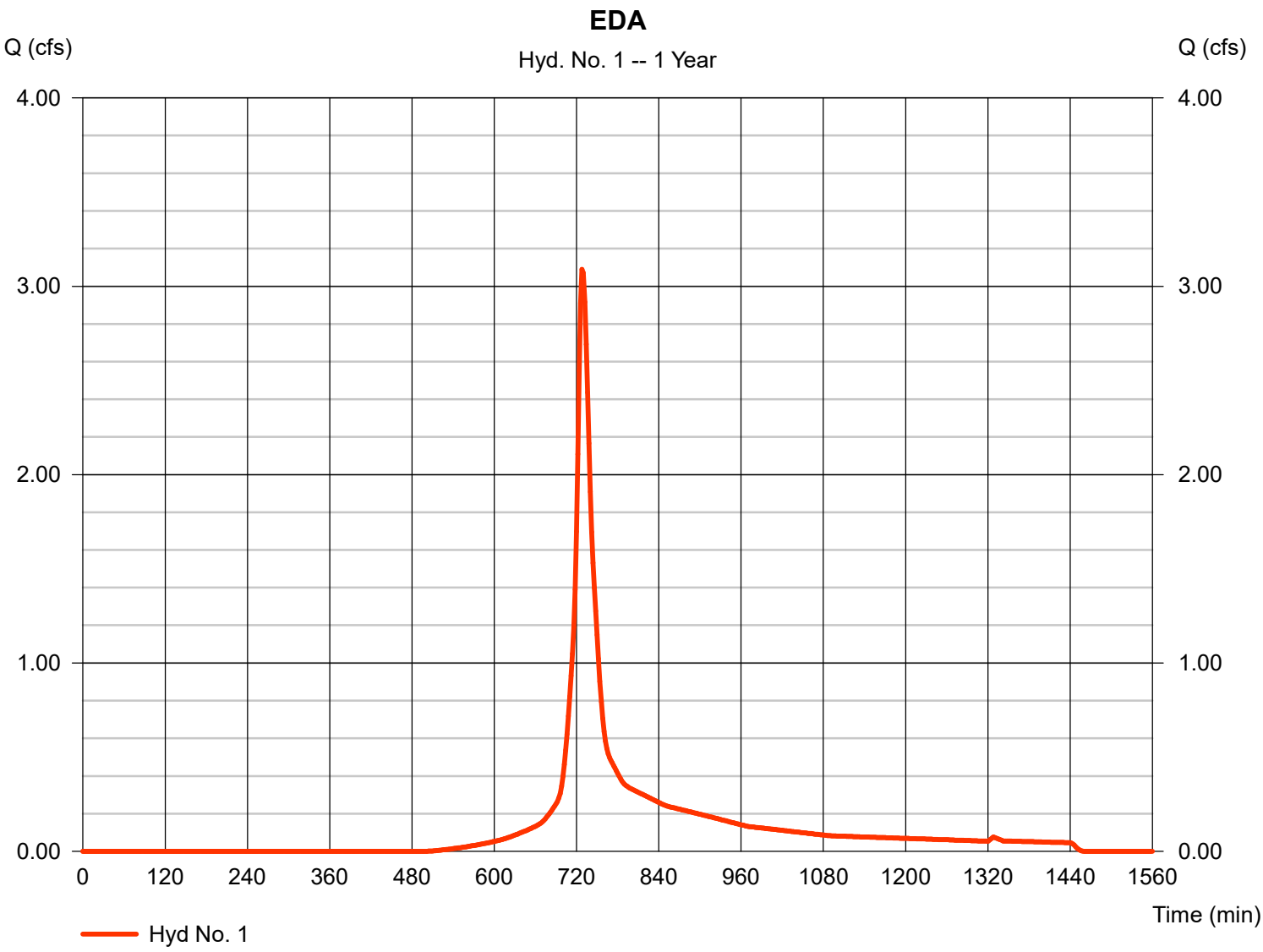
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 1

EDA

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.089 cfs
Storm frequency	=	1 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	11,865 cuft
Drainage area	=	2.250 ac	Curve number	=	86
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	12.00 min
Total precip.	=	2.70 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



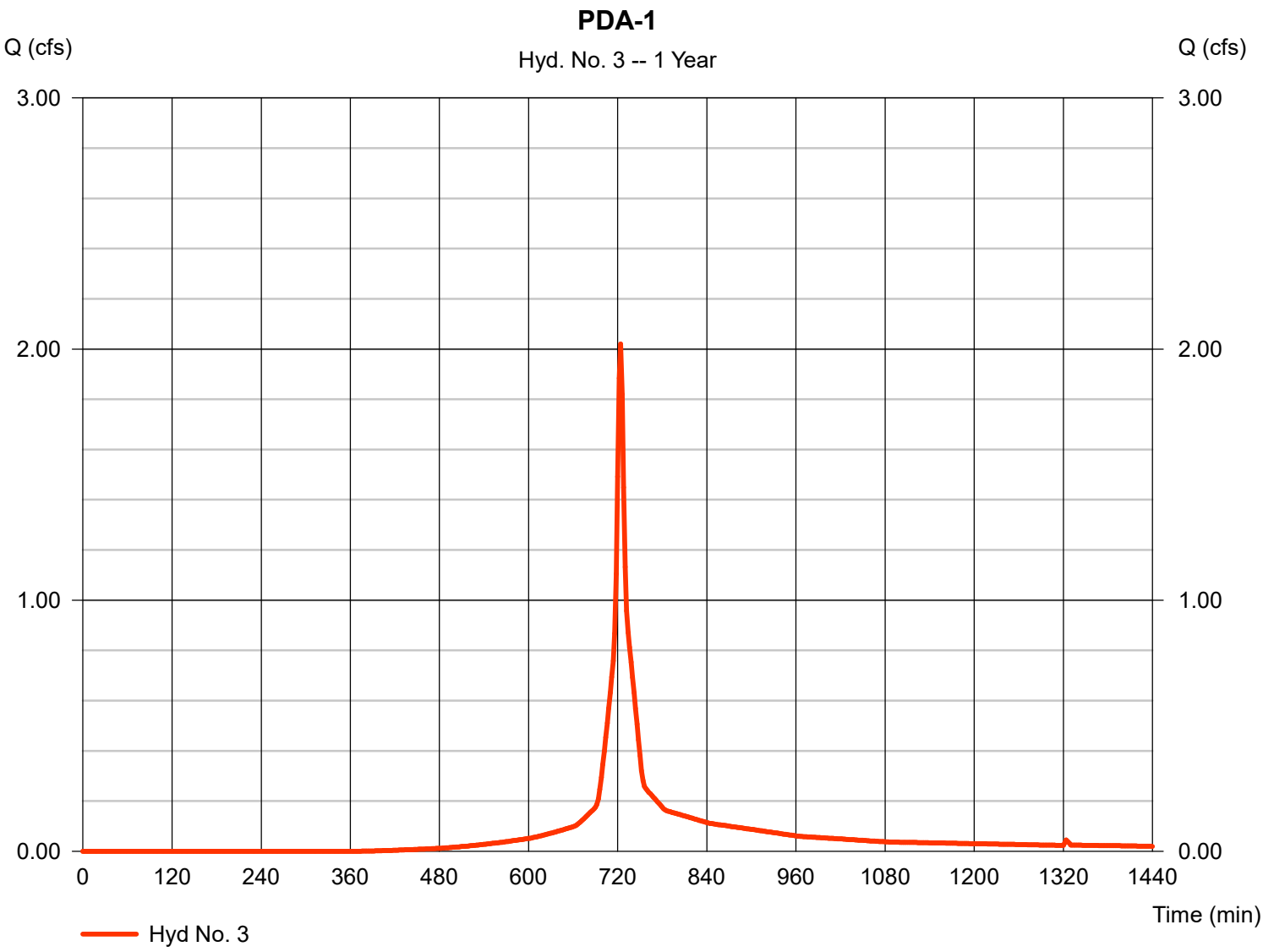
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 3

PDA-1

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.020 cfs
Storm frequency	=	1 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	6,103 cuft
Drainage area	=	1.000 ac	Curve number	=	91
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	2.70 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



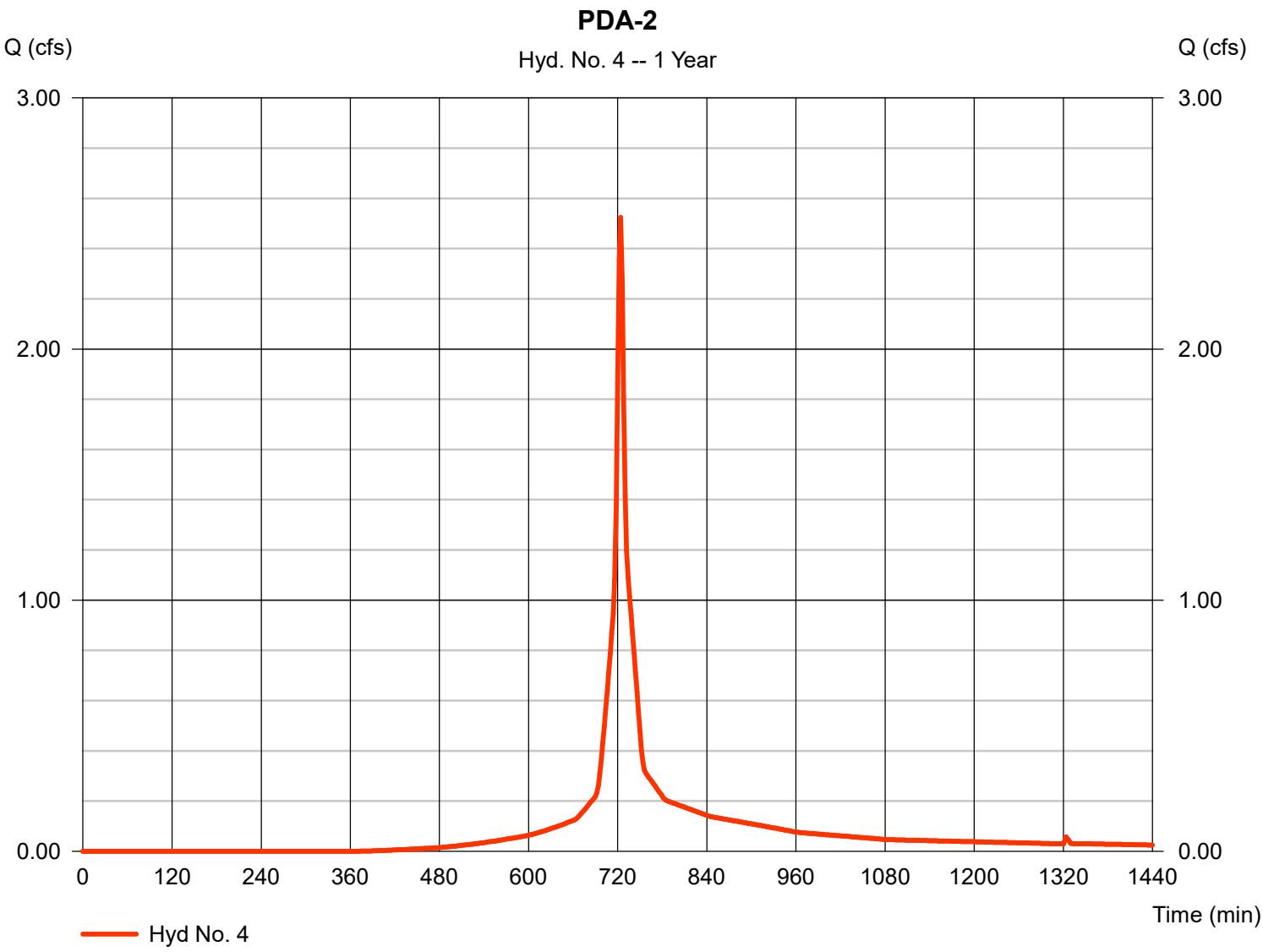
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 4

PDA-2

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.524 cfs
Storm frequency	=	1 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	7,629 cuft
Drainage area	=	1.250 ac	Curve number	=	91
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	2.70 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

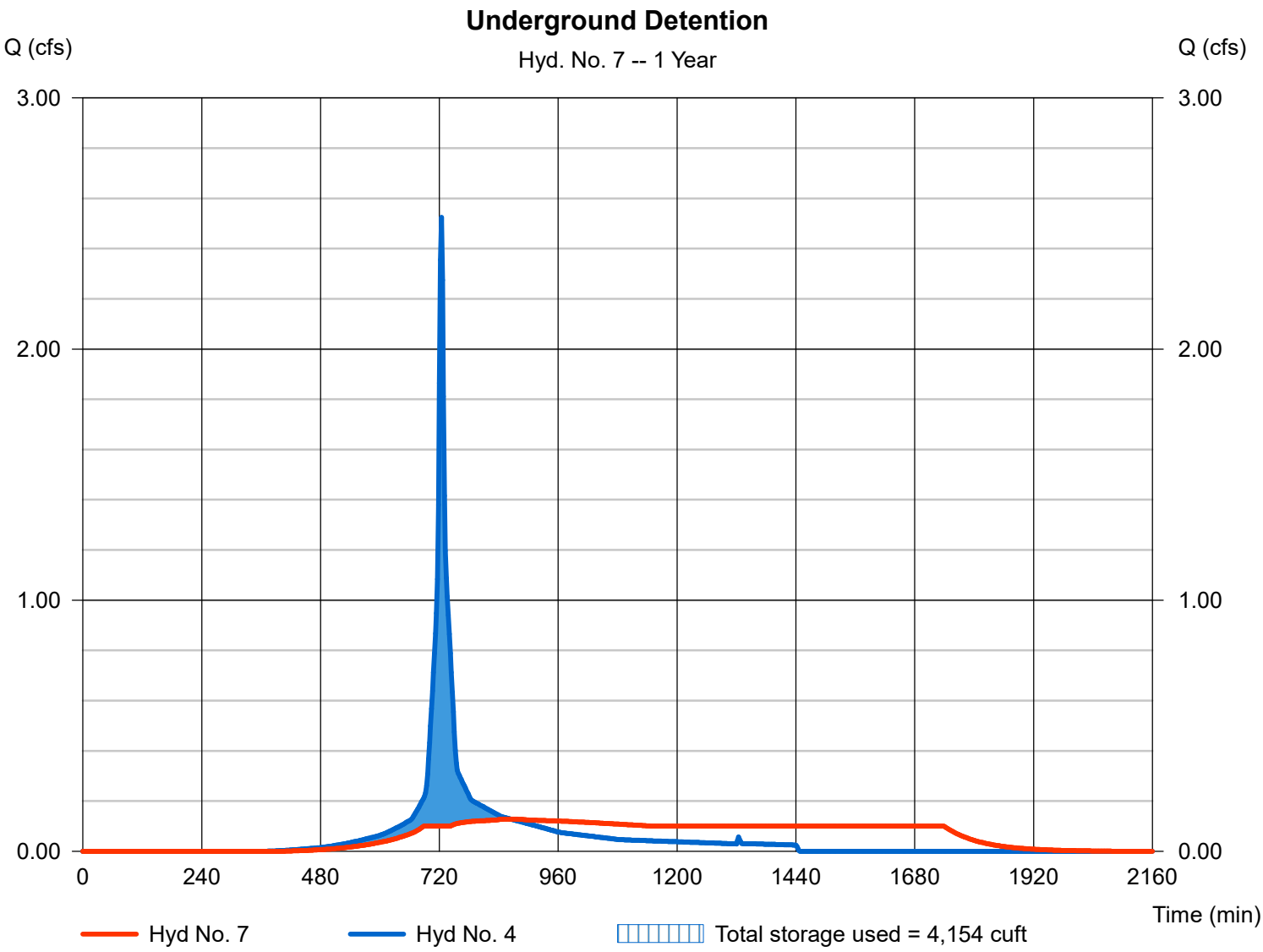
Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 7

Underground Detention

Hydrograph type	=	Reservoir	Peak discharge	=	0.129 cfs
Storm frequency	=	1 yrs	Time to peak	=	864 min
Time interval	=	2 min	Hyd. volume	=	7,624 cuft
Inflow hyd. No.	=	4 - PDA-2	Max. Elevation	=	115.79 ft
Reservoir name	=	Underground	Max. Storage	=	4,154 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Pond No. 1 - Underground

Pond Data

UG Chambers - Invert elev. = 114.00 ft, Rise x Span = 3.75 x 6.42 ft, Barrel Len = 77.00 ft, No. Barrels = 4, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 113.50 ft, Width = 7.50 ft, Height = 4.75 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	113.50	n/a	0	0
0.48	113.98	n/a	439	439
0.95	114.45	n/a	972	1,411
1.43	114.93	n/a	993	2,403
1.90	115.40	n/a	974	3,378
2.38	115.88	n/a	946	4,323
2.85	116.35	n/a	904	5,227
3.33	116.83	n/a	846	6,073
3.80	117.30	n/a	762	6,836
4.28	117.78	n/a	610	7,446
4.75	118.25	n/a	439	7,885

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	12.00	0.00	0.00
Span (in)	= 24.00	15.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 113.50	115.80	0.00	0.00
Length (ft)	= 30.00	0.00	0.00	0.00
Slope (%)	= 1.50	0.00	0.00	n/a
N-Value	= .012	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	113.50	0.00	0.00	---	---	---	---	---	---	---	---	0.00
0.05	44	113.55	0.00	0.00	---	---	---	---	---	---	---	0.01	0.01
0.10	88	113.60	0.00	0.00	---	---	---	---	---	---	---	0.02	0.02
0.14	132	113.64	0.00	0.00	---	---	---	---	---	---	---	0.03	0.03
0.19	176	113.69	0.00	0.00	---	---	---	---	---	---	---	0.04	0.04
0.24	219	113.74	0.00	0.00	---	---	---	---	---	---	---	0.05	0.05
0.29	263	113.79	0.00	0.00	---	---	---	---	---	---	---	0.06	0.06
0.33	307	113.83	0.00	0.00	---	---	---	---	---	---	---	0.07	0.07
0.38	351	113.88	0.00	0.00	---	---	---	---	---	---	---	0.08	0.08
0.43	395	113.93	0.00	0.00	---	---	---	---	---	---	---	0.09	0.09
0.48	439	113.98	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.52	536	114.02	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.57	633	114.07	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.62	730	114.12	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.67	828	114.17	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.71	925	114.21	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.76	1,022	114.26	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.81	1,119	114.31	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.86	1,216	114.36	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.90	1,314	114.40	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
0.95	1,411	114.45	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.00	1,510	114.50	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.05	1,609	114.55	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.09	1,708	114.59	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.14	1,808	114.64	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.19	1,907	114.69	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.24	2,006	114.74	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.28	2,106	114.78	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.33	2,205	114.83	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.38	2,304	114.88	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.43	2,403	114.93	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.47	2,501	114.97	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10

Continues on next page...

Underground

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.52	2,598	115.02	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.57	2,696	115.07	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.62	2,793	115.12	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.66	2,891	115.16	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.71	2,988	115.21	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.76	3,085	115.26	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.81	3,183	115.31	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.85	3,280	115.35	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.90	3,378	115.40	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
1.95	3,472	115.45	0.00	0.00	---	---	---	---	---	---	---	0.10	0.10
2.00	3,567	115.50	0.00	0.00	---	---	---	---	---	---	---	0.11	0.11
2.04	3,661	115.54	0.00	0.00	---	---	---	---	---	---	---	0.11	0.11
2.09	3,756	115.59	0.00	0.00	---	---	---	---	---	---	---	0.11	0.11
2.14	3,851	115.64	0.00	0.00	---	---	---	---	---	---	---	0.12	0.12
2.19	3,945	115.69	0.00	0.00	---	---	---	---	---	---	---	0.12	0.12
2.23	4,040	115.73	0.00	0.00	---	---	---	---	---	---	---	0.12	0.12
2.28	4,134	115.78	0.00	0.00	---	---	---	---	---	---	---	0.12	0.12
2.33	4,229	115.83	0.02 ic	0.02 ic	---	---	---	---	---	---	---	0.13	0.15
2.38	4,323	115.88	0.09 ic	0.09 ic	---	---	---	---	---	---	---	0.13	0.22
2.42	4,414	115.92	0.18 ic	0.18 ic	---	---	---	---	---	---	---	0.13	0.32
2.47	4,504	115.97	0.30 ic	0.30 ic	---	---	---	---	---	---	---	0.14	0.43
2.52	4,595	116.02	0.44 ic	0.43 ic	---	---	---	---	---	---	---	0.14	0.57
2.57	4,685	116.07	0.60 ic	0.58 ic	---	---	---	---	---	---	---	0.14	0.72
2.61	4,775	116.11	0.74 ic	0.74 ic	---	---	---	---	---	---	---	0.15	0.89
2.66	4,866	116.16	0.95 ic	0.92 ic	---	---	---	---	---	---	---	0.15	1.07
2.71	4,956	116.21	1.13 ic	1.11 ic	---	---	---	---	---	---	---	0.15	1.26
2.75	5,047	116.26	1.34 ic	1.31 ic	---	---	---	---	---	---	---	0.15	1.46
2.80	5,137	116.30	1.56 ic	1.52 ic	---	---	---	---	---	---	---	0.16	1.67
2.85	5,227	116.35	1.74 ic	1.74 ic	---	---	---	---	---	---	---	0.16	1.90
2.90	5,312	116.40	1.99 ic	1.97 ic	---	---	---	---	---	---	---	0.16	2.13
2.95	5,397	116.45	2.20 ic	2.20 ic	---	---	---	---	---	---	---	0.16	2.37
2.99	5,481	116.49	2.48 ic	2.45 ic	---	---	---	---	---	---	---	0.17	2.62
3.04	5,566	116.54	2.71 ic	2.71 ic	---	---	---	---	---	---	---	0.17	2.88
3.09	5,650	116.59	3.03 ic	2.97 ic	---	---	---	---	---	---	---	0.17	3.14
3.13	5,735	116.64	3.27 ic	3.25 ic	---	---	---	---	---	---	---	0.17	3.42
3.18	5,820	116.68	3.53 ic	3.53 ic	---	---	---	---	---	---	---	0.17	3.70
3.23	5,904	116.73	3.90 ic	3.82 ic	---	---	---	---	---	---	---	0.18	3.99
3.28	5,989	116.78	4.17 ic	4.11 ic	---	---	---	---	---	---	---	0.18	4.29
3.33	6,073	116.83	4.44 ic	4.36 ic	---	---	---	---	---	---	---	0.18	4.54
3.37	6,150	116.87	4.58 ic	4.55 ic	---	---	---	---	---	---	---	0.18	4.73
3.42	6,226	116.92	4.74 ic	4.74 ic	---	---	---	---	---	---	---	0.18	4.92
3.47	6,302	116.97	5.01 ic	4.92 ic	---	---	---	---	---	---	---	0.18	5.10
3.51	6,378	117.02	5.16 ic	5.09 ic	---	---	---	---	---	---	---	0.18	5.27
3.56	6,455	117.06	5.31 ic	5.26 ic	---	---	---	---	---	---	---	0.18	5.44
3.61	6,531	117.11	5.46 ic	5.42 ic	---	---	---	---	---	---	---	0.18	5.60
3.66	6,607	117.16	5.61 ic	5.57 ic	---	---	---	---	---	---	---	0.18	5.75
3.70	6,683	117.21	5.76 ic	5.73 ic	---	---	---	---	---	---	---	0.18	5.91
3.75	6,759	117.25	5.91 ic	5.87 ic	---	---	---	---	---	---	---	0.18	6.05
3.80	6,836	117.30	6.06 ic	6.02 ic	---	---	---	---	---	---	---	0.18	6.20
3.85	6,897	117.35	6.22 ic	6.16 ic	---	---	---	---	---	---	---	0.18	6.34
3.90	6,958	117.40	6.37 ic	6.30 ic	---	---	---	---	---	---	---	0.18	6.48
3.94	7,019	117.44	6.53 ic	6.43 ic	---	---	---	---	---	---	---	0.19	6.62
3.99	7,080	117.49	6.57 ic	6.57 ic	---	---	---	---	---	---	---	0.19	6.75
4.04	7,141	117.54	6.70 ic	6.70 ic	---	---	---	---	---	---	---	0.19	6.89
4.09	7,202	117.59	6.85 ic	6.82 ic	---	---	---	---	---	---	---	0.19	7.01
4.13	7,263	117.63	7.00 ic	6.95 ic	---	---	---	---	---	---	---	0.19	7.14
4.18	7,324	117.68	7.16 ic	7.07 ic	---	---	---	---	---	---	---	0.20	7.27
4.23	7,385	117.73	7.19 ic	7.19 ic	---	---	---	---	---	---	---	0.20	7.39
4.28	7,446	117.78	7.32 ic	7.31 ic	---	---	---	---	---	---	---	0.20	7.51
4.32	7,490	117.82	7.48 ic	7.43 ic	---	---	---	---	---	---	---	0.20	7.63
4.37	7,534	117.87	7.64 ic	7.54 ic	---	---	---	---	---	---	---	0.20	7.74
4.42	7,578	117.92	7.65 ic	7.65 ic	---	---	---	---	---	---	---	0.20	7.85
4.47	7,621	117.97	7.80 ic	7.77 ic	---	---	---	---	---	---	---	0.20	7.97
4.51	7,665	118.01	7.96 ic	7.88 ic	---	---	---	---	---	---	---	0.20	8.08
4.56	7,709	118.06	7.98 ic	7.98 ic	---	---	---	---	---	---	---	0.20	8.18
4.61	7,753	118.11	8.12 ic	8.09 ic	---	---	---	---	---	---	---	0.20	8.29
4.66	7,797	118.16	8.28 ic	8.20 ic	---	---	---	---	---	---	---	0.20	8.40
4.70	7,841	118.20	8.30 ic	8.30 ic	---	---	---	---	---	---	---	0.20	8.50
4.75	7,885	118.25	8.44 ic	8.40 ic	---	---	---	---	---	---	---	0.20	8.60

...End

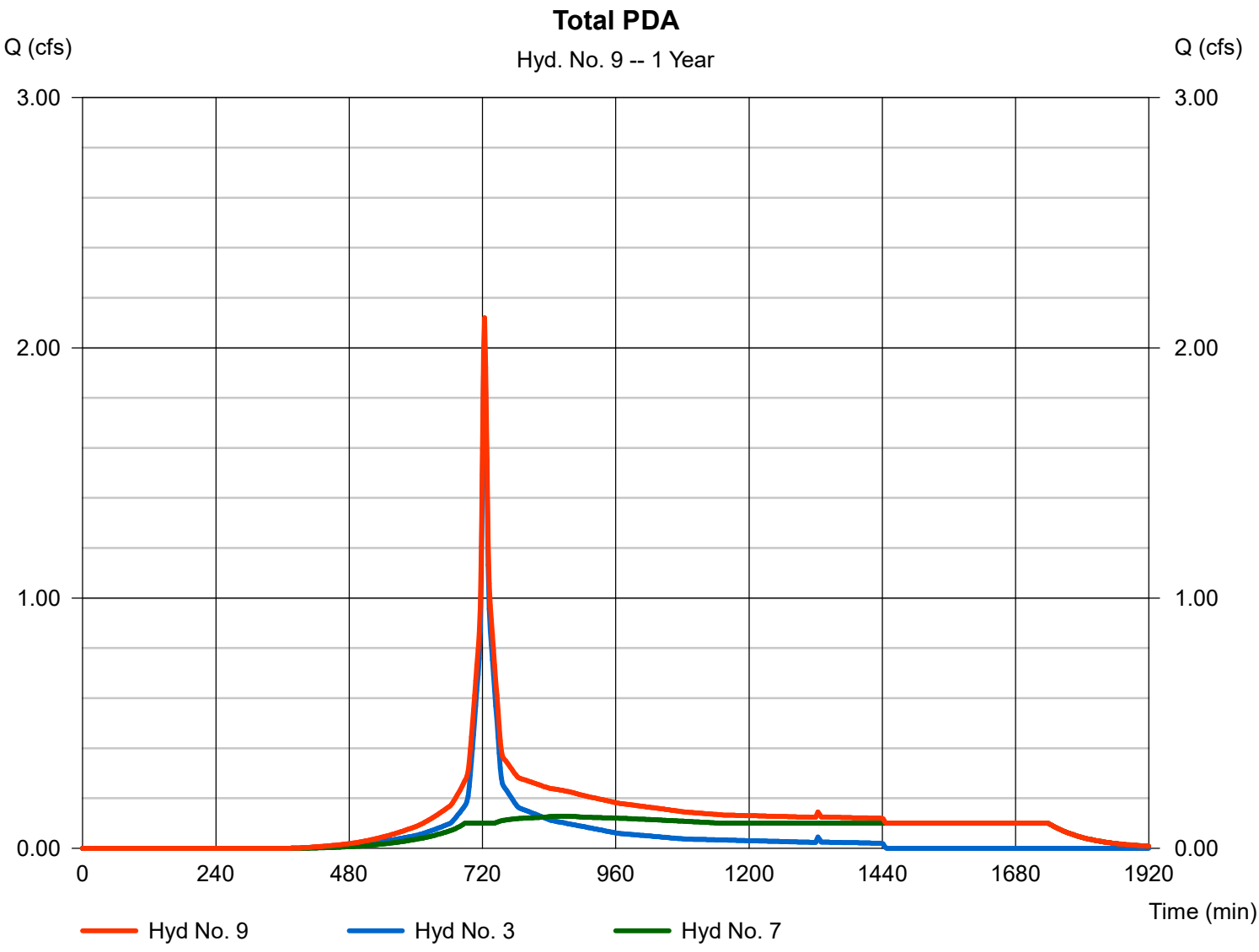
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 9

Total PDA

Hydrograph type	=	Combine	Peak discharge	=	2.120 cfs
Storm frequency	=	1 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	13,727 cuft
Inflow hyds.	=	3, 7	Contrib. drain. area	=	1.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	7.539	2	728	29,202	----	------	------	EDA
3	SCS Runoff	4.319	2	724	13,552	----	------	------	PDA-1
4	SCS Runoff	5.398	2	724	16,939	----	------	------	PDA-2
7	Reservoir	3.347	2	730	16,935	4	116.64	5,713	Underground Detention
9	Combine	6.722	2	726	30,487	3, 7,	------	------	Total PDA

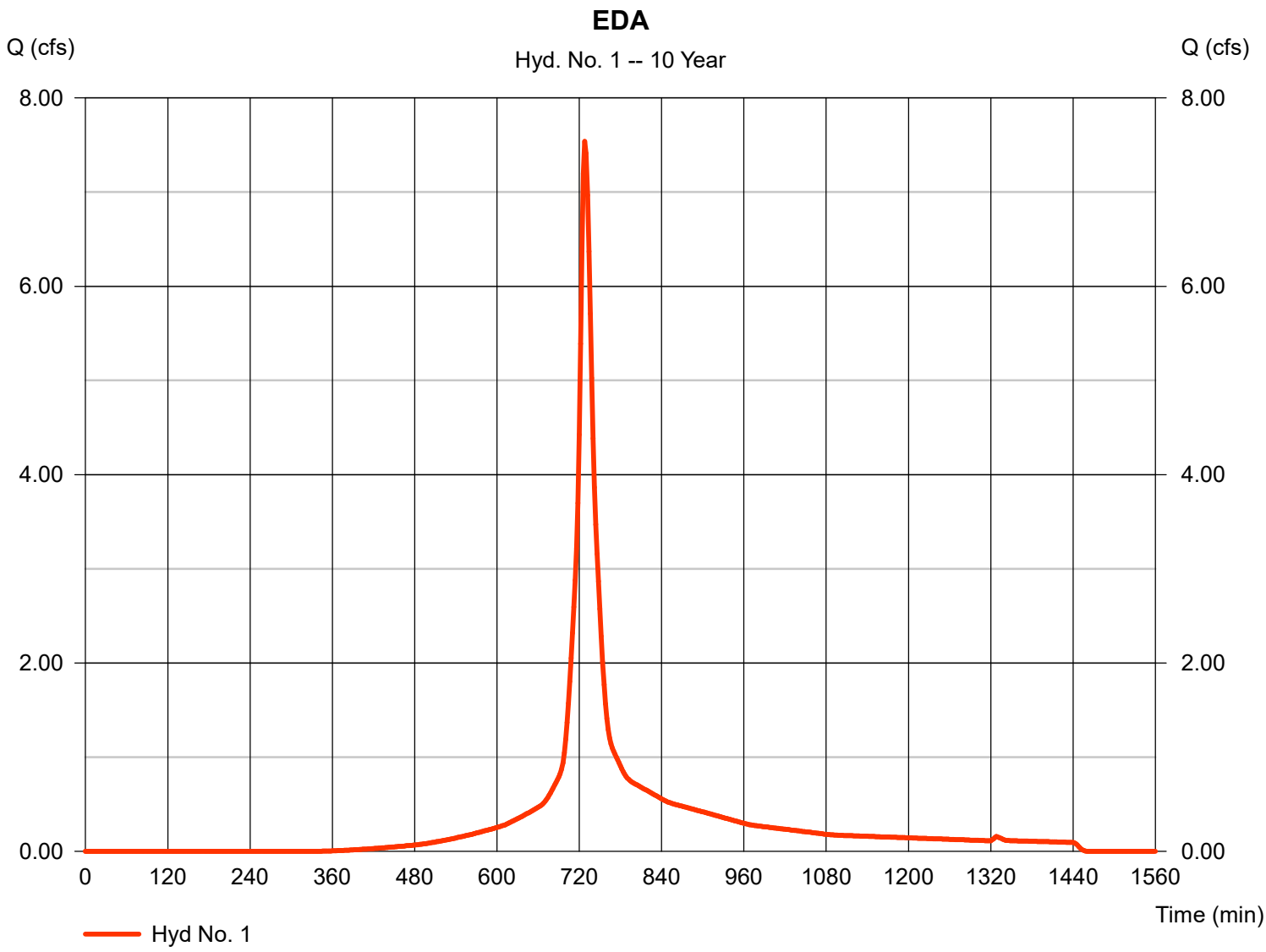
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 1

EDA

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.539 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	29,202 cuft
Drainage area	=	2.250 ac	Curve number	=	86
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	12.00 min
Total precip.	=	5.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



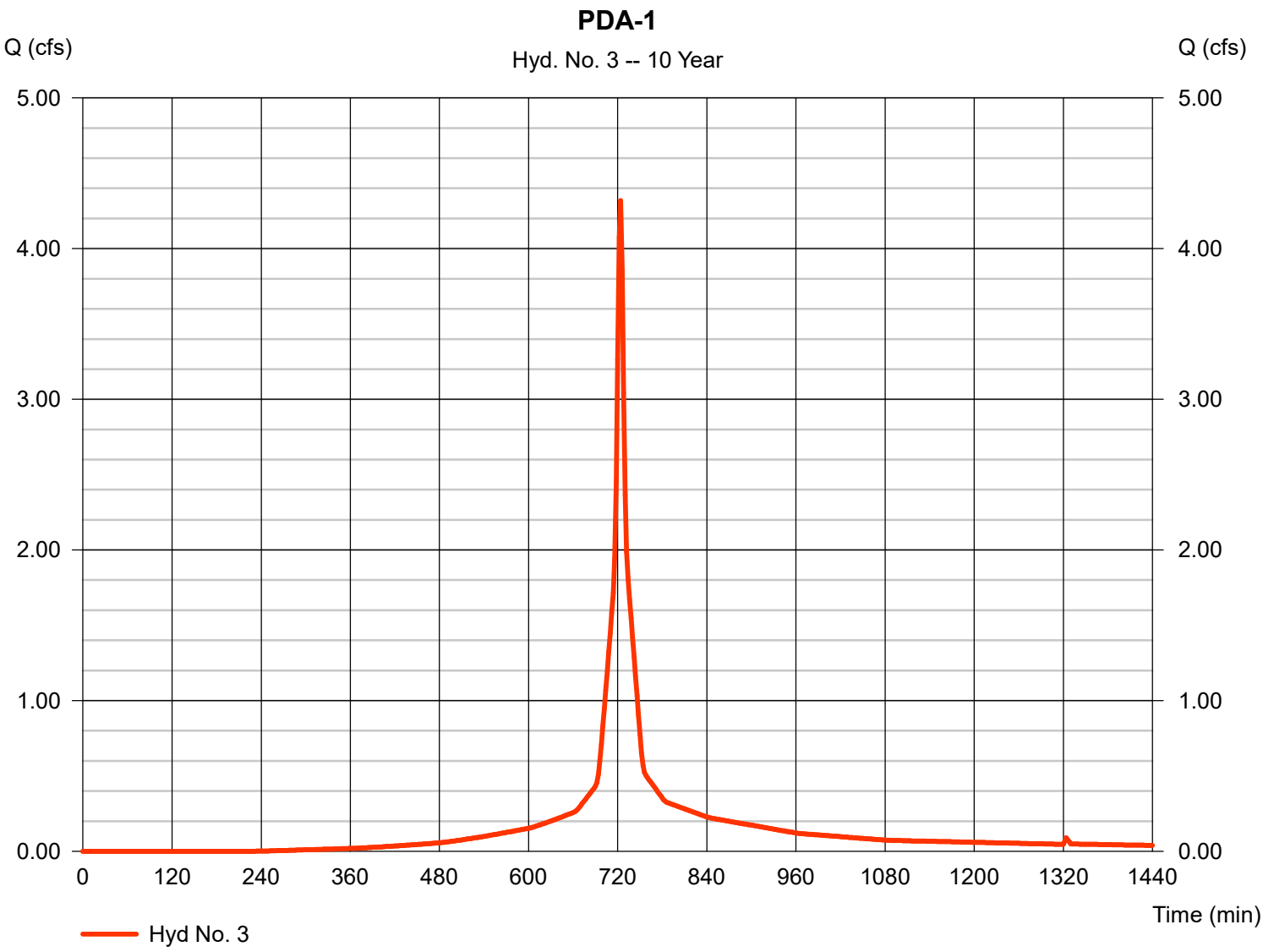
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 3

PDA-1

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.319 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	13,552 cuft
Drainage area	=	1.000 ac	Curve number	=	91
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



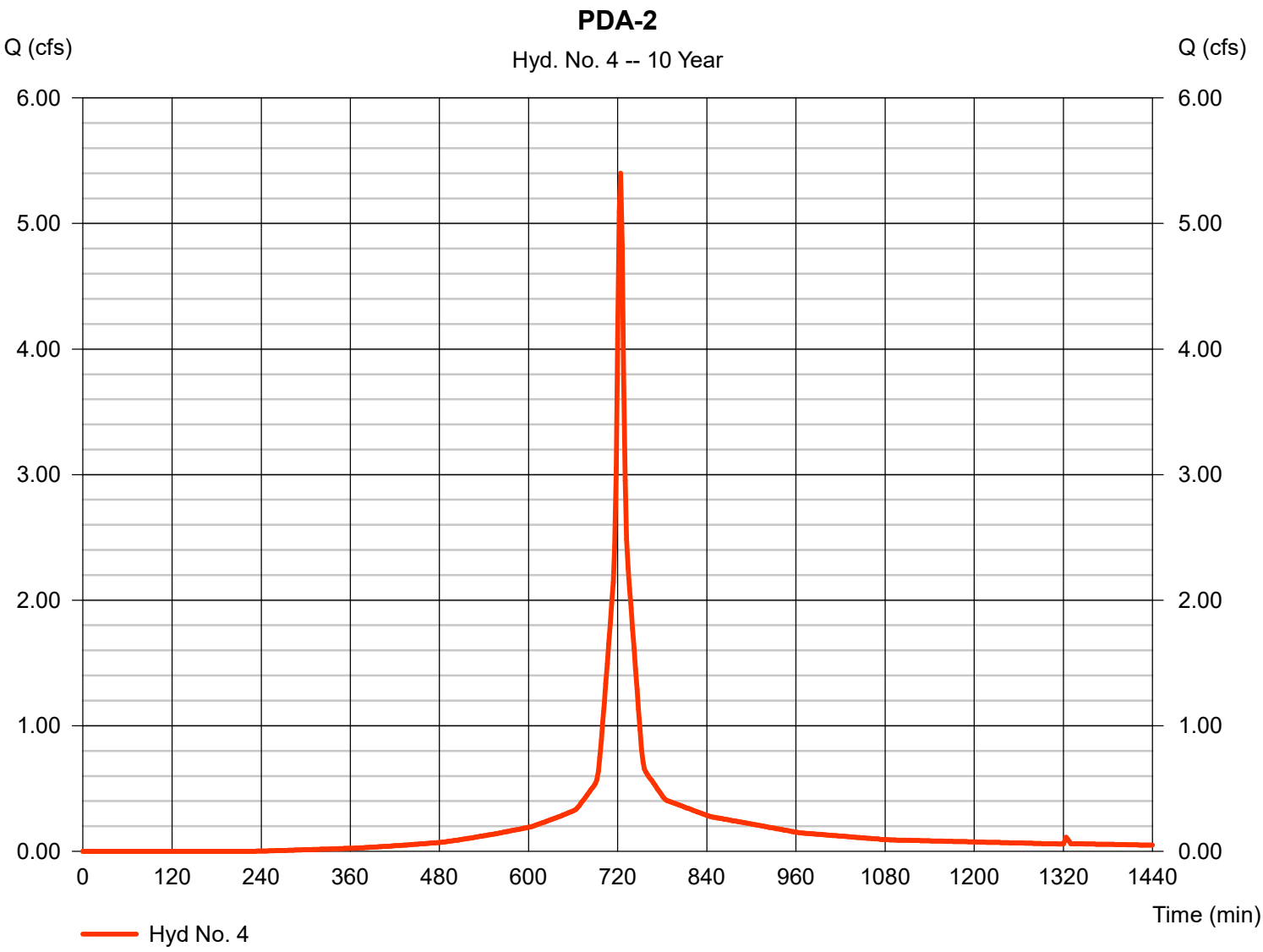
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 4

PDA-2

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.398 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	16,939 cuft
Drainage area	=	1.250 ac	Curve number	=	91
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

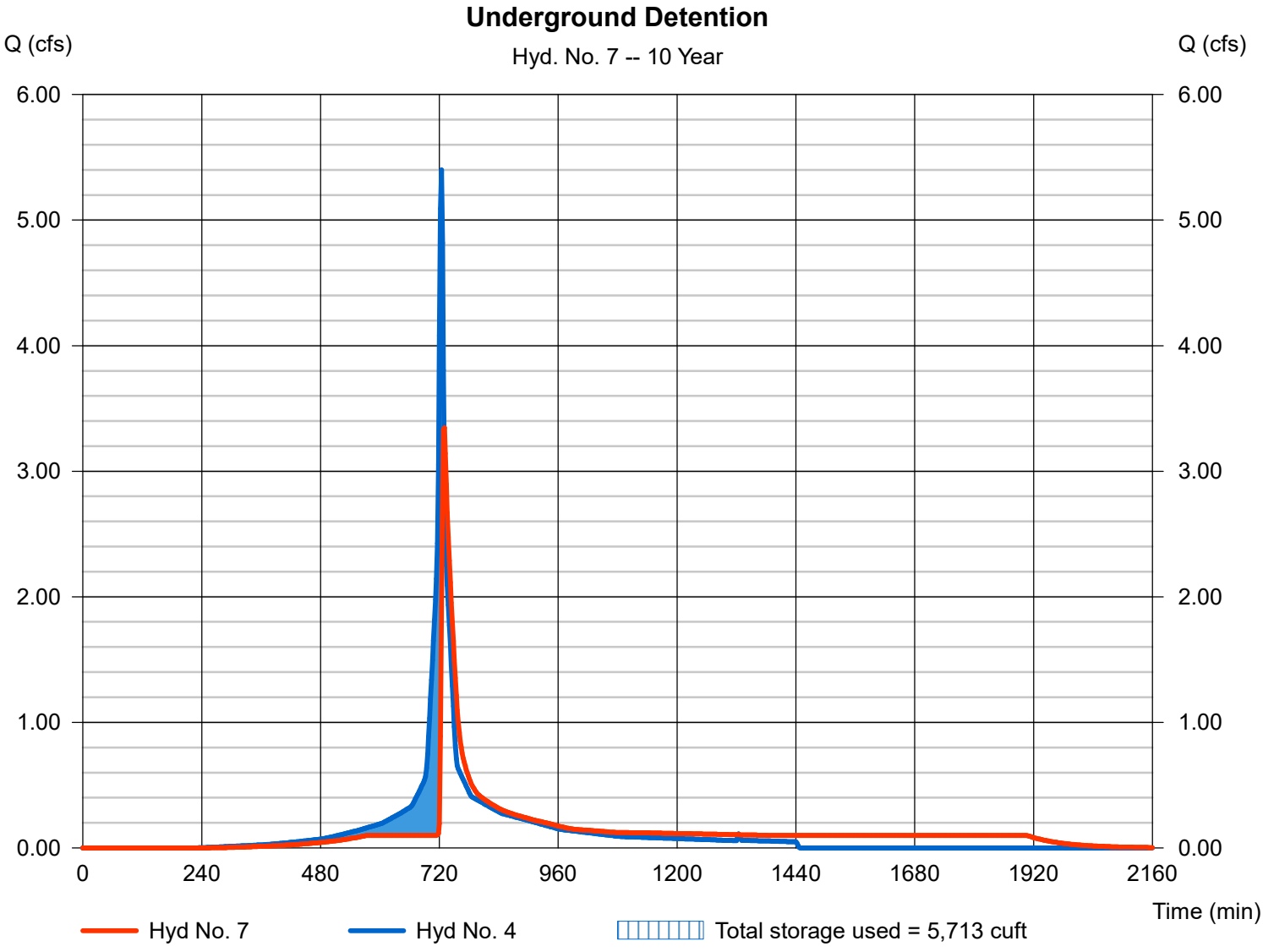
Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 7

Underground Detention

Hydrograph type	=	Reservoir	Peak discharge	=	3.347 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	16,935 cuft
Inflow hyd. No.	=	4 - PDA-2	Max. Elevation	=	116.64 ft
Reservoir name	=	Underground	Max. Storage	=	5,713 cuft

Storage Indication method used.



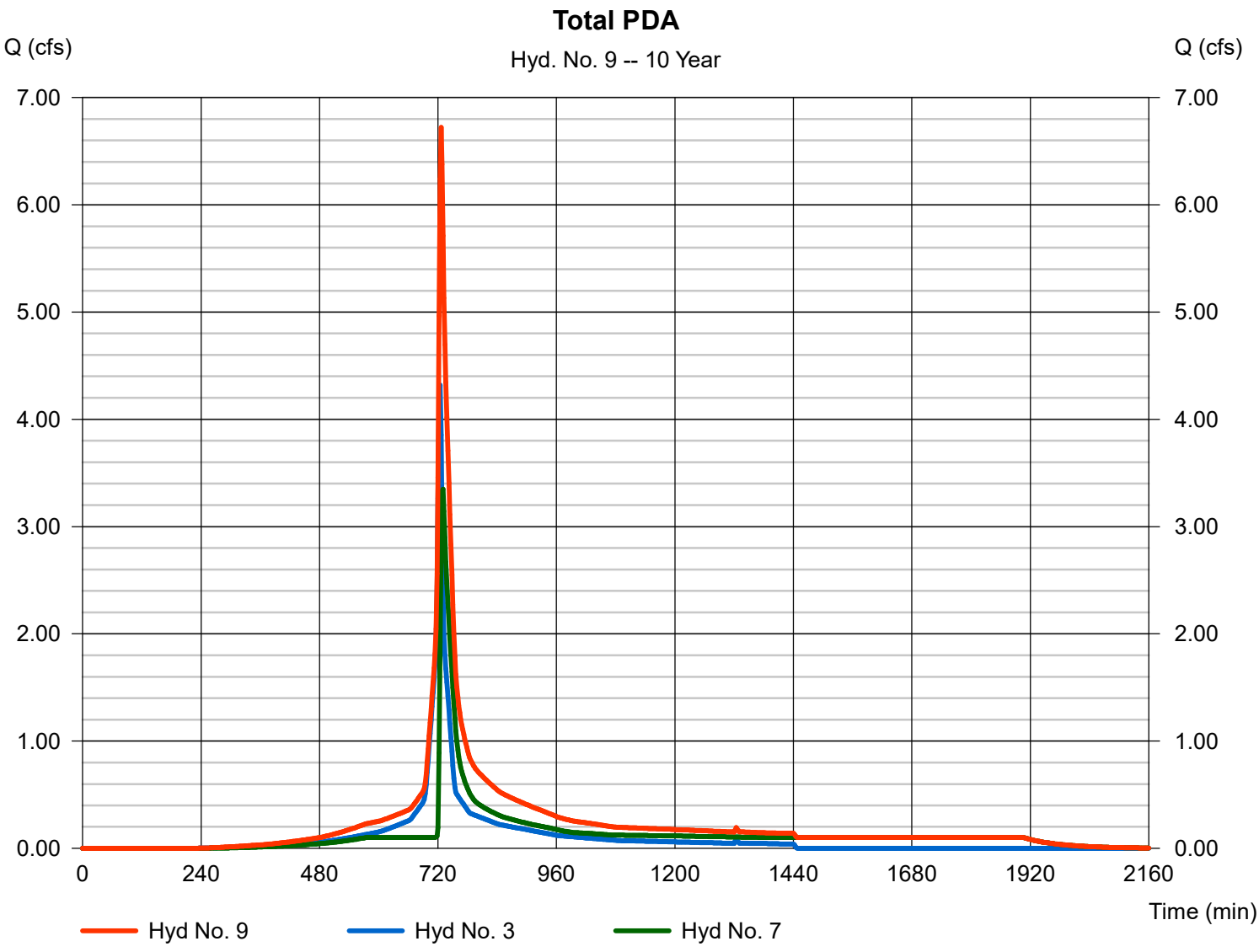
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 9

Total PDA

Hydrograph type	=	Combine	Peak discharge	=	6.722 cfs
Storm frequency	=	10 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	30,487 cuft
Inflow hyds.	=	3, 7	Contrib. drain. area	=	1.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	15.36	2	728	61,517	----	------	------	EDA
3	SCS Runoff	8.242	2	724	26,929	----	------	------	PDA-1
4	SCS Runoff	10.30	2	724	33,662	----	------	------	PDA-2
7	Reservoir	7.639	2	728	33,657	4	117.86	7,495	Underground Detention
9	Combine	15.06	2	724	60,586	3, 7,	------	------	Total PDA

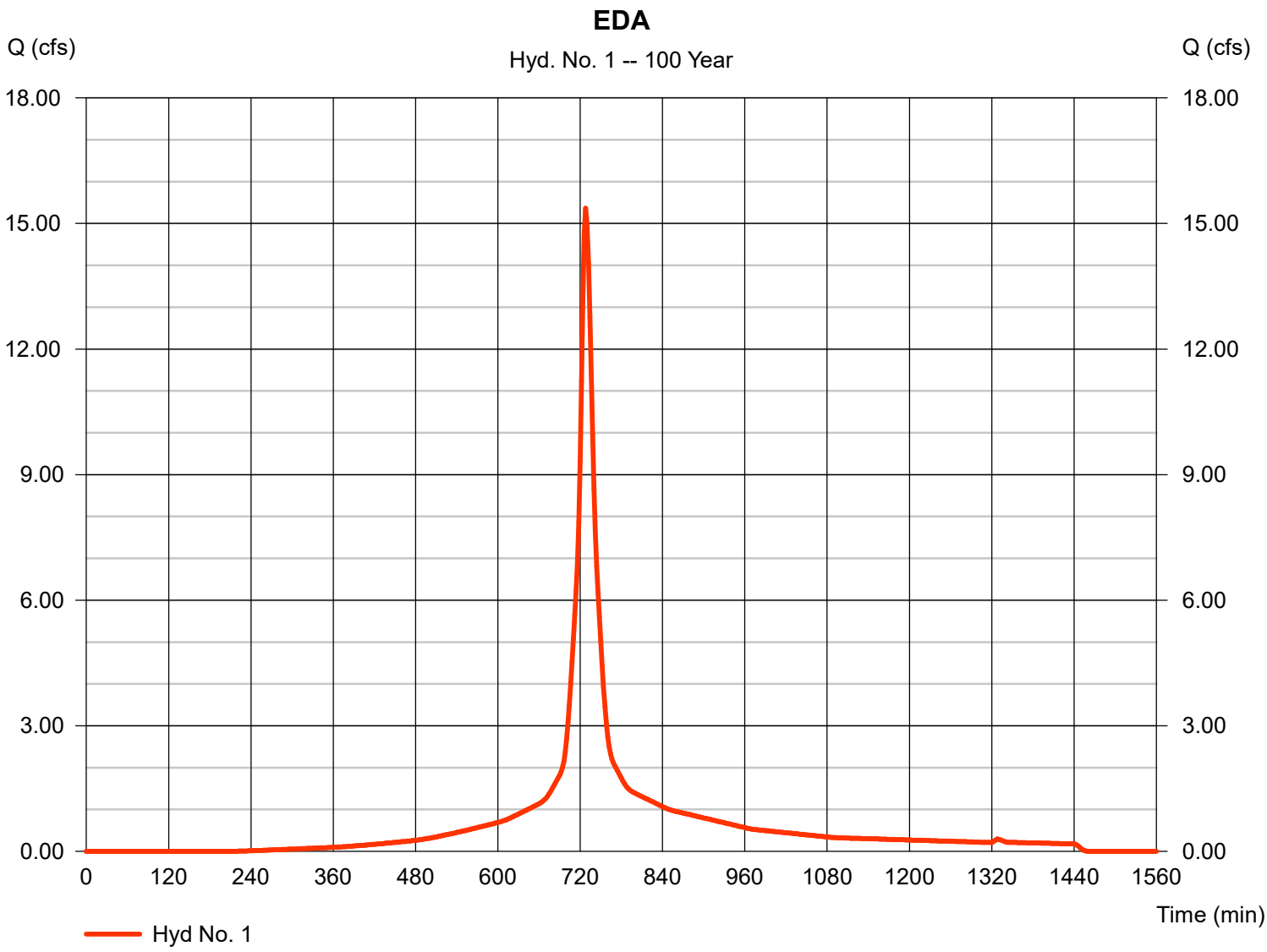
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 1

EDA

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.36 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	61,517 cuft
Drainage area	=	2.250 ac	Curve number	=	86
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	12.00 min
Total precip.	=	9.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



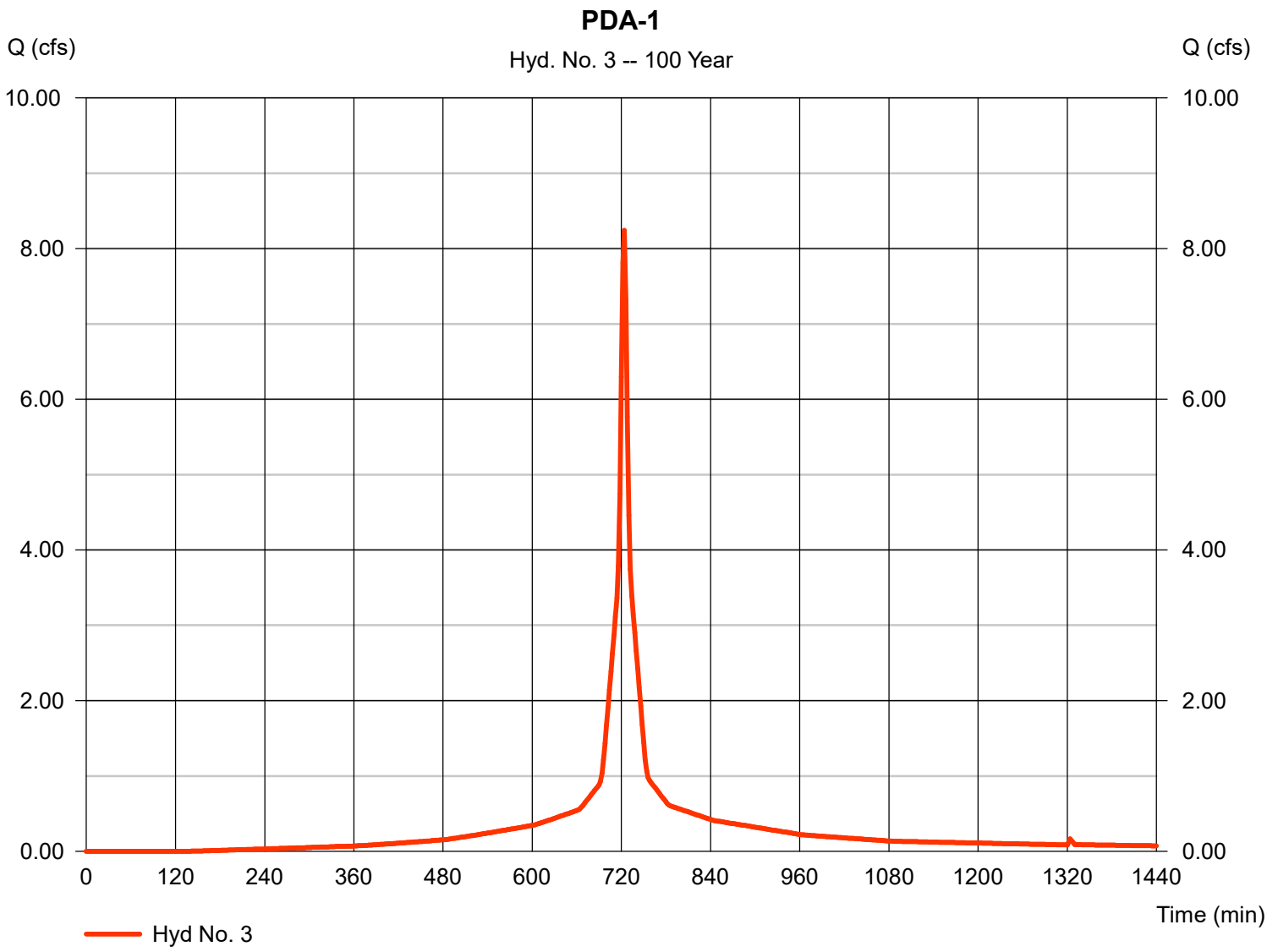
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 3

PDA-1

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.242 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	26,929 cuft
Drainage area	=	1.000 ac	Curve number	=	91
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	9.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



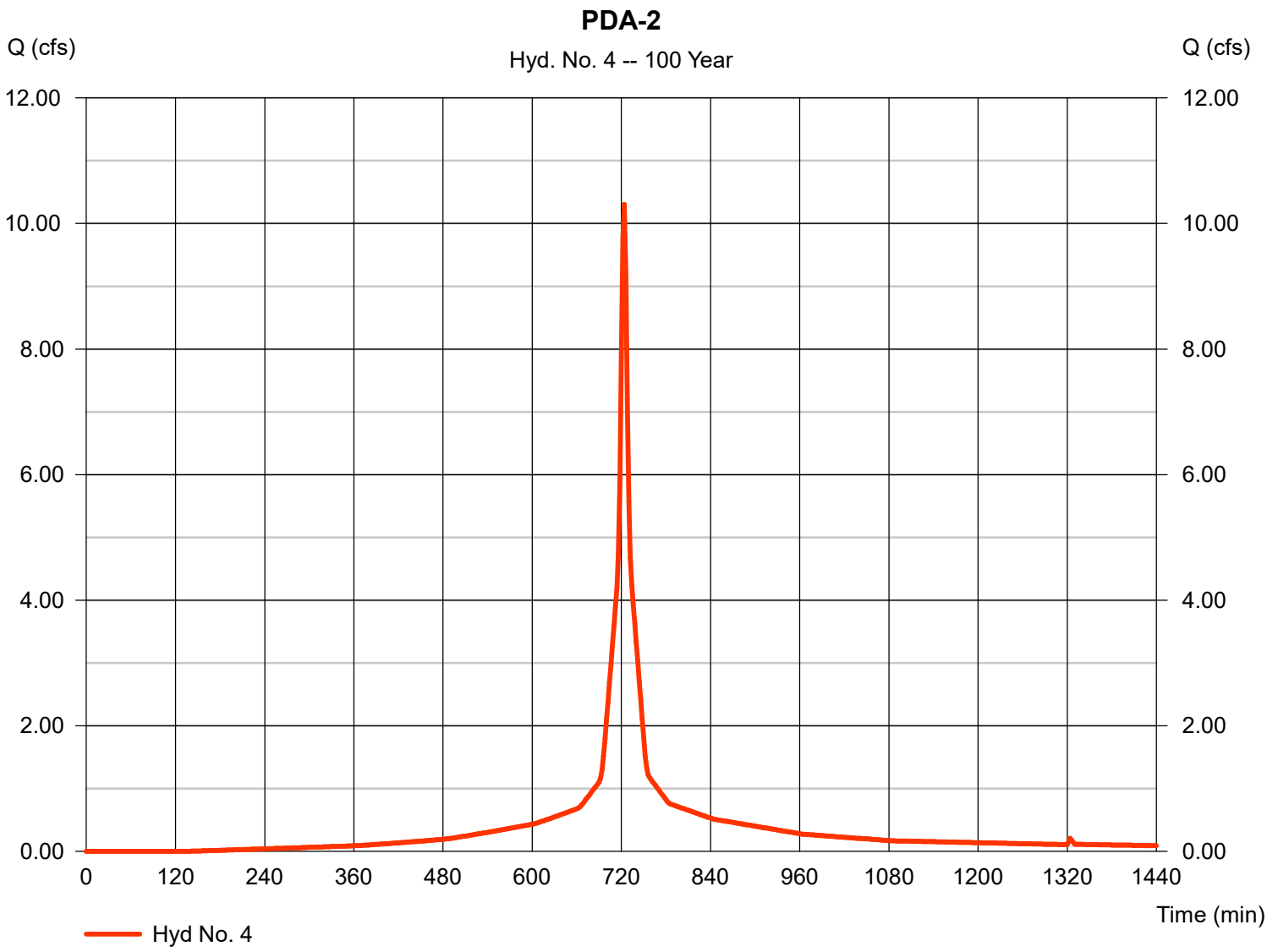
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 4

PDA-2

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.30 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	33,662 cuft
Drainage area	=	1.250 ac	Curve number	=	91
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	9.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

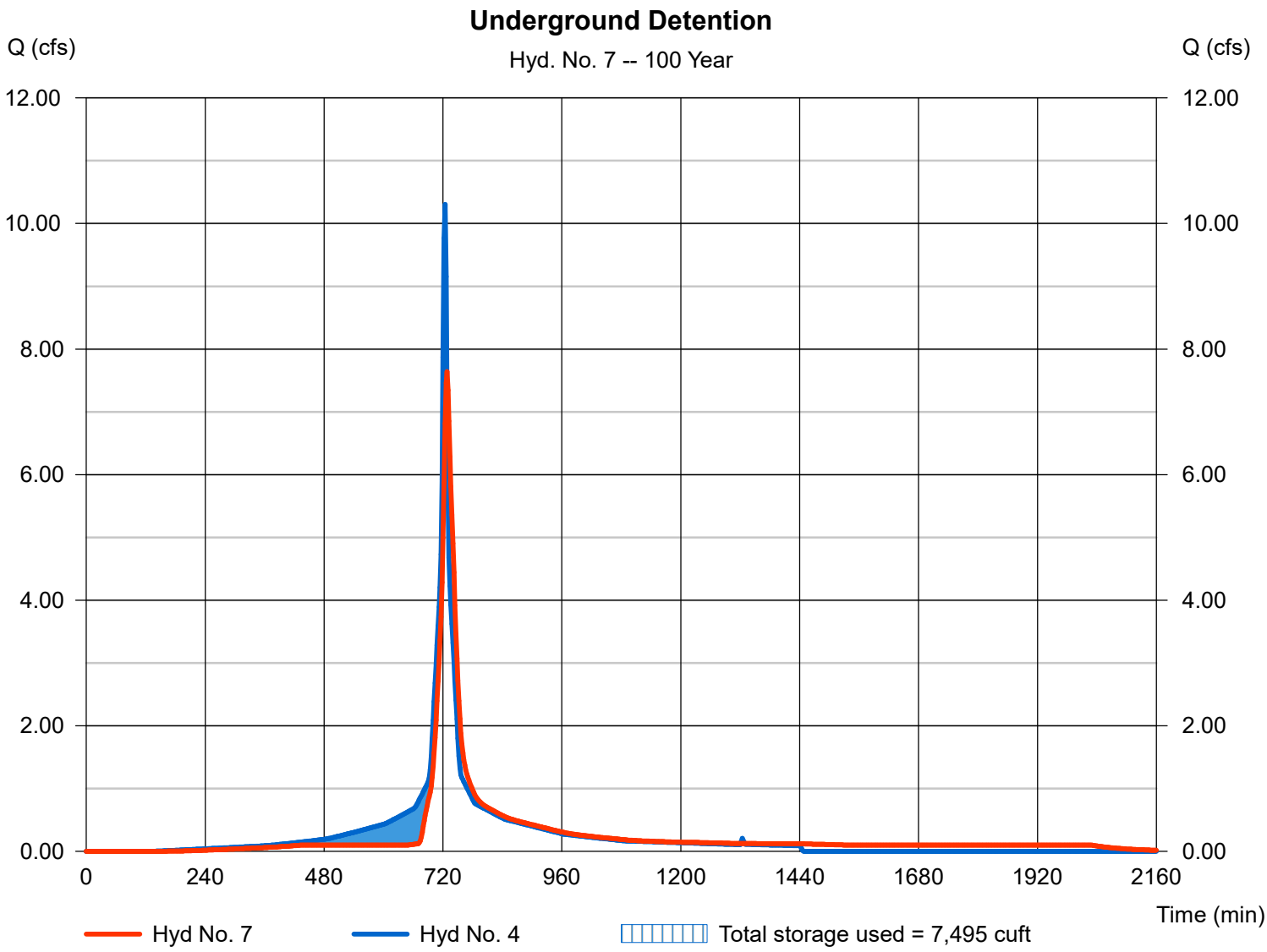
Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 7

Underground Detention

Hydrograph type	=	Reservoir	Peak discharge	=	7.639 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	33,657 cuft
Inflow hyd. No.	=	4 - PDA-2	Max. Elevation	=	117.86 ft
Reservoir name	=	Underground	Max. Storage	=	7,495 cuft

Storage Indication method used.



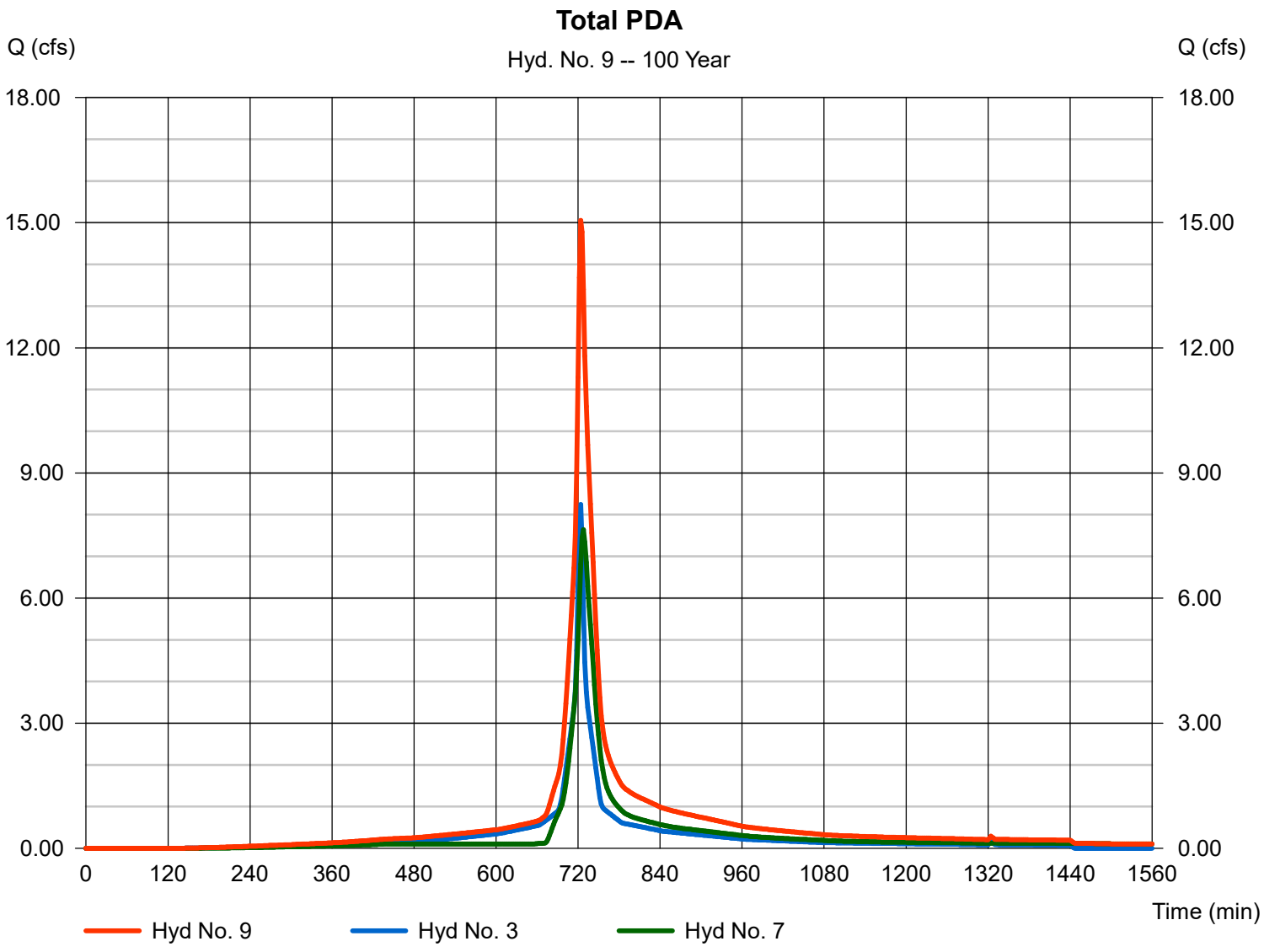
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Monday, Aug 1, 2016

Hyd. No. 9

Total PDA

Hydrograph type	= Combine	Peak discharge	= 15.06 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 60,586 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 1.000 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	24.5432	4.6000	0.6871	--------
3	0.0000	0.0000	0.0000	--------
5	31.8256	5.9000	0.6995	--------
10	21.3579	2.8000	0.5721	--------
25	48.2920	8.0000	0.7215	--------
50	37.3151	5.6000	0.6322	--------
100	70.1804	10.3000	0.7492	--------

File name: rockland.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.19	3.89	3.18	2.72	2.39	2.15	1.96	1.81	1.68	1.57	1.48	1.40
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.99	4.60	3.80	3.27	2.89	2.60	2.37	2.19	2.04	1.91	1.80	1.70
10	6.60	4.97	4.11	3.57	3.19	2.90	2.67	2.49	2.34	2.21	2.10	2.00
25	7.59	6.00	5.03	4.36	3.88	3.50	3.20	2.96	2.75	2.58	2.43	2.30
50	8.39	6.57	5.51	4.80	4.29	3.90	3.59	3.33	3.12	2.94	2.79	2.65
100	9.09	7.36	6.24	5.45	4.86	4.40	4.03	3.73	3.47	3.25	3.06	2.90

Tc = time in minutes. Values may exceed 60.

Precip. file name: orange.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.70	3.50	0.00	4.50	5.00	6.50	7.00	9.00
SCS 6-Hr	0.00	2.52	0.00	3.22	3.80	4.64	5.35	6.12
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX F: MAINTENANCE PLAN

Mid-Broadway Mixed-Use Development
Stormwater Management Maintenance Plan

Efficient and timely maintenance of the stormwater practices is necessary to ensure the proper function and longevity of the stormwater management system. The maintenance plan is an outline of the maintenance tasks and schedules. The maintenance is to be performed by the lease holder or their representative and contact information is presented below. Sample Maintenance Logs are attached.

Contact Information

Company Name: _____

Contact Name: _____

Address: _____

Phone: _____

1.1 GENERAL

- The maintenance plan must be evaluated for effectiveness at least annually and must be revised as needed.
- As-built plans shall be prepared and submitted by a NYS licensed land surveyor to the City Engineer to document all stormwater improvements at the end of construction.

1.2 VEGETATION/TREE-PLANTINGS

- The vegetative cover should be maintained at 85 percent. If vegetation has greater than 50 percent damage, the area should be reestablished in accordance with the original specifications and the inspection requirements presented above.
- All vegetation deficiencies should be addressed without the use of fertilizers and pesticides whenever possible.

1.3 POROUS PAVEMENT

- The primary goal of porous pavement maintenance is to prevent the pavement surface and/or the underlying infiltration bed from being clogged with fine sediments.
- Porous Pavement and surround areas should be checked for sediment deposits and debris bi-annually.
- Vacuuming of porous pavement will be performed on an as needed basis if infiltration deficiencies are observed.
- Sand and salt mixtures should not be utilized during snow removal.

1.4 HYDRODYNAMIC SEPARATOR (CDS UNITS)

- Visual inspections should be performed to determine there are no blockages or obstructions in the inlet and separation screen.
- The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system.
- The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated.

1.5 UNDERGROUND DETENTION SYSTEM

- Visual inspections through the inspection ports should be performed to check for debris and sediment build up.
- Sedimentation should be controlled in the underground system through the pretreatment provided by the hydrodynamic separator. If marked sedimentation is observed in the first row or sedimentation in the other rows may be indicative of a problem with the hydrodynamic separator. An inspection of the hydrodynamic separator should be performed.
- When the average depth of sediment exceeds 3 inches throughout the length of the chamber row, clean-out should be performed.
- Vacuuming of the detention system will be performed on an as needed basis if build-up is observed.
- Vacuuming of the detention system shall be performed through the outlet structure at the connection of the first row.

1.6 CATCH BASINS/STORMWATER COLLECTION PIPING

- Visual inspection of grates and remove any trash or debris.
- The sump area should be checked for debris and sedimentation. Remove sedimentation when within 6-inches below pipe invert.
- Stormwater conveyance piping may need to be cleaned out through hydro-excavating or alternative pipe cleaning method.

2.0 MAINTENANCE FREQUENCY

The frequencies in which maintenance items are performed on the Mid-Broadway Mixed-Use Development Site are outlined below. If the frequency appears in sufficient based on the level of sediment build up or erosion, modifications should be made to the maintenance plan.

Maintenance Item	Frequency
Vegetation	Bi-Annually (Spring & Fall) and after a 5-inch rainfall
Porous Pavement Inspections	Bi-Annually (Spring & Fall) and after a 5-inch rainfall
Hydrodynamic Separator (CDS Units)	Bi-Annually (Spring & Fall) and after a 5-inch rainfall
Underground Detention System	Bi-Annually (Spring & Fall) and after a 5-inch rainfall
Catch Basins/Stormwater Collection Piping	Quarterly (Winter, Spring, Summer, Fall) and after a 5-inch rainfall

Mid-Broadway Mixed-Use Site- Inspection Record

Date	Inspector	Items Checked (check all that apply)					Action Items
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	
		Vegetation/Tree-Plantings	Porous Pavement	Hydrodynamic Separator	Underground Detention	Catch Basins (Grates and Sump)	

CONTECH®
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CDS® Inspection and Maintenance Guide

CDS TECHNOLOGIES

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	yd3	m3
CDS2015-4	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Support

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.

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CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

APPENDIX E: EROSION CONTROL MEASURES

STANDARD AND SPECIFICATIONS FOR RECREATION AREA IMPROVEMENT

Definition

Establishing grasses, legumes, vines, shrubs, trees, or other plants, or selectively reducing stand density and trimming woody plants, to improve an area for recreation.

Purpose

To increase the attractiveness and usefulness of recreation areas and to protect the soil and plant resources.

Conditions Where Practice Applies

On any area planned for recreation use, lawns, and areas that will be maintained in a closely mowed condition.

Specifications

ESTABLISHING GRASSES (Turfgrass)

The following applies for playgrounds, parks, athletic fields, camping areas, picnic areas, passive recreation areas such as lawns, and similar areas.

1. Time of Planting

Fall planting is preferred. Seed after August 15. In the spring, plant until May 15.

If seeding is done between May 15 and August 15, irrigation may be necessary to ensure a successful seeding.

2. Site Preparation

A. Install needed water and erosion control measures and bring area to be seeded to desired grades. A minimum of 4 in. topsoil is required.

B. See Standard and Specification of Topsoiling.

C. Prepare seedbed by loosening soil to a depth of 4-6 inches.

D. Lime to a pH of 6.5.

E. **Fertilize as per soil test** or, if soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 850 pounds of 5-10-10 or equivalent per acre (20 lbs/1,000 sq. ft.)

F. Incorporate lime and fertilizer in top 2-4 inches of topsoil.

G. Smooth. Remove sticks, foreign matter, and stones over 1 inch in diameter, from the surface. Firm the seedbed.

3. Planting

Use a cultipacker type seeder if possible. Seed to a depth of 1/8 to 1/4 inch. If seed is to be broadcast, cultipack or roll after seeding. If hyroseeded, lime and fertilizer may be applied through the seeder, and rolling is not practical.

4. Mulching

Mulch all seedings in accordance with Standard and Specifications for Mulching. Small grain straw is the best material.

5. Seed Mixtures

Select seed mixture for site conditions and intended use from Table 3.2.

6. Contact Cornell Cooperative Extension Turf Specialist for suitable varieties.

When Kentucky bluegrass is used, it is desirable to use two or more varieties in the seeding for disease resistance.

Turf-type tall fescues have replaced the old KY31 tall fescues. New varieties have finer leaves and are the most resistant grass to foot traffic. Do not mix it with fine textured grasses such as bluegrass and red fescue.

Common ryegrass and redtop, which are relatively short lived species, provide quick green cover. Improved lawn cultivars of perennial ryegrass provide excellent quality turf, but continue to lack winter hardiness.

Common white clover can be added to mixtures at the rate of 1-2 lbs/acre to help maintain green color during the dry summer period; however, they will not withstand heavy traffic. Avoid using around swimming areas as flowers attract bees which can be easily stepped on.

Table 3.2 Recreation Turfgrass Seed Mixture

Site - Use	Species (% by weight)	lbs/1,000 sq. ft.	lbs./acre
1. Sunny sites (well, moderately well, and somewhat poorly drained soils)			
a. Athletic fields and similar areas			
	80% Kentucky bluegrass blend……..	2.4-3.2	105-138
	20% perennial ryegrass……..	0.6-0.8	25-37
	OR……	3.0-4.0	130-175
	(for southern and eastern NY)		
	50% Kentucky bluegrass…….	1.5-2.0	65-88
	50% perennial ryegrass……	1.5-2.0	65-87
	OR……..	3.0-4.0	130-175
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200
b. General recreation areas and lawns (Medium to high maintenance)			
	65% Kentucky bluegrass blend……	2.0-2.6	85-114
	20% perennial ryegrass……	0.6-0.8	26-35
	15% fine fescue……	0.4-0.6	19-26
	OR……	3.0-4.0	130-175
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200
2. Sunny droughty sites - general recreation areas and lawns, low maintenance (somewhat excessively to excessively drained soils). Excluding Long Island.			
	65% fine fescue……..	2.6-3.3	114-143
	15% perennial ryegrass……	0.6-0.7	26-33
	20% Kentucky bluegrass blend……	0.8-1.0	35-44
	OR……	4.0-5.0	175-220
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200
3. Shady dry sites (well to somewhat poorly drained soils).			
	65% fine fescue……..	2.6-3.3	114-143
	15% perennial ryegrass……	0.6-0.7	26-33
	20% Kentucky bluegrass blend……	0.8-1.0	35-44
	OR……	4.0-5.0	174-220
	80% blend of shade-tolerant Kentucky bluegrass……	2.4-3.2	105-138
	20% perennial ryegrass……	0.6-0.8	25-37
	OR……..	3.0-4.0	130-175
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200
4. Shady wet sites (somewhat poor to poorly drained soils).			
	70% rough bluegrass……..	1.4-2.1	60-91
	30% blend of shade-tolerant Kentucky bluegrass……	0.6-0.9	25-39
	OR……	2.0-3.0	85-130
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200

For varieties suitable for specific locations, contact Cornell Cooperative Extension Turf Specialist.

Reference: Thurn, M.C., N.W. Hummel, and A.M. Petrovic. Cornell Extension Pub. Info. Bulletin 185 Revised. HomeLawns Establishment and Maintenance. 1994.

7. Fertilizing—First Year

Apply fertilizer as indicated by the soil test three to four weeks after germination (spring seedlings). If test results have not been obtained, apply 1 pound nitrogen/1,000 square feet using a complete fertilizer with a 2-1-1 or 4-1-3 ratio. Summer and early fall seedings, apply as above unless air temperatures are above 85ºF for an extended period. Wait for cooler temperatures to fertilize. Late fall/ winter seedings, fertilize in spring.

8. Restrict Use

New seedlings should be protected from use for one full year to allow development of a dense sod with good root structure.

MAINTAINING GRASSES

1. Maintain a pH of 6.0 - 7.0.

2. Fertilize in late May to early June as follows with 10-10-10 analysis fertilizer at the rate of 10 lbs./1,000 sq. ft. and repeat in late August if sod density is not adequate. Avoid fertilizing when heat is greater than 85ºF. Top dress weak sod annually in the spring, but at least once every 2 to 3 years. It is recommended to fertilize according to soil test analysis, after determining adequate topsoil depth exists.

3. Aerate compacted or heavily used areas, like athletic fields, annually as soon as soil moisture conditions permit. Aerate area six to eight times using a spoon or hollow tine type aerator. Do not use solid spike equipment.

4. Reseed bare and thin areas annually with original seed mix.

ESTABLISHING TREES, SHRUBS, AND VINES

1. Planting nursery stock

A. Select species to serve the intended purpose. See Table 3.3**,** "Trees Suitable for Landscape and Conservation Plantings in New York." Where planting of trees is to be done in recreation areas, use those species resistant to compaction listed in Table 3.4, "Susceptibility of Tree Species to Compaction" whenever possible.

B. Plant Materials

1) Plants shall conform to the species, variety, size, number, and conditions as stated in a conservation plan or on a plant list shown on landscape drawings. "American Standard for Nursery Stock," by American Association of Nurserymen, shall be used to develop the plant list for landscape drawings and to check quality of plant materials.

2) Durable, legible labels with the scientific and common name and cultivar shall be securely attached to plants, bundles of seedlings, containers, and/or flats.

C. Plant Protection

Prior to delivery, the trunk, branches, and foliage of the plants shall be sprayed with non-toxic antidesicant, applied according to the manufacturers recommendations. This does not apply to state nursery seedlings.

D. Planting Time

Deciduous trees and shrubs: April 1 to June 1 and October 15 to December 15.
Evergreen trees and shrubs: April 1 to June 1 and September 1 to November 15.

E. Spacing

Plant all trees and shrubs well back from buildings to allow for mature crown size. The following are guides for planning:

Large trees:	50-60 feet apart
Small trees:	20-30 feet apart
Columnar species:	6-8 feet apart
Hedges:	1-4 feet apart
Shrubs:	For clumps, plan spacing so mature shrubs will be touching or overlapping by only 1 or 2 feet.

F. Site Preparation

1) Individual sites for planting seedlings can be prepared by scalping the sod away from a four foot square area where the seedling is to be planted.

2) All planting beds shall be cultivated to a depth of 8 inches, or chemically treated for weed control. Remove objectionable objects that will interfere with maintenance of site.

G. Planting

1) Plants shall be located as shown on plans and/or drawings and, where necessary, located on the site by stakes, flags or other means.

2) Prior to planting, remove galvanized wire basket securing root ball, untie and roll down burlap covering from around the stem.

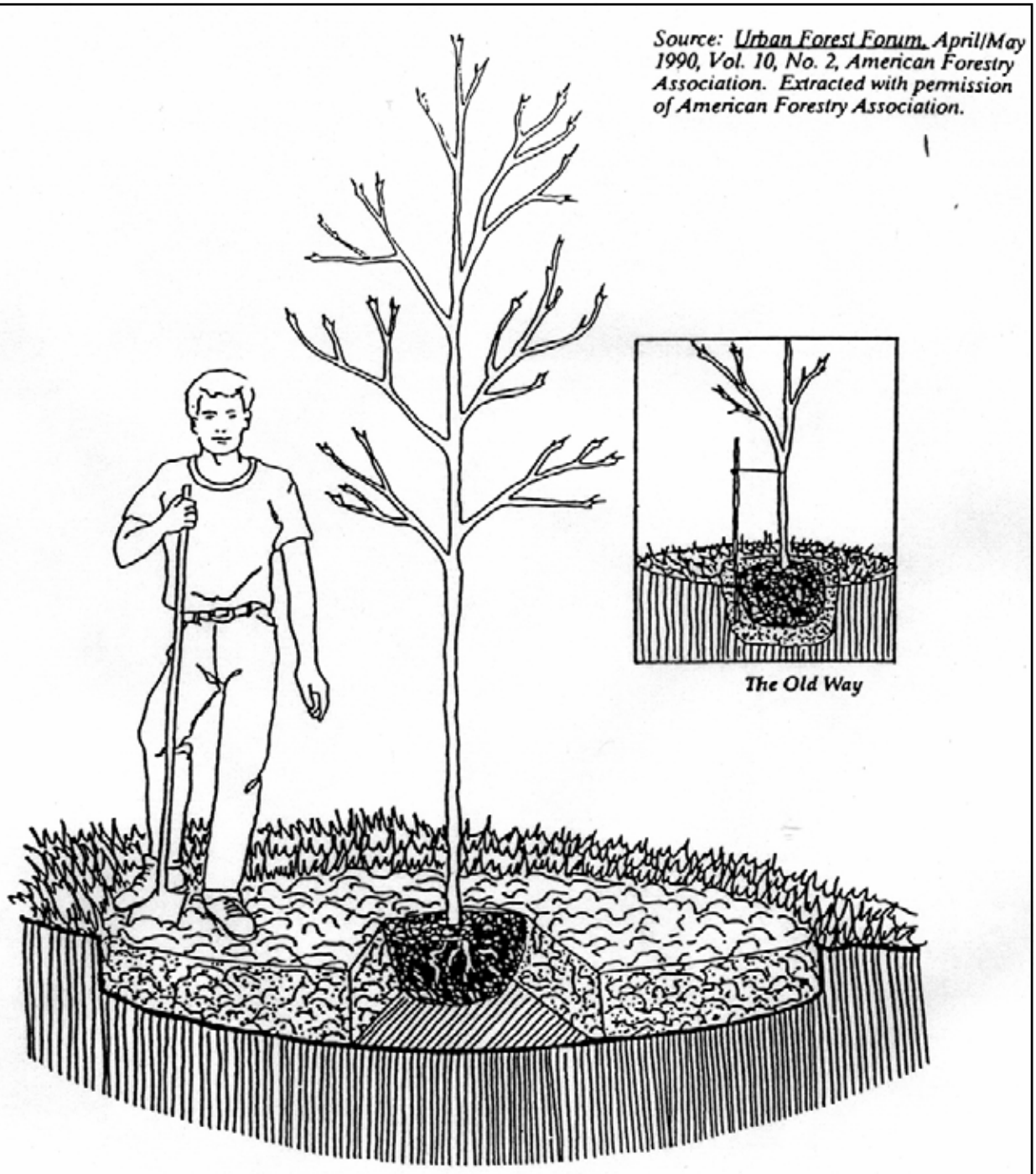
3) The plants shall be set upright in holes as illustrated in Figure 3.1.

4) All plants shall be thoroughly watered on the same day of planting. Plants that have settled shall be reset to grade.

H. Wrapping

Immediately after planting, wrap deciduous tree trunks from the bottom to the first limb with a 4 inch wide bituminous impregnated, insect resistant tape or paper manufactured for that purpose. Tie with jute (bag strings) at top and bottom. The wrap should be

Figure 3.1
New Tree Planting Procedure



The new method of tree planting will result in better survival and growth than the old method. Grass competition and soil compaction are two of the most common factors in poor performance. The New Method: Prepare a planting area five times the diameter of the root ball or container. Use a rototiller and/or spades to loosen and mix the soil to a depth of about 12 inches. Organic matter (well decomposed) can be added. Dig a hole in the center to set the tree, so that the root ball will rest on solid ground. Backfill around the root area, pressing the soil but not packing it. Mulch the entire prepared area with 2 to 4 inches of bark, wood chips, decomposed sawdust, or leaves. Reference the article for a full explanation.

removed per nursery recommendations.

I. Mulching

Mulch the disturbed area around individual trees and shrubs with a 2-3" layer of wood chips. Pull wood chips 1 inch away from the base of shrubs to avoid fungus development.

J. Pruning

After planting, prune to remove injured twigs and branches. The natural shape of the plant should not be changed.

K. Cleanup and Maintenance

1) After all work is complete, all excess soil, peat moss, debris, etc., shall be removed from the site.

2) Water plants two weeks after planting. For two years, water plants every two weeks during dry periods, which exceed three weeks without a good soaking rain. Shrubs may require 5 to 10 gallons and trees, 20 to 30 gallons for each watering.

3) Remove trunk wrap one year after planting.

2. Transplanting "Wild" Stock

Successful transplanting of wild stock will require heavy equipment and considerable labor as a large weight of soil must be moved with the roots.

A. Select trees and shrubs with good form and full crowns.
B. Transplant only when plants are dormant and soil is moist. Wrap soil ball with burlap to prevent soil from separating from roots.
C. Table 3.5 shows minimum diameter and approximate weight of soil ball that must be moved with each size plant.
D. Plant and maintain as described above for nursery stock.

PRUNING AND THINNING

Use	Cleared Width Each Side of Trail Tread (ft.)	Cleared Height (ft.)
TRAILS		
Hiking	1	8
Bicycle	2	10
Motorbike	2	10
Horse	2	12
X-Country Ski	Total: 3 - 12	12[1]
Snowmobile	Total: 6 - 12	12[1]
PICNIC & CAMPING AREAS		
Campfire/Grill	10 ft. diam.	15+ Locations

1. Pruning

A. Remove trees, limbs, and limb stubs to the following widths and heights specified for the intended use.

[1] Includes allowance for snow depth and snow load on branches.

B. Remove dead, diseased, or dying limbs that may fall.

C. Do not remove more than one-third of the live crown of a tree in a year.

D. Cut limbs flush to the branch bark ridge.

E. Use the 3 or 4 cut pruning method on all branches over 2 inches in diameter: First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

2. Thinning

A. Remove dead, diseased, dying, poorly anchored, or ice damaged trees that pose a hazard to recreationists or that interfere with intended use.

B. To maintain grass cover in a wooded area, thin according to formula Dx3 (average diameter of the trunk of overstory trees, in inches, times three—the answer is the spacing between trees to be left, in feet). For example, for trees with average diameter of 6 inches, spacing after thinning should leave trees 18 feet apart on average. Crown cover after thinning should be about 50 percent.

C. Selectively thin as needed to favor those trees that are most "resistant" to compaction around their roots. See Table 3.4**,** "Susceptibility of Tree Species to Compaction." If the soil on the site is naturally well drained, those species in the "intermediate" group may also be favored.

PROTECTING TREES IN HEAVY USE AREAS

The compaction of soil over the roots of trees and shrubs by the trampling of recreationists, vehicular traffic, etc., reduces oxygen, water, and nutrient uptake by feeder roots. This weakens and may eventually kill the plants. Table 3.4 rates the "Susceptibility of Tree Species to Compaction."

Where heavy compaction is anticipated, apply and maintain a 3 to 4 inch layer of undecayed wood chips or 2 inches of No. 2 washed, crushed gravel.

Table 3.3
Trees Suitable for Landscape and Conservation Plantings in New York

TREE SIZE:

Large Sized Trees (75'+) - Trees that exceed this height at maturity.

Medium Sized Trees (35'- 75') - Trees in this height range at maturity.

Small Sized Trees (15'- 35') - Trees relatively low at maturity.

VAR; (x) = varieties of the species are available for various uses.

FOLIAGE:

E = evergreen

c = colorful in fall

l = lustrous; shiny

D = deciduous

d = dense

u = unusual leaves

f = fine textured

SITE TOLERANCE:

cold = hardy in zones 2 and 3 (northeastern mountains)

wet = tolerant of moderately well to somewhat poorly drained soils.

dry = tolerant of sandy, gravelly, excessively drained soils.

shade = will tolerate some shady sites.

sea = trees which may tolerate seaside conditions.

city = trees that withstand usual city conditions.

PEST:

F = usually free S = susceptible

FEATURES:

Habit = general shape of open grown plants.

Bo - broad open (wide)

Co - columnar

FEATURES: (cont'd)

Ho - horizontal branching

Na - narrow

Op - open

Ov - ovoid/oblong

Pe - pendulous

Py - pyramidal

Ro - round

S - spreading

Up - upright

Wo - wide/open

BRK; (x) = bark has interesting characteristics of color, texture or form.

FLR; (x) = flowers are colorful and interesting.

f = fragrant;

s = showy;

u = unusual shape.

FRU; (x) = fruits are interesting and/or edible.

LVS; (x) = leaves have attractive color and/or unusual shape.

USES:

WIND; (x) = suitable for windbreaks and screening.

SHD; (x) = suitable as lawn shade trees.

STRT; (x) = trees often selected for street planting.

WILD; F/c = trees offering food and cover to wildlife.

F = trees providing food from fruits.

W/c = trees offering winter cover.

BARR; (x) = trees which can be used as a barrier to some traffic.

ORN; (x) = trees whose main value is ornamental.

Table 3.3 (cont'd)
Trees Suitable for Landscape and Conservation Plantings in New York

A. LARGE SIZED TREES (75 ft.+)

1. DECIDUOUS SPECIES	HEIGHT	VAR	FOLIAGE	SITE TOLERANCE							FEATURES					USES					
				COLD	WET	DRY	SHADE	SEA	CITY	PEST	HABIT	BRK	FLR	FRU	LVS	WIND	SHDE	STRT	WILD	BARR	ORN
BEECH, EUROPEAN Fagus sylvatica	90'	X	D,c,d,l								Py	X			X		X				
BIRCH, PAPER Betula papyrifera	90'		D,c	X							Py	X			X						X
BIRCH, RIVER Betula nigra	90'		D,c		X						Py	X			X						
CHERRY, BLACK Prunus serotina	90'	X	D,d,l	X				X			S	X	X	X					F		X
GINKGO Ginkgo biloba	120'		D,c,u						X	F	Wo				X		X	X			
GUM, BLACK TUPELO Nyssa sylvatica	90'		D,c,d,l		X			X			Py				X						X
HICKORY, PIGNUT Carya glabra	120'		D,c			X					Ro				X				F		X
HICKORY, SHAGBARK Carya ovata	120'	X	D,c								Na/Up	X			X				F		X
HONEYLOCUST [1] Gleditsia spp.	135'	X	D,c,u			X			X	F	Bo						X	X			
JAPANESE ZELKOVA Zelkova serrata	90'		D,c		Substitute for American Elm						Ro				X		X				
KATSURA TREE Cercidiphyllum japonicum	60-100'		D,c,u							F	Ro				X		X				
LINDEN, LITTLE-LEAF Tilia cordata	90'	X	D,d	X					X		Py		X	X			X	X			
LONDON PLANE TREE X Platanus acerifolia	100'		D								S	X			X		X				
MAPLE, RED Acer rubrum	120'	X	D,c	X	X						Ro	X	X		X	X	X				
MAPLE, SUGAR Acer saccharum	120'	X	D,c	X							Ov				X		X	X			
OAK, WHITE Quercus alba	90'		D,c								Ro/S				X		X		F		X
POPLAR, HYBRID [2] X Populus	90'	X	D								varies					X	X				
POPLAR, WHITE Populus alba	90'	X	D,c,u	X		X		X			S		X		X						X
SWEET-GUM Liquidambar styraciflua	125'	X	D,c,u		X					F	Py				X		X	X			X

Table 3.3 (cont'd)
Trees Suitable for Landscape and Conservation Plantings in New York

A. LARGE SIZED TREES (75 ft.+)

2. EVERGREEN SPECIES	HEIGHT	VAR	FOLIAGE	SITE TOLERANCE: COLD	WET	DRY	SHADE	SEA	CITY	PEST	FEATURES: HABIT	BRK	FLR	FRU	LVS	USES: WIND	SHDE	STRT	WILD	BARR	ORN
CEDAR, EASTERN RED Juniperus virginiana	90'	X	E,d	X		X		X		F	Py	X		X		X			WC		
FIR, DOUGLAS Pseudotsuga menziesii	300'	X	E,d								Py			X		X			WC		X
FIR, WHITE Abies concolor	120'	X	E,c								Py				X	X			WC		
HEMLOCK, CANADA Tsuga canadensis	90'	X	E,d	X							Py					X			WC		X
LARCH, EUROPEAN Larix decidua	100'	X	D,c	X							Py			X							X
PINE, AUSTRIAN Pinus nigra	90'	X	E					X			Py					X			WC		X
PINE, EASTERN WHITE Pinus strobus	100-150'	X	E	X							Ro/Py					X			WC		X
PINE, JAPANESE BLACK Pinus thunbergii	90'		E					X			S								WC		X
SPRUCE, COLORADO Picea pungens	100'	X	E,c,d	X				X		S	Py				X	X			WC		X
SPRUCE, NORWAY Picea abies	150'	X	E,d	X							Py			X		X			WC		
SPRUCE, SERBIAN Picea omorika	90'		E,c,d								Py				X	X			WC		X
SPRUCE, WHITE Picea glauca	90'	X	E	X							Py				X	X			WC		X

[1] Thornless, seedless cultivars recommended
[2] Select male, non-root suckering, disease resistant cultivars

Note: It is not recommended to combine Colorado Blue Spruce or any other spruce with Douglas Fir in the same landscape design. Douglas Fir is an alternate host for the Cooley Spruce Gall Aphid.

STANDARD AND SPECIFICATIONS FOR TOPSOILING

Definition

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas.

Purpose

To provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established.

3. Refer to USDA Soil Conservation Service (presently Natural Resource Conservation Service) soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted to a minimum depth of 12 inches with a deep ripper or chisel plow prior to topsoiling.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the following amounts:

Site Conditions	Intended Use	Minimum Topsoil Depth
1. Deep sand or loamy sand	Mowed lawn Tall legumes, unmowed Tall grass, unmowed	6 in. 2 in. 1 in.
2. Deep sandy loam	Mowed lawn Tall legumes, unmowed Tall grass, unmowed	5 in. 2 in. none
3. Six inches or more: silt loam, loam, or silt	Mowed lawn Tall legumes, unmowed Tall grass, unmowed	4 in. 1 in. 1 in.

STANDARD AND SPECIFICATIONS FOR MULCHING

Definition

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface.

Purpose

The primary purpose is to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch is also used alone for temporary stabilization in non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

Table 3.7
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/ yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	8” x 100” 2-sided plastic, 48” x 180” 1-sided plastic	—	—	Use without additional mulch. Excellent for seeding establishment. Tie down as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Compost	Up to 3” pieces, moderately to highly stable	3-9 cu. yds.	134-402 cu. yds.	1-3”	Coarser textured mulches may be more effective in reducing weed growth and wind erosion.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 3.8
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR PROTECTING VEGETATION DURING CONSTRUCTION

Definition

The protection of trees, shrubs, ground cover and other vegetation from damage by construction equipment.

Purpose

To preserve existing vegetation determined to be important for soil erosion control, water quality protection, shade, screening, buffers, wildlife habitat, wetland protection, and other values.

Condition Where Practice Applies

On planned construction sites where valued vegetation exists and needs to be preserved.

Design Criteria

1. Planning Considerations

   A. Inventory:

      1) Property boundaries, topography, vegetation and soils information should be gathered. Identify potentially high erosion areas, areas with tree windthrow potential, etc. A vegetative cover type map should be made on a copy of a topographic map which shows other natural and manmade features. Vegetation that is desirable to preserve because of its value for screening, shade, critical erosion control, endangered species, aesthetics, etc., should be identified and marked on the map.

      2) Based upon this data, general statements should be prepared about the present condition, potential problem areas, and unique features of the property.

   B. Planning:

      1) After engineering plans (plot maps) are prepared, another field review should take place and recommendations made for the vegetation to be saved. Minor adjustments in location of roads, dwellings, and utilities may be needed. Construction on steep slopes, erodible soils, wetlands, and streams should be avoided. Clearing limits should be delineated (See Section 2).

      2) Areas to be seeded and planted should be identified. Remaining vegetation should blend with their surroundings and/or provide special function such as a filter strip, buffer zone, or screen.

      3) Trees and shrubs of special seasonal interest, such as flowering dogwood, red maple, striped maple, serviceberry, or shadbush, and valuable potential shade trees should be identified and marked for special protective treatment as appropriate.

      4) Trees to be cut should be marked on the plans. If timber can be removed for salable products, a forester should be consulted for marketing advice.

      5) Trees that may become a hazard to people, personal property, or utilities should be removed. These include trees that are weak-wooded, disease-prone, subject to windthrow, or those that have severely damaged root systems.

      6) The vigor of remaining trees may be improved by a selective thinning. A forester should be consulted for implementing this practice.

2. Measures to Protect Vegetation

   A. Limit soil placement over existing tree and shrub roots to a maximum of 3 inches. Soils with loamy texture and good structure should be used.

   B. Use retaining walls and terraces to protect roots of trees and shrubs when grades are lowered. Lowered grades should start no closer than the dripline of the tree. For narrow-canopied trees and shrubs, the stem diameter in inches is converted to feet and doubled, such that a 10 inch tree should be protected to 20 feet.

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C. Trenching across tree root systems should be the same minimum distance from the trunk, as in “B”. Tunnels under root systems for underground utilities should start 18 inches or deeper below the normal grounds surface. Tree roots which must be severed should be cut clean. Backfill material that will be in contact with the roots should be topsoil or a prepared planting soil mixture.

D. Construct sturdy fences, or barriers, of wood, steel, or other protective material around valuable vegetation for protection from construction equipment. Place barriers far enough away from trees, but not less than the specifications in "B", so that tall equipment such as backhoes and dump trucks do not contact tree branches.

E. Construction limits should be identified and clearly marked to exclude equipment.

F. Avoid spills of oil/gas and other contaminants.

G. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged. The 3 or 4 cut method should be used on all branches larger than two inches at the cut. First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

H. Penalties for damage to valuable trees, shrubs, and herbaceous plants should be clearly spelled out in the contract.

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STANDARD AND SPECIFICATIONS FOR RECREATION AREA IMPROVEMENT

Definition

Establishing grasses, legumes, vines, shrubs, trees, or other plants, or selectively reducing stand density and trimming woody plants, to improve an area for recreation.

Purpose

To increase the attractiveness and usefulness of recreation areas and to protect the soil and plant resources.

Conditions Where Practice Applies

On any area planned for recreation use, lawns, and areas that will be maintained in a closely mowed condition.

Specifications

ESTABLISHING GRASSES (Turfgrass)

The following applies for playgrounds, parks, athletic fields, camping areas, picnic areas, passive recreation areas such as lawns, and similar areas.

1. Time of Planting

Fall planting is preferred. Seed after August 15. In the spring, plant until May 15.

If seeding is done between May 15 and August 15, irrigation may be necessary to ensure a successful seeding.

2. Site Preparation

A. Install needed water and erosion control measures and bring area to be seeded to desired grades. A minimum of 4 in. topsoil is required.

B. See Standard and Specification of Topsoiling.

C. Prepare seedbed by loosening soil to a depth of 4-6 inches.

D. Lime to a pH of 6.5.

E. **Fertilize as per soil test** or, if soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 850 pounds of 5-10-10 or equivalent per acre (20 lbs/1,000 sq. ft.)

F. Incorporate lime and fertilizer in top 2-4 inches of topsoil.

G. Smooth. Remove sticks, foreign matter, and stones over 1 inch in diameter, from the surface. Firm the seedbed.

3. Planting

Use a cultipacker type seeder if possible. Seed to a depth of 1/8 to 1/4 inch. If seed is to be broadcast, cultipack or roll after seeding. If hyroseeded, lime and fertilizer may be applied through the seeder, and rolling is not practical.

4. Mulching

Mulch all seedings in accordance with Standard and Specifications for Mulching. Small grain straw is the best material.

5. Seed Mixtures

Select seed mixture for site conditions and intended use from Table 3.2.

6. Contact Cornell Cooperative Extension Turf Specialist for suitable varieties.

When Kentucky bluegrass is used, it is desirable to use two or more varieties in the seeding for disease resistance.

Turf-type tall fescues have replaced the old KY31 tall fescues. New varieties have finer leaves and are the most resistant grass to foot traffic. Do not mix it with fine textured grasses such as bluegrass and red fescue.

Common ryegrass and redtop, which are relatively short lived species, provide quick green cover. Improved lawn cultivars of perennial ryegrass provide excellent quality turf, but continue to lack winter hardiness.

Common white clover can be added to mixtures at the rate of 1-2 lbs/acre to help maintain green color during the dry summer period; however, they will not withstand heavy traffic. Avoid using around swimming areas as flowers attract bees which can be easily stepped on.

Table 3.2 Recreation Turfgrass Seed Mixture

Site - Use	Species (% by weight)	lbs/1,000 sq. ft.	lbs./acre
1. Sunny sites (well, moderately well, and somewhat poorly drained soils)			
a. Athletic fields and similar areas			
	80% Kentucky bluegrass blend……..	2.4-3.2	105-138
	20% perennial ryegrass……..	0.6-0.8	25-37
	OR……	3.0-4.0	130-175
	(for southern and eastern NY)		
	50% Kentucky bluegrass…….	1.5-2.0	65-88
	50% perennial ryegrass……	1.5-2.0	65-87
	OR……..	3.0-4.0	130-175
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200
b. General recreation areas and lawns (Medium to high maintenance)			
	65% Kentucky bluegrass blend……	2.0-2.6	85-114
	20% perennial ryegrass……	0.6-0.8	26-35
	15% fine fescue……	0.4-0.6	19-26
	OR……	3.0-4.0	130-175
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200
2. Sunny droughty sites - general recreation areas and lawns, low maintenance (somewhat excessively to excessively drained soils). Excluding Long Island.			
	65% fine fescue……..	2.6-3.3	114-143
	15% perennial ryegrass……	0.6-0.7	26-33
	20% Kentucky bluegrass blend……	0.8-1.0	35-44
	OR……	4.0-5.0	175-220
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200
3. Shady dry sites (well to somewhat poorly drained soils).			
	65% fine fescue……..	2.6-3.3	114-143
	15% perennial ryegrass……	0.6-0.7	26-33
	20% Kentucky bluegrass blend……	0.8-1.0	35-44
	OR……	4.0-5.0	174-220
	80% blend of shade-tolerant Kentucky bluegrass……	2.4-3.2	105-138
	20% perennial ryegrass……	0.6-0.8	25-37
	OR……..	3.0-4.0	130-175
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200
4. Shady wet sites (somewhat poor to poorly drained soils).			
	70% rough bluegrass……..	1.4-2.1	60-91
	30% blend of shade-tolerant Kentucky bluegrass……	0.6-0.9	25-39
	OR……	2.0-3.0	85-130
	100% Tall fescue, Turf-type, fine leaf…….	3.4-4.6	150-200

For varieties suitable for specific locations, contact Cornell Cooperative Extension Turf Specialist.

Reference: Thurn, M.C., N.W. Hummel, and A.M. Petrovic. Cornell Extension Pub. Info. Bulletin 185 Revised. HomeLawns Establishment and Maintenance. 1994.

7. Fertilizing—First Year

Apply fertilizer as indicated by the soil test three to four weeks after germination (spring seedlings). If test results have not been obtained, apply 1 pound nitrogen/1,000 square feet using a complete fertilizer with a 2-1-1 or 4-1-3 ratio. Summer and early fall seedings, apply as above unless air temperatures are above 85ºF for an extended period. Wait for cooler temperatures to fertilize. Late fall/ winter seedings, fertilize in spring.

8. Restrict Use

New seedlings should be protected from use for one full year to allow development of a dense sod with good root structure.

MAINTAINING GRASSES

1. Maintain a pH of 6.0 - 7.0.

2. Fertilize in late May to early June as follows with 10-10-10 analysis fertilizer at the rate of 10 lbs./1,000 sq. ft. and repeat in late August if sod density is not adequate. Avoid fertilizing when heat is greater than 85ºF. Top dress weak sod annually in the spring, but at least once every 2 to 3 years. It is recommended to fertilize according to soil test analysis, after determining adequate topsoil depth exists.

3. Aerate compacted or heavily used areas, like athletic fields, annually as soon as soil moisture conditions permit. Aerate area six to eight times using a spoon or hollow tine type aerator. Do not use solid spike equipment.

4. Reseed bare and thin areas annually with original seed mix.

ESTABLISHING TREES, SHRUBS, AND VINES

1. Planting nursery stock

A. Select species to serve the intended purpose. See Table 3.3**,** "Trees Suitable for Landscape and Conservation Plantings in New York." Where planting of trees is to be done in recreation areas, use those species resistant to compaction listed in Table 3.4, "Susceptibility of Tree Species to Compaction" whenever possible.

B. Plant Materials

1) Plants shall conform to the species, variety, size, number, and conditions as stated in a conservation plan or on a plant list shown on landscape drawings. "American Standard for Nursery Stock," by American Association of Nurserymen, shall be used to develop the plant list for landscape drawings and to check quality of plant materials.

2) Durable, legible labels with the scientific and common name and cultivar shall be securely attached to plants, bundles of seedlings, containers, and/or flats.

C. Plant Protection

Prior to delivery, the trunk, branches, and foliage of the plants shall be sprayed with non-toxic antidesicant, applied according to the manufacturers recommendations. This does not apply to state nursery seedlings.

D. Planting Time

Deciduous trees and shrubs: April 1 to June 1 and October 15 to December 15.
Evergreen trees and shrubs: April 1 to June 1 and September 1 to November 15.

E. Spacing

Plant all trees and shrubs well back from buildings to allow for mature crown size. The following are guides for planning:

Large trees:	50-60 feet apart
Small trees:	20-30 feet apart
Columnar species:	6-8 feet apart
Hedges:	1-4 feet apart
Shrubs:	For clumps, plan spacing so mature shrubs will be touching or overlapping by only 1 or 2 feet.

F. Site Preparation

1) Individual sites for planting seedlings can be prepared by scalping the sod away from a four foot square area where the seedling is to be planted.

2) All planting beds shall be cultivated to a depth of 8 inches, or chemically treated for weed control. Remove objectionable objects that will interfere with maintenance of site.

G. Planting

1) Plants shall be located as shown on plans and/or drawings and, where necessary, located on the site by stakes, flags or other means.

2) Prior to planting, remove galvanized wire basket securing root ball, untie and roll down burlap covering from around the stem.

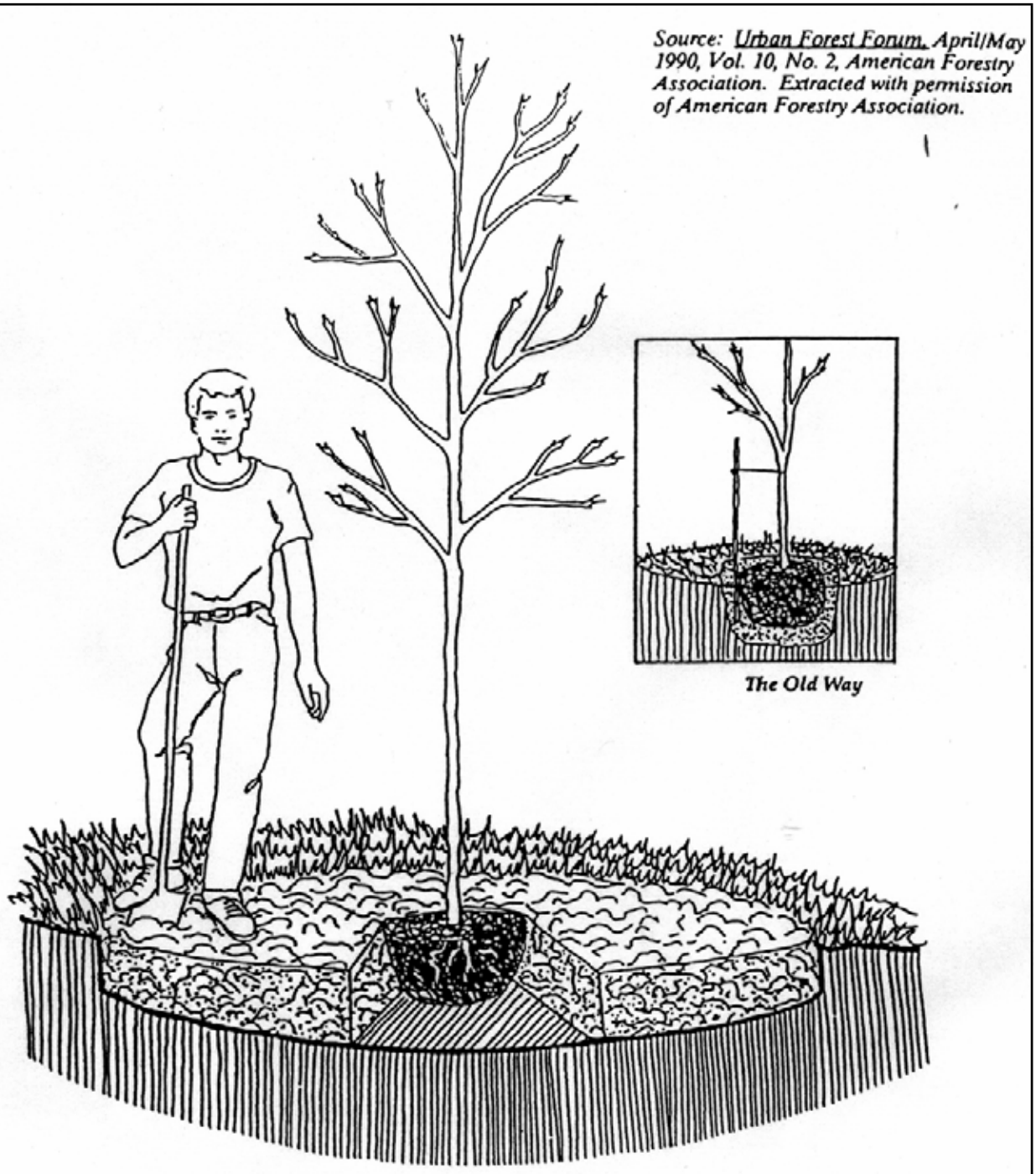
3) The plants shall be set upright in holes as illustrated in Figure 3.1.

4) All plants shall be thoroughly watered on the same day of planting. Plants that have settled shall be reset to grade.

H. Wrapping

Immediately after planting, wrap deciduous tree trunks from the bottom to the first limb with a 4 inch wide bituminous impregnated, insect resistant tape or paper manufactured for that purpose. Tie with jute (bag strings) at top and bottom. The wrap should be

Figure 3.1
New Tree Planting Procedure



The new method of tree planting will result in better survival and growth than the old method. Grass competition and soil compaction are two of the most common factors in poor performance. The New Method: Prepare a planting area five times the diameter of the root ball or container. Use a rototiller and/or spades to loosen and mix the soil to a depth of about 12 inches. Organic matter (well decomposed) can be added. Dig a hole in the center to set the tree, so that the root ball will rest on solid ground. Backfill around the root area, pressing the soil but not packing it. Mulch the entire prepared area with 2 to 4 inches of bark, wood chips, decomposed sawdust, or leaves. Reference the article for a full explanation.

removed per nursery recommendations.

I. Mulching

Mulch the disturbed area around individual trees and shrubs with a 2-3" layer of wood chips. Pull wood chips 1 inch away from the base of shrubs to avoid fungus development.

J. Pruning

After planting, prune to remove injured twigs and branches. The natural shape of the plant should not be changed.

K. Cleanup and Maintenance

1) After all work is complete, all excess soil, peat moss, debris, etc., shall be removed from the site.

2) Water plants two weeks after planting. For two years, water plants every two weeks during dry periods, which exceed three weeks without a good soaking rain. Shrubs may require 5 to 10 gallons and trees, 20 to 30 gallons for each watering.

3) Remove trunk wrap one year after planting.

2. Transplanting "Wild" Stock

Successful transplanting of wild stock will require heavy equipment and considerable labor as a large weight of soil must be moved with the roots.

A. Select trees and shrubs with good form and full crowns.
B. Transplant only when plants are dormant and soil is moist. Wrap soil ball with burlap to prevent soil from separating from roots.
C. Table 3.5 shows minimum diameter and approximate weight of soil ball that must be moved with each size plant.
D. Plant and maintain as described above for nursery stock.

PRUNING AND THINNING

Use	Cleared Width Each Side of Trail Tread (ft.)	Cleared Height (ft.)
TRAILS		
Hiking	1	8
Bicycle	2	10
Motorbike	2	10
Horse	2	12
X-Country Ski	Total: 3 - 12	12[1]
Snowmobile	Total: 6 - 12	12[1]
PICNIC & CAMPING AREAS		
Campfire/Grill	10 ft. diam.	15+ Locations

1. Pruning

A. Remove trees, limbs, and limb stubs to the following widths and heights specified for the intended use.

[1] Includes allowance for snow depth and snow load on branches.

B. Remove dead, diseased, or dying limbs that may fall.

C. Do not remove more than one-third of the live crown of a tree in a year.

D. Cut limbs flush to the branch bark ridge.

E. Use the 3 or 4 cut pruning method on all branches over 2 inches in diameter: First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

2. Thinning

A. Remove dead, diseased, dying, poorly anchored, or ice damaged trees that pose a hazard to recreationists or that interfere with intended use.

B. To maintain grass cover in a wooded area, thin according to formula Dx3 (average diameter of the trunk of overstory trees, in inches, times three—the answer is the spacing between trees to be left, in feet). For example, for trees with average diameter of 6 inches, spacing after thinning should leave trees 18 feet apart on average. Crown cover after thinning should be about 50 percent.

C. Selectively thin as needed to favor those trees that are most "resistant" to compaction around their roots. See Table 3.4**,** "Susceptibility of Tree Species to Compaction." If the soil on the site is naturally well drained, those species in the "intermediate" group may also be favored.

PROTECTING TREES IN HEAVY USE AREAS

The compaction of soil over the roots of trees and shrubs by the trampling of recreationists, vehicular traffic, etc., reduces oxygen, water, and nutrient uptake by feeder roots. This weakens and may eventually kill the plants. Table 3.4 rates the "Susceptibility of Tree Species to Compaction."

Where heavy compaction is anticipated, apply and maintain a 3 to 4 inch layer of undecayed wood chips or 2 inches of No. 2 washed, crushed gravel.

Table 3.3
Trees Suitable for Landscape and Conservation Plantings in New York

TREE SIZE:

Large Sized Trees (75'+) - Trees that exceed this height at maturity.

Medium Sized Trees (35'- 75') - Trees in this height range at maturity.

Small Sized Trees (15'- 35') - Trees relatively low at maturity.

VAR; (x) = varieties of the species are available for various uses.

FOLIAGE:

E = evergreen

c = colorful in fall

l = lustrous; shiny

D = deciduous

d = dense

u = unusual leaves

f = fine textured

SITE TOLERANCE:

cold = hardy in zones 2 and 3 (northeastern mountains)

wet = tolerant of moderately well to somewhat poorly drained soils.

dry = tolerant of sandy, gravelly, excessively drained soils.

shade = will tolerate some shady sites.

sea = trees which may tolerate seaside conditions.

city = trees that withstand usual city conditions.

PEST:

F = usually free S = susceptible

FEATURES:

Habit = general shape of open grown plants.

Bo - broad open (wide)

Co - columnar

FEATURES: (cont'd)

Ho - horizontal branching

Na - narrow

Op - open

Ov - ovoid/oblong

Pe - pendulous

Py - pyramidal

Ro - round

S - spreading

Up - upright

Wo - wide/open

BRK; (x) = bark has interesting characteristics of color, texture or form.

FLR; (x) = flowers are colorful and interesting.

f = fragrant;

s = showy;

u = unusual shape.

FRU; (x) = fruits are interesting and/or edible.

LVS; (x) = leaves have attractive color and/or unusual shape.

USES:

WIND; (x) = suitable for windbreaks and screening.

SHD; (x) = suitable as lawn shade trees.

STRT; (x) = trees often selected for street planting.

WILD; F/c = trees offering food and cover to wildlife.

F = trees providing food from fruits.

W/c = trees offering winter cover.

BARR; (x) = trees which can be used as a barrier to some traffic.

ORN; (x) = trees whose main value is ornamental.

Table 3.3 (cont'd)
Trees Suitable for Landscape and Conservation Plantings in New York

A. LARGE SIZED TREES (75 ft.+)

1. DECIDUOUS SPECIES	HEIGHT	VAR	FOLIAGE	SITE TOLERANCE							FEATURES					USES					
				COLD	WET	DRY	SHADE	SEA	CITY	PEST	HABIT	BRK	FLR	FRU	LVS	WIND	SHDE	STRT	WILD	BARR	ORN
BEECH, EUROPEAN Fagus sylvatica	90'	X	D,c,d,l								Py	X			X		X				
BIRCH, PAPER Betula papyrifera	90'		D,c	X							Py	X			X						X
BIRCH, RIVER Betula nigra	90'		D,c		X						Py	X			X						
CHERRY, BLACK Prunus serotina	90'	X	D,d,l	X				X			S	X	X	X					F		X
GINKGO Ginkgo biloba	120'		D,c,u						X	F	Wo				X		X	X			
GUM, BLACK TUPELO Nyssa sylvatica	90'		D,c,d,l		X			X			Py				X						X
HICKORY, PIGNUT Carya glabra	120'		D,c			X					Ro				X				F		X
HICKORY, SHAGBARK Carya ovata	120'	X	D,c								Na/Up	X			X				F		X
HONEYLOCUST [1] Gleditsia spp.	135'	X	D,c,u			X			X	F	Bo						X	X			
JAPANESE ZELKOVA Zelkova serrata	90'		D,c		Substitute for American Elm						Ro				X		X				
KATSURA TREE Cercidiphyllum japonicum	60-100'		D,c,u							F	Ro				X		X				
LINDEN, LITTLE-LEAF Tilia cordata	90'	X	D,d	X					X		Py		X	X			X	X			
LONDON PLANE TREE X Platanus acerifolia	100'		D								S	X			X		X				
MAPLE, RED Acer rubrum	120'	X	D,c	X	X						Ro	X	X		X	X	X				
MAPLE, SUGAR Acer saccharum	120'	X	D,c	X							Ov				X		X	X			
OAK, WHITE Quercus alba	90'		D,c								Ro/S				X		X		F		X
POPLAR, HYBRID [2] X Populus	90'	X	D								varies					X	X				
POPLAR, WHITE Populus alba	90'	X	D,c,u	X		X		X			S		X		X						X
SWEET-GUM Liquidambar styraciflua	125'	X	D,c,u		X					F	Py				X		X	X			X

Table 3.3 (cont'd)
Trees Suitable for Landscape and Conservation Plantings in New York

A. LARGE SIZED TREES (75 ft.+)

2. EVERGREEN SPECIES	HEIGHT	VAR	FOLIAGE	SITE TOLERANCE: COLD	WET	DRY	SHADE	SEA	CITY	PEST	FEATURES: HABIT	BRK	FLR	FRU	LVS	USES: WIND	SHDE	STRT	WILD	BARR	ORN
CEDAR, EASTERN RED Juniperus virginiana	90'	X	E,d	X		X		X		F	Py	X		X		X			WC		
FIR, DOUGLAS Pseudotsuga menziesii	300'	X	E,d								Py			X		X			WC		X
FIR, WHITE Abies concolor	120'	X	E,c								Py				X	X			WC		
HEMLOCK, CANADA Tsuga canadensis	90'	X	E,d	X							Py					X			WC		X
LARCH, EUROPEAN Larix decidua	100'	X	D,c	X							Py			X							X
PINE, AUSTRIAN Pinus nigra	90'	X	E					X			Py					X			WC		X
PINE, EASTERN WHITE Pinus strobus	100-150'	X	E	X							Ro/Py					X			WC		X
PINE, JAPANESE BLACK Pinus thunbergii	90'		E					X			S								WC		X
SPRUCE, COLORADO Picea pungens	100'	X	E,c,d	X				X		S	Py				X	X			WC		X
SPRUCE, NORWAY Picea abies	150'	X	E,d	X							Py			X		X			WC		
SPRUCE, SERBIAN Picea omorika	90'		E,c,d								Py				X	X			WC		X
SPRUCE, WHITE Picea glauca	90'	X	E	X							Py				X	X			WC		X

[1] Thornless, seedless cultivars recommended
[2] Select male, non-root suckering, disease resistant cultivars

Note: It is not recommended to combine Colorado Blue Spruce or any other spruce with Douglas Fir in the same landscape design. Douglas Fir is an alternate host for the Cooley Spruce Gall Aphid.

STANDARD AND SPECIFICATIONS FOR VEGETATING WATERWAYS

Definition

Waterways are a natural or constructed outlet, shaped or graded. They are vegetated as needed for safe transport of runoff water.

Purpose

To provide for the safe transport of excess surface water from construction sites and urban areas without damage from erosion.

Conditions Where Practice Applies

This standard applies to vegetating waterways and similar water carrying structures.

Supplemental measures may be required with this practice. These may include: subsurface drainage to permit the growth of suitable vegetation and to eliminate wet spots; a section stabilized with asphalt, stone, or other suitable means; or additional storm drains to handle snowmelt or storm runoff.

Retardance factors for determining waterway dimensions are shown in Table 5B.1 and "Maximum Permissible Velocities for Selected Grass and Legume Mixtures," are shown in Table 3.6.

Design Criteria

Waterways or outlets shall be protected against erosion by vegetative means as soon after construction as practical. Vegetation must be well established before diversions or other channels are outletted into them. Consideration should be given to the use of synthetic products, jute or excelsior matting, other rolled erosion control products, or sodding of channels to provide erosion protection as soon after construction as possible. It is strongly recommended that the center line of the waterway be protected with one of the above materials to avoid center gullies.

1. Liming, fertilizing, and seedbed preparation.
   - A. Lime to pH 6.5.
   - B. **The soil should be tested to determine the amounts of amendments needed.** If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 1.0 lbs/1,000 sq. ft. of N, P_2O_5, and K_2O.
   - C. Lime and fertilizer shall be mixed thoroughly into the seedbed during preparation.
   - D. Channels, except for paved section, shall have at least 4 inches of topsoil.
   - E. Remove stones and other obstructions that will hinder maintenance.
2. Timing of Seeding.
   - A. Early spring and late August are best.
   - B. Temporary cover to protect from erosion is recommended during periods when seedings may fail.
3. Seed Mixtures:

Mixtures	Rate per Acre (lbs)	Rate per 1,000 sq. ft. (lbs)
A. Birdsfoot trefoil or ladino clover[1]	8	0.20
Tall fescue or smooth bromegrass	20	0.45
Redtop[2]	2	0.05
	30	0.70
OR		
B. Kentucky bluegrass[3]	25	0.60
Creeping red fescue	20	0.50
Perennial ryegrass	10	0.20
	55	1.30

[1] Inoculate with appropriate inoculum immediately prior to seeding. Ladino or common white clover may be substituted for birdsfoot trefoil and seeded at the same rate.

[2] Perennial ryegrass may be substituted for the redtop but increase seeding rate to 5 lbs/acre (0.1 lb/1,000 sq. ft).

[3] Use this mixture in areas which are mowed frequently. Common white clover may be added if desired and seeded at 8 lbs/acre (0.2 lb/1,000 sq. ft.)

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4. Seeding

Select the appropriate seed mixture and apply uniformly over the area. Rolling or cultipacking across the waterway is desirable.

Waterway centers or crucial areas may be sodded. Refer to the standard and specification for Stabilization with Sod. Be sure sod is securely anchored using staples or stakes.

5. Mulching.

All seeded areas will be mulched. Channels more than 300 feet long, and/or where the slope is 5 percent or more, must have the mulch securely anchored. Refer to the standard and specifications for Mulching for details.

6. Maintenance

Fertilize, lime, and mow as needed to maintain dense protective vegetative cover.

Waterways shall not be used for roadways.

If rills develop in the centerline of a waterway, prompt attention is required to avoid the formation of gullies. Either stone and/or compacted soil fill with excelsior or filter fabric as necessary may be used during the establishment phase. See Figure 3.2, Rill Maintenance Measures. Spacing between rill maintenance barriers shall not exceed 100 feet.

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Table 3.6
Maximum Permissible Velocities for Selected Seed Mixtures

Cover	Slope Range [2] (%)	Permissible Velocity [1]	
		Erosion-resistant Soils (ft. per sec.) K=0.10 - 0.35 [3]	Easily Eroded Soils (ft. per sec.) K=0.36 - 0.80
Kentucky Bluegrass Smooth Brome Tall Fescue	0-5 5-10 Over 10	7 6 5	5 4 3
Grass Mixtures Reed Canarygrass	[2] 0-5 5-10	5 4	4 3
Redtop Alfalfa Red Fescue	[4] 0-5	3.5	2.5

[1] Use velocities exceeding 5 feet per second only where good covers and proper maintenance can be obtained.
[2] Do not use on slopes steeper than 10 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section.
[3] K is the soil erodibility factor used in the Revised Universal Soil Loss Equation. Visit Appendix A or consult the appropriate USDA-NRCS technical guide for K values for New York State soils.
[4] Do not use on slopes steeper than 5 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section.
[5] Annuals - use on mild slopes or as temporary protection until permanent covers are established.
[6] Use on slopes steeper than 5 percent is not recommended.

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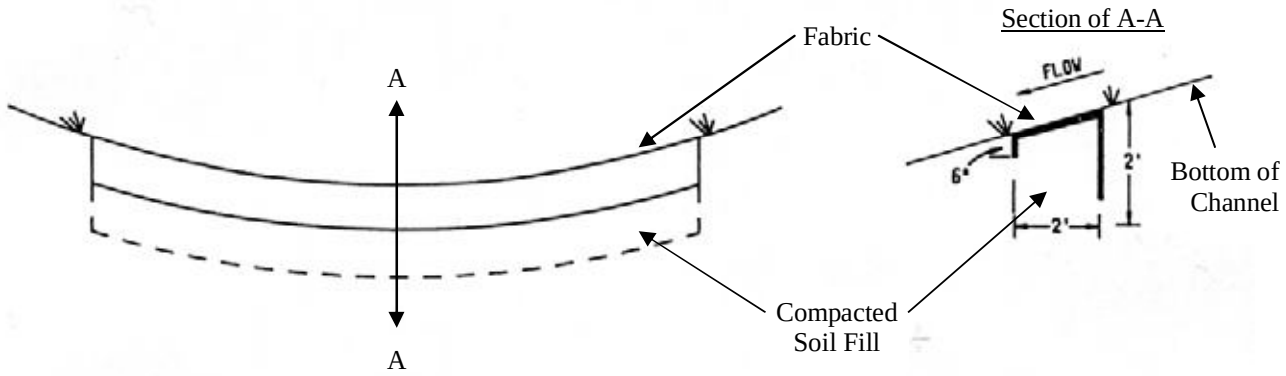
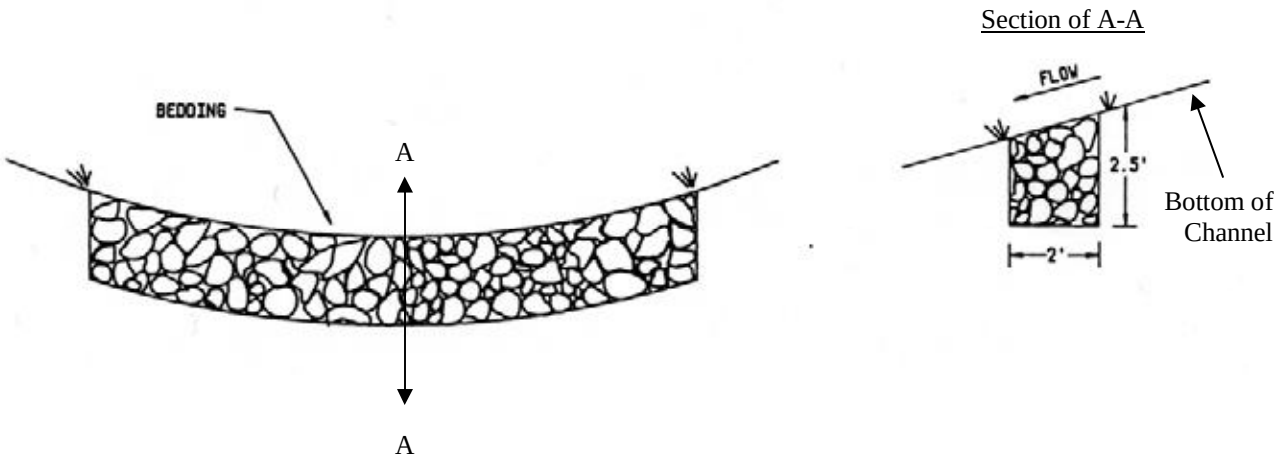
Figure 3.2
Rill Maintenance Measures

Filter Fabric



Stone



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STANDARD AND SPECIFICATIONS FOR TOPSOILING

Definition

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas.

Purpose

To provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established.

3. Refer to USDA Soil Conservation Service (presently Natural Resource Conservation Service) soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted to a minimum depth of 12 inches with a deep ripper or chisel plow prior to topsoiling.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the following amounts:

Site Conditions	Intended Use	Minimum Topsoil Depth
1. Deep sand or loamy sand	Mowed lawn Tall legumes, unmowed Tall grass, unmowed	6 in. 2 in. 1 in.
2. Deep sandy loam	Mowed lawn Tall legumes, unmowed Tall grass, unmowed	5 in. 2 in. none
3. Six inches or more: silt loam, loam, or silt	Mowed lawn Tall legumes, unmowed Tall grass, unmowed	4 in. 1 in. 1 in.

STANDARD AND SPECIFICATIONS FOR MULCHING

Definition

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface.

Purpose

The primary purpose is to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch is also used alone for temporary stabilization in non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

Table 3.7
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/ yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	8” x 100” 2-sided plastic, 48” x 180” 1-sided plastic	—	—	Use without additional mulch. Excellent for seeding establishment. Tie down as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Compost	Up to 3” pieces, moderately to highly stable	3-9 cu. yds.	134-402 cu. yds.	1-3”	Coarser textured mulches may be more effective in reducing weed growth and wind erosion.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 3.8
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR PROTECTING VEGETATION DURING CONSTRUCTION

Definition

The protection of trees, shrubs, ground cover and other vegetation from damage by construction equipment.

Purpose

To preserve existing vegetation determined to be important for soil erosion control, water quality protection, shade, screening, buffers, wildlife habitat, wetland protection, and other values.

Condition Where Practice Applies

On planned construction sites where valued vegetation exists and needs to be preserved.

Design Criteria

1. Planning Considerations

   A. Inventory:

      1) Property boundaries, topography, vegetation and soils information should be gathered. Identify potentially high erosion areas, areas with tree windthrow potential, etc. A vegetative cover type map should be made on a copy of a topographic map which shows other natural and manmade features. Vegetation that is desirable to preserve because of its value for screening, shade, critical erosion control, endangered species, aesthetics, etc., should be identified and marked on the map.

      2) Based upon this data, general statements should be prepared about the present condition, potential problem areas, and unique features of the property.

   B. Planning:

      1) After engineering plans (plot maps) are prepared, another field review should take place and recommendations made for the vegetation to be saved. Minor adjustments in location of roads, dwellings, and utilities may be needed. Construction on steep slopes, erodible soils, wetlands, and streams should be avoided. Clearing limits should be delineated (See Section 2).

      2) Areas to be seeded and planted should be identified. Remaining vegetation should blend with their surroundings and/or provide special function such as a filter strip, buffer zone, or screen.

      3) Trees and shrubs of special seasonal interest, such as flowering dogwood, red maple, striped maple, serviceberry, or shadbush, and valuable potential shade trees should be identified and marked for special protective treatment as appropriate.

      4) Trees to be cut should be marked on the plans. If timber can be removed for salable products, a forester should be consulted for marketing advice.

      5) Trees that may become a hazard to people, personal property, or utilities should be removed. These include trees that are weak-wooded, disease-prone, subject to windthrow, or those that have severely damaged root systems.

      6) The vigor of remaining trees may be improved by a selective thinning. A forester should be consulted for implementing this practice.

2. Measures to Protect Vegetation

   A. Limit soil placement over existing tree and shrub roots to a maximum of 3 inches. Soils with loamy texture and good structure should be used.

   B. Use retaining walls and terraces to protect roots of trees and shrubs when grades are lowered. Lowered grades should start no closer than the dripline of the tree. For narrow-canopied trees and shrubs, the stem diameter in inches is converted to feet and doubled, such that a 10 inch tree should be protected to 20 feet.

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C. Trenching across tree root systems should be the same minimum distance from the trunk, as in “B”. Tunnels under root systems for underground utilities should start 18 inches or deeper below the normal grounds surface. Tree roots which must be severed should be cut clean. Backfill material that will be in contact with the roots should be topsoil or a prepared planting soil mixture.

D. Construct sturdy fences, or barriers, of wood, steel, or other protective material around valuable vegetation for protection from construction equipment. Place barriers far enough away from trees, but not less than the specifications in "B", so that tall equipment such as backhoes and dump trucks do not contact tree branches.

E. Construction limits should be identified and clearly marked to exclude equipment.

F. Avoid spills of oil/gas and other contaminants.

G. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged. The 3 or 4 cut method should be used on all branches larger than two inches at the cut. First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

H. Penalties for damage to valuable trees, shrubs, and herbaceous plants should be clearly spelled out in the contract.

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STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition

A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil.

Purpose

The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment load. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope lengths contributing runoff to a silt fence placed on a slope are:

Slope Steepness	Maximum Length (ft.)
2:1	25
3:1	50
4:1	75
5:1 or flatter	100

2. Maximum drainage area for overland flow to a silt fence shall not exceed ¼ acre per 100 feet of fence, with maximum ponding depth of 1.5 feet behind the fence; and

3. Erosion would occur in the form of sheet erosion; and

4. There is no concentration of water flowing to the barrier.

Design Criteria

Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff. All silt fences shall be placed as close to the areas as possible, but at least 10 feet from the toe of a slope to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.

Sensitive areas to be protected by silt fence may need to be reinforced by using heavy wire fencing for added support to prevent collapse.

Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. A detail of the silt fence shall be shown on the plan. See Figure 5A.8 on page 5A.21 for details.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682

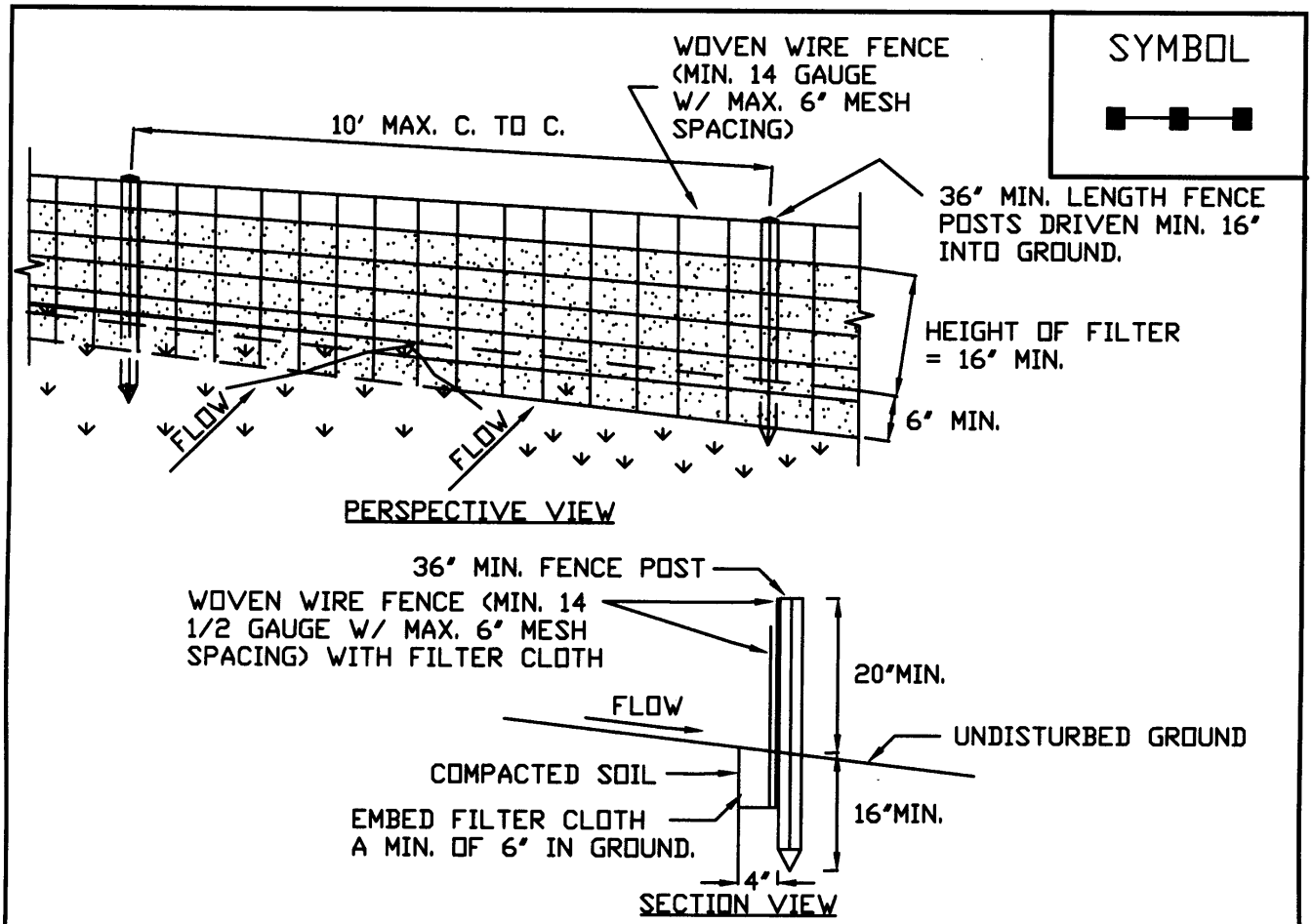
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751 (modified)
Slurry Flow Rate (gal/min/sf)	0.3	
Equivalent Opening Size	40-80	US Std Sieve CW-02215
Ultraviolet Radiation Stability (%)	90	ASTM G-26

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.0 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot.

3. Wire Fence (for fabricated units): Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated Units: Envirofence, Geofab, or approved equal, may be used in lieu of the above method providing the unit is installed per details shown in Figure 5A.8.

Figure 5A.8
Silt Fence



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	SILT FENCE

STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION

Definition

A temporary, somewhat permeable barrier, installed around inlets in the form of a fence, berm or excavation around an opening, trapping water and thereby reducing the sediment content of sediment laden water by settling.

Purpose

To prevent heavily sediment laden water from entering a storm drain system through inlets.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are four (4) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Curb Drop Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

See details for Excavated Drop Inlet Protection in Figure 5A.11 on page 5A.29.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection

See Figure 5A.12 for details on Filter Fabric Drop Inlet Protection on page 5A.30.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as

necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

If straw bales are used in lieu of filter fabric, they should be placed tight with the cut edge adhering to the ground at least 3 inches below the elevation of the drop inlet. Two anchor stakes per bale shall be driven flush to bale surface. Straw bales will be replaced every 4 months until the area is stabilized.

Type III – Stone and Block Drop Inlet Protection

See Figure 5A.13 for details on Stone and Block Drop Inlet Protection on page 5A.31.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet ("doughnut"). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilized in a manner appropriate to the site.

Type IV – Curb Drop Inlet Protection

See Figure 5A. 14 for details on Curb Drop Inlet Protection on page 5A.32.

The drainage area should be limited to 1 acre at the drop inlet. The wire mesh must be of sufficient strength to support the filter fabric and stone with the water fully impounded against it. Stone is to be 2 inches in size and clean. The filter fabric must be of a type approved for this purpose with an equivalent opening size (EOS) of 40-85. The protective structure will be constructed to extend beyond the inlet 2 feet in both directions. Assure that storm flow does not bypass the inlet by installing temporary dikes (such as sand bags) directing flow into the inlet. Make sure that the overflow weir is stable. Traffic safety shall be integrated with the use of this practice.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any stone missing should be replaced. Check materials for proper anchorage and secure as necessary.

Figure 5A.11
Excavated Drop Inlet Protection

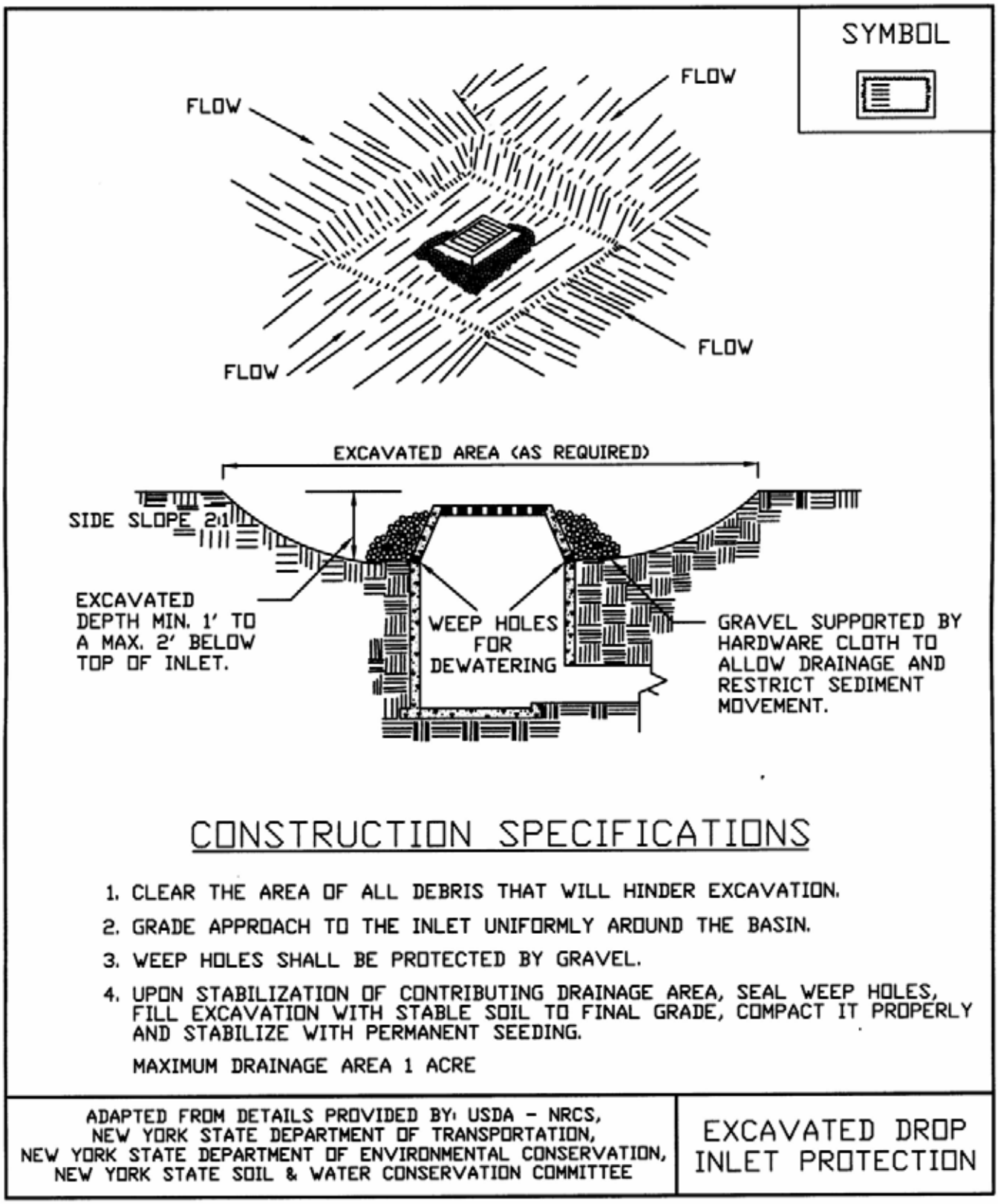
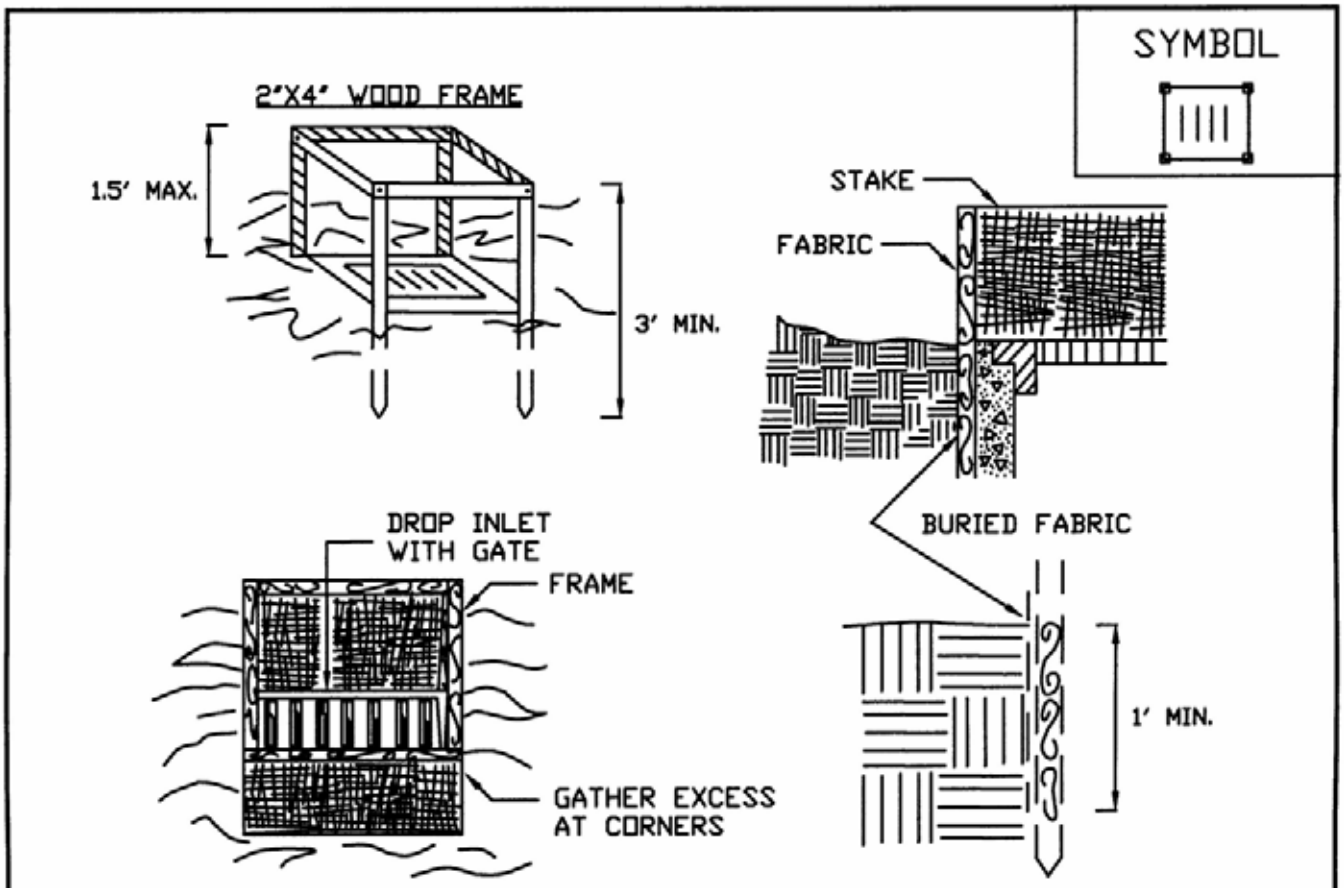


Figure 5A.12
Filter Fabric Drop Inlet Protection



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUN DRAINAGE AREA 1 ACRE

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	FILTER FABRIC DROP INLET PROTECTION

Figure 5A.13
Stone & Block Drop Inlet Protection

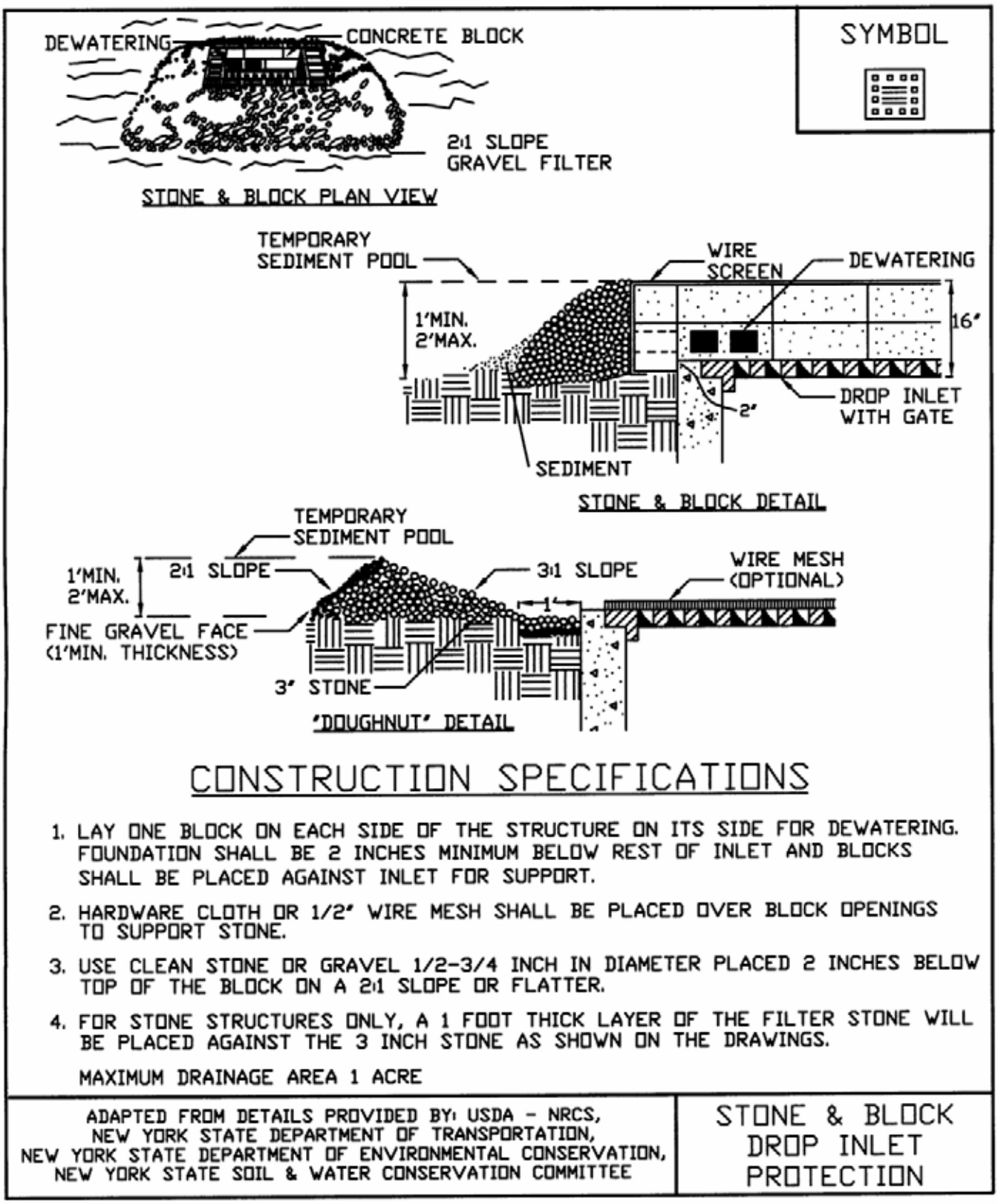
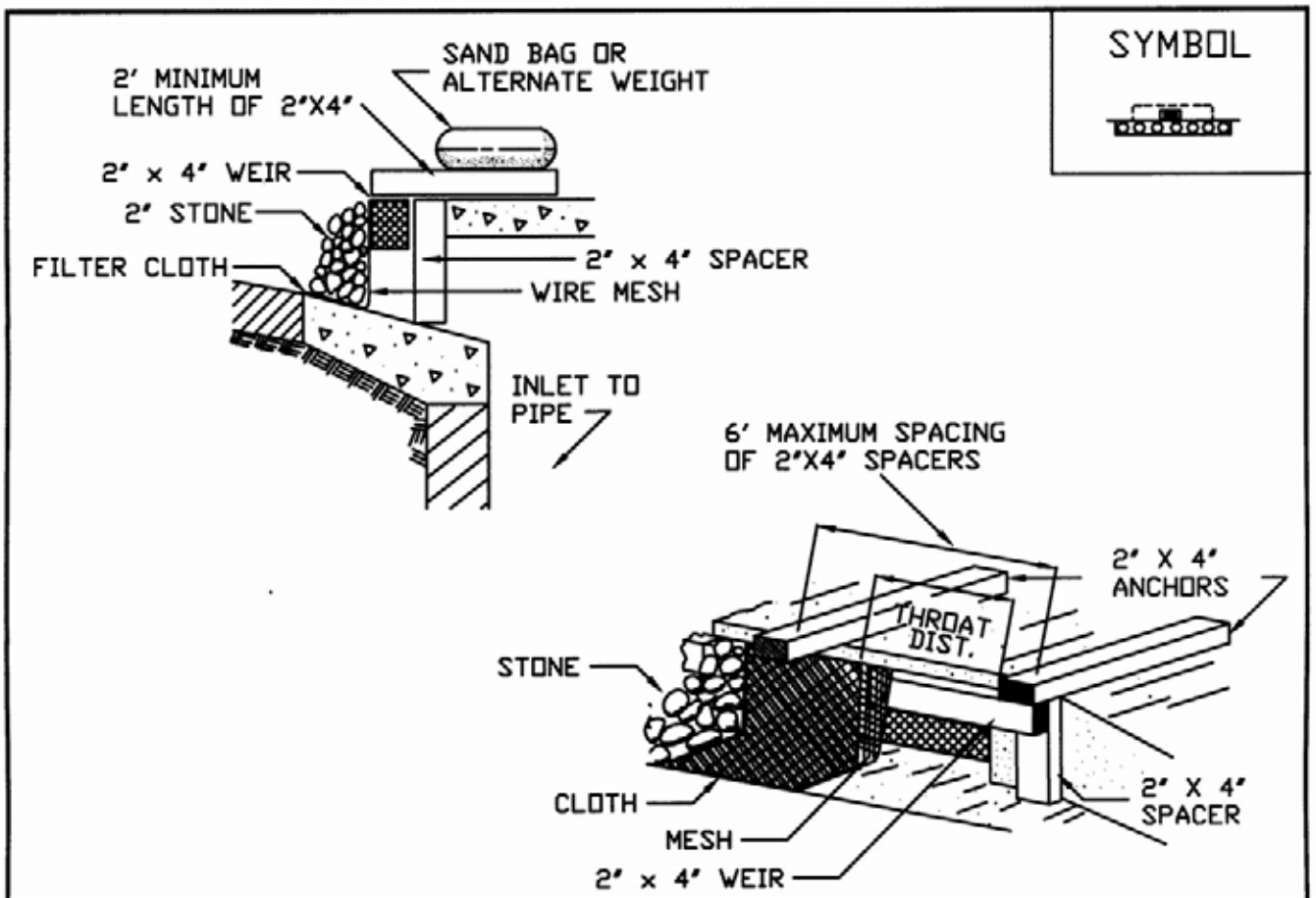


Figure 5A.14
Curb Drop Inlet Protection



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN AOS OF 40-85.
2. WOODEN FRAME SHALL BE CONSTRUCTED OF 2" x 4" CONSTRUCTION GRADE LUMBER.
3. WIRE MESH ACROSS THROAT SHALL BE A CONTINUOUS PIECE 30 INCH MINIMUM WIDTH WITH A LENGTH 4 FEET LONGER THAN THE THROAT. IT SHALL BE SHAPED AND SECURELY NAILED TO A 2" x 4" WEIR.
4. THE WEIR SHALL BE SECURELY NAILED TO 2" x 4" SPACERS 9 INCHES LONG SPACED NO MORE THAN 6 FEET APART.
5. THE ASSEMBLY SHALL BE PLACED AGAINST THE INLET AND SECURED BY 2" x 4" ANCHORS 2 FEET LONG EXTENDING ACROSS THE TOP OF THE INLET AND HELD IN PLACE BY SANDBAGS OR ALTERNATE WEIGHTS.

MAXIMUM DRAINAGE AREA 1 ACRE

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CURB DROP INLET PROTECTION

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE

Definition

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area.

Purpose

The purpose of stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction entrance shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 5A.35 on page 5A.76 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile

The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Brust Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 modified
Equivalent Opening Size	40-80	40-80	US Std Sieve CW-02215
Aggregate Depth	6	10	--

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

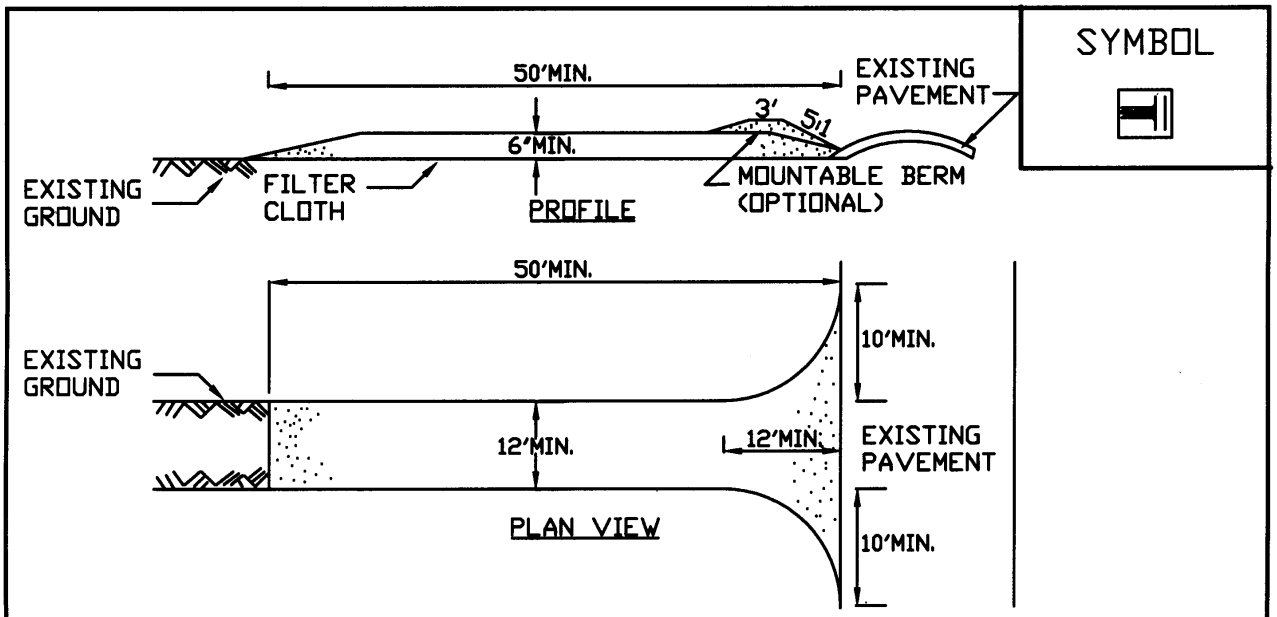
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The entrance shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 5A.35
Stabilized Construction Entrance



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STABILIZED CONSTRUCTION ENTRANCE

STANDARD AND SPECIFICATIONS FOR DUST CONTROL

Definition

The control of dust resulting from land-disturbing activities.

Purpose

To prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the local permitting authority.

Construction Specifications

A. Non-driving Areas – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. Driving Areas – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access routes.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geotextiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

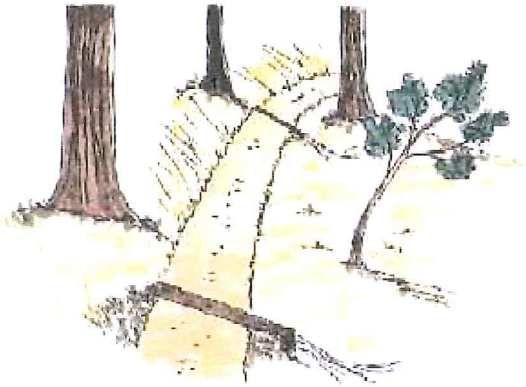
Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

All Stormwater Pollution Prevention Plans must contain the NYS DEC issued “Conditions for Use” and “Application Instructions” for any polymers used on the site. This information can be obtained from the NYS DEC website.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR WATER BAR



Definition

A ridge or ridge and channel constructed diagonally across a sloping road or utility right-of-way that is subject to erosion.

Purpose

To limit the accumulation of erosive velocity of water by diverting surface runoff at pre-designed intervals.

Conditions Where Practice Applies

Where runoff protection is needed to prevent erosion on sloping access right-of-ways or either long, narrow sloping areas generally less than 100 feet in width.

Design Criteria

Design computations are not required.

1. The design height shall be minimum of 12 inches measured from channel bottom to ridge top.

2. The side slopes shall be 2:1 or flatter, a minimum of 4:1 where vehicles cross.

3. The base width of the ridge shall be six feet minimum.

4. The spacing of the water bars shall be as follows:

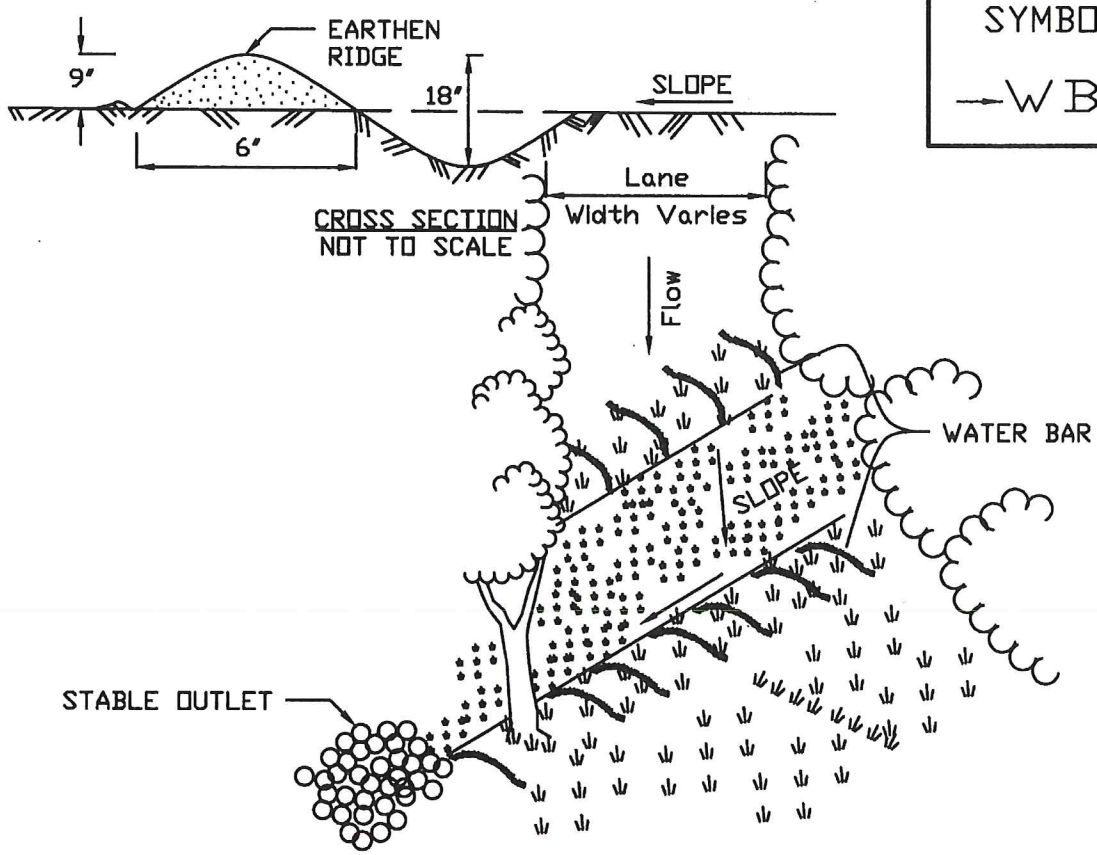
Slope (%)	Spacing (ft)
<5	125
5 TO 10	100
10 TO 20	75
20 TO 35	50
>35	25

5. The positive grade of the water bar shall not exceed 2%. A crossing angle of approximately 60 degrees is preferred.

6. Once diverted, water must be conveyed to a stable system (i.e. vegetated swale or storm sewer system). Water bars should have stable outlets, either natural or constructed. Site spacing may need to be adjusted for field conditions to use the most suitable areas for water disposal.

See Figure 5A.4 for details.

Figure 5A.4
Water Bar



SYMBOL

→WB←

CONSTRUCTION SPECIFICATIONS

1. INSTALL THE WATER BAR AS SOON AS THE RIGHT OF WAY IS CLEARED AND GRADED.
2. DISK OR STRIP THE SOD FROM THE BASE FOR THE CONSTRUCTED RIDGE BEFORE PLACING FILL.
3. TRACK THE RIDGE TO COMPACT IT TO THE DESIGN CROSS SECTION.
4. THE OUTLET SHALL BE LOCATED ON AN UNDISTURBED AREA. FIELD SPACING WILL BE ADJUSTED TO USE THE MOST STABLE OUTLET AREAS. OUTLET PROTECTION WILL BE PROVIDED WHEN NATURAL AREAS ARE NOT ADEQUATE.
5. VEHICLE CROSSING SHALL BE STABILIZED WITH GRAVEL. EXPOSED AREAS SHALL BE IMMEDIATELY SEEDED AND MULCHED.
6. PERIODICALLY INSPECT WATER BARS FOR EROSION DAMAGE AND SEDIMENT. CHECK OUTLET AREAS AND MAKE REPAIRS AS NEEDED TO RESTORE OPERATION.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	WATER BARS

United States Environmental Protection Agency

Stormwater Best Management Practice

Concrete Washout

Permits for Clean Water NPDES

Minimum Measure

Construction Site Stormwater Runoff Control

Subcategory

Good Housekeeping/Materials Management

Description of Concrete Washout at Construction Sites

Concrete and its ingredients

Concrete is a mixture of cement, water, and aggregate material. Portland cement is made by heating a mixture of limestone and clay containing oxides of calcium, aluminum, silicon and other metals in a kiln and then pulverizing the resulting clinker. The fine aggregate particles are usually sand. Coarse aggregate is generally gravel or crushed stone. When cement is mixed with water, a chemical reaction called hydration occurs, which produces glue that binds the aggregates together to make concrete.

Concrete washout

After concrete is poured at a construction site, the chutes of ready mixed concrete trucks and hoppers of concrete pump trucks must be washed out to remove the remaining concrete before it hardens. Equipment such as wheelbarrows and hand tools also need to be washed down. At the end of each work day, the drums of concrete trucks must be washed out. This is customarily done at the ready mixed batch plants, which are usually off-site facilities, however large or rural construction projects may have on-site batch plants. Cementitious (having the properties of cement) washwater and solids also come from using such construction materials as mortar, plaster, stucco, and grout.

Environmental and Human Health Impacts

Concrete washout water (or washwater) is a slurry containing toxic metals. It's also caustic and corrosive, having a pH near 12. In comparison, Drano liquid drain cleaner has a pH of 13.5. Caustic washwater can harm fish gills and eyes and interfere with reproduction. The safe pH ranges for aquatic life habitats are 6.5 – 9 for freshwater and 6.5 – 8.5 for saltwater.

Construction workers should handle wet concrete and washout water with care because it may cause skin irritation and eye damage. If the washwater is dumped on the ground (Fig. 1), it can run off the construction site to adjoining roads and enter roadside storm drains, which discharge to surface waters such as rivers, lakes, or estuaries. The red arrow in Figure 2 points to a ready mixed truck chute that's being washed out into a roll-off bin, which isn't watertight. Leaking washwater, shown in the foreground, will likely follow similar

Figure 1. *Chute washwater being dumped on the ground*

Figure 2. *Chute washwater leaking from a roll-off bin being used as a washout container*

paths to nearby surface waters. Rainfall may cause concrete washout containers that are uncovered to overflow and also transport the washwater to surface waters. Rainwater polluted with concrete washwater can percolate down through the soil and alter the soil chemistry, inhibit plant growth, and contaminate the groundwater. Its high pH can increase the toxicity of other substances in the surface waters and soils. Figures 1 and 2 illustrate the need for better washout management practices.

Best Management Practice Objectives

The best management practice objectives for concrete washout are to (a) collect and retain all the concrete washout water and solids in leak proof containers, so that this caustic material does not reach the soil surface and then migrate to surface waters or into the ground water, and (b) recycle 100 percent of the collected concrete washout water and solids. Another

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objective is to support the diversion of recyclable materials from landfills. Table 1 shows how concrete washout materials can be recycled and reused.

Table 1 – Recycling concrete washout materials

Uses of Recycled Materials	Concrete Washout Materials					
	Washwater	Cement fines[a]	Fine aggregate	Coarse aggregate	Hardened concrete	Unused wet concrete
Reused to washout additional mixer truck chutes or drums	x					
Reused as a ready mixed concrete ingredient	x	x[b]	x	x		
Reused as an ingredient of precast concrete products, e.g., highway barriers, retaining wall blocks, riprap	x	x	x	x		x
Reused as crushed concrete products, e.g., road base or fill		x	x	x	x	
Reused to pave the yards of ready mixed concrete plants						x
Returned back to a surface water, e.g., river, lake, or estuary	x[c]					

a. Fine particles of cementitious material (e.g., Portland cement, slag cement, fly ash, silica fume)

b. Recyclable, if allowed by the concrete quality specifications

c. Treated to reduce the pH and remove metals, so it can be delivered to a municipal wastewater treatment plant, where it is treated further and then returned to a natural surface water

Washwater recycling, treatment, disposal

Washwater from concrete truck chutes, hand mixers, or other equipment can be passed through a system of weirs or filters to remove solids and then be reused to wash down more chutes and equipment at the construction site or as an ingredient for making additional concrete. A three chamber washout filter is shown in Figure 3. The first stage collects the coarse aggregate. The middle stage filters out the small grit and sand. The third stage has an array of tablets that filter out fines and reduces the pH. The filtered washwater is then discharged through a filter sock. An alternative is to pump the washout water out of the washout container (Fig 4) and treat the washwater off site to remove metals and reduce its pH, so it can be delivered to a publicly owned treatment works (POTW), also known as a municipal wastewater treatment plant, which provides additional treatment allowing the washwater to be discharged to a surface water. The POTW should be contacted to inquire about any pretreatment requirements, i.e., the National Pretreatment Standards for Prohibited Dischargers (40CFR 403.5) before discharging the washwater to the POTW. The washwater can also be retained in the washout container and allowed to evaporate, leaving only the hardened cementitious solids to be recycled.

Figure 3. *Concrete washout filter*

Figure 4. *Vacuuming washwater out of a washout container for treatment and reuse*

Solids recycling

The course aggregate materials that are washed off concrete truck chutes into a washout container can be either separated by a screen and placed in aggregate bins to be reused at the construction site or returned to the ready mixed plant and washed into a reclaimer (Fig. 5). When washed out into a reclaimer, the fine and course aggregates are separated out and placed in different piles or bins to be reused in making fresh concrete. Reclaimers with settling tanks separate cement fines from the washwater, and these fines can also be used in new concrete unless prohibited by the user's concrete quality specifications.

Figure 5. *Ready mixed truck washing out into a reclaimer*

Hardened concrete recycling

When the washwater in a construction site concrete washout container has been removed or allowed to evaporate, the hardened concrete that remains can be crushed (Fig. 6) and reused as a construction material. It makes an excellent aggregate for road base and can be used as fill at the construction site or delivered to a recycler. Concrete recyclers can be found at municipal solid waste disposal facilities, private recycling plants, or large construction sites.

Figure 6. *Crushed concrete stockpile and crusher*

Wet concrete recycling

Builders often order a little more ready mixed concrete than they actually need, so it is common for concrete trucks to have wet concrete remaining in their drum after a delivery. This unused concrete can be returned to the ready mixed plant and either (1) used to pour precast concrete products (e.g., highway barriers, retaining wall blocks, riprap), (2) used to pave the ready mixed plant's yard, (3) washed into a reclaimer, or (4) dumped on an impervious surface and allowed to harden, so it can be crushed and recycled as aggregate. Unused wet concrete should not be dumped on bare ground to harden at construction sites because this can contribute to ground water and surface water contamination.

Washout Containers

Different types of washout containers are available for collecting, retaining, and recycling the washwater and solids from washing down mixed truck chutes and pump truck hoppers at construction sites.

Chute washout box

A chute washout box is mounted on the back of the ready mixed truck. If the truck has three chutes, the following procedure is used to perform the washout from the top down: (1) after the pour is completed, the driver attaches the extension chute to the washout box, (2) the driver then rotates the main chute over the extension chute (Fig. 7) and washes down the hopper first then the main chute, (3) finally the driver washes down the flop down chute and last the extension chute hanging on the box. All washwater and solids are captured in the box. After the wash down, washwater and solids are returned to the ready mixed plant for recycling. A filter basket near the top of the washout box separates out the coarse aggregates so they can be placed in a bin for reuse either at the construction site or back at the cement plant.

Figure 7. *Chute washout box*

Chute washout bucket and pump

After delivering ready mixed concrete and scraping the last of the customer's concrete down the chute, the driver hangs a washout bucket shown in Figure 8 (see red arrow) on the end of the truck's chute and secures the hose to insure no leaks. The driver then washes down the chute into the bucket to remove any cementitious material before it hardens. After washing out the chute, the driver pumps (yellow arrow points to the pump) the washwater, sand, and other fine solids from the bucket up into the truck's drum to be returned to the ready mixed plant, where it can be washed into a reclaimer. A removable screen at the bottom of the washout bucket prevents course aggregate from entering the pump. This course aggregate can also be returned to the plant and added to the coarse aggregate pile to be reused. All the materials are recycled.

Figure 8. *Chute washout bucket and pump*

Hay bale and plastic washout pit

A washout pit made with hay bales and a plastic lining is shown in Figure 9. Such pits can be dug into the ground or built above grade. The plastic lining should be free of tears or holes that would allow the washwater to escape (Fig. 10). After the pit is used to wash down the chutes of multiple ready mixed trucks and the washwater has evaporated or has been vacuumed off, the remaining hardened solids can be broken up and removed from the pit. This process may damage the hay bales and plastic lining. If damage occurs, the pit will need to be repaired and relined with new plastic. When the hardened solids are removed, they may be bound up with the plastic lining and have to be sent to a landfill, rather than recycled. Recyclers usually accept only unmixed material. If the pit is going to be emptied and repaired more than a few times, the hay bales and plastic will be generating additional solid waste. Ready mixed concrete

Figure 9. *Hay bale and plastic washout pit*

Figure 10. *Leaking washout pit that has not been well maintained*

trucks can use hay bale washout pits, but concrete pump trucks have a low hanging hopper in the back that may prevent their being washed out into bale-lined pits.

Vinyl washout container

Figure 11. *Vinyl washout pit with filter bag*

The vinyl washout container (Fig. 11) is portable, reusable, and easier to install than a hay bale washout pit. The biodegradable filter bag (Fig. 12) assists in extracting the concrete solids and prolongs the life of the vinyl container. When the bag is lifted, the water is filtered out and the remaining concrete solids and the bag can be disposed of together in a landfill, or the hardened concrete can be delivered to a recycler. After the solids have been removed several times and the container is full of washwater, the washwater can be allowed to evaporate, so the container can be reused. The washwater can be removed more quickly by placing another filter bag in the container and spreading water gelling granules evenly across the water. In about five minutes, the water in the filter bag will turn into a gel that can be removed with the bag. Then the gel and filter bag can be disposed to together.

Figure 12. *Extracting the concrete solids or gelled washwater*

Metal washout container

The metal roll-off bin (Fig. 13) is designed to securely contain concrete washwater and solids and is portable and reusable. It also has a ramp that allows concrete pump trucks to wash out their hoppers (Fig. 14). Roll-off providers offer recycling services, such as, picking up the roll-off bins after the washwater has evaporated and the solids have hardened, replacing them with empty washout bins, and delivering the hardened concrete to a recycler (Fig. 15), rather than a landfill. Some providers will vacuum off the washwater, treat it to remove metals and reduce the pH, deliver it to a wastewater treatment plant for additional treatment and subsequent discharge to a surface water. Everything is recycled or treated sufficiently to be returned to a natural surface water.

Figure 13. *Mixer truck being washed out into a roll-off bin*

Figure 14. *Pump truck using the ramp to wash out into a roll-off bin*

Figure 15. *Delivering hardened Concrete to a recycler*

Another metal, portable, washout container, which has a rain cover to prevent overflowing, is shown in Figure 16. It is accompanied by an onsite washwater treatment unit, which reduces the pH and uses a forced weir tank system to remove the coarse aggregate, fine aggregate, and cement fines. The washwater can then be reused at the construction site to wash out other mixer truck chutes and equipment. The solids are allowed to harden together and can be taken to a concrete recycler (Fig. 17) to be crushed and used as road base or aggregate for making precast products, such as retaining wall blocks. All materials are recycled.

Figure 16. *Washout container with a rain cover and onsite washwater treatment*

Figure 17. *Delivering hardened concrete to a recycler*

Siting Washout Facilities

Concrete washout facilities, such as washout pits and vinyl or metal washout containers, should be placed in locations that provide convenient access to concrete trucks, preferably near the area where concrete is being poured. However they

should not be placed within 50 feet of storm drains, open ditches, or waterbodies. Appropriate gravel or rock should cover approaches to concrete washout facilities when they are located on undeveloped property. On large sites with extensive concrete work, washouts should be placed at multiple locations for ease of use by ready mixed truck drivers. If the washout facility is not within view from the pour location, signage will be needed to direct the truck drivers.

Operating and Inspecting Washout Facilities

Concrete washout facilities should be inspected daily and after heavy rains to check for leaks, identify any plastic linings and sidewalls have been damaged by construction activities, and determine whether they have been filled to over 75 percent capacity. When the washout container is filled to over 75 percent of its capacity, the washwater should be vacuumed off or allowed to evaporate to avoid overflows. Then when the remaining cementitious solids have hardened, they should be removed and recycled. Damages to the container should be repaired promptly. Before heavy rains, the washout container's liquid level should be lowered or the container should be covered to avoid an overflow during the rain storm.

Educating Concrete Subcontractors

The construction site superintendent should make ready mixed truck drivers aware of washout facility locations and be watchful for improper dumping of cementitious material. In addition, concrete washout requirements should be included in contracts with concrete delivery companies.

Reference

NRMCA 2009. Environmental Management in the Ready Mixed Concrete Industry, 2PEMRM, 1st edition. By Gary M. Mullins. Silver Springs, MD: National Ready Mixed Concrete Association.

Websites and Videos

Construction Materials Recycling Association
www.concreterecycling.org

National Ready Mixed Concrete Association
www.nrmca.org

National Ready Mixed Concrete Research and Education Foundation
www.rmc-foundation.org

Additional information and videos on concrete washout containers and systems can be found by a web search for "concrete washout."

Photograph Credits

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Figure 3. *Mark Shaw, Ultra Tech International, Inc.*
Figure 4. *Mark Jenkins, Concrete Washout Systems, Inc.*
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Figure 6. *William Turley, Construction Materials Recycling Association*
Figure 7. *Brad Burke, Innovative Concrete Solutions, LLC*
Figure 8. *Ron Lankester, Enviroguard*
Figures 9, 10. *Mark Jenkins, Concrete Washout Systems, Inc.*
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Figures 13, 14, 15. *Mark Jenkins, Concrete Washout Systems, Inc.*
Figures 16, 17. *Rick Abney Sr., Waste Crete Systems, LLP*

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New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water

Deep-Ripping and Decompaction

April 2008

New York State
Department of Environmental Conservation

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Alternative Stormwater Management
Deep-Ripping and Decompaction

Description

The two-phase practice of 1) “Deep Ripping;” and 2) “Decompaction” (deep subsoiling), of the soil material as a step in the cleanup and restoration/landscaping of a construction site, helps mitigate the physically induced impacts of soil compression; i.e.: soil compaction or the substantial increase in the bulk density of the soil material.

Deep Ripping and Decompaction are key factors which help in restoring soil pore space and permeability for water infiltration. Conversely, the physical actions of cut-and-fill work, land grading, the ongoing movement of construction equipment and the transport of building materials throughout a site alter the architecture and structure of the soil, resulting in: the mixing of layers (horizons) of soil materials, compression of those materials and diminished soil porosity which, if left unchecked, severely impairs the soil’s water holding capacity and vertical drainage (rainfall infiltration), from the surface downward.

In a humid climate region, compaction damage on a site is virtually guaranteed over the duration of a project. Soil in very moist to wet condition when compacted, will have severely reduced permeability. Figure 1 displays the early stage of the deep-ripping phase (Note that all topsoil was stripped prior to construction access, and it remains stockpiled until the next phase – decompaction – is complete). A heavy-duty tractor is pulling a three-shank ripper on the first of several series of incrementally deepening passes through the construction access corridor's densely compressed subsoil material. Figure 2 illustrates the approximate volumetric composition of a loam surface soil when conditions are good for plant growth, with adequate natural pore space for fluctuating moisture conditions.

Fig. 1. A typical deep ripping phase of this practice, during the first in a series of progressively deeper “rips” through severely compressed subsoil.

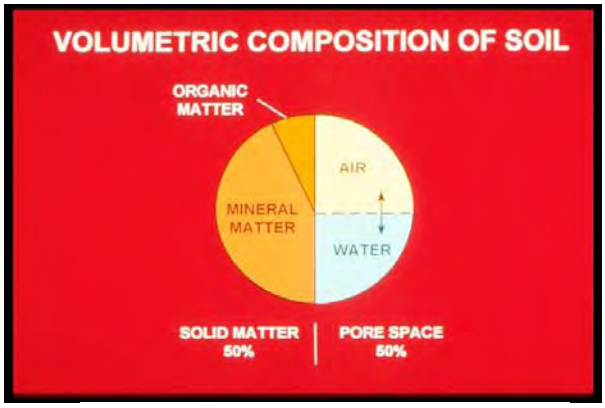


Fig. 2. About 50% of the volume of undisturbed loam surface soil is pore space, when soil is in good condition for plant growth. Brady, 2002.

Recommended Application of Practice

The objective of Deep Ripping and Decompaction is to effectively fracture (vertically and laterally) through the thickness of the physically compressed subsoil material (see Figure 3), restoring soil porosity and permeability and aiding infiltration to help reduce runoff. Together with topsoil stripping, the "two-phase" practice of Deep Ripping and Decompaction first became established as a "best management practice" through ongoing success on commercial farmlands affected by heavy utility construction right-of-way projects (transmission pipelines and large power lines).

Fig. 3. Construction site with significant compaction of the deep basal till subsoil extends 24 inches below this exposed cut-and-fill work surface.

Soil permeability, soil drainage and cropland productivity were restored. For broader construction application, the two-phase practice of Deep Ripping and Decompaction is best adapted to areas impacted with significant soil compaction, on contiguous open portions of large construction sites and inside long, open construction corridors used as temporary access over the duration of construction. Each mitigation area should have minimal above-and-below-ground obstructions for the easy avoidance and maneuvering of a large tractor and ripping/decompacting implements. Conversely, the complete two-phase practice is not recommended in congested or obstructed areas due to the limitations on tractor and implement movement.

Benefits

Aggressive "deep ripping" through the compressed thickness of exposed subsoil before the replacement/respreading of the topsoil layer, followed by "decompaction," i.e.: "sub-soiling," through the restored topsoil layer down into the subsoil, offers the following benefits:

- Increases the project (larger size) area's direct surface infiltration of rainfall by providing the open site's mitigated soil condition and lowers the demand on concentrated runoff control structures

- Enhances direct groundwater recharge through greater dispersion across and through a broader surface than afforded by some runoff-control structural measures

- Decreases runoff volume generated and provides hydrologic source control

- May be planned for application in feasible open locations either alone or in

conjunction with plans for structural practices (e.g., subsurface drain line or infiltration basin) serving the same or contiguous areas

- Promotes successful long-term revegetation by restoring soil permeability, drainage and water holding capacity for healthy (rather than restricted) root-system development of trees, shrubs and deep rooted ground cover, minimizing plant drowning during wet periods and burnout during dry periods.

Feasibility / Limitations

The effectiveness of Deep Ripping and Decompaction is governed mostly by site factors such as: the original (undisturbed) soil's hydrologic characteristics; the general slope; local weather/timing (soil moisture) for implementation; the space-related freedom of equipment/implement maneuverability (noted above in **Recommended Application of Practice**), and by the proper selection and operation of tractor and implements (explained below in **Design Guidance**). The more notable site-related factors include:

Soil

In the undisturbed condition, each identified soil type comprising a site is grouped into one of four categories of soil hydrology, Hydrologic Soil Group A, B, C or D, determined primarily by a range of characteristics including soil texture, drainage capability when thoroughly wet, and depth to water table. The natural rates of infiltration and transmission of soil-water through the undisturbed soil layers for Group A is "high" with a low runoff potential while soils in Group B are moderate in infiltration and the transmission of soil-water with a moderate runoff potential, depending somewhat on slope. Soils in Group C have slow rates of infiltration and transmission of soil-water and a moderately high runoff potential influenced by soil texture and slope; while soils in Group D have exceptionally slow rates of infiltration and transmission of soil-water, and high runoff potential.

In Figure 4, the profile displays the undisturbed horizons of a soil in Hydrologic Soil Group C and the naturally slow rate of infiltration through the subsoil. The slow rate of infiltration begins immediately below the topsoil horizon (30 cm), due to the limited amount of macro pores, e.g.: natural subsoil fractures, worm holes and root channels. Infiltration after the construction-induced mixing and compression of such subsoil material is virtually absent; but can be restored back to this natural level with the two-phase practice of deep ripping and decompaction, followed by the permanent establishment of an appropriate, deep taproot

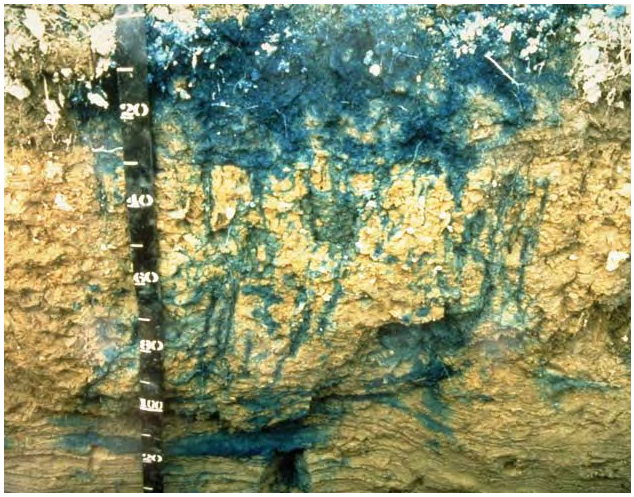


Fig. 4. Profile (in centimeters) displaying the infiltration test result of the natural undisturbed horizons of a soil in Hydrologic Soil Group C.

lawn/ground cover to help maintain the restored subsoil structure. Infiltration after construction-induced mixing and compression of such subsoil material can be notably rehabilitated with the Deep Ripping and Decompaction practice, which prepares the site for the appropriate long-term lawn/ground cover mix including deep taproot plants such as clover, fescue or trefoil, etc. needed for all rehabilitated soils.

Generally, soils in Hydrologic Soil Groups A and B, which respectively may include deep, well-drained, sandy-gravelly materials or deep, moderately well-drained basal till materials, are among the easier ones to restore permeability and infiltration, by deep ripping and decompaction. Among the many different soils in Hydrologic Soil Group C are those unique glacial tills having a natural fragipan zone, beginning about 12 to 18 inches (30 – 45cm), below surface. Although soils in Hydrologic Soil Group C do require a somewhat more carefully applied level of the Deep Ripping and Decompaction practice, it can greatly benefit such affected areas by reducing the runoff and fostering infiltration to a level equal to that of pre-disturbance.

Soils in Hydrologic Soil Group D typically have a permanent high water table close to the surface, influenced by a clay or other highly impervious layer of material. In many locations with clay subsoil material, the bulk density is so naturally high that heavy trafficking has little or no added impact on infiltration; and structural runoff control practices rather than Deep Ripping and Decompaction should be considered.

The information about Hydrologic Soil Groups is merely a general guideline. Site-specific data such as limited depths of cut-and-fill grading with minimal removal or translocation of the inherent subsoil materials (as analyzed in the county soil survey) or, conversely, the excavation and translocation of deeper, unconsolidated substratum or consolidated bedrock materials (unlike the analyzed subsoil horizons' materials referred to in the county soil survey) should always be taken into account.

Sites made up with significant quantities of large rocks, or having a very shallow depth to bedrock, are not conducive to deep ripping and decompation (subsoiling); and other measures may be more practical.

Slope

The two-phase application of 1) deep ripping and 2) decompaction (deep subsoiling), is most practical on flat, gentle and moderate slopes. In some situations, such as but not limited to temporary construction access corridors, inclusion areas that are moderately steep along a project's otherwise gentle or moderate slope may also be deep ripped and decompacted. For limited instances of moderate steepness on other projects, however, the post-construction land use and the relative alignment of the potential ripping and decompaction work in relation to the lay of the slope should be reviewed for safety and practicality. In broad construction areas predominated by moderately steep or steep slopes, the practice is generally not used.

Local Weather/Timing/Soil Moisture

Effective fracturing of compressed subsoil material from the exposed work surface, laterally and vertically down through the affected zone is achieved only when the soil material is moderately dry to moderately moist. Neither one of the two-phases, deep ripping nor decompaction (deep

subsoiling), can be effectively conducted when the soil material (subsoil or replaced topsoil) is in either a "plastic" or "liquid" state of soil consistency. Pulling the respective implements legs through the soil when it is overly moist only results in the "slicing and smearing" of the material or added "squeezing and compression" instead of the necessary fracturing. Ample drying time is needed for a "rippable" soil condition not merely in the material close to the surface, but throughout the material located down to the bottom of the physically compressed zone of the subsoil.

The "poor man's Atterberg field test" for soil plasticity is a simple "hand-roll" method used for quick, on-site determination of whether or not the moisture level of the affected soil material is low enough for: effective deep ripping of subsoil; respreading of topsoil in a friable state; and final decompaction (deep subsoiling). Using a sample of soil material obtained from the planned bottom depth of ripping, e.g.: 20 - 24 inches below exposed subsoil surface, the sample is hand rolled between the palms down to a 1/8-inch diameter thread. (Use the same test for stored topsoil material before respreading on the site.) If the respective soil sample crumbles apart in segments no greater than 3/8 of an inch long, by the time it is rolled down to 1/8 inch diameter, it is low enough in moisture for deep ripping (or topsoil replacement), and decompaction. Conversely, as shown in Figure 5, if the rolled sample stretches out in increments greater than 3/8 of an inch long before crumbling, it is in a "plastic" state of soil consistency and is too wet for subsoil ripping (as well as topsoil replacement) and final decompaction.

Fig. 5. Augered from a depth of 19 inches below the surface of the replaced topsoil, this subsoil sample was hand rolled to a 1/8-inch diameter. The test shows the soil at this site stretches out too far without crumbling; it indicates the material is in a plastic state of consistence, too wet for final decompaction (deep subsoiling) at this time.

Design Guidance

Beyond the above-noted site factors, a vital requirement for the effective Deep Ripping and Decompaction (deep subsoiling), is implementing the practice in its distinct, two-phase process:

1) Deep rip the affected thickness of exposed subsoil material (see Figure 10 and 11), aggressively fracturing it before the protected topsoil is reapplied on the site (see Figure 12); and

2) Decompact (deep subsoil), simultaneously through the restored topsoil layer and the upper half of the affected subsoil (Figure 13). The second phase, "decompaction," mitigates the partial recompaction which occurs during the heavy process of topsoil spreading/grading. Prior to deep ripping and decompacting the site, all construction activity, including construction equipment and material storage, site cleanup and trafficking (Figure 14), should be finished; and the site closed off to further disturbance. Likewise, once the practice is underway and the area's soil permeability and

rainfall infiltration are being restored, a policy limiting all further traffic to permanent travel lanes is maintained.

The other critical elements, outlined below, are: using the proper implements (deep, heavy-duty rippers and subsoilers), and ample pulling-power equipment (tractors); and conducting the practice at the appropriate speed, depth and pattern(s) of movement.

Note that an appropriate plan for the separate practice of establishing a healthy perennial ground cover, with deep rooting to help maintain the restored soil structure, should be developed in advance. This may require the assistance of an agronomist or landscape horticulturist.

Implements

Avoid the use of all undersize implements. The small-to-medium, light-duty tool will, at best, only "scarify" the uppermost surface portion of the mass of compacted subsoil material. The term "chisel plow" is commonly but incorrectly applied to a broad range of implements. While a few may be adapted for the moderate subsoiling of non-impacted soils, the majority are less durable and used for only lighter land-fitting (see Figure 6).

Fig. 6. A light duty chisel implement, not adequate for either the deep ripping or decompaction (deep subsoiling) phase.

Fig. 7. One of several variations of an agricultural ripper. This unit has long, rugged shanks mounted on a steel V-frame for deep, aggressive fracturing through Phase 1.

Use a "heavy duty" agricultural-grade, deep ripper (see Figures 7,9,10 and 11) for the first phase: the lateral and vertical fracturing of the mass of exposed and compressed subsoil, down and through, to the bottom of impact, prior to the replacement of the topsoil layer. (Any oversize rocks which are uplifted to the subsoil surface during the deep ripping phase are picked and removed.) Like the heavy-duty class of implement for the first phase, the decompaction (deep subsoiling) of Phase 2 is conducted with the heavy-duty version of the deep subsoiler. More preferable is the angled-leg variety of deep subsoiler (shown in Figures 8 and 13). It minimizes the inversion of the subsoil and topsoil layers while laterally and vertically fracturing the upper half of the previously ripped subsoil layer and all of the topsoil layer by delivering a momentary, wave-like "lifting and shattering" action up through the soil layers as it is pulled.

Pulling-Power of Equipment

Use the following rule of thumb for tractor horsepower (hp) whenever deep ripping and decompacting a significantly impacted site: For both types of implement, have at least 40 hp of tractor pull available for each mounted shank/ leg.

Using the examples of a 3-shank and a 5-shank implement, the respective tractors should have 120 and 200 hp available for fracturing down to the final depth of 20-to-24 inches per phase. Final depth for the deep ripping in Phase 1 is achieved incrementally by a progressive series of passes (see Depth and Patterns of Movement, below); while for Phase 2, the full operating depth of the deep subsoiler is applied from the beginning.

The operating speed for pulling both types of implement should not exceed 2 to 3 mph. At this slow and managed rate of operating speed, maximum functional performance is sustained by the tractor and the implement performing the soil fracturing. Referring to Figure 8, the implement is the 6-leg version of the deep angled-leg subsoiler. Its two outside legs are "chained up" so that only four legs will be engaged (at the maximum depth), requiring no less than 160 hp, (rather than 240 hp) of pull. The 4-wheel drive, articulated-frame tractor in Figure 8 is 174 hp. It will be decompacting this unobstructed, former construction access area simultaneously through 11 inches of replaced topsoil and the upper 12 inches of the previously deep-ripped subsoil. In constricted areas of Phase 1) Deep Ripping, a medium-size tractor with adequate hp, such as the one in Figure 9 pulling a 3-shank deep ripper, may be more maneuverable.

Fig. 8. A deep, angled-leg subsoiler, ideal for Phase 2 decompaction of after the topsoil layer is graded on top of the ripped subsoil.

Fig. 9. This medium tractor is pulling a 3-shank deep ripper. The severely compacted construction access corridor is narrow, and the 120 hp tractor is more maneuverable for Phase 1 deep ripping (subsoil fracturing), here.

Some industrial-grade variations of ripping implements are attached to power graders and bulldozers. Although highly durable, they are generally not recommended. Typically, the shanks or "teeth" of these rippers are too short and stout; and they are mounted too far apart to achieve the well-distributed type of lateral and vertical fracturing of the soil materials necessary to restore soil permeability and infiltration. In addition, the power graders and bulldozers, as pullers, are far less maneuverable for turns and patterns than the tractor.

Depth and Patterns of Movement

As previously noted both Phase 1 Deep Ripping through significantly compressed, exposed subsoil and Phase 2 Decompaction (deep subsoiling) through the replaced topsoil and upper subsoil need to be performed at maximum capable depth of each implement. With an implement's guide wheels attached, some have a "normal" maximum operating depth of 18 inches, while others may go deeper. In many situations, however, the tractor/implement operator must first remove the guide wheels and other non essential elements from the implement. This adapts the ripper or the deep subsoiler for skillful pulling with its frame only a few inches above surface, while the shanks or legs, fracture the soil material 20-to-24 inches deep.

There may be construction sites where the depth of the exposed subsoil's compression is moderate, e.g.: 12 inches, rather than deep. This can be verified by using a ¾ inch cone penetrometer and a shovel to test the subsoil for its level of compaction, incrementally, every three inches of increasing depth. Once the full thickness of the subsoil's compacted zone is finally "pieced" and there is a significant drop in the psi measurements of the soil penetrometer, the depth/thickness of compaction is determined. This is repeated at several representative locations of the construction site. If the thickness of the site's subsoil compaction is verified as, for example, ten inches, then the Phase 1 Deep Ripping can be correspondingly reduced to the implement's minimum operable depth of 12 inches. However, the Phase 2 simultaneous Decompation (subsoiling) of an 11 inch thick layer of replaced topsoil and the upper subsoil should run at the subsoiling implements full operating depth.

Fig. 10. An early pass with a 3-shank deep ripper penetrating only 8 inches into this worksite's severely compressed subsoil.

Fig. 11. A repeat run of the 3-shank ripper along the same patterned pass area as Fig. 9; here, incrementally reaching 18 of the needed 22 inches of subsoil fracture.

Typically, three separate series (patterns) are used for both the Phase 1 Deep Ripping and the Phase 2 Decompaction on significantly compacted sites. For Phase 1, each series begins with a moderate depth of rip and, by repeat-pass, continues until full depth is reached. Phase 2 applies the full depth of Decompation (subsoiling), from the beginning.

Every separate series (pattern) consists of parallel, forward-and-return runs, with each progressive

pass of the implement's legs or shanks evenly staggered between those from the previous pass. This compensates for the shank or leg-spacing on the implement, e.g., with 24-to-30 inches between each shank or leg. The staggered return pass ensures lateral and vertical fracturing actuated every 12 to 15 inches across the densely compressed soil mass.

Large, Unobstructed Areas

For larger easy areas, use the standard patterns of movement:

- The first series (pattern) of passes is applied lengthwise, parallel with the longest spread of the site; gradually progressing across the site's width, with each successive pass.

- The second series runs obliquely, crossing the first series at an angle of about 45 degrees.

- The third series runs at right angle (or 90 degrees), to the first series to complete the fracturing and shattering on severely compacted sites, and avoid leaving large unbroken blocks of compressed soil material. (In certain instances, the third series may be optional, depending on how thoroughly the first two series loosen the material and eliminate large chunks/blocks of material as verified by tests with a ¾-inch cone penetrometer.)

Fig. 12. Moderately dry topsoil is being replaced on the affected site now that Phase 1 deep ripping of the compressed subsoil is complete.

Fig. 13. The same deep, angled-leg subsoiler shown in Fig. 7 is engaged at maximum depth for Phase 2, decompaction (deep soiling), of the replaced topsoil and the upper subsoil materials.

Corridors

In long corridors of limited width and less maneuverability than larger sites, e.g.: along compacted areas used as temporary construction access, a modified series of pattern passes are used.

- First, apply the same initial lengthwise, parallel series of passes described above.

● A second series of passes makes a broad “S” shaped pattern of rips, continually and gradually alternating the “S” curves between opposite edges inside the compacted corridor.

● The third and final series again uses the broad, alternating S pattern, but it is “flip-flopped” to continually cross the previous S pattern along the corridor’s centerline. This final series of the S pattern curves back along the edge areas skipped by the second series.

Maintenance and Cost

Once the two-phase practice of Deep Ripping and Decompation is completed, two items are essential for maintaining a site’s soil porosity and permeability for infiltration. They are: planting and maintaining the appropriate ground cover with deep roots to maintain the soil structure (see Figure 15); and keeping the site free of traffic or other weight loads.

Note that site-specific choice of an appropriate vegetative ground-cover seed mix, including the proper seeding ratio of one or more perennial species with a deep taproot system and the proper amount of lime and soil nutrients (fertilizer mix) adapted to the soil-needs, are basic to the final practice of landscaping, i.e: surface tillage, seeding/planting/fertilizing and culti-packing or mulching is applied. The "maintenance" of an effectively deep-ripped and decompacted area is generally limited to the successful perennial (long-term) landscape ground cover; as long as no weight-bearing force of soil compaction is applied.

Fig. 14. The severely compacted soil of a temporary construction yard used daily by heavy equipment for four months; shown before deep ripping, topsoil replacement, and decompaction.

Fig. 15. The same site as Fig. 14 after deep ripping of the exposed subsoil, topsoil replacement, decompaction through the topsoil and upper subsoil and final surface tillage and revegetation to maintain soil permeability and infiltration.

The Deep Ripping and Decompaction practice is, by necessity, more extensive than periodic subsoiling of farmland.The cost of deep ripping and decompacting (deep subsoiling), will vary according to the depth and severity of soil-material compression and the relative amount of tractor and implement time that is required. In some instances, depending on open maneuverability, two-to-three acres of compacted project area may be deep-ripped in one day. In other situations of more severe compaction and - or less maneuverability, as little as one acre may be fully ripped in a day. Generally, if the Phase 1) Deep Ripping is fully effective, the Phase 2) Decompaction should be completed in 2/3 to 3/4 of the time required for Phase 1.

Using the example of two acres of Phase 1) Deep Ripping in one day, at $1800 per day, the net cost is $900 per acre. If the Phase 2) Decompacting or deep subsoiling takes 3/4 the time as Phase 1, it costs $675 per acre for a combined total of $1575 per acre to complete the practice (these figures do not include the cost of the separate practice of topsoil stripping and replacement). Due to the many variables, it must be recognized that cost will be determined by the specific conditions or constraints of the site and the availability of proper equipment.

Resources

Publications:

- American Society of Agricultural Engineers. 1971. *Compaction of Agricultural Soils.* ASAE.

- Brady, N.C., and R.R. Weil. 2002. *The Nature and Properties of Soils. 13th ed.* Pearson Education, Inc.

- Baver, L.D. 1948. *Soil Physics.* John Wiley & Sons.

- Carpachi, N. 1987 (1995 fifth printing). *Excavation and Grading Handbook, Revised. 2nd ed.* Craftsman Book Company
- Ellis, B. (Editor). 1997. Safe & Easy Lawn Care: The Complete Guide to Organic Low Maintenance Lawn. Houghton Mifflin.

- Harpstead, M.I., T.J. Sauer, and W.F. Bennett. 2001. *Soil Science Simplified. 4th ed.* Iowa State University Press.

- Magdoff, F., and H. van Es. 2000. *Building Soils for Better Crops. 2nd ed.* Sustainable Agricultural Networks

- McCarthy, D.F. 1993. *Essentials of Soil Mechanics and Foundations, Basic Geotechnics 4th ed.* Regents/Prentice Hall.

- Plaster, E.J. 1992. *Soil Science & Management. 3rd ed.* Delmar Publishers.

- Union Gas Limited, Ontario, Canada. 1984. *Rehabilitation of Agricultural Lands, Dawn-Kerwood Loop Pipeline; Technical Report*. Ecological Services for Planning, Ltd.; Robinson, Merritt & Devries, Ltd. and Smith, Hoffman Associates, Ltd.

- US Department of Agriculture in cooperation with Cornell University Agricultural Experiment Station. Various years. *Soil Survey of (various names) County, New York.* USDA.

Internet Access:

- Examples of implements:

V-Rippers. Access by internet search of *John Deere Ag -New Equipment for 915* (larger-frame model) *V-Rippe*; and, *for 913* (smaller-frame model) *V-Ripper*. Deep, angled-leg subsoiler. Access by internet search of: B*igham Brothers Shear Bolt Paratill-Subsoiler.* http://salesmanual.deere.com/sales/salesmanual/en_NA/primary_tillage/2008/feature/rippers/915v_pattern_frame.html?sbu=ag&link=prodcat Last visited March 08.

- Soils data of USDA Natural Resources Conservation Service. *NRCS Web Soil Survey.* http://websoilsurvey.nrcs.usda.gov/app/ and *USDA-NRCS Official Soil Series Descriptions; View by Name.* http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi . *Last visited Jan. 08.*

- Soil penetrometer information. Access by internet searches of: *Diagnosing Soil Compaction using a Penetrometer (soil compaction tester), PSU Extension;* as well as *Dickey-john Soil Compaction Tester*. http://www.dickey-johnproducts.com/pdf/SoilCompactionTest.pdf and http://cropsoil.psu.edu/Extension/Facts/uc178pdf Last visited Sept. 07

APPENDIX G: SITE LOG BOOK, CHECKLISTS & REPORTS

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

I. Pre-Construction Meeting Documents
   a. Preamble to Site Assessment and Inspections
   b. Operator's Certification
   c. Qualified Professional's Credentials & Certification
   d. Pre-Construction Site Assessment Checklist

II. Construction Duration Inspections
   a. Directions
   b. Modification to the SWPPP

III. Monthly Summary Reports

IV. Monitoring, Reporting, and Three-Month Status Reports
   a. Operator's Compliance Response Form

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:**_____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)
Yes No NA
[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap
Yes No NA
[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin
Yes No NA
[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

_____ _____

Signature of Permittee or Duly Authorized Representative Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

APPENDIX H: REDUCED SIZE PLAN SHEETS

GENERAL NOTES

A. SITE CONDITIONS

1. ALL ELEVATIONS SHOWN ARE FINISHED GRADE ELEVATIONS UNLESS OTHERWISE NOTED.
2. ALL INFORMATION SHOWN OR NOTED FOR EXISTING FACILITIES, GRADES, ROADWAYS, AND MATERIALS IS APPROXIMATE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL INFORMATION WHICH MAY AFFECT HIS WORK.
3. TEST PITS SHALL BE CONSTRUCTED BY THE CONTRACTOR AT ALL PIPE CROSSINGS AS REQUIRED TO COMPLETE THE WORK OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE PROVISION OF ALL MATERIALS, LABOR AND INSTALLATION OF ALL ITEMS OF CONSTRUCTION FOR THE SUCCESSFUL COMPLETION AND OPERATION OF THE PROJECT SATISFACTORY TO THE OWNER AND THEIR REPRESENTATIVE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. THE CONTRACTOR SHALL PROVIDE HIS OWN LAYOUT AND STAKEOUT OF ALL PROPOSED IMPROVEMENTS. OFFSET LINES WITH STAKES SHALL BE SET AT APPROPRIATE INTERVALS TO FACILITATE CONSTRUCTION. CUT SHEETS SHALL BE SUBMITTED FOR APPROVAL TO THE OWNERS REPRESENTATIVE AND TO THE WORK CREWS IN THE TIME IDENTIFIED IN SPECS PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL VERIFY ALL BENCHMARKS PRIOR TO THE START OF CONSTRUCTION.
7. THE CONTRACTOR SHALL PROTECT ALL BENCH MARKS AND MONUMENTS FROM DAMAGE AND SHALL ESTABLISH OFFSET POINTS AS REQUIRED FOR THIS WORK.
8. ALL STATIONS SHOWN ON PLANS ARE MEASURED ALONG THE VARIOUS CONSTRUCTION BASELINES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY THROUGHOUT THE DURATION OF THE PROJECT AND SHALL PROVIDE AND MAINTAIN SECURITY FENCING, MEASURES, AND PERSONNEL AS REQUIRED AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
10. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE SAFETY REQUIREMENTS AS OUTLINED IN THE GENERAL CONDITIONS OF THE CONSTRUCTION SPECIFICATIONS. THE OWNER AND ENGINEER SHALL ASSUME NO RESPONSIBILITY AND/OR LIABILITY FOR THE SAFETY OF THE WORKERS WHERE THE WORK IS BEING PERFORMED.
11. CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND ALL CODES, ORDINANCES, RULES AND REGULATIONS OF HEALTH, PUBLIC OR OTHER AUTHORITIES CONTROLLING OR LIMITING THE METHODS, MATERIAL TO BE USED, OR THE ACTIONS OF THOSE EMPLOYED IN WORK OF THIS KIND. ALL WORK, LABOR OR MATERIAL NECESSARY TO COMPLY WITH THESE LAWS, CODES, ORDINANCES, RULES AND REGULATIONS SHALL BE PERFORMED AND FURNISHED BY THE CONTRACTOR.
12. THE MUNICIPAL AND COUNTY DEPARTMENT OF PUBLIC WORKS AS WELL AS THE STATE DOT (WHERE STATE ROADS ARE INVOLVED) SHALL BE NOTIFIED 72 HOURS IN ADVANCE OF ANY ROAD OPENING OF ANY STREET.
13. THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL NECESSARY PERMITS AND LICENSES REQUIRED TO CARRY OUT HIS WORK IN FULL ACCORDANCE WITH REQUIREMENTS OF ALL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
14. AT LEAST ONE WEEK PRIOR TO THE COMMENCEMENT OF ANY WORK, INCLUDING THE INSTALLATION OF EROSION CONTROL DEVICES OR THE REMOVAL OF TREES AND VEGETATION, A PRE-CONSTRUCTION MEETING MUST BE HELD WITH MUNICIPAL REPRESENTATIVES. IT IS THE RESPONSIBILITY AND OBLIGATION OF THE PROPERTY OWNER TO ARRANGE SUCH A MEETING.

B. SOIL EROSION, SEDIMENT, AND DUST CONTROL

1. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO MAINTAIN DUST CONTROL AS REQUIRED OR DIRECTED BY THE ENGINEER. ALL VEHICLES SHALL BE CLEAN AND ALL ROADWAYS SHALL BE MAINTAINED FREE OF CONSTRUCTION DEBRIS AND SOIL.
2. ALL SEDIMENT AND SOIL EROSION CONTROLS PRACTICES ARE TO BE INSTALLED IN CONFORMANCE WITH STATE AND LOCAL STANDARDS PRIOR TO ANY MAJOR SOIL DISTURBANCES. ALL WORK SHALL BE COMPLETED IN PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
3. THE SOIL EROSION AND SEDIMENT CONTROL PLAN SHEET INCLUDES ADDITIONAL NOTES WHICH SHALL BE ADHERED TO BY THE CONTRACTOR.

C. UTILITIES

1. THE LOCATION OF EXISTING UTILITIES, AS MAY BE SHOWN ON THE CONTRACT DRAWINGS, ARE NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. ALL EXISTING UTILITIES ARE SHOWN FOR INFORMATION ONLY. THE CONTRACTOR SHALL CONTACT THE DIG SAFELY NEW YORK (UFPO) SHOWN BELOW. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE, IDENTIFY AND PROTECT UTILITIES WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL DIG TEST PITS TO LOCATE UTILITIES WITHIN THE PROJECT LIMITS.
2. DIG SAFELY NEW YORK (UFPO), PHONE # 1-800-962-7962.
3. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES TEN (10) DAYS PRIOR TO CONSTRUCTION, OF THEIR ANTICIPATED START DATE.
4. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES TO DETERMINE THEIR SCHEDULE FOR PERFORMING UTILITY RELOCATION AND INSTALLATION WORK AND HE SHALL SCHEDULE HIS WORK ACCORDINGLY SO AS NOT TO INTERFERE WITH THE WORK OF THE UTILITY COMPANIES.
5. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AT LEAST 72 HOURS IN ADVANCE OF ANY WORK ON THEIR FACILITIES.
6. EXISTING UTILITY FACILITIES THAT MAY HAVE TO BE RELOCATED ARE TO BE MOVED BY THE RESPECTIVE UTILITY COMPANY UNLESS OTHERWISE NOTED. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND SHALL NOT CLAIM ANY DELAYS TO HIS CONSTRUCTION SCHEDULE.
7. ALL PROPOSED UTILITIES SHALL BE INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED AND SHALL BE LOCATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY. THE CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH THESE UTILITIES FOR THE PROJECT, BOTH ON AND OFF SITE. SAID UTILITIES INCLUDE POTABLE WATER, TELEPHONE, ELECTRIC, GAS, CABLE, AND SANITARY SEWER SERVICES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL REQUIRED UTILITY CONNECTIONS WITH THE RESPECTIVE UTILITY COMPANY.
9. ALL TRENCHES SHALL BE BACK FILLED WITHOUT DELAY. OPEN TRENCHES SHALL BE KEPT TO A MINIMUM. OPEN TRENCHES SHALL BE TEMPORARILY SUPPORTED AND STEEL PLATED WHEN WORK IS NOT IN PROGRESS. NO EXCAVATION AREAS SHALL REMAIN OPEN OVERNIGHT. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF STEEL PLATES THAT ARE CAPABLE OF SAFELY SUPPORTING THE LOADS THEY WILL BE SUBJECTED TO.
10. ANY DAMAGE TO UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, AND ALL COST FOR REPAIRS SHALL BE BORNE BY THE CONTRACTOR.
11. ALL GAS VALVES, MARKERS, VENTS AND BOXES WITHIN THE CONSTRUCTION LIMITS SHALL BE RESET BY THE RESPECTIVE UTILITY COMPANIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY EACH UTILITY COMPANY AND SCHEDULE THE WORK ACCORDINGLY.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COSTS INCURRED IN TEMPORARY SUPPORT OF UTILITY POLES NEAR EXCAVATION THAT DO NOT REQUIRE RELOCATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE APPROPRIATE UTILITY COMPANY FOR UTILITY POLE RELOCATION.
13. ALL PROPOSED WATER SERVICES SHALL BE LOCATED A MINIMUM SEPARATION DISTANCE OF 10 HORIZONTAL FEET AND 1.5 VERTICAL FEET FROM ALL SANITARY SEWER FACILITIES. A MINIMUM 4.5 FEET OF COVER SHALL BE PROVIDED OVER ALL WATER AND SANITARY SEWER LINES.
14. ALL EXCAVATIONS MADE TO REMOVE EXISTING UNDERGROUND UTILITIES/STRUCTURES, INSTALL NEW UNDERGROUND UTILITIES/STRUCTURES, WITHIN FIVE (5) FEET OUTSIDE OF THE BUILDING, OR WITHIN ROADWAYS SHALL BE BACKFILLED IN ACCORDANCE WITH THE PLAN DETAILS AND SPECIFICATIONS AND UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE.
15. UNDERGROUND IMPROVEMENTS IF ANY AND NOT VISIBLE AT THE TIME OF THE SURVEY, HAVE NOT BEEN LOCATED IN THE FIELD OR SHOWN HEREON. TO THE BEST OF OUR BELIEF, UNDERGROUND IMPROVEMENTS FROM AVAILABLE DOCUMENTATION HAVE BEEN SHOWN.

D. PEDESTRIAN AND TRAFFIC FLOW

1. THE CONTRACTOR MUST PROVIDE A MEANS OF SAFE INGRESS AND EGRESS AT ALL TIMES TO THE PUBLIC. THIS SHALL INCLUDE RIGHTS OF WAYS AS WELL AS INDIVIDUAL RESIDENCES AND/OR BUSINESSES WITHIN THE PROJECT AREA.
2. CONTRACTOR IS REQUIRED TO ENSURE THE SAFE, ORDERLY AND EXPEDITIOUS FLOW OF TRAFFIC AT ALL TIMES. SAID TRAFFIC FLOW IS TO BE MAINTAINED IN ACCORDANCE WITH RECOGNIZED TRAFFIC CONTROL STANDARDS AND IS TO BE ENSURED, THROUGH THE USE OF, BUT NOT LIMITED TO, FLAGMAN, SIGNING, BARRICADES, FLASHING LIGHTS, CONES, BARRELS, ETC. AS SHOWN ON THE CONTRACT PLANS, AND APPROVED BY THE OWNER'S REPRESENTATIVE.
3. FLAGMAN SHALL BE USED FOR THE PROTECTION OF ANY EQUIPMENT ENTERING, LEAVING OR CROSSING ACTIVE TRAFFIC LANES, OR AS MAY BE REQUIRED FOR THE ROUTING OF ANY TRAFFIC AROUND OR THROUGH THE CONSTRUCTION. FLAGMAN SHALL BE EMPLOYED BY THE CONTRACTOR.
4. DURING THE WINTER MONTHS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW AND ICE REMOVAL AND THE COMPLETE MAINTENANCE OF EXISTING ROADWAYS UTILIZED FOR CONSTRUCTION PURPOSES BY ALL TRADES. THE ROADWAYS SHALL BE KEPT FREE OF ALL OBSTRUCTIONS AND KEPT IN A SMOOTH RIDING CONDITION AT ALL TIMES. ALL POT HOLES, WASHOUTS, CAVE-INS, ETC., DEVELOPING DURING THIS PERIOD SHALL BE PROPERLY FILLED IN WITH MATERIAL BY METHOD APPROVED BY THE OWNER'S REPRESENTATIVE. HOWEVER, THE CONTRACTOR SHALL NOT BE REQUIRED TO REMOVE SNOW FROM ROADS OVER WHICH TRAFFIC IS BEING MAINTAINED.
5. BEFORE BEGINNING WORK ON ANY STAGE OF THE PROJECT, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIFIED WARNING SIGNS, BARRICADES, LIGHTS, AND OTHER DEVICES AS SHOWN ON THE CONTRACT PLANS, OR DEEMED NECESSARY, IN THE OPINION OF THE OWNERS REPRESENTATIVE, TO PROTECT THE PUBLIC DURING THAT PHASE OF HIS OPERATIONS.
6. ALL NECESSARY REGULATORY AND WARNING SIGNS SHALL BE IN ACCORDANCE WITH THE FHWA MUTCD WITH THE NYS SUPPLEMENT, LATEST EDITION, AND STANDARD HIGHWAY SIGNS, LATEST EDITION AND SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR AS INDICATED ON PLANS. WHEN SUCH SIGNS ARE NO LONGER REQUIRED, THE CONTRACTOR SHALL IMMEDIATELY AND CAREFULLY REMOVE AND STORE THEM ON THE PROJECT SITE AT LOCATIONS APPROVED BY THE OWNERS REPRESENTATIVE UNTIL THEY ARE REUSED ON THE PROJECT OR REMOVED BY THE CONTRACTOR.
7. DURING CONSTRUCTION, ALL EXISTING ROADS AND RAMPS SHALL REMAIN OPEN AND BE PROPERLY MAINTAINED TO ACCOMMODATE EMERGENCY VEHICLES AT ALL TIMES.

E. CONSTRUCTION

1. EXISTING ASPHALT PAVEMENT SHALL BE SAWCUT AND REMOVED IN SUCH A MANNER SO AS NOT TO TEAR, BULGE OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO THE DIRECTION OF TRAFFIC.
2. ALL ADJACENT CONCRETE AND BUILDING SURFACES SHALL BE PROTECTED WHEN TACK COAT AND/OR PRIME COAT IS APPLIED.
3. WHERE UNSTABLE SUBGRADE IS ENCOUNTERED DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE COMPLETE EXTENT OF THE FAILED AREA AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL REPLACE THE UNSUITABLE SOILS WITH SUBBASE, COMPACT THE AREA IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AND PROOF ROLL THE AREA TO THE SATISFACTION OF THE OWNERS REPRESENTATIVE.
4. WHERE UNSTABLE OR WEAK AREAS OF PAVEMENT ARE ENCOUNTERED DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE THE COMPLETE EXTENT OF THE FAILED AREA AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL REPLACE THE FAILED PAVEMENT WITH HMA BASE COURSE PLACED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
5. ONCE THE CONTRACTOR HAS COMMENCED CONSTRUCTION, THE WORK SHALL CONTINUE ON A DAILY BASIS WITHOUT INTERRUPTION UNTIL ALL OF THE WORK HAS BEEN COMPLETED.
6. MAILBOXES, STREET SIGNS, OR TRAFFIC SIGNS REMOVED FOR CONSTRUCTION PURPOSES MUST BE REPLACED BY THE CONTRACTOR WITHIN 24 HOURS.
7. ALL NEW SURFACE CONCRETE SHALL BE PROTECTED FROM DE-ICING SALTS FOR AT LEAST 60 DAYS AFTER THE POUR DATE.
8. ALL UNUSED SIGNS, SIGN POSTS, STORM SEWER CASTINGS AND GRATES REMOVED DURING CONSTRUCTION AND NOT REPLACED ELSEWHERE ON THIS PROJECT SHALL BECOME THE PROPERTY OF THE OWNER. IF THE OWNER DECLINES OWNERSHIP OF THE MATERIALS, THE CONTRACTOR SHALL REMOVE THE MATERIALS FROM THE SITE AT NO ADDITIONAL COST TO THE OWNER.
9. DEPRESSED CURBING SHALL BE CONSTRUCTED AT ALL WALKWAY CROSSINGS. DEPRESSED CURBS FOR HANDICAP ACCESS SHALL BE FLUSH WITH PAVEMENT. ALL HANDICAP ACCESS FACILITIES SHALL COMPLY WITH CURRENT A.D.A. REGULATIONS AND NEW YORK STATE BUILDING CODE, CHAPTER 11.
10. THE CONTRACTOR SHALL MAINTAIN SUFFICIENT COVER (TEMPORARY AND PERMANENT) OVER ALL PIPES DURING THE CONSTRUCTION OF THE PROJECT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
11. WHERE CONCRETE PIPE IS PROPOSED, ALL PIPE SHALL BE CLASS III WITH O-RING GASKETS, UNLESS OTHERWISE INDICATED.
12. UNLESS OTHERWISE NOTED, ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS OF THE STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION", LATEST EDITION.

F. SITE CLEARING AND GRADING

1. SITE CLEARING SHALL INCLUDE, BUT IS NOT LIMITED TO, THE REMOVAL OF ALL DEBRIS, RUBBLE, FENCES, TREES, EXISTING UTILITIES, EXISTING STRUCTURES, FOUNDATIONS, SUBSURFACE STRUCTURES, UNSUITABLE MATERIALS, EXISTING PAVEMENT, THE COORDINATION OF THE RELOCATION OF EXISTING UTILITIES, GRUBBING, ETC. AND ALL OTHER WORK REQUIRED TO COMPLETE THE PROJECT FOR WHICH THERE IS NO SPECIFIC PAY ITEM OR CALLOUT.
2. ALL DEMOLITION ACTIVITIES TO BE IN ACCORDANCE WITH ALL APPLICABLE AUTHORITIES INCLUDING BUT NOT LIMITED TO COUNTY RULES AND REGULATIONS, THE MUNICIPAL ORDINANCE, NYSDEC RULES AND REGULATIONS, AND NEW YORK STATE BUILDING CODE.
3. ALL REMEDIAL ACTIONS OUTLINED IN THE PHASE II ENVIRONMENTAL SITE ASSESSMENT, MID-BROADWAY PROJECT, DATED 06/10/2013, PREPARED BY ECOSYSTEMS STRATEGIES, INC., SHALL BE CONDUCTED, AS REQUIRED, FOLLOWING NYCRR 613 PETROLEUM BULK STORAGE AND DEC-10 TECHNICAL GUIDANCE FOR SITE INVESTIGATION AND REMEDIATION. THE ACTIONS INCLUDE BUT ARE NOT LIMITED TO:

   THIS REPORT CONCLUDES THAT SEVERAL REMEDIAL ACTIONS SHOULD BE PRETORMED AS FOLLOWS:

   - REMOVAL OF UST (UNDERGROUND STORAGE TANKS) AND CONTAMINATED SOILS FROM THE SITE.
   - INSTALLATION OF GROUNDWATER MONITORING WELLS WITHIN THE VICINITY OF ANY UST.
   - PROPER OFF-SITE DISPOSAL OF ALL REGULATED MATERIALS.
   - NOTIFICATION OF THIRD PARTIES DURING CONSTRUCTION TO FACILITATE DEVELOPMENT OF SITE-SPECIFIC HEALTH AND SAFETY PLAN, PROPER SAMPLING OF SOILS AND DUST/RUNOFF CONTROL.
   - SEGREGATION OF DEBRIS MATERIALS INTO APPROPRIATE WASTE STREAMS.
   - ADDITIONAL INVESTIGATION OF SOIL GAS PRIOR TO DEVELOPMENT.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL UNSUITABLE MATERIALS EXCAVATED OF WHATEVER NATURE AT HIS OWN EXPENSE. THE OWNER IS NOT OBLIGATED TO SUPPLY A DISPOSAL SITE. THE CONTRACTOR MUST NOT DEPOSIT THE EXCESS MATERIALS WITHIN THE MUNICIPALITY LIMITS WITHOUT EXPRESS PERMISSION OF THE MUNICIPALITY. MATERIALS MUST BE DISPOSED OF IN ACCORDANCE WITH APPROVED NYSDEC METHODS AND MEANS.
5. ANY EXISTING AND NEW CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE AND LAWFULLY DISPOSED OF BY THE CONTRACTOR.
6. EXISTING ONSITE SUITABLE SOIL SHALL BE EXCAVATED, TRANSPORTED, SPREAD, GRADED, AND COMPACTED AS REQUIRED BY THE PROPOSED GRADES. ALL EARTHWORK OPERATIONS INVOLVING ONSITE SOILS SHALL BE COMPLETED PRIOR TO IMPORTING ANY OFFSITE MATERIALS. ALL IMPORTED FILL REQUIRED TO ACHIEVE THE PROPOSED GRADES SHALL BE INCLUDED IN THE PROPOSAL. IMPORTED SOIL SHALL BE FREE OF WASTE OR HAZARDOUS MATERIAL AND SHALL COMPLY WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.

LIST OF ABBREVIATIONS

AH., BK.	AHEAD, BACK
B.C.T.	BARRIER CURB TRANSITION
B.L., B.L.	BASELINE
BM.,	BENCHMARK
BIT., BITUM.	BITUMINOUS
BLDG.	BUILDING
C , C.L.	CENTERLINE
C.I.P.	CAST IRON PIPE
C.I.	CHAIN LINK FENCE
C.M.P.	CORRUGATED METAL PIPE
CO , C.O.	CLEANOUT
CONC.	CONCRETE
CULV.	CULVERT
D, DIA.	DIAMETER
D.C.	DROP CURB
DE	DITCH EXCAVATION
DEP., DP	DEPRESSED CURB
DH	DRILL HOLE
D.S.	DOWNSTREAM
DWY	DRIVEWAY
E.B., W.B., N.B., S.B.,	EASTBOUND, WESTBOUND NORTHBOUND, SOUTHBOUND
EL., ELEV.	ELEVATION
EXIST., EX.	EXISTING
FC	FOOT CANDLES
GR, GRT	GRATE
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
HT.	HEIGHT
H.W.	HEADWALL
HYD.	HYDRANT
INV	INVERT
IP	IRON PIN
J.B.	JUNCTION BOX
LT., RT.,	LEFT, RIGHT
LOP	LIMIT OF PAVEMENT (PAVING)
LOM	LIMIT OF MILLING
M.B.	MAILBOX
M.P.	MILE POST
MAX, MAX.	MAXIMUM
MIN, MIN.	MINIMUM
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NTS, N.T.S.	NOT TO SCALE
PAV'T	PAVEMENT
P.G.L.	PROFILE GRADE LINE
PERF.	PERFORATED
L.O.D.	LIMIT OF DISTURBANCE
P, P.L.	PROPERTY LINE, PROFILE LINE
PK	PARKER KALON MASONRY NAIL
PCC	POINT OF COMPOUND CURVATURE
POC, P.O.C.	POINT ON CURVE
POL, P.O.L.	POINT ON LINE
POT, P.O.T.	POINT ON TANGENT
PRC, P.R.C.	POINT OF REVERSE CURVE
PROP	PROPOSED
PT, P.T.	POINT OF TANGENCY
PVC, P.V.C.	POLYVINYL CHLORIDE PIPE
	POINT OF VERTICAL CURVATURE
PVI, P.V.I.	POINT OF VERTICAL INTERSECTION
PVT, P.V.T	POINT OF VERTICAL TANGENCY, PAVEMENT
R	RADIUS
RCCP, R.C.C.P.	REINFORCED CONCRETE CULVERT PIPE
RCP, R.C.P.	REINFORCED CONCRETE PIPE
RMC, R.M.C.	RIGID METALLIC CONDUIT
RNMC, R.N.M.C.	RIGID NON-METALLIC CONDUIT
ROW, R.O.W.	RIGHT OF WAY
RR,	RAILROAD
RTE., RT.	ROUTE
SAN.	SANITARY
SDWK.	SIDEWALK
S.H.D.	STATE HIGHWAY DEPARTMENT
SHLD.	SHOULDER
S , S.L.	SURVEY LINE
S.O.D.	SUBBASE OUTLET DRAIN
STY.	STORY
T	TANGENT
TBA	TO BE ABANDONED
TBR	TO BE REMOVED
TEL.	TELEPHONE
TEMP.	TEMPORARY
THK., TH.	THICK
T.O.S.	TOE OF SLOPE
TYP, TYP.	TYPICAL
U.D.	UNDERDRAIN
UP, U.P.	UTILITY POLE
U.S.	UPSTREAM
VAR.	VARIABLE, VARIES
V.C.T.	VERTICAL CURB TRANSITION
W.C.V.C.	WHITE CONCRETE VERTICAL CURB
WM	WATER METER
X-SECT	CROSS SECTION
XS	CROSS SECTION

LIST OF DRAWINGS

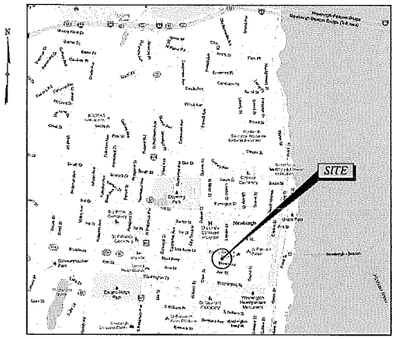
C-100	GENERAL NOTES & LEGEND
C-101	DEMOLITION PLAN
C-102	SITE PLAN
C-103	GRADING, DRAINAGE & UTILITY PLAN
C-104	EROSION CONTROL PLAN
C-201	DETAILS
C-202	DETAILS
C-203	DETAILS
C-204	DETAILS
C-205	DETAILS
C-206	CITY DETAILS
C-207	CITY DETAILS

LEGEND

128	EXISTING CONTOUR LINE
130	EXISTING INDEX CONTOUR LINE
	EXISTING RUNWAY
	EXISTING SIDEWALK
128	PROPOSED CONTOUR LINE
130	PROPOSED INDEX CONTOUR LINE
	PROPOSED DRAINAGE PIPE
S	PROPOSED SANITARY LINE
W	PROPOSED WATER LINE
	PROPOSED SILT FENCE
	PROPOSED LIMIT OF DISTURBANCE
	PROPOSED SAWCUT LINE
	PROPOSED FENCE
	PROPOSED EDGE OF PAVEMENT WITH CONCRETE CURB
	PROPOSED EDGE OF PAVEMENT WITH MOUNTABLE CURB
	PROPOSED DEPRESSED CURB
	PROPOSED CONCRETE SIDEWALK
	PROPOSED BUILDING
	PROPOSED RETAINING WALL
×123.00	PROPOSED SPOT ELEVATION
	PROPOSED CATCH BASIN
	PROPOSED DRAINAGE MANHOLE
	PROPOSED INLET PROTECTION
	STABILIZED CONSTRUCTION ENTRANCE
	SOIL STOCK PILE
	CONCRETE WASHOUT
	PROPOSED RAMP
9	PROPOSED PARKING COUNT
	PROPOSED TRAFFIC ARROW
	PROPOSED DRAINAGE FLOW ARROW
	PROPOSED PERMEABLE PAVER AREA

NOTES

SEE SHEET A-03 FOR ZONING ANALYSIS



LOCATION MAP

SCALE: NTS

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TECTONIC WORK ORDER NO.: 6860.01

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Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Client:
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42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
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2	06/01/16	PER PLANNER, ENGINEER & FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD COMMENTS
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Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
GENERAL NOTES & LEGEND

Project Number: 12008
Date: 06/01/16
Drawing #: C-100
Scale: AS NOTED
Drawn by: DNW
Checked by: WM

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UTILITY NOTES

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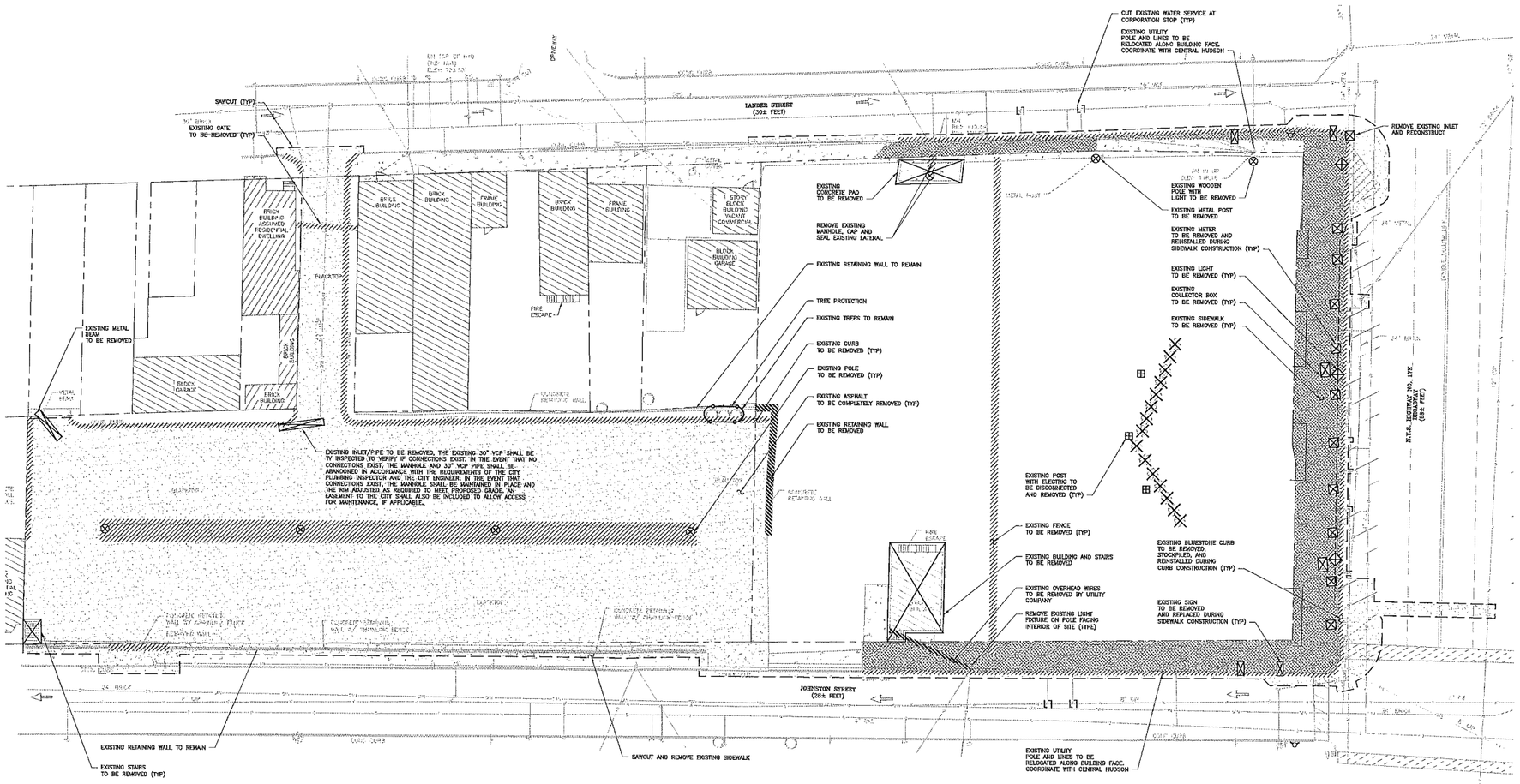
2. EXISTING WATER SERVICE CONNECTIONS TO BE CUT AT THE CORPORATION STOP ON THE MAIN AND SEALED IN ACCORDANCE WITH THE CITY PLUMBING INSPECTOR'S REQUIREMENTS.

SITE MATERIAL DISPOSAL NOTES

1. ALL MATERIALS REMOVED FROM THE SITE SHALL BE DISPOSED OF IN AN APPROPRIATE MANNER BY A LICENSED FACILITY.
2. NO MATERIAL SHALL BE LEFT FOR DISPOSAL BY THE CITY, NOR DUMPED ELSEWHERE IN THE CITY.



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Seal:

Drawing Title:
DEMOLITION PLAN

Project Number:	12008
Date: 06/01/16	Drawing #:
Scale: 1" = 20'	C-101
Drawn by: DRW	
Checked by: WM	

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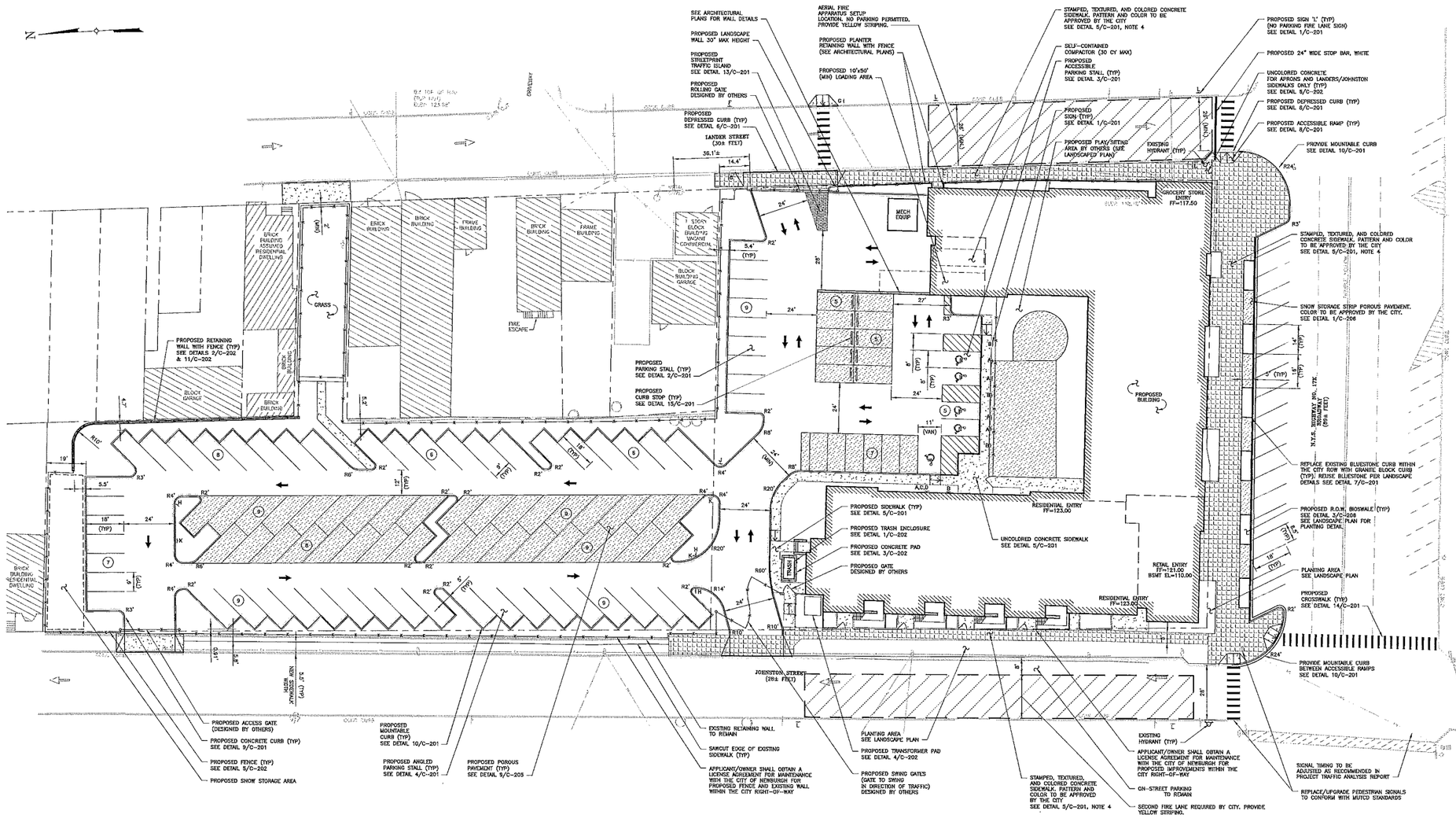
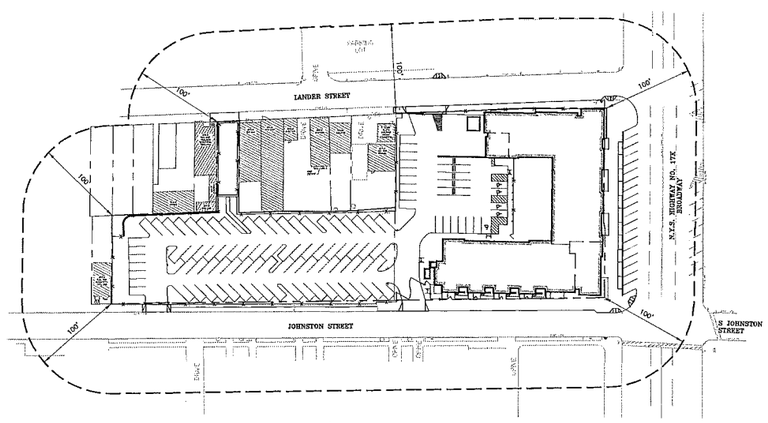


1 C-102 SITE PLAN
SCALE: 1" = 20'



2 C-102 DRIVEWAY/CURB CUT EXHIBIT
SCALE: 1" = 60'

GATE/FENCE NOTES

1. FENCE TO BE 6' HIGH MAX.
2. FENCING MATERIAL TO BE APPROVED BY NEWBURGH ARCHITECTURAL REVIEW BOARD.
3. ROLLING GATE TO BE OPEN DURING BUSINESS HOURS OF THE GROCERY STORE AND REMAIN CLOSED THE REMAINDER OF THE TIME.
4. SWING GATES WILL BE ELECTRONICALLY ACTIVATED BY RESIDENT VEHICLES AS THEY APPROACH GATES.
5. ALL GATES WILL BE ALARM ACTIVATED TO REMAIN OPEN FOR EMERGENCY RESPONDERS.
6. FOR FENCE ALONG JOHNSON STREET, EXISTING FENCE POSTS TO BE CUT FLUSH WITH TOP OF RETAINING WALL AND REMOVED. PROPOSED FENCE AND POSTS TO UTILIZE EMBEDDED EXISTING POSTS AS SLEEVE. (SEE ARCHITECTURAL DRAWINGS FOR DETAILS)

SNOW REMOVAL NOTE

ALL SNOW THAT CANNOT BE STOCKPILED ON SITE IS TO BE REMOVED FROM SITE AT THE CONCLUSION OF THE SNOWFALL/WINTER WEATHER EVENT.

SUPPLEMENTAL PARKING REQUIREMENTS*

PARKING AREA	REQUIRED	PROVIDED
AREA OF PAVEMENT / PROVIDED PARKING SPACES (37,404 SF / 111 SPACES)	300	337 SF
ACCESSIBLE PARKING		
FEDERAL ADA STANDARDS	5 SPACES FOR 101-150 SPACES	5 SPACES FOR 111 SPACES
NEW YORK STATE BUILDING CODE	5 SPACES FOR 101-150 SPACES	5 SPACES FOR 111 SPACES
HUD REQUIREMENTS	1 SPACE PER ACCESSIBLE RESIDENTIAL UNIT (5% OF TOTAL UNITS)	5 SPACES FOR 5 UNITS

* SEE A-02 AND A-02A FOR PARKING CALCULATIONS

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Seal:

Drawing Title:
SITE PLAN

Project Number:	12008
Date: 06/01/16	Drawing #: C-102
Scale: AS NOTED	
Drawn by: DMW	
Checked by: WM	

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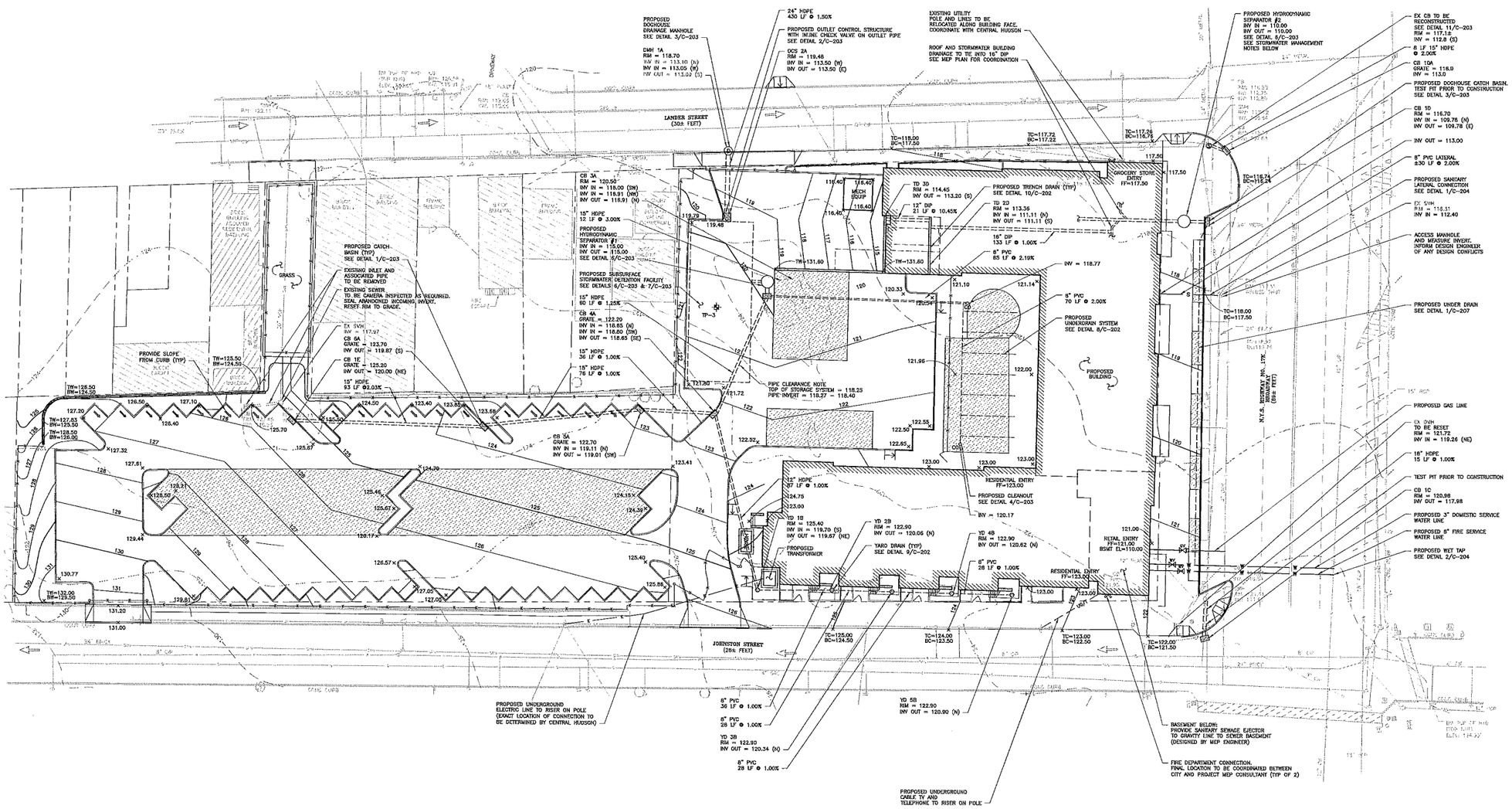

WATER CONNECTION NOTES

1. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPARTMENT, AUTHORIZED BY THE PLUMBING INSPECTOR.
2. A CITY OF NEWBURGH LICENSED PLUMBER MUST BE RETAINED TO INSTALL THE WATER CONNECTIONS.
3. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
4. THE CITY OF NEWBURGH WATER SUPERINTENDENT SHALL BE NOTIFIED, VIA A CORPORATION TAP REQUEST, PRIOR TO MAKING CONNECTION TO THE MUNICIPAL WATER SYSTEM.
5. THE CITY OF NEWBURGH WATER DEPARTMENT SHALL INSTALL THE CORPORATION TAP INTO THE MUNICIPAL WATER SYSTEM, UP TO A ONE (1) INCH SERVICE. CORPORATION TAPS ABOVE ONE (1) INCH IN SIZE SHALL BE DONE BY THE APPLICANT'S CONTRACTOR SPECIALIZING IN LARGE DIAMETER TAPPING.
6. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL.

SEWER CONNECTION NOTES

1. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPARTMENT, AUTHORIZED BY THE PLUMBING INSPECTOR.
2. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
3. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL.

GENERAL UTILITY NOTES

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2. EXISTING WATER SERVICE CONNECTIONS TO BE CUT AT THE CORPORATION STOP ON THE MAIN AND SEALED IN ACCORDANCE WITH THE CITY PLUMBING INSPECTOR'S REQUIREMENTS.
3. DOMESTIC WATER AND FIRE SUPPRESSION SIZE CALCULATIONS SHALL BE PROVIDED BY THE PROJECT MEP CONSULTANT FOR REVIEW AND APPROVAL WITH THE BUILDING PERMIT APPLICATION.
4. SUBMIT FOR REVIEW AND APPROVAL A MAINTENANCE AND PROTECTION OF TRAFFIC PLAN FOR ALL WORK THAT WILL BE CONDUCTED WITHIN CITY STREETS DURING THE BUILDING PERMIT APPLICATION PROCESS.

TEST PIT NOTE

1. TEST PIT CONDUCTED ON 11/11/2013, WITNESSED BY SES.
2. TP-3 SOIL LOG:

0' – 6'-1/2"	SAND, COARSE TO FINE GRAVEL, CONSTRUCTION DEBRIS, FILL
6'-1/2" – 9'	SAND, COARSE TO FINE, SOME COARSE TO FINE GRAVEL, NO GROUNDWATER, NO ROCK/LEDGE ENCOUNTERED

INFILTRATION TESTING NOTE

1. INFILTRATION TESTING SHALL BE PERFORMED, AND WITNESSED BY THE CITY, IN PROPOSED PERMEABLE PAVEMENT AREAS IN ACCORDANCE WITH APPENDIX D OF THE NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL.

STORMWATER MANAGEMENT FACILITIES NOTES

1. ALL STORMWATER MANAGEMENT FACILITIES SHALL BE MAINTAINED BY THE OWNER IN ACCORDANCE WITH THE APPROVED PLANS AND SWPPP.
2. EASEMENTS FOR ACCESS TO STORMWATER MANAGEMENT FACILITIES SHALL BE PREPARED AND APPROVED BY THE CITY.
3. AS-BUILT PLANS SHALL BE PREPARED BY A LICENSED NYS SURVEYOR FOR ALL STORMWATER MANAGEMENT IMPROVEMENTS AND SUBMITTED TO THE CITY ENGINEER.

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Seal:

Drawing Title:
GRADING, DRAINAGE & UTILITY PLAN

Project Number:	12008
Date: 06/01/16	Drawing #:
Scale: 1" = 20'	C-103
Drawn by: DMW	
Checked by: WM	

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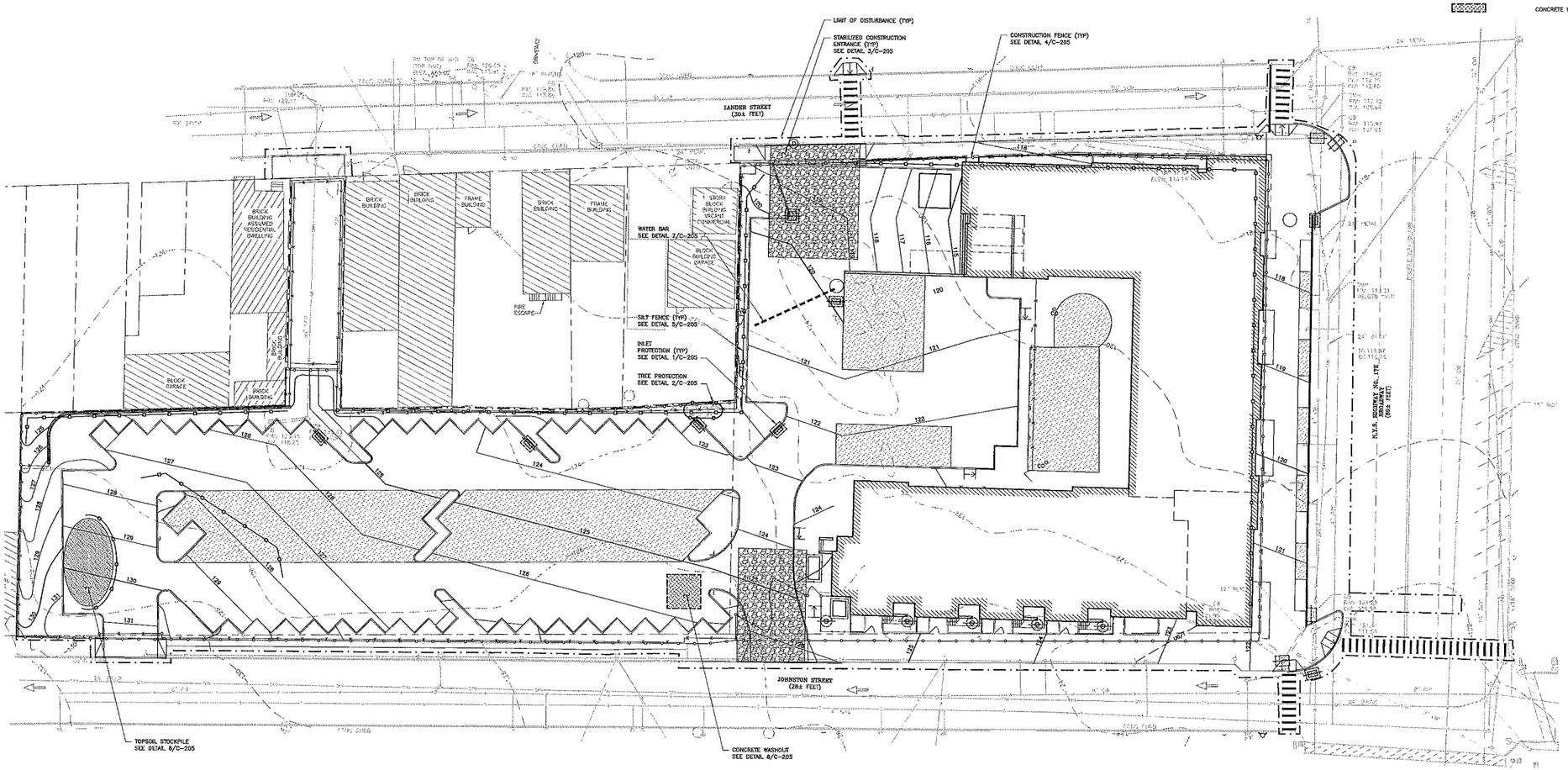

LEGEND

- SILT FENCE LINE
- LIMIT OF DISTURBANCE LINE
- CONSTRUCTION FENCE
- WATER BAR LINE
- INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- SOIL STOCK PILE
- CONCRETE WASHOUT

EROSION AND SEDIMENT CONTROL NOTES

1. SITE DISTURBANCE SHALL BE LIMITED TO THE MINIMUM NECESSARY GRADING AND VEGETATION REMOVAL REQUIRED FOR CONSTRUCTION.
2. ACTIVE DISTURBANCE SHALL BE LIMITED TO A 5 AC MAXIMUM AT ANY TIME WITHOUT TEMPORARY STABILIZATION.
3. TEMPORARY EROSION CONTROL MEASURES, INCLUDING SILT FENCES AND/OR STRAW BALE DIKES, DRAINAGE STRUCTURES, SEDIMENTATION BASINS, DIVERSION SWALES/DIKES, AND RIP-RAP PROTECTION SHALL BE INSTALLED PRIOR TO GROUND DISTURBANCE FOR GRADING AND CONSTRUCTION.
4. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS SOON AS PRACTICAL FOLLOWING DISTURBANCE TO STABILIZE BARE SOIL AND PROMOTE THE PROMPT RE-ESTABLISHMENT OF VEGETATION:
   - A. AN ADEQUATE SEEDBED SHALL BE PREPARED BY SCARIFYING SOIL AND REMOVING SURFACE DEBRIS AND OBSTACLES WITHIN THE DISTURBED AREA TO A DEPTH OF 4".
   - B. LIME SHALL BE APPLIED SUFFICIENTLY TO ATTAIN A SOIL ACIDITY Ph OF 5.5.
   - C. FERTILIZER (10-20-10 MIXTURE OR EQUIVALENT) SHALL BE APPLIED PER SOIL TEST RESULTS OR AT A RATE OF 15 LBS. PER 1000 SQFT.
   - D. DISTURBED AREAS WHICH WILL REMAIN TEMPORARILY FALLOW FOR PERIODS GREATER THAN 14 DAYS SHALL BE SEEDED AT THE FOLLOWING RATE TO PRODUCE TEMPORARY GROUND COVER: 30 LBS. RYEGRASS (ANNUAL) PER ACRE. DURING THE WINTER, USE 100 LBS. CERTIFIED "ARDOSTOOK" WINTER RYE (CEREAL RYE) PER ACRE.
   - E. AREAS USED FOR CONSTRUCTION ACCESS AND STORAGE/STOCKPILING OF CONSTRUCTION MATERIALS SHALL BE DECOMPACTED USING THE PROCEDURES OUTLINED IN THE NYSDEC PUBLICATION "DEEP RIPPING AND DECOMPACTION", APRIL 2008 OR AS CURRENTLY AMENDED THIS DOCUMENT IS INCLUDED WITHIN THE PROJECT SWPPP.
   - F. PERMANENT SEEDING SHALL BE APPLIED ON 4" MIN TOPSOIL AND IN ACCORDANCE WITH LANDSCAPE PLAN.
   - G. ALL SEEDING SHALL BE PERFORMED USING HYDROSEEDING. HYDROSEEDING SLURRY SHALL BE COMPRISED OF A HOMOGENEOUS MIX OF SEED AND FERTILIZER IN WATER. VARIOUS SPECIFIED SEED MIXES SHALL BE INDEPENDENTLY MIXED AND APPLIED.
   - H. ALL DISTURBED AREAS SHALL BE STABILIZED SUBSEQUENT TO SEEDING BY APPLYING 2 TONS OF STRAW MULCH PER ACRE. STRAW MULCH SHALL BE ANCHORED BY APPLYING 750 LBS OF WOOD FIBER MULCH PER ACRE WITH A HYDROSEEDER. HYDROMULCHING SLURRY SHALL BE COMPRISED OF A HOMOGENEOUS MIX OF NON-ASPHALTIC TACKIFIER AND FIBER MULCH IN WATER.
5. ALL EROSION AND SEDIMENTATION CONTROL MEASURES AND DRAINAGE STRUCTURES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND FOLLOWING EVERY SITE RAINFALL EVENT. AND MAINTENANCE AND REPAIRS SHALL BE PERFORMED PROMPTLY TO MAINTAIN PROPER FUNCTION. TRAPPED SEDIMENT SHALL BE REMOVED AND DEPOSITED IN A PROTECTED AREA IN A PROPER MANNER WHICH WILL NOT RESULT IN EROSION. THE CONTRACTOR SHALL REPLACE ANY PRACTICE THAT IS NO LONGER PERFORMING AS DESIGNED OR INTENDED. TEMPORARY CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED AND GROUND COVER IS COMPLETELY REESTABLISHED. FOLLOWING STABILIZATION, TEMPORARY MEASURES SHALL BE REMOVED TO AVOID INTERFERENCE WITH DRAINAGE.
6. ALL STORM INLETS TO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION.
7. SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN SUFFICIENT QUANTITIES.
8. MULCH NETTING SUCH AS PAPER, JUTE, EXCELSOR, COTTON OR PLASTIC MAY BE USED. STAPLE IN PLACE OVER HAY OR STRAW MULCH. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.
10. OPTIMUM SEEDING PERIODS ARE 3/15-5/15 AND 8/15-10/15.

EROSION AND SEDIMENT CONTROL SCHEDULE

CONSTRUCTION SCHEDULE

1. ALL APPROVALS AND PERMITS SHALL BE SECURED.
2. A PRE-CONSTRUCTION MEETING WITH OWNER, OWNER'S REPRESENTATIVE, MUNICIPAL REPRESENTATIVE AND CONTRACTOR PRESENT WILL BE HELD.
3. CERTIFICATIONS OBTAINED FROM CONTRACTORS, SUBCONTRACTORS AND ANY OTHERS PERFORMING SITE DISTURBANCES INCLUDING UNDERGROUND UTILITY CONTRACTORS BE SIGNED AND MAINTAINED ON SITE.
4. CONSTRUCTION ENTRANCE, SILT FENCE, STRAW BALE DIKE, DIVERSION SWALES/DIKES, SEDIMENTATION TRAPS, SEDIMENTATION BASIN, STORM DRAIN INLET PROTECTION, CONSTRUCTION FENCE AND OTHER TEMPORARY EROSION CONTROL MEASURES WILL BE INSTALLED PRIOR TO ANY CONSTRUCTION INCLUDING CLEARING, GRUBBING, AND DEMOLITION OF THE SITE IN ACCORDANCE WITH THE NYS STANDARDS AND SPECIFICATIONS FOR EROSION CONTROL AUGUST 2005.
5. INSTALL PROVISIONS FOR PROTECTION OF EXISTING FACILITIES WHERE INDICATED ON THE PLANS AND DETAILS
6. ACTIVE DISTURBANCE SHALL BE LIMITED TO A 2 AC MAXIMUM AT ANY TIME WITHOUT TEMPORARY STABILIZATION. ALL NON-ACTIVE DISTURBED AREAS SHALL RECEIVE TEMPORARY OR PERMANENT STABILIZATION. NON-ACTIVE DISTURBED AREAS SHALL NOT REMAIN FALLOW FOR LONGER THAN 14 DAYS WITHOUT BEING STABILIZED.
7. ANY BORROW OR WASTE PITS LOCATED ON OR OFF-SITE MUST IMMEDIATELY RECEIVE TEMPORARY STABILIZATION, SHALL NOT BE LEFT UNSTABILIZED, AND BE MAINTAINED PER THE REQUIREMENT OF THE GENERAL CONSTRUCTION PERMIT AND THE SWPPP FOR THIS PROJECT.
8. DRAINAGE STRUCTURES AND PIPES SHALL BE INSTALLED ALONG WITH ENERGY DISSIPATERS. SWALES SHALL BE IMMEDIATELY STABILIZED.
9. ROADWAYS SHALL BE GRADED AND IMMEDIATELY STABILIZED WITH PROPOSED STONE SURFACE.
10. UPON UTILITY COMPLETION, FINAL GRADING WILL BEGIN.
11. DECOMPACT ACCESS AND STORAGE/STOCKPILE AREAS.
12. ALL LANDSCAPED/GRASSED AREAS WILL BE SEEDED AND MULCHED IN A TWO STEP HYDRAULIC PROCESS TO PROMOTE GROWTH AS SOON AS POSSIBLE.
13. ALL SLOPES GREATER THAN 3:1 OR WHERE RILLS FORM SHALL BE STABILIZED WITH ROLLED EROSION CONTROL PRODUCTS. INSTALL PER MANUFACTURER'S INSTRUCTION.
14. TO FACILITATE FINAL STABILIZATION, INTERMEDIATE SILT FENCES/DIKES/DIVERSIONS MAY BE REMOVED UPON INITIAL CATCH OF UPSLOPE FINAL SEEDING/MULCHING. PERIMETER AND BASE OF SLOPE SILT FENCES/DIKES SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION IS ACHIEVED TO PROTECT OFFSITE DISCHARGE POTENTIAL.
15. UPON STABILIZATION, ALL TEMPORARY MEASURES WILL BE REMOVED.
16. ALL SWALES AND DRAINAGE LINES ARE TO BE FLUSHED CLEAN OF ALL SILT AND SEDIMENT AFTER ALL CONSTRUCTION DISTURBANCE HAS BEEN STABILIZED. REMOVE ALL SILT FROM PERMANENT STORM WATER CONTROL STRUCTURES.
17. REMOVE ALL SILT AND SEDIMENT FROM SITE.
18. ALL DEBRIS, SILT, AND OTHER OBSTRUCTIONS ARE TO BE REMOVED FROM THE END OF THE DRAINAGE STRUCTURES AFTER ALL ON SITE WORK IS COMPLETE AND ALL DISTURBED AREAS HAVE BEEN STABILIZED.

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

TECTONIC WORK ORDER NO.: 6660.01

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Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES

Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/16	SUBMISSION
2	05/31/16	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD COMMENTS
4	09/07/16	PER CITY ENGINEERS COMMENTS DATED-9/16/16

Revisions:

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Tel (212) 253 7820 Fax (212) 253 1276
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PO Box 37, Pleasant Hill Rd 70 Mountainville, NY 10953
Tel (845) 534 5959
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Tel (212) 254 5800
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Pouder Design Group PC
228 Harryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
EROSION CONTROL PLAN

Project Number: 12008
Date: 06/01/16 Drawing #:
Scale: 1" = 20'
Drawn by: DNW
Checked by: WM
C-104

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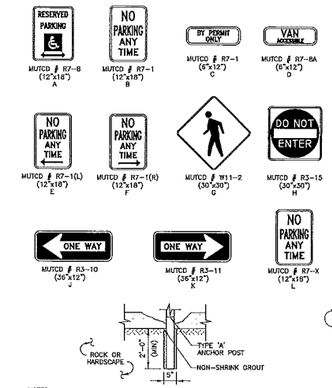
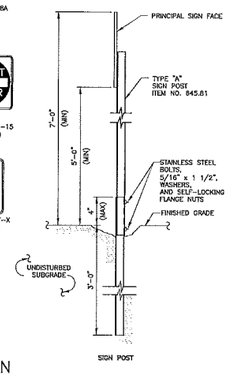
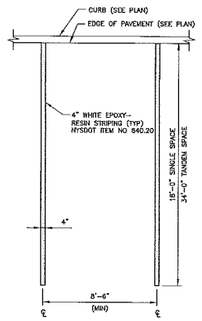


NOTES:

1. OFFSET POST 3'-0" FROM EDGE OF PAVEMENT.
2. INSERT 3/16" THREADED SPACER BETWEEN POSTS AT CONNECTION.

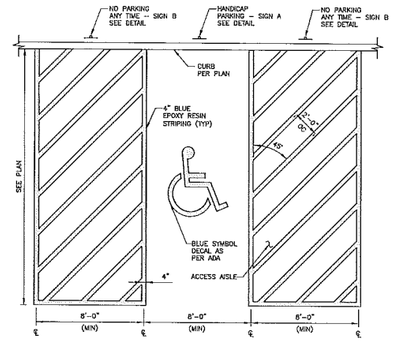
1 C-201 SIGN
SCALE: NTS



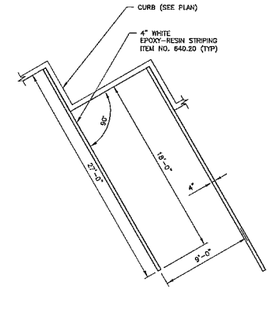


NOTE:
ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS.

2 C-201 PARKING SPACE
SCALE: 1/4" = 1'-0"

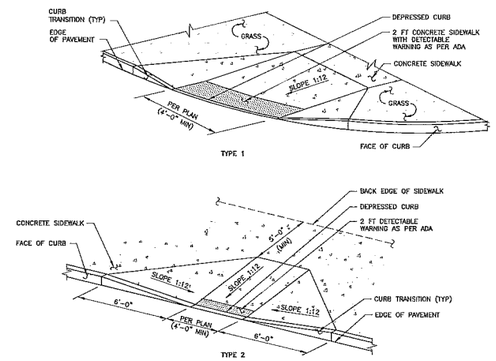


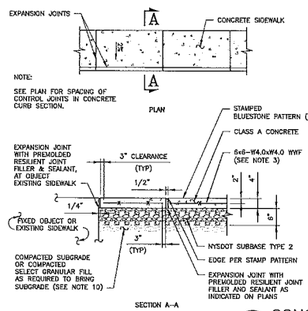
3 C-201 HANDICAP PARKING SPACES
SCALE: 1/4" = 1'-0"



NOTE:
ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS

4 C-201 ANGLED PARKING SPACE
SCALE: 3/16" = 1'-0"



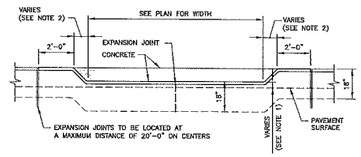


NOTE:
SEE PLAN FOR SPACING OF CONTROL JOINTS IN CONCRETE CURB SECTION.

SIDEWALK NOTES:

1. MATERIAL AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JANUARY 1, 2018 AND AS AMENDED THEREAFTER: THE ONLY EXCEPTION BEING THAT THE WORK OF THIS CONTRACT SHALL BE MEASURED IN ENGLISH UNITS.
2. ALL CONCRETE SHALL BE 4000 PSI CLASS A CONCRETE. CONCRETE MATERIALS, PLACEMENT, AND CONSTRUCTION SHALL CONFORM WITH SECTION 500 OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS.
3. REINFORCING STEEL FOR CONCRETE SHALL CONFORM WITH SECTION 556 – REINFORCING STEEL. CONCRETE STRUCTURES OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS AND AS SPECIFICALLY CALLED OUT IN THE DRAWINGS.
4. CONCRETE TEXTURE AND STAMP PATTERN SHALL BE 18"x36" BLUESTONE BY BUTTERFIELD COLOR (PRODUCT NO. BST42110) OR APPROVED EQUAL. WHERE INDICATED. COLOR TO BE SELECTED BY THE CITY.
5. EXPANSION JOINTS SHALL BE LOCATED A MAXIMUM OF 20'-0" ON CENTER, OR AS INDICATED ON PLANS.
6. JOINTS SHALL NOT BE SAW CUT.
7. SUBBASE MATERIAL SHALL CONFORM WITH THE SECTION 304 OF THE ABOVE REFERENCED NYSDOT STANDARD.
8. WHERE IT IS NECESSARY TO PLACE FILL FOR PURPOSES OF BRINGING THE SUBGRADE ELEVATION UP TO A SPECIFIED GRADE, THE FILL MATERIAL PLACED SHALL BE IN CONFORMATION WITH SECTION 203–EXCAVATION AND EMBANKMENT OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS.
9. ALL WORK SHALL CONFORM WITH SECTION 608–SIDEWALK, DRIVEWAYS, AND BICYCLE PATHS OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS.

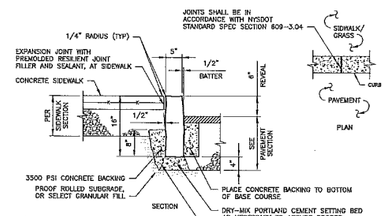
5 C-201 CONCRETE SIDEWALK
SCALE: NTS



NOTES:

1. LIP DIMENSION SHALL BE 1.5 INCHES FOR DRIVEWAYS, AND 0 – INCHES FOR HANDICAP ACCESS RAMPS.
2. RAMP DIMENSION SHALL BE 2 FEET FOR DRIVEWAYS AND 4.5 FEET FOR 6" EXPOSED FACE CURBS.

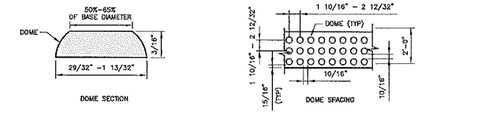
6 C-201 DEPRESSED CURB
SCALE: NONE



NOTES:

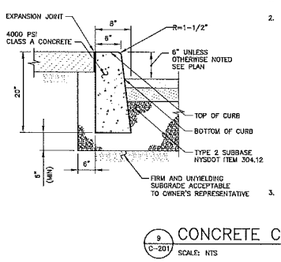
1. GRANITE CURB TO BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH NYSDOT STANDARD SPECIFICATION SECTION 609.
2. FOR NEW CONSTRUCTION, A 6" CURB REVEAL SHALL BE MAINTAINED FOR CURB REPLACEMENT OR RESETTING, MATCH EXISTING REVEAL.

7 C-201 GRANITE CURB
SCALE: NTS



NOTE:
DETECTABLE WARNING SHALL BE RED COLORED, PRECAST CONCRETE TILES (SAFE STEP) MANUFACTURED BY TRANSPO (914-636-1000).

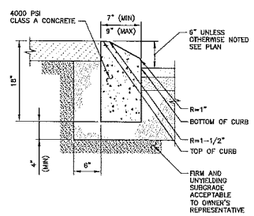
8 C-201 ACCESSIBLE RAMP
SCALE: NTS



NOTES:

1. CURB SHALL BE CAST IN PLACE, 4,000 PSI @ 28 DAYS CONCRETE WITH RUBBED FINISH.
2. USE CONVENTIONALLY FORMED CLASS A PORTLAND CEMENT CONCRETE.
   A. FORMS SHALL BE FREE FROM WARP AND OF SUCH CONSTRUCTION THAT THERE WILL BE NO INTERFERENCE TO INSPECTION FOR GRADE AND ALIGNMENT. ALL FORMS SHALL EXTEND TO THE FULL CURB DEPTH AND BE SECURED SO NO DISPLACEMENT WILL OCCUR DURING THE PLACEMENT OF CONCRETE.
   B. CURB SHALL BE CAST IN SEGMENTS HAVING A UNIFORM LENGTH OF APPROXIMATELY TEN (10) FEET. THE JOINTS BETWEEN SEGMENTS SHALL NOT EXCEED 1/4" IN WIDTH.
   C. EXPANSION JOINTS SHALL BE 3/4" WIDE AND CONTAIN PRE-MOULDED RESILIENT JOINT FILLER. THE FILLER SHALL BE CUT TO CONFORM TO THE CROSS SECTION OF THE CURB. EXPANSION JOINTS SHALL BE LOCATED AT ALL IMMOVABLE OBJECTS, ADJACENT TO EXPANSION JOINTS IN THE PAVEMENT, OR WHERE DIRECTED BY THE ENGINEER.
3. ALL CONSTRUCTION AND MATERIALS USED SHALL MEET THE REQUIREMENTS OF SECTION 14K OF THE TOWN OF NEWBURGH ROAD SPECIFICATIONS.

9 C-201 CONCRETE CURB
SCALE: NTS



NOTES:

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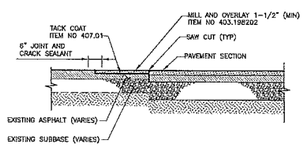
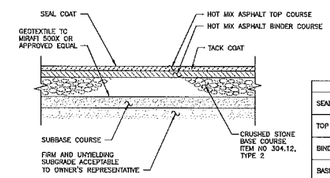
   C. EXPANSION JOINTS SHALL BE 3/4" WIDE AND CONTAIN PRE-MOULDED RESILIENT JOINT FILLER. THE FILLER SHALL BE CUT TO CONFORM TO THE CROSS SECTION OF THE CURB. EXPANSION JOINTS SHALL BE LOCATED AT ALL IMMOVABLE OBJECTS, ADJACENT TO EXPANSION JOINTS IN THE PAVEMENT, OR WHERE DIRECTED BY THE ENGINEER.

10 C-201 MOUNTABLE CURB
SCALE: 1" = 1'-0"



NOTE:
ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS.

11 C-201 PAVEMENT TRANSITION
SCALE: 1/2" = 1'-0"

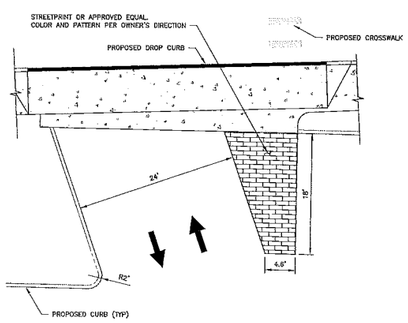


NOTES:

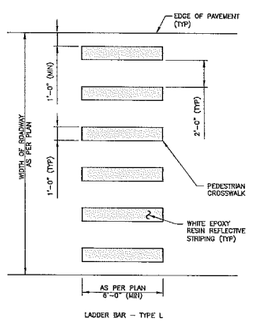
1. ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS.
2. PARKING PAVEMENT SECTION MINIMIZED: 4" CRUSHED STONE SUBBASE.

	CITY ROAD	HEAVY SECTION	LIGHT SECTION
SEAL COAT	3/8"	–	–
TOP COURSE	1" TYPE 6F ITEM NO. 403.178202	1–1/2" TYPE 7F2 ITEM NO. 403.198202	1–1/2" TYPE 7F2 ITEM NO. 403.198202
BINDER COURSE	2–1/2" ITEM NO. 403.138902	2–1/2" ITEM NO. 403.138902	2" ITEM NO. 403.138902
BASE COURSE	8"	8"	4"
SUBBASE	12"	–	–

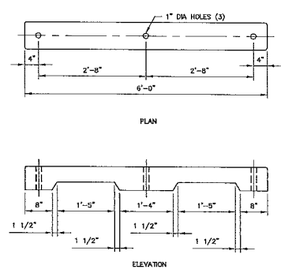
12 C-201 PAVEMENT SECTION
SCALE: NTS



13 C-201 STREETPRINT ENLARGEMENT
SCALE: 1-1/2" = 1'-0"



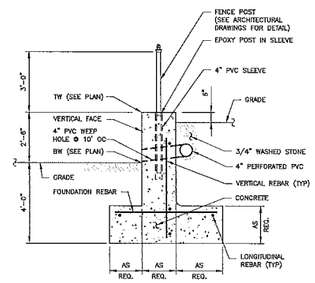
14 C-201 PEDESTRIAN CROSSWALK
SCALE: 1/4" = 1'-0"



NOTES:

1. CONCRETE USED TO HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.
2. UNIT TO BE PINNED TO SURFACE WITH 3 – 3/4" DIA.
3. STEEL RODS, 24" MINIMUM IN LENGTH.
4. ALL BEVELS TO BE 1/2". ALL ANGLES TO BE 45°.

15 C-201 PRECAST CONCRETE CURB STOP
SCALE: 3/4" = 1'-0"



NOTE:
SHOP DRAWING OF WALL TO BE DESIGNED BY A NYS PROFESSIONAL ENGINEER AND APPROVED FOR CONSTRUCTION PRIOR TO COMMENCING WORK ON THE WALL.

16 C-201 CONCRETE RETAINING WALL
SCALE: 3/8" = 1'-0"

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■ Respect The Marks
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TECTONIC WORK ORDER NO.: 6680.01

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Key Plan

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Revisions:

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Structural Engineer:
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MEP Engineer:
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Holmdel, NJ 07733
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Steven Winters Associates
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New York, NY 10001
Tel (212) 254 5800
Landscape Architect:
Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 729 7612

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Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
DETAILS

Project Number:	12008
Date:	06/01/16
Scale:	AS NOTED
Drawn by:	DNW
Checked by:	WM

Drawing #: C-201

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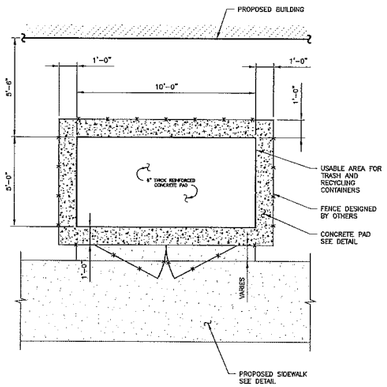
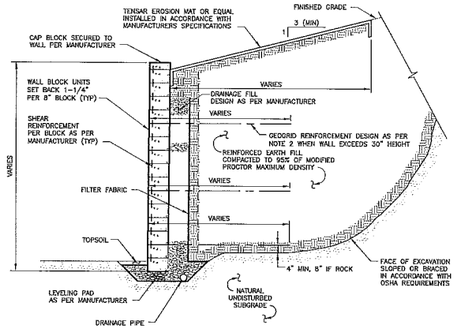


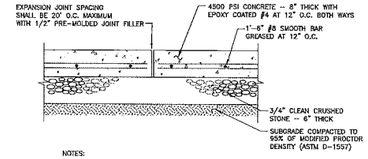
1 C-202 TRASH ENCLOSURE
SCALE: NTS



NOTES:

1. PROPOSED RETAINING WALL SHALL BE DESIGNED AS PER THE MANUFACTURER.
2. PRIOR TO CONSTRUCTION, DETAILED SHOP DRAWINGS AND DESIGNS SIGNED AND SEALED BY A NY STATE PROFESSIONAL ENGINEER MUST BE SUBMITTED TO THE CITY ENGINEER AND THE CODES DEPARTMENT FOR EACH SEPARATE WALL STRUCTURE. WALLS SHALL NOT BE CONSTRUCTED WITHOUT THE MUNICIPALITY'S AUTHORIZATION TO PROCEED.
3. CONSTRUCTION OF THE WALLS SHALL BE OBSERVED ON A FULL TIME BASIS BY A QUALIFIED INSPECTOR UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER.
4. COMPLETED WALLS SHALL BE CERTIFIED BY A NEW YORK STATE PROFESSIONAL ENGINEER TO HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS.
5. WALLS IN EXCESS OF 30" EXPOSED HEIGHT SHALL HAVE SAFETY FENCING INSTALLED.

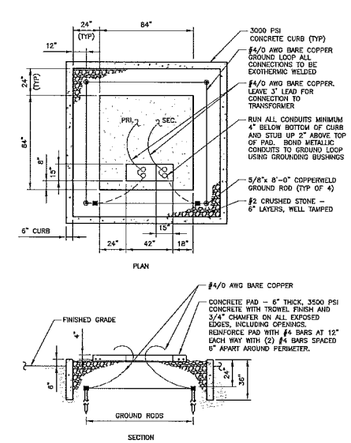
2 C-202 SEGMENTAL RETAINING WALL
SCALE: NTS



NOTES:

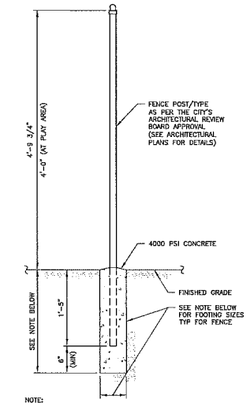
1. SUBGRADE IS TO BE COMPACTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. THE CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS AND BE PROPORTIONED AS FOLLOWS:
   A. PROVIDE DCIS CORROSION INHIBITOR (BY GRACE CONSTRUCTION PRODUCT OR EQUIVALENT) IN THE CONCRETE MIX AT A RATE OF 4 GALLONS PER CUBIC YARD.
   B. 6% ENTRAINED AIR.
   C. MAXIMUM 4" SLUMP AT TIME OF PLACEMENT.
   D. MAXIMUM WATER-CEMENT RATIO = 0.48
   E. COARSE AGGREGATE: MINIMUM 1450 LBS OF 1-1/2" CLEAN, CRUSHED, DURABLE STONE CONFORMING TO THE REQUIREMENTS OF ASTM C33 FOR SIZE 57 OR 467 COARSE STONE AGGREGATE.
3. PLACEMENT AND FINISHING SHALL BE IN A CONTINUOUS OPERATION.
4. THE CONCRETE SHALL BE FOGGED AND COVERED WITH POLYETHYLENE AND WET CURED, MAINTAINING MOISTURE CONTENT WHILE COVERED FOR AT LEAST 5 DAYS.
5. CONCRETE SHALL BE PROTECTED FROM BOTH FREEZING AND LOSS OF MOISTURE FOR A PERIOD OF 7 DAYS FROM TIME OF PLACEMENT.
6. CONCRETE SHALL NOT BE PLACED ON FROZEN SUBGRADE SOILS.
7. ALL EDGES SHALL BE ROUNDED AND GIVEN A STEEL TROWEL FINISH.
8. EXPANSION JOINTS ARE TO BE 1/2" WIDE AND FILLED WITH PREFORMED BITUMINOUS TYPE JOINT FILLER. THE TOP OF ALL JOINT FILLER SHALL BE BELOW THE TOP OF THE SURFACE. EXPANSION JOINTS SHALL BE LOCATED 24" (MAX) ON CENTER.
9. STEEL SHALL HAVE A YIELD STRENGTH OF 60,000 PSI.

3 C-202 CONCRETE PAD
SCALE: 1" = 1'-0"



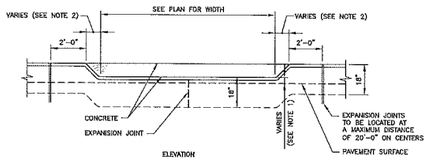
3/4" CLEAN CRUSHED STONE – 6" THICK
3000 PSI CONCRETE CURB (TYP)
#4/0 AWG BARE COPPER GROUND LOOP ALL CONNECTIONS TO BE EXOTHERMIC WELDED
#4/0 AWG BARE COPPER. LEAVE 2' LEAD FOR CONNECTION TO TRANSFORMER
RUN ALL CONDUITS MINIMUM 4" BELOW BOTTOM OF CURB AND STUB UP 2" ABOVE TOP OF PAD. BOND METALLIC CONDUITS TO GROUND LOOP USING GROUNDING BUSHINGS
5/8"x 8'-0" COPPERWELD GROUND ROD (TYP OF 4)
#2 CRUSHED STONE – 6" LAYERS, WELL TAMPED

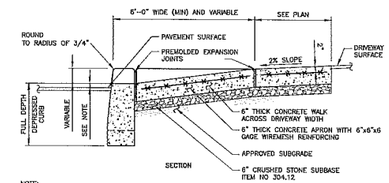
4 C-202 TRANSFORMER PAD
SCALE: 1/4" = 1'-0"



NOTE:
FOOTING SIZES:
A. LINE POSTS – 12" DIA. x 24" DP.
B. CORNER AND TERMINAL POSTS – 12" DIA. x 36" DP.

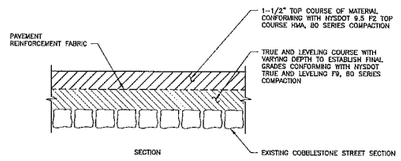
5 C-202 TYPICAL FENCE
SCALE: NTS





NOTE:
ALL CONCRETE TO BE 4000 PSI (MIN), UNCOLORED.

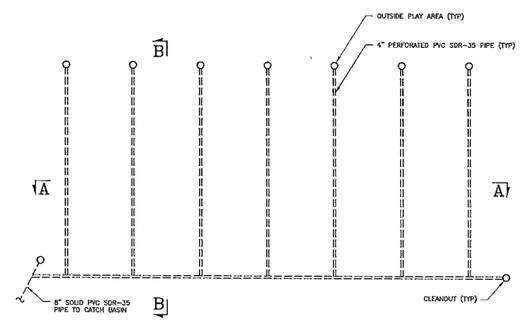
6 C-202 DEPRESSED CURB AND APRON
SCALE: NTS

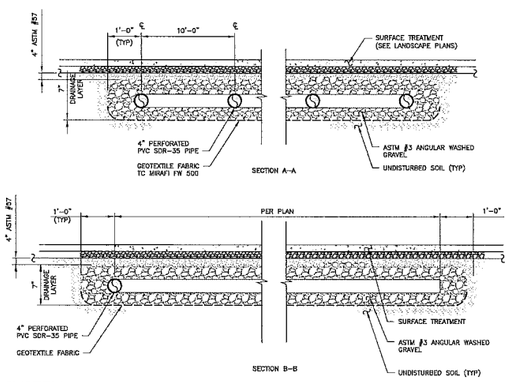


NOTES:

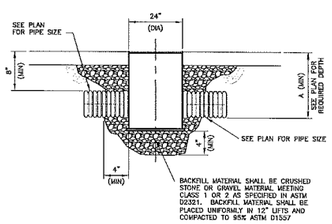
1. MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JANUARY 1, 2016, AND ALL ADDENDA THERETO; THE ONLY EXCEPTION BEING THAT THE WORK OF THIS CONTRACT SHALL BE MEASURED IN ENGLISH UNITS.
2. HOT MIX ASPHALT (HMA) PAVEMENT SHALL CONFORM WITH SECTION 400-HOT MIX ASPHALT OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS AND THE TYPOE CALLED OUT IN THESE DRAWINGS. ALTHOUGH SECTION 400 IN ITS ENTIRETY IS REFERENCED, THE HOT MIX ASPHALT (HMA) PAVEMENT(S) SPECIFIED FOR THIS CONTRACT SHALL BE AS SPECIFIED UNDER SECTION 402-HOT MIX ASPHALT (HMA) PAVEMENTS.
3. TACK COAT MATERIAL AND APPLICATION RATE WHEN SPECIFIED OR CALLED OUT IN THESE DRAWINGS OR REQUIRED BY THE REFERENCED SPECIFICATIONS SHALL CONFORM WITH SECTION 407-TACK COAT OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS.
4. PAVEMENT REINFORCEMENT FABRIC SHALL BE TENSAR GLASGRID 8301 OR APPROVED EQUIVALENT. PRODUCT SHALL BE INSTALLED PER MANUFACTURE'S SPECIFICATIONS.

7 C-202 TYPICAL CITY OF NEWBURGH, NY ASPHALT PAVEMENT RESTORATION
SCALE: NTS





5 C-202 UNDERDRAIN SYSTEM
SCALE: NTS

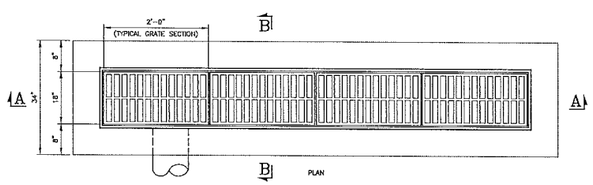


PIPE SIZE	A (ADS N-12 PIPE)
4"	12"±
6"	14"±
8"	16"±
10"	18"±
12"	20"±
15"	23"±
18"	26"±

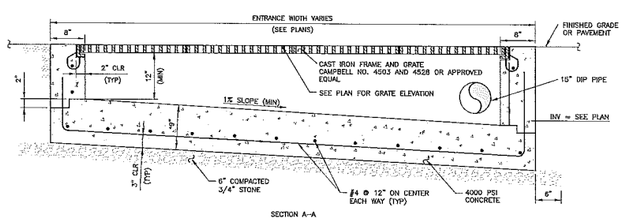
NOTES:

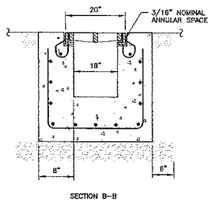
1. BASIN SHALL BE NYLOPLAST® AS MANUFACTURED BY ADS, OR APPROVED EQUAL.
2. GRATE SHALL BE DUCTILE IRON, DROP-IN TYPE, COMPATIBLE WITH THE BASIN.

9 C-202 YARD DRAIN
SCALE: NTS

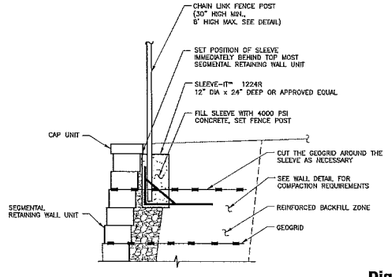


NOTE:
THE TRENCH DRAIN FRAME AND GRATE MUST BE CAPABLE OF SUSTAINING HS-25 LOADING.





10 C-202 TRENCH DRAIN
SCALE: NTS



11 C-202 FENCE POST INSTALLATION AT SEGMENTAL RETAINING WALL
SCALE: NTS

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

TECTONIC WORK ORDER NO.: 8660.01

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Mountainville, NY 10953
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www.tectonicengineering.com

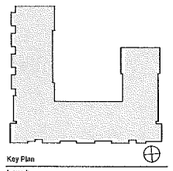
Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Client:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/15	SUBMISSION
2	06/01/15	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/29/15	PER PLANNING BOARD COMMENTS
4	09/07/15	PER CITY ENGINEERS COMMENTS DATED-9/15/15

Revisions:

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41 West 27th Street 15th Floor,
New York, NY 10003
Tel (212) 253 7820 Fax (212) 253 1276

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Corporate Office
POBox 37, Pleasant Hill Rd 70 Mountainville, NY 10953
Tel (845) 534 5959

Structural Engineer:
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Ambler, PA 19002
Tel (215) 646 8001 Fax (215) 646 9210

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New York, NY 10001
Tel (212) 254 5800

Landscape Architect:
Pouder Design Group PC
228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
DETAILS

Project Number:	12008
Date: 06/01/15	Drawing #:
Scale: AS NOTED	C-202
Drawn by: DMW	
Checked by: WM	

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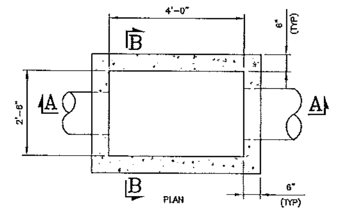
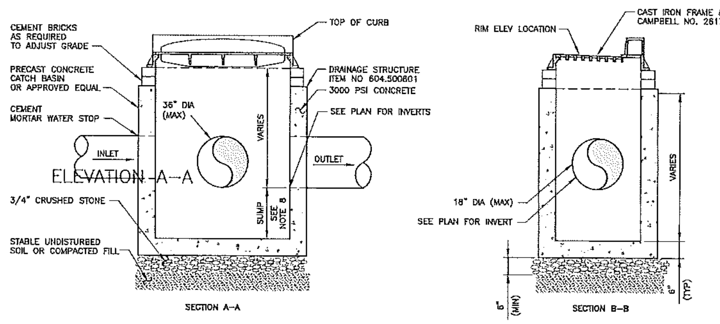


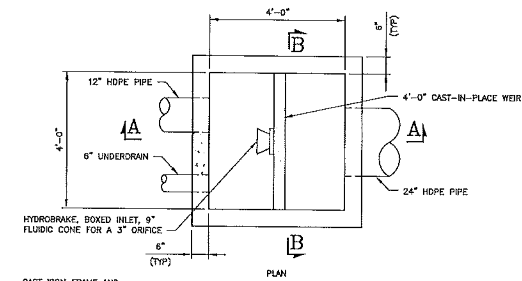


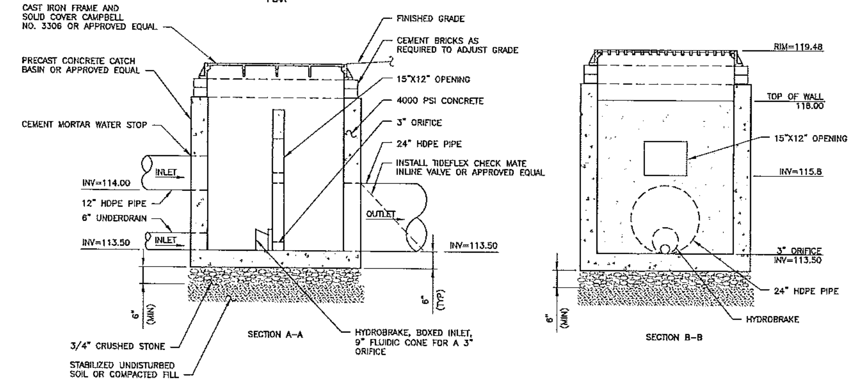
NOTES:

1. BACKFILL AROUND CATCH BASIN TO BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY (ASTM D1557) IN MAX 9" LIFTS.
2. PRECAST STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC STEPS SHALL BE PROVIDED FOR ALL BASINS GREATER THAN FOUR FEET IN DEPTH.
3. CATCH BASIN SHALL BE CAPABLE TO WITHSTAND HS–25 LOADING.
4. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. REINFORCEMENT TO BE IN CONFORMANCE WITH ASTM A615 GRADE 60 AND ASTM A185 GRADE 65.
6. CONTRACTOR TO ORDER SECTIONS FROM MANUFACTURER TO MATCH REQUIRED ELEVATIONS AND INVERTS PER PLAN.
7. PRECAST CONCRETE COMPONENTS BY WOODARDS OR EQUAL.
8. 12" UNLESS ROCK IS ENCOUNTERED PRIOR TO ACHIEVING THE FULL 12" DEEP SUMP. FOR THAT CASE, CARRY THE SUMP TO THE ROCK DEPTH, BUT IN NO CASE LESS THAN 6".
9. GRATE FRAME SHALL BE STENCILED, "DUMP NO WASTE. DRAINS TO RIVER".
10. ITEM NUMBERS REFER TO NYSDOT SPECIFICATIONS.

1 (C-203) CATCH BASIN WITH CURB BOX

SCALE: 1/2" = 1'-0"



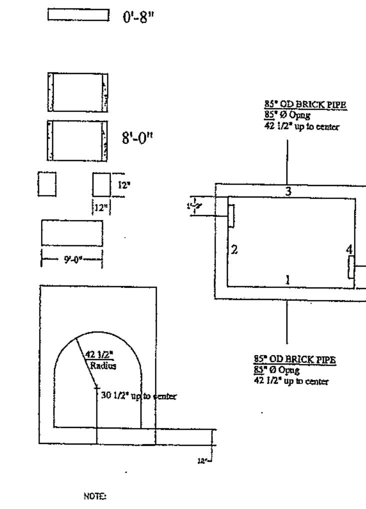


NOTES:

1. BACKFILL AROUND STRUCTURE TO BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY (ASTM D1557) IN MAX 8" LIFTS.
2. PRECAST STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC STEPS SHALL BE PROVIDED.
3. STRUCTURE SHALL BE CAPABLE TO WITHSTAND HS–25 LOADING.
4. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. REINFORCEMENT TO BE IN CONFORMANCE WITH ASTM A615 GRADE 60 AND ASTM A185 GRADE 65.
6. CONTRACTOR TO ORDER SECTIONS FROM MANUFACTURER TO MATCH REQUIRED ELEVATIONS AND INVERTS PER PLAN.
7. PRECAST CONCRETE COMPONENTS BY FORT MILLER OR EQUAL.

2 (C-203) OUTLET CONTROL STRUCTURE

SCALE: NTS

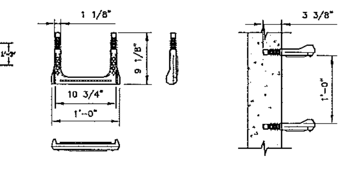


NOTE:

EXACT DIMENSIONS TO BE FIELD VERIFIED PRIOR TO FABRICATION.

3 (C-203) TYPICAL PRECAST DOGHOUSE STRUCTURE

SCALE: NTS

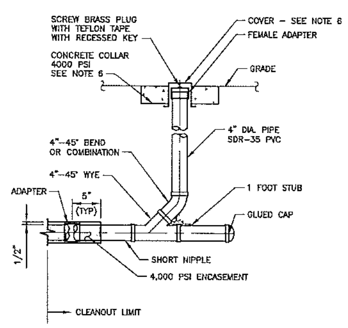


NOTES:

1. MANHOLE STEPS MUST BE TIGHT AND FIRMLY EMBEDDED. THEY MUST ALSO MEET THE ASTM TEST FOR WITHSTANDING PULLING OUT.
2. MUST CONFORM TO ASTM C478, STEEL REINFORCING BAR MINIMUM 1/2" GRADE 60. MEETING REQUIREMENTS OF ASTM 1615 ENCAPSULATED WITH INJECTION MOLDED COPOLYMER POLYPROPYLENE WITH SERRATED SURFACES.

5 (C-203) STEP

SCALE: 1" = 1'-0"



NOTES:

1. TOP OF CLEANOUT STACK/PLUG/CAP ASSEMBLY SHALL BE RECESSED 1/8" BELOW BELOW FINISHED GRADE.
2. ADAPTORS FOR TRANSITION BETWEEN DIFFERENT PIPE MATERIALS SHALL BE SUBJECT TO APPROVAL BY THE OWNER'S REPRESENTATIVE.
3. ALL CONCRETE SHALL HAVE THE MINIMUM ULTIMATE COMPRESSION STRENGTH AS INDICATED WITHIN 28 DAYS.
4. BEDDING BENEATH BASE OF DEEP CONNECTION SHALL BE EQUAL TO THAT PROVIDED FOR REMAINDER OF SEWER MAIN.
5. ADAPTORS FOR DISSIMILAR MATERIALS AND/OR SIZES SHALL BE PROVIDED AS REQUIRED.
6. ALL CLEANOUTS SHALL BE PROVIDED WITH A 18 1/2"x18"x13" DEEP CAST IN PLACE CLEANOUT COLLAR WITH CAMPBELL CASTING 4130 CLEANOUT BOX.
7. THE USE OF FLEXIBLE ADAPTORS (FERNCO) IS ABSOLUTELY PROHIBITED.
8. CLEANOUTS SHALL BE PROVIDED AT ALL BENDS, ENDS, BUILDING LINE CONNECTIONS, AND AT 100' INTERVALS ON LINEAR RUNS EXCEEDING 200' IN LENGTH.

4 (C-203) CLEANOUT ASSEMBLIES

SCALE: NTS

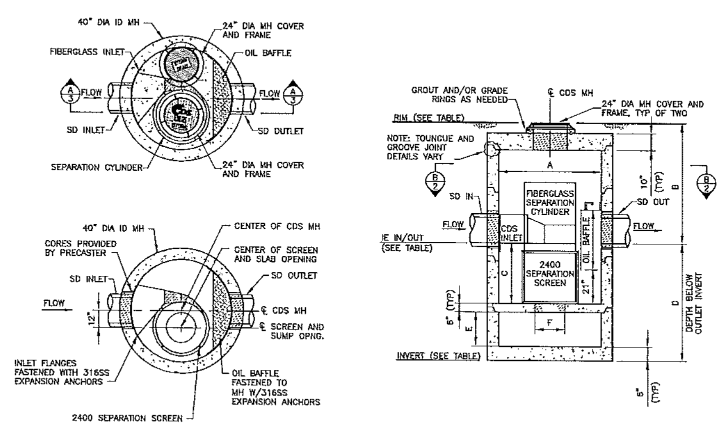


TABLE: CDS UNIT DETAIL INFORMATION

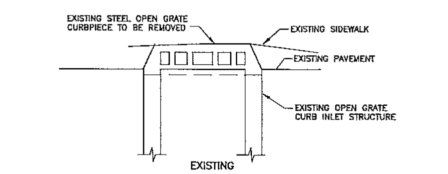
	MODEL	RIM	INV IN/OUT	INV SUMP	A	B	C	D	E
#1	CDS UNIT MODEL # CDS 2015–4	120.5	115.0	109.0	4 FT	5 FT	2 FT	6 FT	2 FT
#2	CDS UNIT MODEL # CDS 2015–4	117.2	110.0	104.0	4 FT	5 FT	2 FT	6 FT	2 FT

CONSTRUCTION NOTES:

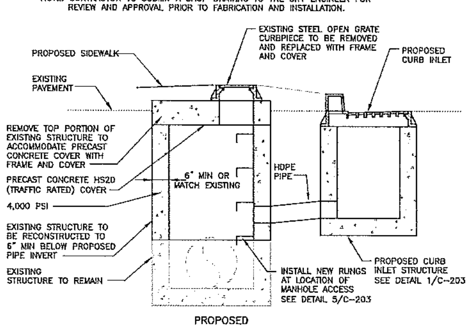
1. APPLY BUTYL MASTIC AND/OR GROUT TO SEAL JOINTS OF MANHOLE STRUCTURE. APPLY LOAD TO MASTIC SEAL IN JOINTS OF MH SECTIONS TO COMPRESS SEALANT IF NECESSARY. UNIT MUST BE WATER TIGHT, HOLDING WATER UP TO FLOWLINE INVERT (MINIMUM).
2. IF SEPARATION SLAB IS NON–INTEGRAL TO THE SEPARATION SECTION OF THE UNIT, SET AND VERIFY TOP ELEVATION BEFORE PLACING MORE PRECAST COMPONENTS OR BACKFILLING. ENSURE 35" FROM TOP OF SEPARATION SLAB TO PIPE INVERT.
3. GROUT PIPE CONNECTIONS TO SEAL JOINT.
4. SET BOTTOM OF OIL BAFFLE 21" ABOVE SEPARATION SLAB FLOOR; DRILL AND INSERT A MINIMUM OF TEN (10) 3/8" x 3 3/4" SS EXPANSION BOLTS @ 12" O.C. EQUALLY SPACED TO SECURE FIBERGLASS OIL BAFFLE FLANGE TO RISER WALL–(HARDWARE SUPPLIED BY CDS TECHNOLOGIES).
5. FASTEN FIBERGLASS CYLINDER/INLET TO SCREEN ASSEMBLY USING FOUR (4) SETS OF 1/2" x 1 1/2" SS HEX HEAD BOLTS W/ NUTS AND WASHERS; IN THE LEFT–HANDED CONFIGURATION THE "RED" COLORED FLANGE SHOULD FACE UP; IN THE RIGHT–HANDED CONFIGURATION, THE "GREEN" COLORED FLANGE SHOULD FACE UP–(HARDWARE SUPPLIED BY CDS TECHNOLOGIES).
6. CENTER SCREEN ASSEMBLY OVER SUMP OPENING AND POSITION FIBERGLASS INLET AGAINST RISER WALL WITH INLET PIPE REASONABLY CENTERED WITHIN THE CDS INLET ORIFICE; FASTEN SCREEN TO SEPARATION SLAB USING FOUR (4) 3/8" x 3 3/4" SS EXPANSION BOLTS–(HARDWARE SUPPLIED BY CDS TECHNOLOGIES); IF STAINLESS STEEL SEPARATION PLATE (SEE INSET) IS PROVIDED, PLACE PLATE WITHIN THE SCREEN CYLINDER AND OVER THE 21"ø SUMP ACCESS HOLE (NO FASTENING REQUIRED).
7. VERIFY THAT SCREEN ASSEMBLY IS CENTERED OVER SUMP ACCESS HOLE AND ADJUST IF NECESSARY; DRILL AND INSERT A MINIMUM OF SIX (6) 3/8" x 3 3/4" SS EXPANSION BOLTS EQUALLY SPACED TO SECURE FIBERGLASS INLET FLANGE TO RISER WALL–(HARDWARE SUPPLIED BY CDS TECHNOLOGIES).
8. BLOCK AND/OR GROUT TO MATCH FINISHED GRADE ELEVATION AS NEEDED.

6 (C-203) HYDRODYNAMIC SEPARATOR

SCALE: NTS

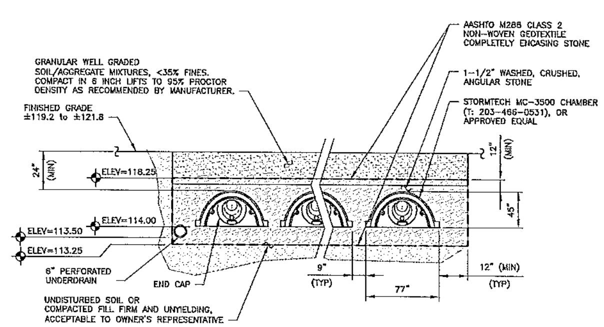


NOTE: CONTRACTOR TO SUBMIT A SHOP DRAWING TO THE CITY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND INSTALLATION.



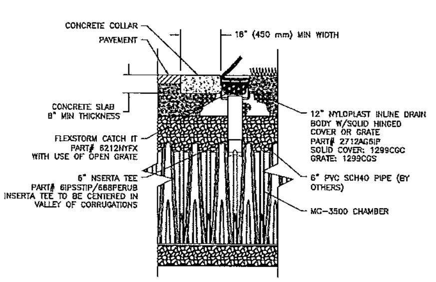
11 (C-203) SKETCH OF CURB INLET REPLACEMENT AT LANDER/BROADWAY INTERSECTION

SCALE: NTS



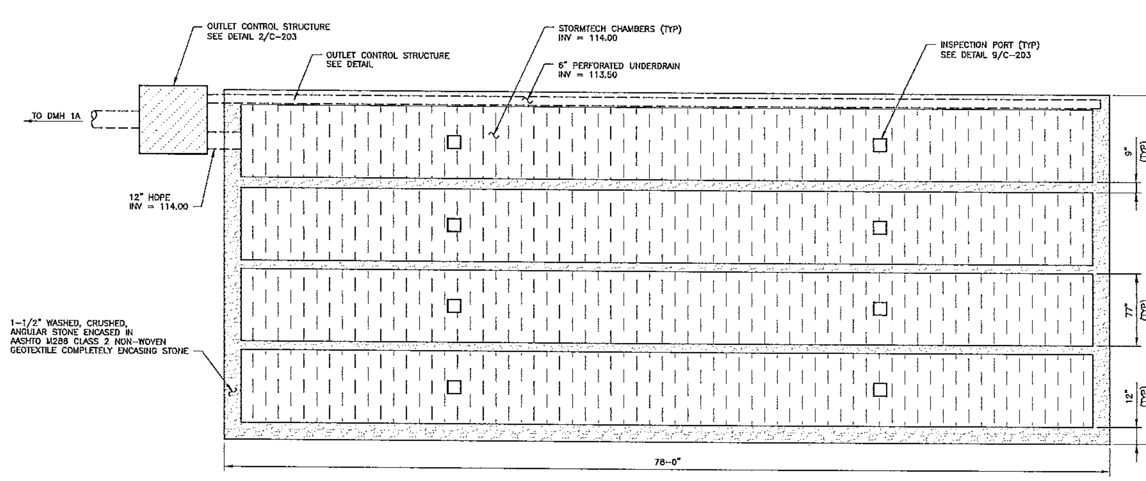
8 (C-203) UNDERGROUND DETENTION CROSS SECTION

SCALE: NTS



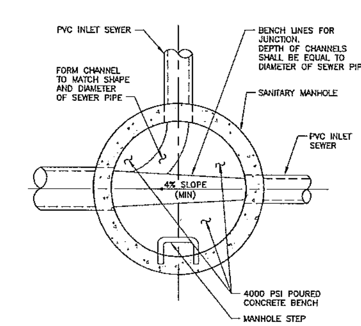
9 (C-203) INSPECTION PORT DETAIL

SCALE: NTS



7 (C-203) UNDERGROUND DETENTION PLAN LAYOUT

SCALE: NTS



10 (C-203) BENCH & CHANNEL

SCALE: NTS

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

TECTONIC WORK ORDER NO.: 6660.01

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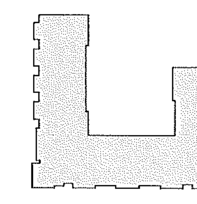

Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/16	SUBMISSION
2	06/01/16	PER PLANNER, ENGINEER,
		& FIRE DEPT. COMMENTS
3	07/29/16	PER PLANNING BOARD
		COMMENTS
4	09/07/16	PER CITY ENGINEERS
		COMMENTS DATED-8/16/16

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Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
DETAILS

Project Number: 12008
Date: 06/01/16
Drawing #: C-203
Scale: AS NOTED
Drawn by: DNW
Checked by: WM

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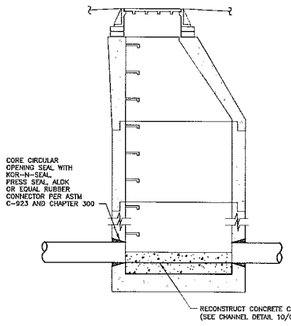
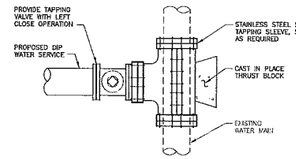


NOTES:

1. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPARTMENT, AUTHORIZED BY THE PLUMBING INSPECTOR.
2. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
3. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL.

1 C-204 CONNECTION TO SEWER MANHOLE

SCALE: 1/2" = 1'-0"

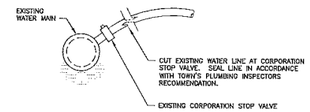


NOTES:

1. WET TAP DRILLING TO BE PERFORMED BY THE CONTRACTOR. THE LOCAL WATER UTILITY SHALL HAVE A REPRESENTATIVE ON-SITE.
2. CONTRACTOR TO CONTACT THE LOCAL WATER UTILITY FOR INSTALLATION REQUIREMENTS.
3. EXPOSE MAIN TO DETERMINE SIZE OF MAIN PRIOR TO ORDERING TAPPING SLEEVE.
4. RESTRAIN ALL PROPOSED JOINTS IN ACCORDANCE WITH PIPE RESTRAINT DETAIL.
5. ALL COORDINATION, EXCAVATION, BACKFILL, RESTORATION, SHORING/BRACING AND MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR.
6. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPARTMENT, AUTHORIZED BY THE PLUMBING INSPECTOR.
7. A CITY OF NEWBURGH LICENSED PLUMBER MUST BE RETAINED TO INSTALL THE WATER CONNECTIONS.
8. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
9. THE CITY OF NEWBURGH WATER SUPERINTENDENT SHALL BE NOTIFIED, VIA A CORPORATION TAP REQUEST, PRIOR TO MAKING CONNECTION TO THE MUNICIPAL WATER SYSTEM.
10. THE CITY OF NEWBURGH WATER DEPARTMENT SHALL INSTALL THE CORPORATION TAP INTO THE MUNICIPAL WATER SYSTEM, UP TO A ONE (1) INCH SERVICE. CORPORATION TAPS ABOVE ONE (1) INCH IN SIZE SHALL BE DONE BY A CONTRACTOR SPECIALIZING IN LARGE DIAMETER TAPPING.
11. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL.

2 C-204 WET TAP

SCALE: 1" = 1'-0"

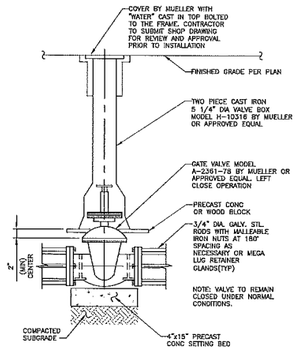


NOTES:

1. LOCATE SERVICE TO BE ABANDONED.
2. DETERMINE THE EXCAVATION AREA IN THE STREET OVER THE SERVICE CORPORATION.
3. NOTIFY WATER DEPARTMENT PRIOR TO EXCAVATION.
4. PERFORM EXCAVATION.
5. EXISTING CORPORATION STOP SHALL BE COMPLETELY CLOSED BEFORE THE WATER SERVICE LINE IS DISCONNECTED AT THE EXISTING CORPORATION STOP.
6. AFTER REMOVAL OF THE SERVICE LINE FROM THE CORPORATION STOP, A BRONZE CAP OR PLUG SHALL BE INSTALLED ON THE OUTLET SIDE OF THE CORPORATION STOP.
7. IF THE WATER SERVICE LINE CANNOT BE REMOVED WITHOUT DAMAGING THE EXISTING CORPORATION STOP AND/OR CREATING A LEAK, THE WATER SERVICE LINE SHALL BE SAWED OFF AT THE EXISTING CORPORATION STOP.
8. NUT ON THE BOTTOM OF THE EXISTING CORPORATION STOP, IF PRESENT SHALL BE COMPLETELY TIGHTENED.
9. IF THE EXISTING CORPORATION STOP LEAKS WHEN FULLY CLOSED OR AFTER BEING TIGHTENED, THE EXISTING CORPORATION STOP SHALL BE COMPLETELY PLUGGED AS APPROVED BY THE WATER DEPARTMENT REPRESENTATIVE.
10. BACKFILL IN ACCORDANCE WITH TRENCH BACKFILL DETAIL 7/C-204.
11. RESTORE PAVEMENT IN ACCORDANCE WITH PAVEMENT SECTION DETAIL 9/C-201.

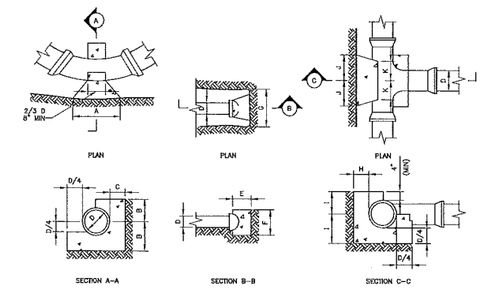
3 C-204 EXISTING WATER SERVICE DISCONNECTION

SCALE: NTS



4 C-204 VALVE AND VALVE BOX

SCALE: 1" = 1'-0"



HORIZONTAL BEND

BEND					
11 1/4° BEND	A	4"*	8"	8"	10"
	B	8"	9"	10"	12"
	C	7"	7"	8"	8"
22 1/2° BEND	A	9"	12"	18"	21"
	B	7"	8"	9"	10"
	C	8"	9"	10"	11"
45° BEND	A	15"	15"	22"	30"
	B	7"	8"	9"	10"
	C	8"	9"	10"	11"
90° BEND	A	24"	30"	36"	42"
	B	8"	9"	12"	15"
	C	22"	21"	20"	19"

* SEE NOTE 4

CAP

D	4"*	8"	
E	8"	8"	
F	12"	16"	
G	17"	23"	

* SEE NOTE 4

TEE

D	4"*	6"	8"	10"
H	18"	9"	30"	32"
I	9"	10"	12"	15"
J	7"	9"	12"	14"
K	8"	8"	8"	8"

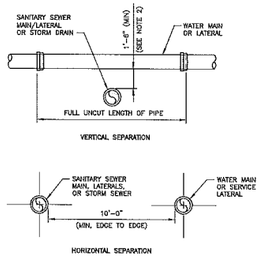
* SEE NOTE 4

NOTES:

1. ALL CONCRETE TO BE 3000 PSI.
2. ALL THRUST BLOCKS TO BE CARRIED TO UNDISTURBED EARTH.
3. THRUST BLOCK DIMENSIONS SHOWN ARE MINIMUM.
4. MINIMUM DIMENSION FOR PIPES LESS THAN 4" DIAMETER.

5 C-204 THRUST BLOCK

SCALE: NTS

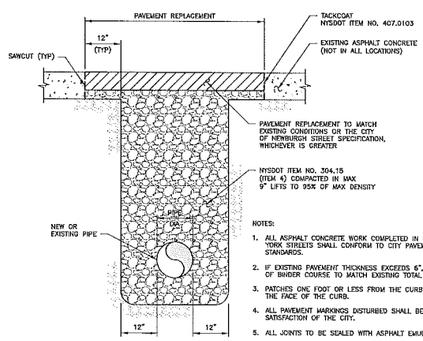


NOTES:

1. NO DEVIATION (EXCEPT AS SPECIFICALLY INDICATED ON THE PLANS) IN THE SEPARATION REQUIREMENTS WILL BE PERMITTED WITHOUT APPROVAL OF THE JURISDICTIONAL AUTHORITY.
2. WHERE WATER AND SANITARY OR STORM SEWER MAINS ARE LESS THAN 10' APART HORIZONTAL OR PROVIDE LESS THAN 18" SEPARATION BETWEEN PIPES, CONCRETE ENCASE WATER MAIN PER ENCASEMENT DETAIL.

6 C-204 WATER/SEWER SEPARATION REQUIREMENTS

SCALE: NTS

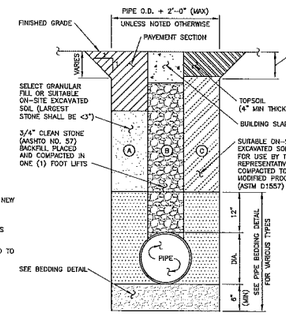


NOTES:

1. ALL ASPHALT CONCRETE WORK COMPLETED IN CITY OF NEWBURGH, NEW YORK STREETS SHALL CONFORM TO CITY PAVEMENT SECTION STANDARDS.
2. IF EXISTING PAVEMENT THICKNESS EXCEEDS 6", INCREASE THICKNESS OF BINDER COURSE TO MATCH EXISTING TOTAL THICKNESS.
3. PATCHES ONE FOOT OR LESS FROM THE CURB SHALL BE EXTENDED TO THE FACE OF THE CURB.
4. ALL PAVEMENT MARKINGS DISTURBED SHALL BE RESTORED TO THE SATISFACTION OF THE CITY.
5. ALL JOINTS TO BE SEALED WITH ASPHALT EMULSION (AS-20).

7 C-204 TRENCH EXCAVATION WITHIN CITY RIGHT-OF-WAY

SCALE: NTS



CONSTRUCTION CASES:

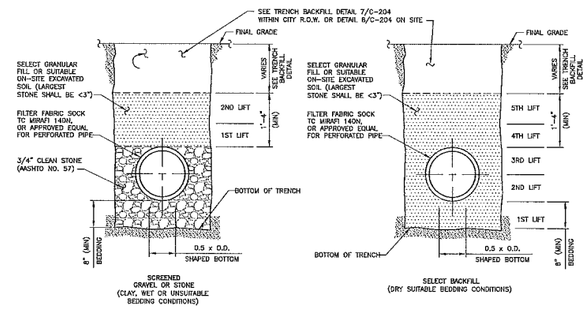
A. TRENCH UNDER ROADWAY (EXTEND 5' OUTSIDE CURB/EDGE OF PAVEMENT)
B. TRENCH UNDER BUILDING SLAB/FOOTING (EXTEND 5' OUTSIDE BUILDING LINE)
C. TRENCH UNDER OFF-ROAD AREAS

NOTES:

1. ALL COSTS ASSOCIATED WITH THE PROVISION TRENCH BACKFILL IN ACCORDANCE WITH THIS DETAIL SHALL BE INCLUDED IN THE PRICE BID FOR THE PROJECT.
2. ALL EXCAVATION AND TRENCHING MEET OSHA REQUIREMENTS.
3. BACKFILL WITH EXCAVATED TRENCH MATERIAL FREE OF DELETERIOUS MATERIAL AND STONES OVER 6" DIAMETER (UNLESS OTHERWISE NOTED). BACKFILL TO BE PLACED IN 8" (MAX) LIFTS AND COMPACTED TO 95% MODIFIED PROCTOR DENSITY (ASTM D1557) (UNLESS OTHERWISE NOTED).

8 C-204 TRENCH BACKFILL ON SITE

SCALE: NTS

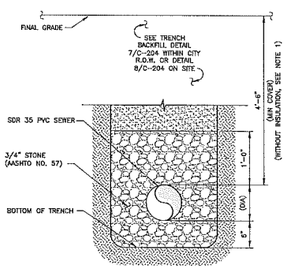


NOTES:

1. SELECT FILL TO BE THOROUGHLY COMPACTED IN 6" LAYERS BY APPROVED TAMPING MACHINE.
2. SELECT FILL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY (ASTM D1557)
3. APPROVED BACKFILL COMPACTED AS PER SPECIFICATIONS.
4. TRENCH WIDTH TO BE THE LESSER OF (O.D.+2'O.D.) OR (O.D.+2'0.5FT)
5. PVC SEWER PIPE AND FITTINGS, NPS 15 AND SMALLER SHALL BE ASTM D 3034, SDR-35 FOR SANITARY APPLICATIONS, AND SCHEDULE 40 FOR DRAINAGE APPLICATIONS FOR SOLVENT-CEMENTED OR GASKETED JOINTS. IF GASKETS ARE PROVIDED, GASKETS SHALL MEET ASTM F 477 FOR ELASTOMERIC SEALS.
6. HDPE STORM SEWER PIPE AND FITTINGS SHALL COMPLY WITH THE REQUIREMENTS FOR TEST METHODS, DIMENSIONS AND MARKINGS FOUND IN AASHTO DESIGNATIONS M252, AND M294. PIPE AND FITTINGS SHALL BE MADE FROM VIRGIN PE COMPOUNDS WHICH CONFORM TO THE APPLICABLE CURRENT EDITION OF THE AASHTO MATERIAL SPECIFICATIONS FOR CELL CLASSIFICATION AS DEFINED AND DESCRIBED IN ASTM D3350. STORM SEWER PIPING GREATER THAN EIGHT (8) INCHES IN DIAMETER SHALL BE SMOOTH INTERIOR/CORRUGATED EXTERIOR PIPE FITTED WITH WATERTIGHT JOINTS MEETING OR EXCEEDING ASTM 3212 LAB TEST AND ASTM 1417 WATERTIGHT FIELD TEST. M-12 IB WTY*PRODUCT AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC. (ADS), COLUMBUS, OH, (614) 457-3051 OR APPROVED EQUAL. STORM SEWER PIPING LESS THAN OR EQUAL TO EIGHT (8) INCHES IN DIAMETER SHALL BE SINGLE WALL, CORRUGATED PIPE FITTED WITH SNAP OR SPLIT COUPLINGS, AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC. (ADS), COLUMBUS, OH, (614) 457-3051 OR APPROVED EQUAL. PERFORATIONS APPLIED BY THE MANUFACTURER TO THE PIPE SHALL BE PROVIDED WERE INDICATED ON THE PROJECT PLANS.
7. FILTER FABRIC SHALL BE AASHTO M288 CLASS 2 NON-WOVEN, TC MIRAFI 170N OR APPROVED EQUAL, UNLESS OTHERWISE INDICATED.
8. BEDDING CONDITION SHALL BE DETERMINED BY OWNER'S REPRESENTATIVE.

9 C-204 STANDARD BEDDING FOR PVC/HDPE PIPE

SCALE: NTS



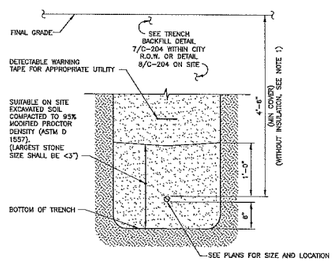
NOTE:

WHEN SITE CONDITIONS DICTATE COVER REQUIREMENTS LESS THAN THOSE DIMENSIONED, 4 FT WIDE POLYSTYRENE FOAM INSULATION SHALL BE PROVIDED APPROXIMATELY 1 FT BELOW THE GROUND SURFACE ALONG THE CENTERLINE OF THE PIPE AS FOLLOWS:

COVER PROVIDED	SURFACE CONDITIONS	INSULATION THICKNESS
<4'-6", >3'-0"	PAVEMENT	2"
<4'-6", >2'-0"	TURF	3"
<2'-0", >1'-6"	TURF	4"

10 C-204 SEWER PIPE BEDDING

SCALE: 1" = 1'-0"



NOTES:

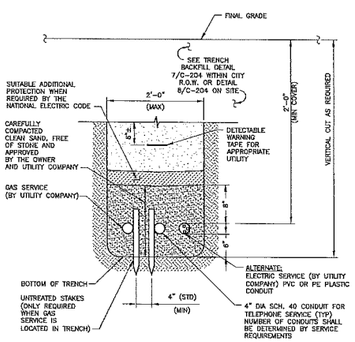
1. WHEN SITE CONDITIONS DICTATE COVER REQUIREMENTS LESS THAN THOSE DIMENSIONED, 4 FT WIDE POLYSTYRENE FOAM INSULATION SHALL BE PROVIDED APPROXIMATELY 1 FT BELOW THE GROUND SURFACE ALONG THE CENTERLINE OF THE PIPE AS FOLLOWS:

COVER PROVIDED	SURFACE CONDITIONS	INSULATION THICKNESS
<4'-6", >3'-0"	PAVEMENT	2"
<4'-6", >2'-0"	TURF	2"
<2'-0", >1'-6"	TURF	4"

2. IN CASE OF ROCK EXCAVATION OR ROCKY TERRAIN, A SAND BALLAST OF FOUR (4) INCHES SHALL BE PLACED BELOW THE SERVICE LINE AND COVERED WITH NO LESS THAN TWELVE (12) INCHES OF CLEAN SAND. NO TRENCH SHALL BE BACKFILLED ON ANY SERVICE LINE UNTIL THE SAME HAS BEEN INSPECTED BY THE DISTRICT OR ITS REPRESENTATIVE AND TESTED FOR LEAKS, AND NO WATER SERVICE WILL BE FURNISHED UNTIL THE DISTRICT OR ITS REPRESENTATIVE HAS MADE SUCH INSPECTION.

11 C-204 WATER PIPE BEDDING

SCALE: 1" = 1'-0"



NOTE:

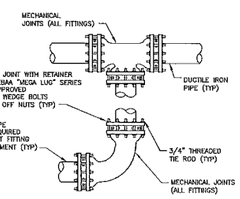
ALL WORK SHALL BE PERFORMED TO THE SATISFACTION OF THE LOCAL UTILITY COMPANIES.

12 C-204 UTILITY BEDDING

SCALE: NTS

TABLE A -- REQUIRED RESTRAINED LENGTH FOR DUCTILE IRON PIPE

PIPE SIZE	8"						
BEND ANGLE	45 DEGREE			22.5 DEGREE	11.25 DEGREE		
TYPE OF TEE	H BEND	V BEND (UP)	V BEND (DN)	H BEND	H BEND	TEE (8x8)	TEE (8x6)	CAP
SOIL (BASED ON CLASSIFICATION) CL >75% PASSING NO. 200	13'	13'	28'	6'	3'	28'	18'	34'
ML >75% PASSING NO. 200	12'	12'	30'	6'	3'	58'	36'	73'
CL >50-75% PASSING NO. 200	12'	12'	28'	6'	3'	27'	17'	34'
ML >50-75% PASSING NO. 200	11'	11'	30'	5'	3'	55'	33'	73'
CC, SC	10'	10'	32'	5'	2'	40'	22'	56'
GM, SM	10'	10'	29'	5'	2'	53'	30'	71'
SW, SP, GW	7'	7'	20'	3'	2'	31'	14'	46'



NOTES:

1. THRUST BLOCKING IS NOT PERMITTED.
2. PIPE RESTRAINING TO BE USED FOR VERTICAL DEFLECTIONS ALSO.
3. SEE TABLE A FOR REQUIRED RESTRAINED LENGTH FOR DUCTILE IRON PIPE.
4. PIPE BEDDING SHALL BE IN ACCORDANCE WITH WATER PIPE TRENCH DETAIL.
5. THE CONTRACTOR SHALL PERFORM SOIL TEST TO DETERMINE SOIL TYPE(S) INDICATED ON TABLE A.

13 C-204 PIPE RESTRAINT

SCALE: 1"=1'-0"

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UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR

TECTONIC WORK ORDER NO.: 8640.01

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0 1 2 3
ORIGINAL SIZE IN INCHES

Drawing Title:
DETAILS

Project Number: 12008
Date: 06/01/16
Drawing #: C-204
Scale: AS NOTED
Drawn by: DNW
Checked by: WM

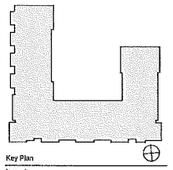
Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Client:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/15	SUBMISSION
2	06/01/15	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/20/15	PER PLANNING BOARD COMMENTS
4	05/07/16	PER CITY ENGINEERS COMMENTS DATED 3/15/16

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Tel (845) 534 5959
Structural Engineer:
Mulhern & Kulp
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Ambler, PA 19002
Tel (215) 646 8001 Fax (215) 646 8010
MEP Engineer:
Johnson & Urban, LLC
33 Main Street
Holmdel, NJ 07733
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Energy Consultant:
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Tel (212) 254 5800
Landscape Architect:
Pouder Design Group PC
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New Milford, CT 06776
Tel (860) 729 7612

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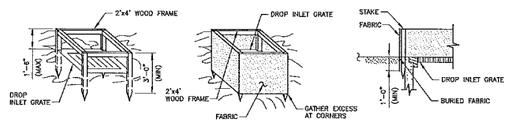
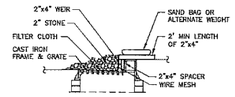
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:



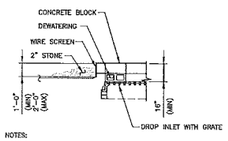
NOTES:

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2"x4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IF SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2"x4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.
7. DRAINAGE AREA LIMITED TO 1 ACRE.



NOTES:

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85.
2. WIRE MESH SHALL BE BETWEEN THE GRATE AND FILTER FABRIC.
3. WOODEN FRAME SHALL BE CONSTRUCTED OF 2"x4" CONSTRUCTION GRADE LUMBER.
4. WIRE MESH ACROSS THROAT SHALL BE A CONTINUOUS PIECE 30" MIN WIDTH WITH A LENGTH OF 4' LONGER THAN THE THROAT. IT SHALL BE SHAPED AND SECURELY NAILED TO A 2"x4" WEIR.
5. THE WEIR SHALL BE SECURELY NAILED TO 2"x4" SPACERS 9" LONG SPACED NO MORE THAT 6' APART.
6. THE ASSEMBLY SHALL BE PLACED AGAINST THE INLET AND SECURED BY 2"x4" ANCHORS 2' LONG EXTENDING ACROSS THE TOP OF THE INLET AND HELD IN PLACE BY SAND BAGS OR ALTERNATE WEIGHTS.
7. DRAINAGE AREA LIMITED TO 1 ACRE.

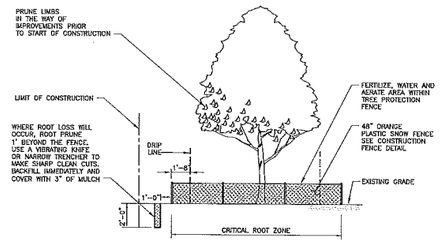


NOTES:

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2" MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2" - 3/4" DIA PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1' THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3" STONE AS SHOWN ON THE DRAWINGS.
5. DRAINAGE AREA LIMITED TO 1 ACRE.

1 C-205 INLET PROTECTION

SCALE: 1/4" = 1'-0"



NOTE:

NO ENTRY, STORAGE, DISTURBANCE OR ALTERATION TO AREA WITHIN TREE PROTECTION FENCE.

TREE PROTECTION NOTES:

THE TREE PROTECTION AND PRESERVATION GUIDELINES ADOPTED PURSUANT TO THE LAND DEVELOPMENT REGULATIONS OF THE MUNICIPALITY WILL BE IMPLEMENTED IN ORDER TO PROTECT AND PRESERVE BOTH INDIVIDUAL SPECIMEN TREES AND BUFFER AREA WITH MANY TREES. STEPS THAT WILL BE TAKEN TO RESERVE AND PROTECT EXISTING TREES TO REMAIN ARE AS FOLLOWS:

A. NO CONSTRUCTION EQUIPMENT SHALL BE PARKED UNDER THE TREE CANOPY.

B. THERE WILL BE NO EXCAVATION OR STOCKPILING OF EARTH UNDERNEATH THE TREES.

C. TREES DESIGNATED TO BE PRESERVED SHALL BE MARKED CONSPICUOUSLY ON ALL SIDES AT A 5 TO 10 FOOT HEIGHT.

D. THE TREE PROTECTION ZONE FOR TREES DESIGNATED TO BE PRESERVED WILL BE ESTABLISHED BY ONE OF THE FOLLOWING METHODS:

ONE (1) FOOT RADIUS FROM TRUNK PER INCH DBH

DRIP LINE OF THE TREE CANOPY. THE METHOD CHOSEN SHOULD BE BASED ON PROVIDING THE MAXIMUM PROTECTION ZONE POSSIBLE. A BARRIER OF F. SNOW FENCE OR EQUAL IS TO BE PLACED AND MAINTAINED ONE YARD BEYOND THE ESTABLISHED TREE PROTECTION ZONE. IF IT IS AGREED THAT THE TREE PROTECTION ZONE OF A SELECTED TREE MUST BE VIOLATED, ONE OF THE FOLLOWING METHODS MUST BE EMPLOYED TO MITIGATE THE IMPACT:

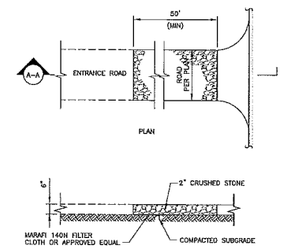
LIGHT TO HEAVY IMPACTS - MINIMUM OF EIGHT INCHES OF WOOD CHIPS INSTALLED IN THE AREAS TO BE PROTECTED. CHIPS SHALL BE REMOVED UPON COMPLETION OF WORK.

LIGHT IMPACTS ONLY - INSTALLATION OF 3/4 INCH OF PLYWOOD OR BOARDS, OR EQUAL OVER THE AREA TO BE PROTECTED.

E. SEPARATE PAYMENT WILL NOT BE MADE FOR THIS WORK

2 C-205 TREE PROTECTION AND PRUNING

SCALE: NTS



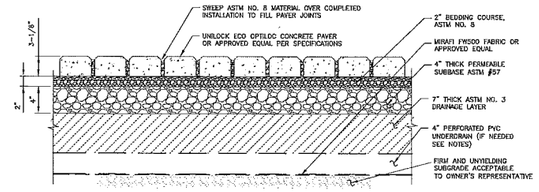
SECTION A-A

NOTES:

1. STONE SIZE - USE 2 1/4" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET.
3. THICKNESS - NOT LESS THAN SIX INCHES.
4. WIDTH - 12 FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24 FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRED PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTIONS AND NEEDED MAINTENANCE SHALL BE PROVIDED.

3 C-205 STABILIZED CONSTRUCTION ENTRANCE

SCALE: 3/8" = 1'-0"

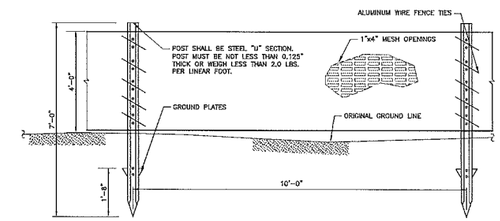


9 C-205 PERMEABLE CONCRETE PAVER BEDDING

SCALE: NTS

NOTES:

1. IF UNDERLYING SOILS DO NOT MEET MINIMUM INFITRATION RATE OF 0.5 IN/HR PER APPENDIX D OF THE SWDM, THAN AN UNDERDRAIN MUST BE INSTALLED.
2. UNDERDRAIN TO CONSIST OF 4-INCH PERFORATED PVC (AASHTO M252) PIPE WITH 3/8-INCH PERFORATIONS AT 6 INCHES ON CENTER WITH SOLID SCH. 40 PVC CONNECTORS EXTENDED TO THE NEAREST CATCH BASIN.
3. UNDERDRAINS SHALL BE INSTALLED AT A MINIMUM SLOPE OF 0.5%
4. EXTEND CLEANOUT PIPES TO SURFACE WITH VENTED CAPS AT T OR Y CONNECTIONS. CAST WITH CONCRETE 12"x 12"x 12" COLLARS WITHIN PAVER PATTERN.

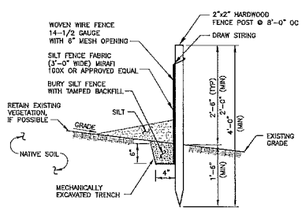


NOTES:

1. FENCING TO BE PLACED LINEARLY ALONG LIMIT OF CLEARING, AND AS SHOWN ON PLAN AND AS REQUIRED BY REFERRING DETAILS.
2. MESH COLOR TO BE BLAZE ORANGE

4 C-205 CONSTRUCTION FENCE (PLASTIC)

SCALE: NTS

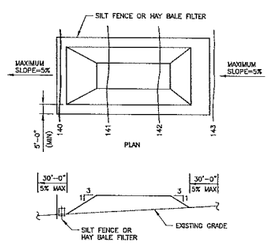


NOTES:

1. WOVEN WIRE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOODEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID-SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6 INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" FORM IN SILT FENCE.
5. SILT FENCE TO BE MAINTAINED IN PLACE DURING CONSTRUCTION AND SOIL STABILIZATION PERIOD.
6. SILT FENCE SHALL BE INSTALLED PARALLEL TO CONTOURS.

5 C-205 SILT FENCE

SCALE: NTS



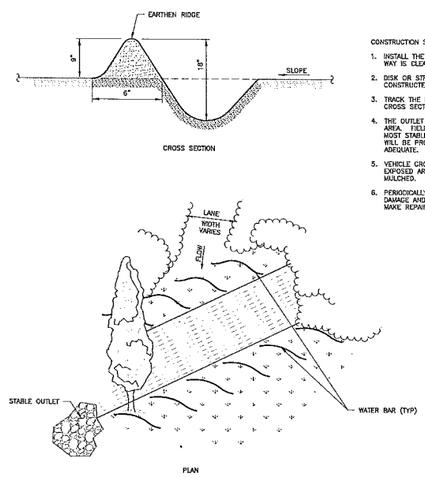
SECTION

NOTES:

1. PLACE STOCKPILES AT LOCATIONS AS SHOWN ON THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
2. ALL SIDE SLOPES SHALL BE 3 TO 1 OR FLATTER.
3. STOCKPILE SURFACE SHALL SEALED WITH A ROLLER TO PREVENT SATURATION
4. STOCKPILE SHALL RECEIVE A VEGETATIVE COVER IN ACCORDANCE WITH MINIMUM STABILIZATION REQ.
5. SILT FENCE OR HAY BALE FILTER SHALL BE INSTALLED AS DETAILED HEREON.

6 C-205 TOPSOIL STOCKPILE

SCALE: NTS

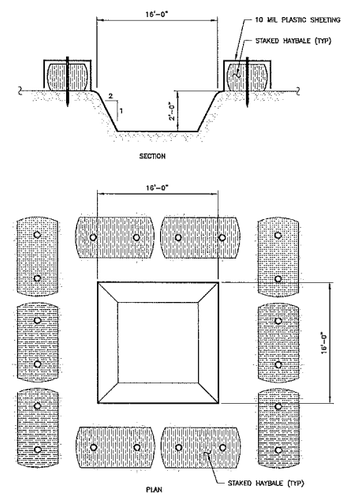


CONSTRUCTION SPECIFICATIONS:

1. INSTALL THE WATER BAR AS SOON AS THE RIGHT OF WAY IS CLEARED AND GRADED.
2. DISK OR STRIP THE SOD FROM THE BASE FRO THE CONSTRUCTED RIDGE BEFORE PLACING FILL.
3. TRACK THE RIDGE TO COMPACT IT TO THE DESIGN CROSS SECTION.
4. THE OUTLET SHALL BE LOCATED ON AN UNDISTURBED AREA. FIELD SPACING WILL BE ADJUSTED TO USE THE MOST STABLE OUTLET AREAS. OUTLET PROTECTION WILL BE PROVIDED WHEN NATURAL AREAS ARE NOT ADEQUATE.
5. VEHICLE CROSSING SHALL BE STABILIZED WITH GRAVEL. EXPOSED AREAS SHALL BE IMMEDIATELY SEEDED AND MULCHED.
6. PERIODICALLY INSPECT WATER BARS FOR EROSION DAMAGE AND SEDIMENT. CHECK OUTLET AREAS AND MAKE REPAIRS AS NEEDED TO RESTORE OPERATION.

7 C-205 WATER BARS

SCALE: NTS



8 C-205 TEMPORARY CONCRETE WASH

SCALE: NTS

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TECTONIC WORK ORDER NO.: 8860.01

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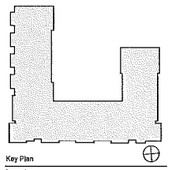
Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/16	SUBMISSION
2	06/01/16	PER PLANNER, ENGINEER, & FIRE DEPT. COMMENTS
3	07/25/16	PER PLANNING BOARD COMMENTS
4	09/27/16	PER CITY ENGINEERS COMMENTS DATED-9/16/16

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MEP Engineer:
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Energy Consultant:
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New York, NY 10001
Tel (212) 254 5900

Landscape Architect:
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228 Merryall Road
New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
DETAILS

Project Number:	12008
Date: 06/01/16	Drawing #:
Scale: AS NOTED	C-205
Drawn by: DNW	
Checked by: WM	

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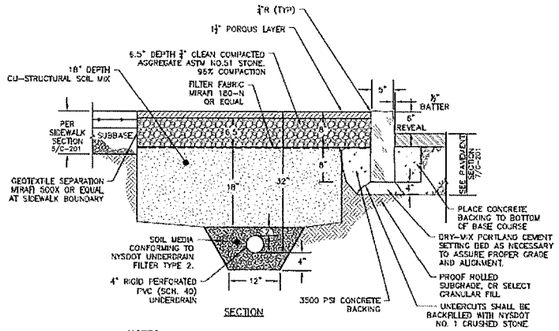
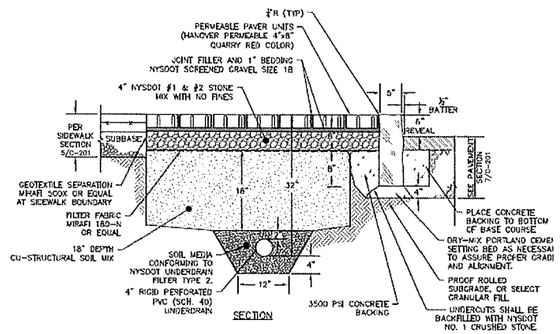
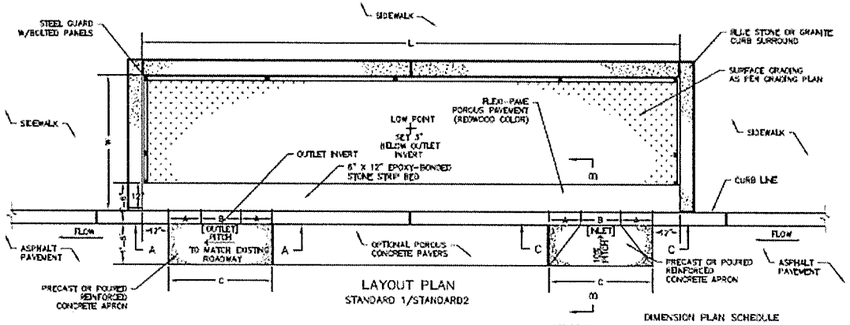


NOTES:
1. POROUS PAVEMENT SHALL BE FLEXI-PAVE BY K.JINDUSTRIES, INC. REDWOOD COLORED OR APPROVED EQUIVALENT.
2. STRUCTURAL SOIL MIX SHALL CONFORM TO CU-STRUCTURAL SOIL BY CORNELL UNIVERSITY OR APPROVED EQUIVALENT.

1 / C-205 POROUS FLEXIBLE PAVEMENT
SCALE: NOT TO SCALE



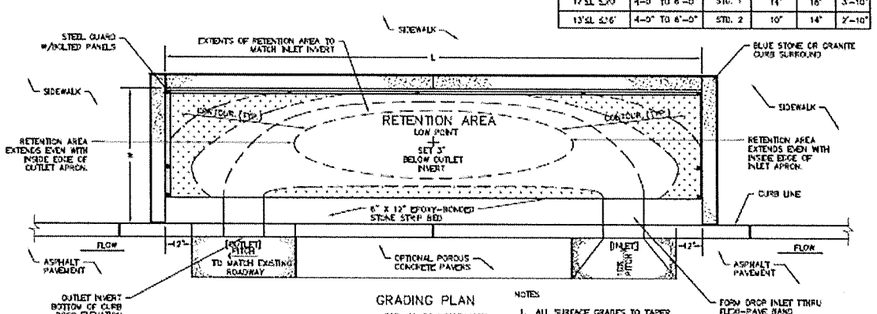
1 / C-206 PERMEABLE PAVERS IN CITY R.O.W.
SCALE: NOT TO SCALE



LAYOUT PLAN
STANDARD 1/STANDARD2

DIMENSION PLAN SCHEDULE

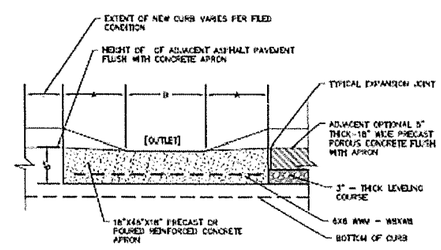
R.O.W BIOSWALE			INLET/OUTLET DIMENSIONS		
LENGTH (L) 1FT.INCREMENT	WIDTH (W) 6 IN.INCREMENT	STANDARD	A	B	C
17'SL ≤20'	4'-0" TO 6'-0"	STD. 1	14"	16"	3'-10"
13'SL ≤16'	4'-0" TO 6'-0"	STD. 2	10"	14"	2'-10"



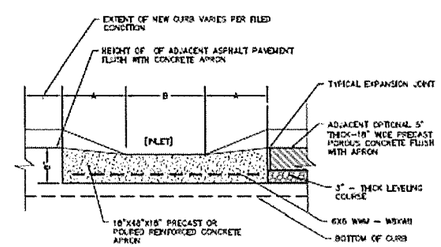
GRADING PLAN
FOR ALL ROW BIOSWALES L = 13' OR GREATER

NOTES
1. ALL SURFACE GRADES TO TAPER TOWARD THE LOW POINT
2. CONTOUR LINES SHOWN ON THIS PLAN ARE SCHEMATIC ONLY AND DEPEND ON THE ACTUAL STREET GRADE ADJACENT TO THE BIOSWALE

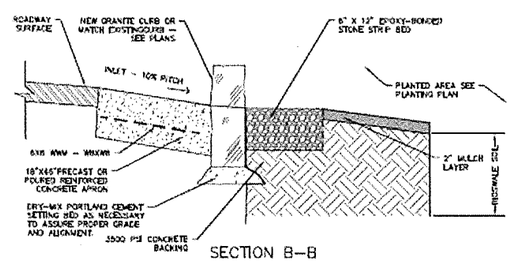
3 / C-206 R.O.W. BIOSWALE
SCALE: NOT TO SCALE



SECTION A–A



SECTION C–C



SECTION B–B

REFERENCE: BIOSWALE DETAILS, LIBERTY STREET CORR SIDEWALKS, CITY OF NEWBURGH; DATED 6/24/216; PREPARED BY GPI, SUPPLIED BY CITY OF NEWBURGH.

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TECTONIC WORK ORDER NO.: 6660.01

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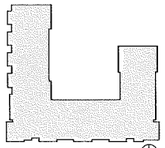

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Revisions:

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Seal:

Drawing Title:
CITY DETAILS

Project Number: 12009
Date: 06/01/16
Drawing #: C-206
Scale: AS NOTED
Drawn by: DRW
Checked by: WM

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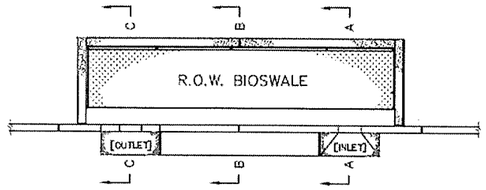
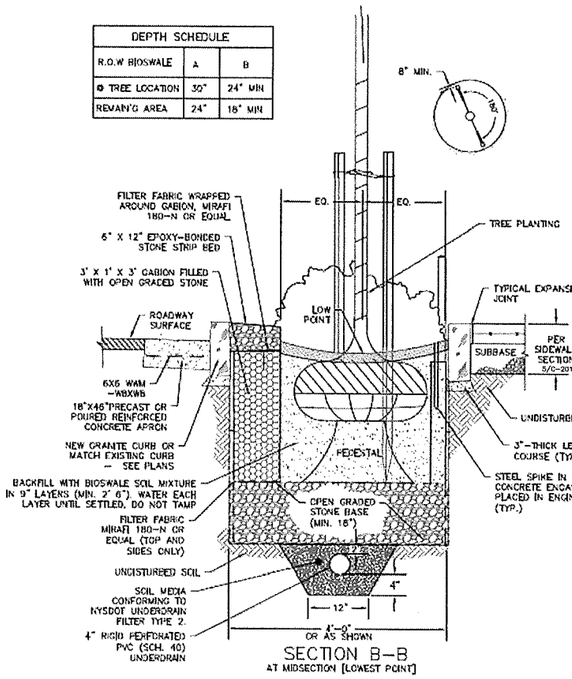
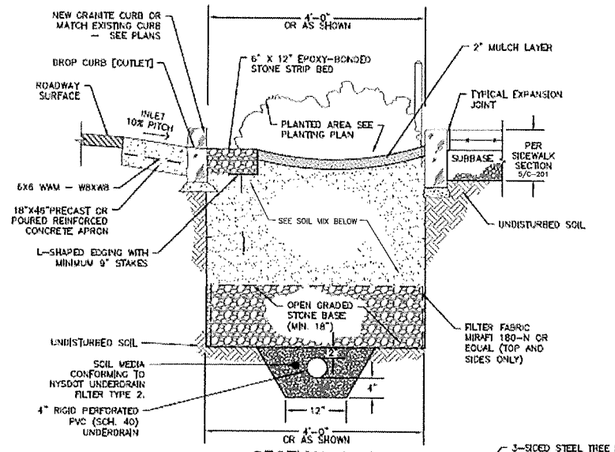


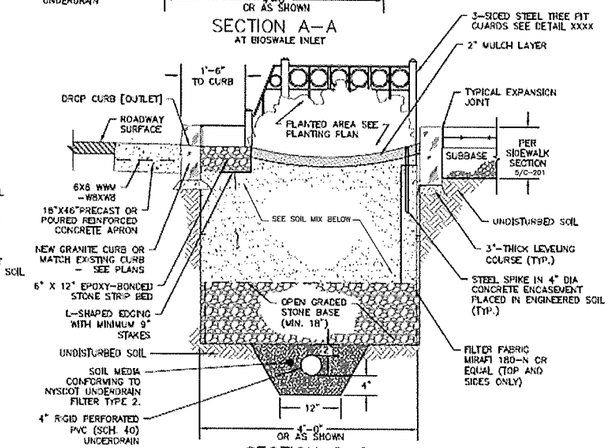
DEPTH SCHEDULE		
R.O.W BIOSWALE	A	B
⊙ TREE LOCATION	30"	24" MIN
REMAIN'G AREA	24"	18" MIN



SECTION B-B
AT MIDSECTION (LOWEST POINT)

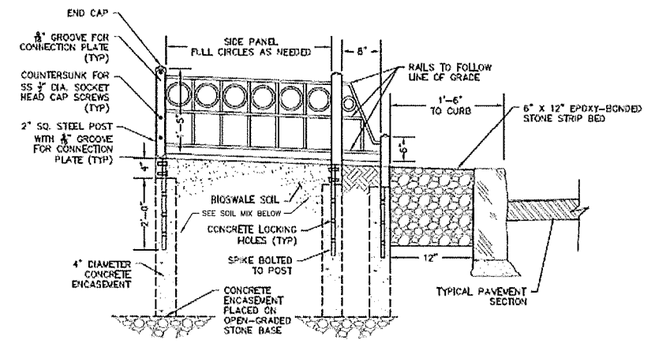


SECTION A-A
AT BIOSWALE INLET

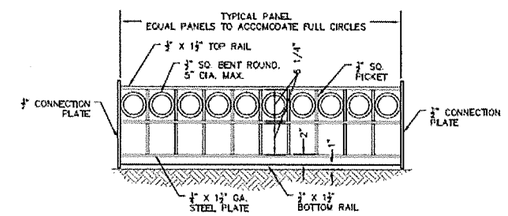


SECTION C-C
AT BIOSWALE OUTLET

1 C-207 R.O.W. BIOSWALE SECTIONS
SCALE: SCALE: NOT TO SCALE



SIDE SECTION



TYPICAL SECTION

NOTES:

1. ALL STEEL SHALL CONFORM TO ASTM-A36 SPECIFICATION.
2. ALL JOINTS TO BE WELDED UNLESS NOTED OTHERWISE.
3. ALL POST AND GROOVE CONNECTIONS TO BE BOLTED.
4. ALL VISIBLE BOLTS TO BE COUNTERSUNK AND FLUSHED WITH THE POSTS.
5. ALL STEEL TO BE PAINTED WITH ONE SHOP COAT OF PRIMER AND ONE SHOP COAT OF INTERMEDIATE AND ONE SHOP COAT (OR ROLLED FIELD COAT) OF FINISH TOP COAT. THE COLOR OF TOP COAT SHALL BE BLACK. ALL COMPONENTS OF PAINT SHALL BE COMPATIBLE AND SUPPLIED BY A SINGLE MANUFACTURER. ALL PAINT SHALL BE APPLIED IN COMPLIANCE WITH MANUFACTURER'S DATA SHEETS. PRIOR TO FIELD PAINTING, THE SURFACES TO BE PAINTED SHALL BE CLEAN, DRY AND LIGHTLY SANDPAPERED.
6. RAILS TO FOLLOW LINE OF GRADE.
7. ALL SPIKES OF TREE FENCING TO BE EMBEDDED IN CONCRETE PER DETAIL

2 C-207 R.O.W. BIOSWALE FENCE
SCALE: SCALE: NOT TO SCALE

BIOSWALE SOIL MIX

THE PLANTING SOIL SHALL BE A SANDY LOAM, LOAMY SAND, LOAM (USDA), OR A LOAM/SAND MIX (SHOULD CONTAIN A MINIMUM 35 TO 60% SAND, BY VOLUME). THE CLAY CONTENT FOR THESE SOILS SHOULD BY LESS THAN 25% BY VOLUME. SOILS SHOULD FALL WITHIN THE SM, OR ML CLASSIFICATIONS OF THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). A PERMEABILITY OF AT LEAST 1.0 FEET PER DAY (0.3"/HR) IS REQUIRED. THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OTHER WOODY MATERIAL OVER 1" IN DIAMETER, BRUSH, OR SEEDS FROM NOXIOUS WEEDS. PLACEMENT OF THE PLANTING SOIL SHALL BE IN LIFTS OF 12 TO 18", LOOSELY COMPACTED (TAMPED LIGHTLY WITH A DOZER OR BACKHOE BUCKET), UNLESS OTHERWISE SPECIFIED. THE SPECIFIC CHARACTERISTICS SHALL BE:

PH RANGE: 5.2 TO 7.00
ORGANIC MATTER: 1.5 TO 4.0%
MAGNESIUM: 35 LBS. PER ACRE, MINIMUM
PHOSPHORUS (P_2O_5): 75 LBS. PER ACRE, MINIMUM
POTASSIUM (K_2O): 85 LBS. PER ACRE, MINIMUM
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

REFERENCE: BIOSWALE DETAILS, LIBERTY STREET CDBG SIDEWALKS, CITY OF NEWBURGH; DATED 6/24/216; PREPARED BY GPI. SUPPLIED BY CITY OF NEWBURGH.

UNLESS OTHERWISE NOTED, ALL INDICATED WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR.

TECTONIC WORK ORDER NO.: 0860.01

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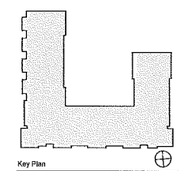
Mid-Broadway Redevelopment

Block: 3 Lot: 21-38

Application #:

Clients:
MILL STREET PARTNERS
42 West 39th Street 15th Floor,
New York, NY 10018
Tel (212) 253 7820 Fax (212) 253 1276

SUSTAINABILITY TARGET:
LEED FOR HOMES



Key Plan

Issued:

NUMBER	DATE	DESCRIPTION
1	04/29/15	SUBMISSION
2	06/09/15	PER PLANNER, ENGINEER,
		& FIRE DEPT. COMMENTS
3	07/29/15	PER PLANNING BOARD
		COMMENTS
4	03/07/16	PER CITY ENGINEERS
		COMMENTS DATED-8/16/16

Revisions:

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Ambler, PA 19002
Tel (215) 646 8001 Fax (215) 646 8310

MEP Engineer:
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Holmdel, NJ 07733
Tel (732) 772 1500 Fax (732) 772 1515

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New York, NY 10001
Tel (212) 254 5000

Landscape Architect:
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New Milford, CT 06776
Tel (860) 779 7612

Do Not Scale Plans
Contractor to promptly notify Architect of any material variations between field conditions and existing conditions as indicated in Contract documents

Seal:

Drawing Title:
CITY DETAILS

Project Number:	12008
Date:	06/01/16
Scale:	AS NOTED
Drawn by:	DWW
Checked by:	WM

Drawing #:
C-207

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