

**CITY OF MIDDLETOWN
INLAND WETLANDS AND WATERCOURSES AGENCY**

PERMIT NO. 16-20
GRANTED: October 5, 2016

DATE: August 9, 2017

City of Middletown
Public Works Department
Attn: Christopher Holden, P.E.
245 deKoven Drive
Middletown, CT 06457

This Permit refers to your application to conduct specific activities in the regulated area, namely, the upland review area, at the following location as depicted only on the submitted and plans as approved: Walnut Grove Road, Map/Lot: 12/0187

The Inland Wetlands and Watercourses Agency (hereinafter, "Agency"), having considered your application with due regard for the criteria enumerated in Section 22a-41 of the Connecticut General Statutes and Section 8 of the City's Inland Wetlands & Watercourses Agency Regulations, has found that the proposed work, as specified and conditioned below, is in conformance with the purposes and provisions of said sections.

The Permit is granted, with conditions, to allow the following regulated activities:

Various park improvements including a paved multi-use trail, stormwater improvements, parking area and roadway paving.

The work as presented must comply with all staff and Commission comments as set forth below.

This Permit is issued by the Agency subject to the following conditions and/or modifications as follows:

1. If the activity authorized by this Permit also involves an activity and/or a project which requires zoning, subdivision, special permit, special exception, and/or variance approval, no work pursuant to this Permit shall begin until such approval(s) is/are obtained and the Chairman of the Inland Wetlands & Watercourses Agency signs the final Mylar plans. (Emphasis added.)
2. Prior to the commencement of any site work, the Permittees and/or their agent shall properly install any and all sedimentation and erosion (S&E) control measures as depicted on the site plans approved by the Agency. Changes to S&E controls may be made in order to accommodate field conditions so long as

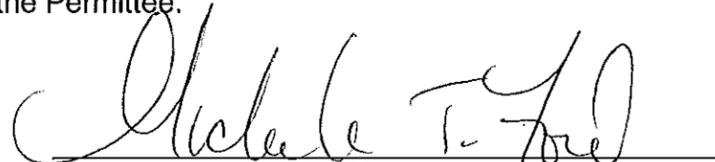
IWWA Permit No. 16-20
City of Middletown
RE: Map 12 Lot 0187 Walnut Grove
GRANTED – October 5, 2016

they provide equal or greater protection against S&E into the regulated wetlands and upland review area.

3. A copy of the plans approved by the Agency shall be kept at the job site for the duration of construction activities as approved herein.
4. During construction, as represented to the Agency, no material shall be stockpiled within the regulated area or in areas other than those depicted on the site plans approved by the Agency.
5. The City reserves the right to inspect the site work area at any time from commencement to conclusion of the property to ensure permit conditions and compliance with the regulations are being met.
6. If the authorized activity is not completed within five (5) years from the date of approval by the Agency that is, on or before **October 5, 2021**, said activity shall cease and, if not previously revoked or specifically extended, this Permit shall be null and void.
7. All sedimentation and erosion control devices shall remain in place until the end of construction and the site is deemed stabilized by the City's Zoning & Wetlands Enforcement Officer or other authorized agent of the Department of Planning, Conservation & Development. An inspection can be scheduled by calling 860-638-4840.
8. All work, including all regulated activities conducted pursuant to this authorization, shall be consistent with the terms and conditions of this Permit. Any structures, excavation, fill, obstructions, encroachments, and/or regulated activities not specifically identified and authorized herein shall constitute a violation of this Permit and may result in its modification, suspension, or revocation. Upon initiation of the activities authorized herein, the Permittees accept and agree to comply fully with all terms and conditions of this Permit.
9. No equipment or material including, without limitation, fill, construction materials and/or debris, shall be deposited, placed, and/or stored in any regulated area, on or off site, unless specifically authorized by this Permit.
10. The authorizations and activities set forth in this Permit are not transferable without the written consent of the Agency or its Authorized Agent.
11. In evaluating this application, the Agency has relied on information provided by the Permittees. If such information subsequently proves to be false, deceptive, incomplete and/or inaccurate, this Permit may be modified, suspended, or revoked by the Agency.

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12. If applicable, flagging associated with the wetland boundary shall remain until the completion of construction activities and shall not be removed until all work is complete and the site is stabilized.
13. The Permittee shall employ best management practices, consistent with the terms and conditions of this Permit, to control stormwater discharge, to prevent erosion and sediment migration beyond the work area(s), and to otherwise prevent pollution of inland wetlands and watercourses. The Permittees shall immediately inform the City's Inland Wetlands Enforcement Officer of any problems related to activities in the regulated area, which have been impacted during the course of, or caused by, the authorized work.
14. This Permit is subject to, and does not derogate, any present or future property rights or other rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby.
15. Nothing in these regulations shall obviate any requirement for the Permittee to obtain any other assent, permit, or license required by law and/or regulation by the Government of the United States, the State of Connecticut, or any other political subdivisions thereof. Obtaining such assents, permits, and/or licenses is solely the responsibility of the Permittee.



Michelle T. Ford, CWB®, PWS, CESSWI
Inland Wetlands & Watercourses Agency Staff
Planning & Environmental Specialist
City of Middletown

LEGAL NOTICE

Notice of decision of the Inland Wetlands and Watercourses Agency of the City of Middletown, Connecticut, at its Regular Meeting held on Wednesday, October 5, 2016.

1. Approved proposed parking lot improvements to address current water quality concerns at Veteran's Memorial Park, Walnut Grove Road with the stipulation that the City provide staff with an acceptable maintenance plan for the mowing and cleaning out swale/water quality features, and the recommendation that the City give serious consideration to store stockpiled snow in a different location. Applicant/agent City of Middletown Public Works Dept. 16-20
2. Approved the proposed construction of two (2) dwellings with driveways, grading, and utilities within 100 foot regulated area located on lots 1 & 2 at 706 Saybrook Road with condition that 1) wetland medallions be placed at each wetland flag or 25' intervals (whichever is less) and be placed on the map; 2) native blueberry bushes to be planted be shown on the map; 3) conservation easement, including limit of clearing, be recorded in the deed; and 4) submit a revised map, including a note that both lots are entirely within the regulated area and that all comments and conditions of approval pertain to both lots. Applicant/agent Lou Aresco 16-18
3. Approved the proposed PV solar array, which is designed to serve electrical needs of subject properties, to be constructed within 100 feet of wetlands located at 322, 330, & 346 Butternut Street/West Street with the condition that all staff comments be addressed. Applicant/agent MSL Group, Inc. 16-19

Joe Carta
Chairman

P.O. No. 2003-01283, Account No. 067419

The above legal notice to appear in the Hartford Courant ONCE.

Thursday, October 13, 2016

RECEIVED
16 OCT - 7 PM 12:03
TOWN CLERK
MIDDLETOWN, CONN.

THE MUNICIPAL BUILDING IS WHEELCHAIR ACCESSIBLE

Handed to Chris Bell 10/17/16

**AGENDA SUMMARY REPORT
INLAND WETLANDS AND WATERCOURSES AGENCY**

APPLICATION: 16 – 20 Proposed parking lot improvements to address current water quality concerns at Veteran’s Memorial Park

LOCATION: Walnut Grove Road

OWNERS: City of Middletown

APPLICANT: City of Middletown

ZONE: R-15

REPORT DATE: September 27, 2016

PROPOSAL

The City of Middletown (applicant) is looking to improve runoff and surface conditions at a parking lot at Veteran’s Memorial Park. The improvements include construction of building a roadway, paving a multi-use trail, paving a dirt parking lot, installing several water quality features including bio-swales, rain gardens and vegetated basins. The parking lot will provide the following:

- Parking area for the future Veteran’s Memorial Museum
- Snow storage area during winter
- Improved water quality runoff into the Coginchaug River

DISCUSSION

As stated in an Agency Update report dated August 3, 2016:

On Tuesday July 25th, the Planning, Conservation and Development Department received a complaint regarding the potential for wetland pollution (via sediment intrusion) into the Coginchaug River and to the recently created pond at the Trees of Honor Memorial at Veteran’s Memorial Park in Middletown. Staff (Michelle T. Ford, PWS, CWB[®], CESSWI) discussed the concerns with Mr. Fleming visited the property to evaluate the concerns. The areas of concern include a snow staging area/dirt parking lot as well as a swale along the Trees of Honor Memorial.

Upon arriving at the Site, I noted a break in an existing berm along the snow storage and parking area at the park. The substrate in this area is soil whereas the other half of the lot is crushed stone and a small portion asphalt. Upon investigation down-gradient of the break in the berm I noticed a high degree of erosion and deposition of material (mostly fines) through the vegetation down toward the Coginchaug River. Upon arriving at the River I noticed only a minimal introduction of material from the above parking area along the bank and within the River. However, noting the extent of erosion and substrate in the parking area (IMG4934), it’s likely that the complainant had observed a lot of the fines migrating into the River during a storm event. Upon observation of this condition, I met with the Public Works Department and they are going to install a swale along the edge of the parking area along with a sedimentation basin so that any water entering the River will have settled and not be laden with sediment.

Return to:
 Inland Wetlands and Watercourses Agency
 Municipal Building, Room 202
 245 deKoven Drive
 Middletown, Connecticut 06457

For Agency Use Only: 16-20
 Application Fee _____
 Received \$ N/A
 Check # _____
 Prepared By S.M.
 Date 8/30/16

City OF MIDDLETOWN
INLAND/WETLANDS AND WATERCOURSES AGENCY
APPLICATION FOR
INLAND WETLANDS AND WATERCOURSES ACTIVITY
 (Applicant to complete all information in Items 1-15
 applications for significant activities should attach additional
 sheets for Item 16)

DEPT. PLANNING & ZONING
 16 AUG 30 PM 11:41

1. Applicant Name and Address City of Middletown Dept. of Public Works 245 deKoven Dr. Middletown, CT 06457	2. Property Owner and Address (If different than applicant) same
Telephone during Business hours: 860-638-4850	Telephone during Business hours: same
3. Applicant's Interest in Property: (Circle One) <input checked="" type="radio"/> Owner Developer Option Holder Other (describe)	4. Exact Location of Property: (include Street Name, Assessor's Map #, Block #, and Lot #) Walnut Grove, Veteran's Park map/lot: 12/0187
5. Summary Description of Proposed Activity: Build roadway, pave multi-use trail, pave parking lot, install water quality improvement features including bio-swales and rain gardens and vegetated basins. Improvements will address current water quality concerns.	
6. Purpose of Proposed Activity: Improve the park, improve access to the trees of honor and veteran's memorial museum, improve quality of runoff from rain and snow storage, and reduce impact to the Coginchaug River.	

7. Activity Location and site plan showing existing and proposed conditions in relation to wetlands and watercourses. Location of activity should be shown on the City's wetland maps.

Number of acres of wetlands (or portion thereof) on the property: 1.5 ac.

Total acreage of wetlands or linear feet of watercourse to be altered: ∅

Total area of impacted, regulated area: 1.7 ac.

8. Estimated Time land will be disturbed during construction: est. 8 weeks
2 weeks in fall to install basins + swale and 6 weeks to complete planting + paving

9. Check applicable activities occurring within 0-100 feet from wetland or watercourse:

Removal

Discharge: culvert
Specify Type

Filling

Surface Water Diversion

Paving

Vegetation Removal

Other: _____
Specify Type

10. Explain in detail extent of any activity checked above and type of material:

See report

11. Explain what alternatives have been considered in connection:

Do nothing - not a great option because would continue to degrade water quality
Other options do not adequately improve water quality.

12. Identify any other local, State or Federal permits previously issued or that will be required for work on the property.

None

To comprise a complete application, the following must be submitted to the Inland Wetland and Watercourses Agency: one (1) copy of this application form; twenty-one (21) copies of the site plan; and, six (6) copies of supporting documentation. All permit applications must be submitted eight (8) days prior to the next scheduled Agency meeting to insure consideration at that meeting.

13. The undersigned is familiar with all the information provided in this application and is aware that any permit obtained through deception, inaccurate, or misleading information is subject to revocation.



Applicant

8/30/16

Date

14.

Authorized Agent

Date

Address of Authorized Agent

15. The undersigned, as owner of the property, hereby consents to necessary and proper inspections of the above-mentioned property by Commissioners of the Inland Wetlands and Watercourses Agency, agents of the City of Middletown, the Connecticut Department of Environmental Protection and the U.S. Department of Agriculture, Soil Conservation Service, at reasonable times, both before and after a final decision has been issued by the Middletown Inland Wetlands and Watercourses Agency.



Owner's Authorization

8/30/16

Date

16. If the proposed activity involves a significant activity as determined by the Agency and defined in Section 2 of these Regulations, additional information, based on the nature and anticipated effects of the activity, shall be submitted as per Section 3.6B of the Inland Wetlands and Watercourses Agency Regulations.

CITY OF MIDDLETOWN
Department of Planning, Conservation, and Development

<http://www.middletownct.gov>

PO Box 1300
245 deKoven Drive
Middletown, CT 06457-1300
(860) 344-3425

Erosion & Sedimentation Control Compliance Agreement

I, (PRINT NAME) Christopher M. Holden hereby agree that any tree cutting, land clearing, earth excavation, earth filling or any other construction activity associated with an approved permit at:

(PROPERTY ADDRESS) Veteran's Park (12/0187)

shall be in compliance with a approved plot/site plan as well and the City of Middletown Erosion & Sedimentation Control Guidelines.

I understand that failure to comply with the City of Middletown Erosion & Sedimentation Control Guidelines shall be deemed a violation and shall result in an enforcement action that may include a \$150 per day municipal citation fine and shall preclude zoning approval required for the issuance of a Certificate of Occupancy.

The City of Middletown reserves the right to implement corrective action for Erosion & Sedimentation Control violations, and in such cases will seek reimbursement for expenses related to any corrective action deemed necessary by the City.

Signed: [Signature]
Date: 8/30/14

.....
For Office Use Only

SPR# _____



City of Middletown
PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION

PRESENTING

A Drainage Narrative for the
Construction of a Parking Lot, Multi-Use Trail
And Roadway in Veteran's Park

Prepared by:
Thomas Nigosanti, P.E., City Engineer

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Quality

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Project Overview

This project is a multi-phased project. The first phase is the water quality swales, silt basin and water quality basin. This needs to be implemented as soon as possible to eliminate the erosion and sediment transfer to the river that is happening at this time. The second phase would be to pave the parking lot. The third phase would be to reconstruct the road and build the multi-use trail. These three phases are being designed together so as to eliminate the possibility of disturbing the water quality elements of this project. Phase two and three can be completed with no impact to the first phase.

Design Criteria

Quantity

The SCS TR-55 method was used to determine the existing and proposed runoff from the site. The existing paved parking area will be removed, and a new, larger paved parking area is proposed. The existing dirt and stone parking area is so clogged with silt that it acts as an impervious area. However, being conservative with the runoff coefficients, there will be an increase in peak runoff for the 100 year storm of 1.4 cfs. Although detention should not be required at this point in the Coginchaug watershed, detention is provided.

Quality

The bigger issue here is the elimination of any erosion, the capture of as much sand and debris from storage of winter snow and the removal of contaminants. This area of the park drains directly to the Coginchaug River. In order to achieve the above goals, the water quality improvements are staged.

The first stage is concerned with the runoff from the open field in front of the military museum, and from the roadway and multi-use trail. This runoff was eliminated from the parking lot area with the construction of a swale/rain garden between the roadway and the trail. Both will be sloped to the swale, which will contain plants suitable to a rain garden. This water will flow down the swale to a catch basin which is piped under the parking lot to the silt basin.

The second stage is another swale/rain garden that runs along the rear of the parking lot. This picks up the parking lot runoff. This also drains into the silt basin.

The third stage is the silt basin. The two inlet points are designed to enter the basin tangentially so as to create a swirling effect. The intention is to have this water swirl around until the basin is full, at which point the overflow will exit into a grass swale. This swirling should cause the sediment to collect at the center of the basin, which can easily be removed.

The fourth stage would be the water quality basin. Technically, this is a detention basin since the outflow pipe is sized to eliminate any increase from the site. However, the basin is designed with steppes. There are two steppes, each 4 feet wide. They circle the basin and are 6" deep. The downslope side of the steppe is a semi-permeable stone check dam. When the water fills the first steppe, it overflows in a sheet flow manner down to the second steppe. This will overflow to the catch basin at the bottom, where the water will flow to the existing drainage system which outlets to the river.

The steppes will be planted with appropriate plants, designed to withstand occasional flooding.

This multi-stage water quality system will provide for detention, solids removal, and some contaminant removal prior to entering the Coginchaug River.

Drainage Analysis

There are three drainage segments to this system. The first is the twin 6" pipes under the walkway to the Trees of Honor. Due to the restriction in cover, two 6" pipes were used. The flow to this swale is only 1 cfs, so the two 6" pipes will be able to handle the flow.

The second part of the drainage system is the 10" Sch 40 pipe leading from the road swale to the silt basin. This type and size of this pipe is designed due to the limited cover in the parking lot.

The third part is the outlet from the water quality basin. At the bottom of the basin, there is a "CG" catch basin. This was chosen for its two curb openings. This will help to minimize clogging. The outlet pipe from this catch basin is designed to retain the increase in runoff from this project. At elevation 18.5 there is a double grate catch basin that will accept the overflow if the basin fills to that level. A rip-rap level spreader at elevation 19 will direct any additional water to the river.

Kerby Method - Time of Concentration

Walnut Grove Parking Lot - Proposed

$$t_{ov} = K(L*N)^{.467} S^{-.235}$$

Area	K	L	N	S	L*N	(L*N) ^{.467}	S ^{-.235}	t _{ov} (min)
P1	0.828	350	0.2	0.036	70.00	7.27	2.18	13.15
P2	0.828	250	0.15	0.015	37.50	5.43	2.68	12.07
P3	0.828	360	0.02	0.02	7.20	2.51	2.51	5.22
P4	0.828	140	0.2	0.01	28.00	4.74	2.95	11.58
P6	0.828	170	0.02	0.04	3.40	1.77	2.13	3.12
P7	0.828	250	0.02	0.02	5.00	2.12	2.51	4.40

Vets Park Parking Lot Drainage Calculations
Existing Runoff for 100 yr storm

Sub Area	Area (SF)	c	a (acres)	ca	c(composite)
ExDA1					
Grass	39,000.00	0.15	0.90	0.13	0.07
Brick	950.00	0.85	0.02	0.02	0.01
Pavement	7,125.00	0.90	0.16	0.15	0.08
Stone	8,000.00	0.20	0.18	0.04	0.02
Dirt	28,310.00	0.30	0.65	0.19	0.10
Total	83,385.00		1.91		0.28

ExDA2					
Grass	975.00	0.15	0.02	0.00	0.01
Pavement	10,600.00	0.90	0.24	0.22	0.78
Stone	725.00	0.20	0.02	0.00	0.01
Total	12,300.00		0.28		0.81

ExDA3					
Grass	1,435.00	0.15	0.03	0.00	0.02
Pavement	5,555.00	0.90	0.13	0.11	0.55
Grass	2,275.00	0.20	0.05	0.01	0.05
Total	9,265.00		0.21		0.62

ExDA4					
Grass	1,450.00	0.15	0.03	0.00	0.06
Pavement	1,900.00	0.90	0.04	0.04	0.49
Total	3,350.00		0.08		0.55

Sub Area	Area (SF)	c(composite)	i100	a (acres)	Q(cfs)
ExDA1	83,385.00	0.28	4.00	1.91	2.14
ExDA2	12,300.00	0.81	4.00	0.28	0.91
ExDA3	9,265.00	0.62	4.00	0.21	0.53
ExDA4	3,350.00	0.55	4.00	0.08	0.17
				Total	3.76

Vets Park Parking Lot Drainage Calculations
Proposed Runoff for 100 yr storm

Sub Area	Area (SF)	c	a (acres)	ca	c(composite)
P1					
Grass	35,056.00	0.15	0.80	0.12	0.12
Brick	609.00	0.85	0.01	0.01	0.01
Pavement	5,692.00	0.90	0.13	0.12	0.12
Grass	974.00	0.15	0.02	0.00	0.00
Grass Swale	545.00	0.10	0.01	0.00	0.00
Total	42,876.00		0.98		0.26
P2					
Grass Swale	1,843.00	0.10	0.04	0.00	0.03
Pavement	2,192.00	0.90	0.05	0.05	0.32
Pavement	1,843.00	0.90	0.04	0.04	0.27
Brick	356.00	0.85	0.01	0.01	0.05
Total	6,234.00		0.14		0.68
P3					
Pavement	29,307.00	0.90	0.67	0.61	0.70
Grass Swale	8,400.00	0.10	0.19	0.02	0.02
Total	37,707.00		0.87		0.72
P4					
Pavement	3,075.00	0.90	0.07	0.06	0.30
Grass Swale	6,039.00	0.10	0.14	0.01	0.07
Total	9,114.00		0.21		0.37
P6					
Grass	4,113.00	0.15	0.09	0.01	0.07
Pavement	4,325.00	0.90	0.10	0.09	0.47
Total	8,438.00		0.19		0.54
P7					
Grass	3,171.00	0.15	0.07	0.01	0.05
Pavement	5,901.00	0.90	0.14	0.12	0.58
Total	9,072.00		0.21		0.63
SubArea	Area (SF)	c(composite)	i100	a (acres)	Q(cfs)
P1	42,876.00	0.26	4.00	0.98	1.02
P2	6,234.00	0.68	4.00	0.14	0.39
P3	37,707.00	0.72	4.00	0.87	2.49
P4	9,114.00	0.37	4.00	0.21	0.31
P6	8,438.00	0.54	4.00	0.19	0.42
P7	9,072.00	0.63	4.00	0.21	0.52
				Total	5.16

Walnut Grove Road - Parking Lot Drainage

Pipe Flows using $Q=VA$ and $V=1.486 \cdot R^{2/3} \cdot S^{1/2} / n$										
Existing Outfall to River					Pond Outfall					
D(inches)	S(ft/ft)	n	V(fps)	Q(cfs)	D(inches)	S(ft/ft)	n	V(fps)	Q(cfs)	
15	0.07	0.012	15.08	18.51	18	0.02	0.025	4.37	7.72	
2-6" under walk					10" from rain garden to silt pond					
D(inches)	S(ft/ft)	n	V(fps)	Q(cfs)	D(inches)	S(ft/ft)	n	V(fps)	Q(cfs)	
6	0.0113	0.012	3.29	0.65	10	0.01	0.012	4.35	2.37	
6	0.0113	0.012	3.29	0.65						
total				1.29						
12" ADS from retention pond										
D(inches)	S(ft/ft)	n	V(fps)	Q(cfs)						
12	0.0062	0.012	3.87	3.04						

Detention Analysis

Due to the location of this site within the Coginchaug River watershed, detention should not be required. The peak flow from this site will be long gone when the peak flow of the watershed appears. Regardless, some detention is provided in the water quality basin. The outlet pipe is sized for 3.04 cfs, which is the existing runoff amount to the basin area. The proposed flow to the basin is 4.21 cfs, so 1.16 cfs will be retained. The retention is in the form of two steppes which will contain wetlands plantings. The purpose of these steppes is to slow the water down and allow the plants to absorb some of the water and contaminants prior to exiting the site. During larger storms, some water will be retained in the basin and then drain when the storm is over.

Plantings

The type of plants in the rain garden/swales, and in the water quality basin as shown in appendix A, will be planted in coordination with the City's Environmental Specialist.

Summary

The history of this site has been one of erosion, unattractiveness and salt and silt entering the river. The intent of this project is to provide visitors to the park a place to park their car that is clean and has a pleasing appearance. This area is also used for snow storage in the winter. The runoff from a parking lot and the storage of snow adversely affects the river and its embankments. This project is also designed to eliminate any erosion of the embankments and reduce the amount of contaminants entering the river.

This plan is an attempt to create a pleasant looking parking lot and multi-use trail, intermingled with rain gardens and basins that will enhance the attractiveness of the area, leading to a more pleasant visit to the park.

Appendix A

Veteran's Park Parking Area Improvements Planting Notes

The following plants will be planted in the locations as designated below. The selected species will help to improve nutrient and toxicant retention and sedimentation fallout, will provide feeding opportunities for foraging birds and pollinators, and improve the aesthetics of the parking area. The species will tolerate the higher salinity when the area is used for snow storage in the winter.

Rain Garden/Grass Swales

Interspersed along the upper (drier) edge of the swales

- o Switchgrass (*Panicum virgatum*):
- o New England Aster (*Aster novae-angliae*)
- o Beach Plum (*Prunus maritima*)
- o Bayberry (*Myrica pensylvanica*)
- o Sweet Fern (*Comptonia peregrina*)

Area to be seeded with New England Erosion Control/Restoration Mix for Dry Sites from New England Wetland Plants (or similar).

Interspersed along the slope and base of the swales:

- o Sweet Pepperbush (*Clethra alnifolia*)
- o Seaside Goldenrod (*Solidago sempervirens*)
- o Sand Cherry (*Prunus depressa*)
- o Manna Grass (*Glyceria canadensis*)
- o Slopes to be seeded with New England Erosion Control/Restoration Mix for Dry Sites from New England Wetland Plants (or similar).

Base to be seeded with New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites (or similar)

Siltation Basin & Water Quality Pond

Upper reaches of Basin and Upper terrace of Pond (See Section B-B)

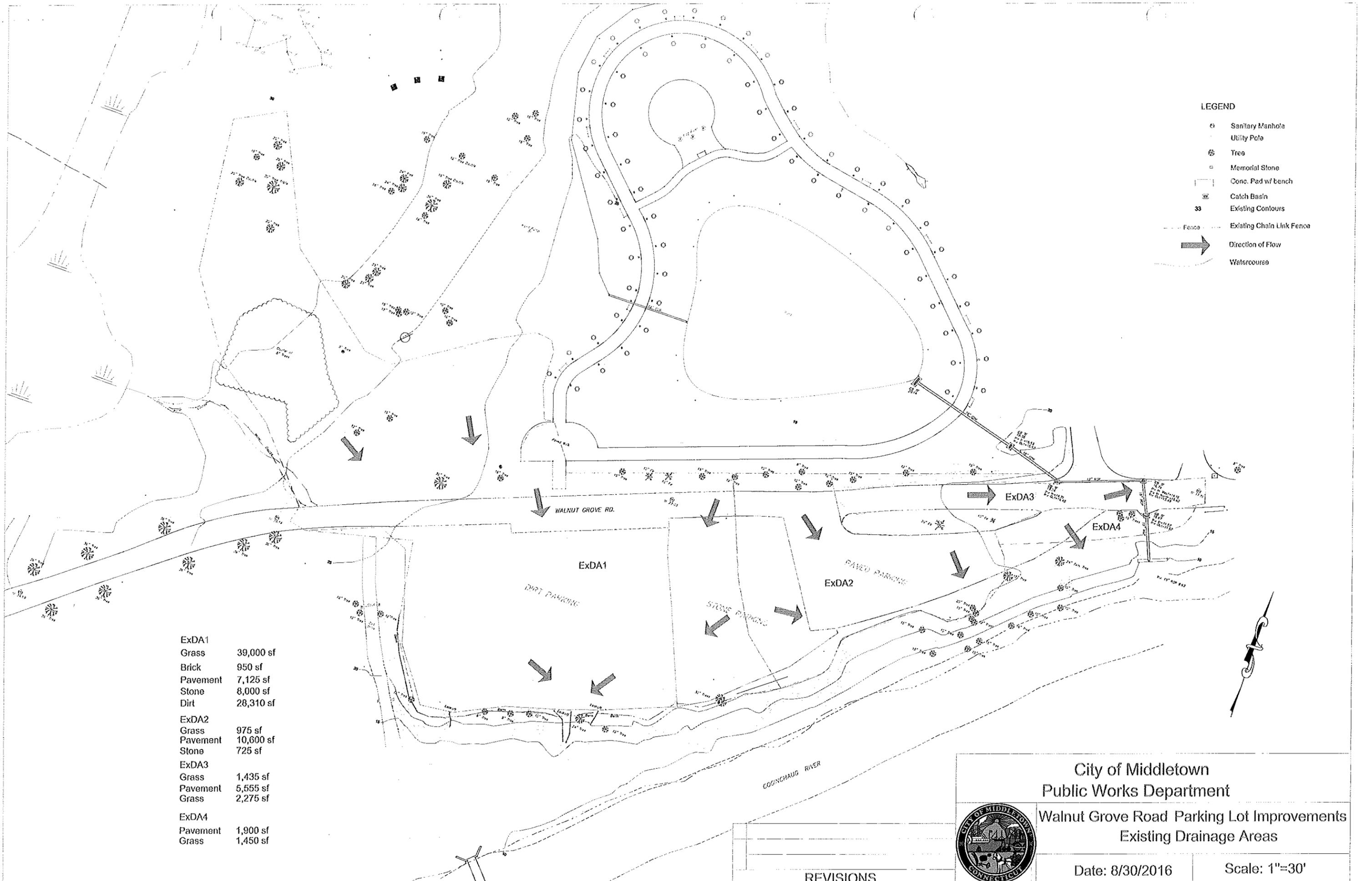
- o Sweet Pepperbush (*Clethra alnifolia*)
- o New England Aster (*Aster novae-angliae*)
- o Seaside Goldenrod (*Solidago sempervirens*)

Base to be seeded with New England Conservation/Wildlife Mix (or similar)

Lower reaches of Basin and Lower terrace of Pond Lower Terrace (See Section B-B)

- o Blue Flag Iris (*Iris versicolor*)
- o Chairmaker's Bulrush (*Schoenoplectus pungens*)
- o Smooth Cordgrass (*Spartina alterniflora*)

Base to be seeded with New England Wet Mix (or similar)



- LEGEND**
- Sanitary Manhole
 - Utility Pole
 - ☼ Tree
 - Memorial Stone
 - ▭ Conc. Pad w/ bench
 - ⊞ Catch Basin
 - Existing Contours
 - - - Fence
 - - - Existing Chain Link Fence
 - ➔ Direction of Flow
 - ~ Watercourse

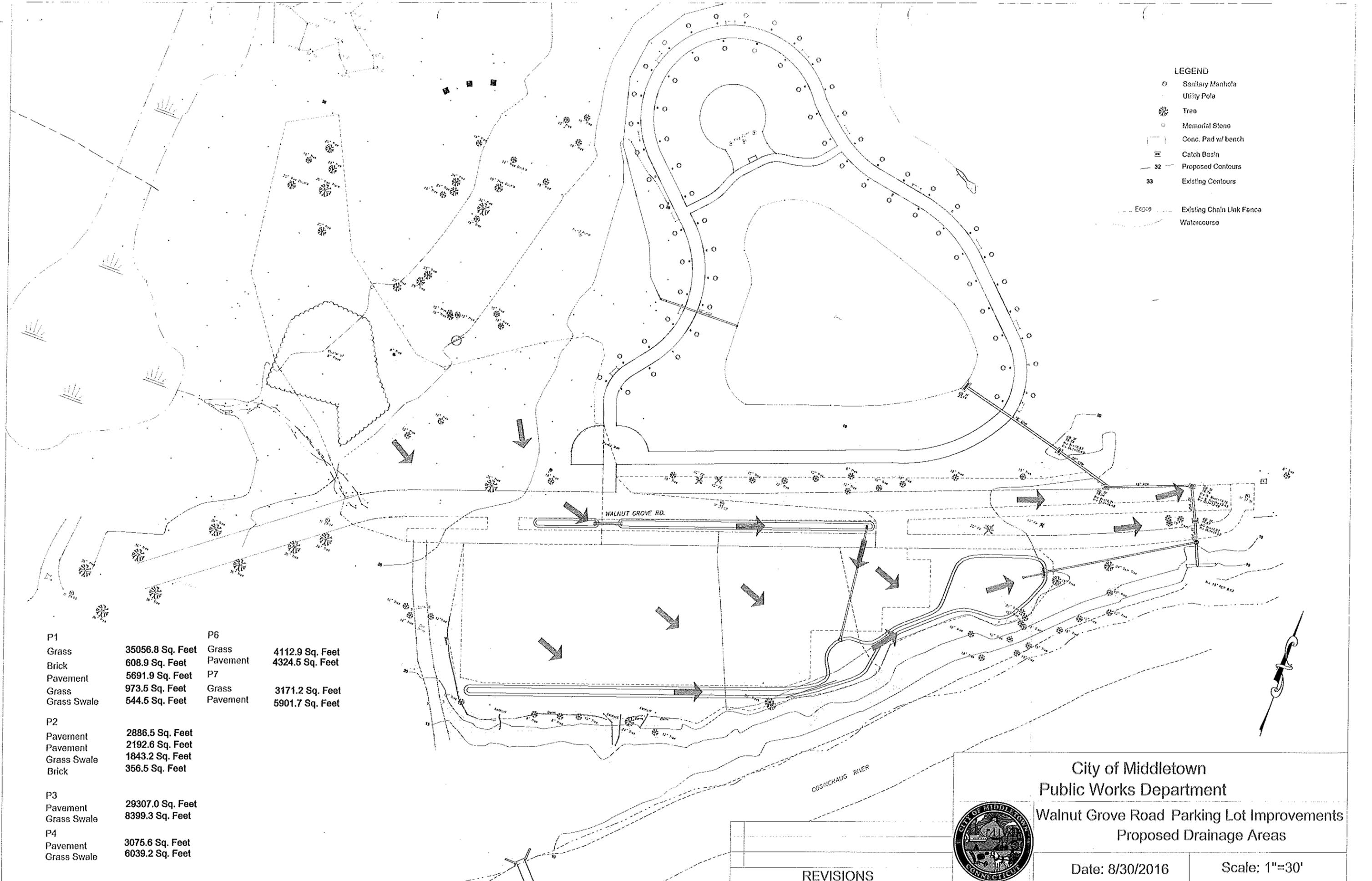
ExDA1	
Grass	39,000 sf
Brick	950 sf
Pavement	7,125 sf
Stone	8,000 sf
Dirt	28,310 sf
ExDA2	
Grass	975 sf
Pavement	10,600 sf
Stone	725 sf
ExDA3	
Grass	1,435 sf
Pavement	5,555 sf
Grass	2,275 sf
ExDA4	
Pavement	1,900 sf
Grass	1,450 sf

REVISIONS

	City of Middletown Public Works Department	
	Walnut Grove Road Parking Lot Improvements Existing Drainage Areas	
	Date: 8/30/2016	Scale: 1"=30'

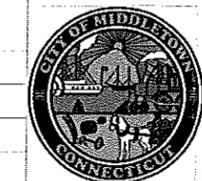
LEGEND

- Sanitary Manhole
- Utility Pole
- ☼ Tree
- Memorial Stone
- ▭ Conc. Pad w/ bench
- ▭ Catch Basin
- 32 — Proposed Contours
- 33 — Existing Contours
- Fence
- Existing Chain Link Fence
- Watercourse



P1	Grass	35056.8 Sq. Feet	P6	Grass	4112.9 Sq. Feet
	Brick	608.9 Sq. Feet		Pavement	4324.5 Sq. Feet
	Pavement	5691.9 Sq. Feet	P7	Grass	3171.2 Sq. Feet
	Grass	973.5 Sq. Feet		Pavement	5901.7 Sq. Feet
	Grass Swale	544.5 Sq. Feet			
P2	Pavement	2886.5 Sq. Feet			
	Pavement	2192.6 Sq. Feet			
	Grass Swale	1843.2 Sq. Feet			
	Brick	356.5 Sq. Feet			
P3	Pavement	29307.0 Sq. Feet			
	Grass Swale	8399.3 Sq. Feet			
P4	Pavement	3075.6 Sq. Feet			
	Grass Swale	6039.2 Sq. Feet			

REVISIONS



City of Middletown
 Public Works Department
 Walnut Grove Road Parking Lot Improvements
 Proposed Drainage Areas

Date: 8/30/2016

Scale: 1"=30'