Notice of Intent

Under the Massachusetts Wetland Protection Act,

G.L. c. 131, s. 40

And

The Town of Acton Wetland Protection Bylaw

for

Duggan Road – Drainage Improvements

Acton, MA 01720

Date: July 21, 2014

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Project Narrative

Duggan Road

Applicant/Project Name:

Project Name: Proposed Drainage Improvements – Duggan Road

Project Location: Duggan Road/Grist Mill Road

Applicant: Corey York, Town Engineer / Director of Public Works

472 Main Street, Acton, MA 01720

Telephone: (978) 929-6630

Fax: (978) 929-6340

Property Owner: Steve Ledoux, Town Manager

472 Main Street, Acton, MA 01720

Telephone: (978) 929-6630

Fax: (978) 929-6340

Representative: Paul Campbell, Assistant Town Engineer

472 Main Street, Acton, MA 01720

Telephone: (978) 929-6630

Fax: (978) 929-6340

Project Description

The existing drainage system in the neighborhood of Duggan Road and Grist Mill Road is aging and is in need of maintenance. The residents in the area have also commented that during moderate sized storms Duggan Road becomes flooded at the low point between 26 and 28 Duggan. The Town is proposing to replace the aging utilities, which are mostly corrugated

metal pipes, and replace them with properly sized utilities. The Engineering Department has inspected the drainage system in the neighborhood during rain storms. It was observed that a significant amount of stormwater bypasses the catch basins and flows downhill to the low point on Duggan Road.

In the past, to alleviate the flooding problem at the low point, the Highway Department constructed a drainage swale adjacent to the drainage easement on 26 Duggan Road. This swale alleviated the flooding problem at the low point but it is possible that this may have lead to additional flooding downstream between 171 and 173 Willow Street. Photos of this additional flooding have been provided with this report.

Existing Site Conditions

The existing drainage system is a composition of catch basins and manholes mostly connected by corrugated metal pipes. The pipes increase in size as it directs stormwater downstream to the low point on Duggan Road. The drainage system collects to a 15-inch corrugated metal pipe between 26 and 28 Duggan Road which outlets to a headwall behind 28 Duggan Road. Residents in the area have observed that this pipe outlets in the same manner as a fire hose during moderate sized storms, which is indicative of the pipe being undersized.

there is an intermittent stream at the headwall behind 28 Duggan Road and Bordering Vegetated Wetland (BVW) in the area of the headwall. The 100-foot Buffer Zone from the stream and BVW is about to the edge of Duggan Road.

Proposed Site Conditions

The existing drainage system will be excavated and replaced. The corrugated metal pipes will be replaced with precast concrete pipes that will be sized properly to handle a 25-year storm. Additional catch basins will be added along Grist Mill and in other areas. Curbing will be added or replaced along the roadway and the existing single catch basins will be replaced with double catch basins in order to direct more stormwater into the system and avoid having it collect at the low point. Calculations have been provided as part of this submittal.

In order to replace the 15-inch pipe between Duggan Road and the headwall, the area will need to be excavated which would require the removal of several trees and vegetation. This area is within the 50-foot buffer. The area will be restored back to existing conditions as practicable as possible.

Buffer Zone

The work within the Buffer Zone will include excavation of the headwall and 18-inch metal drainage pipe. The existing head wall will be reconstructed in kind.

The Town of Acton Wetland Bylaw prohibits certain activities within the Buffer Zone as well as other setback areas. The following outlines the prohibition and the projects respective compliance:

> <u>Wetland Protection Bylaw Section 3.3 and Chapter F 8.3 Wetland Setbacks for Existing Structures</u>
>
> *0-foot setback for wetland-dependant structures (drain outfalls, weirs, etc), fences, and structures necessary for upland access where reasonable alternative access is unavailable.*
>
> *Work associated with pre-existing structures or activities not presently in compliance with Section 3.2 may not increase the degree of "non-conformance" of those structures or activities.*

This is an undersized drainage system that is also in need of repair. As it is a wetland-dependant structure, the required setback for new activities (Section 3.2) is 0-feet. The proposed project meets this new activity requirement.

Summary

The repair and replacement of the existing drainage system in the neighborhood of Duggan Road is a necessary procedure in the routine maintenance of the overall drainage system. The disturbance associated with this work is temporary in nature and all surfaces shall be restored post-construction. The proposed work is necessary to maintain a functioning stormwater system and maintaining public safety.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

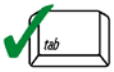
Provided by MassDEP:

MassDEP File Number

Document Transaction Number

City/Town

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

Duggan Road — a. Street Address
Acton — b. City/Town
01720 — c. Zip Code

Latitude and Longitude:
42d27'17"N — d. Latitude
71d28'11'W — e. Longitude

G1 — f. Assessors Map/Plat Number
287 — g. Parcel /Lot Number

2. Applicant:

Corey — a. First Name
York — b. Last Name
Town of Acton — c. Organization
472 Main Street — d. Street Address
Acton — e. City/Town
MA — f. State
01720 — g. Zip Code
978-929-6630 — h. Phone Number
978-929-6340 — i. Fax Number
engineering@acton-ma.gov — j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

Steve — a. First Name
Ledoux — b. Last Name
Town of Acton — c. Organization
472 Main Street — d. Street Address
Acton — e. City/Town
MA — f. State
01720 — g. Zip Code
978-929-6630 — h. Phone Number
978-929-6340 — i. Fax Number
engineering@acton-ma.gov — j. Email address

4. Representative (if any):

Paul — a. First Name
Campbell — b. Last Name
Town of Acton — c. Company
472 Main Street — d. Street Address
Acton — e. City/Town
MA — f. State
01720 — g. Zip Code
978-929-6630 — h. Phone Number
978-929-6340 — i. Fax Number
engineering@acton-ma.gov — j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

Town Project — a. Total Fee Paid
$0.00 — b. State Fee Paid
$0.00 — c. City/Town Fee Paid

A. General Information (continued)

6. General Project Description:

Drainage Improvements

7a. Project Type Checklist:

1. ☐ Single Family Home
2. ☐ Residential Subdivision
3. ☐ Limited Project Driveway Crossing
4. ☐ Commercial/Industrial
5. ☐ Dock/Pier
6. ☒ Utilities
7. ☐ Coastal Engineering Structure
8. ☐ Agriculture (e.g., cranberries, forestry)
9. ☐ Transportation
10. ☐ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☐ Yes ☒ No If yes, describe which limited project applies to this project:

2. Limited Project

8. Property recorded at the Registry of Deeds for:

a. County
b. Certificate # (if registered land)
c. Book
d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☐ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☒ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Bank	1. linear feet	2. linear feet
b. ☒ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☒ Riverfront Area	1. Name of Waterway (if available)	

2. Width of Riverfront Area (check one):

☐ 25 ft. - Designated Densely Developed Areas only

☐ 100 ft. - New agricultural projects only

☒ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

5500	3700	1800
a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.

5. Has an alternatives analysis been done and is it attached to this NOI? ☒ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☐ Yes ☐ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet	
	2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet	

4. ☐ Restoration/Enhancement
If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW _____ b. square feet of Salt Marsh _____

5. ☐ Project Involves Stream Crossings

a. number of new stream crossings _____ b. number of replacement stream crossings _____

C. Other Applicable Standards and Requirements

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/online_viewer.htm.

a. ☐ Yes ☒ No **If yes, include proof of mailing or hand delivery of NOI to:**

Natural Heritage and Endangered Species Program
Division of Fisheries and Wildlife
100 Hartwell Street, Suite 230
West Boylston, MA 01583

Oct 1, 2008
b. Date of map

C. Other Applicable Standards and Requirements (cont'd)

If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.C, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.1.d, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

1. c. Submit Supplemental Information for Endangered Species Review*

   1. ☐ Percentage/acreage of property to be altered:

      (a) within wetland Resource Area _____ percentage/acreage

      (b) outside Resource Area _____ percentage/acreage

   2. ☐ Assessor's Map or right-of-way plan of site

   3. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work ******

      (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

      (b) ☐ Photographs representative of the site

      (c) ☐ MESA filing fee (fee information available at: http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_fee_schedule.htm). Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

      *Projects altering **10 or more acres** of land, also submit:*

      (d) ☐ Vegetation cover type map of site

      (e) ☐ Project plans showing Priority & Estimated Habitat boundaries

   d. OR Check One of the Following

      1. ☐ Project is exempt from MESA review.
         Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_exemptions.htm; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

      2. ☐ Separate MESA review ongoing. _____ a. NHESP Tracking # _____ b. Date submitted to NHESP

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see http://www.mass.gov/dfwele/dfw/nhesp/nhesp.htm, regulatory review tab). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

C. Other Applicable Standards and Requirements (cont'd)

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

2. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☒ Not applicable – project is in inland resource area only

b. ☐ Yes ☐ No If yes, include proof of mailing or hand delivery of NOI to either:

South Shore - Cohasset to Rhode Island, and the Cape & Islands:	North Shore - Hull to New Hampshire:
Division of Marine Fisheries - Southeast Marine Fisheries Station Attn: Environmental Reviewer 1213 Purchase Street – 3rd Floor New Bedford, MA 02740-6694	Division of Marine Fisheries - North Shore Office Attn: Environmental Reviewer 30 Emerson Avenue Gloucester, MA 01930

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

3. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

b. ACEC

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

a. ☐ Yes ☒ No

5. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

a. ☐ Yes ☒ No

6. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

a. ☐ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

2. ☐ A portion of the site constitutes redevelopment

3. ☐ Proprietary BMPs are included in the Stormwater Management System.

b. ☒ No. Check why the project is exempt:

1. ☐ Single-family house

C. Other Applicable Standards and Requirements (cont'd)

2. ☒ Emergency road repair
3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☒ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

3. ☐ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Duggan Road - Drainage System - Proposed Drainage a. Plan Title	
Town of Acton Engineering Department b. Prepared By	Paul Campbell, P.E. c. Signed and Stamped by
12/17/2013 d. Final Revision Date	1" = 10' e. Scale
f. Additional Plan or Document Title	g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☐ Attach NOI Wetland Fee Transmittal Form

9. ☐ Attach Stormwater Report, if needed.

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

City/Town

E. Fees

1. ☒ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

2. Municipal Check Number	3. Check date
4. State Check Number	5. Check date
6. Payor name on check: First Name	7. Payor name on check: Last Name

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant	2. Date
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	6. Date

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the “yes” box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

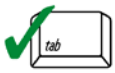
The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

Duggan Road	Acton, MA
a. Street Address	b. City/Town
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Corey	York	
a. First Name	b. Last Name	
Town of Acton		
c. Organization		
472 Main Street		
d. Mailing Address		
Acton	MA	01720
e. City/Town	f. State	g. Zip Code
978-929-6630	978-929-6430	engineering@acton-ma.gov
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

a. First Name	b. Last Name	
c. Organization		
d. Mailing Address		
e. City/Town	f. State	g. Zip Code
h. Phone Number	i. Fax Number	j. Email Address

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

B. Fees

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee

Step 5/Total Project Fee: _____

Step 6/Fee Payments:

Total Project Fee:	a. Total Fee from Step 5
State share of filing Fee:	b. 1/2 Total Fee **less $**12.50
City/Town share of filling Fee:	c. 1/2 Total Fee **plus** $12.50

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

Drainage Calculations

- Existing Conditions
- Proposed Conditions
- Catchment Area Map

Storm Drainage Computations

Name: Duggan Road

Location: Acton, MA

Proj. No.:

Date: 1/6/2014

Computed by: PVC

Checked by: PVC

Design Parameters:

25 Year Storm*

n = VARIED

RUNOFF													DESIGN											
LOCATION		AREA	C	C x A	SUM	FLOW TIME (MIN)		i					PIPE DESIGN			CAPACITY			PROFILE					
FROM (upstream)	TO (downstream)	(AC.)			C x A	PIPE	CONC TIME		Q_cb cfs	DCB? (Y/N)	Q_{ACTUAL} cfs	V_{ACTUAL} ft/s	PIPE TYPE	PIPE SIZE	SLOPE (ft/ft)	Q full cfs	Q excess	V full ft/s	LENGTH	FALL	RIM UPPER	INV UPPER	INV LOWER	cover depth
EX CB23	EX CB22	0.33	0.68	0.23	0.23	0.00	5.00	5.3	1.2	N	1.2	4.4	RCP	12	0.012	3.9	2.7	5.0	22.0	0.27	178.59	174.59	174.32	3.00
EX CB22	EX CB16	0.12	0.95	0.11	0.34	0.00	5.00	5.3	0.58	N	1.8	8.0	RCP	12	0.047	7.7	5.9	9.8	393.9	18.50	178.57	174.07	155.57	3.50
EX CB16	EX DMH4	0.11	0.95	0.10	1.10	0.00	5.00	5.3	0.55	N	5.8	10.4	RCP	12	0.043	7.4	1.6	9.4	36.7	1.59	160.27	155.57	153.98	3.70
EX DMH4	DMH3				3.86	0.00	5.00	5.3			20.5	13.6	RCP	18	0.040	21.1	0.6	11.9	172.4	6.93	159.08	153.93	147.00	3.65
DMH3	EX DMH3				4.33	0.00	5.00	5.3			23.0	14.9	RCP	18	0.048	23.1	0.1	13.1	103.6	5.00	152.00	147.00	142.00	3.50
EX DMH3	EX DMH2				4.78	0.00	5.00	5.3			25.3	16.9	RCP	18	0.062	26.2	0.9	14.8	33.9	2.11	146.58	142.00	139.89	3.08
EX DMH2	EX DMH1				7.52	0.00	5.00	5.3			39.9	25.9	RCP	18	0.143	39.8	-0.1	22.5	210.0	30.09	144.74	139.89	109.80	3.35
EX DMH1	DMH2				7.98	0.00	5.00	5.3			42.3	15.7	RCP	24	0.036	43.2	0.9	13.7	46.6	1.70	117.28	109.80	108.10	5.48
DMH2	DMH1				8.17	0.00	5.00	5.3			43.3	16.0	RCP	24	0.038	44.0	0.7	14.0	26.5	1.00	114.00	108.10	107.10	3.90
DMH1	EX CB6				8.76	0.00	5.00	5.3			46.4	16.8	RCP	24	0.042	46.4	0.0	14.8	25.6	1.08	112.00	107.10	106.02	
EX CB6	EX CB5	0.11	0.95	0.11	8.86	0.00	5.00	5.3	0.57	N	47.0	17.8	RCP	24	0.047	49.0	2.0	15.6	249.4	11.69	110.82	106.02	94.33	2.80
EX CB5	EX HD1	0.07	0.95	0.06	10.78	0.00	5.00	5.3	0.34	N	57.1	27.8	RCP	24	0.130	81.6	24.5	26.0	119.0	15.47	99.59	93.84	78.37	3.75
EX CB21	EX CB20	1.00	0.47	0.47	0.47	0.00	5.00	5.3	2.47	Y	2.5	7.2	RCP	12	0.028	5.9	3.5	7.6	21.9	0.61	179.07	175.02	174.41	3.05
EX CB20	EX CB18	0.74	0.53	0.39	2.56	0.00	5.00	5.3	2.09	Y	13.5	17.8	RCP	15	0.102	20.6	7.1	16.8	177.9	18.09	179.01	174.11	156.02	3.65
EX CB18	EX DMH4	0.20	0.69	0.14	2.77	0.00	5.00	5.3	0.75	N	14.7	13.2	RCP	18	0.044	22.0	7.3	12.4	47.7	2.09	160.62	155.97	153.88	3.15
EX CB15	EX CB14	2.02	0.55	1.11	1.11	0.00	5.00	5.3	5.88	Y	5.9	8.9	RCP	12	0.030	6.2	0.3	7.8	21.7	0.65	183.30	180.15	179.50	2.15
EX CB14	EX CB12	1.42	0.58	0.83	1.94	0.00	5.00	5.3	4.38	Y	10.3	16.2	RCP	12	0.100	11.2	1.0	14.3	314.7	31.33	183.55	178.85	147.52	3.70
EX CB12	EX DMH2	0.50	0.62	0.31	2.74	0.00	5.00	5.3	1.65	N	14.5	19.6	RCP	15	0.124	22.8	8.3	18.6	57.7	7.18	151.57	147.07	139.89	3.25
EX CB2	EX CB4	0.12	0.95	0.12	0.12	0.00	5.00	5.3	0.61	N	0.6	4.7	RCP	12	0.026	5.7	5.1	7.3	39.3	1.01	99.46	96.26	95.25	2.20
EX CB4	EX CB5	0.01	0.95	0.01	1.91	0.00	5.00	5.3	0.05	N	10.1	11.8	RCP	18	0.041	21.3	11.1	12.0	8.8	0.36	99.45	94.20	93.84	3.75
EX CB1	EX CB3	2.26	0.51	1.16	1.16	0.00	5.00	5.3	6.15	Y	6.1	9.8	RCP	12	0.037	6.8	0.7	8.7	42.0	1.54	99.67	97.50	95.96	1.17
EX CB3	EX CB4	1.14	0.55	0.63	1.79	0.00	5.00	5.3	3.32	Y	9.5	14.2	RCP	12	0.076	9.8	0.3	12.5	22.0	1.66	99.61	95.96	94.30	2.65

Storm Drainage Computations

Name: Duggan Road

Location: Acton, MA

Proj. No.:

Date: 1/6/2014

Computed by: PVC

Checked by: PVC

Design Parameters:

25 Year Storm*

n = VARIED

RUNOFF													DESIGN											
LOCATION		AREA	C	C x A	SUM	FLOW TIME (MIN)		i					PIPE DESIGN			CAPACITY			PROFILE					
FROM (upstream)	TO (downstream)	(AC.)			C x A	PIPE	CONC TIME		Q_cb cfs	DCB? (Y/N)	Q_{ACTUAL} cfs	V_{ACTUAL} ft/s	PIPE TYPE	PIPE SIZE	SLOPE (ft/ft)	Q full cfs	Q excess	V full ft/s	LENGTH	FALL	RIM UPPER	INV UPPER	INV LOWER	cover depth
EX CB8	DMH2	0.36	0.51	0.18	0.18	0.00	5.00	5.3	0.98	N	1.0	6.0	RCP	12	0.034	6.5	5.6	8.3	27.3	0.92	114.07	110.92	110.00	2.15
EX CB7	DMH1	1.05	0.56	0.59	0.59	0.00	5.00	5.3	3.13	Y	3.1	5.6	RCP	12	0.012	4.0	0.9	5.1	16.0	0.20	110.84	107.40	107.20	2.44
EX CB13	EX CB12	0.95	0.52	0.49	0.49	0.00	5.00	5.3	2.61	Y	2.6	6.3	RCP	12	0.019	4.9	2.2	6.2	22.1	0.41	151.53	147.73	147.32	2.80
EX CB19	EX CB18	0.12	0.63	0.07	0.07	0.00	5.00	5.3	0.39	N	0.4	4.2	RCP	12	0.028	6.0	5.6	7.6	21.9	0.62	160.49	156.99	156.37	2.50
EX CB17	EX CB16	1.27	0.52	0.66	0.66	0.00	5.00	5.3	3.48	Y	3.5	5.6	RCP	12	0.012	3.9	0.4	4.9	22.0	0.26	160.23	156.08	155.82	3.15
EX CB10	EX DMH3	0.09	0.95	0.08	0.08	0.00	5.00	5.3	0.43	N	0.4	3.8	RCP	12	0.018	4.8	4.3	6.1	5.6	0.10	146.36	141.78	141.68	3.58
EX CB11	EX DMH3	0.72	0.51	0.37	0.37	0.00	5.00	5.3	1.95	N	1.9	5.3	RCP	12	0.014	4.3	2.3	5.4	16.1	0.23	146.61	141.81	141.58	3.80
EX CB9	EX DMH1	0.13	0.84	0.11	0.11	0.00	5.00	5.3	0.58	N	0.6	3.6	RCP	12	0.012	4.0	3.4	5.0	5.7	0.07	117.08	112.00	111.93	4.08
CB1	EX DMH1	0.53	0.65	0.35	0.35	0.00	5.00	5.3	1.85	N	1.8	9.0	RCP	12	0.065	9.0	7.2	11.5	15.5	1.00	117.08	113.50	112.50	2.58
CB2	DMH3	0.83	0.56	0.47	0.47	0.00	5.00	5.3	2.48	Y	2.5	3.7	RCP	12	0.005	2.5	0.0	3.2	14.0	0.07	151.88	148.88	148.81	2.00
DCB4	DCB3	0.87	0.69	0.60	0.60	0.00	5.00	5.3	3.17	Y	3.2	9.5	RCP	12	0.050	8.0	4.8	10.1	20.0	1.00	186.81	183.81	182.81	2.00
DCB3	DMH4	1.77	0.62	1.10	1.70	0.00	5.00	5.3	5.82	Y	9.0	10.8	RCP	15	0.036	12.2	3.2	10.0	175.6	6.29	187.04	182.81	176.52	2.98
DMH4	EX CB20				1.70	0.00	5.00	5.3			9.0	10.2	RCP	15	0.031	11.4	2.4	9.3	45.6	1.42	180.75	176.42	175.00	3.08

Storm Drainage Computations

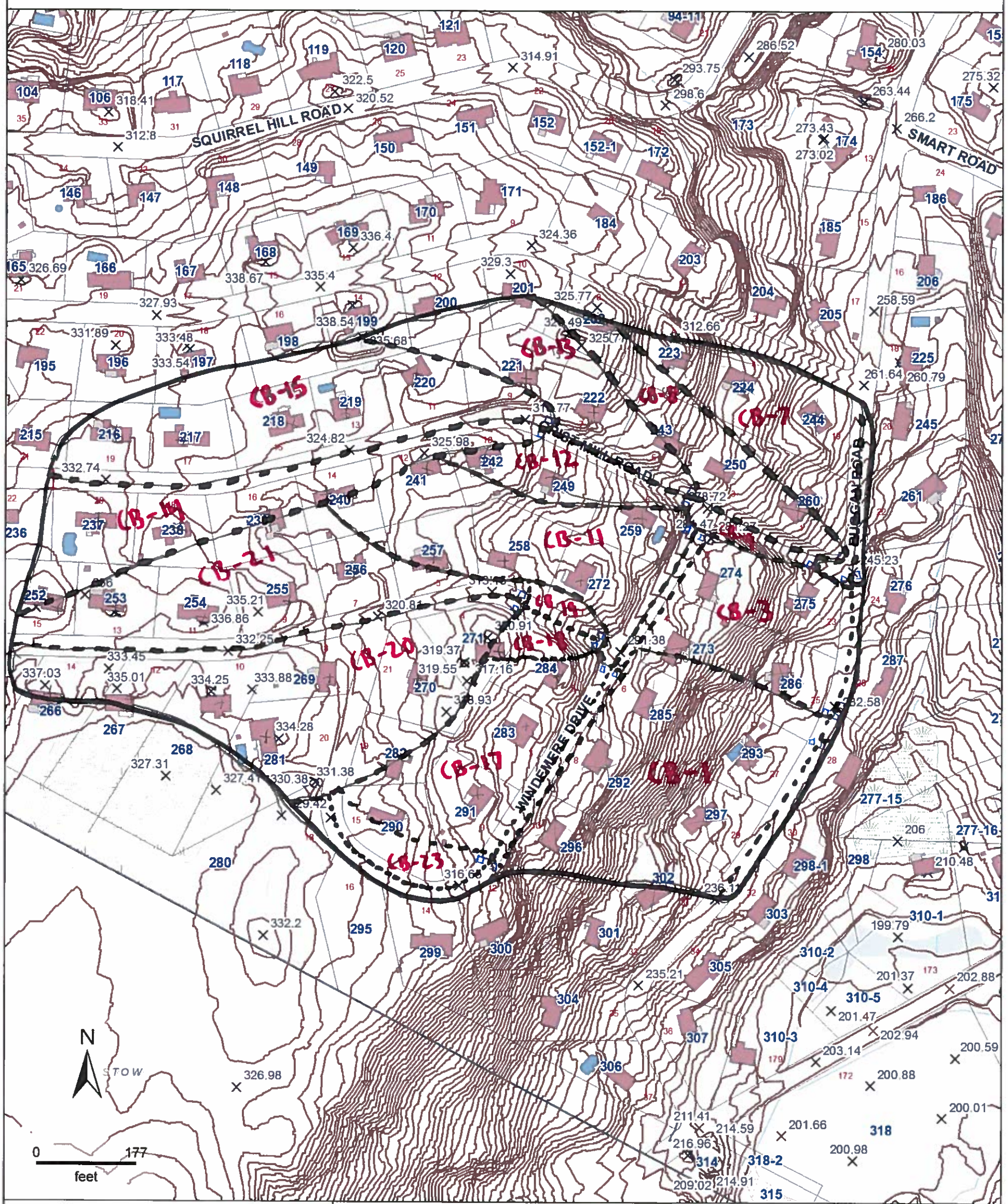
Name: Duggan Road

Location: Acton, MA

Proj. No.:
Date: 1/6/2014
Computed by: PVC
Checked by: PVC

Design Parameters:
25 Year Storm*
n = VARIED

RUNOFF													DESIGN											
LOCATION		AREA	C	C x A	SUM	FLOW TIME (MIN)		i					PIPE DESIGN			CAPACITY			PROFILE					
FROM (upstream)	TO (downstream)	(AC.)			C x A	PIPE	CONC TIME		Q_cb cfs	DCB? (Y/N)	Q_{ACTUAL} cfs	V_{ACTUAL} ft/s	PIPE TYPE	PIPE SIZE	SLOPE (ft/ft)	Q full cfs	Q excess	V full ft/s	LENGTH	FALL	RIM UPPER	INV UPPER	INV LOWER		cover depth
CB23	CB22	0.33	0.68	0.23	0.23	0.00	5.00	5.3	1.2	N	1.2	4.4	RCP	12	0.012	3.9	2.7	5.0	22.0	0.27	178.59	174.59	174.32	OK	3.00
CB22	CB16	0.12	0.95	0.11	0.34	0.00	5.00	5.3	0.58	N	1.8	8.0	RCP	12	0.047	7.7	5.9	9.8	393.9	18.50	178.57	174.07	155.57	OK	3.50
CB16	DMH4	0.11	0.95	0.10	0.44	0.00	5.00	5.3	0.55	N	2.3	8.3	RCP	12	0.043	7.4	5.1	9.4	36.7	1.59	160.27	155.57	153.98	OK	3.70
DMH4	DMH3				3.21	0.00	5.00	5.3		N	17.0	11.1	RCP	12	0.045	7.6	-9.4	9.7	276.0	12.50	159.08	153.93	141.43	PRC	4.15
DMH3	DMH2				4.13	0.00	5.00	5.3		N	21.9	11.1	RCP	12	0.045	7.6	-14.3	9.7	33.9	1.54	146.58	141.43	139.89	PRC	4.15
DMH2	DMH1				6.87	0.00	5.00	5.3		N	36.4	22.0	RCP	15	0.133	23.5	-12.9	19.2	210.0	27.86	144.74	139.89	112.03	PRC	3.60
DMH1	CB6				6.98	0.00	5.00	5.3		N	37.0	16.8	RCP	18	0.061	25.9	-11.1	14.7	98.1	5.96	117.28	111.98	106.02	PRC	3.80
CB6	CB5	0.11	0.95	0.11	8.09	0.00	5.00	5.3	0.57	N	42.9	14.8	RCP	18	0.047	22.7	-20.1	12.9	249.4	11.69	110.82	106.02	94.33	PRC	3.30
CB5	HD1	0.07	0.95	0.06	10.00	0.00	5.00	5.3	0.34	N	53.0	13.4	CMP	18	0.130	20.5	-32.5	11.6	119.0	15.47	99.59	93.84	78.37	PRC	4.25
CB21	CB20	1.87	0.57	1.06	1.06	0.00	5.00	5.3	5.63	Y	5.6	8.6	RCP	12	0.028	5.9	0.3	7.6	21.9	0.61	179.07	175.02	174.41	OK	3.05
CB20	CB18	2.52	0.59	1.49	2.56	0.00	5.00	5.3	7.91	Y	13.5	16.6	RCP	12	0.102	11.4	-2.2	14.5	177.9	18.09	179.07	174.11	156.02	PRC	3.96
CB18	DMH4	0.20	0.69	0.14	2.77	0.00	5.00	5.3	0.75	N	14.7	10.9	RCP	12	0.044	7.5	-7.2	9.5	47.7	2.09	160.62	155.97	153.88	PRC	3.65
CB15	CB14	2.02	0.55	1.11	1.11	0.00	5.00	5.3	5.88	Y	5.9	4.3	CMP	12	0.023	2.9	-3.0	3.7	21.7	0.50	183.30	180.15	179.65	PRC	2.15
CB14	CB12	1.42	0.58	0.83	1.94	0.00	5.00	5.3	4.38	Y	10.3	16.2	RCP	12	0.100	11.2	1.0	14.3	314.7	31.33	183.55	178.85	147.52	OK	3.70
CB12	DMH2	0.50	0.62	0.31	2.74	0.00	5.00	5.3	1.65	N	14.5	18.4	RCP	12	0.124	12.6	-2.0	16.0	57.7	7.18	151.57	147.07	139.89	PRC	3.50
CB2	CB4	0.12	0.95	0.12	0.12	0.00	5.00	5.3	0.61	N	0.6	3.0	CMP	12	0.026	3.1	2.5	3.9	39.3	1.01	99.46	96.26	95.25	OK	2.20
CB4	CB5	0.01	0.95	0.01	1.91	0.00	5.00	5.3	0.05	N	10.1	2.3	CMP	12	0.007	1.6	-8.5	2.0	8.8	0.06	99.45	94.20	94.14	PRC	4.25
CB1	CB3	2.26	0.51	1.16	1.16	0.00	5.00	5.3	6.15	Y	6.1	1.4	CMP	6	0.006	0.2	-5.9	1.2	42.0	0.26	99.67	96.77	96.51	PRC	2.40
CB3	CB4	1.14	0.55	0.63	1.79	0.00	5.00	5.3	3.32	Y	9.5	14.2	RCP	12	0.076	9.8	0.3	12.5	22.0	1.66	99.61	95.96	94.30	OK	2.65
CB8	CB6	0.80	0.56	0.45	0.45	0.00	5.00	5.3	2.37	Y	2.4	10.3	RCP	12	0.076	9.8	7.5	12.5	58.3	4.45	114.07	110.92	106.47	OK	2.15
CB7	CB6	1.13	0.59	0.67	0.67	0.00	5.00	5.3	3.53	Y	3.5	5.1	RCP	12	0.010	3.5	0.0	4.5	28.0	0.27	110.84	106.84	106.57	PRC	3.00
CB13	CB12	0.95	0.52	0.49	0.49	0.00	5.00	5.3	2.61	Y	2.6	6.3	RCP	12	0.019	4.9	2.2	6.2	22.1	0.41	151.53	147.73	147.32	OK	2.80
CB19	CB18	0.12	0.63	0.07	0.07	0.00	5.00	5.3	0.39	N	0.4	4.2	RCP	12	0.028	6.0	5.6	7.6	21.9	0.62	160.49	156.99	156.37	OK	2.50
CB17	CB16	1.27	0.52	0.66	0.66	0.00	5.00	5.3	3.48	Y	3.5	5.6	RCP	12	0.012	3.9	0.4	4.9	22.0	0.26	160.23	156.08	155.82	OK	3.15
CB10	DMH3	0.09	0.95	0.08	0.08	0.00	5.00	5.3	0.43	N	0.4	3.8	RCP	12	0.018	4.8	4.3	6.1	5.6	0.10	146.36	141.78	141.68	OK	3.58
CB11	DMH3	1.55	0.54	0.84	0.84	0.00	5.00	5.3	4.43	Y	4.4	6.2	RCP	12	0.014	4.3	-0.2	5.4	16.1	0.23	146.61	141.81	141.58	PRC	3.80
CB9	DMH1	0.13	0.84	0.11	0.11	0.00	5.00	5.3	0.6	N	0.6	3.7	RCP	12	0.012	4.0	3.4	5.0	5.7	0.07	117.08	112.00	111.93	OK	4.08

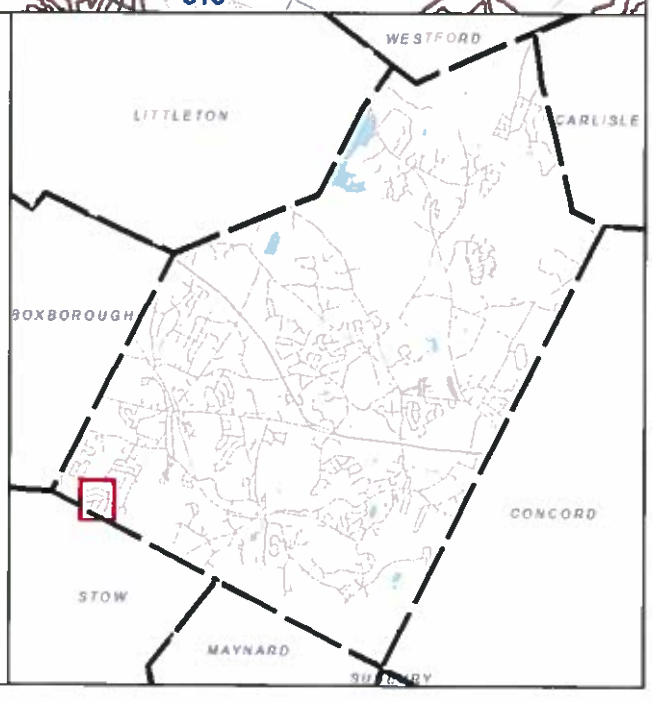


Property Information

Property ID G1-97
Location 1 DUGGAN RD

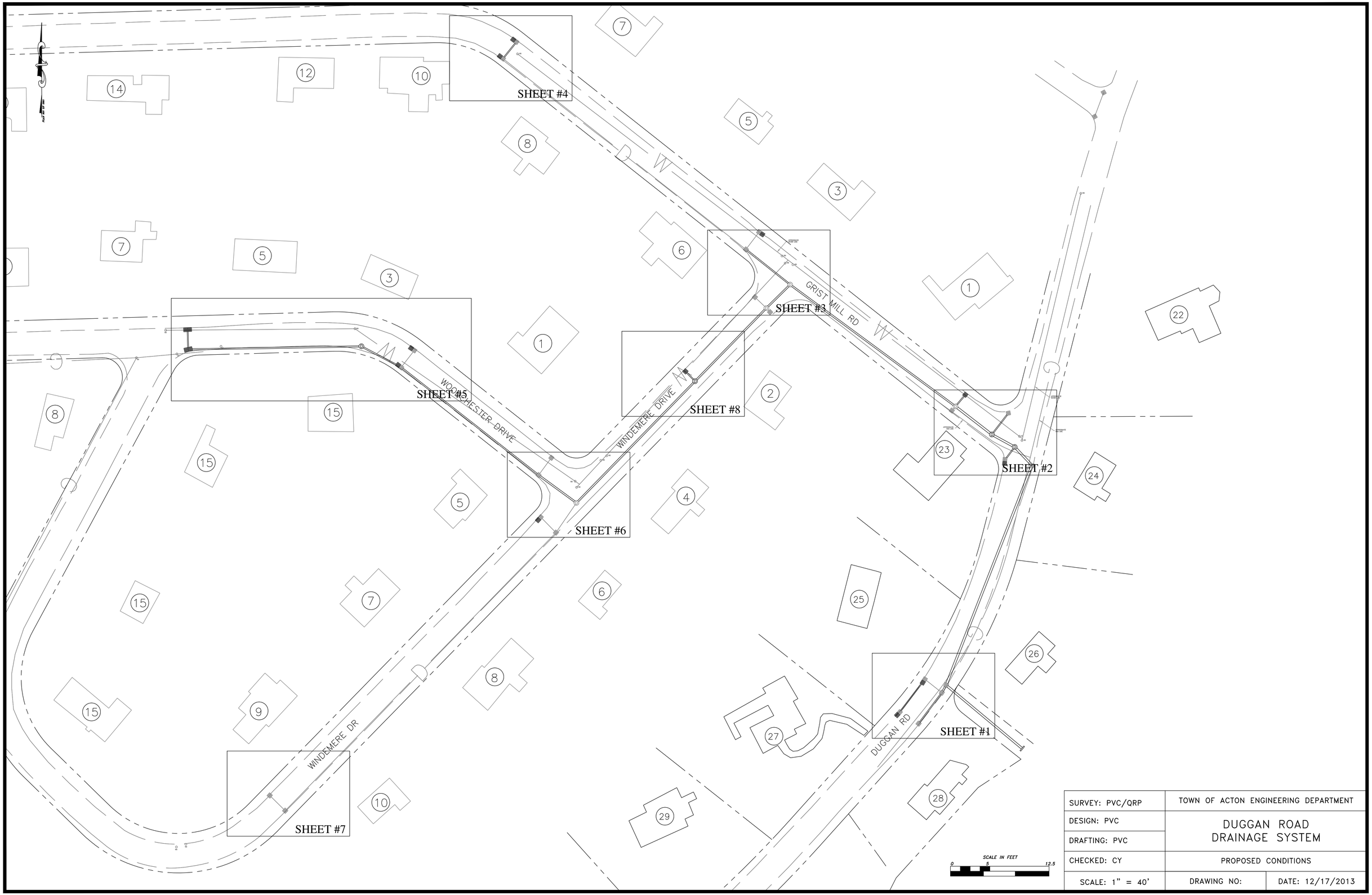
MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

This data set/map is for planning purposes only and should not be used for larger scale analysis. The Town of Acton shall not be held liable for any use of the data or images shown on this map, nor is any warranty of accuracy expressed. All uses of this data set/map are subject to field verification.



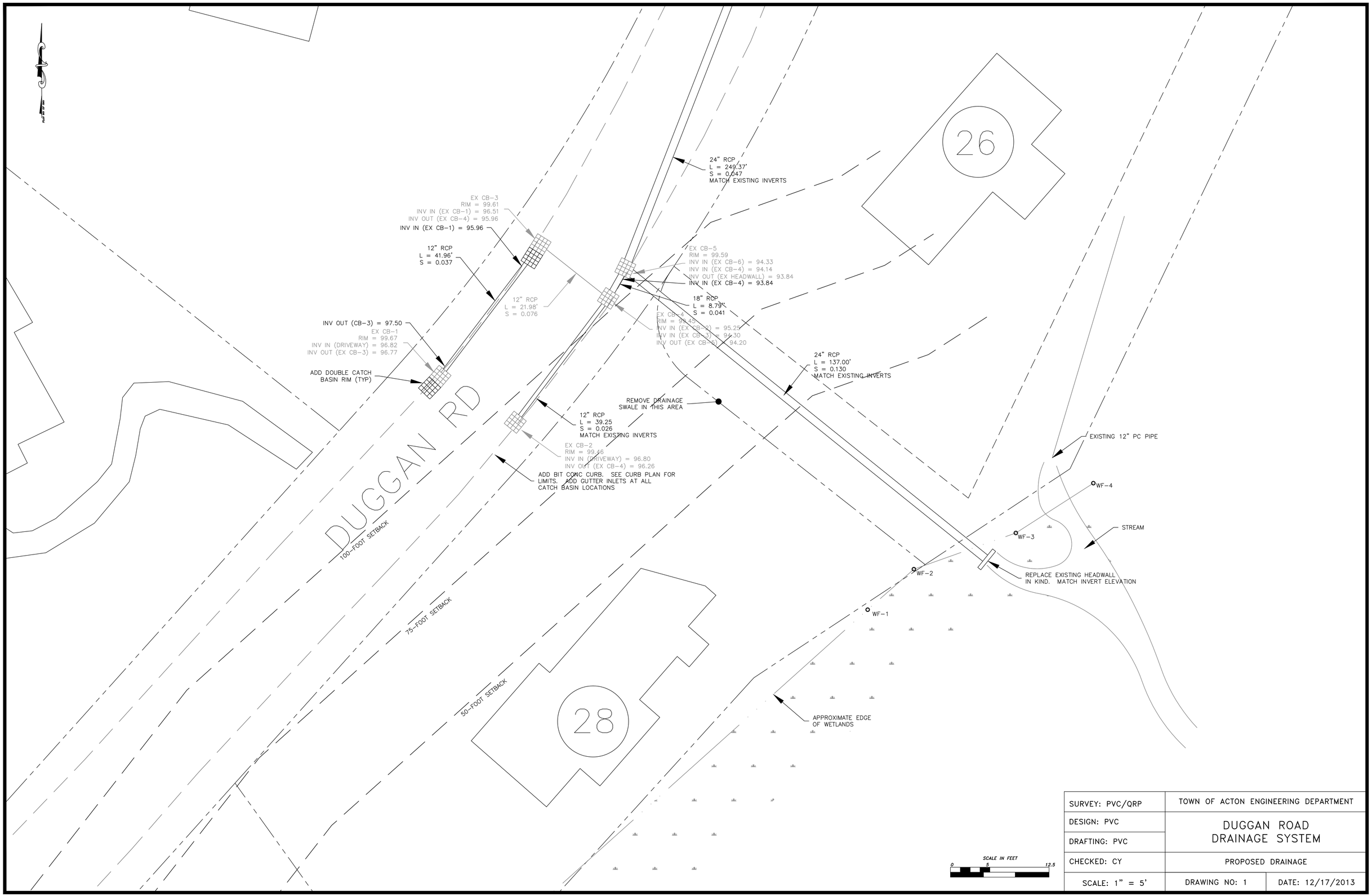
Drainage Improvement Plans

- Overall Drainage Improvement Plans
    - NOI Submittal Plan



SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED CONDITIONS	
SCALE: 1" = 40'	DRAWING NO:	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 - 11:04am



SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED DRAINAGE	
SCALE: 1" = 5'	DRAWING NO: 1	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Jul 14, 2014 - 9:54am

Certified Abutters List / Affidavit / Notice to Abutters

Town of Acton
472 Main Street
Acton, MA 001720
Telephone 978-929-6621
Fax 978-929-6340

Brian McMullen
Assessor

LOCUS **28 Duggan Rd &**
6 Macleod Ln
PARCEL ID G1-298,G1-277-5

Parcel ID	Location	Owner	Co-Owner	Mailing Address	City, ST, ZIP
G1-277-15	28 DUGGAN RD BEHIND	KIM YEON H		28 DUGGAN RD	ACTON, MA 01720
G1-277-4	4 MACLEOD LN	LIANG GANG	YANG XINXING	4 MACLEOD LN	ACTON, MA 01720
G1-277-5	6 MACLEOD LN	RAMACHANDRAN KARTHIKEYAN	SANTHANAKRISHNAN HEMA	6 MACLEOD LN	ACTON, MA 01720
G1-277-6	8 MACLEOD LN	MORAN ROBERT J	MORAN GINA E	8 MACLEOD LN	ACTON, MA 01720
G1-286	25 DUGGAN RD	FOLEY MARK	FOLEY DEBORAH	25 DUGGAN RD	ACTON, MA 01720
G1-287	26 DUGGAN RD	MYERS STEPHEN F	MYERS KATHLEEN E	26 DUGGAN RD	ACTON, MA 01720
G1-293	27 DUGGAN RD	KELLOGG KIRK R	JOAN A	27 DUGGAN ROAD	ACTON, MA 01720
G1-297	29 DUGGAN RD	DOWNS GEORGE S TRUSTEE	DOWNS DEANNA K TRUSTEE	29 DUGGAN RD	ACTON, MA 01720
G1-298-1	30 DUGGAN RD	AHERN JR RICHARD B	AHERN LINDA B	30 DUGGAN RD	ACTON, MA 01720
G1-303	32 DUGGAN RD	FAN QUNYING		32 DUGGAN RD	ACTON, MA 01720
G1-310-1	173 WILLOW ST	KERTZNER PETER	KERTZNER JANA	173 WILLOW ST.	ACTON, MA 01720
G1-310-2	32 DUGGAN RD BEHIND	FAN QUNYING	TU QI	32 DUGGAN RD BEHIND	ACTON, MA 01720
G1-310-4	34 DUGGAN RD BEHIND	SULLIVAN DENNIS P	DOREEN	34 DUGGAN RD.	ACTON, MA 01720
G1-310-5	175 WILLOW ST	KNELL MICHAEL	KNELL BIBIANA	179 WILLOW STREET	ACTON, MA 01720
G1-277	167 WILLOW ST	ARNOLD KATHERINE F		167 WILLOW ST	ACTON, MA 01720
G1-277-12	9 MACLEOD LN	TANIMURA TETSUAKI	TANIMURA MAO	9 MACLEOD LN	ACTON, MA 01720
G1-277-13	7 MACLEOD LN	MORANO MICHAEL ANGELO III	CHOI WAN YU	7 MACLEOD LN	ACTON, MA 01720
G1-277-14	3 MACLEOD LN	WEITZNER BARRY D	POMPILIO GRACE L	3 MACLEOD LANE	ACTON, MA 01720
G1-277-16	4 MACLEOD LN BEHIND	BEALS THOMAS P	ZHANG JEAN X	171 WILLOW STREET	ACTON, MA 01720
G1-277-7	10 MACLEOD LN	KAPPEL GARY S	HERTHER KAREN J	10 MACLEOD LANE	ACTON, MA 01720
G1-298	28 DUGGAN RD	KIM YEON H		28 DUGGAN RD	ACTON, MA 01720
G1-310-1	173 WILLOW ST	KERTZNER PETER	KERTZNER JANA	173 WILLOW ST.	ACTON, MA 01720

The owner of land sharing a common boundry or corner with the site of the proposed activity (100 feet)
in any direction, including land located directly across a street, way, creek, river, stream, brook or canal.
The above are as they appear on the most recent applicable taxes.

13-Jun-14

Kelly Schorr
Acton Assessors Office

NOTIFICATION TO ABUTTERS
UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT
AND THE TOWN OF ACTON WETLANDS BYLAW

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40 and the Town of Acton Bylaws, you are hereby notified of the following:

The Applicant: __Town of Acton_____

Address___472 Main Street_____Phone:__978-929-6630_____

has filed a Notice of Intent with the Acton Conservation Commission seeking permission to remove, fill, dredge or alter an Area Subject to Protection under the Wetlands Protection Act .

Applicant's Representative: ___Corey York, Town of Acton Engineering Department_____

Address_____472 Main Street_____Phone:___978-929-6630_____

The address of the property where the activity is proposed __Behind 26 Duggan Road____

_____

Town Atlas Plate/Map ___G-1_____ Parcel/Lot ___26_____

Project Description____ Proposed drainage improvements on Duggan Road _

Copies of the Notice of Intent may be examined at the Conservation Office, Acton Town Hall, 472 Main Street, Acton. Between the hours of 9:00 A.M. and 4:30 P.M. Monday through Friday. For more information please call the Conservation Office at 978-264-9631.

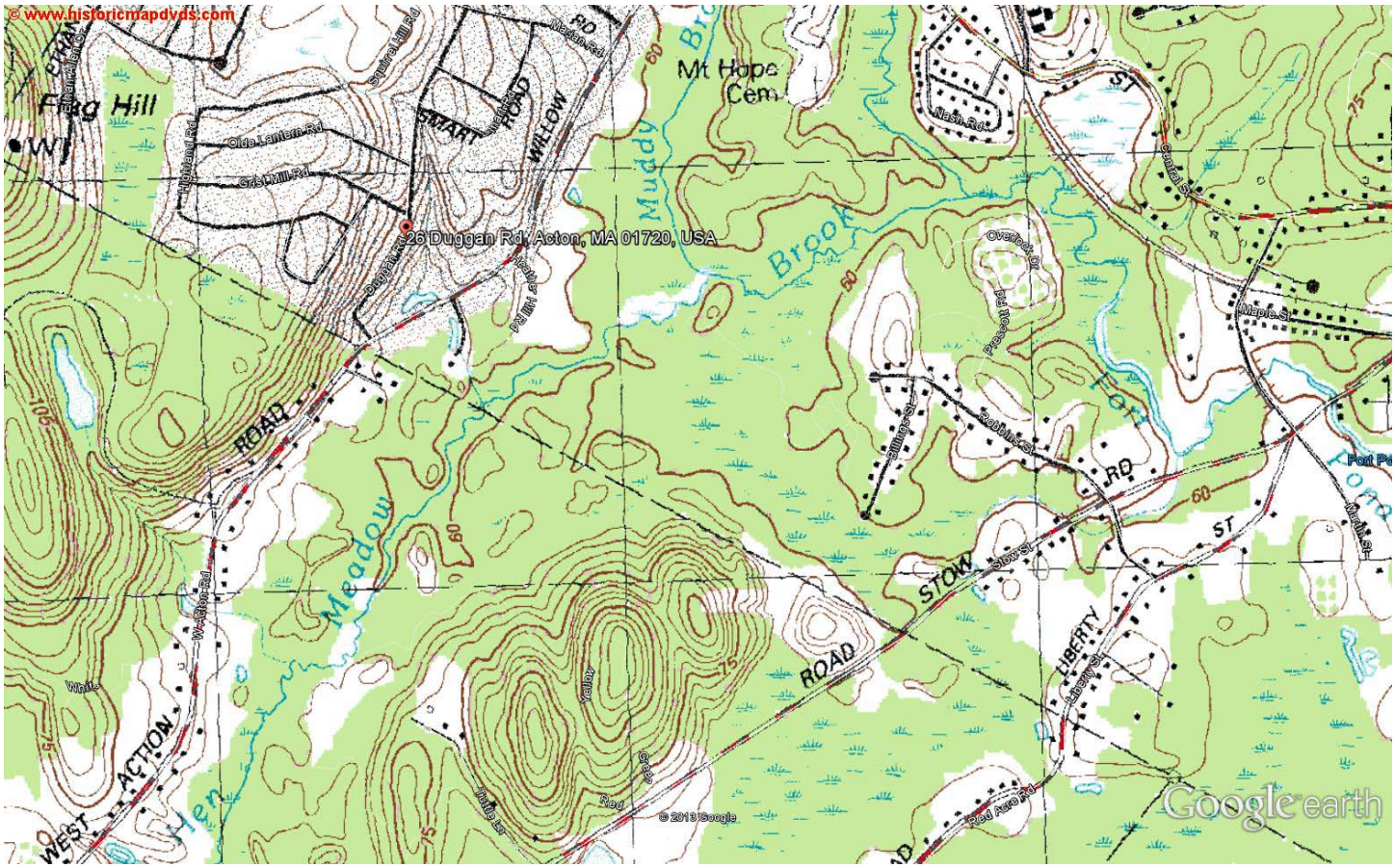
A Public Hearing will be held at the Acton Town Hall, 472 Main Street, on Wednesday, _____8/6/14_____ at _____7:50_____ P.M.
(date)

The notice of the public hearing, will be published at least five (5) days in advance in the Acton edition of the *Beacon* newspaper or *Metrowest Daily News*.

NOTE: You may also contact your local conservation commission or the nearest Department of Environmental Protection Regional Office for the information about this application or, the Wetlands Protection Act. Acton is in the Central Region. To contact DEP, call:

***Central Region: 508-792-7650**	Northeast Region: 978-661-7600
Southeast Region: 508-946-2800	Western Region: 413-784-1100

USGS Map

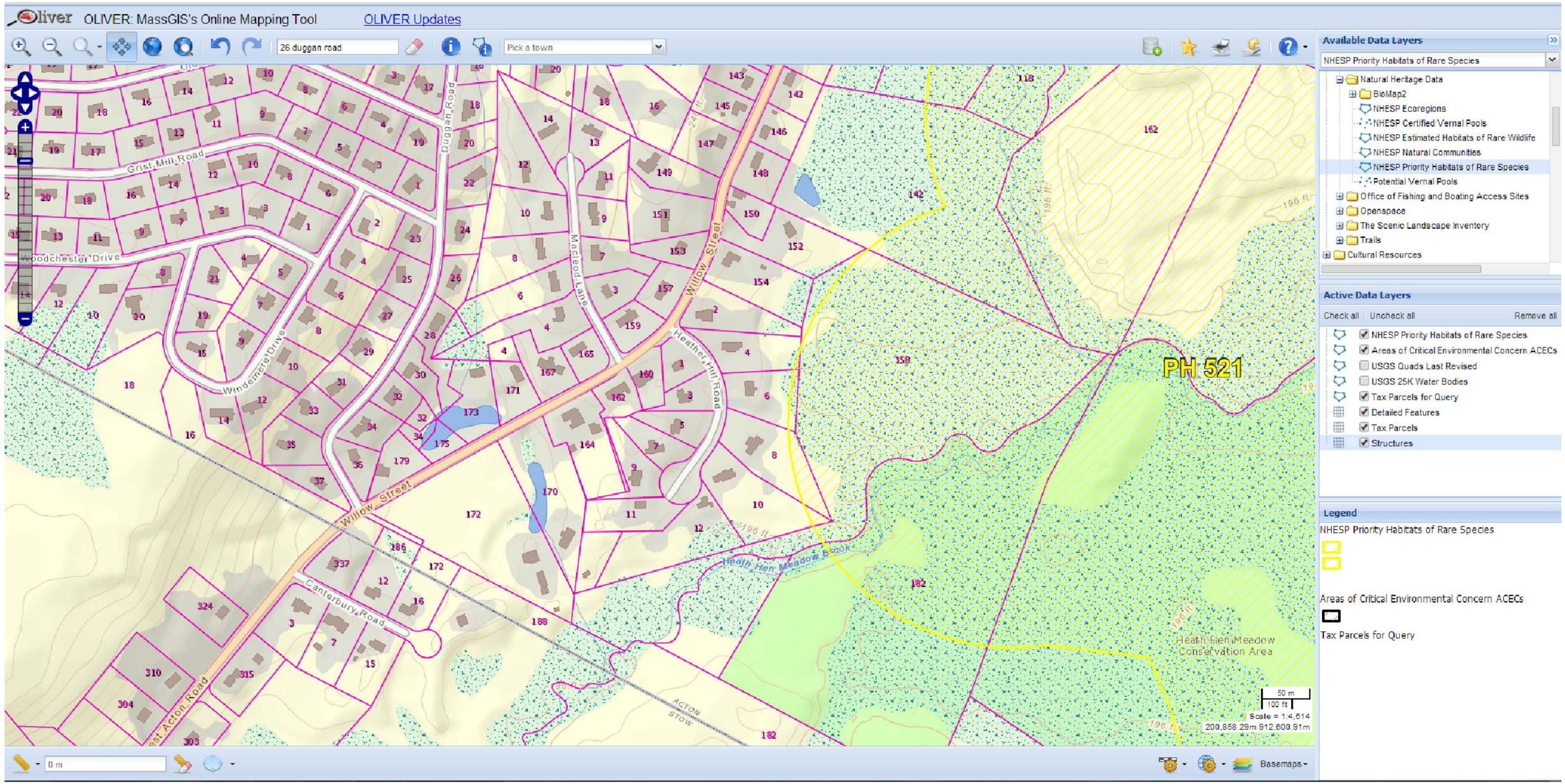


Google earth

miles 1

km 1

NHESP Estimated Habitats of Rare Wildlife & Priority Habitats of Rare Species
OLIVER MassGIS Map


OLIVER: MassGIS's Online Mapping Tool
OLIVER Updates
26 duggan road
Pick a town
Available Data Layers
NHESP Priority Habitats of Rare Species
Natural Heritage Data
BioMap2
NHESP Ecoregions
NHESP Certified Vernal Pools
NHESP Estimated Habitats of Rare Wildlife
NHESP Natural Communities
NHESP Priority Habitats of Rare Species
Potential Vernal Pools
Office of Fishing and Boating Access Sites
Openspace
The Scenic Landscape Inventory
Trails
Cultural Resources
Active Data Layers
Check all
Uncheck all
Remove all
NHESP Priority Habitats of Rare Species
Areas of Critical Environmental Concern ACECs
USGS Quads Last Revised
USGS 25K Water Bodies
Tax Parcels for Query
Detailed Features
Tax Parcels
Structures
Legend
NHESP Priority Habitats of Rare Species
Areas of Critical Environmental Concern ACECs
Tax Parcels for Query
PH 521
Grist Mill Road
Woodchester Drive
Windemere Drive
Duggan Road
Macleod Lane
Willow Street
Heather Hill Road
Canterbury Road
Heath Hen Meadow Brook
Heath Hen Meadow Conservation Area
Acton Stow
Scale = 1:4,514
200,858.29m 912,600.91m
Basemaps

Drainage Improvement Plans

24" RCP
L = 249.37'
S = 0.047
MATCH EXISTING INVERTS

EX CB-3
RIM = 99.61
INV IN (EX CB-1) = 96.51
INV OUT (EX CB-4) = 95.96

INV IN (EX CB-1) = 95.96

12" RCP
L = 41.96'
S = 0.037

EX CB-5
RIM = 99.59
INV IN (EX CB-6) = 94.33
INV IN (EX CB-4) = 94.14
INV OUT (EX HEADWALL) = 93.84

INV IN (EX CB-4) = 93.84

12" RCP
L = 21.98'
S = 0.076

18" RCP
L = 8.79'
S = 0.041

EX CB-4
RIM = 99.45
INV IN (EX CB-2) = 95.25
INV IN (EX CB-3) = 94.30
INV OUT (EX CB-5) = 94.20

INV OUT (CB-3) = 97.50

EX CB-1
RIM = 99.67
INV IN (DRIVEWAY) = 96.82
INV OUT (EX CB-3) = 96.77

ADD DOUBLE CATCH
BASIN RIM (TYP)

24" RCP
L = 119.00"
S = 0.130
MATCH EXISTING INVERTS

REMOVE DRAINAGE
SWALE IN THIS AREA

12" RCP
L = 39.25
S = 0.026
MATCH EXISTING INVERTS

EX CB-2
RIM = 99.46
INV IN (DRIVEWAY) = 96.80
INV OUT (EX CB-4) = 96.26

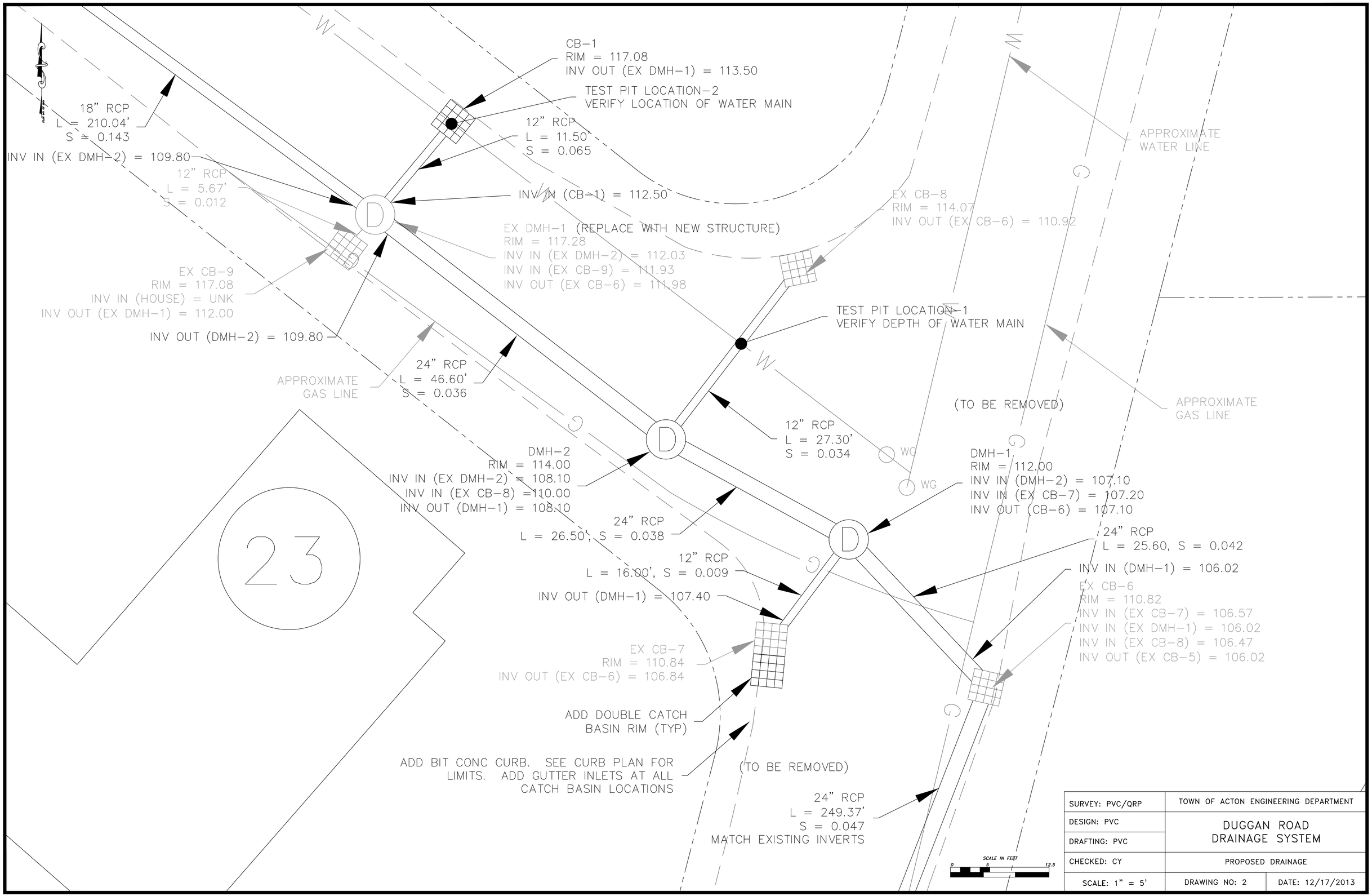
ADD BIT CONC CURB. SEE CURB PLAN FOR
LIMITS. ADD GUTTER INLETS AT ALL
CATCH BASIN LOCATIONS

DUGGAN RD

SCALE IN FEET
0 5 12.5

SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED DRAINAGE	
SCALE: 1" = 5'	DRAWING NO: 1	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 - 11:04am



Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 - 11:05am

EX CB-13
RIM = 151.53
INV OUT (EX CB-12) = 147.73

12" RCP
L = 314.72'
S = 0.100

ADD DOUBLE CATCH
BASIN RIM (TYP)

12" RCP
L = 22.08'
S = 0.019

APPROXIMATE
WATER LINE

EX CB-12
RIM = 151.57
INV IN (EX CB-14) = 147.52
INV IN (EX CB-13) = 147.32
INV OUT (EX DMH-2) = 147.07

15" RCP
L = 57.71'
S = 0.124
MATCH EXISTING INVERTS

ADD BIT CONC CURB. SEE CURB PLAN FOR
LIMITS. ADD GUTTER INLETS AT ALL
CATCH BASIN LOCATIONS

WG

WG

EX DMH-2
RIM = 144.74
INV IN (EX CB-12) = 139.89
INV IN (EX DMH-3) = 139.89
INV OUT (EX DMH-1) = 139.89

18" RCP
L = 33.91'
S = 0.062

GRIST MILL

EX CB-11
RIM = 146.61
INV OUT (EX DMH-3) = 141.81

18" RCP
L = 210.04'
S = 0.143

EX DMH-3
RIM = 146.58
INV IN (EX DMH-4) = 141.43
INV IN (EX CB-11) = 141.58
INV IN (EX CB-10) = 141.68
INV OUT (EX DMH-2) = 141.43

12" RCP
L = 16.08'
S = 0.014

EX DMH-3
RIM = 146.58'
INV IN (DMH-3) = 142.00
INV IN (CB-11) = 141.58
INV IN (CB-10) = 141.68
INV OUT (EX DMH-2) = 142.00

12" RCP
L = 5.55'
S = 0.018

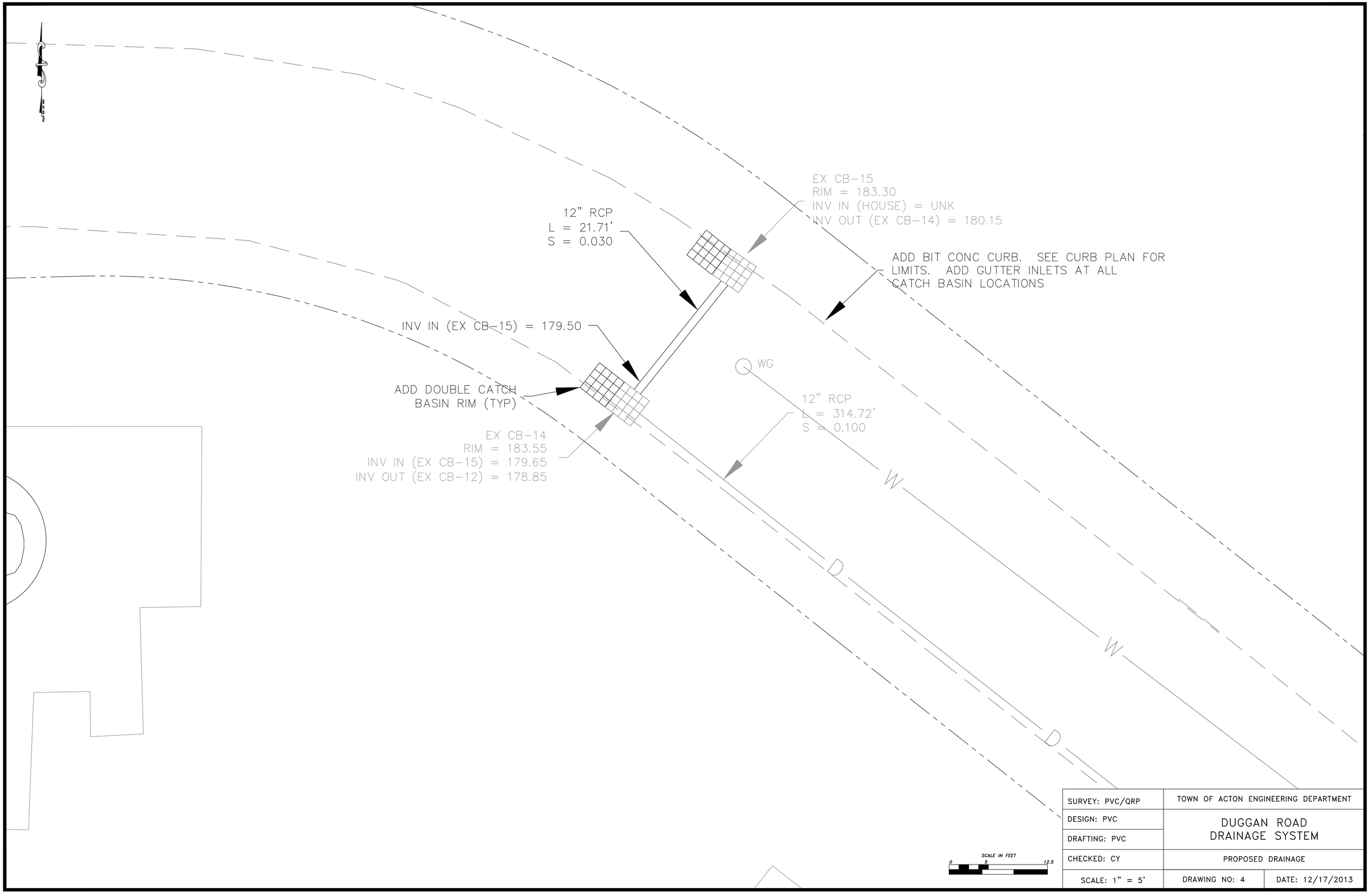
18" RCP
L = 103.79'
S = 0.048

EX CB-10
RIM = 146.36
INV OUT (EX DMH-3) = 141.78

SCALE IN FEET
0 5 12.5

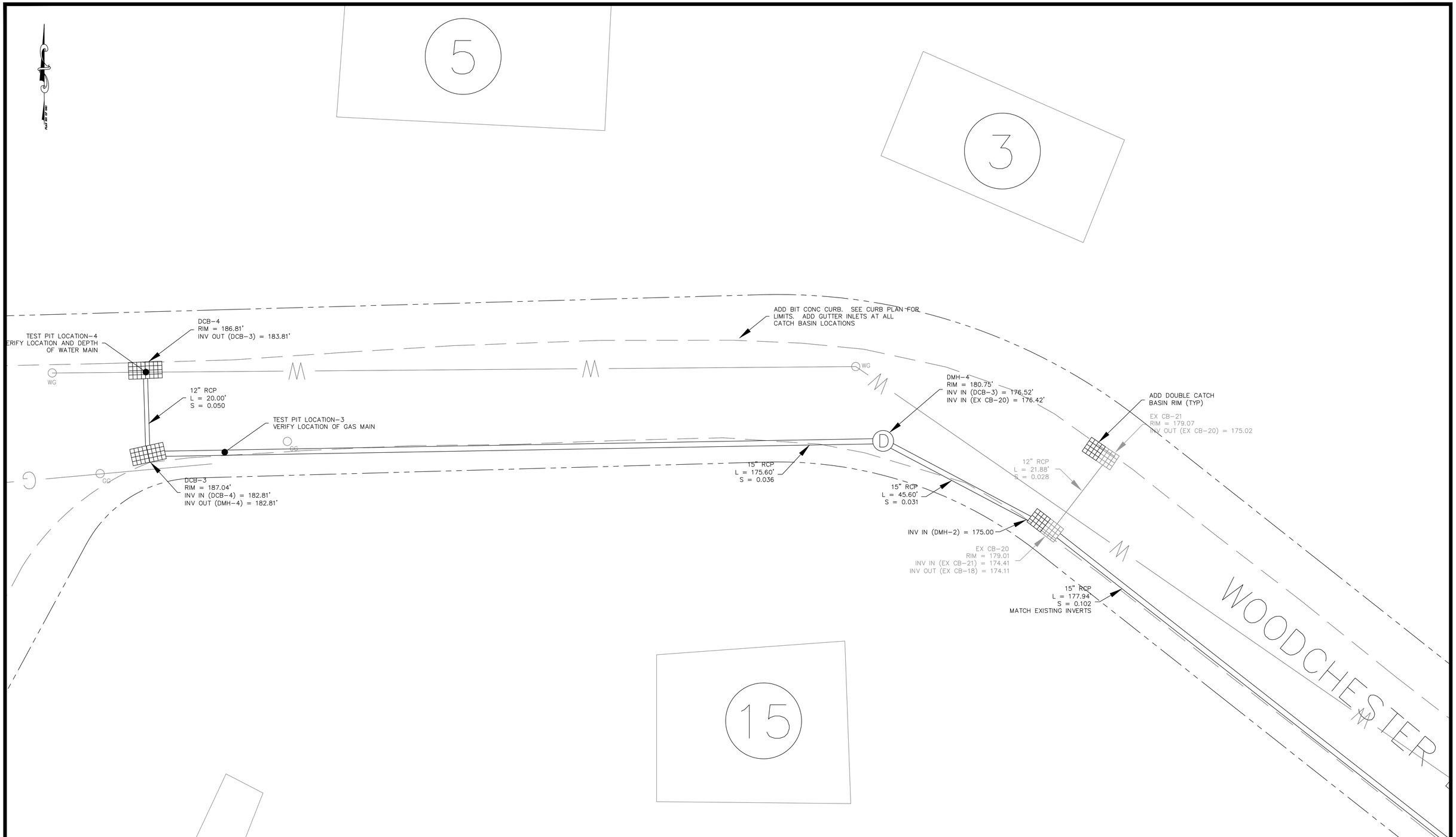
SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED DRAINAGE	
SCALE: 1" = 5'	DRAWING NO: 3	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 - 11:05am



SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED DRAINAGE	
SCALE: 1" = 5'	DRAWING NO: 4	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 - 11:05am



SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED DRAINAGE	
SCALE: 1" = 10'	DRAWING NO: 5	DATE: 12/17/2013

Drawing name: F:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 - 11:05am

15" RCP
L = 177.94'
S = 0.102
MATCH EXISTING INVERTS

CB-19
RIM = 160.49
INV OUT (CB-18) = 156.99

WG

WG

12" RCP
L = 21.86'
S = 0.028

CB-18
RIM = 160.62
INV IN (CB-20) = 156.02
INV IN (CB-19) = 156.37
INV OUT (DMH-4) = 155.97

WG

WG

18" RCP
L = 172.23'
S = 0.040

18" RCP
L = 47.65'
S = 0.044
MATCH EXISTING INVERTS

EX DMH-4
RIM = 159.08
INV IN (EX CB-18) = 153.88
INV IN (EX CB-16) = 153.98
INV OUT (EX DMH-3) = 153.93

EX CB-17
RIM = 160.23
INV OUT (EX CB-16) = 156.08

12" RCP
L = 36.69'
S = 0.043

ADD DOUBLE CATCH
BASIN RIM (TYP)

12" RCP
L = 22.03'
S = 0.012

12" RCP
L = 393.87'
S = 0.047

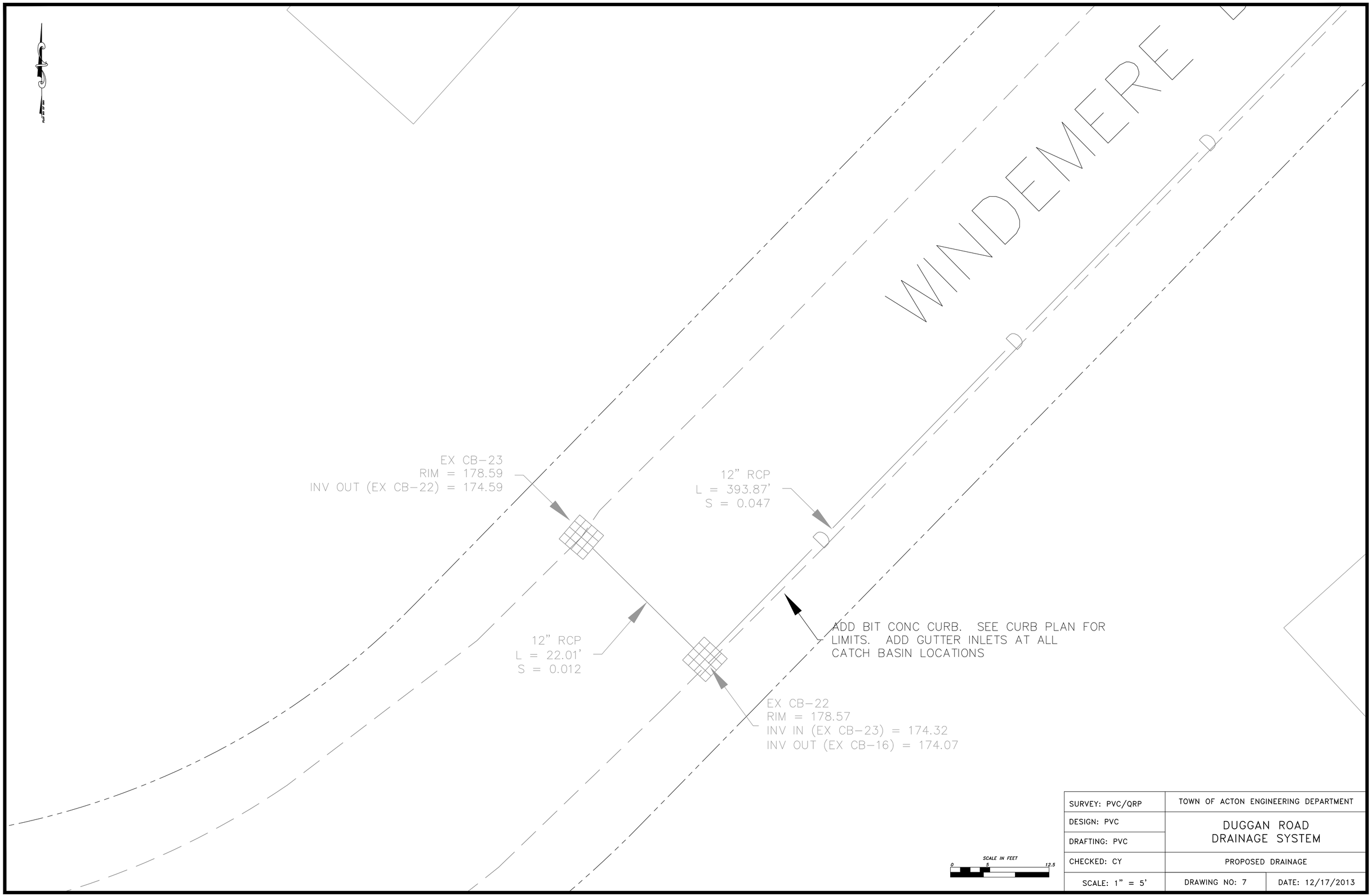
EX CB-16
RIM = 160.27
INV IN (EX CB-17) = 155.82
INV IN (EX CB-22) = 155.57
INV OUT (EX DMH-4) = 155.57

ADD BIT CONC CURB. SEE CURB PLAN FOR
LIMITS. ADD GUTTER INLETS AT ALL
CATCH BASIN LOCATIONS

SCALE IN FEET
0 5 12.5

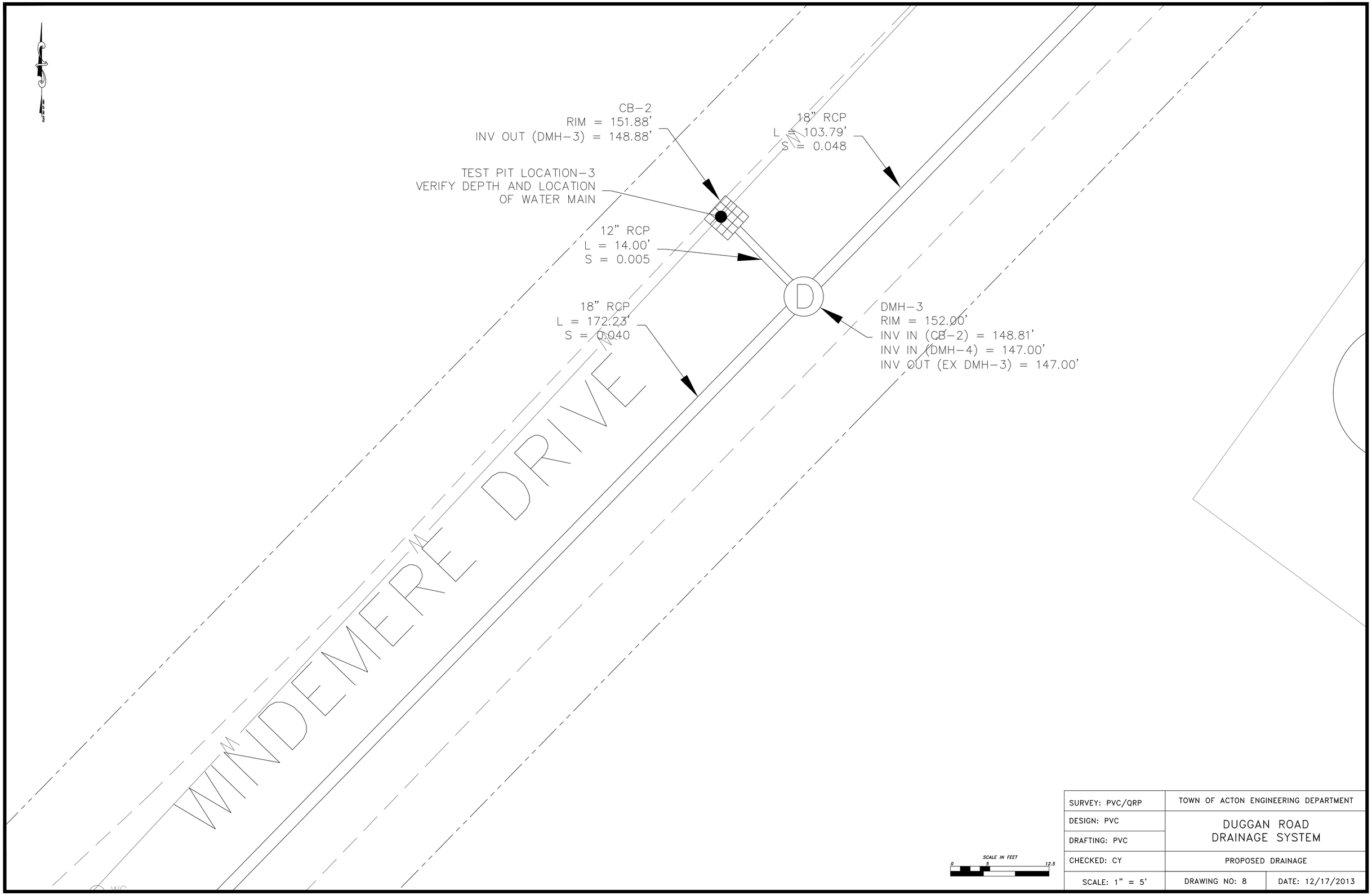
SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED DRAINAGE	
SCALE: 1" = 5'	DRAWING NO: 6	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 - 11:06am



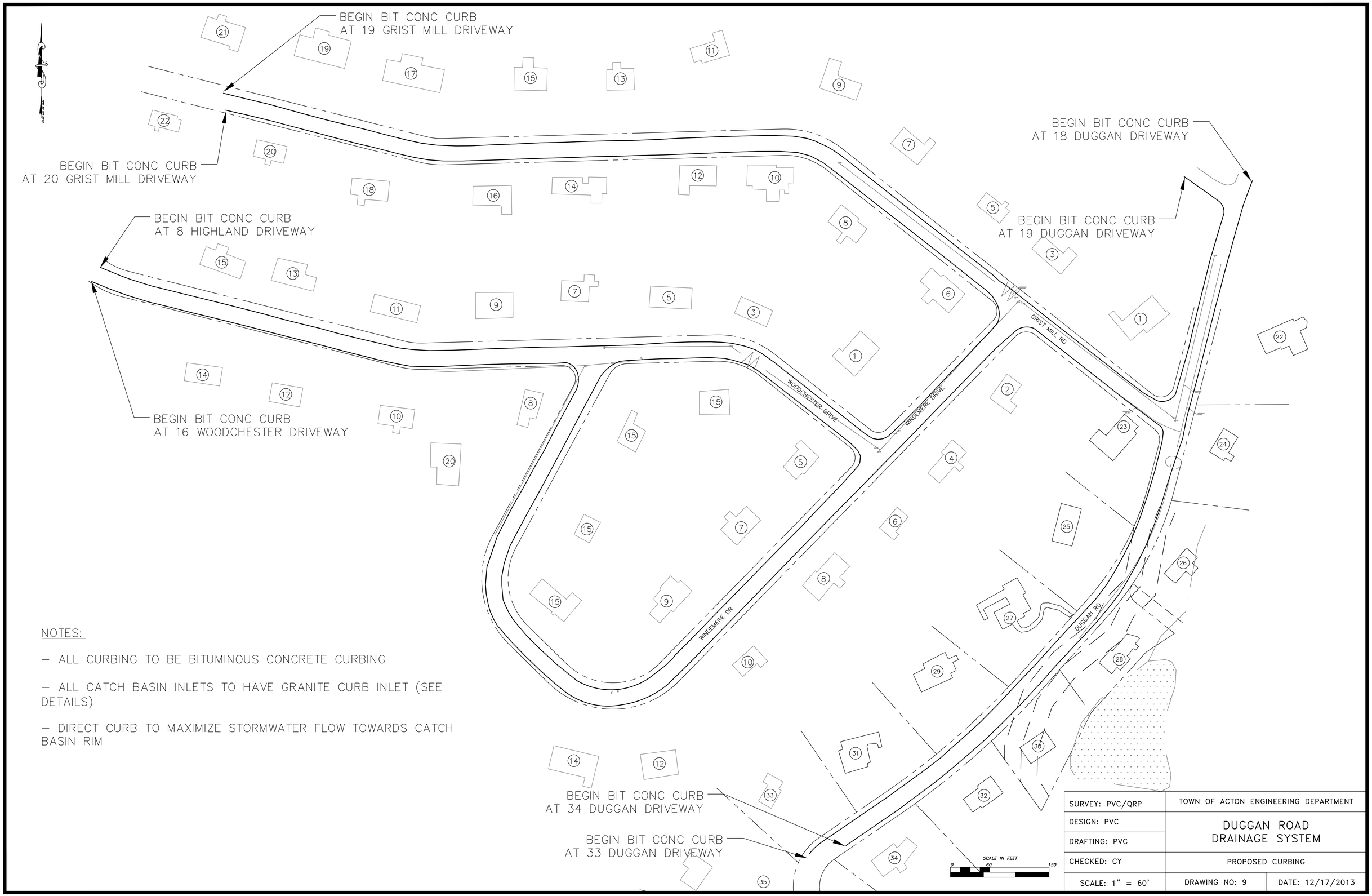
SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED DRAINAGE	
SCALE: 1" = 5'	DRAWING NO: 7	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 - 11:06am



SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED DRAINAGE	
SCALE: 1" = 5'	DRAWING NO: 8	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 - 11:06am



NOTES:

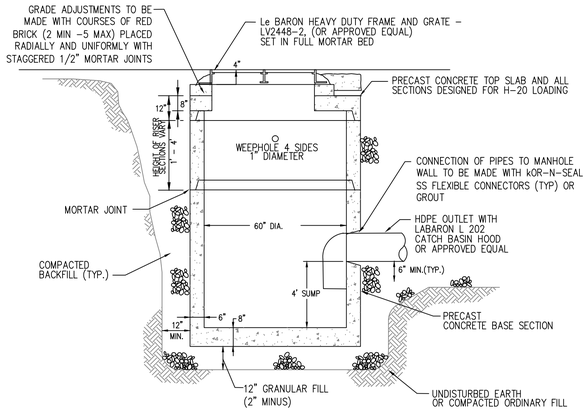
– ALL CURBING TO BE BITUMINOUS CONCRETE CURBING

– ALL CATCH BASIN INLETS TO HAVE GRANITE CURB INLET (SEE DETAILS)

– DIRECT CURB TO MAXIMIZE STORMWATER FLOW TOWARDS CATCH BASIN RIM

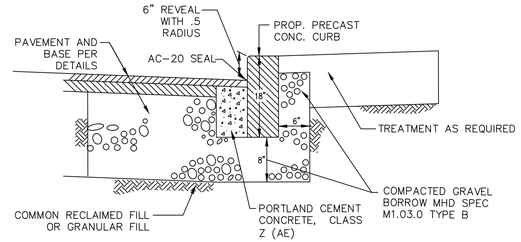
SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	PROPOSED CURBING	
SCALE: 1" = 60'	DRAWING NO: 9	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 – 11:06am



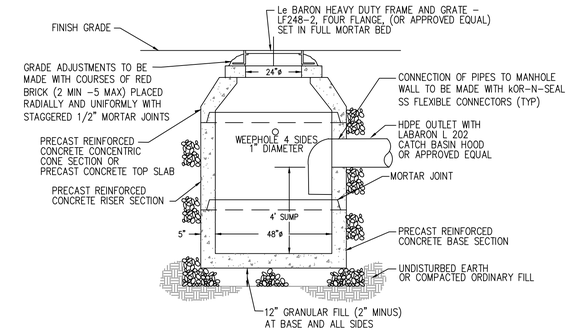
PRECAST CONCRETE 60" DIAMETER DOUBLE CATCH BASIN DETAIL

N.T.S.



PRECAST CEMENT CONCRETE CURB

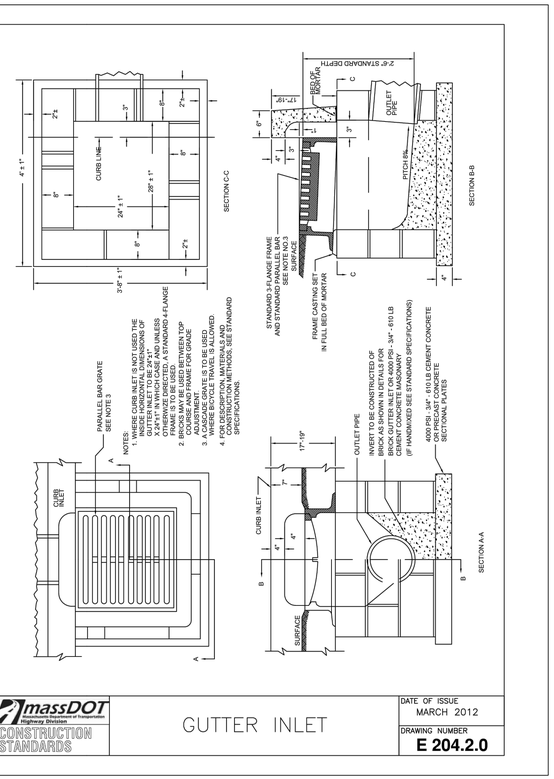
N.T.S.



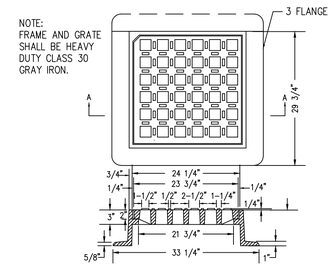
NOTE: ALL PRECAST TO MEET OR EXCEED H–20 LOADING

PRECAST CONCRETE CATCH BASIN DETAIL

N.T.S.



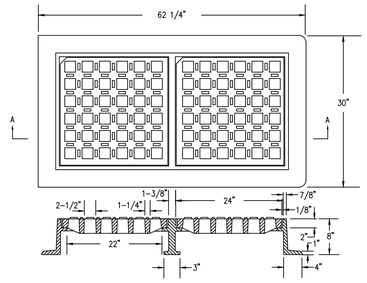
NOTE:
FRAME AND GRATE SHALL BE HEAVY DUTY CLASS 30 GRAY IRON.



SECTION A–A

CATCH BASIN FRAME AND GRATE DETAIL

N.T.S.

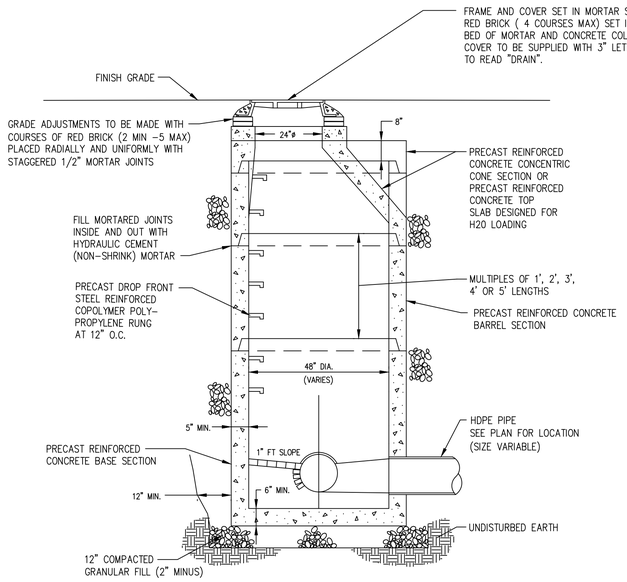


SECTION A–A

NOTE: FRAME AND GRATE SHALL BE HEAVY DUTY CLASS 30 GRAY IRON.

DOUBLE CATCH BASIN FRAME AND GRATE

N.T.S.

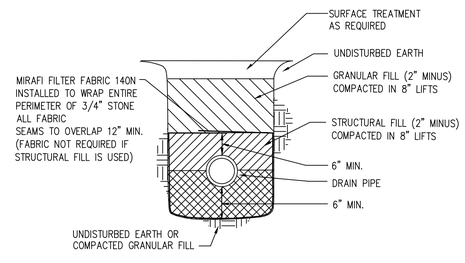


NOTES:

1. MANHOLE SHALL BE PRECAST CEMENT CONCRETE MANUFACTURED IN ACCORDANCE WITH ASTM C–478 (4,000 psi) DESIGNED FOR H–20–44 LOADING. MANHOLES SHALL BE 48" DIA. UNLESS OTHERWISE INDICATED ON GENERAL PLANS.
2. SEE GENERAL PLANS FOR PIPE SIZE, LINE AND GRADE.
3. DIAMETER OF MANHOLE SHALL BE REVIEWED BY THE GENERAL CONTRACTOR TO DETERMINE A LEGEND OF STANDARD MANHOLE DIMENSIONS WITH RESPECT TO PROPOSED PIPE SIZES, NUMBER AND GEOMETRY. OVER SIZE MANHOLES SHALL BE PROVIDED IF MINIMUM 6" WALL DIMENSION BETWEEN PIPES IS NOT MANUFACTURED.

PRECAST CONCRETE DRAIN MANHOLE

N.T.S.



NOTE:
IN CASES WHERE 3/4" STONE IS USED FILTER FABRIC MUST BE INSTALLED AROUND ENTIRE PERIMETER OF STONE MATERIAL.

DRAIN PIPE BEDDING DETAIL

N.T.S.

SURVEY: PVC/QRP	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: PVC	DUGGAN ROAD DRAINAGE SYSTEM	
DRAFTING: PVC		
CHECKED: CY	DETAILS	
SCALE: N.T.S.	DRAWING NO: 10	DATE: 12/17/2013

Drawing name: P:\Drawings\Duggan Road\Duggan Road Drainage\Proposed Conditions.dwg
Mar 04, 2014 – 11:07am

Photographs

Outlet at 28 Duggan Road

Note: Photograph incorrectly states "18-inch outlet". Outlet is 15 inches

اوار
21

10
8
11
12

Photographs

Flooding at 171 & 173 Willow Street