020 (1) 7/6/2015

TOWN OF ACTON
472 Main Street
Acton, Massachusetts 01720
Telephone (978) 929-6611
Fax (978) 929-6340
bos@acton-ma.gov
www.acton-ma.gov

Board of Selectmen

June 11, 2015

ACTON BOARD OF SELECTMEN

NOTICE of PUBLIC HEARING

The Acton Board of Selectmen will hold a public hearing on July 6, 2015 at 7:10 PM at the Acton Town Hall, Room 204 at 472 Main Street, on the application of Haartz Corporation, 87 Hayward Road, Acton for a Site Plan Special Permit #05/29/15-454, for a building (café) addition and parking lot expansion, required under Section 10.4 of the Acton Zoning Bylaw. Plans may be viewed in the Town Hall during normal business hours at 472 Main Street.

Selectmen Berry

TOWN OF ACTON
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Telephone (978) 929-6611
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bos@acton-ma.gov
www.acton-ma.gov

Board of Selectmen

June 11, 2015

To: Community Newspaper Company
P.O. Box 911
Needham, MA 02192
E-MAIL: legals@wickedlocal.com

From: Town Manager's Office
Acton Board of Selectmen
472 Main Street
Acton, MA 01720

Re: Legal Advertisement – SITE PLAN SPECIAL PERMIT #05/29/15 – 454 - Berry

ACTON BOARD OF SELECTMEN

NOTICE of PUBLIC HEARING

The Acton Board of Selectmen will hold a public hearing on July 6, 2015 at 7:10 PM at the Acton Town Hall, Room 204 at 472 Main Street, on the application of Haartz Corporation, 87 Hayward Road, Acton for a Site Plan Special Permit #05/29/15-454, for a building (café) addition and parking lot expansion, required under Section 10.4 of the Acton Zoning Bylaw. Plans may be viewed in the Town Hall during normal business hours at 472 Main Street.

Selectmen Berry

Please advertise this notice on: **June 18, 2015** and **June 28, 2015**

Please bill: MBL Land Development & Permitting, Corp.
Att: Brian M. Dunn
480 Turnpike Street
South Easton, MA 02375

Telephone #: 508-297-2746 (o)
508-297-2756 (f)
508-944-0758 (c)

Email : brian@mbllanddevelopment.com

Water Supply District of Acton

693 MASSACHUSETTS AVENUE
P.O. BOX 953
ACTON, MASSACHUSETTS 01720

TELEPHONE (978) 263-9107 FAX (978) 264-0148

DATE: June 26, 2015

TO: Town of Acton Planning Department

FROM: Chris Allen, District Manager

RE: Comments on 87 Hayward Road site plan Special Permit Application

1. As it is not indicated that there are any proposed modifications to the water supply to 87 Hayward Road/Haartz Corporation, we have NO COMMENT on this application.

Respectfully submitted

Chris Allen
District Manager

DRB Memorandum
87 Hayward Road, Haartz Corporation

Project Location: 87 Hayward Road, two locations on the Haartz Campus
Project Description: Building and Parking Lot Expansion
Architect Plans: R-1, A-1 dated 4-1-1
Engineering Plans: C-1.0 through C-10, dated May28, 2015

Property Owner and Proponent: Not present
Architect: David Saltzman Architects, Inc – Not present
Civil Engineer: MBL Land Development and Permitting Corp. – Not present

Date of DRB Review for this project proposal: 06-17-2015

The DRB, upon review of the submitted documents, notes the following:

In general the DRB supports the proposed addition of the café and parking lot and the efforts to make the building more 'green' with solar panels and on-site run-off containment but question the need for the net gain of 28 parking spaces. The DRB has the following comments on the plans below:

Site Plan:

- It seems that at the low point of the proposed parking a single outlet to the basin is provided; could this potentially clog up and cause standing water/icing during rain events?
- The DRB counted a net gain of 28 spaces, is this due to a net gain of employees as well or what is the reasoning behind this? We are questioning this addition as it will increase the amount of impervious surfacing on the site.
- The minimal planting bed between the parking area and the new café does not provide enough space for plantings that could provide shade for the façade or a separation between the uses. The DRB recommends removing a few additional parking spaces and increasing the size of the planting beds.

Architecture:

- The DRB has no comments about the layout of the new café space.
- The new building has a large glass wall facing due south which will get very hot in the summer months, the DRB suggests shading the building face with either plantings or awnings.
- Will bollards be located between the glass wall of the building and the parking lot? If not, the DRB suggests they be added for safety.

Respectfully Submitted,

Design Review Board

Members in attendance: Holly Ben-Joseph, Peter Darlow, Michael Dube, David Honn, Kim Montella

TOWN OF ACTON
472 Main Street
Acton, Massachusetts, 01720
Telephone (978) 264-9628
Fax (978) 264-9630

Engineering Department

INTERDEPARTMENTAL COMMUNICATION

To: **Planning Department** ***Date:*** June 25, 2015

From: **Engineering Department**

Subject: **Site Plan Special Permit #05/29/15 - 454 – Haartz Corporation – 87 Hayward Road**

We have reviewed the site plan special permit for Haartz Corporation 87 Hayward Road dated May 28, 2015 and have the following comments.

1. In the Drainage Analysis report, the Rainfall data for 100 year storm should be 6.5 inches, not 6 inches that is used in the report.

2. For the 100 year storm analysis, the flow rate is greater in post than pre-development.

3. The applicant has not addressed Section 4.3.6.2 of the Zoning Bylaw regarding Watershed Recharge which states:

   Watershed Recharge – The ***amount of annual precipitation*** *being captured and recharged to the groundwater on site shall not be reduced due to development related surface runoff from the site when compared to pre-development conditions. Where a Special Permit or Subdivision Approval is required the Special Permit Granting Authority or the Planning Board shall require a hydrologic budget or water balance calculation for the site, showing pre- and post-development conditions, prepared by a Massachusetts Registered Professional Engineering experienced in hydrogeology. This Section shall also apply in Zone 4.*

   Water balance calculations should be provided which illustrates the annual volume of recharge in the pre-development and post-development conditions. This volume should not decrease in post-development.

4. There is no information provided in Appendix A – Soil Data.

5. The total area of subcatchment EXDA-7 and PDA-1 did not add up correctly.

6. There is a typo in HydroCAD, grass area for Sub 7S should be 28,751, not 28,571.

7. There is no Earth Removal calculation provided.

8. The TSS removal calculation provided has the removal rate of 53% which is below the required 80% TSS removal rate.

9. The applicant did not address the sidewalk requirements.

10. The elevation should be based on 1929 NGVD, not assumed as noted on the General Construction Requirement Note.

11. The engineer needs to show two temporary benchmarks and the starting benchmark on the plans. The temporary benchmarks should be located on fixed objects that will not be disturbed during construction.

12. An as-built plan certified by a Massachusetts Licensed Surveyor showing the buildings, pavement, drainage, utilities, etc. should be required at the conclusion of construction. A Professional Engineer should also stamp the as-built plan to certify that the site has been completed in accordance with the approved site plan and that all features required on the site by the approved plans, decisions, etc... have been field inspected by the PE and conform with the approved design. Any non-conforming features shall be clearly noted.

13. The engineer should add a note restricting the hauling of earth to and from the site between the hours of 9AM and 4PM on weekdays on the plans.

TOWN OF ACTON
Health Department
472 Main Street
Acton, Massachusetts, 01720
Telephone (978) 929-6632
Fax (978) 929-6340

June 29, 2015

To: Planning Department
From: Health Department
Re: Site Plan Special Permit #SPSP 05/29/15-454 for 87 Hayward Road

1. Any septic system being paved over must be approved for H-20 loading and vented.
2. HAARTZ will need to inquire with Sheryl Ball at the Acton Health Department about putting in a cafeteria. A food service permit may be required.
3. Approved new septic system must be able to accommodate any additional flow from cafeteria uses.

Lisa Tomyl

From: Kim Gorman
Sent: Tuesday, June 02, 2015 2:47 PM
To: Building Department; Planning Department; Engineering Department; Patrick Futterer; Robert Hart; Health Department; Natural Resources Department
Cc: Lisa Tomyl
Subject: 87 Hayward Road - Site Plan Special Permit Application - Comments

Importance: High

Good afternoon,

I am in receipt of an application for a Site Plan Special Permit #SPSP 05/29/15-454 for 87 Hayward Road.

The location of the documents are within the O drive - O:\Planning\Special Permits\Site Plan Special Permit

The applicant is proposing a building (café) addition and parking lot expansion to 87 Hayward Road. The site is also known as Haartz Corporation.

The applicant proposes to construct a 3,880 square foot addition on the existing building near the main office of the main building. Also to construct a parking lot over an existing and proposed septic system behind the main building with surface drainage system, utilities and associated grading. There is an existing wetland area to the East, South Westerly and South Easterly side of the side. The Flood zone is shown on the current FEMA map with no designated elevation. The site does lie within flood zone X according to FEMA Map from July 2014.

Please email your questions or comments if any to the Planning Department – planning@acton-ma.gov no later than June 26, 2015.

Thank you!

Sincerely,

Kim Gorman
Secretary
Acton Planning Department
472 Main Street
Acton, MA 01720
kgorman@acton-ma.gov
978-929-6631

DRB Memorandum
87 Hayward Road, Haartz Corporation

Project Location: 87 Hayward Road, two locations on the Haartz Campus
Project Description: Building and Parking Lot Expansion
Architect Plans: R-1, A-1 dated 4-1-1
Engineering Plans: C-1.0 through C-10, dated May28, 2015

Property Owner and Proponent: Not present
Architect: David Saltzman Architects, Inc – Not present
Civil Engineer: MBL Land Development and Permitting Corp. – Not present

Date of DRB Review for this project proposal: 06-17-2015

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Respectfully Submitted,

Design Review Board

Members in attendance: Holly Ben-Joseph, Peter Darlow, Michael Dube, David Honn, Kim Montella

MBL Land Development & Permitting, Corp.
Land Development, Transportation & Environmental Solutions
480 Turnpike Street
South Easton, MA 02375

P.508.297.2746
F.508.297.2756
Email. info@MBLLandDevelopment.com
Web:www.MBLLandDevelopment.com

TRANSMITTAL

TO:
Town of Acton
Board of Selectmen
472 Main Street
Acton, MA 01720

PROJECT NAME: HAARTZ Corporation
PROJECT NUMBER: 2014-028

DATE: May 29, 2015

RE: Special Permit Submission

WE ARE SENDING:

- ☐ Quotation
- ☐ Brochure
- ☐ Change Order
- ☒ Drawings
- ☐ Schedule
- ☐ Manuals
- ☐ Bid Package
- ☐ Installation Package
- ☒ Other
- ☐ Floppy Disk / CD
- ☐ Sample

Qty	Doc. No.	Rev. No.	Dated	Description
2	Set		5/28/15	24x36 Building & Parking Lot Expansion (Special Permit) Set
11	Set		5/28/15	11x17 Building & Parking Lot Expansion (Special Permit) Set
2	A1&R1	4/1/15		24x36 Architectural Plan, Elevations & Rendering
11	A1&R1	4/1/15		11x17 Architectural Plan, Elevations & Rendering
2	Appendix B		5/20/15	Application
2			5/29/15	Drainage report
2			9/16/14	Abutters List
2			As Noted	Copies of Recorded Deeds and Plans
1				Check in the amount of $2,500

For Your:

- ☐ USE
- ☒ APPROVAL
- ☒ REVIEW/COMMENTS
- ☐ INFORMATION
- ☐ OTHER

Sent By:

- ☐ REGULAR MAIL
- ☐ FEDERAL EXPRESS
- ☐ UPS
- ☐ COURIER
- ☐ OTHER Hand Delivered

RECEIVED
MAY 29 2015
Town of Acton
Planning Department

153810
$2500
KG

Brian M. Dunn
President/Project Director

Received by: Kim L. Grinan
Planning Dept Sec.
Date: 5/29/15

Appendix B

TOWN OF ACTON
APPLICATION FOR SITE PLAN SPECIAL PERMIT

For Proposed Building (Cafe) Addition + Parking Lot Expansion
Under Zoning Bylaw Section 10.4 Special Permit

Refer to the "Rules and Regulations for Site Plan Special Permits" available from the Building Department or the Planning Department for details on the information and fees required for this application. Contact the Planning Department at 978-929-6631 or Building Department at 978-929-6633 with any questions concerning the Rules. Incomplete applications may be denied.

Please type or print your application.

1. Location and Street Address of Site Haartz Corporation 87 Hayward Rd. Acton, Mass. 01720

2. Applicant's Name Douglas E. Sieber
   Address 87 Hayward Rd. Acton, MA 01720
   Telephone 978-264-2600 Email dsieber@haartz.com

3. Record Owner's Name _____
   Address _____
   Telephone _____ Email _____

4. Town Atlas Map(s)/Parcel Number(s) 67 HAYWARD RD (F3-1)
   75 HAYWARD RD (E3-101)

5. Zoning District (s) of Parcel(s) GI - GENERAL INDUSTRIAL
   GROUNDWATER PROTECTION ZONE A

If any site plans have been filed previously for this site give file numbers: _____

The undersigned hereby apply to the Board of Selectmen for a public hearing and a site plan special permit under Section 10.4 of the Zoning Bylaw approving the attached site plan.

The undersigned hereby certify that the information on this application and plans submitted herewith is correct, and that all applicable provisions of Statutes, Regulations, and Bylaws will be complied with. The above is subscribed to and executed by the undersigned under the penalties of perjury in accordance with Section 1-A of Chapter 268, General Laws of the Commonwealth of Massachusetts.

May 20, 2015 _____ _____
Date Signature of Petitioner(s) Signature of Petitioner(s)

RECORD OWNER'S KNOWLEDGE AND CONSENT

I hereby assert that I have knowledge of and give my consent to the application presented above.

May 20, 2015 _____ _____
Date Signature of Record Owner(s) Signature of Record Owner(s)

Town of Acton
472 Main Street
Acton, MA 0001720
Telephone (978) 929-6621
Fax (978) 929-6340

Brian McMullen
Assessor

Locus: 67 & 75 Hayward Road
Parcel: F3-1 & E3-101

Parcel ID	LOCATION	Owner	Co-Owner	Mailing Address	City ST Zip
E2-238	80 CHARTER RD	FULBROOK-HANNA GERALDINE F		80 CHARTER RD	ACTON, MA 01720
E2-238-1	78 CHARTER RD	JEANSON DEBRA GRACE	M & D REALTY COMPANY	12 KENNEDY LANE	ACTON, MA 01720
E2-256	68 CHARTER RD	SMITH IRA D	BARBARA K	68 CHARTER RD	ACTON, MA 01720
E2-257	74 CHARTER RD	KOEHLER HOLGER	KOEHLER KRISTEN E	74 CHARTER RD	ACTON, MA 01720
E2-268	69 CHARTER RD	PURCELL ELIZABETH A		69 CHARTER RD	ACTON, MA 01720
E2-274	68 CHARTER RD	SMITH IRA D	BARBARA K	68 CHARTER RD	ACTON, MA 01720
E2-275	65 CHARTER RD	THOMAS WILLIAM R		65 CHARTER RD	ACTON, MA 01720
E2-280	60 CHARTER RD BEHIND	RICHARDS GORDON D		60 CHARTER ROAD	ACTON, MA 01720
E2-280-1	60 CHARTER RD REAR	RICHARDS GORDON D		60 CHARTER ROAD	ACTON, MA 01720
E2-280-2	64 CHARTER RD	TEEBAGY JR THOMAS C	TEEBAGY AURELIE P	64 CHARTER RD	ACTON, MA 01720
E2-288	60 CHARTER RD	RICHARDS GORDON D		60 CHARTER ROAD	ACTON, MA 01720
E2-288-1	64 CHARTER RD	GILMAN BLAKE D III		64 CHARTER RD	ACTON, MA 01720
E3-100	73 CHARTER RD	VANSIPE TIMOTHY	VANSIPE JACQUELINE	73 CHARTER RD	ACTON, MA 01720
E3-108	63 CHARTER RD	GOODRIDGE, JR. LESTER E	CONLEY REGINA E	63 CHARTER RD	ACTON, MA 01720
E3-109	65 CHARTER RD BEHIND	THOMAS WILLIAM R		65 CHARTER RD	ACTON, MA 01720
E3-84	85 CHARTER RD	CHARTER DEAN A	CHARTER MARCIA A	81 CHARTER ROAD	ACTON, MA 01720
E3-85	83 CHARTER RD	HAARTZ CORPORATION THE		83 CHARTER RD	ACTON, MA 01720
E3-89	86 CHARTER RD	COUGHLIN SEAN T	COUGHLIN MARYANNE C	86 CHARTER RD	ACTON, MA 01720
E3-89-1	84 CHARTER RD	DALAKLIS MARK G	DALAKLIS HEIDI	84 CHARTER RD	ACTON, MA 01720
E3-90	81 CHARTER RD	CHARTER DEAN A	CHARTER MARCIA A	81 CHARTER RD	ACTON, MA 01720
E3-91	75 CHARTER RD	HILL III LEO J	HILL N RENEE MUNTOE	75 CHARTER RD	ACTON, MA 01720
E3-92	79 CHARTER RD	CATALANO GREGORY D	CATALANO ROBIN DAVIDSON	79 CHARTER RD	ACTON, MA 01720
F2-152	101 HAYWARD RD BESIDE	CASALENA DOMMINICK E	CASALENA KIM	101 HAYWARD RD	ACTON, MA 01720
F2-153	56 CHARTER RD	LANOIX ANDREW J	LANOIX MAUREEN C	56 CHARTER RD	ACTON, MA 01720
F2-20	101 HAYWARD RD	CASALENA DOMMINICK E	CASALENA KIM	101 HAYWARD RD	ACTON, MA 01720
F2-21	97 HAYWARD RD	KONG KHUAN HOE	FUNG MICHAEL	97 HAYWARD RD	ACTON, MA 01720
F2-27	100 HAYWARD RD	WILLIAMS LARRY L	HESS DEBORAH	100 HAYWARD ROAD	ACTON, MA 01720
F2-50	94 HAYWARD RD REAR	ACTON-BOXBORO REG SCHOOL DIST		472 MAIN STREET	ACTON, MA 01720
F3-1	67 HAYWARD RD	HAARTZ AUTO FABRIC CO		87 HAYWARD ROAD	ACTON, MA 01720
F3-2	90 HAYWARD RD	RIC 23 LTD	C/O KNOWLEDGE LEARNING CORP	PO BOX 6760	PORTLAND, OR 97228
F3-27	23 CHARTER RD	ACTON-BOXBORO REG SCHOOL DIST		472 MAIN STREET	ACTON, MA 01720
F3-6	88 HAYWARD RD	TOWN OF ACTON		472 MAIN STREET	ACTON, MA 01720
F3-7	86 HAYWARD RD	HAARTZ AUTO FABRIC CO		87 HAYWARD ROAD	ACTON, MA 01720

Brian McMullen
Assessor

Locus: 67 & 75 Hayward Road
Parcel: F3-1 & E3-101

Parcel ID	LOCATION	Owner	Co-Owner	Mailing Address	City ST Zip
F3-8	82 HAYWARD RD	82 HAYWARD RD LLC	C/O DONALD ROBERTSON	82 HAYWARD RD	ACTON, MA 01720

Abutters and owners of land directly opposite on any public or private street or way and abutters to the abutters within three hundred feet of the property line all as they appear on the most recent applicable tax list.

HEARING NOTICES FOR ALL SPECIAL PERMITS MUST BE SENT TO THE PLANNING BOARD, TOWN HALL IN THE FOLLOWING TOWNS:

Boxborough, MA 01729	Maynard, MA 01754	Concord, MA 01742	Littleton, MA 01460
Carlisle, MA 01741	Stow, MA 01775	Westford, MA 01886	Sudbury, MA 01776

Kelly Schorr
Acton Assessors Office

5/20/2015

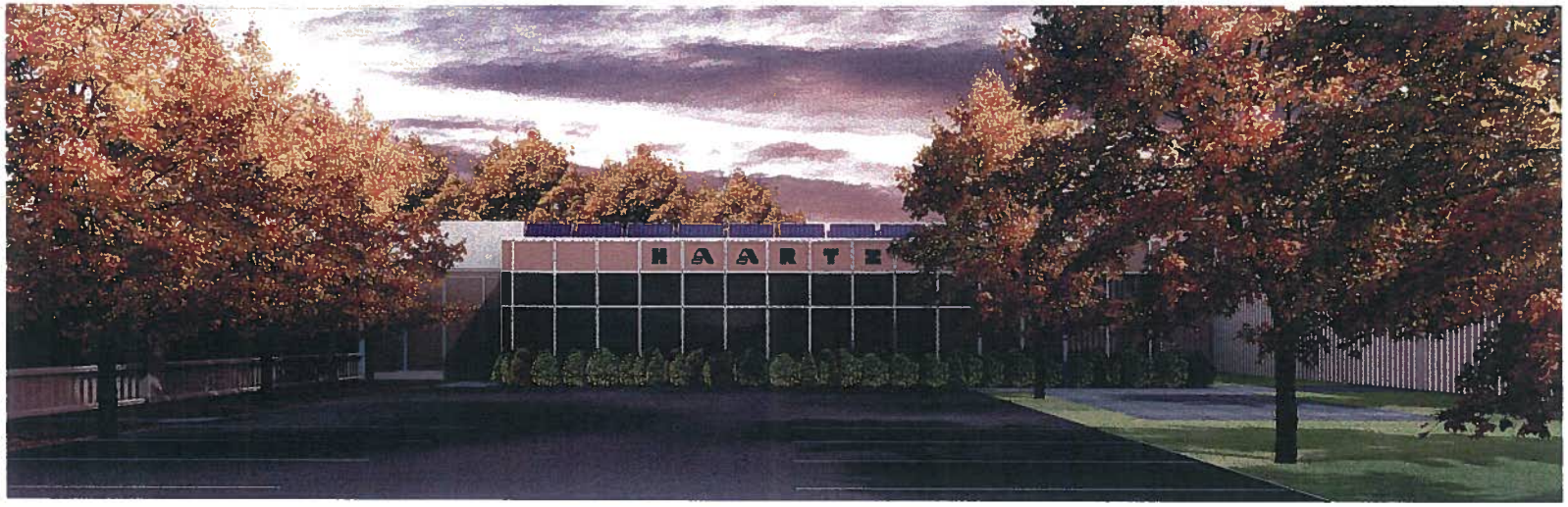
(10.3) feet and eighty-seven (87) feet more or less to the point of beginning; containing 25,080 square feet of land, and be any or all of said measurements more or less and however otherwise said premises may be bounded, measured or described.

The grantors grant to the grantee as appurtenant to said parcel No. 25, and any future subdivisions thereof, a right-of-way in common with others entitled thereto to pass and repass over said twenty foot right-of-way to Bridge Street; also the right to lay and maintain pipes and conduits for water, gas, electricity and for steam and sewerage purposes within the limits of said twenty foot right-of-way and to use the same for all purposes for which streets are commonly used; and so much of parcel No. 25 as is shown within the boundary lines of said twenty foot right-of-way is hereby conveyed subject to the same rights, which rights are appurtenant to parcel No. 26 shown on said plan and to any future subdivisions of said parcel. For title see deed from Lambert O. Nichols to Lambert O. Nichols et al, Co-partners, dated January 1, 1944, recorded with Middlesex South District Registry of Deeds in Book 6738, Page 16.

SECOND PARCEL

A certain parcel of land situated on California Street in said Newton, being Lot 26 in Block C as shown on a plan of Charlesbank Parkway, Newton, Mass., W. A. Mason & Son, Surveyors, dated October 21, 1913 and recorded with Middlesex South District Deeds as filed Plan No. 527, and bounded and described as follows:

Beginning at a point on the Northwesterly side of California Street at the corner of land now or formerly of the Aetna Mills, thence running Northeasterly about ninety-five (95) feet; thence turning and running Northwesterly by said land now or formerly of the Aetna Mills, eight and 40/100 (8.40) feet; thence turning and running Northwesterly again along said land now or formerly of the Aetna Mills, seventy-three (73) feet; thence turning and running Southwesterly by land now or formerly of the Metropolitan Park Reservation, sixty-four and 42/100 (64.42) feet; thence turning and running Southerly by land now or formerly of the Metropolitan Park Reservation, seventy-nine and 86/100 (79.86) feet to California Street; thence turning and running Easterly along said California Street, fifty-five (55) feet to the point of beginning. Containing 9125 square feet according to said plan, and being the same premises conveyed to us by deed of Lambert O. Nichols dated January 1, 1944, duly recorded with said Deeds in Book 6738, Page 15.



RENDERING

NTS

Job:
HAARTZ
ADDITION
87 HAYNWARD RD
ACTON, MA

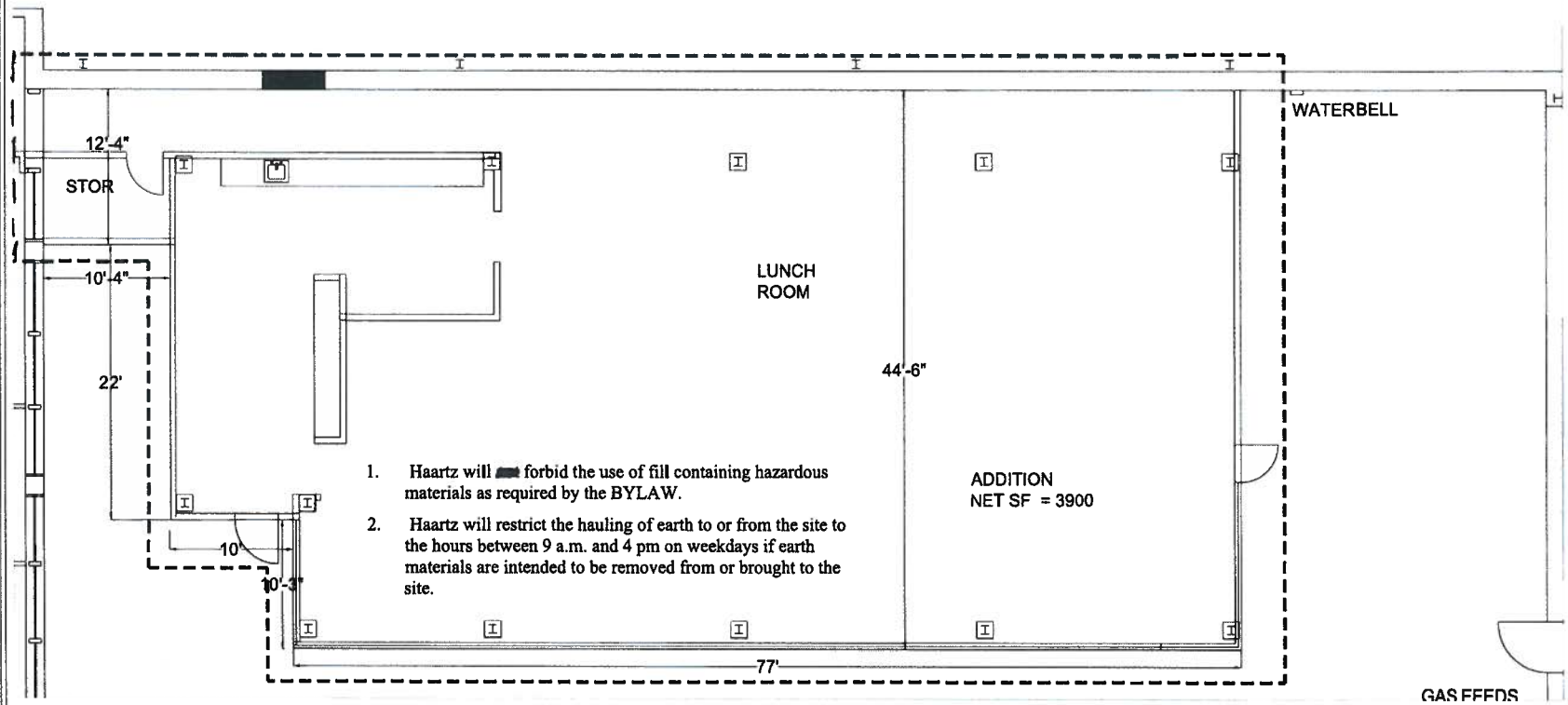
Architect:
DAVID SALTZMAN
ARCHITECTS- INC.
31 SEDGEMEADOW RD
WAYLAND, MA 01778
508-358-4111

RENDERING

AS NOTED

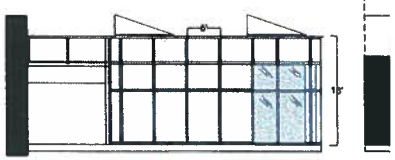
4-1-15 R

R1

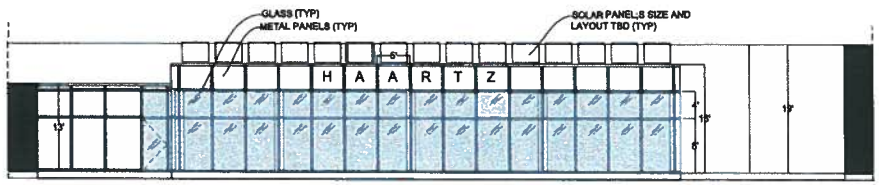


1. Haartz will [redacted] forbid the use of fill containing hazardous materials as required by the BYLAW.
2. Haartz will restrict the hauling of earth to or from the site to the hours between 9 a.m. and 4 pm on weekdays if earth materials are intended to be removed from or brought to the site.

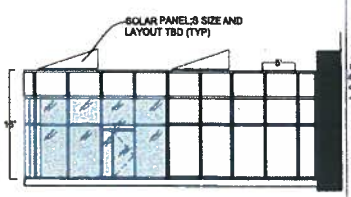
PROPOSED PLAN
1/4"=1'-0"



ELEVATION West
1/8"=1'-0"



ELEVATION South
1/8"=1'-0"



ELEVATION East
1/8"=1'-0"

Job:
HAARTZ
ADDITION
87 HAYWARD RD
ACTON, MA

Architect:
DAVID SALTZMAN
ARCHITECTS- INC.
31 SEDGEMEADOW RD
WAYLAND, MA 01778
508-358-4111

PROPOSED PLAN AND ELEVATIONS

AS NOTED

4-1-16 R2

A1

PROPOSED SITE DEVELOPMENT PLANS

FOR

BUILDING AND PARKING LOT EXPANSION

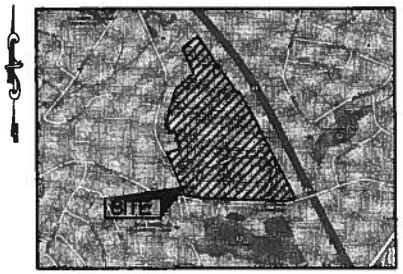
SPECIAL PERMIT

ACTON, MASSACHUSETTS
MAP F3, PARCEL 1

MAY 28, 2015

SHEET INDEX: SITE CIVIL

SHEET NO.	SHEET TITLE
C-1.0	COVER SHEET
C-2.0	LEGEND AND GENERAL NOTES
C-3.0	EXISTING CONDITIONS PLAN
C-4.0	LAYOUT AND MATERIALS PLAN
C-4.1	LAYOUT AND MATERIALS PLAN
C-5.0	GRADING, DRAINAGE, UTILITY & EROSION CONTROL PLAN
C-5.1	GRADING, DRAINAGE, UTILITY & EROSION CONTROL PLAN
C-6.0	LANDSCAPE PLAN
C-6.1	LANDSCAPE PLAN
C-7.0	SITE LIGHTING PLAN
C-7.1	SITE LIGHTING DETAILS
C-8.0	DETAILS
C-9.0	DETAILS



LOCATION MAP

SCALE: N.T.S.

PROJECT CONTACTS:

CIVIL ENGINEER/LAND SURVEYOR

MBL LAND DEVELOPMENT & PERMITTING, CORP.
480 TURNPIKE STREET
SOUTH EASTON, MA 02375
P.508.297.2746
F.508.297.2756
BRIAN M. DUNN PRIMARY CONTACT
brian@MBLLandDevelopment.com
website:info@MBLLandDevelopment.com

PLANS PREPARED FOR:

APPLICANT

HAARTZ CORPORATION
87 HAYWARD ROAD

ACTON MASSACHUSETTS

PLANS PREPARED BY:

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LEGEND

SYMBOL	PROP	SYMBOL	PROP	SYMBOL	PROP
	PROPERTY LINE		DRAINAGE LINE		LOW POINT
	PROJECT LIMIT LINE		OVERFLOW DRAIN		HIGH POINT
	RIGHT-OF-WAY/PROPERTY LINE		ROOF DRAIN		GRADE BREAK
	EASEMENT		SEWER LINE		TOP & BOTTOM ELEVATION
	BUILDING SETBACK		OVERHEAD ELECTRIC, TELEPHONE & FIRE ALARM		SPOT ELEVATION w/LEADER
	STATE HIGHWAY BASELINE		WATER LINE		SPOT ELEVATION
	BASELINE		FIRE PROTECTION LINE		BORING LOCATION
	CONSTRUCTION LAYOUT		GAS LINE		TEST PIT LOCATION
	ZONING LINE		UNDERGROUND ELECTRIC		TEST WELL
	TOWN LINE		TELEPHONE LINE		BENCH MARK
	STATE LINE		FIRE ALARM		SWAMP
			FIRE & POLICE CABLE		50' WETLAND SETBACK
			CABLE TV		100' WETLAND SETBACK
					200' WETLAND SETBACK
					100' WETLAND BUFFER
					WETLAND
					WETLAND FLAG
					100 YEAR FLOOD PLAIN
					MITIGATION AREA LINE
					EDGE OF WATER

SYMBOL	PROP
	GRAND. ROAD
	EDGE OF PAVEMENT
	BITUMINOUS CURB
	CAPE COD BERM
	PRECAST CONC. CURB
	VERT. GRAN. CURB
	SLOPED GRAN. CURB
	LIMIT OF CURB TYPE
	SAWCUT
	MATCHLINE
	SOLID WHITE LINE
	SOLID YELLOW LINE
	BROKEN WHITE LINE
	BROKEN YELLOW LINE
	SOLID WHITE CHANNELIZING LINE
	SOLID YELLOW CHANNELIZING LINE
	DOUBLE YELLOW LINE
	STOP LINE
	STEEL GUARD RAIL
	WOOD GUARD RAIL
	STOCKADE FENCE
	PATH
	TREE LINE
	CHAIN LINK FENCE
	STONE WALL
	RETAINING WALL
	HAY BALES
	MINOR CONTOUR
	MAJOR CONTOUR
	TOP of SLOPE
	BOTTOM of SLOPE
	BUILDING
	BUILDING ENTRANCE
	LOADING DOCK
	OVERHEAD DOOR
	BOLLARD
	DUMPSTER PAD
	SIGN
	DOUBLE SIGN
	PARKING METER
	PARKING COUNT
	COMPACT PARKING STALLS
	CROSSWALK
	CROSSWALK
	CONC. PAVEMENT
	STANDARD DUTY FLEXIBLE PAVEMENT
	HEAVY DUTY FLEXIBLE PAVEMENT
	HANDICAP RAMP
	HANDICAP PARKING
	NON-ACCESSIBLE HANDICAP PARKING
	CART CORRAL
Detail no. / Sheet no.	CIVIL DETAIL (SEE CIVIL DRAWINGS)

SYMBOL	PROP
	CATCH BASIN
	DOUBLE CATCH BASIN
	GRATE INLET
	DRAIN MANHOLE
	TRENCH DRAIN
	FLUSH/GRATE
	FLARED END SECTION
	HEADWALL
	GREASE TRAP
	CONTROL STRUCTURE
	SEWER MANHOLE
	WATER MANHOLE
	WATER GATE
	TAPPING SLEEVE, VALVE, & BOX SEWER
	PRESSURE REDUCER
	SIAMESE CONNECTION
	FIRE HYDRANT
	WATER METER
	POST INDICATOR VALVE
	WELL
	SPRINKLER HEAD
	GAS GATE
	GAS METER
	ELECTRIC MANHOLE
	ELECTRIC BOX
	ELECTRIC METER
	LIGHT POLE
	FLOOD LIGHT
	LIGHT POLE (SINGLE)
	SINGLE LUMINAIRE
	DOUBLE LUMINAIRE
	TRIPLE LUMINAIRE
	QUAD LUMINAIRE
	WALL PACK
	TELEPHONE MANHOLE
	TRAFFIC SIGNAL
	SIGNAL BOX
	FIRE ALARM CONTROL PANEL
	FIRE ALARM BOX
	TRANSFORMER PAD
	MANHOLE
	UTILITY POLE/GUY WIRE
	HAND HOLE
	PULL BOX
	SILT FENCE/HAYBALE
	EROSION BERM/SHRUB AND HAY BALE DECK DAM
	POINT OF INTERSECTION
	FLARED END SECTION (FES) WITH STONE PROTECTION
	FORMICER DRAIN
	PAVED WATERWAY (PWW) WITH STONE PROTECTION
	AVE MAT IN SWALE
	TREES
	SHRUB

ABBREVIATIONS

PROP	GENERAL	PROP	GENERAL
PROP	PROPOSED	PWW	PAVED WATER WAY
MIN	MINIMUM	UP	UTILITY POLE
MAX	MAXIMUM	TW&B	TAPPING SLEEVE, VALVE AND BOX
RET	RETAIN	COND	CONDUIT
REM	REMOVE	SDCPP	SMOOTH WALLED CORRUGATED POLYETHYLENE PIPE
RE/RD	REMOVED	DS	DOWN SPOUT
ABAN	ABANDON	CS	CURB STOP FOR WATER LINE
ADJ	ADJUST	PD	PERFORATED DRAIN
EXIST	EXISTING	ID	INTERCEPTOR DRAIN
R&R	REMOVE AND RESET	PDRA	PREVIOUSLY DISTURBED INVER FRIGHT AREA
R&S	REMOVE AND STACK	SD	STORM DRAIN
FDN	FOUNDATION	W	WATER
ELEV	ELEVATION	S	SEWER
BOS	BOTTOM OF SLOPE	E	ELECTRIC
TOS	TOP OF SLOPE	T	TELEPHONE
SGCE	SLOPED GRANITE EDGING	G	GAS
VGC	VERTICAL GRANITE CURB	R&R	REMOVE & RESET
GC	GRANITE CURB		
GE	GRANITE EDGING		
PCC	CONCRETE CURB		
BB	BITUMINOUS BERM		
BC	BITUMINOUS CURB		
CCB	CAPE COD BERM		
MCC	MONOLITHIC CONCRETE CURB		
NIC	NOT IN CONTRACT		
NTS	NOT TO SCALE		
TYP	TYPICAL		
APPROX	APPROXIMATE		
EOL	EDGE		
LA	LANDSCAPE AREA		
UON	UNLESS OTHERWISE NOTED		
VIF	VERIFY IN FIELD		
TC	TOP OF CURB		
BC	BOTTOM OF CURB		
HP	HIGH POINT		
LP	LOW POINT		
GB	GRADE BREAK		
TOS	TOP OF WALL		
BOW	BOTTOM OF WALL		
	UTILITY		
CIT	CHANGE IN TYPE		
F&G	FRAME AND GRATE		
F&C	FRAME AND COVER		
RCP	REINFORCED CONCRETE PIPE		
VCP	VITRIFIED CLAY PIPE		
PVC	POLYVINYL CHLORIDE PIPE		
CMP	CORRUGATED METAL PIPE		
ACCMP	ASPHALT COATED CORRUGATED METAL PIPE		
CIP	CAST IRON PIPE		
DIP	DUCTILE IRON PIPE		
HYD	HYDRANT		
CAP	CORRUGATED ALUMINUM PIPE		
INV	INVERT ELEVATION		

GENERAL NOTES

1. EXISTING CONDITIONS INFORMATION

A. BASE PLANS:
EXISTING TOPOGRAPHICAL INFORMATION (INCLUDING EXISTING FEATURES) WAS BASED ON AN ON THE GROUND FIELD SURVEY IN JUNE OF 2014 PERFORMED BY MBL LAND DEVELOPMENT & PERMITTING CORP.

B. FLOOD ZONE:
THE SUBJECT SITE LIES WITHIN A FEMA FLOOD ZONE X, AN AREA DETERMINED TO BE AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE OF FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOTER WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD. AS DEPICTED BY THE FLOOD INSURANCE RATE MAPS FOR THE TOWN OF ACTON MASSACHUSETTS, COMMUNITY PANEL NO. 25017C0307 J DEC OF MBR, DATED JULY 7, 2014.

C. UTILITIES:
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND MAYE NOT YET BEEN RESPONSIBLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR IS TO CONTACT THE SAFE AT 811, SEVENTY-TWO (72) HOURS PRIOR TO ANY EXCAVATION PERFORMED ON SITE.

2. MATERIALS

A. CURBING:
ALL CURBING SURROUNDING THE BUILDING SHALL BE AS NOTED ON PLANS. ALL CURBING WITHIN THE TOWN RIGHT-OF-WAY SHALL MATCH EXISTING CURB MATERIAL.

B. PARKING AREAS AND ACCESS DRIVE:
BITUMINOUS PAVEMENT SHALL MEET THE REQUIREMENTS OF SECTION 400 OF THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION, REVISIONS AND ALL CURRENT ADDENDA.
MINIMUM:
SURFACE COURSE: 1.5 INCHES BITUMINOUS CONCRETE
BINDER COURSE: 1.5 INCHES BITUMINOUS BINDER
BASE COURSE: 13.0 INCHES COMPACTED GRAVEL: 6" OF GRADED GRAVEL AND 6" OF 3/4" PROCESSED GRAVEL

C. LANDSCAPE AREAS:
ALL SURFACED AREAS OR DISTURBED AREAS NOT SPECIFIED ON THE LANDSCAPE PLAN SHALL RECEIVE 300 (6) INCHES OF TOPSOIL, SEED, MULCH, AND BE WATERED UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.

D. RETAINING WALL:
THE PROPOSED RETAINING WALLS SHALL BE OF BLOCK CONSTRUCTION AND SHALL BE CONSTRUCTED BY A QUALIFIED CONTRACTOR PER BEST PRACTICES. SHOP DRAWINGS ARE TO BE PREPARED BY PROFESSIONAL STRUCTURAL ENGINEER AND CONTRACTOR SHALL SUBMIT TO ENGINEER OF RECORD PRIOR TO CONSTRUCTION.

3. UTILITIES

A. LOCATION AND ELEVATIONS OF EXISTING UTILITIES
THE LOCATION AND ELEVATIONS OF ALL EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON THE INFORMATION AS REFERENCED IN THE EXISTING CONDITIONS INFORMATION PROVIDED ABOVE, AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

B. STORM DRAINAGE:
UNLESS OTHERWISE NOTED, STORM DRAIN PIPING SHALL BE HDPE, HIGH DENSITY POLYETHYLENE PIPE, SMOOTH LINED (A-A-2V2) WITH LOOK TIGHT JOINTS. THE SIZES OF ALL PIPES ARE SHOWN ON THE PLAN.
CATCH BASINS SHALL BE PRE CAST CONCRETE, AS SPECIFIED ON THE DETAIL SHEET. ALL CATCH BASINS SHALL BE SIX (6) FEET IN DIAMETER, HAVE A FOUR (4) FOOT MINIMUM SUMP, AND HAVE WOODEN/PLASTIC BAFFLES AT INVERT OUTLETS.

4. PARKING STALLS SHALL BE AS FOLLOWS:

5. DUMPSTER AREA NOTE:
THE DUMPSTER AND PROPOSED SITE PLANS ASSOCIATED WITH THIS PROJECT ARE NOT LOCATED WITH IN A RESOURCE AREA OR BUFFER ZONE TO A RESOURCE AREA

6. SNOW STORAGE NOTE:
ALL SNOW STORAGE WILL TAKE PLACE ON SITE

* (ALL REFERENCES TO "CONTRACTOR" SHALL MEAN THE GENERAL CONTRACTOR OR HIS SUB-CONTRACTORS.)

GENERAL CONSTRUCTION REQUIREMENTS

1.) THE CONTRACTOR SHALL VERIFY THE PROPOSED LAYOUT WITH ITS RELATIONSHIP TO THE EXISTING SITE SURVEY. THE CONTRACTOR SHALL ALSO VERIFY ALL DIMENSIONS, SITE CONDITIONS, AND MATERIAL SPECIFICATIONS AND SHALL NOTIFY THE OWNER AND ENGINEER OF ANY DIMENSIONAL OMISSIONS OR DISCREPANCIES BEFORE COMMENCING OR PROCEEDING WITH WORK.

2.) THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, INSPECTIONS, BONDS, ETC. AND OTHER APPROVAL RELATED ITEMS WITH THE TOWN OF ACTON AND MASSACHUSETTS HIGHWAY DEPARTMENT. NO CONSTRUCTION SHALL COMMENCE UNTIL SUCH PERMITS HAVE BEEN SECURED.

3.) METHODS AND MATERIALS USED IN THE CONSTRUCTION OF IMPROVEMENTS FOR THIS PROJECT SHALL CONFORM TO THE CURRENT CONSTRUCTION STANDARDS AND SPECIFICATIONS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT AND THE TOWN OF ACTON

4.) DEVIATIONS OR CHANGES FROM THESE PLANS WILL NOT BE ALLOWED UNLESS APPROVED BY THE OWNER/ENGINEER.

5.) CONTRACTOR TO CONFIRM AND VERIFY THE VALIDITY, LOCATION, MATERIAL, AND AVAILABILITY TO USE EXISTING UTILITIES ON OR NEAR THE PROJECT SITE PROPERTY. CONTRACTOR TO LOCATE EXISTING UTILITIES AND COORDINATE UTILITIES WITH ALL APPLICABLE MUNICIPALITIES AND UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION. ONCE UTILITIES HAVE BEEN CONFIRMED IN THE FIELD BY CONTRACTOR AND VERIFIED BY APPLICABLE MUNICIPALITY AND UTILITY COMPANY AND CONNECTION HAS BEEN APPROVED BY ENTITY, ONLY THEN SHALL CONTRACTOR CONSTRUCT AND UTILIZE THESE UTILITIES. CONTRACTOR TO IMMEDIATELY REPORT ENGINEER OF RECORD OF ANY DEVIATIONS TO PLANS.

6.) THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AND LOCATE ANY EXISTING UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF NECESSARY. THE EXISTENCE AND/OR LOCATION OF UTILITIES SHOWN ON THESE PLANS MAY BE ONLY APPROXIMATELY CORRECT AND THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN HEREON AND ANY OTHER EXISTING UTILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, AT HIS EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.

7.) THE CONTRACTOR SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATION OR BLASTING AT LEAST TWO WORKING DAYS, BUT NOT MORE THAN TEN WORKING DAYS, PRIOR TO COMMENCEMENT OF EXCAVATION OR BLASTING. ALL WATER, GAS, SEWER AND OTHER UTILITIES SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

8.) RELOCATION OF ANY UTILITIES SHALL BE AT THE OWNERS EXPENSE AND COMPLETED WITH THE UTILITY OWNER. THE OWNER SHALL BE NOTIFIED AS TO THE RELOCATION REQUIRED PRIOR TO THE START OF CONSTRUCTION.

GENERAL CONSTRUCTION REQUIREMENTS (CONTINUED)

8.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING, WITH MATCHING MATERIALS, ANY PAVEMENT, WALKS, CURBS, ETC. THAT MUST BE CUT OR THAT ARE DAMAGED DURING CONSTRUCTION.

10.) AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES.

11.) CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL AND ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING A PROTECTIVE BARRIER AROUND THE SITE PRIOR TO AND DURING CONSTRUCTION.

12.) THE CONTRACTOR IS RESPONSIBLE TO INSTALL AND MAINTAIN ALL EROSION AND SEDIMENTATION CONTROL DEVICES.

13.) WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

14.) THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS WITH THE APPROPRIATE UTILITY COMPANIES FOR POLE RELOCATIONS, AND FOR THE ALLOCATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, CABLE, FIRE ALARM, WATER, SANITARY SEWER, STORM DRAIN, AND ANY OTHER UTILITIES, BOTH PUBLIC AND PRIVATE, AS REQUIRED.

15.) THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, (SEE CHAPTER 370, ACTS OF 1963, MASSACHUSETTS) PRIOR COMMENCING ANY WORK.

16.) MBL LAND DEVELOPMENT & PERMITTING CORP. ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES EMITTED OR INADVERTENTLY SHOWN.

17.) THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET". (R&R)

18.) UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH SAME, AND COORDINATE WITH THE ENGINEER AS REQUIRED.

19.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY OTHER EXISTING INFORMATION OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR MUST NOTIFY THE OWNER OR ENGINEER IMMEDIATELY UPON DISCOVERY AND AT LEAST 72 HOURS PRIOR TO INSTALLATION OF ANY PORTION OF THE AFFECTED WORK.

20.) THE CONTRACTOR SHALL REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL BUILDING DIMENSIONS AND CONSTRUCTION. BUILDING DIMENSIONS ARE SHOWN FOR COORDINATION WITH OTHER SITE WORK ONLY AND SHOULD NOT BE USED TO STAKE OUT BUILDINGS. SITE CONTRACTOR SHALL STAKE OUT THE EXTERIOR BUILDING CORNERS FROM THE LATEST ARCHITECTURAL PLANS. THE CONTRACTOR SHALL NOTIFY MBL LAND DEVELOPMENT & PERMITTING CORP. OF ANY DISCREPANCIES BETWEEN SITE PLAN DIMENSIONS AND ARCHITECTURAL BUILDING PLANS BEFORE PROCEEDING WITH ANY PORTION OF SITE WORK WHICH MAY BE AFFECTED SO THAT PROPER ADJUSTMENTS TO THE SITE LAYOUT CAN BE MADE IF NECESSARY. ALSO, SITE WORK MUST BE ALIGNED IN THE LANDSCAPE AREAS WITHIN 10-INCHES OF THE BUILDING FOUNDATION WALL AT ANY TIME.

21.) PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF OPERATIONS TO THE OWNER AND ITS REPRESENTATIVE. THE CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE OWNER, ITS ENGINEER OR REPRESENTATIVE.

22.) CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY AND ALL CONSTRUCTION MEANS AND METHODS. MBL LAND DEVELOPMENT & PERMITTING, CORP. DOES NOT ASSUME ANY RESPONSIBILITY IN JOB SITE SAFETY FOR CONSTRUCTION METHODS USED. ALL FEDERAL, STATE, AND LOCAL OSHA REQUIREMENTS AND REGULATIONS SHALL BE FOLLOWED BY ALL PERSONNEL ON THE JOB SITE AT ALL TIMES.

23.) THE CONTRACTOR SHALL REMOVE ALL STUMPS, RUBBISH, UNSUITABLE MATERIAL AND DEBRIS FROM THE SITE PROJECT SITE. STORAGE OF THESE MATERIALS WILL NOT BE PERMITTED ON THE PROJECT SITE. THE CONTRACTOR SHALL LEAVE THE SITE IN A SAFE, CLEAN, AND ORDERLY CONDITION AT THE COMPLETION OF THE SITE CLEANUP WORK.

24.) ALL UNSUITABLE MATERIALS ENCOUNTERED WITHIN THE LIMITS OF WORK FOR GRADED SHALL BE REMOVED, AS DIRECTED BY THE OWNER OR OWNERS REPRESENTATIVE, TO NATURAL STABLE GROUND BY THE CONTRACTOR. UNSUITABLE MATERIALS INCLUDE TOPSOIL, LOAM, PEAT, ALL ORGANIC MATERIAL, SHOW, ICE, CONSTRUCTION RUBBLE, TRASH, AND OTHER OBJECTIONABLE ITEMS.

25.) AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS, WITHOUT PRIOR APPROVAL BY THE OWNER OR ITS REPRESENTATIVE, SHALL BE RESTORED BY THE CONTRACTOR TO WHOM ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

26.) EXISTING SUBSURFACE ROCK/LEDGE IS NOT SHOWN ON THE PLANS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE THEIR OWN DETERMINATION AS TO THE LOCATION OF SUBSURFACE ROCK.

27.) THE CONTRACTOR SHALL PROTECT ALL UNDERGROUND DRAINAGE, SEWER, AND UTILITY FACILITIES FROM EXCESSIVE VEHICULAR LOADS DURING CONSTRUCTION. ANY FACILITIES DAMAGED BY CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

28.) ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS NOTED OTHERWISE.

29.) JOINTS BETWEEN NEW BITUMINOUS CONCRETE BONDING PAVEMENT AND SAW CUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND SANDGRADED.

30.) ALL PROPOSED WALKWAYS WILL BE HANDICAPPED ACCESSIBLE. ALL PROPOSED SLOPES ON WALKWAYS TO BE LESS THAN 5% AND ALL CROSS SLOPES LESS 2%. ALL WORK WILL BE IN ACCORDANCE WITH THE MOST CURRENT REQUIREMENTS OF THE U.S. ACCESS BOARD, ADAAG, AND THE MASSACHUSETTS ACT IN COMMONWEALTH OF MASSACHUSETTS, ARCHITECTURAL ACCESS BOARD.

GENERAL CONSTRUCTION REQUIREMENTS (CONTINUED)

31.) FINAL LAYOUT AND STAKING OF ALL PROPOSED FEATURES AND GRADING SHALL BE DENOTED IN THE FIELD AND APPROVED BY THE OWNERS REPRESENTATIVE PRIOR TO ANY SITE PREPARATION OR CONSTRUCTION. THE CONTRACTOR SHALL NOT ADJUST OR MODIFY THE LAYOUT AND STAKING OF ANY PROPOSED FEATURES WITHOUT PRIOR APPROVAL FROM THE OWNERS REPRESENTATIVE AND ANY GOVERNMENTAL AGENCY THEIR MAY HAVE JURISDICTION OVER CONTEMPLATED CHANGE.

32.) ALL ELECTRICAL, TELEPHONE, DATA/CON AND FIRE DEPARTMENT CONDUITS ARE TO BE INSTALLED BY THE ELECTRICAL CONTRACTOR. WHENEVER, DUCT FILLING, CONCRETE WORK AND STREET REPAIR SHALL BE PERFORMED BY THE GENERAL CONTRACTOR.

33.) RIM ELEVATIONS OF DRAINAGE AND SANITARY SEWER MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH AND CONSISTENT WITH GRADING PLANS. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, GAS GATES, WATER GATES AND OTHER UTILITIES TO FINISHED GRADE WITHIN THE LIMITS OF THE SITE WORK.

34.) ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED IN KIND. LAWN AREAS SHALL HAVE A MODIFIED LOAM BORROW PLACED AND SEEDED. THE MODIFIED LOAM BORROW SHALL HAVE A MINIMUM DEPTH OF 6" AND SHALL BE PLACED FLUSH WITH THE TOP OF ADJACENT CURB, COBBLE, BERM, OR OTHER SURFACE.

35.) THE CONTRACTOR SHALL WATER, MOW, FERTILIZE OR OTHERWISE MAINTAIN LAWN AREAS UNTIL SATISFACTORY GRASS STANDS ARE ACHIEVED TO THE OWNER OR ITS REPRESENTATIVE SATISFACTION.

36.) THE CONTRACTOR SHALL RESET ALL MONUMENTATION DISTURBED DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL PROVIDE A SURVEY BY A PLS TO SHOWING THAT THE MONUMENTATION IS RESET TO ITS ORIGINAL LOCATION. MONUMENTS INCLUDE, BUT ARE NOT LIMITED TO, TOWN BOUNDS, MASS HIGHWAY BOUNDS, PROPERTY LINE MONUMENTS, IRON RODS, STAKES, CONCRETE BOUNDS, GRANITE BOUNDS AND STONE WALLS WITH DRILL HOLES.

37.) ELEVATIONS ARE BASED ON ASSUMED ELEVATION ON RECORD PLANS.

38.) CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY AND ALL CONSTRUCTION MEANS AND METHODS.

39.) THE CONTRACTOR SHALL CONFIRM LOCATION AND DEPTH OF EXISTING SEWER LINES BEFORE COMMENCING UTILITY INSTALLATION.

40.) THE CONTRACTOR SHALL PREPARE A REPORT OF THE EXISTING ASBESTOS, IF ANY WITHIN THE EXISTING BUILDING PRIOR TO DEMOLITION. IF REQUIRED, THIS REPORT SHALL BE SUBMITTED TO THE ACTON BOARD OF HEALTH AND THE NANCY LANDMALE, MA OFFICE.

STORM WATER MAINTENANCE PROGRAM

1.) ALL EROSION AND SEDIMENTATION CONTROL DEVICES TO BE USED FOR THIS PROJECT SHALL BE INSTALLED AND MAINTAINED AS DEPICTED ON THESE PLANS AND IN VOLUME TWO OF THE STATE OF MASSACHUSETTS STORM WATER MANAGEMENT MANUAL.

PROPER EROSION AND SEDIMENT CONTROL PRACTICES MUST BE IMPLEMENTED DURING ALL PHASES OF CONSTRUCTION AND UNTIL THE SITE IS SATISFACTORILY STABILIZED. ALL CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH VOLUME TWO OF THE STATE OF MASSACHUSETTS STORM WATER MANAGEMENT MANUAL.

2.) THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND/OR REPLACEMENT OF ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES TO ENSURE PROPER OPERATION THROUGHOUT THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL CONDUCT THE FOLLOWING MAINTENANCE AT ANY TIME THE DEVICE IS FOUND TO BE DAMAGED. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF PERMANENT MEASURES UNTIL CONSTRUCTION OF THE PROJECT IS COMPLETED OR UNTIL IT IS ACCEPTED BY THE OWNER. THE OWNER IS RESPONSIBLE THEREAFTER.

4.) TEMPORARY VEGETATIVE COVER SHALL BE APPLIED TO ANY DISTURBED AREAS (INCLUDING NON-STOCKPILE AREAS) THAT HAVE NOT YET REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN THIRTY-ONE (31) DAYS.

5.) PERMANENT VEGETATIVE COVER SHALL BE APPLIED TO ALL DISTURBED AREAS THAT HAVE REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS PERMANENTLY CEASED. THE RECOMMENDED PERMANENT SEEDING DATES ARE APRIL 1 TO JUNE 15 AND AUGUST 15 TO OCTOBER 1.

6.) IF SEEDING CANNOT BE COMPLETED IMMEDIATELY OR WITHIN THE RECOMMENDED SEEDING DATES, USE THE TEMPORARY MULCHING MEASURE TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

7.) AREAS WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED SHOULD BE MULCHED IMMEDIATELY FOLLOWING SEEDING IN ADDITION TO AREAS WHICH CANNOT BE SEEDED WITHIN THE RECOMMENDED SEEDING DATES AND ANY SOIL STOCKPILE AREAS. TEMPORARY MULCHING SHOULD BE PERFORMED AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED UNLESS THE ACTIVITY IS TO RESUME WITHIN THIRTY-ONE (31) DAYS.

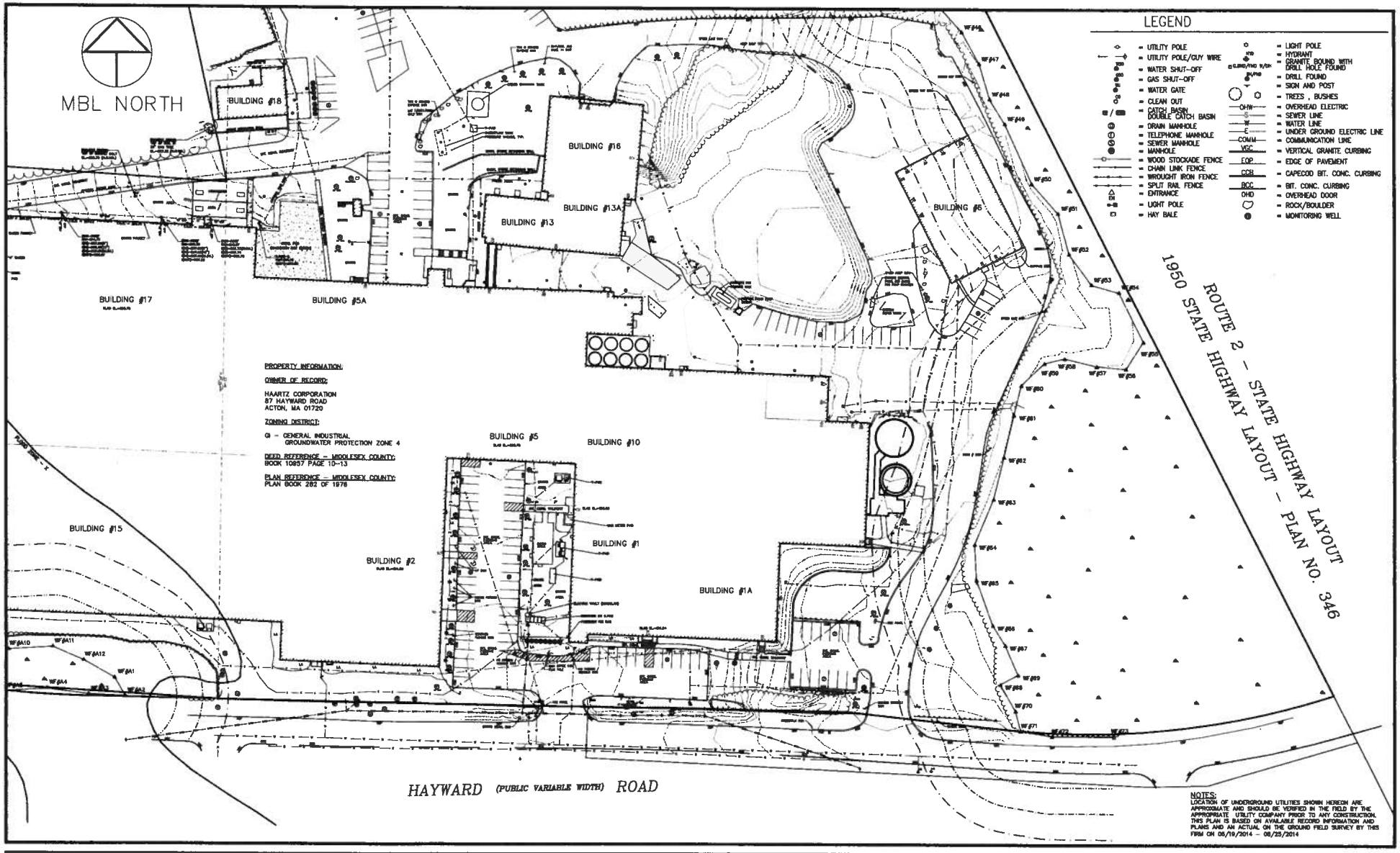
8.) ALL MULCHED AREAS MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR WILL ERODED. WHERE EROSION IS OBSERVED, ADDITIONAL MULCH MUST BE APPLIED. IF NETTING IS USED, THE NET SHOULD BE INSPECTED AFTER RAINSTORMS FOR DISLOCATION OR FAILURE. IF UNDERCUTS OR BREAKAGE OCCUR, THE NET MUST BE REINSTALLED AS NECESSARY AFTER REPAIRING DAMAGE TO SLOPE. INSPECTIONS SHOULD TAKE PLACE UNTIL GRASSES ARE FIRMLY ESTABLISHED. GRASS IS CONSIDERED TO BE FIRMLY ESTABLISHED AT A MINIMUM HEIGHT OF THREE (3) INCHES.

9.) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTROL DUST AND TAKE ALL NECESSARY MEASURES TO INSURE ALL AREAS ARE MAINTAINED IN A DUST FREE CONDITION AT ALL TIMES THROUGHOUT THE LIFE OF THE CONTRACT. REPETITIVE TREATMENTS SHOULD BE APPLIED AS NECESSARY.

10.) ALL PROPOSED CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE SURROUNDING ROADWAYS. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO THE SURROUNDING ROADWAYS MUST BE REMOVED IMMEDIATELY.

11.) INSPECTION OF PERIMETER SEDIMENT BARRIERS (INCLUDING THOSE ENCLOSURES DEA STOCKPILE AREAS) SHOULD BE MADE AFTER EACH STORM EVENT AND REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED. CLEAN OUT OF ACCUMULATED SEDIMENT BEHIND THE SILT FENCE IS NECESSARY IF ONE-HALF OF THE ORIGINAL HEIGHT OF THE BALES BECOMES FILLED IN WITH SEDIMENT.

12.) SILT SACKS MAKE BEEN PROPOSED IN ALL ON-SITE CATCH BASINS IN ORDER TO PREVENT SEDIMENT FROM ENTERING THE PROPOSED STORM D



No.	DATE	DESCRIPTION	BY
1			

REVISIONS

PROJ. MANAGER: MBL
CHIEF DESIGNER: MBL
REVIEWED BY: DATE

SEAL

JAMES E. MILLER No. 34385

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE:
HORZ.: 1" = 40'
VERT.:
DATUM:
HORZ.:
VERT.:
40 20 0 40
GRAPHIC SCALE

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SITE DEVELOPMENT PLANS
EXISTING CONDITIONS PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015
C-3.0

USER: | LAST VIEW: | LAYOUT: | CTB:
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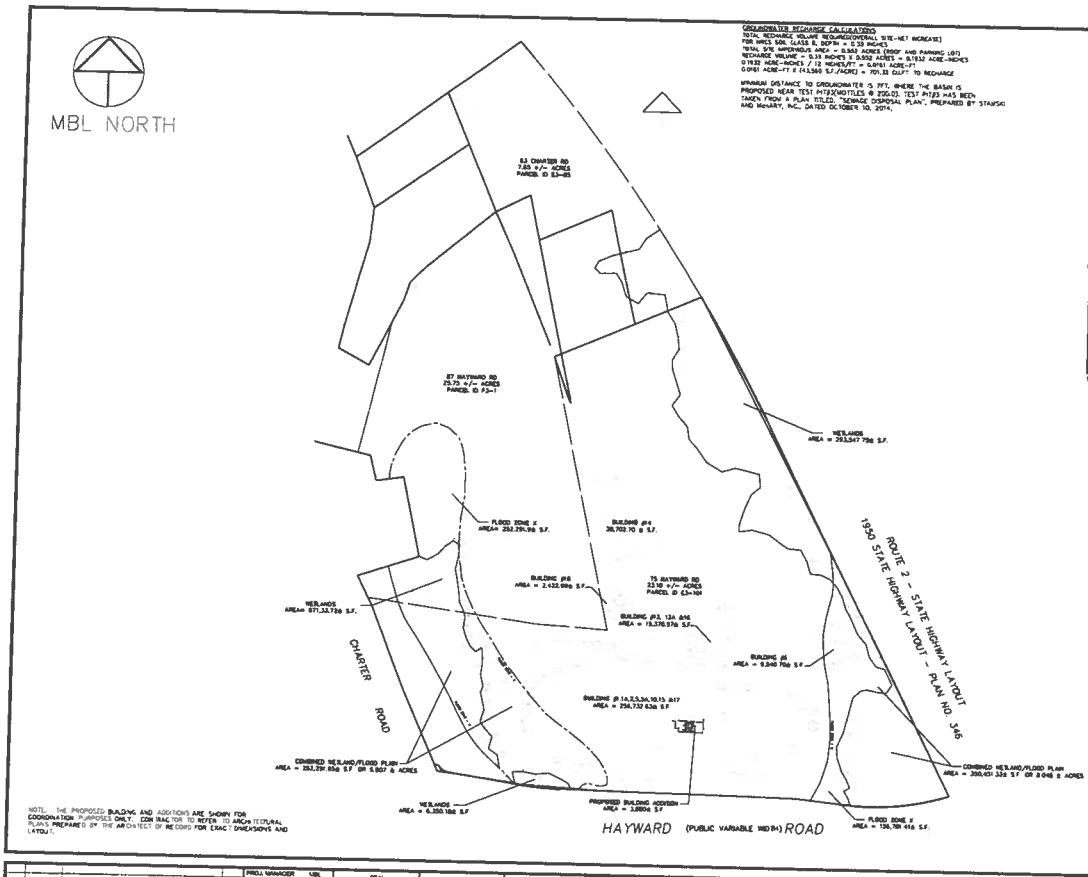

NOTE: THE PROPOSED BUILDING AND ADDITIONS ARE SHOWN FOR COORDINATION PURPOSES ONLY. CONTRACTOR TO REFER TO ARCHITECTURAL PLANS PREPARED BY THE ARCHITECT OF RECORD FOR EXACT DIMENSIONS AND LAYOUT.

GROUNDWATER RECHARGE CALCULATIONS

TOTAL RECHARGE VOLUME REQUIRED(OVERALL SITE-NET INCREASE)
FOR HRCS SOIL CLASS B, DEPTH = 0.33 INCHES
TOTAL SITE IMPERVIOUS AREA = 0.862 ACRES (ROOF AND PARKING LOT)
RECHARGE VOLUME = 0.33 INCHES X 0.862 ACRES = 0.1512 ACRE-INCHES
0.1512 ACRE-INCHES / 12 INCHES/FT = 0.0151 ACRE-FT
0.0151 ACRE-FT X (43,560 S.F./ACRE) = 701.33 CU.FT TO RECHARGE

MINIMUM DISTANCE TO GROUNDWATER IS 7FT. WHERE THE BASIN IS PROPOSED NEAR TEST PIT23(MOTTLES @ 200.0). TEST PIT23 HAS BEEN TAKEN FROM A PLAN TITLED, "SEWAGE DISPOSAL PLAN", PREPARED BY STAWSKI AND McNARY, INC., DATED OCTOBER 10, 2014.

ZONING TABLE

ZONE: GENERAL INDUSTRIAL
GROUNDWATER PROTECTION ZONE 4

USE: MANUFACTURING/INDUSTRIAL

	REQUIRED ALLOWED	EXISTING	CHANGE	PROPOSED
MIN. LOT AREA	40,000 S.F. (0.918 ACRES)	2,481,237± S.F. (56.502± ACRES)	NONE	2,481,237± S.F. (56.502± ACRES)
FRONTAGE	100 FT.	1,816.44 FT.	NONE	1,816.44 FT.
SETBACKS				
FRONT	45 FT.	37.4 FT.(HAYWARD) 283.3 FT.(CHARTER)	NONE	37.4 FT.(HAYWARD) 283.3 FT.(CHARTER)
SIDE	20 FT.	37.4 FT.(HAYWARD) 283.3 FT.(CHARTER)	NONE	37.4 FT.(HAYWARD) 283.3 FT.(CHARTER)
REAR	20 FT.	88.9 FT.(ROUTE 2) 963.48 FT.(ROUTE 2)	NONE	88.9 FT.(ROUTE 2) 963.48 FT.(ROUTE 2)
BUILDING HEIGHT	40FT.(MAX)	30FT.±	NONE	16 FT.
BUILDING AREA		320,347 S.F.	3,880 S.F.	324,227 S.F.
FLOOR AREA RATIO	0.20	0.1730	0.00232	0.1790
% OF LOT COVERAGE	35.0%(MAX)	13.01%	0.01%	13.02%
BUILDING		7.408 ACRES	0.089 ACRES	7.496 ACRES
PAVEMENT		3.225 ACRES	0.667 ACRES	3.891 ACRES
OPEN SPACE		33.963 ACRES	-0.531 ACRES	33.431 ACRES
WETLANDS		8.88 ACRES	0.000 ACRES	8.88 ACRES
FLOODPLAIN		8.391 ACRES	0.000 ACRES	8.391 ACRES

DEVELOPABLE SITE AREA = 56.502 - (5.827 - 8.045) - 42.532 ACRES OR 1,857,834±SF
LOT AREA-NET=(1,000 **
** = COMBINED WETLAND/FLOOD PLAIN TO GREATEST EXTENT COMBINED

PARKING SUMMARY

	EXISTING	PROPOSED
TOTAL PARKING SPACES(*)	226	251
PARKING SPACES - OF BUILDS & 3 LOT FROM SHOP ADDITION		12
PARKING SPACES - OVER SEPTIC FIELD CANCEL FROM PARKING LOT		43
CONFIGURATION		

(*) PARKING REQUIREMENTS: 1 SPACE FOR 2,000 S.F.(FIRST 25,000 S.F.); 1 SPACE FOR 10,000 S.F.(REMAINING AREA); OR ONE SPACE FOR EACH EMPLOYEE ON THE LARGEST SHIFT, WHICHEVER IS GREATER.

ACCESSIBLE PARKING SPACE REQUIREMENT PER ADA STANDARDS FOR ACCESSIBLE DESIGN, 36 CMR PART 36, SECTION 4.1.2 HAVE: TOTAL PARKING IS BETWEEN 26-50 SPACES. REQUIRED MINIMUM NUMBER OF ACCESSIBLE SPACES IS 2.

TOTAL EXISTING HANDICAPPED PARKING IS 2.

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANS AND AS ACTUAL ON THE GROUND FIELD SURVEY BY THIS FIRM ON 06/19/2014 - 08/25/2014

No.	DATE	DESCRIPTION	BY
3	06/08/2015	PER PLANNING OFFICE MEETING 06/03/2015	BMD
2	09/15/2014	AREA CALCULATIONS PER PB OFFICE	BMD
1	8/8/2014	ADD ZONING TABLE PER PLANNING OFFICE	TAL

REVISIONS

PROJ. MANAGER	MBL
CHIEF DESIGNER	MBL
REVIEWED BY	DATE

SEAL: JAMES A. MILLER No. 34884 — MASSACHUSETTS

SEAL: JAMES A. MILLER CIVIL No. 34884 — MASSACHUSETTS

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE: HORZ 1"=150' VERT
DATUM: HORZ VERT
GRAPHIC SCALE 20 10 0 20

MBL
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SITE DEVELOPMENT PLANS
AREA CALCULATION PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No. 2014-078
DATE: MAY 26, 2015

C-4.2

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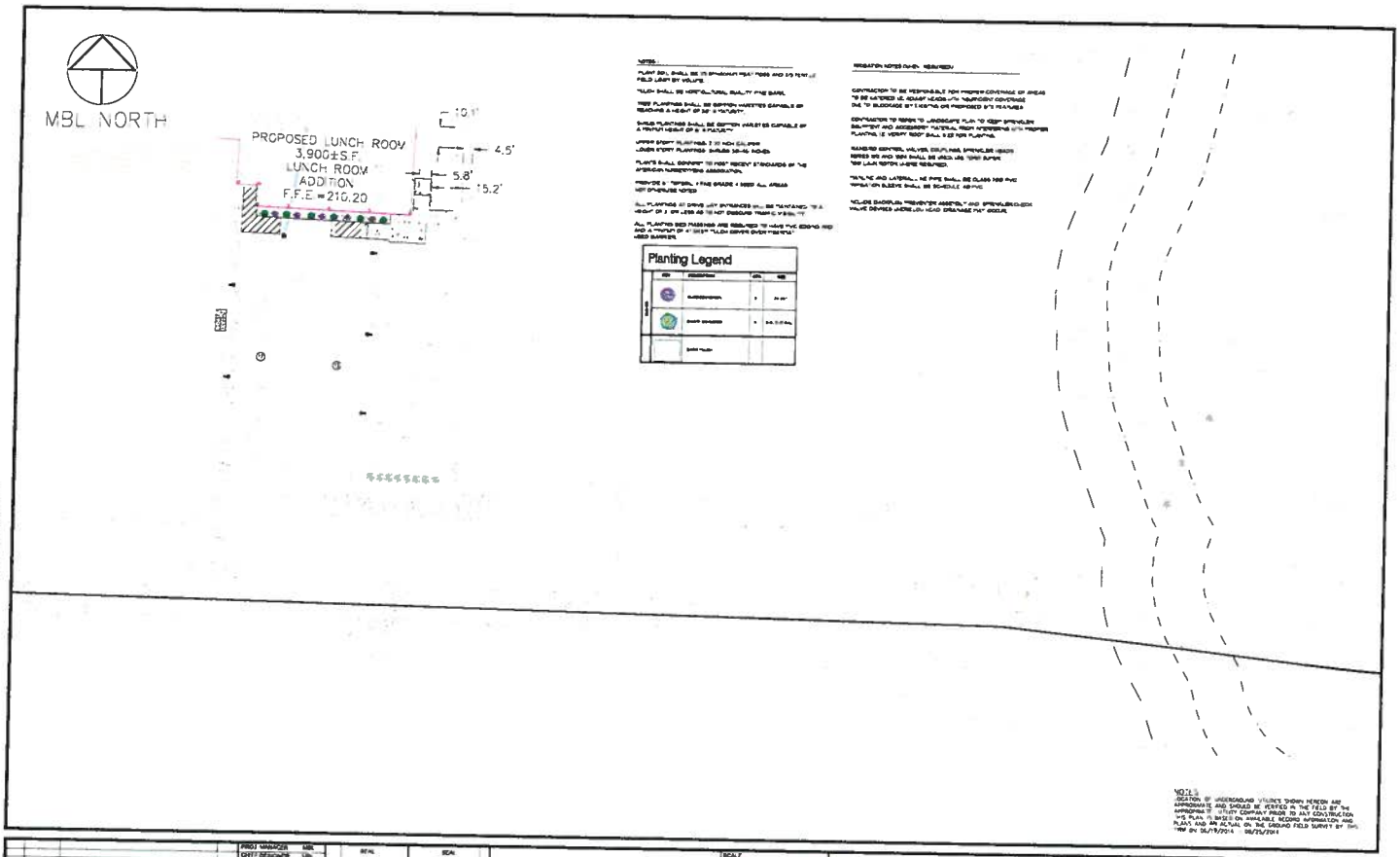

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON VARIOUS RECORD INFORMATION AND PLANS AND AN ACTUAL ON THE GROUND FIELD SURVEY BY [illegible] FIRM ON 06/19/2014 - 06/26/2014

3	06/26/15	PER PLANNING OFFICE LETTER 06/23/15	BHD
2	05/19/15	AREA CALCULATIONS PER PD 05-20	BHD
1	05/2015	ADD ZONING TABLE PER PLANNING OFFICE	TK
No.	DATE	DESCRIPTION	BY

REVISIONS

PROJ. MANAGER	MBL
CHIEF DESIGNER	LBL
REVIEWED BY	DATE

SEAL: JAMES E. MILLER No. 36282

SEAL: JAMES E. FULLER CIVIL No. 31664

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE: HORZ. 1"=20' VERT.
DRAWN: HORZ. VERT.
GRAPHIC SCALE

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SITE DEVELOPMENT PLANS
LANDSCAPE PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 26, 2015

C-6.0

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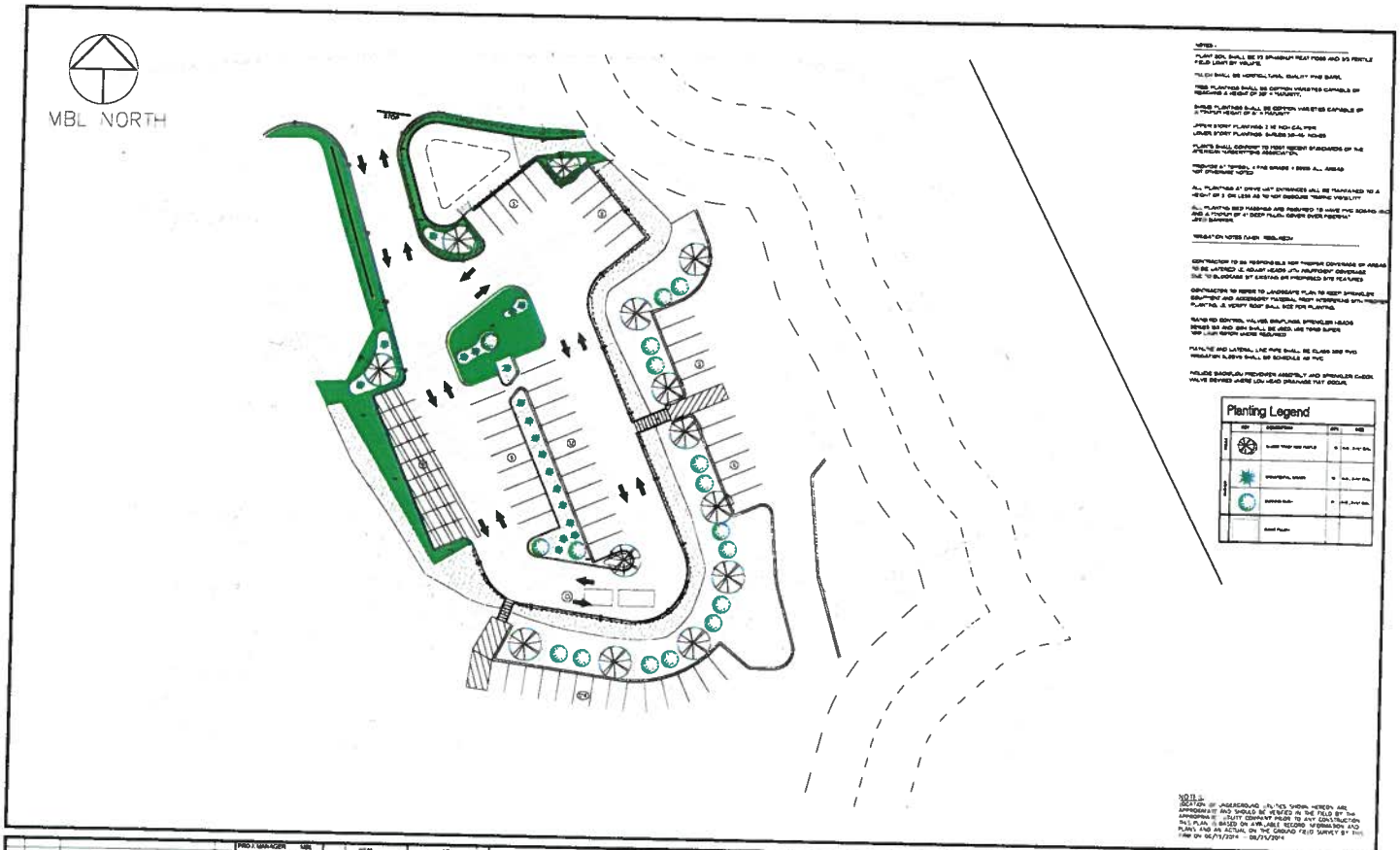

NOTES -

PLANT SOIL SHALL BE 75 SPHAGNUM PEAT MOSS AND 25 FERTILE FELD LOAM BY VOLUME.

MULCH SHALL BE HARDWOOD, WELL AGED PINE BARK.

TREE PLANTINGS SHALL BE CONTAINER NURSERY GROWN CAPABLE OF REACHING A HEIGHT OF 20' + MATURITY.

SHRUB PLANTINGS SHALL BE CONTAINER NURSERY GROWN CAPABLE OF A MATURE HEIGHT OF 6' + MATURITY.

UPPER STORY PLANTINGS 2 1/2 INCH CAL MIN
LOWER STORY PLANTINGS SHRUBS 24-30 INCHES

PLANTS SHALL CONFORM TO THEIR RECENT STANDARDS OF THE AMERICAN NURSERYMEN ASSOCIATION.

PROVIDE 4" TOPSOIL + FINE GRADE + SEED ALL AREAS NOT OTHERWISE NOTED

ALL PLANTING AT DRIVE WAY ENTRANCES WILL BE MAINTAINED TO A HEIGHT OF 3' OR LESS AS TO NOT OBSCURE "SAFAE VISIBILITY"

ALL PLANTING BED MARGINS ARE REQUIRED TO HAVE PVC EDGING (6") AND A TOPSOIL OF 4" DEEP MULCH SPADE OVER MATERIAL (FIELD MARKER)

IRRIGATION NOTES (VIA IRRIGATION)

CONTRACTOR TO BE RESPONSIBLE FOR PROPER COVERAGE OF AREAS TO BE WATERED (E.GUARD HEADS ETC) MINIMUM COVERAGE DUE TO BLOCKAGE BY EXISTING OR PROPOSED SITE FEATURES

CONTRACTOR TO REFER TO LANDSCAPE PLAN TO KEEP SPRINKLER EQUIPMENT AND ASSOCIATED MATERIAL FROM INTERFERING WITH PROPOSED PLANTING. A VERBY SOON SHALL BOE FOR PLANTING.

RAIN BIRD CONTROL VALVES SPRAY/PLUGS SPRINKLER HEADS SERIES 5A AND 5RH SHALL BE USED. USE TORO SUPER TOP LOW REFER WHERE REQUIRED

MAINLINE AND LATERAL LINE PIPE SHALL BE CLASS 200 PVC IRRIGATION SLEEVE SHALL BE SCHEDULE 40 PVC

PROVIDE BACKFLOW PREVENTER ASSEMBLY AND SPRINKLER CHECK VALVE DEVICES WHERE LOW HEAD DRAINAGE THAT OCCUR

Planting Legend

	KEY	DESCRIPTION	QTY.	SIZE
TREES		SUGAR MAPLE AND MAPLE	9	2.5" Cal.
		ORNAMENTAL GRASS	18	2.5" Cal.
SHRUBS		BARBERRY	41	2.5" Cal.
		SOD		

NOTE:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANS AND AS ACTUAL ON THE GROUND FIELD SURVEY BY [illegible] TAKEN ON 06/13/2014 - 06/15/2014

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No.	DATE	DESCRIPTION	BY
3	06/26/2015	PER PLANNING OFFICE LIST TRANSMITTAL 06/25/15	[illegible]
2	06/19/2015	AREA CALCULATIONS PER TR DRY CO	[illegible]
1	06/2015	ADD ZONING TABLE PER PLANNING OFFICE	[illegible]

REVISIONS

PROJ. MANAGER: MBL
DRFT DESIGNER: MBL
REVIEWED BY: DATE

SEAL

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE
HORZ 1"=20'
VERT
DATUM
HORZ
VERT
DRAWING SCALE

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SITE DEVELOPMENT PLANS
LANDSCAPE PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. NO.: 2014-028
DATE: MAY 29, 2015

C-6.1

MBL NORTH

GROUNDWATER RECHARGE CALCULATIONS
TOTAL RECHARGE VOLUME REQUIRED(OVERALL SITE-NET INCREASE)
FOR HRGS SOIL CLASS B, DEPTH = 0.33 INCHES
TOTAL SITE IMPERVIOUS AREA = 0.958 ACRES (ROOF AND PAVEMENT LOT)
RECHARGE VOLUME = 0.33 INCHES X 0.958 ACRES = 0.1933 ACRE-INCHES
0.1933 ACRE-INCHES / 12 INCHES/FT = 0.0161 ACRE-FT
0.0161 ACRE-FT X 43,560 S.F./ACRE) = 701.20 CU.FT. TO RECHARGE

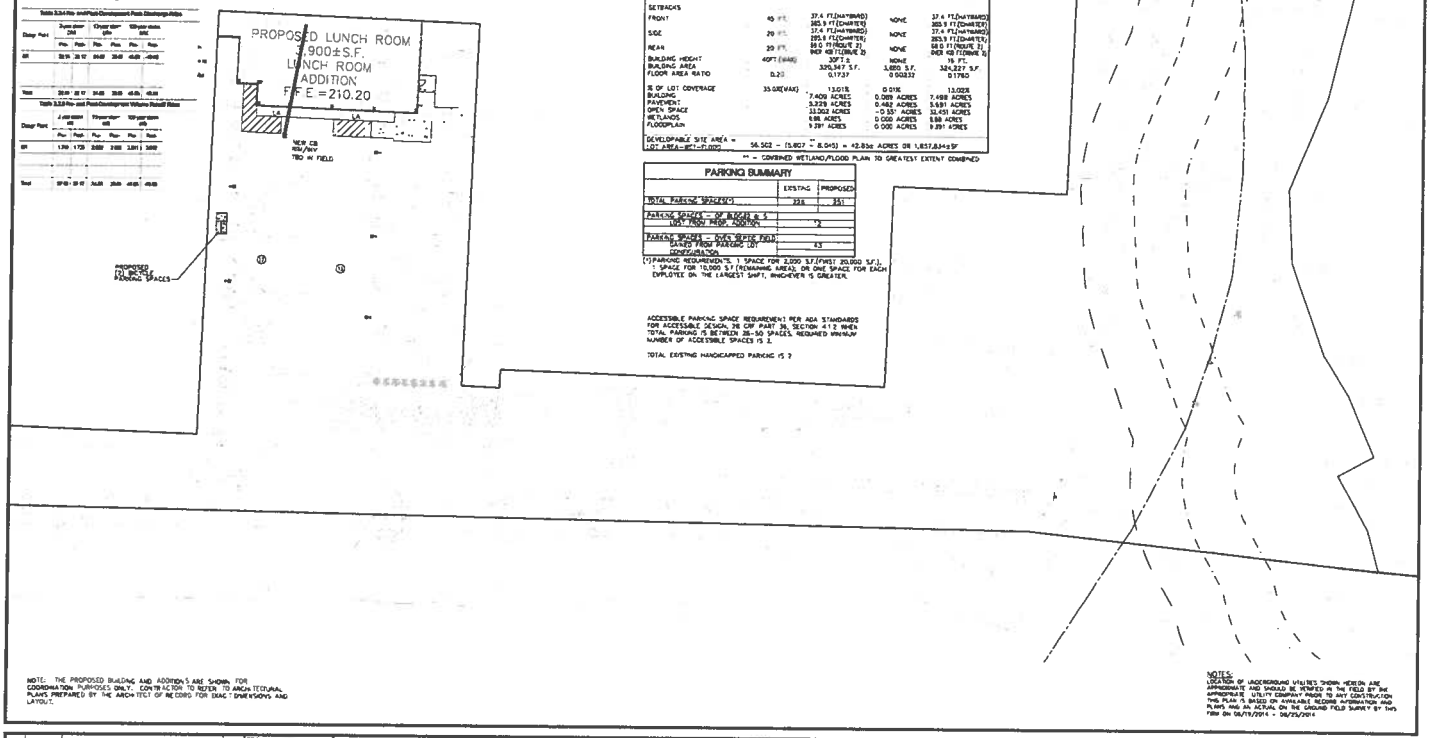
MINIMUM DISTANCE TO GROUNDWATER IS 7FT. WHERE THE BASIN IS PROPOSED NEAR TEST PIT3(MOTTLES @ 200.0). TEST PIT#3 HAS BEEN TAKEN FROM A PLAN TITLED, "SEWAGE DISPOSAL PLAN", PREPARED BY STAMPSKI AND McNARY, INC., DATED OCTOBER 10, 2014.

Table 3.3.4 Pre- and Post-Development Peak Discharge Rates

Discharge Point	2-year storm (24)		10-year storm (24)		100-year storm (24)	
	Pre	Post	Pre	Post	Pre	Post
SP	32.19	28.12	69.69	39.40	49.83	49.83
Total	32.19	28.12	69.69	39.40	49.83	49.83

Table 3.3.5 Pre- and Post-Development Volume Runoff Rates

Discharge Point	2-year storm (24)		10-year storm (24)		100-year storm (24)	
	Pre	Post	Pre	Post	Pre	Post
SP	1.79	1.73	3.82	3.82	3.81	3.82
Total	3.79	3.73	3.82	3.82	3.81	3.82



ZONING TABLE

ZONE: GENERAL INDUSTRIAL
GROUNDWATER PROTECTION ZONE 4
USE: MANUFACTURING/INDUSTRIAL

	REQUIRED ALLOWED	EXISTING	CHANGE	PROPOSED
MIN. LOT AREA	40,000 S.F. (0.918 ACRES)	2,461,227± S.F. (56.502± ACRES)	NONE	2,461,227± S.F. (56.502± ACRES)
FRONTAGE	120 FT.	1,616.44 FT	NONE	1,616.44 FT
SETBACKS				
FRONT	45 FT.	37.4 FT.(NATURAL) 383.9 FT.(CHARTER)	NONE	37.4 FT.(NATURAL) 383.9 FT.(CHARTER)
SIDE	20 FT.	37.4 FT.(NATURAL) 255.8 FT.(CHARTER)	NONE	37.4 FT.(NATURAL) 255.8 FT.(CHARTER)
REAR	20 FT.	58.0 FT.(ROUTE 2) OVER 400 FT.(ROUTE 2)	NONE	58.0 FT.(ROUTE 2) OVER 400 FT.(ROUTE 2)
BUILDING HEIGHT	40FT (MAX)	39FT.±	NONE	16 FT.
BUILDING AREA		329,347 S.F.	3,880 S.F.	329,227 S.F.
FLOOR AREA RATIO	0.20	0.1737	0.00232	0.1760
% OF LOT COVERAGE	35.0%(MAX)	13.01%	0.01%	13.02%
BUILDING		7.409 ACRES	0.089 ACRES	7.498 ACRES
PAVEMENT		3.329 ACRES	0.482 ACRES	3.811 ACRES
OPEN SPACE		33.002 ACRES	-0.551 ACRES	32.451 ACRES
WETLANDS		8.88 ACRES	0.000 ACRES	8.88 ACRES
FLOODPLAIN		9.391 ACRES	0.000 ACRES	9.391 ACRES

DEVELOPABLE SITE AREA = 56.502 - (5.807 + 8.045) = 42.650 ACRES OR 1,857,834±SF
LOT AREA-WET-FLOOD
** - COMBINED WETLAND/FLOOD PLAIN TO GREATEST EXTENT COMBINED

PARKING SUMMARY

	EXISTING	PROPOSED
TOTAL PARKING SPACES(*)	228	251
PARKING SPACES - OF BLOCKS & 5 LOT FROM NEW ADDITION		*2
PARKING SPACES - OVER SEPTIC FIELD TAKEN FROM PARKING LOT CONFIGURATION		43

(*) PARKING REQUIREMENTS: 1 SPACE FOR 2,000 S.F.(FIRST 20,000 S.F.), 1 SPACE FOR 10,000 S.F.(REMAINING AREA), OR ONE SPACE FOR EACH EMPLOYEE ON THE LARGEST SHIFT, WHICHEVER IS GREATER.

ACCESSIBLE PARKING SPACE REQUIREMENT PER ADA STANDARDS FOR ACCESSIBLE DESIGN, 28 CRF PART 36, SECTION 4.1.2 WHEN TOTAL PARKING IS BETWEEN 26-50 SPACES, REQUIRED MINIMUM NUMBER OF ACCESSIBLE SPACES IS 2.

TOTAL EXISTING HANDICAPPED PARKING IS 2

NOTE: THE PROPOSED BUILDING AND ADDITION,S ARE SHOWN FOR COORDINATION PURPOSES ONLY. CONTRACTOR TO REFER TO ARCHITECTURAL PLANS PREPARED BY THE ARCHITECT OF RECORD FOR EXACT DIMENSIONS AND LAYOUT.

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANTS AND AN ACTUAL ON THE GROUND FIELD SURVEY BY THIS FIRM ON 08/19/2014 - 08/25/2014

REV.	DATE	DESCRIPTION	BY
3	06/30/2015	PER PLANNING OFFICE MEETING 06/26/15	BMD
2	06/19/2015	AREA CALCULATIONS PER PB OFFICE	BMD
1	6/8/2015	ADD ZONING TABLE PER PLANNING OFFICE	THL

REVISIONS

PROJ MANAGER	MBL	
CHIEF DESIGNER	MBL	
REVIEWED BY	DATE	

SEAL: BRIAN D. MALES CIVIL No. 34004
SEAL: BRIAN D. MALES CIVIL No. 34004

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE: HORZ. 1"=30' VERT.
DATUM: HORZ. VERT.
GRAPHIC SCALE

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SITE DEVELOPMENT PLANS
LAYOUT AND MATERIAL PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-4.0

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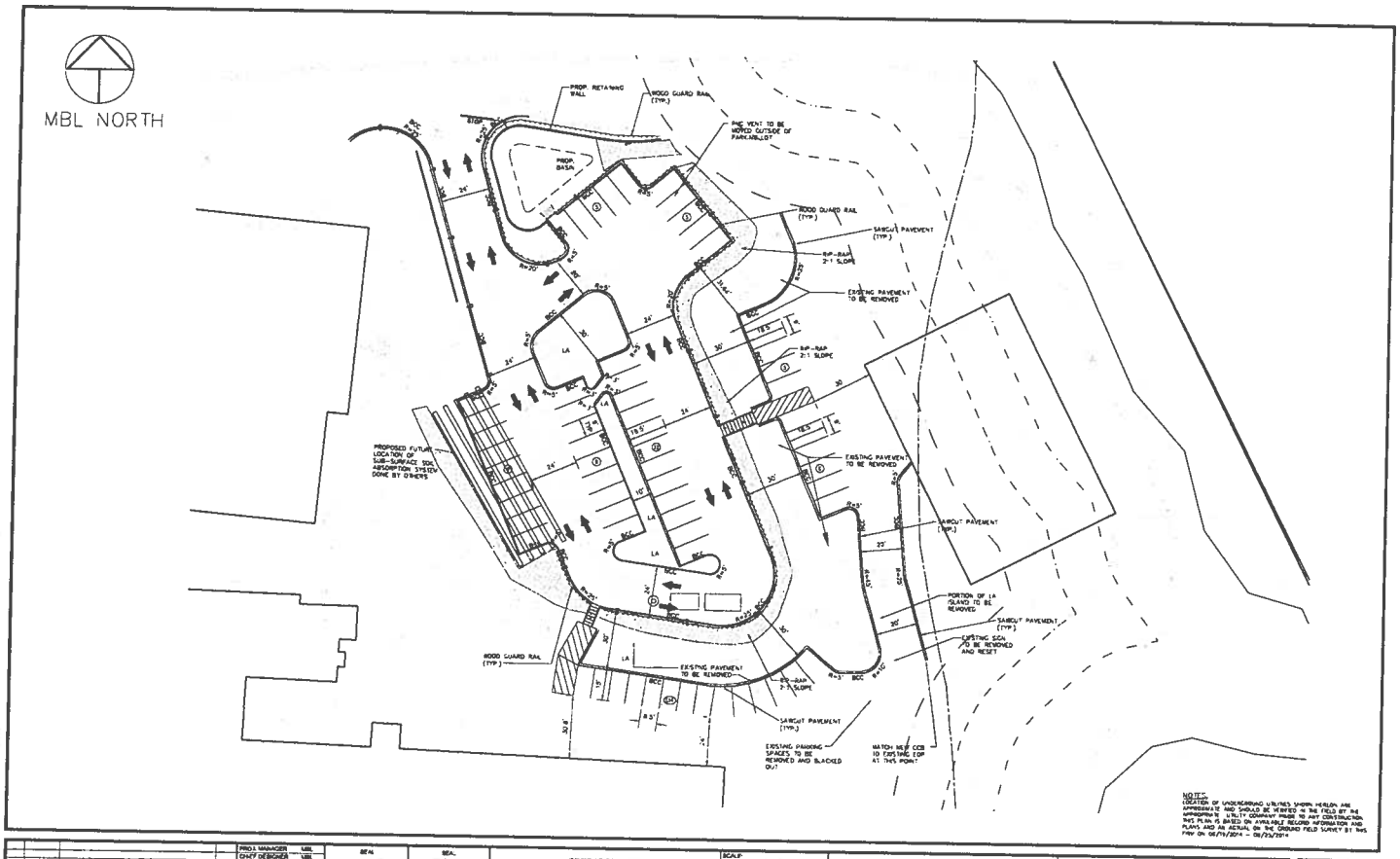

No.	DATE	DESCRIPTION	BY
3	06/26/2015	PER PLANNING OFFICE MEETING 06/25/2015	BHD
2	06/16/2015	AREA CALCULATIONS PER PB OFFICE	BHD
1	6/8/2015	ADD ZONING TABLE PER PLANNING OFFICE	THL

REVISIONS

PROJ. MANAGER	MBL
CHIEF DESIGNER	MBL
REVIEWED BY	DATE

SEAL

SEAL

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE: HORIZ: 1"=20' VERT:
DATUM: HORIZ: VERT:
GRAPHIC SCALE

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SITE DEVELOPMENT PLANS
LAYOUT AND MATERIAL PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 20, 2015

C-4.1

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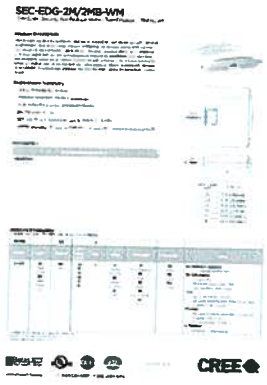

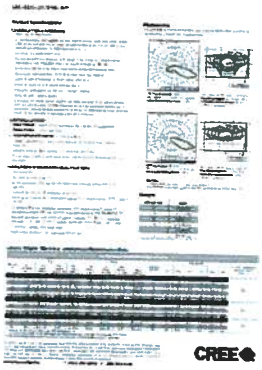

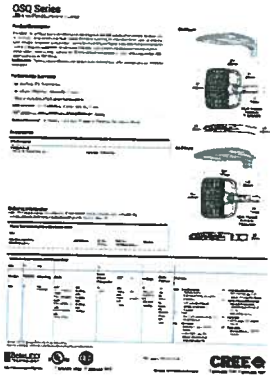

SECTION 10.6.3.2

NOTES

PARKING LOTS, DRIVEWAYS, WALKWAYS, BIKEWAYS (INCLUDES 5 WARDS OF GRADE OR LANDSCAPING) : 0.1 WATTS PER SF

0.1 WATTS/SF x 30,313 SF = 3,031 WATTS

TOTAL = 3,031 WATTS ALLOWED

LIGHTS	WATTS	NUMBER	TOTAL
120W FIXTURES	130	21	2,730

TOTAL = 2,730 WATTS PROPOSED

No.	DATE	DESCRIPTION	BY
1	06/02/15	PER PLANNING OFFICE MEETING 06/02/15	BMC
2	06/22/15	AREA CALCULATIONS PER 10.6.3.2	BMC
3	6/26/15	ADD ZONING TABLE PER PLANNING OFFICE	TAL

REVISIONS

PROJ MANAGER: MBL
DRAFT DESIGNER: MBL
REVIEWED BY: DATE

SEAL

SEAL

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE: HORZ AS SHOWN / VERT
DATUM: HORZ / VERT

GRAPHIC SCALE

MBL
LAND DEVELOPMENT & PERMITTING, CORP
480 TURNPIKE STREET
NORTH EASTON, MA 02375
P 508 297 2766 F 508 297 2796
EMAIL info@MBLandDevelopment.com
WEB www.MBLandDevelopment.com

SITE DEVELOPMENT PLANS
SITE LIGHTING DETAILS
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No. 2014-028
DATE: MAY 26, 2015

C-7.1

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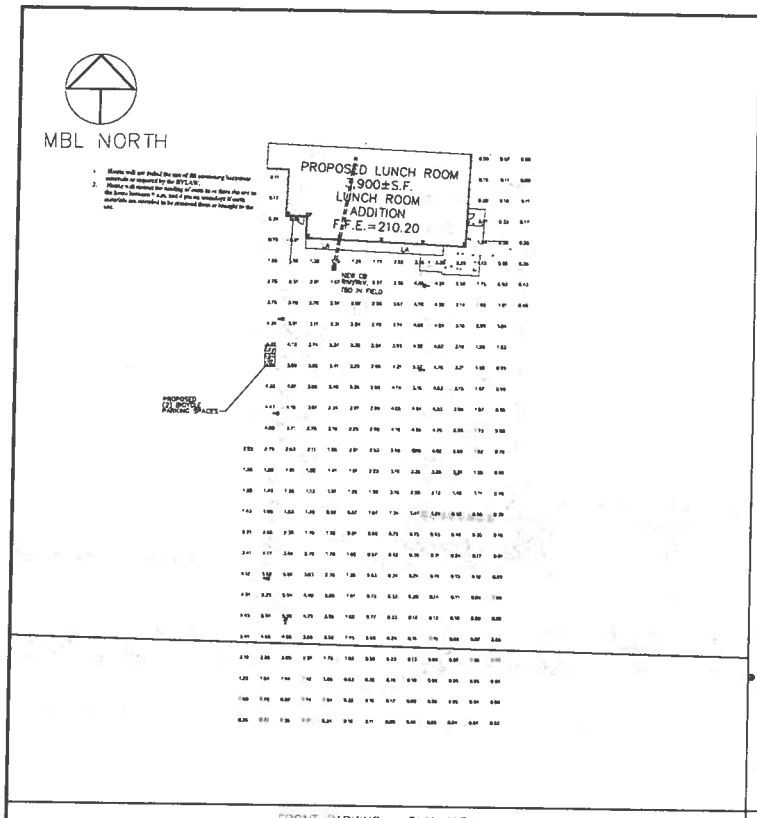


FRONT PARKING - PLAN VIEW

SCALE: 1" = 20'

SECTION 10.6.3.2

NOTES

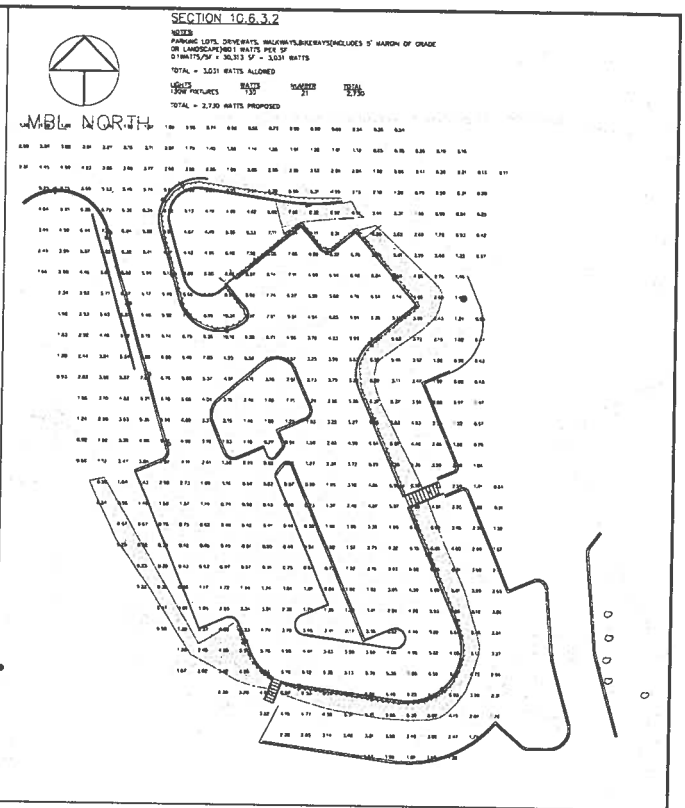
PARKING LOTS, DRIVEWAYS, WALKWAYS, BIKEWAYS (INCLUDES 5' MARGIN OF GRADE OR LANDSCAPE) 0.1 WATTS PER SF

0.1WATTS/SF x 30,313 SF = 3,031 WATTS

TOTAL = 3,031 WATTS ALLOWED

LIGHTS	WATTS	WALKWAYS	TOTAL
15ZW FIXTURES	135	21	2,835

TOTAL = 2,730 WATTS PROPOSED



REAR PARKING AREA - PLAN VIEW

SCALE: 1" = 20'

			PROJ. MANAGER: MBL	
			CHIEF DESIGNER: MBL	
			REVIEWED BY:	DATE:
3	06/26/2015	PER PLANNING OFFICE MEETING 06/23/2015	BAD	
2	05/19/2015	AREA CALCULATIONS PER PB OFFICE	BAD	
1	5/8/2015	ADD ZONING TABLE PER PLANNING OFFICE	TAL	
No.	DATE	DESCRIPTION	BY	
		REVISIONS		

SEAL

SEAL

PREPARED FOR

HAARTZ CORPORATION

87 HAYWARD ROAD

ACTON MASSACHUSETTS

SCALE: HORIZ.: AS SHOWN VERT.:

DATUM: HORIZ.: VERT.:

GRAPHIC SCALE

MBL

LAND DEVELOPMENT & PERMITTING, CORP.

480 TURNPIKE STREET

SOUTH EASTON, MA 02375

P 508 297 3748 F 508 297 3798

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SITE DEVELOPMENT PLANS

SITE LIGHTING PLAN

87 HAYWARD ROAD

ACTON MASSACHUSETTS

PROJ. No.: 2014-028

DATE: MAY 28, 2015

C-7.0

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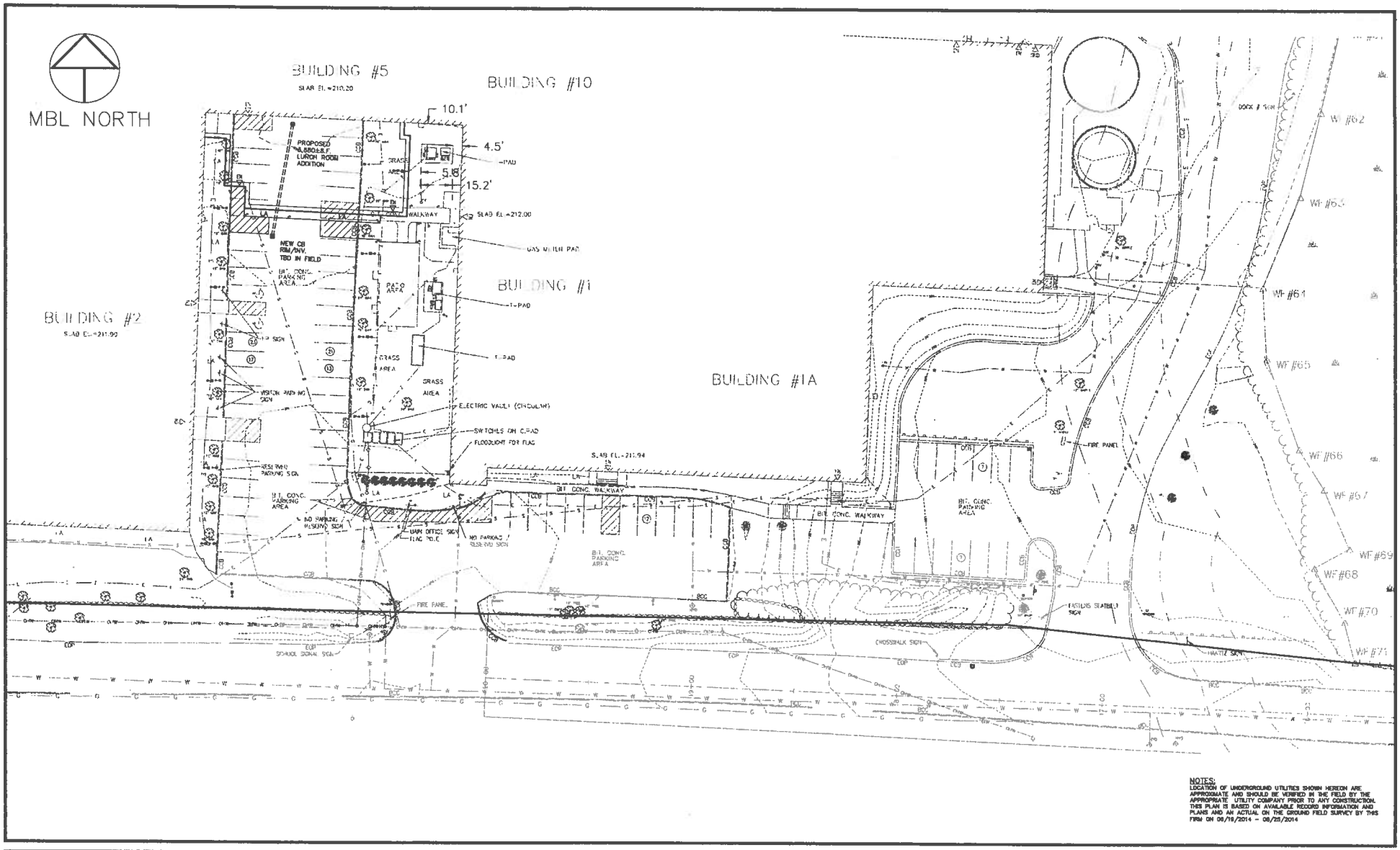

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANS AND AN ACTUAL ON THE GROUND FIELD SURVEY BY THIS FIRM ON 06/16/2014 – 06/25/2014

No.	DATE	DESCRIPTION	BY
1			

REVISIONS

PROJ. MANAGER:	MBL
CHIEF DESIGNER:	MBL
REVIEWED BY:	DATE

SEAL

SEAL: COMMONWEALTH OF MASSACHUSETTS JAMES E. MILLER CIVIL No. 31064

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE: HORZ.: 1"=20' VERT.:
DATUM: HORZ.: VERT.:
20 10 0 20
GRAPHIC SCALE

MBL
LAND DEVELOPMENT & PERMITTING, CORP.
LAND DEVELOPMENT, TRANSPORTATION AND ENVIRONMENTAL SOLUTIONS
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WEB: www.MBLLandDevelopment.com

SITE DEVELOPMENT PLANS
GRADING, DRAINAGE, UTILITY & EROSION CONTROL PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-5.0

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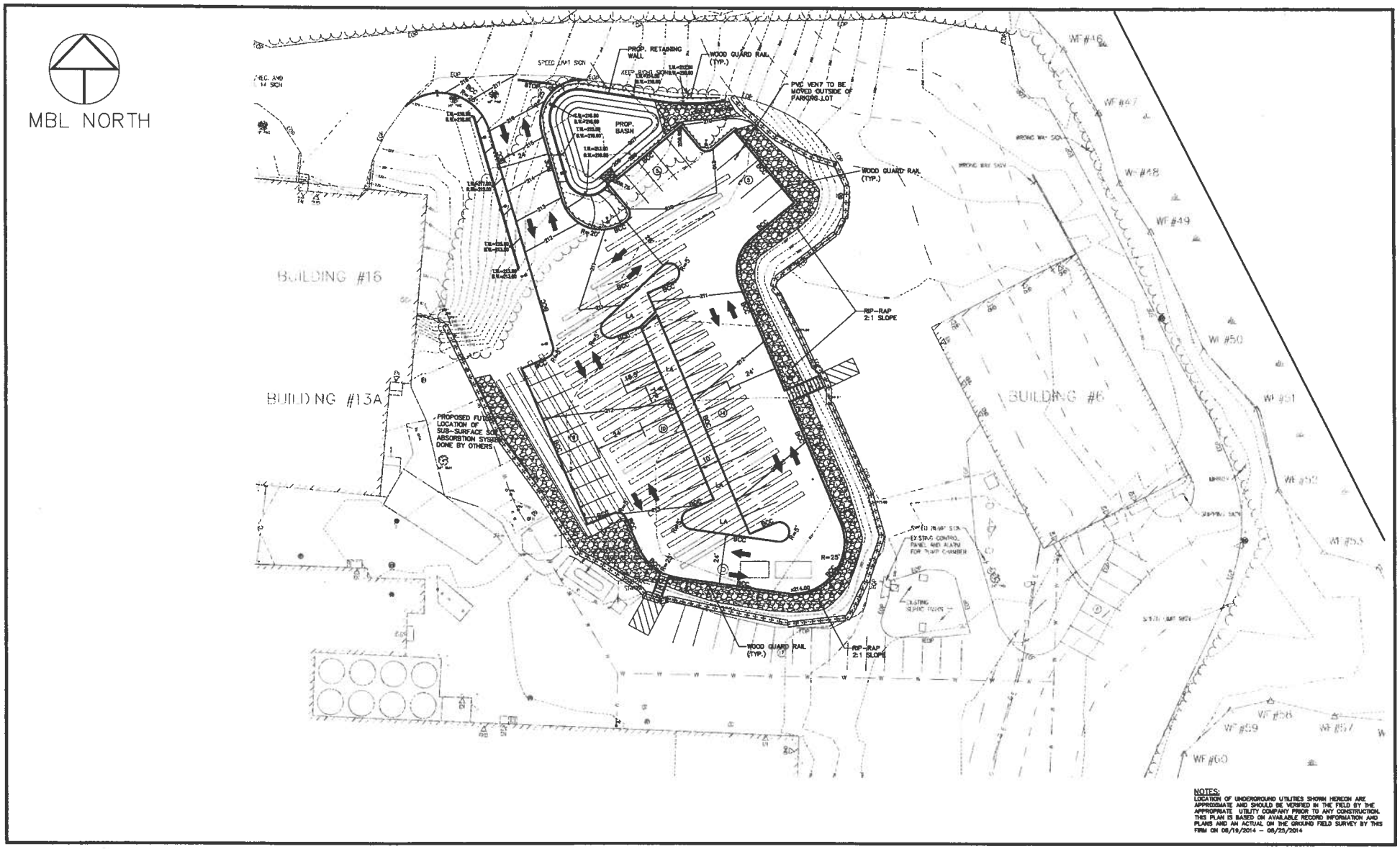

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANS AND AN ACTUAL ON THE GROUND FIELD SURVEY BY THIS FIRM ON 08/19/2014 – 08/23/2014

No.	DATE	DESCRIPTION	BY
1			

REVISIONS

PROJ. MANAGER:	MBL
CHIEF DESIGNER:	MBL
REVIEWED BY:	DATE

SEAL

SEAL: JAMES E. MILLER CIVIL No. 31064

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE: HORZ.: 1"=20' VERT.:
DATUM: HORZ.: VERT.:
GRAPHIC SCALE 20 10 0 20

MBL
LAND DEVELOPMENT & PERMITTING, CORP.
LAND DEVELOPMENT, TRANSPORTATION AND ENVIRONMENTAL ENGINEERS
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WEB: www.MBLLandDevelopment.com

SITE DEVELOPMENT PLANS
GRADING, DRAINAGE, UTILITY & EROSION CONTROL PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-5.1

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LAYOUT: WORLD MS VIEW: 1920 LAMAK CTB: MBL Standard

MBL NORTH

GROUNDWATER RECHARGE CALCULATIONS
TOTAL RECHARGE VOLUME REQUIRED(OVERALL SITE–NET INCREASE):
FOR HRCS SOIL CLASS B, DEPTH = 0.35 INCHES
TOTAL SITE IMPERVIOUS AREA = 0.552 ACRES (ROOF AND PARKING LOT)
RECHARGE VOLUME = 0.35 INCHES X 0.552 ACRES = 0.1632 ACRE–INCHES
0.1632 ACRE–INCHES / 12 INCHES/FT = 0.0161 ACRE–FT
0.0161 ACRE–FT X (43,560 S.F./ACRE) = 701.32 CU.FT. TO RECHARGE

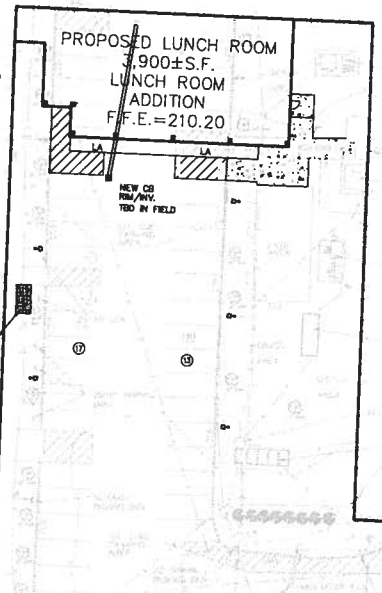
MINIMUM DISTANCE TO GROUNDWATER IS 7FT. WHERE THE BASIN IS PROPOSED NEAR TEST PIT#3(MOTTLES @ 200.0). TEST PIT#3 HAS BEEN TAKEN FROM A PLAN TITLED, "SEWAGE DISPOSAL PLAN", PREPARED BY STAMSKI AND McNARY, INC., DATED OCTOBER 10, 2014.

Table 3.2.4 Pre- and Post-Development Peak Discharge Rates

Design Point	3-year storm (cfs)		10-year storm (cfs)		100-year storm (cfs)	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
BR	22.69	22.17	34.69	33.09	49.65	49.65
Total	22.69	22.17	34.69	33.09	49.65	49.65

Table 3.2.5 Pre- and Post-Development Volume Runoff Rates

Design Point	3-year storm (af)		10-year storm (af)		100-year storm (af)	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
BR	1.749	1.720	2.682	2.559	3.811	3.812
Total	22.69	22.17	34.69	33.09	49.65	49.65



ZONING TABLE

ZONE: GENERAL INDUSTRIAL
GROUNDWATER PROTECTION ZONE 4

USE: MANUFACTURING/INDUSTRIAL

	REQUIRED ALLOWED	EXISTING	CHANGE	PROPOSED
MIN. LOT AREA	40,000 S.F. (0.918 ACRES)	2,461,227± S.F. (56.502± ACRES)	NONE	2,461,227± S.F. (56.502± ACRES)
FRONTAGE	100 FT.	1,819.44 FT.	NONE	1,819.44 FT.
SETBACKS				
FRONT	45 FT.	37.4 FT.(HAYWARD) 285.9 FT.(CHARTER)	NONE	37.4 FT.(HAYWARD) 285.9 FT.(CHARTER)
SIDE	20 FT.	37.4 FT.(HAYWARD) 285.9 FT.(CHARTER)	NONE	37.4 FT.(HAYWARD) 285.9 FT.(CHARTER)
REAR	20 FT.	68.0 FT.(ROUTE 2) (NO) 49 FT.(ROUTE 2)	NONE	68.0 FT.(ROUTE 2) (NO) 49 FT.(ROUTE 2)
BUILDING HEIGHT	40FT.(MAX)	30FT.±	NONE	16 FT.
BUILDING AREA		320,347 S.F.	3,880 S.F.	324,227 S.F.
FLOOR AREA RATIO	0.20	0.1737	0.002252	0.1760
% OF LOT COVERAGE	35.0%(MAX)	13.01%	0.01%	13.02%
BUILDING		7.409 ACRES	0.069 ACRES	7.488 ACRES
PAVEMENT		5.229 ACRES	0.462 ACRES	5.691 ACRES
OPEN SPACE		33.002 ACRES	–0.551 ACRES	32.451 ACRES
WETLANDS		6.86 ACRES	0.000 ACRES	6.86 ACRES
FLOODPLAIN		9.301 ACRES	0.000 ACRES	9.301 ACRES
DEVELOPABLE SITE AREA = LOT AREA–WET–FLOOD	56.502 – (5.807 – 8.045) = 42.65± ACRES OR 1,857,834±SF			

** = COMBINED WETLAND/FLOOD PLAIN TO GREATEST EXTENT COMBINED

PARKING SUMMARY

	EXISTING	PROPOSED
TOTAL PARKING SPACES(*)	228	261
PARKING SPACES – OF BLDG#2 & 5 LOST FROM PROP. ADDITION	12	
PARKING SPACES – OVER SEPTIC FIELD GAINED FROM PARKING LOT CONFIGURATION	43	

(*)PARKING REQUIREMENTS: 1 SPACE FOR 2,000 S.F.(FIRST 20,000 S.F.); 1 SPACE FOR 10,000 S.F.(REMAINING AREA); OR ONE SPACE FOR EACH EMPLOYEE ON THE LARGEST SHIFT, WHICHEVER IS GREATER.

ACCESSIBLE PARKING SPACE REQUIREMENT PER ADA STANDARDS FOR ACCESSIBLE DESIGN, 28 CRF PART 36, SECTION 4.1.2 WHEN TOTAL PARKING IS BETWEEN 26–50 SPACES, REQUIRED MINIMUM NUMBER OF ACCESSIBLE SPACES IS 2.

TOTAL EXISTING HANDICAPPED PARKING IS 2.

NOTE: THE PROPOSED BUILDING AND ADDITIONS ARE SHOWN FOR COORDINATION PURPOSES ONLY. CONTRACTOR TO REFER TO ARCHITECTURAL PLANS PREPARED BY THE ARCHITECT OF RECORD FOR EXACT DIMENSIONS AND LAYOUT.

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANS AND AN ACTUAL ON THE GROUND FIELD SURVEY BY THIS FIRM ON 08/19/2014 – 08/25/2014

No.	DATE	DESCRIPTION	BY
3	06/26/2015	PER PLANNING OFFICE MEETING 06/23/2015	BMD
2	06/18/2015	AREA CALCULATIONS PER PB OFFICE	BMD
1	6/8/2015	ADD ZONING TABLE PER PLANNING OFFICE	THL

REVISIONS

PROJ. MANAGER: MBL
CHIEF DESIGNER: MBL
REVIEWED BY: DATE

SEAL: JAMES E. MILLER No. 34383
SEAL: JAMES E. MILLER CIVIL No. 31964

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE: HORZ.: 1"=20' VERT.:
DATUM: HORZ.: VERT.:
20 10 0 20
GRAPHIC SCALE

MBL
LAND DEVELOPMENT & PERMITTING, CORP.
480 TURNPIKE STREET
SOUTH EASTON, MA 02375
P.508.297.2748 F.508.297.2766
EMAIL:info@MBLandDevelopment.com
WEB: www.MBLLandDevelopment.com

SITE DEVELOPMENT PLANS
LAYOUT AND MATERIAL PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-4.0

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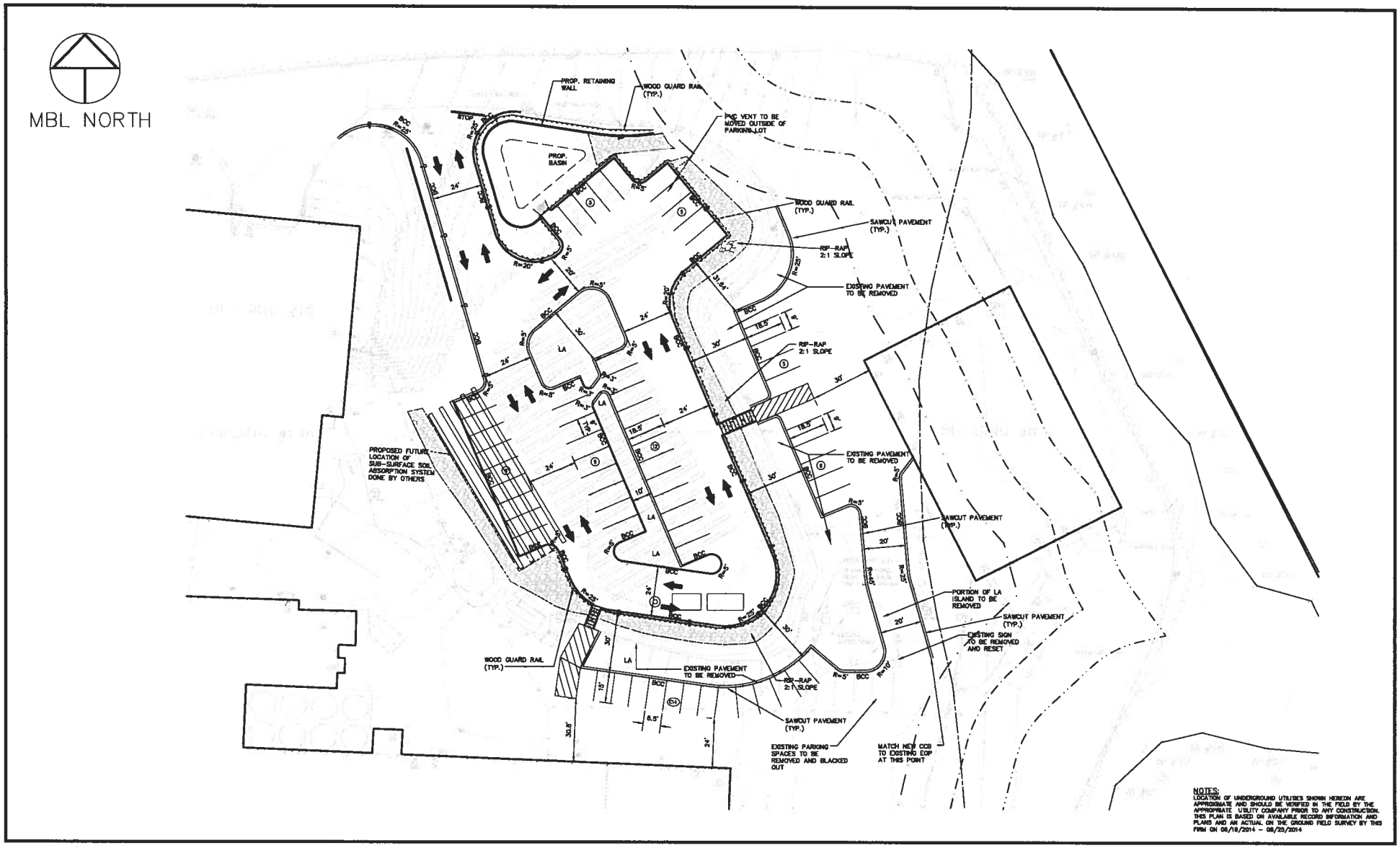

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANS AND AN ACTUAL ON THE GROUND FIELD SURVEY BY THIS FIRM ON 06/19/2014 – 06/23/2014

No.	DATE	DESCRIPTION	BY
3	06/26/2015	PER PLANNING OFFICE MEETING 06/23/2015	BMD
2	06/19/2015	AREA CALCULATIONS PER PB OFFICE	BMD
1	6/8/2015	ADD ZONING TABLE PER PLANNING OFFICE	THL

REVISIONS

PROJ. MANAGER:	MBL
CHIEF DESIGNER:	MBL
REVIEWED BY:	DATE

SEAL: COMMONWEALTH OF MASSACHUSETTS JAMES E. MILLER No. 36325

SEAL: COMMONWEALTH OF MASSACHUSETTS JAMES E. MILLER CIVIL No. 31064

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE:
HORZ.: 1"=20'
VERT.:
DATUM:
HORZ.:
VERT.:
20 10 0 20
GRAPHIC SCALE

MBL
LAND DEVELOPMENT & PERMITTING, CORP.
480 TURNPIKE STREET
SOUTH EASTON, MA 02375
P.508.297.2746 F.508.297.2756
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SITE DEVELOPMENT PLANS
LAYOUT AND MATERIAL PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-4.1

LOCK: WHILD | NAS VIEW: wp20 | LAMA: | CTTB: MBL Standard

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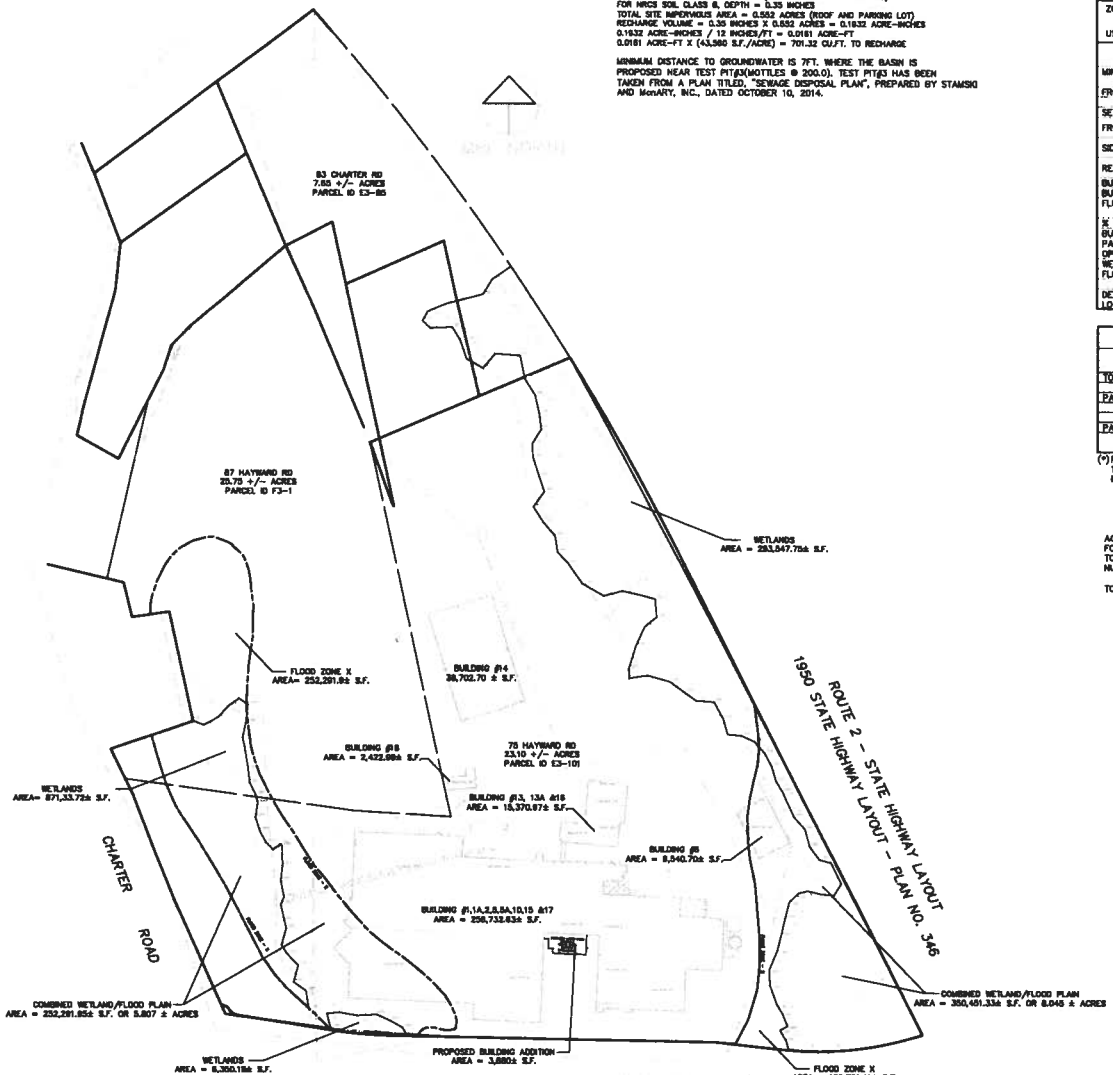
MBL NORTH

GROUNDWATER RECHARGE CALCULATIONS
TOTAL RECHARGE VOLUME REQUIRED(OVERALL SITE-NET INCREASE):
FOR NRCS SOIL CLASS B, DEPTH = 0.35 INCHES
TOTAL SITE IMPERVIOUS AREA = 0.552 ACRES (ROOF AND PARKING LOT)
RECHARGE VOLUME = 0.35 INCHES X 0.552 ACRES = 0.1932 ACRE-INCHES
0.1932 ACRE-INCHES / 12 INCHES/FT = 0.0161 ACRE-FT
0.0161 ACRE-FT X (43,560 S.F./ACRE) = 701.32 CU.FT. TO RECHARGE

MINIMUM DISTANCE TO GROUNDWATER IS 7FT. WHERE THE BASIN IS PROPOSED NEAR TEST PIT#3(MOTTLES @ 200.0). TEST PIT#3 HAS BEEN TAKEN FROM A PLAN TITLED, "SEWAGE DISPOSAL PLAN", PREPARED BY STAMSKI AND McNARY, INC., DATED OCTOBER 10, 2014.



NOTE: THE PROPOSED BUILDING AND ADDITIONS ARE SHOWN FOR COORDINATION PURPOSES ONLY. CONTRACTOR TO REFER TO ARCHITECTURAL PLANS PREPARED BY THE ARCHITECT OF RECORD FOR EXACT DIMENSIONS AND LAYOUT.

ZONING TABLE

ZONE: GENERAL INDUSTRIAL
GROUNDWATER PROTECTION ZONE 4

USE: MANUFACTURING/INDUSTRIAL

	REQUIRED ALLOWED	EXISTING	CHANGE	PROPOSED
MIN. LOT AREA	40,000 S.F. (0.918 ACRES)	2,461,227± S.F. (56.502± ACRES)	NONE	2,461,227± S.F. (56.502± ACRES)
FRONTAGE	100 FT.	1,818.44 FT.	NONE	1,818.44 FT.
SETBACKS				
FRONT	45 FT.	37.4 FT.(HAYWARD) 285.8 FT.(CHARTER)	NONE	37.4 FT.(HAYWARD) 285.8 FT.(CHARTER)
SIDE	20 FT.	37.4 FT.(HAYWARD) 285.8 FT.(CHARTER)	NONE	37.4 FT.(HAYWARD) 285.8 FT.(CHARTER)
REAR	20 FT.	69.0 FT.(ROUTE 2) OVER 400 FT.(ROUTE 2)	NONE	69.0 FT.(ROUTE 2) OVER 400 FT.(ROUTE 2)
BUILDING HEIGHT	40FT.(MAX)	30FT.±	NONE	18 FT.
BUILDING AREA		320,347 S.F.	3,880 S.F.	324,227 S.F.
FLOOR AREA RATIO	0.20	0.1737	0.00232	0.1760
% OF LOT COVERAGE	35.02%(MAX)	13.01%	0.01%	13.02%
BUILDING		7.409 ACRES	0.089 ACRES	7.498 ACRES
PAVEMENT		5.229 ACRES	0.462 ACRES	5.691 ACRES
OPEN SPACE		33.092 ACRES	-0.581 ACRES	32.451 ACRES
WETLANDS		8.88 ACRES	0.000 ACRES	8.88 ACRES
FLOODPLAIN		9.391 ACRES	0.000 ACRES	9.391 ACRES
DEVELOPABLE SITE AREA = LOT AREA-WET-FLOOD	56.502 - (5.807 ** - 8.045) = 42.65± ACRES OR 1,857,834±SF			

** = COMBINED WETLAND/FLOOD PLAIN TO GREATEST EXTENT COMBINED

PARKING SUMMARY

	EXISTING	PROPOSED
TOTAL PARKING SPACES(*)	226	261
PARKING SPACES - OF BLDGS2 & 5 LOST FROM PROP. ADDITION	12	
PARKING SPACES - OVER SEPTIC FIELD GAINED FROM PARKING LOT CONFIGURATION	43	

(*)PARKING REQUIREMENTS: 1 SPACE FOR 2,000 S.F.(FIRST 20,000 S.F.); 1 SPACE FOR 10,000 S.F.(REMAINING AREA); OR ONE SPACE FOR EACH EMPLOYEE ON THE LARGEST SHIFT, WHICHEVER IS GREATER.

ACCESSIBLE PARKING SPACE REQUIREMENT PER ADA STANDARDS FOR ACCESSIBLE DESIGN, 28 CRF PART 36, SECTION 4.1.2 WHEN TOTAL PARKING IS BETWEEN 26-50 SPACES, REQUIRED MINIMUM NUMBER OF ACCESSIBLE SPACES IS 2.

TOTAL EXISTING HANDICAPPED PARKING IS 2.

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANS AND AN ACTUAL ON THE GROUND FIELD SURVEY BY THIS FIRM ON 08/18/2014 - 08/29/2014

No.	DATE	DESCRIPTION	BY
3	08/26/2015	PER PLANNING OFFICE MEETING 08/25/2015	BMD
2	08/18/2015	AREA CALCULATIONS PER PB OFFICE	BMD
1	6/8/2015	ADD ZONING TABLE PER PLANNING OFFICE	THL

REVISIONS

PROJ. MANAGER: MBL
CHIEF DESIGNER: MBL
REVIEWED BY: DATE

SEAL: JAMES E. MILLER No. 36385
SEAL: JAMES E. MILLER CIVIL No. 31064

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE:
HORZ. 1"=130'
VERT.:
DATUM:
HORZ.:
VERT.:
130 65 0 130
GRAPHIC SCALE

MBL
LAND DEVELOPMENT & PERMITTING, CORP.
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SITE DEVELOPMENT PLANS
AREA CALCULATION PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-4.2

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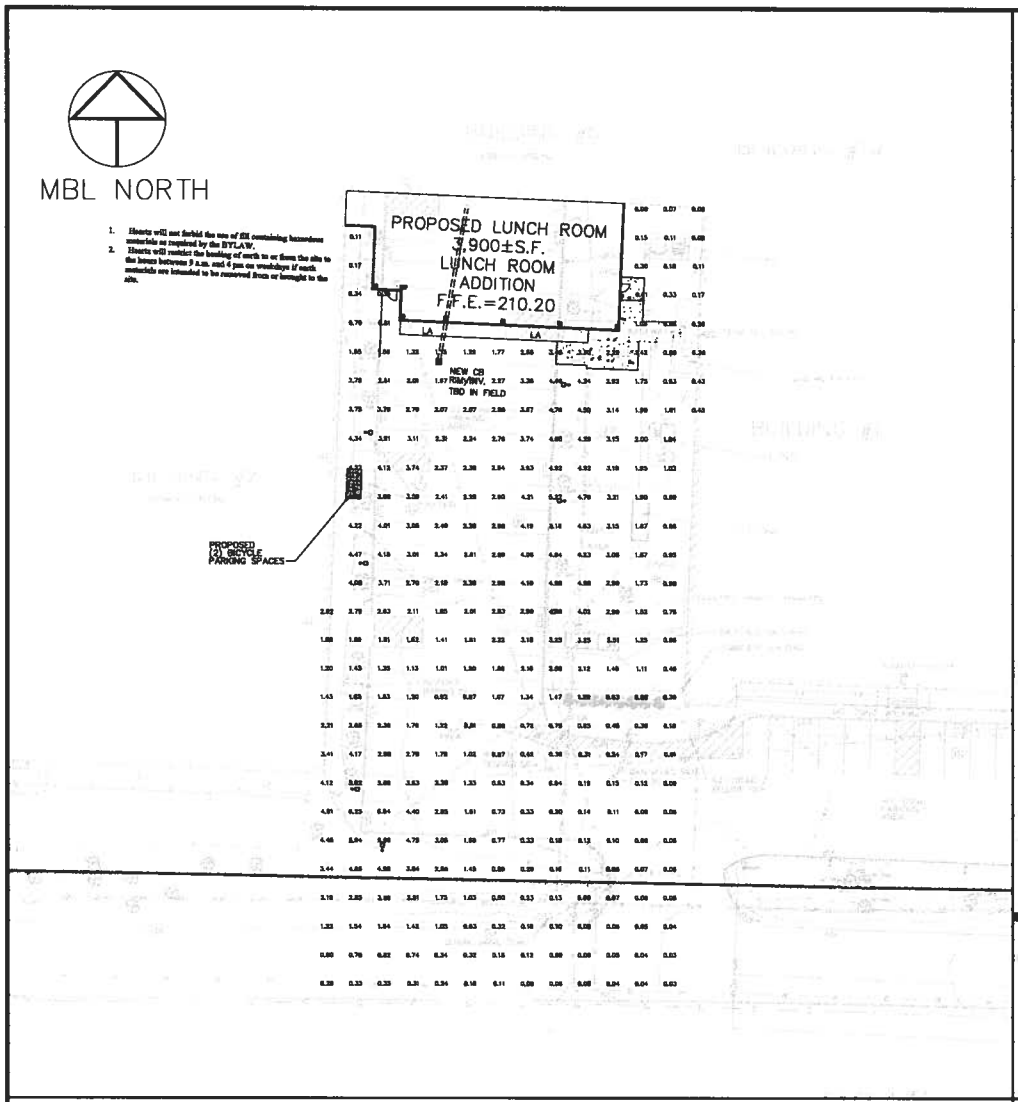
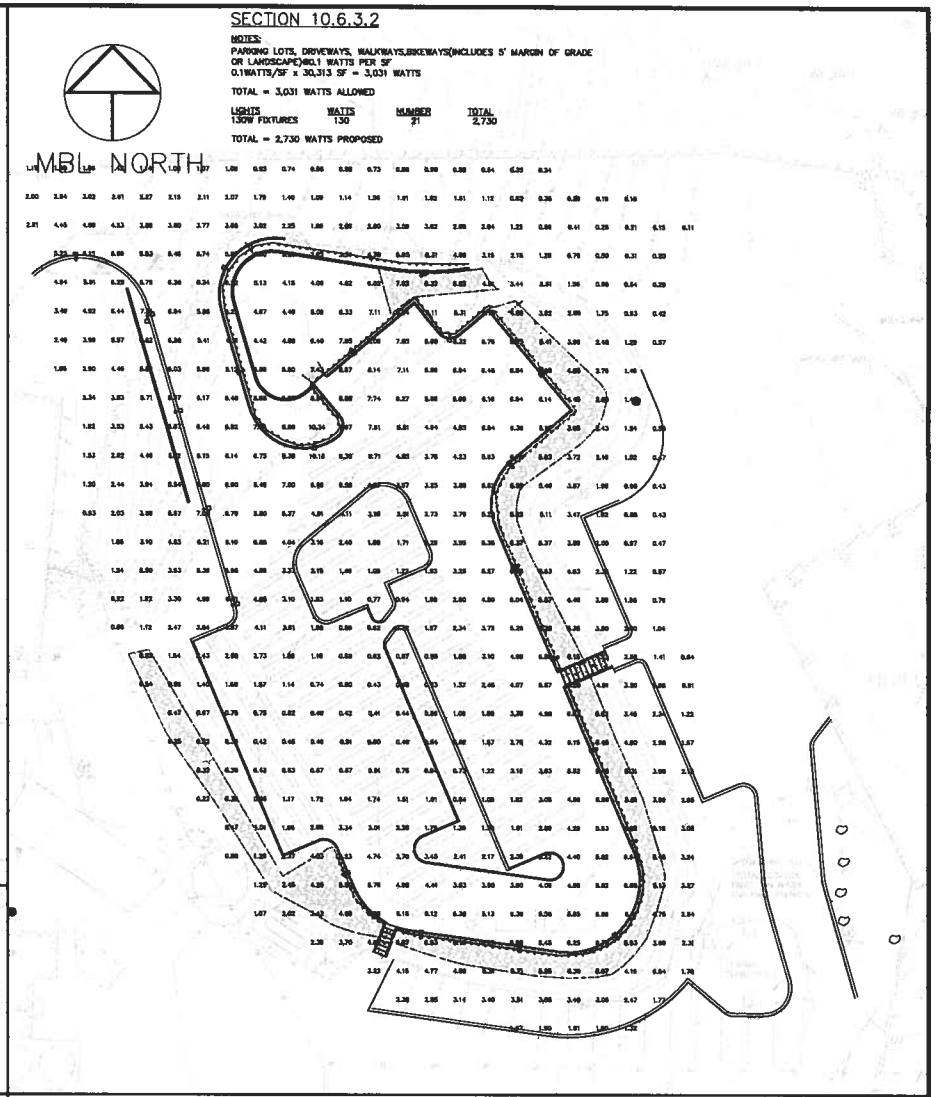


FRONT PARKING – PLAN VIEW

SCALE: 1" = 20'



SECTION 10.6.3.2

NOTES:
PARKING LOTS, DRIVEWAYS, WALKWAYS,BIKEWAYS(INCLUDES 5' MARGIN OF GRADE OR LANDSCAPE)@0.1 WATTS PER SF
0.1WATTS/SF x 30,313 SF = 3,031 WATTS

TOTAL = 3,031 WATTS ALLOWED

LIGHTS	WATTS	NUMBER	TOTAL
130W FIXTURES	130	21	2,730

TOTAL = 2,730 WATTS PROPOSED

REAR PARKING AREA – PLAN VIEW

SCALE: 1" = 20'

No.	DATE	DESCRIPTION	BY
3	06/26/2015	PER PLANNING OFFICE MEETING 06/23/2015	BMD
2	06/18/2015	AREA CALCULATIONS PER PB OFFICE	BMD
1	6/8/2015	ADD ZONING TABLE PER PLANNING OFFICE	THL

REVISIONS

PROJ. MANAGER: MBL
CHIEF DESIGNER: MBL
REVIEWED BY: DATE

SEAL

SEAL

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE:
HORZ.: AS SHOWN
VERT.:
DATUM:
HORZ.:
VERT.:
GRAPHIC SCALE

MBL
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SITE DEVELOPMENT PLANS
SITE LIGHTING PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

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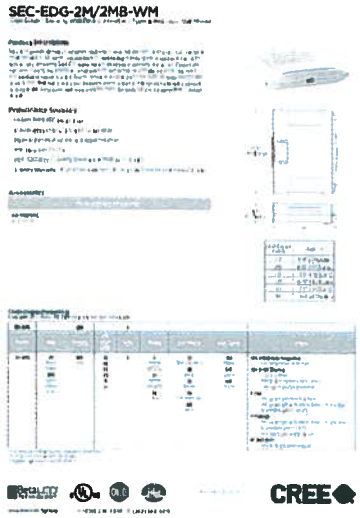

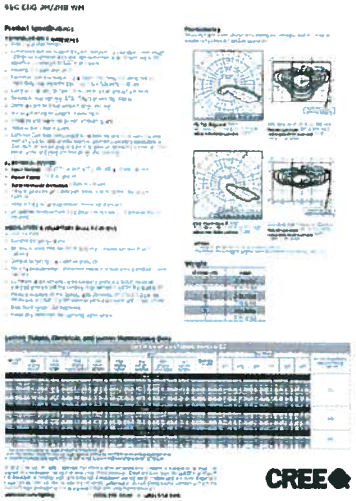

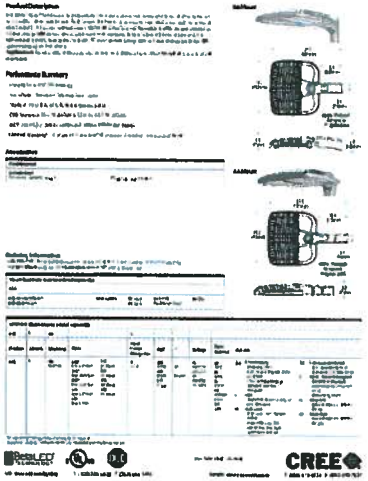

SECTION 10.6.3.2

NOTES:

PARKING LOTS, DRIVEWAYS, WALKWAYS,BIKEWAYS(INCLUDES 5' MARGIN OF GRADE OR LANDSCAPE)@0.1 WATTS PER SF
0.1WATTS/SF x 30,313 SF = 3,031 WATTS

TOTAL = 3,031 WATTS ALLOWED

LIGHTS	WATTS	NUMBER	TOTAL
130W FIXTURES	130	21	2,730

TOTAL = 2,730 WATTS PROPOSED

No.	DATE	DESCRIPTION	BY
3	08/28/2015	PER PLANNING OFFICE MEETING 08/23/2015	BMD
2	08/18/2015	AREA CALCULATIONS PER PB OFFICE	BMD
1	6/9/2015	ADD ZONING TABLE PER PLANNING OFFICE	TML

REVISIONS

PROJ. MANAGER: MBL
CHIEF DESIGNER: MBL
REVIEWED BY: DATE

SEAL

SEAL

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE:
HORZ.: AS SHOWN
VERT.:
DATUM:
HORZ.:
VERT.:
0
GRAPHIC SCALE

MBL
LAND DEVELOPMENT & PERMITTING, CORP.
480 TURNPIKE STREET
SOUTH EASTON, MA 02375
P.508.297.2748 F.508.297.2758
EMAIL:Info@MBLLandDevelopment.com
WEB: www.MBLLandDevelopment.com

SITE DEVELOPMENT PLANS
SITE LIGHTING DETAILS
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-7.1

UCS: WRLD VIS VIEW: vp30 LMAN: CTB: MBL Standard
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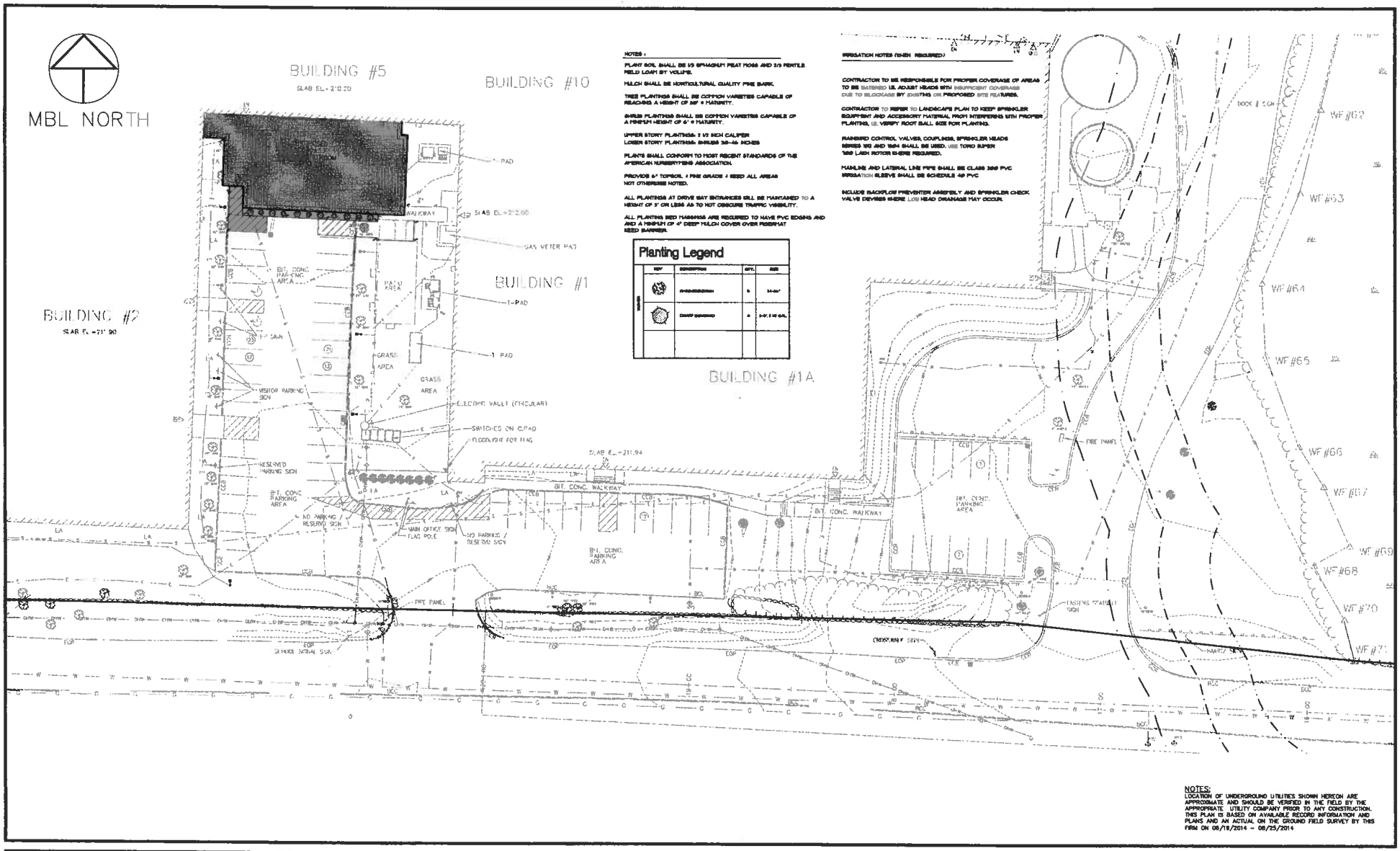

NOTES :

PLANT SOIL SHALL BE 1/3 SPHAGNUM PEAT MOSS AND 2/3 FERTILE FIELD LOAM BY VOLUME.

MULCH SHALL BE HORTICULTURAL QUALITY PINE BARK.

TREE PLANTINGS SHALL BE COTTON VARIETIES CAPABLE OF REACHING A HEIGHT OF 30' ± MATURITY.

SHRUB PLANTINGS SHALL BE COTTON VARIETIES CAPABLE OF A MINIMUM HEIGHT OF 6' ± MATURITY.

UPPER STORY PLANTINGS: 2 1/2 INCH CALIPER
LOWER STORY PLANTINGS: SHRUBS 36-48 INCHES

PLANTS SHALL CONFORM TO MOST RECENT STANDARDS OF THE AMERICAN NURSERYMENS ASSOCIATION.

PROVIDE 6" TOPSOIL + FINE GRADE + SEED ALL AREAS NOT OTHERWISE NOTED.

ALL PLANTINGS AT DRIVE WAY ENTRANCES WILL BE MAINTAINED TO A HEIGHT OF 3' OR LESS AS TO NOT OBSCURE TRAFFIC VISIBILITY.

ALL PLANTING BED MARGINS ARE REQUIRED TO HAVE PVC EDGING AND AND A MINIMUM OF 4" DEEP MULCH COVER OVER FIBERMAT SEED BARRIER.

Planting Legend

KEY	DESCRIPTION	QTY.	SIZE
TREES	[illegible]	5	3-4 cal
	[illegible]	6	2-2.5 cal.

IRRIGATION NOTES (WHEN REQUIRED)

CONTRACTOR TO BE RESPONSIBLE FOR PROPER COVERAGE OF AREAS TO BE WATERED I.E. ADJUST HEADS WITH INSUFFICIENT COVERAGE DUE TO BLOCKAGE BY EXISTING OR PROPOSED SITE FEATURES.

CONTRACTOR TO REFER TO LANDSCAPE PLAN TO KEEP SPRINKLER EQUIPMENT AND ACCESSORY MATERIAL FROM INTERFERING WITH PROPER PLANTING. I.E. VERIFY ROOT BALL SIZE FOR PLANTING.

RAINBIRD CONTROL VALVES, COUPLINGS, SPRINKLER HEADS SERIES 1812 AND 1804 SHALL BE USED. USE TORO SUPER 1800 LASH ROTOR 15-SERE REQUIRED.

MAINLINE AND LATERAL LINE PIPE SHALL BE CLASS 200 PVC IRRIGATION SLEEVE SHALL BE SCHEDULE 40 PVC

INCLUDE BACKFLOW PREVENTER ASSEMBLY AND SPRINKLER CHECK VALVE DEVICES WHERE LOW HEAD DRAINAGE MAY OCCUR.

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANS AND AN ACTUAL ON THE GROUND FIELD SURVEY BY THIS FIRM ON 08/18/2014 – 08/25/2014

No.	DATE	DESCRIPTION	BY

REVISIONS

PROJ. MANAGER: MBL
CHIEF DESIGNER: MBL
REVIEWED BY: DATE

SEAL

SEAL: JAMES E. HILLER CIVIL No. 31064

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE:
HORZ.: 1"=20'
VERT.:
DATUM:
HORZ.:
VERT.:
20 10 0 20
GRAPHIC SCALE

MBL
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SITE DEVELOPMENT PLANS
LANDSCAPE PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-6.0

LICS: WHILD MB VIEW: vp09 LMAR: CTB: MBL Standard
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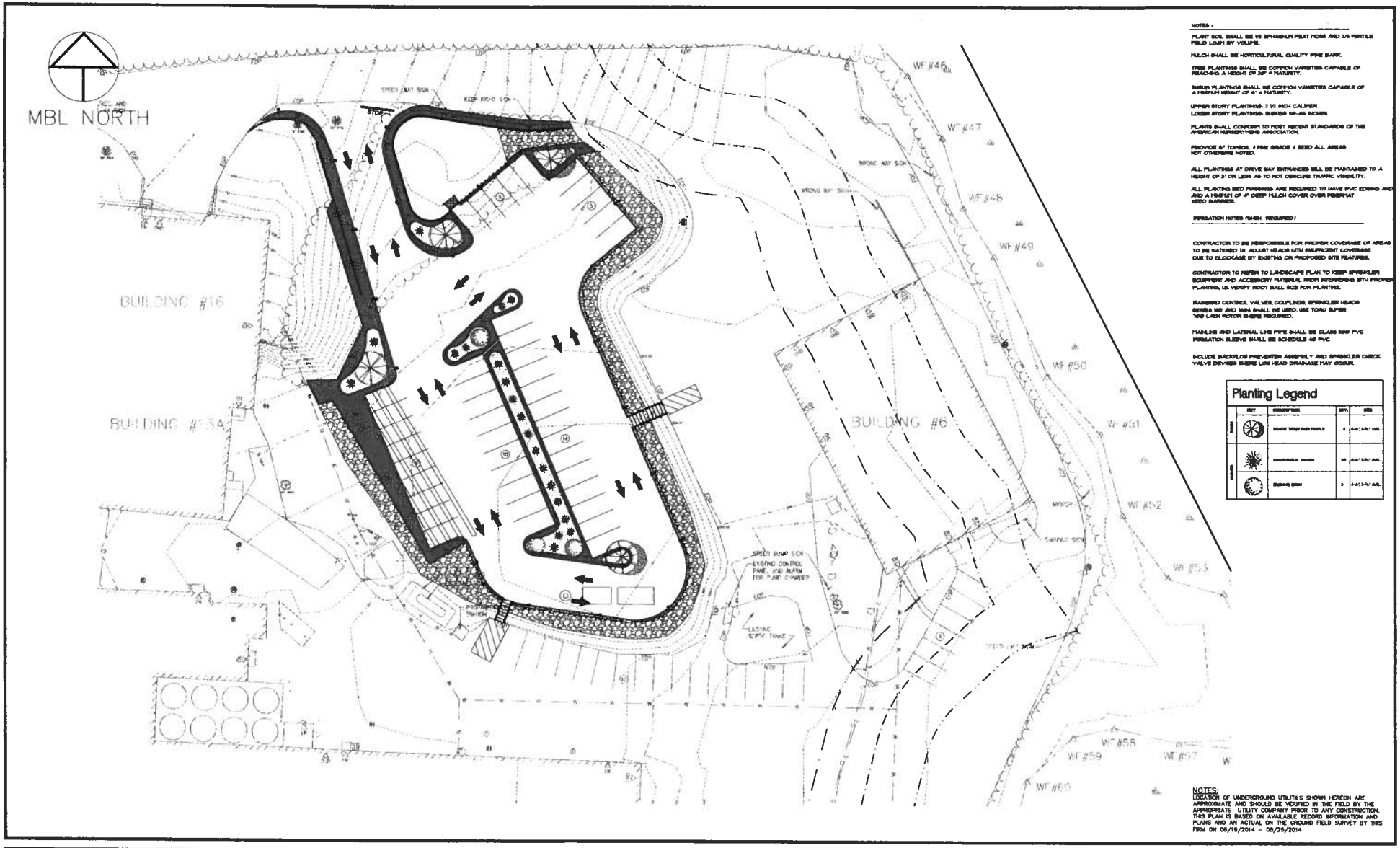

NOTES -

PLANT SOIL SHALL BE 1/3 SPHAGNUM PEAT MOSS AND 2/3 FERTILE FIELD LOAM BY VOLUME.

MULCH SHALL BE HORTICULTURAL QUALITY PINE BARK.

TREE PLANTINGS SHALL BE COTTON VARIETIES CAPABLE OF REACHING A HEIGHT OF 30' + MATURITY.

SHRUB PLANTINGS SHALL BE COTTON VARIETIES CAPABLE OF A MINIMUM HEIGHT OF 6' + MATURITY.

UPPER STORY PLANTINGS- 2 1/2 INCH CALIPER
LOWER STORY PLANTINGS- SHRUBS 24-48 INCHES

PLANTS SHALL CONFORM TO MOST RECENT STANDARDS OF THE AMERICAN NURSERYMENS ASSOCIATION.

PROVIDE 6" TOPSOIL & FINE GRADE & SEED ALL AREAS NOT OTHERWISE NOTED.

ALL PLANTINGS AT DRIVE WAY ENTRANCES WILL BE MAINTAINED TO A HEIGHT OF 3' OR LESS AS TO NOT OBSCURE TRAFFIC VISIBILITY.

ALL PLANTING BED MARGINS ARE REQUIRED TO HAVE PVC EDGING AND AND A MINIMUM OF 4" DEEP MULCH COVER OVER PERMEAT WEED BARRIER.

IRRIGATION NOTES (WHEN REQUIRED)

CONTRACTOR TO BE RESPONSIBLE FOR PROPER COVERAGE OF AREAS TO BE WATERED I.E. ADJUST HEADS WITH INSUFFICIENT COVERAGE DUE TO BLOCKAGE BY EXISTING OR PROPOSED SITE FEATURES.

CONTRACTOR TO REFER TO LANDSCAPE PLAN TO KEEP SPRINKLER EQUIPMENT AND ACCESSORY MATERIAL FROM INTERFERING WITH PROPER PLANTING I.E. VERIFY ROOT BALL SIZE FOR PLANTING.

RAINBIRD CONTROL VALVES, COUPLINGS, SPRINKLER HEADS SERIES 150 AND 1804 SHALL BE USED. USE TORO SUPER 'VAN' LASH ROTOR SERIES REQUIRED.

MAINLINE AND LATERAL LINE PIPE SHALL BE CLASS 200 PVC IRRIGATION SLEEVE SHALL BE SCHEDULE 40 PVC

INCLUDE BACKFLOW PREVENTER ASSEMBLY AND SPRINKLER CHECK VALVE DEVICES WHERE LOW HEAD DRAINAGE MAY OCCUR.

Planting Legend

	KEY	DESCRIPTION	QTY.	SIZE
TREES		SHADE TREE RED MAPLE	4	4-4'; 2-4½" BAL.
SHRUBS		ORNAMENTAL GRASS	30	4-6'; 2-5½" BAL.
		BURNING BUSH	3	4-4'; 2-5½" BAL.

NOTES:
LOCATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION. THIS PLAN IS BASED ON AVAILABLE RECORD INFORMATION AND PLANS AND AN ACTUAL ON THE GROUND FIELD SURVEY BY THIS FIRM ON 06/19/2014 – 08/25/2014

No.	DATE	DESCRIPTION	BY
1			

REVISIONS

PROJ. MANAGER:	MBL
CHIEF DESIGNER:	MBL
REVIEWED BY:	DATE

SEAL

SEAL: COMMONWEALTH OF MASSACHUSETTS JAMES E. MILLER CIVIL No. 31084

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE:
HORZ.: 1"=20'
VERT.:
DATUM:
HORZ.:
VERT.:
20 10 0 20
GRAPHIC SCALE

MBL
LAND DEVELOPMENT & PERMITTING, CORP.
480 TURNPIKE STREET
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SITE DEVELOPMENT PLANS
LANDSCAPE PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-6.1

USER: MRLD MS VIEW: ydb LAMC CTB: MBL Revised
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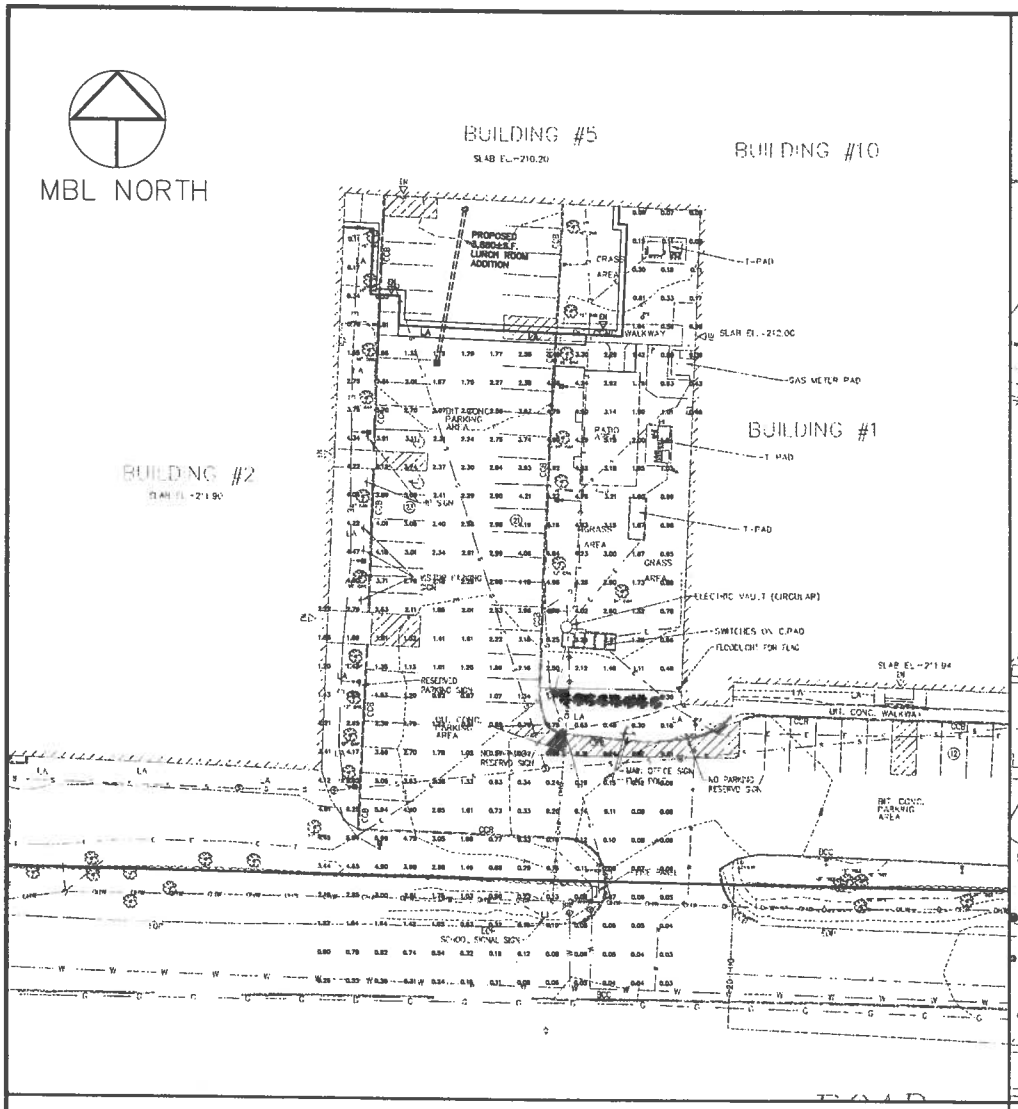
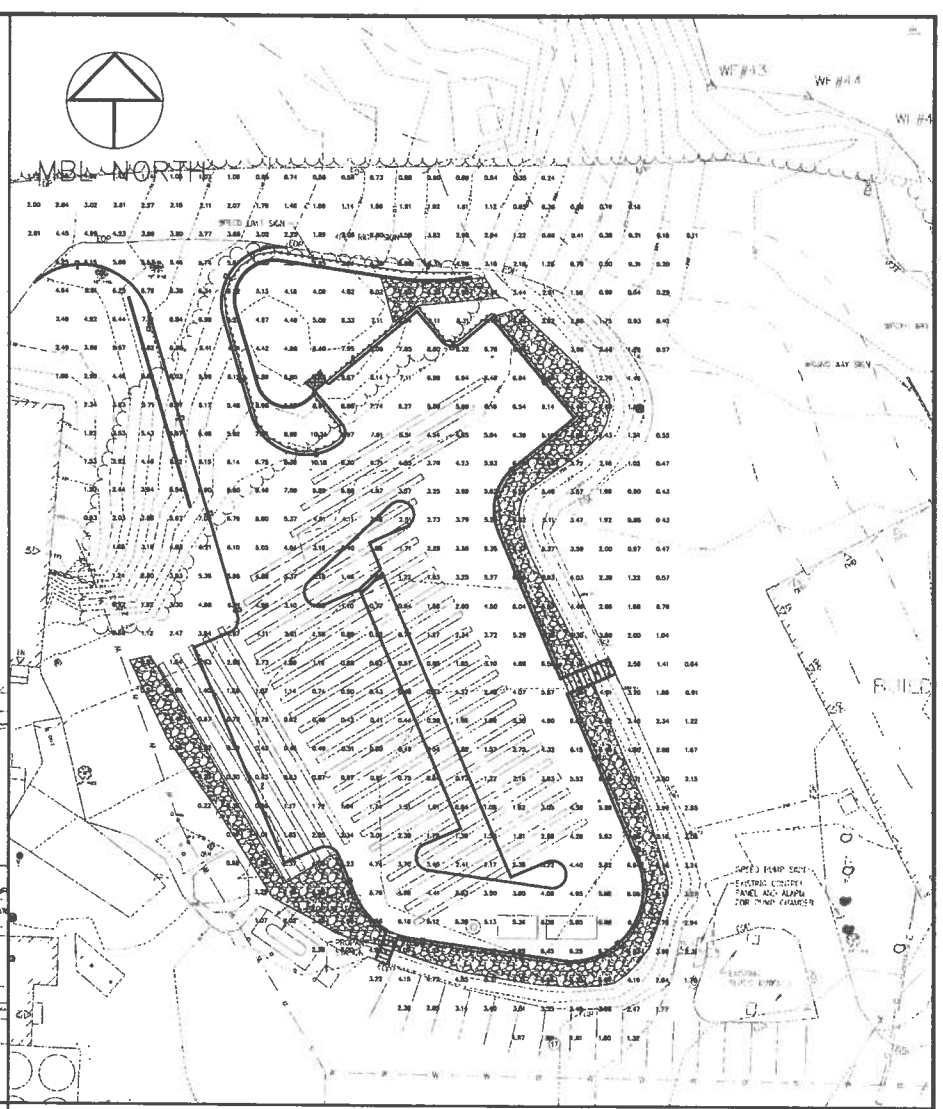


FRONT PARKING – PLAN VIEW

SCALE: 1" = 20'



REAR PARKING AREA – PLAN VIEW

SCALE: 1" = 20'

No.	DATE	DESCRIPTION	BY
1			

REVISIONS

PROJ. MANAGER:	MBL
CHIEF DESIGNER:	MBL
REVIEWED BY:	DATE

SEAL

SEAL: COMMONWEALTH OF MASSACHUSETTS JAMES E. MILLER CIVIL No. 31064

PREPARED FOR

HAARTZ CORPORATION
87 HAYWARD ROAD

ACTON MASSACHUSETTS

SCALE:
HORZ.: AS SHOWN
VERT.:
DATUM:
HORZ.:
VERT.:
0
GRAPHIC SCALE

MBL LAND DEVELOPMENT & PERMITTING, CORP.
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SITE DEVELOPMENT PLANS
SITE LIGHTING PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-7.0

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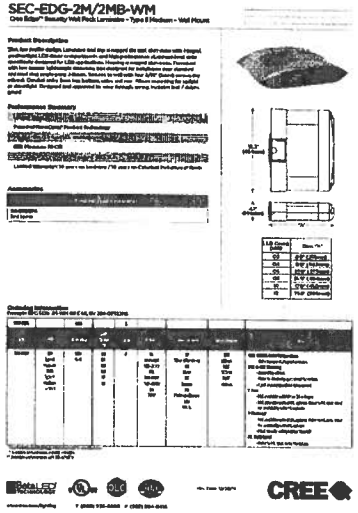

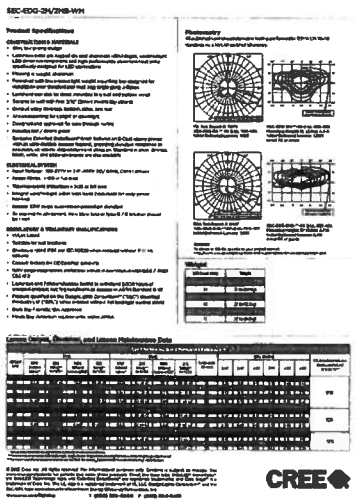

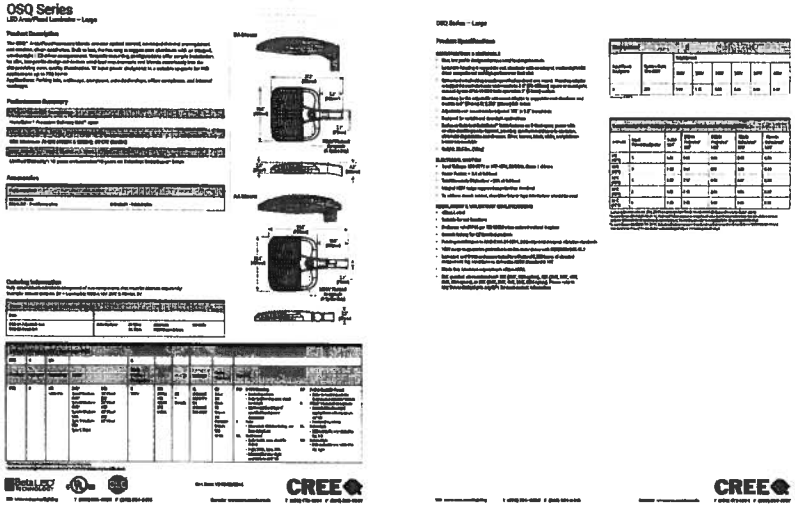

				PROJ. MANAGER:	MBL
				CHIEF DESIGNER:	MBL
				REVIEWED BY:	DATE
1					
No.	DATE	DESCRIPTION	BY		

REVISIONS

SEAL

COMMONWEALTH OF MASSACHUSETTS
JAMES E. MILLER
CIVIL
No. 31064

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE:
HORZ.: AS SHOWN
VERT.:
DATUM:
HORZ.:
VERT.:
0
GRAPHIC SCALE

MBL
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SITE DEVELOPMENT PLANS
SITE LIGHTING DETAILS
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-7.1

LICS: WRLD LMS VIEW: wp20 LMARK: CTB: MBL Standard

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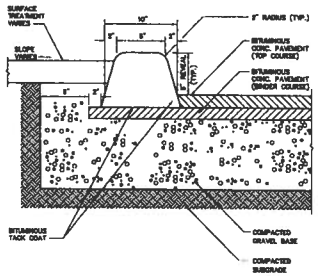
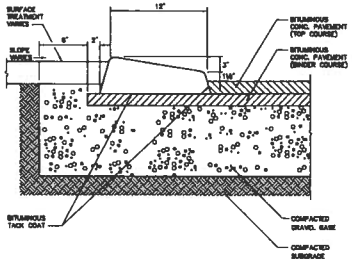
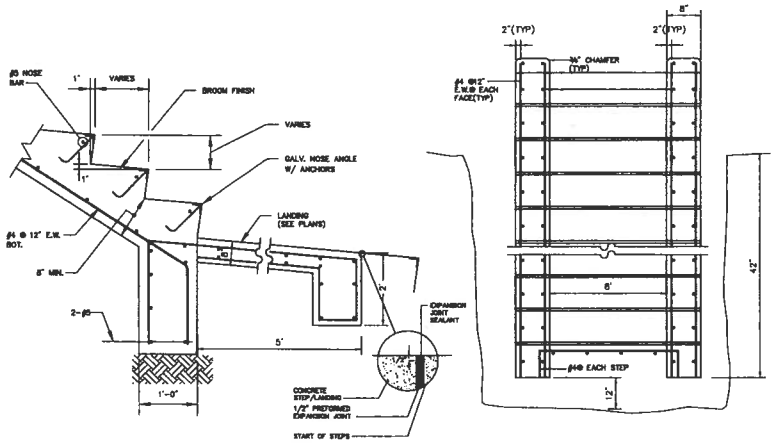


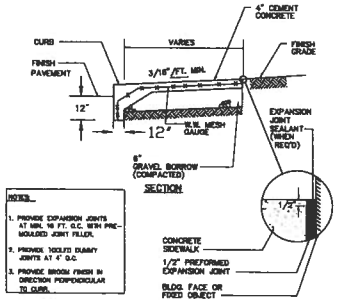
C-410 BITUMINOUS CURB (BC)
N.T.S.



C-411 CAPE COD BERM (CCB)
N.T.S.

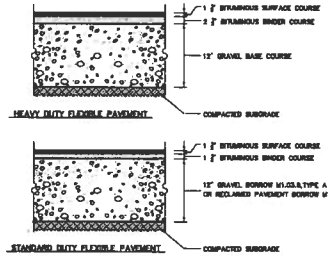


C-410 CONCRETE STEPS
N.T.S.



NOTES:
1. PROVIDE EXPANSION JOINTS AT MIN. 16 FT. O.C. WITH PRE-MOULDED JOINT FILLER.
2. PROVIDE TOOLED DUMMY JOINTS AT 4' O.C.
3. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

C-421 MONOLITHIC CONCRETE SIDEWALK AND CURB
N.T.S.



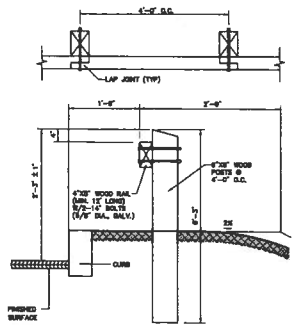
COMPOSITION AND COMPACTION ACCEPTANCE TESTS

1. OBTAIN SAMPLES FROM PLANT TO INDICATE CONFORMANCE WITH M3.11.09
2. PAVEMENT DENSITY AS OUTLINED IN M3.11.09
3. ALL SAMPLES TO BE TAKEN IN ACCORDANCE WITH AASHTO T230
4. MATERIALS SHALL MEET OR EXCEED THE REQUIREMENTS SPECIFIED IN SECTION M3.11.00 DIVISION(S) . MATERIALS AND THE FOLLOWING SUBSECTIONS

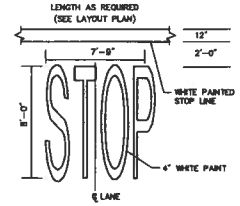
MINERAL AGGREGATE :M3.11.04	BITUMINOUS MATERIALS :M3.11.06
MINERAL FILLER :M3.11.05	COMPOSITION OF BASE COURSE :M3.11.02

5. THE BITUMINOUS CONCRETE BASE COURSE SHALL BE CONSTRUCTED IN ACCORDANCE WITH RELEVANT SECTIONS/PROVISIONS OF SECTION 460 FOR CLASS I BITUMINOUS CONCRETE PAVEMENT, TYPE I-1
6. CLASS I BITUMINOUS PAVEMENT ,TYPE I-1 REQUIRED THE SAME TESTING AS BASE COURSE AND SHALL HAVE A MINIMUM OF 92% COMPACTION. TESTING TO BE COMPLETED BY METHODS OUTLINED IN M3.11.09

C-416 BITUMINOUS CONCRETE PAVEMENT SECTIONS
N.T.S.



C-501 WOOD GUARD RAIL
N.T.S.



NOTE: PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS SHOWN ON THE PLANS

C-708 PAINTED PAVEMENT MARKING
N.T.S.

No.	DATE	DESCRIPTION	BY
1			

REVISIONS

PROJ. MANAGER:	MBL
CHIEF DESIGNER:	MBL
REVIEWED BY:	DATE

SEAL

SEAL: COMMONWEALTH OF MASSACHUSETTS JAMES E. MILLER CIVIL No. 31064

PREPARED FOR
HAARTZ CORPORATION
87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE: HORZ.: VERT.:
DATUM: HORZ.: VERT.:
GRAPHIC SCALE

MBL
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SITE DEVELOPMENT PLANS
DETAILS
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-8.0

USR: MBLD
MBL VIEW: vp30
LAYER:
CTB: MBL Standard
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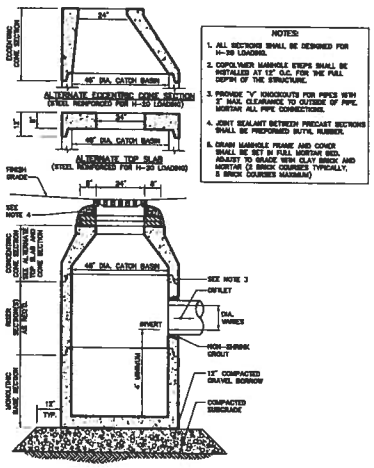


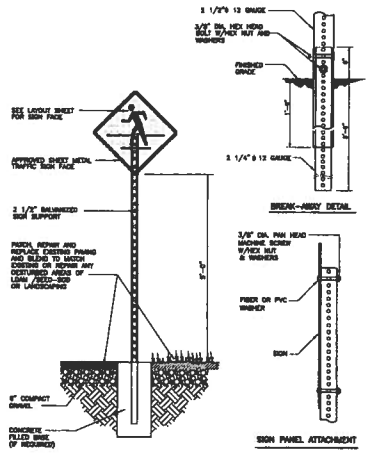
NOTES:

1. ALL SECTIONS SHALL BE DESIGNED FOR H-20 LOADING.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 3" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)

C-
104

CATCH BASIN (CB)

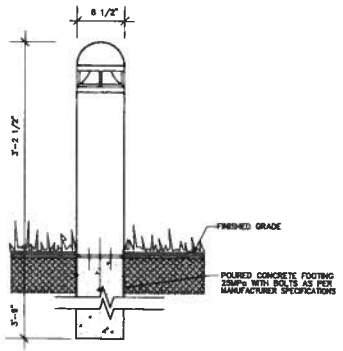
N.T.S.



C-
722

TRAFFIC SIGN POST

N.T.S.



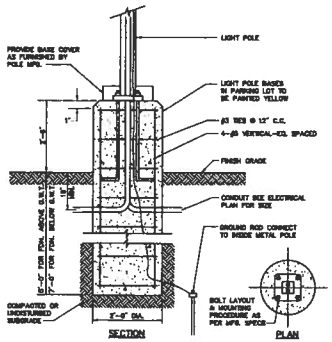
SPECIFICATIONS:

1. Heavy duty metal bollards constructed of die cast aluminum
2. Reflector is made of anodized aluminum and is encased behind a clear acrylic enclosure
3. Fasteners are stainless steel socket head screws
4. Colour: Black, White or Custom
5. Lamp size: 50W-HPS, 50W-MV, 100W-MH

C-
801

METAL WALK LIGHT

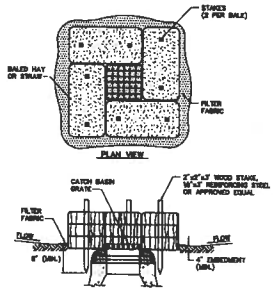
N.T.S.



C-
820

LIGHT POLE INSTALLATION

N.T.S.



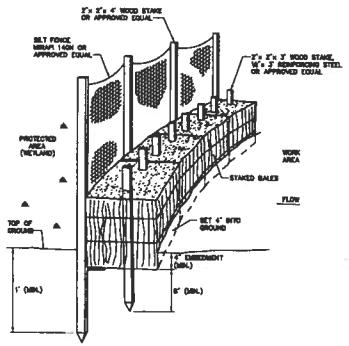
NOTES:

1. ENCLOSE STRUCTURE WITH HAY BALES IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION. MAINTAIN UNTIL PAVING BINDER COURSE IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. IF GRATE IS AGAINST EXISTING CURB THEN HAY BALES ARE TO PLACED AROUND THREE SIDES OF GRATE ONLY.
3. WHEN STAKES MUST BE DRIVEN INTO PAVEMENT THE CONTRACTOR SHALL USE REINFORCING STEEL STAKES OR DRILL HOLES.
4. GRATE TO PLACED OVER FILTER FABRIC.
5. BALES SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

C-
807

CATCH BASIN SEDIMENT TRAP

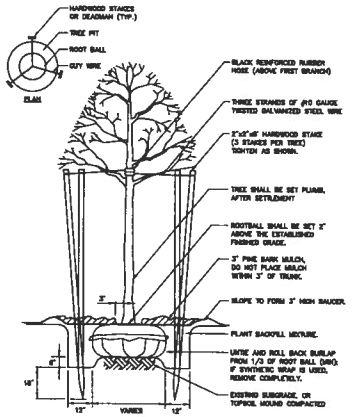
N.T.S.



C-
801

SILT FENCE / HAY BALE BARRIER

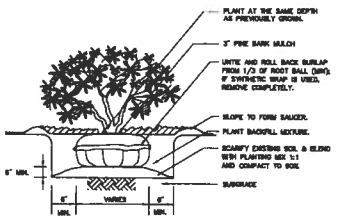
N.T.S.



C-
801

TREE PLANTING (For Trees under 4" caliper)

N.T.S.



C-
820

SHRUB PLANTING

N.T.S.

No.	DATE	DESCRIPTION	BY
1			

REVISIONS

PROJ. MANAGER:	MBL
CHIEF DESIGNER:	MBL
REVIEWED BY:	DATE

SEAL

SEAL: COMMONWEALTH OF MASSACHUSETTS JAMES E. MILLER CIVIL No. 31064

PREPARED FOR

HAARTZ CORPORATION
87 HAYWARD ROAD

ACTON MASSACHUSETTS

SCALE:
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HORZ.:
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GRAPHIC SCALE

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LAND DEVELOPMENT & PERMITTING, CORP.
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SITE DEVELOPMENT PLANS

DETAILS

87 HAYWARD ROAD

ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

C-9.0

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Drainage Analysis

HAARTZ Corporation

Site Plan Redevelopment

Map F3 Parcel 1

87 Hayward Road

Acton, Massachusetts

01720

May 28, 2015

MBL Land Development & Permitting Corp.
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Figure 2: USGS Site Location Map

Figure 3: Flood Insurance Rate Map

Figure 4: Pre-Development Plan

Figure 5: Post-Development Plan

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APPENDIX

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APPENDIX B: HYDROLOGIC ANALYSIS

APPENDIX C: HYDRAULIC ANALYSIS

APPENDIX D: WATER QUALITY VOLUME CALCULATIONS

APPENDIX E: REQUIRED RECHARGE

APPENDIX F: TOTAL SUSPENDED SOLIDS

APPENDIX G: CONSTRUCTION PERIOD POLLUTION PLAN / EROSION AND SEDIMENTATION CONTROL PLAN

APPENDIX H: LONG -TERM POLLUTION PREVENTION AND MAINTAINTNANCE PLAN

APPENDIX I: ILLICIT DISCHARGE STATEMENT

2. SITE DESCRIPTION

2.1 PRE-DEVELOPMENT CONDITIONS

This project site is located at 87 Hayward Road, Acton, Massachusetts on Assessor's Map F3 Parcel 1. As shown on Figure 1: Aerial Photographic Map and Figure 2: Existing Conditions & Soil Evaluation Plan of this report. The existing site is industrial/manufacturing facility approximately 47.9± acres with five stand-alone building structures in which a combined total of 18 buildings exist. The site grade is generally 0-25% with paved parking with wetlands to the south and east sides of the site. The main building with offices is located at the southerly portion of the site with parking and landscaping. The existing septic system is located approximately in the middle of the site to the west of building #6. The site in these areas described are divided into drainage areas – EXDA1 thru EXDA7. EXDA1 thru EXDA-7 flows from west to east of the site towards the existing wetlands.

The site, as shown in Figure 3: FEMA Flood Insurance Rate Map of this report, is located within a FEMA Flood Zone X, which is an area determined to be inside the area of 1% annual chance flood plain with average depths of less than 1 foot or with drainage areas less than 1 square mile. The site lies outside of any Area of Critical Environmental Concern (ACEC), Zone II, and wellhead protection area.

2.2 POST-DEVELOPMENT CONDITIONS

The proposed development includes a building addition for a 3,880± s.f. lunch room off of building #5 and a newly constructed parking lot expansion will be over the existing septic system west of building #6. The proposed building for the lunch room will tie-into the existing drainage system that leads to the wetlands to the east of the site. The proposed parking expansion shall have curbed and graded to collect surface runoff to a detention pond at the north side with associated parking and grading throughout the site.

2.3 SOILS

The proposed project is based on test pit data provided on a plan titled, "Sewage Disposal Plan, prepared by Stamski and McNary, Inc, dated October 30, 2014 as attached to the Appendix A of the Appendices contents of this report.

2.4 SITE TOPOGRAPHY

The proposed portion of the site topography ranges from elevation 223' at the high point at building #16 to elevation 199' at the wetlands to the east. The site slopes generally 0-25% in an West to Easterly direction to the existing low point of the site.

3.1.1 Design Points

In order to compare the difference between pre and post-development peak flows, existing and proposed watersheds were delineated. A Design Point (DP) for each watershed was established with flow paths representing the longest time of concentration of run-off in each contributory watershed. The location of the design point does not differ in the pre and post-development analysis. For this analysis two design point were chosen which are as follows:

- 8R

3.1.2 Pre-Development Hydrology

The existing portion of the site is divided into 7 existing watershed for the pre-development analysis, each discharging to design point. The existing watershed area, EXDA-1 thru EXDA-7 are shown on the attached Figure 4 titled "Pre-Development Drainage Area Plan". The existing watershed areas were modeled as follows:

The hydrographs for each watershed were generated to develop the peak discharge rates for the 24-hour, 2, 10, 25, and 100-year Type III storm events for pre-development conditions.

3.1.3 Post-Development Hydrology

The portion of the proposed site is divided into 10 proposed watersheds for the post-development analysis. The three proposed watershed areas, PDA-1 thru PDA-10 are shown on the attached Figure 5 entitled "Post-Development Drainage Area Plan". The proposed watershed areas were modeled as follows:

The hydrographs for each watershed were generated and routed through the BMPs to develop the peak discharge rates for the 24-hour, 2, 10, 25, and 100-year Type III storm events for post-development conditions.

4. BEST MANAGEMENT PRACTICES

The Massachusetts Stormwater Standards requires 80% removal rate over an average annual basis, for Total Suspended Solids (TSS) contained in stormwater runoff. The water quality volume or "first flush" is defined as the volume obtained by multiplying one-half inch (½") or one inch (1") times the impervious surface area of the contributing drainage area. Water quality volume calculations are provided in Appendix D, Water Quality Volume. When this volume is incorporated into properly designed BMPs an 80% reduction of average annual TSS loading will result. The following Best Management Practices will be employed for the project.

4.1 DETENTION POND

Sub-surface Infiltration system will achieve a TSS removal rate of 80%, while also removing phosphorus, nitrogen, metals, organics, and bacteria to varying degrees.

removal worksheet, requires Water Quality Volume Calculations, and MASTEP Technology Review for the Downstream Defender Units.

Standard 5

For land uses with higher potential loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.

Not applicable to the site.

Standard 6

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook.

Not applicable to the site.

Standard 7

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing Stormwater discharges shall comply with Standard 1 only to the maximum extent practicable.

Standard 8

A plan to control construction-related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

A construction period erosion, sedimentation, and pollution prevention plan has been provided and included in the Construction Period Pollution Prevention Plan (CPPPP) located in Appendix I.

Standard 9

A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

Long-Term Operation and Maintenance Plan (O&M Plan) for the site bio-retention facilities is included in this report and a Long-Term Pollution Prevention Plan (LPPP) located in Appendix J.

Standard 10

All illicit discharges to the stormwater management system are prohibited.

6. CONCLUSION

The proposed development will not increase the rate of storm water runoff for the 2yr and 10yr storm events for this site over pre-existing conditions. This is accomplished by implementing BMPs that will provide enhance the quality of stormwater run-off while also providing a means of flood control. The proposed stormwater system design is in conformance with the Massachusetts Stormwater Management Standards.

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REVISIONS

AERIAL PHOTOGRAPH MAP

87 HAYWARD ROAD

ASSESSORS MAP F3 PARCEL 1

ACTON MASSACHUSETTS

SCALE:
HORZ.: N.T.S.
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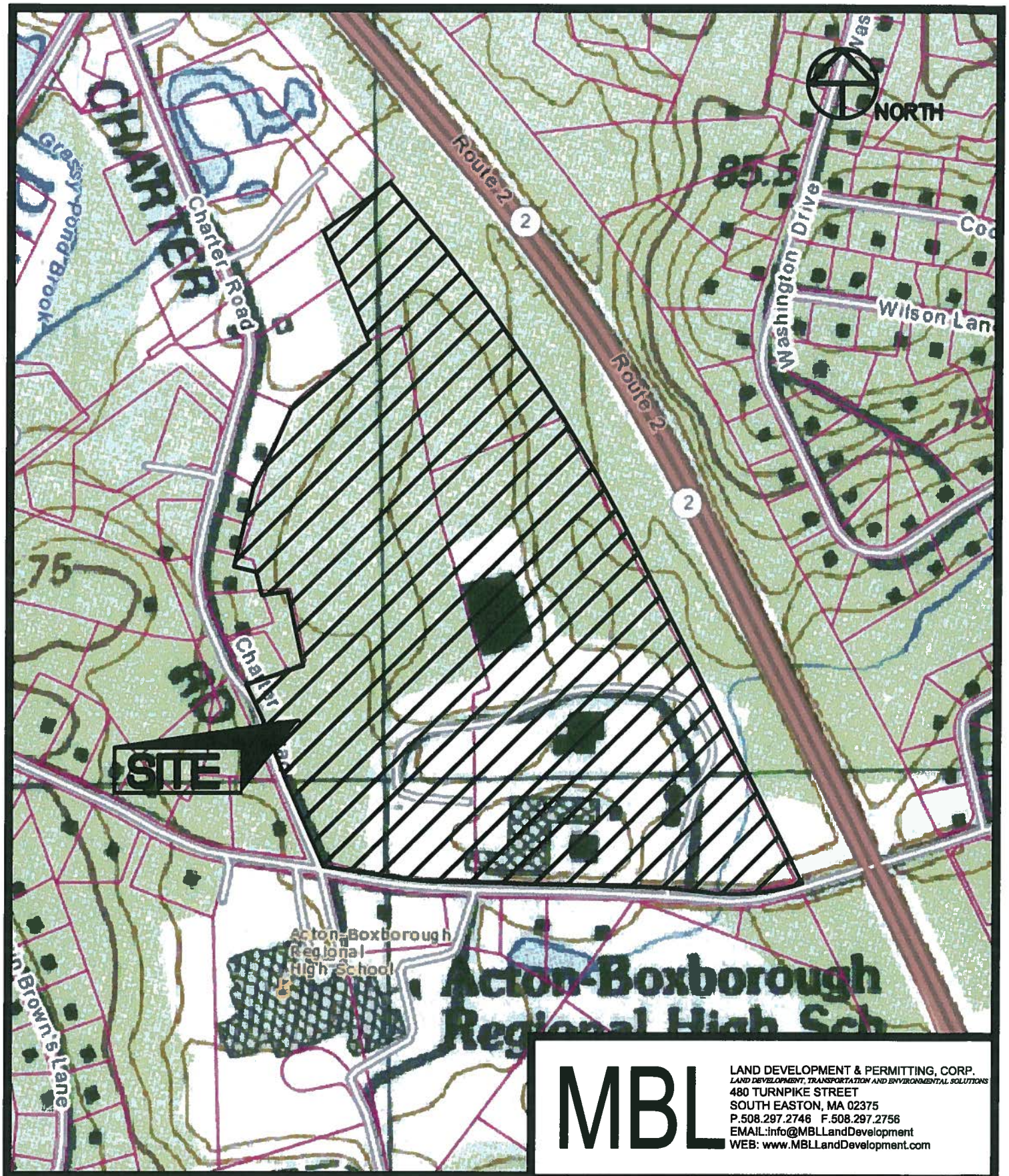
PROJ. No.: 2014-028

DATE: MAY 28, 2015

FIG.1



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USGS QUAD MAP

87 HAYWARD ROAD

ASSESSORS MAP F3 PARCEL 1

ACTON MASSACHUSETTS

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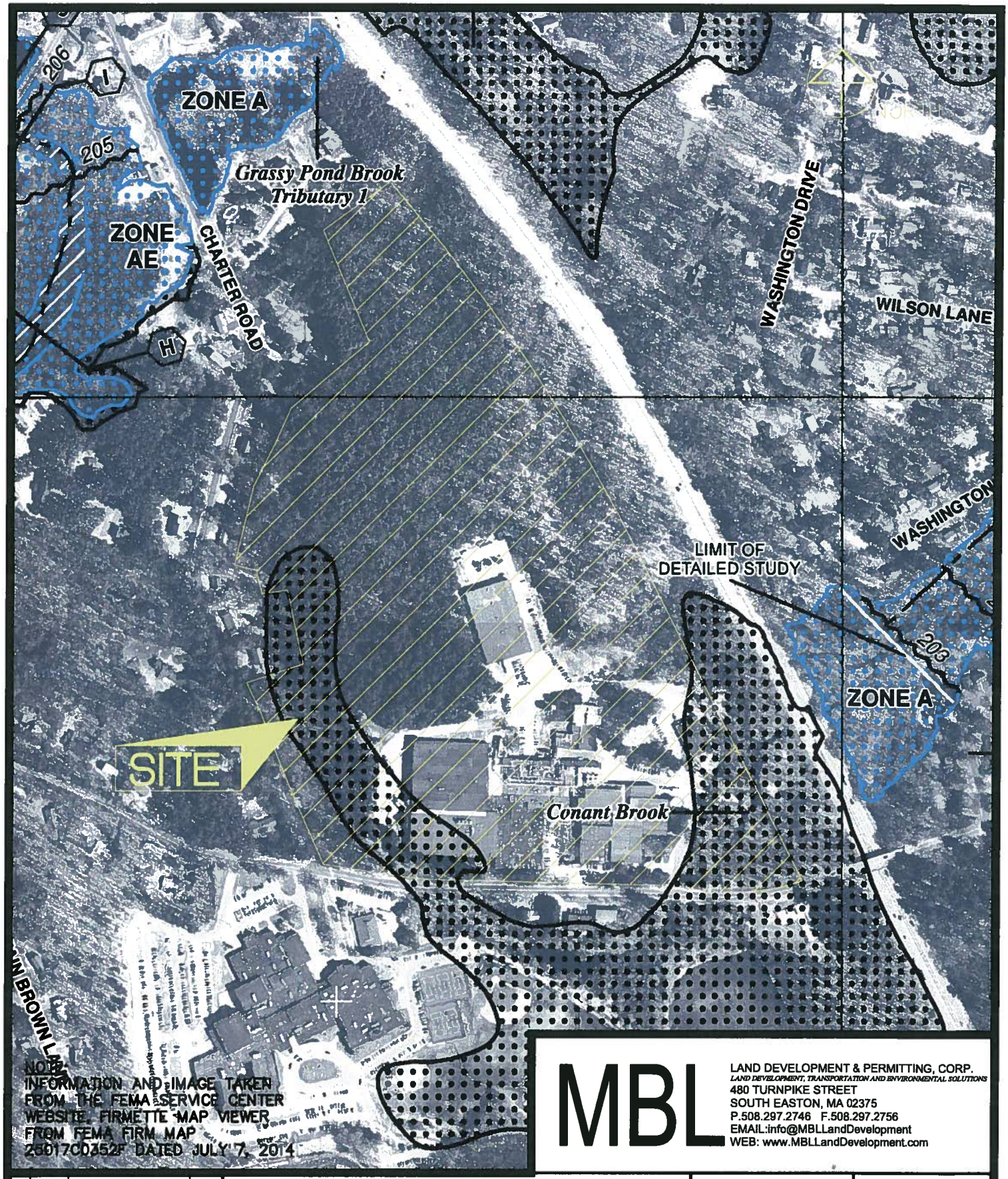
GRAPHIC SCALE

PROJ. No.: 2014-028

DATE: MAY 28, 2015

FIG.2



NOTE:
INFORMATION AND IMAGE TAKEN FROM THE FEMA SERVICE CENTER WEBSITE, FIRMETTE MAP VIEWER FROM FEMA FIRM MAP 25017C0352F DATED JULY 7, 2014

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FEMA FIRM MAP

87 HAYWARD ROAD

ASSESSORS MAP F3 PARCEL 1

ACTON MASSACHUSETTS

SCALE:
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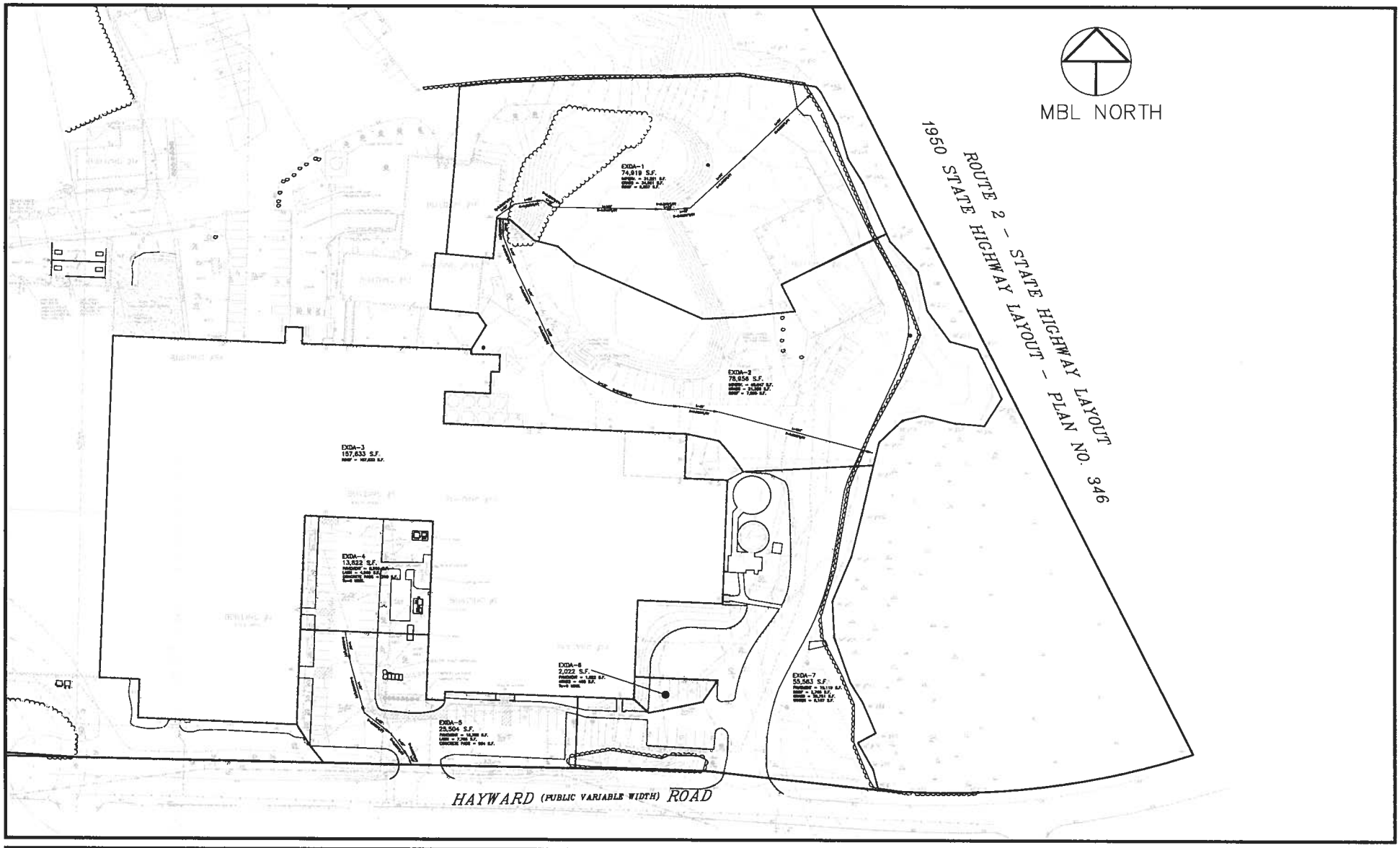
GRAPHIC SCALE

PROJ. No.: 2014-028

DATE: APRIL 8, 2015

FIG.3



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CHIEF DESIGNER:
REVIEWED BY: DATE

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87 HAYWARD ROAD
ACTON MASSACHUSETTS

SCALE:
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SITE DEVELOPMENT PLANS
PRE-DEVELOPMENT PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

FIG. 4

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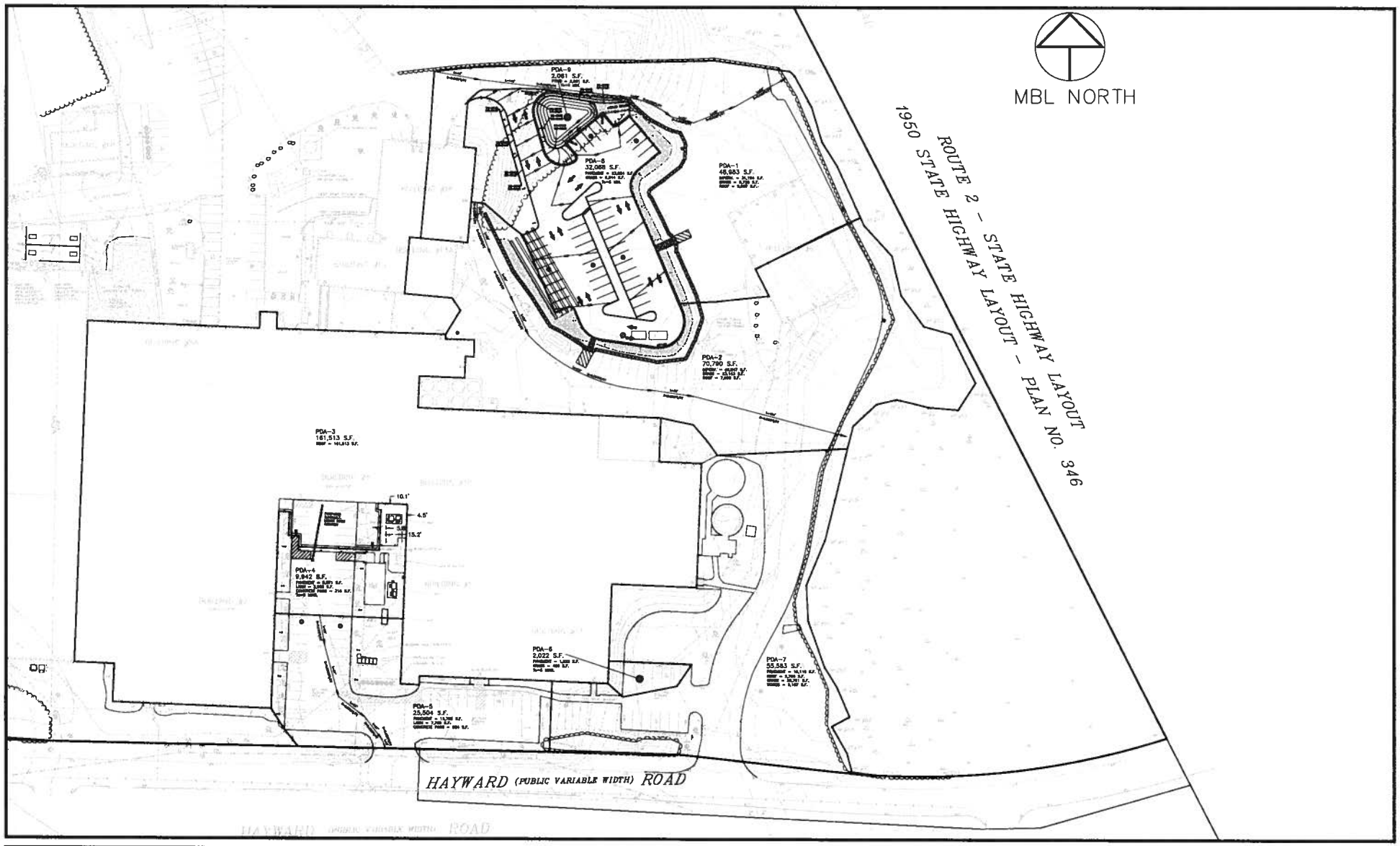

No.	DATE	DESCRIPTION	BY

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ACTON MASSACHUSETTS

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GRAPHIC SCALE

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SITE DEVELOPMENT PLANS
POST-DEVELOPMENT PLAN
87 HAYWARD ROAD
ACTON MASSACHUSETTS

PROJ. No.: 2014-028
DATE: MAY 28, 2015

FIG. 5

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APPENDIX B: HYDROLOGIC ANALYSIS

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.117	60	Woods, Fair, HSG B (7S)
2.472	69	50-75% Grass cover, Fair, HSG B (1S,2S,4S,5S,6S,7S)
0.030	98	Concrete Pad (4S,5S)
2.693	98	Pavement (1S,2S,4S,5S,6S,7S)
4.063	98	Roof (1S,2S,3S,7S)
9.376		

Subcatchment 1S: EXDA-1

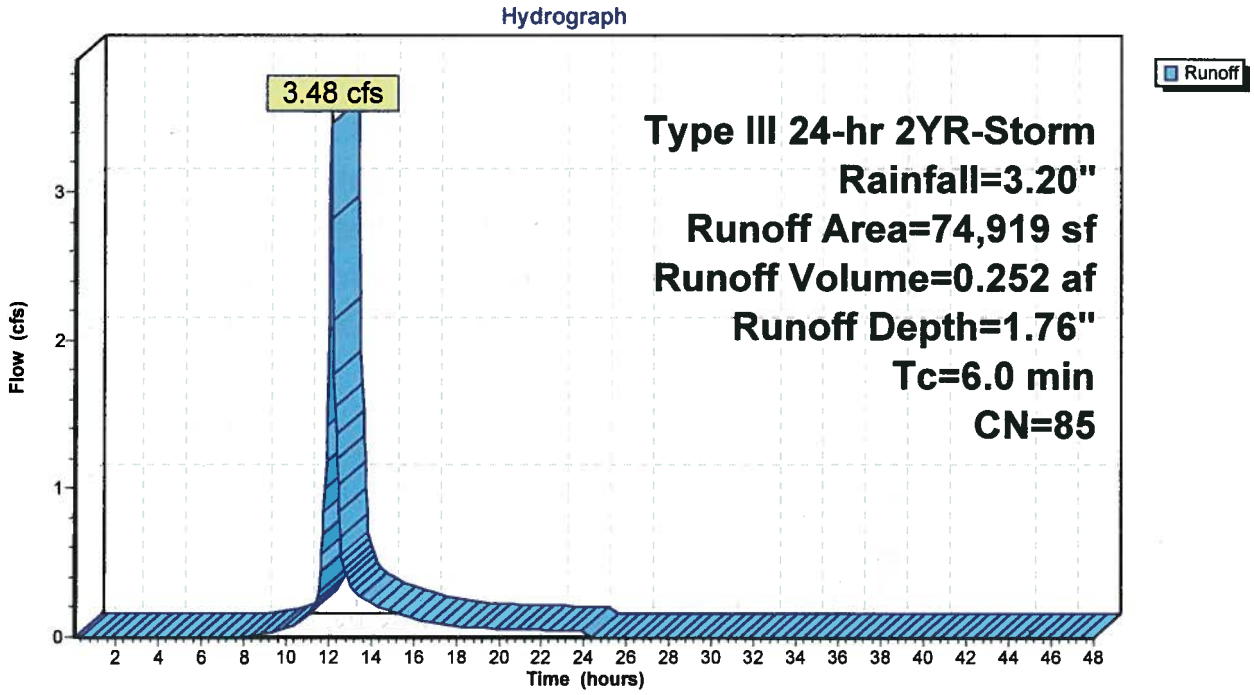
Runoff = 3.48 cfs @ 12.09 hrs, Volume= 0.252 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR-Storm Rainfall=3.20"

Area (sf)	CN	Description
31,221	98	Pavement
34,691	69	50-75% Grass cover, Fair, HSG B
9,007	98	Roof
74,919	85	Weighted Average
34,691		Pervious Area
40,228		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: EXDA-1



Subcatchment 3S: EXDA-3

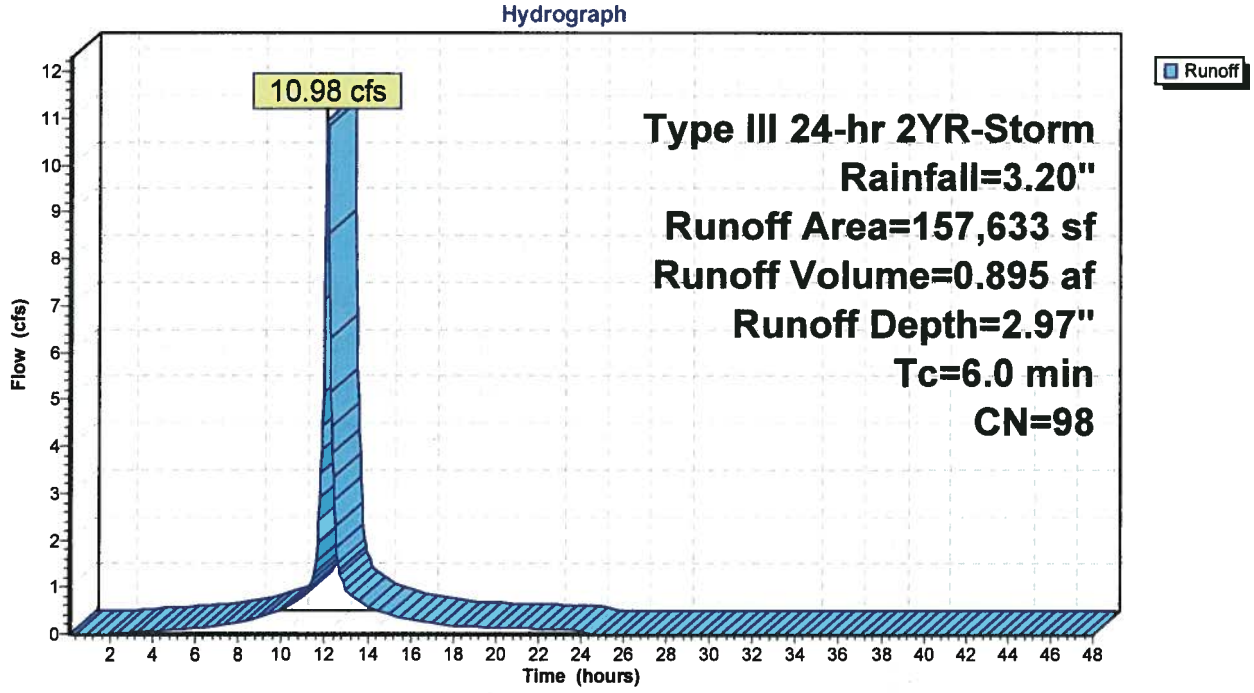
Runoff = 10.98 cfs @ 12.09 hrs, Volume= 0.895 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR-Storm Rainfall=3.20"

Area (sf)	CN	Description
157,633	98	Roof
157,633		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: EXDA-3



Subcatchment 5S: EXDA-5

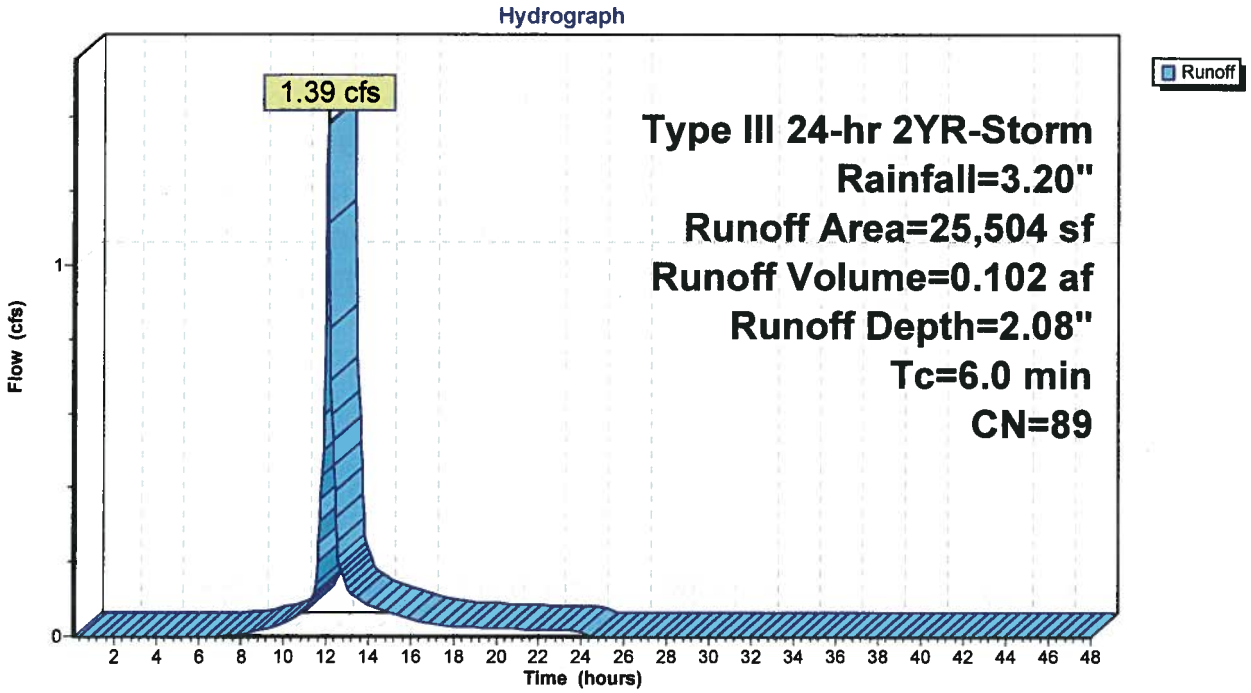
Runoff = 1.39 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR-Storm Rainfall=3.20"

Area (sf)	CN	Description
16,755	98	Pavement
7,765	69	50-75% Grass cover, Fair, HSG B
984	98	Concrete Pad
25,504	89	Weighted Average
7,765		Pervious Area
17,739		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: EXDA-5



Subcatchment 7S: EXDA-7

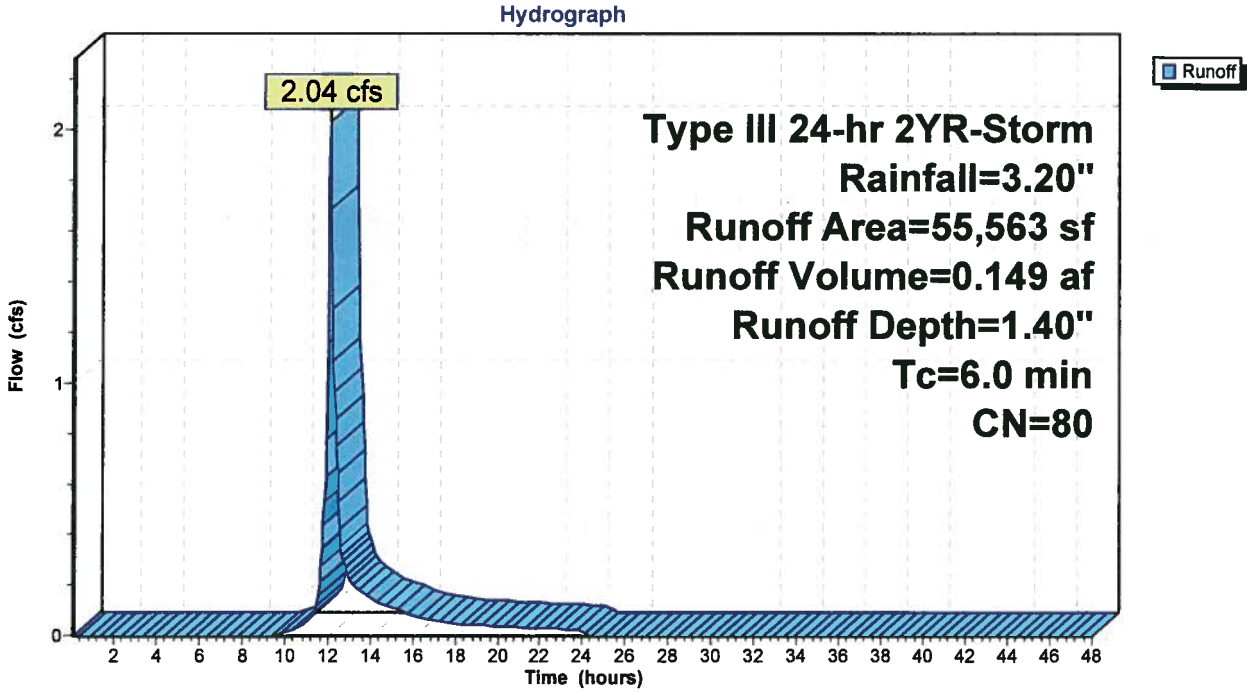
Runoff = 2.04 cfs @ 12.10 hrs, Volume= 0.149 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR-Storm Rainfall=3.20"

Area (sf)	CN	Description
19,119	98	Pavement
2,766	98	Roof
28,571	69	50-75% Grass cover, Fair, HSG B
5,107	60	Woods, Fair, HSG B
55,563	80	Weighted Average
33,678		Pervious Area
21,885		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7S: EXDA-7



Time span=0.10-48.00 hrs, dt=0.05 hrs, 959 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EXDA-1 Runoff Area=74,919 sf Runoff Depth=2.91"
Tc=6.0 min CN=85 Runoff=5.71 cfs 0.417 af

Subcatchment 2S: EXDA-2 Runoff Area=78,956 sf Runoff Depth=3.10"
Tc=6.0 min CN=87 Runoff=6.36 cfs 0.468 af

Subcatchment 3S: EXDA-3 Runoff Area=157,633 sf Runoff Depth=4.26"
Tc=6.0 min CN=98 Runoff=15.54 cfs 1.286 af

Subcatchment 4S: EXDA-4 Runoff Area=13,822 sf Runoff Depth=3.20"
Tc=6.0 min CN=88 Runoff=1.14 cfs 0.085 af

Subcatchment 5S: EXDA-5 Runoff Area=25,504 sf Runoff Depth=3.30"
Tc=6.0 min CN=89 Runoff=2.16 cfs 0.161 af

Subcatchment 6S: EXDA-6 Runoff Area=2,022 sf Runoff Depth=3.60"
Tc=6.0 min CN=92 Runoff=0.18 cfs 0.014 af

Subcatchment 7S: EXDA-7 Runoff Area=55,563 sf Runoff Depth=2.46"
Tc=6.0 min CN=80 Runoff=3.61 cfs 0.262 af

Reach 8R: wetlands Inflow=34.69 cfs 2.692 af
Outflow=34.69 cfs 2.692 af

Total Runoff Area = 9.376 ac Runoff Volume = 2.692 af Average Runoff Depth = 3.45"
27.62% Pervious Area = 2.590 ac 72.38% Impervious Area = 6.786 ac

Subcatchment 2S: EXDA-2

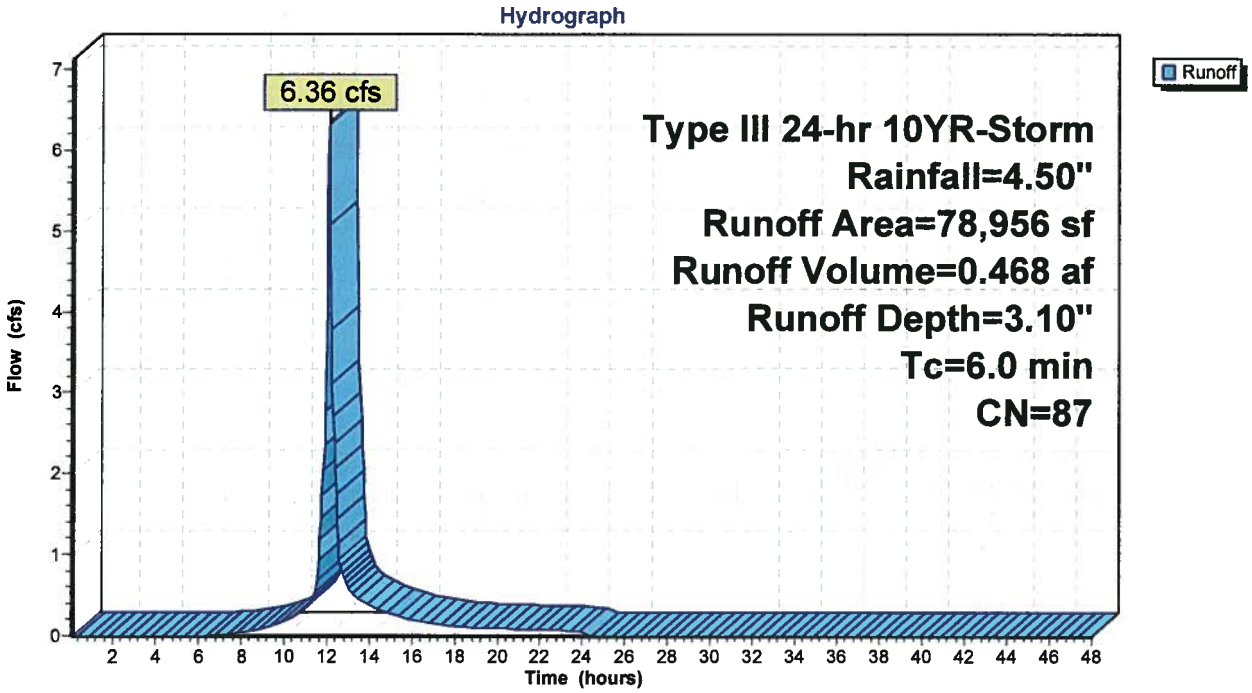
Runoff = 6.36 cfs @ 12.09 hrs, Volume= 0.468 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR-Storm Rainfall=4.50"

Area (sf)	CN	Description
40,047	98	Pavement
31,309	69	50-75% Grass cover, Fair, HSG B
7,600	98	Roof
78,956	87	Weighted Average
31,309		Pervious Area
47,647		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: EXDA-2



Subcatchment 4S: EXDA-4

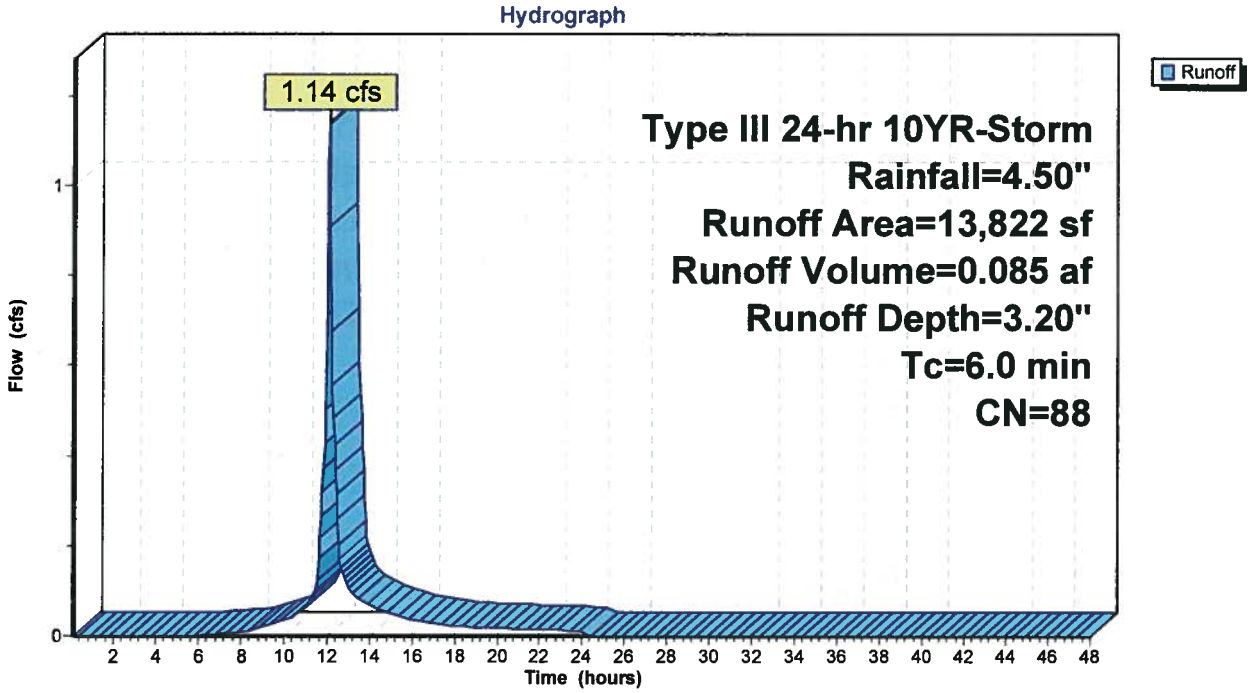
Runoff = 1.14 cfs @ 12.09 hrs, Volume= 0.085 af, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR-Storm Rainfall=4.50"

Area (sf)	CN	Description
8,546	98	Pavement
4,960	69	50-75% Grass cover, Fair, HSG B
316	98	Concrete Pad
13,822	88	Weighted Average
4,960		Pervious Area
8,862		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 4S: EXDA-4



Subcatchment 6S: EXDA-6

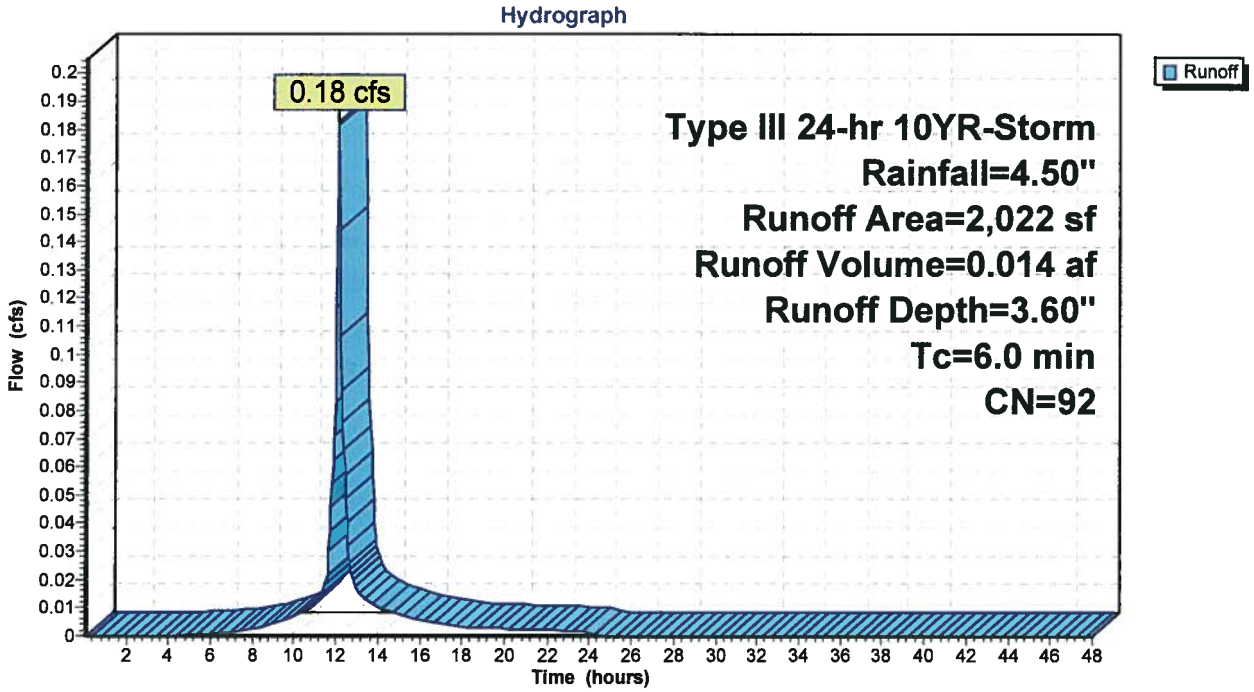
Runoff = 0.18 cfs @ 12.09 hrs, Volume= 0.014 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR-Storm Rainfall=4.50"

Area (sf)	CN	Description
1,622	98	Pavement
400	69	50-75% Grass cover, Fair, HSG B
2,022	92	Weighted Average
400		Pervious Area
1,622		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: EXDA-6

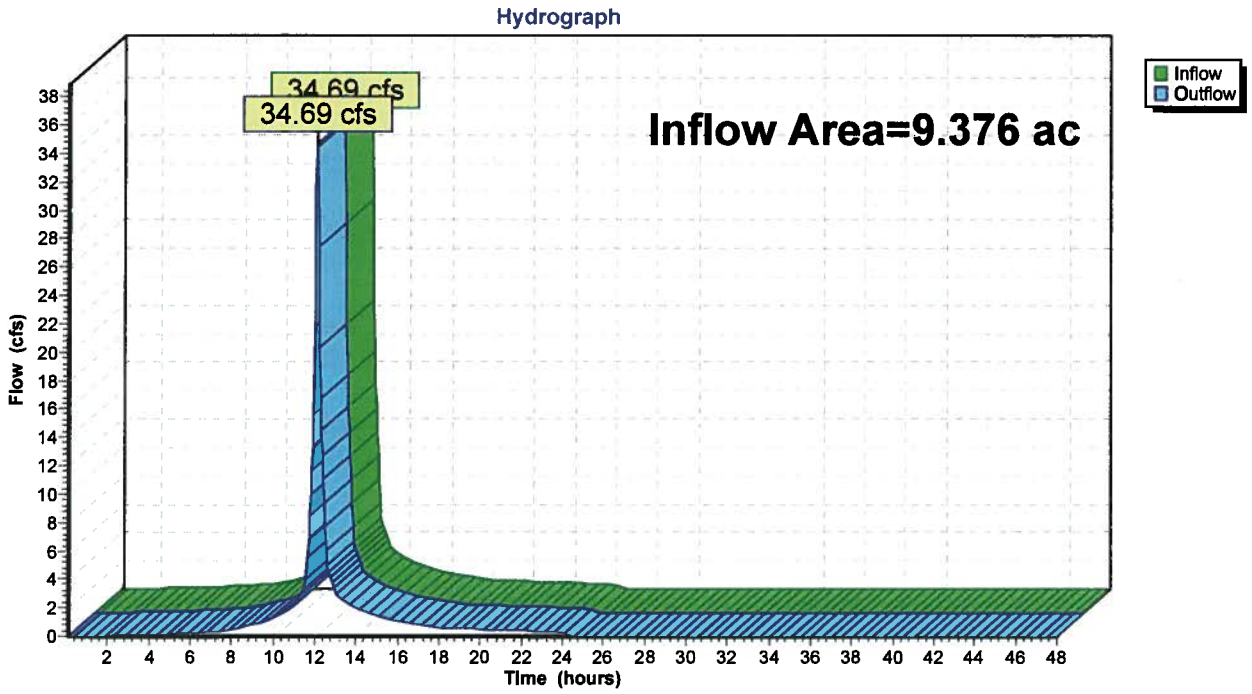


Reach 8R: wetlands

Inflow Area = 9.376 ac, Inflow Depth = 3.45" for 10YR-Storm event
Inflow = 34.69 cfs @ 12.09 hrs, Volume= 2.692 af
Outflow = 34.69 cfs @ 12.09 hrs, Volume= 2.692 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs

Reach 8R: wetlands



Subcatchment 1S: EXDA-1

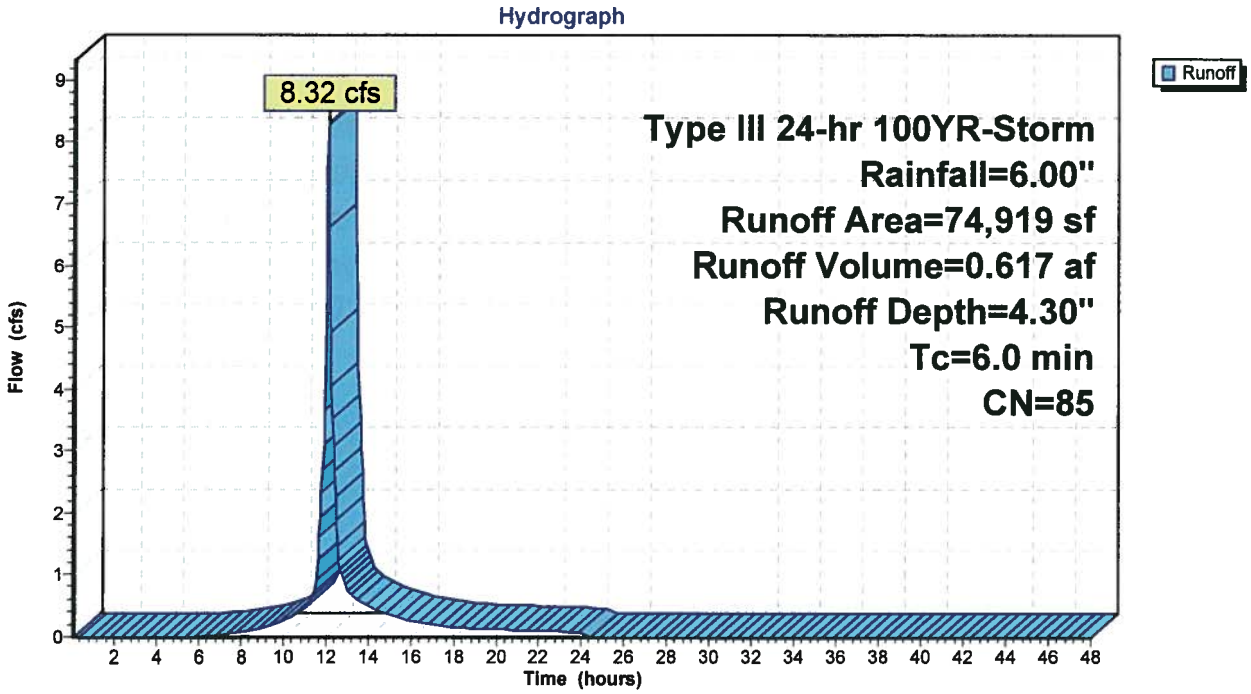
Runoff = 8.32 cfs @ 12.09 hrs, Volume= 0.617 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR-Storm Rainfall=6.00"

Area (sf)	CN	Description
31,221	98	Pavement
34,691	69	50-75% Grass cover, Fair, HSG B
9,007	98	Roof
74,919	85	Weighted Average
34,691		Pervious Area
40,228		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: EXDA-1



Subcatchment 3S: EXDA-3

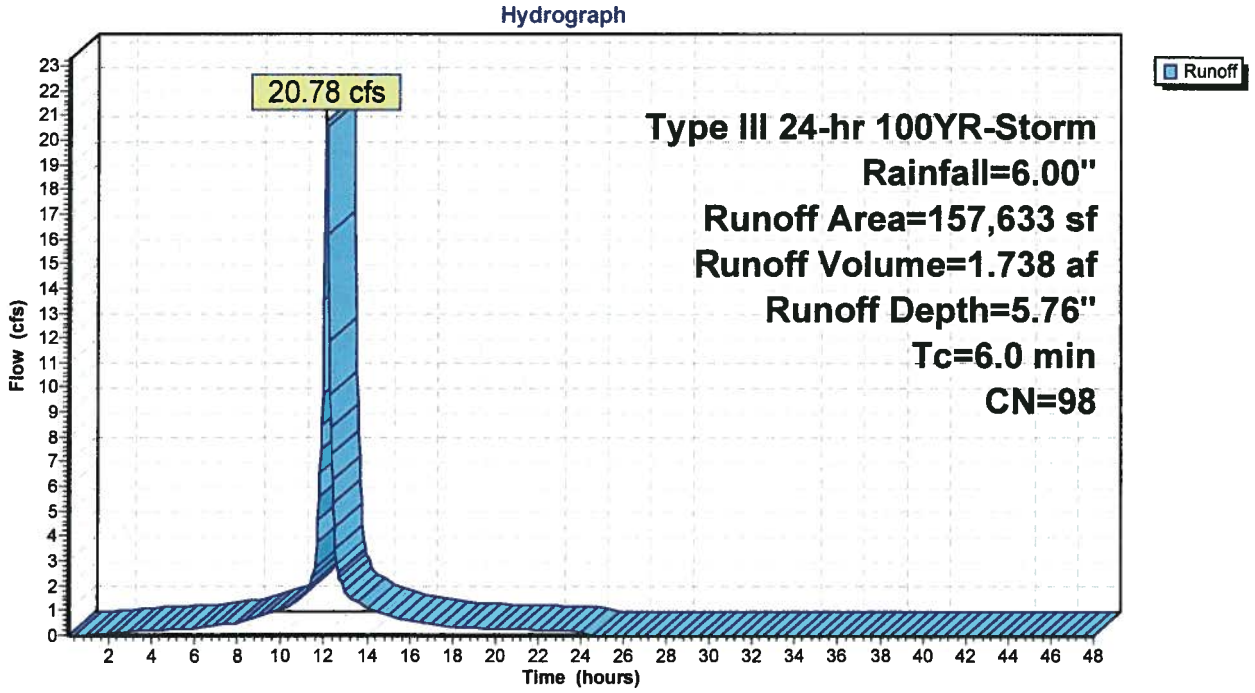
Runoff = 20.78 cfs @ 12.09 hrs, Volume= 1.738 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR-Storm Rainfall=6.00"

Area (sf)	CN	Description
157,633	98	Roof
157,633		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: EXDA-3



Subcatchment 5S: EXDA-5

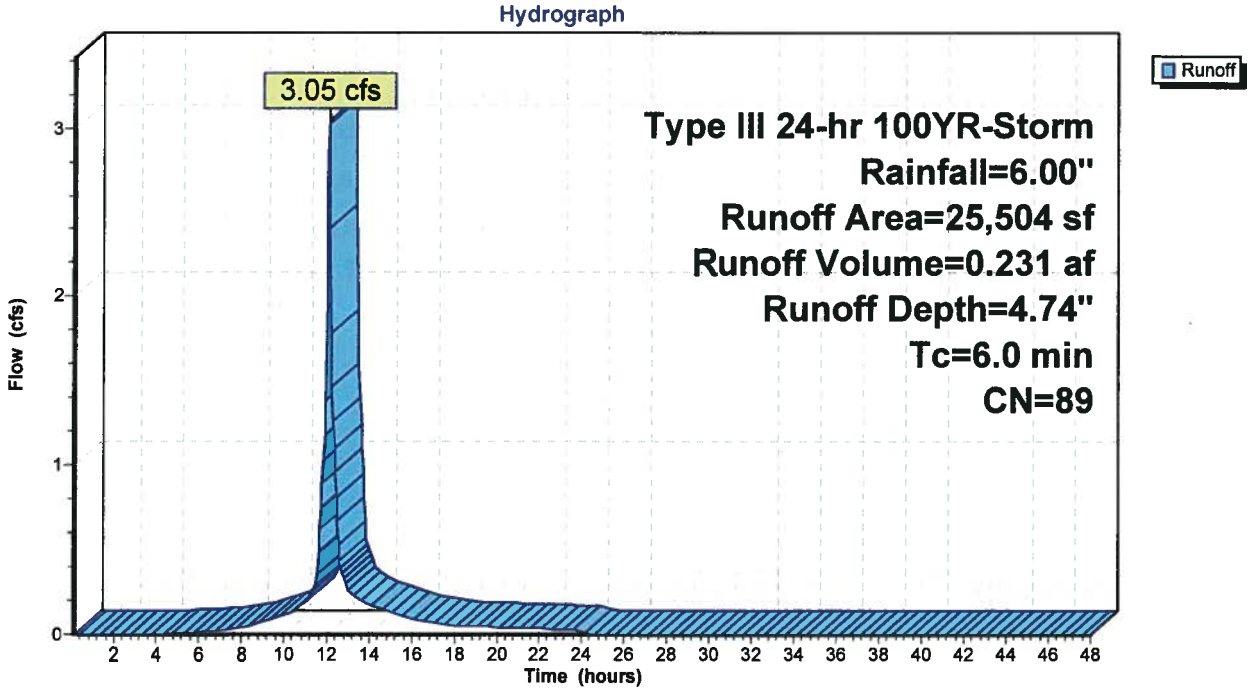
Runoff = 3.05 cfs @ 12.09 hrs, Volume= 0.231 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR-Storm Rainfall=6.00"

Area (sf)	CN	Description
16,755	98	Pavement
7,765	69	50-75% Grass cover, Fair, HSG B
984	98	Concrete Pad
25,504	89	Weighted Average
7,765		Pervious Area
17,739		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: EXDA-5



Subcatchment 7S: EXDA-7

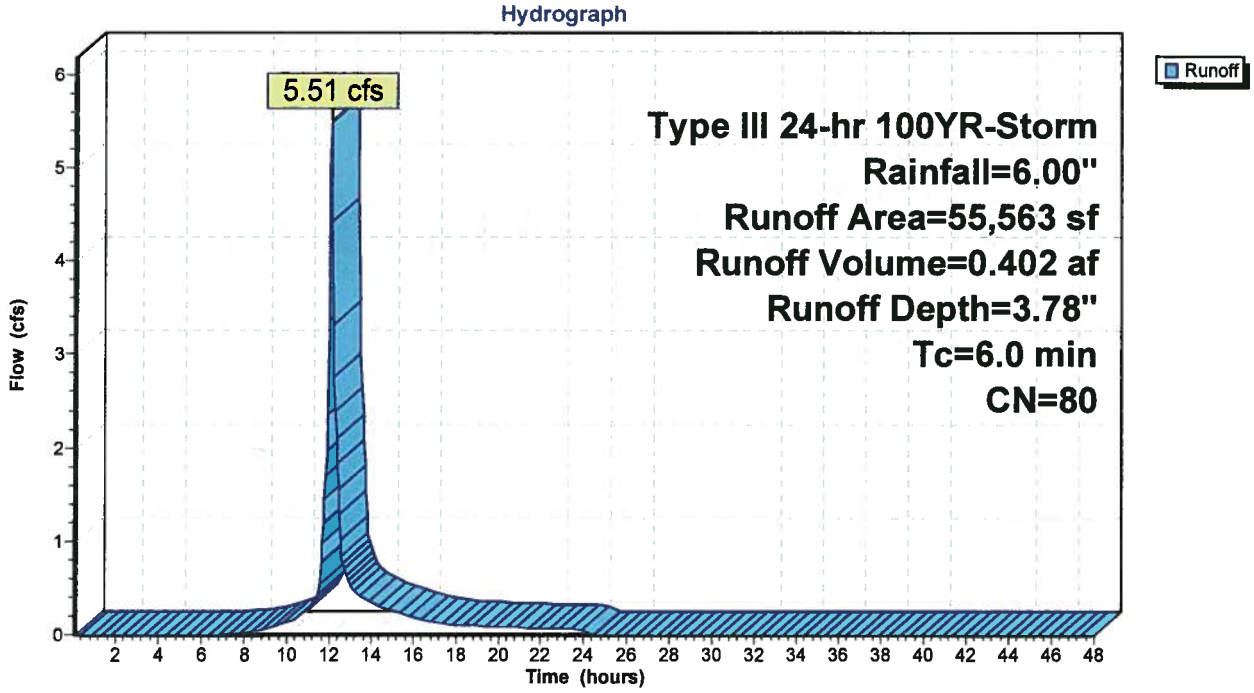
Runoff = 5.51 cfs @ 12.09 hrs, Volume= 0.402 af, Depth= 3.78"

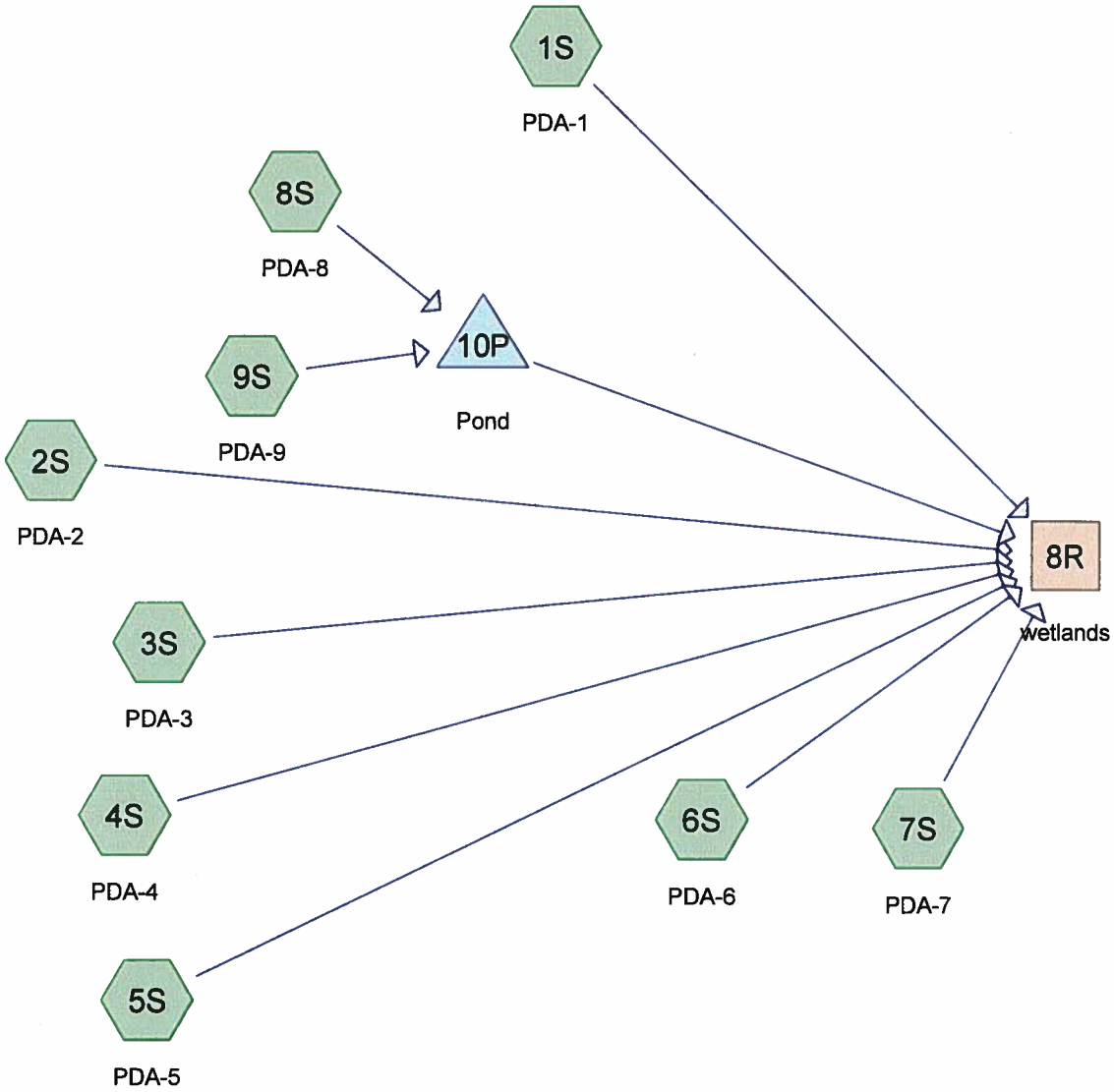
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR-Storm Rainfall=6.00"

Area (sf)	CN	Description
19,119	98	Pavement
2,766	98	Roof
28,571	69	50-75% Grass cover, Fair, HSG B
5,107	60	Woods, Fair, HSG B
55,563	80	Weighted Average
33,678		Pervious Area
21,885		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7S: EXDA-7





Drainage Diagram for 2014-028POST
Prepared by MBL Land Development & Permitting, Corp. 5/29/2015
HydroCAD® 8.00 s/n 004337 © 2006 HydroCAD Software Solutions LLC

Time span=0.10-48.00 hrs, dt=0.05 hrs, 959 points x 3
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PDA-1 Runoff Area=48,929 sf Runoff Depth=2.45"
Tc=6.0 min CN=93 Runoff=3.05 cfs 0.229 af

Subcatchment 2S: PDA-2 Runoff Area=70,790 sf Runoff Depth=2.08"
Tc=6.0 min CN=89 Runoff=3.86 cfs 0.282 af

Subcatchment 3S: PDA-3 Runoff Area=161,513 sf Runoff Depth=2.97"
Tc=6.0 min CN=98 Runoff=11.25 cfs 0.917 af

Subcatchment 4S: PDA-4 Runoff Area=9,942 sf Runoff Depth=1.84"
Tc=6.0 min CN=86 Runoff=0.48 cfs 0.035 af

Subcatchment 5S: PDA-5 Runoff Area=25,504 sf Runoff Depth=2.08"
Tc=6.0 min CN=89 Runoff=1.39 cfs 0.102 af

Subcatchment 6S: PDA-6 Runoff Area=2,022 sf Runoff Depth=2.35"
Tc=6.0 min CN=92 Runoff=0.12 cfs 0.009 af

Subcatchment 7S: PDA-7 Runoff Area=55,563 sf Runoff Depth=1.40"
Tc=6.0 min CN=80 Runoff=2.04 cfs 0.149 af

Reach 8R: wetlands Inflow=22.17 cfs 1.735 af
Outflow=22.17 cfs 1.735 af

Subcatchment 8S: PDA-8 Runoff Area=32,068 sf Runoff Depth=2.17"
Tc=6.0 min CN=90 Runoff=1.81 cfs 0.133 af

Subcatchment 9S: PDA-9 Runoff Area=2,061 sf Runoff Depth=1.91"
Tc=6.0 min CN=87 Runoff=0.10 cfs 0.008 af

Pond 10P: Pond Peak Elev=209.61' Storage=3,613 cf Inflow=1.92 cfs 0.141 af
Discarded=0.05 cfs 0.121 af Primary=0.10 cfs 0.013 af Outflow=0.15 cfs 0.134 af

Total Runoff Area = 9.375 ac Runoff Volume = 1.863 af Average Runoff Depth = 2.38"
21.74% Pervious Area = 2.038 ac 78.26% Impervious Area = 7.337 ac

Subcatchment 2S: PDA-2

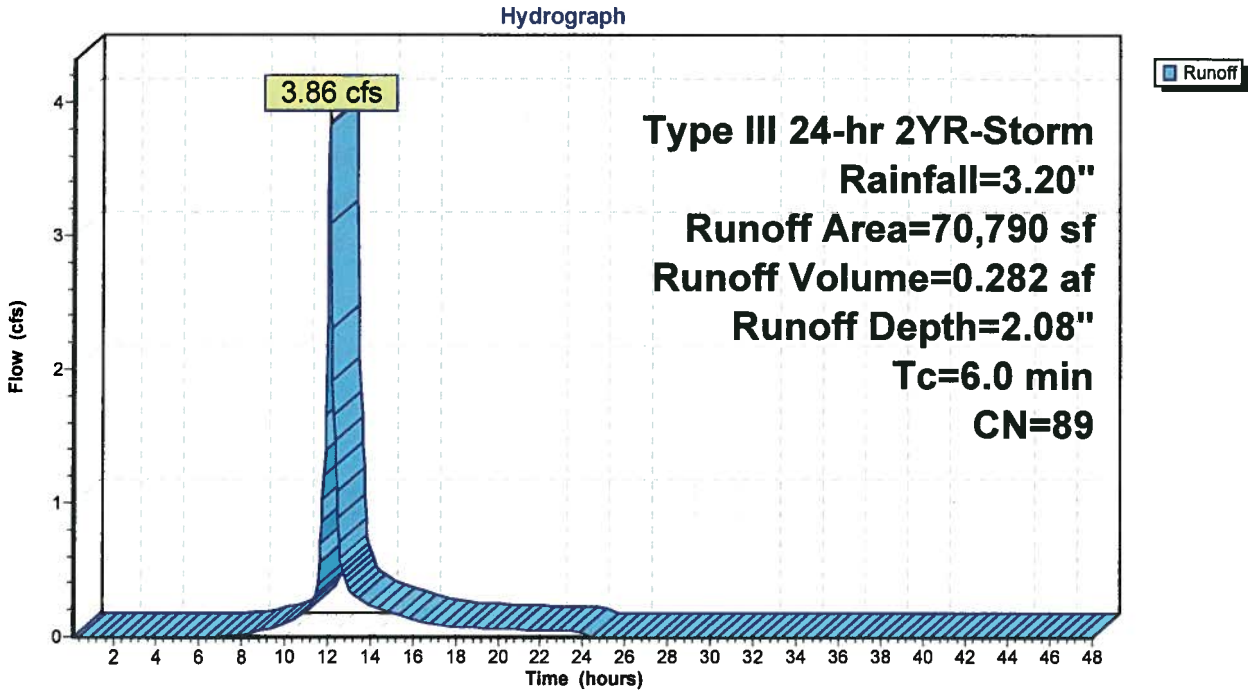
Runoff = 3.86 cfs @ 12.09 hrs, Volume= 0.282 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR-Storm Rainfall=3.20"

Area (sf)	CN	Description
40,047	98	Pavement
23,143	69	50-75% Grass cover, Fair, HSG B
7,600	98	Roof
70,790	89	Weighted Average
23,143		Pervious Area
47,647		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: PDA-2



Subcatchment 4S: PDA-4

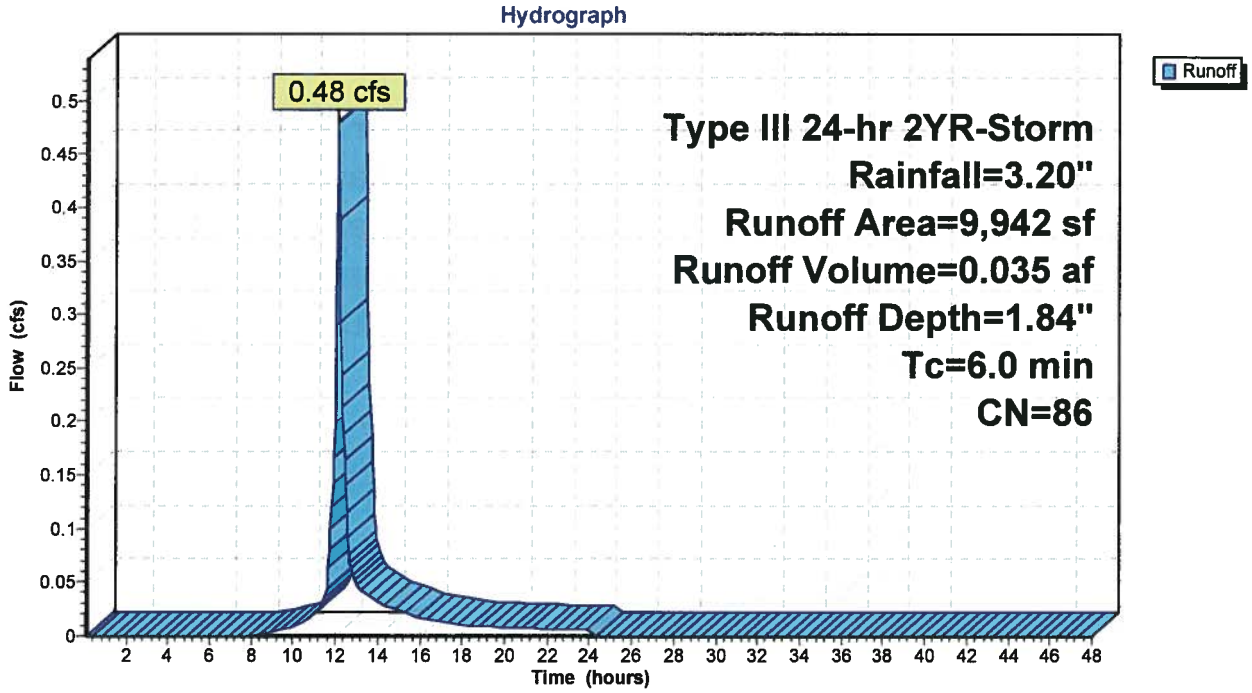
Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR-Storm Rainfall=3.20"

Area (sf)	CN	Description
5,671	98	Pavement
3,955	69	50-75% Grass cover, Fair, HSG B
316	98	Concrete Pad
9,942	86	Weighted Average
3,955		Pervious Area
5,987		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 4S: PDA-4



Subcatchment 6S: PDA-6

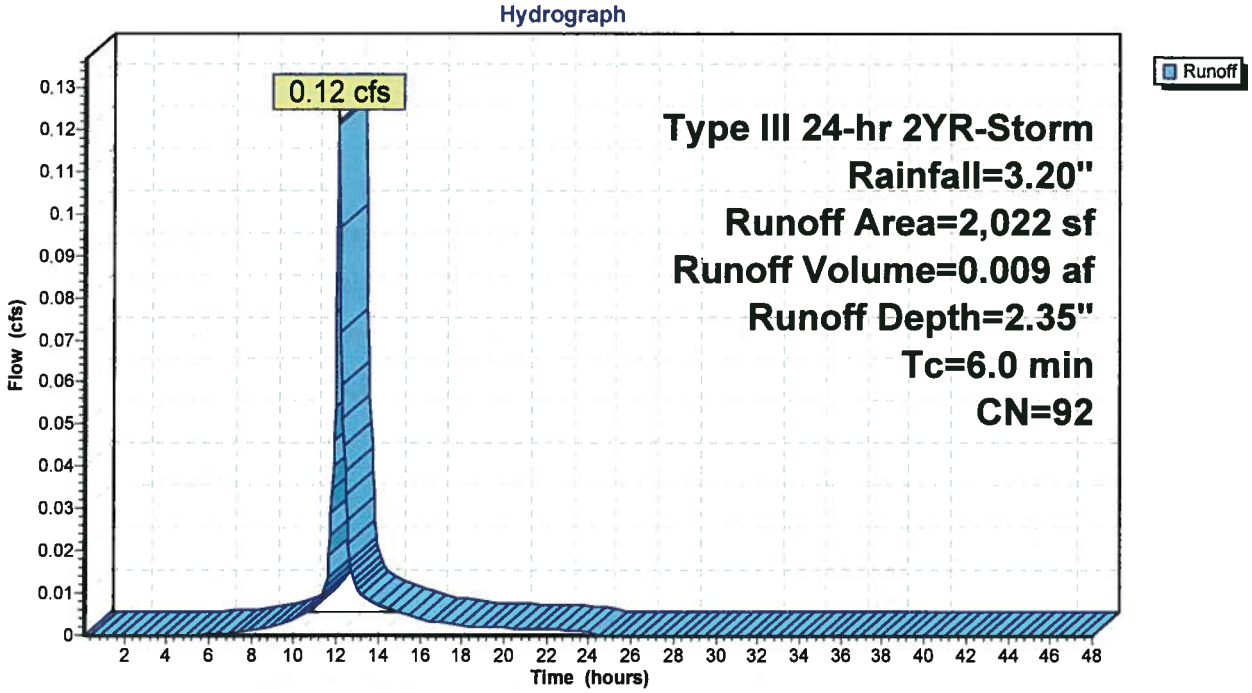
Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.009 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR-Storm Rainfall=3.20"

Area (sf)	CN	Description
1,622	98	Pavement
400	69	50-75% Grass cover, Fair, HSG B
2,022	92	Weighted Average
400		Pervious Area
1,622		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: PDA-6

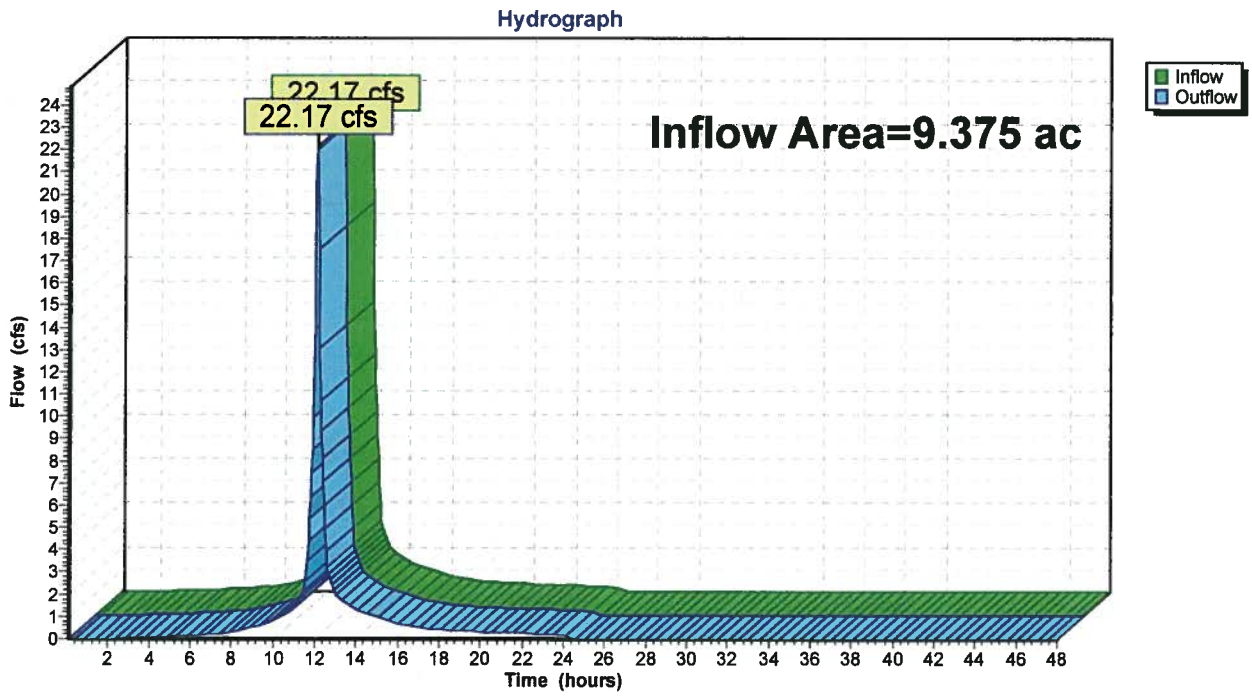


Reach 8R: wetlands

Inflow Area = 9.375 ac, Inflow Depth = 2.22" for 2YR-Storm event
Inflow = 22.17 cfs @ 12.09 hrs, Volume= 1.735 af
Outflow = 22.17 cfs @ 12.09 hrs, Volume= 1.735 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 3

Reach 8R: wetlands



Subcatchment 9S: PDA-9

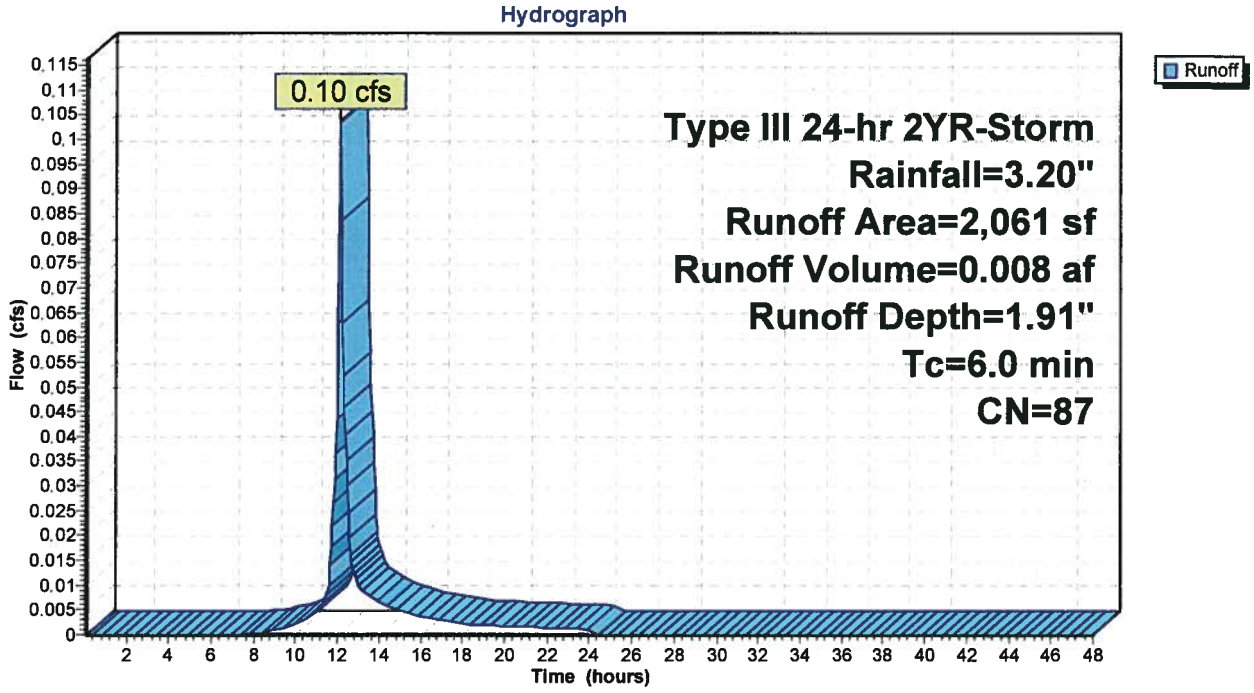
Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR-Storm Rainfall=3.20"

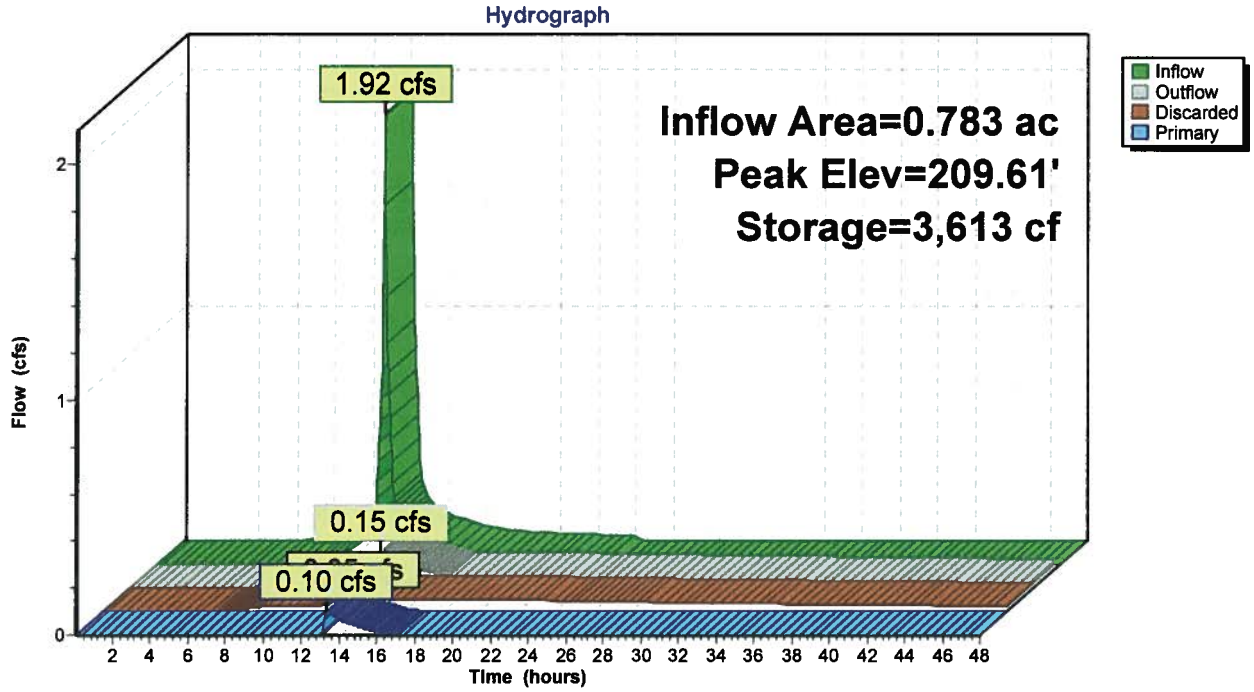
Area (sf)	CN	Description
2,061	87	Water
2,061		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 9S: PDA-9



Pond 10P: Pond



Subcatchment 1S: PDA-1

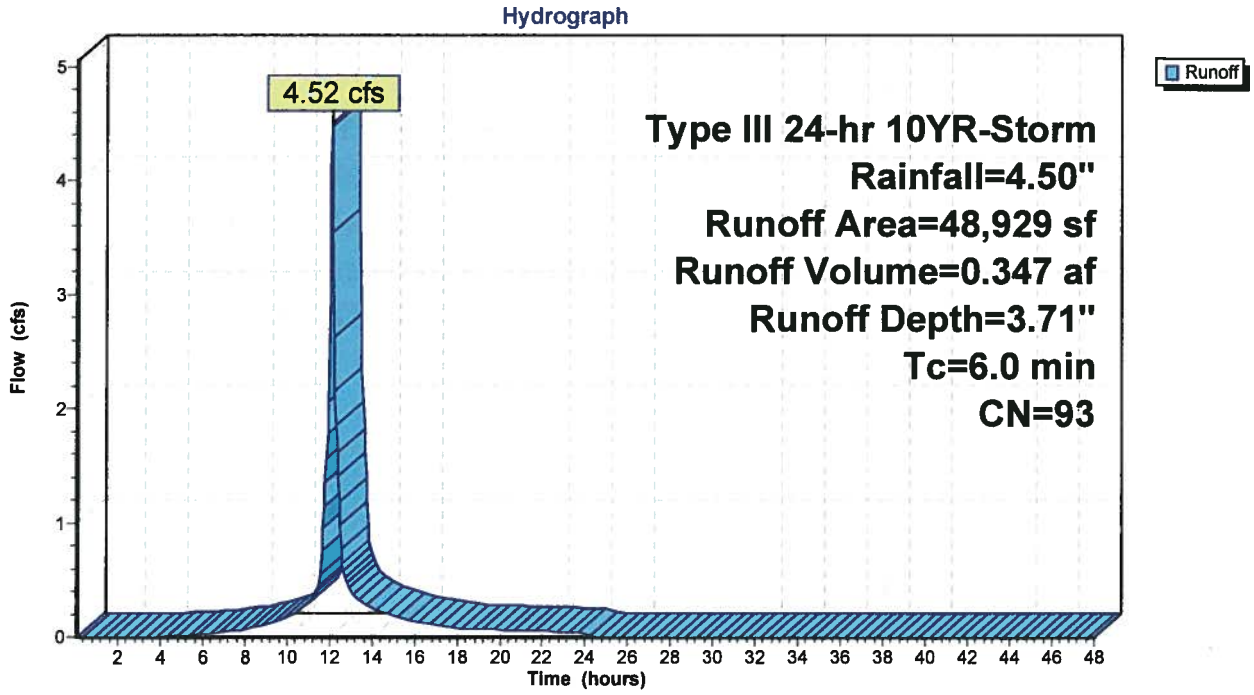
Runoff = 4.52 cfs @ 12.09 hrs, Volume= 0.347 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR-Storm Rainfall=4.50"

Area (sf)	CN	Description
31,194	98	Pavement
8,728	69	50-75% Grass cover, Fair, HSG B
9,007	98	Roof
48,929	93	Weighted Average
8,728		Pervious Area
40,201		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: PDA-1



Subcatchment 3S: PDA-3

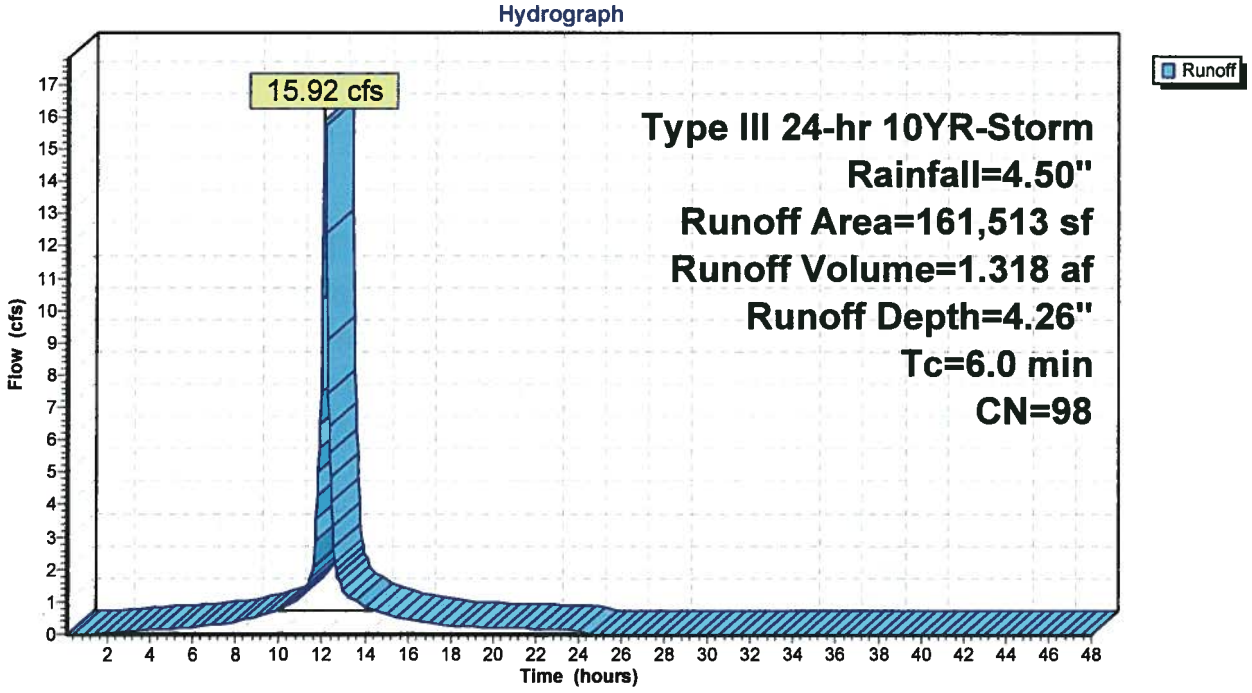
Runoff = 15.92 cfs @ 12.09 hrs, Volume= 1.318 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR-Storm Rainfall=4.50"

Area (sf)	CN	Description
161,513	98	Roof
161,513		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: PDA-3



Subcatchment 5S: PDA-5

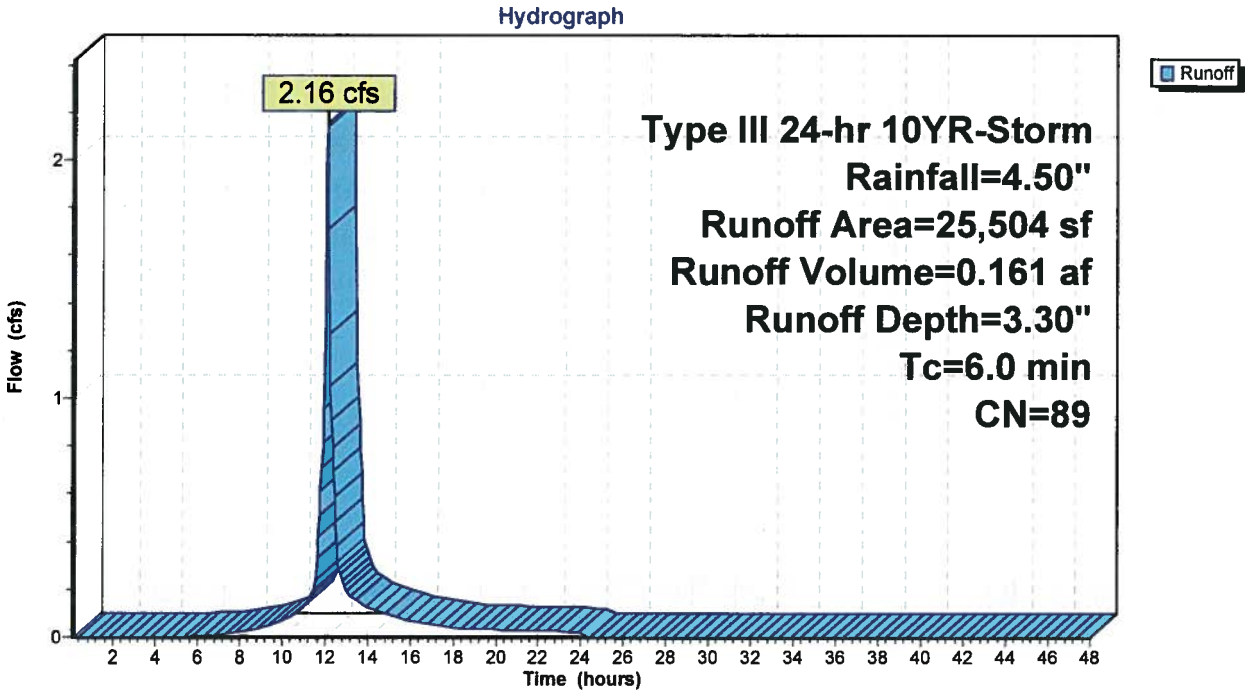
Runoff = 2.16 cfs @ 12.09 hrs, Volume= 0.161 af, Depth= 3.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR-Storm Rainfall=4.50"

Area (sf)	CN	Description
16,755	98	Pavement
7,765	69	50-75% Grass cover, Fair, HSG B
984	98	Concrete Pad
25,504	89	Weighted Average
7,765		Pervious Area
17,739		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: PDA-5



Subcatchment 7S: PDA-7

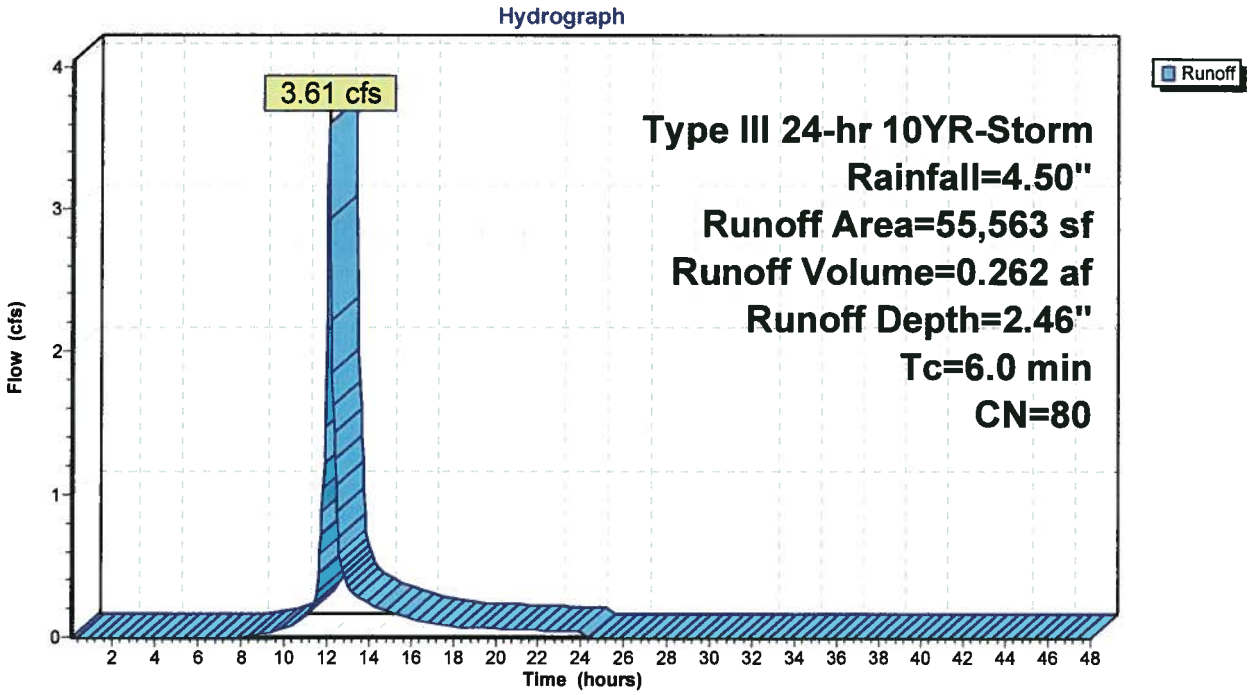
Runoff = 3.61 cfs @ 12.09 hrs, Volume= 0.262 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR-Storm Rainfall=4.50"

Area (sf)	CN	Description
19,119	98	Pavement
2,766	98	Roof
28,571	69	50-75% Grass cover, Fair, HSG B
5,107	60	Woods, Fair, HSG B
55,563	80	Weighted Average
33,678		Pervious Area
21,885		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7S: PDA-7



Subcatchment 8S: PDA-8

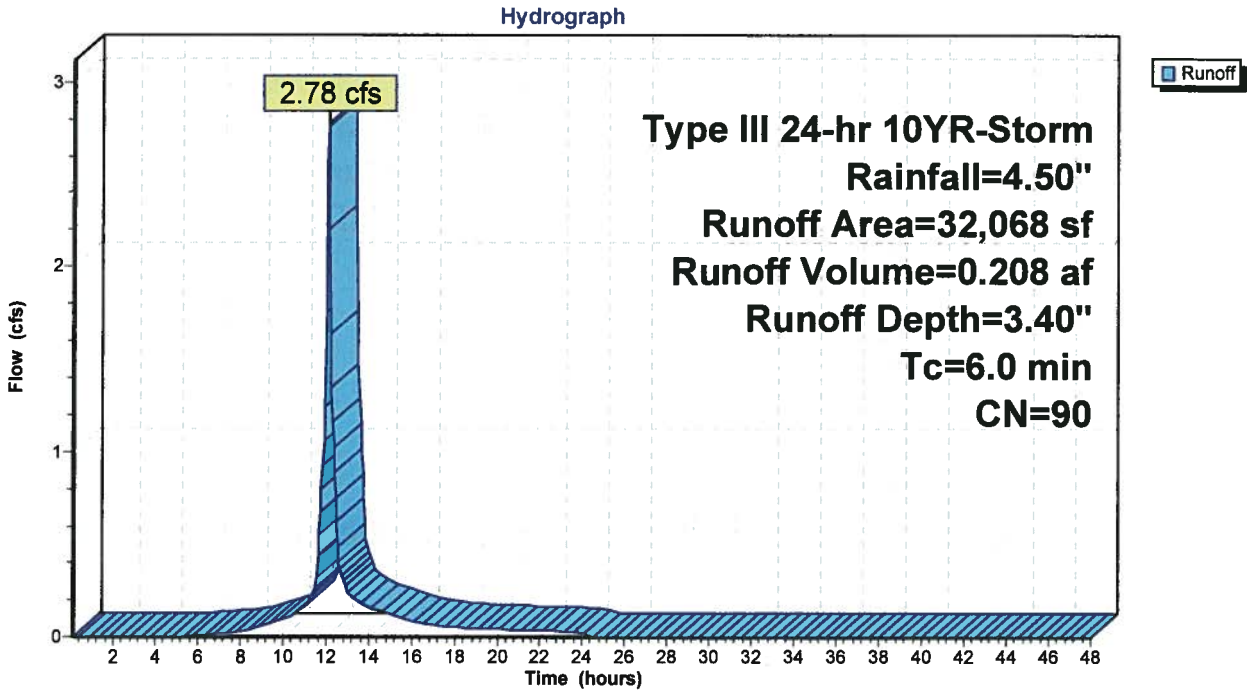
Runoff = 2.78 cfs @ 12.09 hrs, Volume= 0.208 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR-Storm Rainfall=4.50"

Area (sf)	CN	Description
23,024	98	Pavement
9,044	69	50-75% Grass cover, Fair, HSG B
32,068	90	Weighted Average
9,044		Pervious Area
23,024		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8S: PDA-8



Pond 10P: Pond

Inflow Area =	0.783 ac,	Inflow Depth =	3.38"	for	10YR-Storm event
Inflow =	2.95 cfs @	12.09 hrs,	Volume=	0.221 af	
Outflow =	2.23 cfs @	12.21 hrs,	Volume=	0.211 af,	Atten= 24%, Lag= 7.1 min
Discarded =	0.05 cfs @	12.21 hrs,	Volume=	0.129 af	
Primary =	2.18 cfs @	12.21 hrs,	Volume=	0.082 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 209.69' @ 12.21 hrs Surf.Area= 2,188 sf Storage= 3,775 cf

Plug-Flow detention time= 493.1 min calculated for 0.211 af (96% of inflow)
Center-of-Mass det. time= 469.5 min (1,264.4 - 795.0)

Volume	Invert	Avail.Storage	Storage Description
#1	207.00'	3,917 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
207.00	799	117.2	0	0	799
209.00	1,702	154.9	2,445	2,445	1,659
209.75	2,236	173.1	1,472	3,917	2,150

Device	Routing	Invert	Outlet Devices
#1	Primary	209.60'	**36.0' long x 7.4' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.41 2.53 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.67 2.69 2.72 2.76
#2	Discarded	0.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 12.21 hrs HW=209.68' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=2.05 cfs @ 12.21 hrs HW=209.68' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 2.05 cfs @ 0.69 fps)

Time span=0.10-48.00 hrs, dt=0.05 hrs, 959 points x 3
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PDA-1 Runoff Area=48,929 sf Runoff Depth=5.18"
Tc=6.0 min CN=93 Runoff=6.19 cfs 0.485 af

Subcatchment 2S: PDA-2 Runoff Area=70,790 sf Runoff Depth=4.74"
Tc=6.0 min CN=89 Runoff=8.47 cfs 0.641 af

Subcatchment 3S: PDA-3 Runoff Area=161,513 sf Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=21.29 cfs 1.780 af

Subcatchment 4S: PDA-4 Runoff Area=9,942 sf Runoff Depth=4.41"
Tc=6.0 min CN=86 Runoff=1.13 cfs 0.084 af

Subcatchment 5S: PDA-5 Runoff Area=25,504 sf Runoff Depth=4.74"
Tc=6.0 min CN=89 Runoff=3.05 cfs 0.231 af

Subcatchment 6S: PDA-6 Runoff Area=2,022 sf Runoff Depth=5.07"
Tc=6.0 min CN=92 Runoff=0.25 cfs 0.020 af

Subcatchment 7S: PDA-7 Runoff Area=55,563 sf Runoff Depth=3.78"
Tc=6.0 min CN=80 Runoff=5.51 cfs 0.402 af

Reach 8R: wetlands Inflow=49.86 cfs 3.812 af
Outflow=49.86 cfs 3.812 af

Subcatchment 8S: PDA-8 Runoff Area=32,068 sf Runoff Depth=4.85"
Tc=6.0 min CN=90 Runoff=3.90 cfs 0.297 af

Subcatchment 9S: PDA-9 Runoff Area=2,061 sf Runoff Depth=4.52"
Tc=6.0 min CN=87 Runoff=0.24 cfs 0.018 af

Pond 10P: Pond Peak Elev=209.73' Storage=3,869 cf Inflow=4.13 cfs 0.315 af
Discarded=0.05 cfs 0.135 af Primary=3.99 cfs 0.169 af Outflow=4.04 cfs 0.304 af

Total Runoff Area = 9.375 ac Runoff Volume = 3.958 af Average Runoff Depth = 5.07"
21.74% Pervious Area = 2.038 ac 78.26% Impervious Area = 7.337 ac

Subcatchment 2S: PDA-2

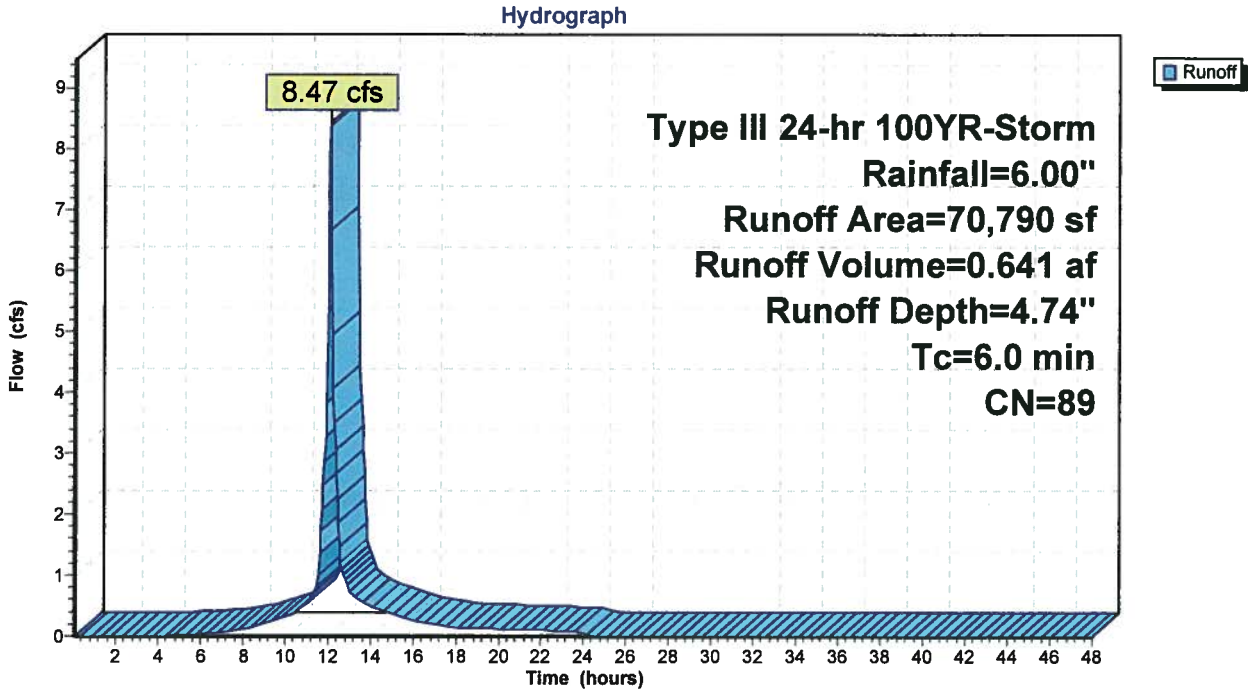
Runoff = 8.47 cfs @ 12.09 hrs, Volume= 0.641 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR-Storm Rainfall=6.00"

Area (sf)	CN	Description
40,047	98	Pavement
23,143	69	50-75% Grass cover, Fair, HSG B
7,600	98	Roof
70,790	89	Weighted Average
23,143		Pervious Area
47,647		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: PDA-2



Subcatchment 4S: PDA-4

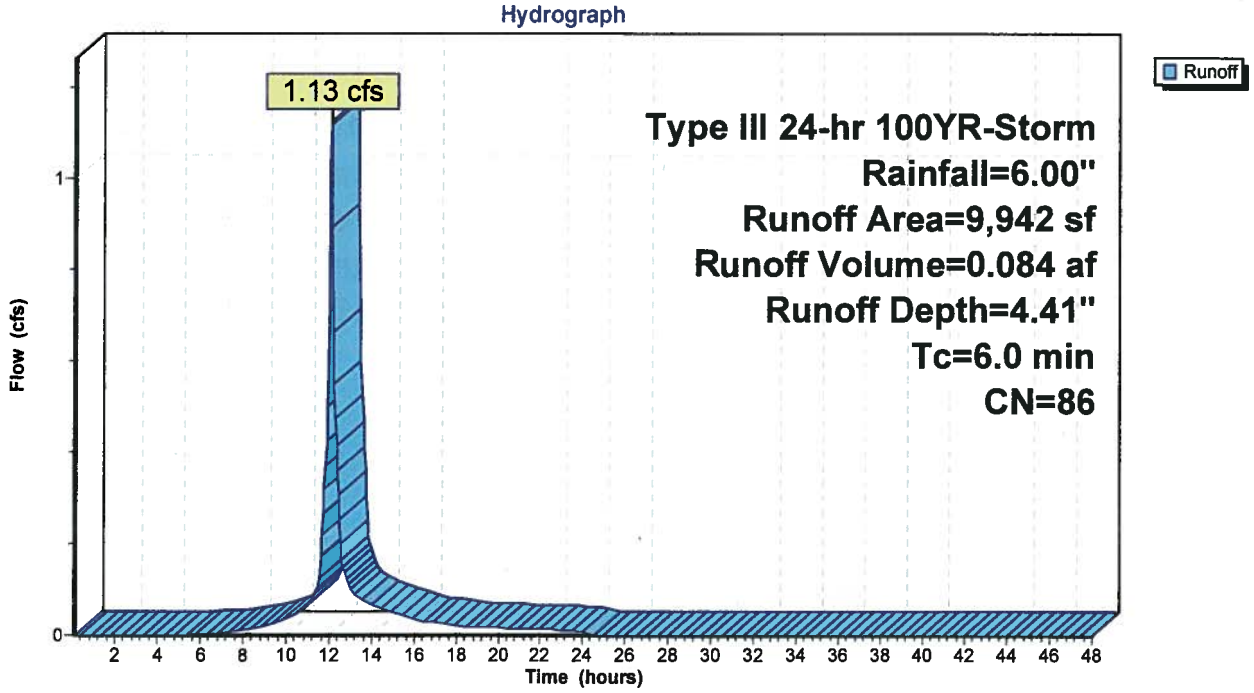
Runoff = 1.13 cfs @ 12.09 hrs, Volume= 0.084 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR-Storm Rainfall=6.00"

Area (sf)	CN	Description
5,671	98	Pavement
3,955	69	50-75% Grass cover, Fair, HSG B
316	98	Concrete Pad
9,942	86	Weighted Average
3,955		Pervious Area
5,987		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 4S: PDA-4



Subcatchment 6S: PDA-6

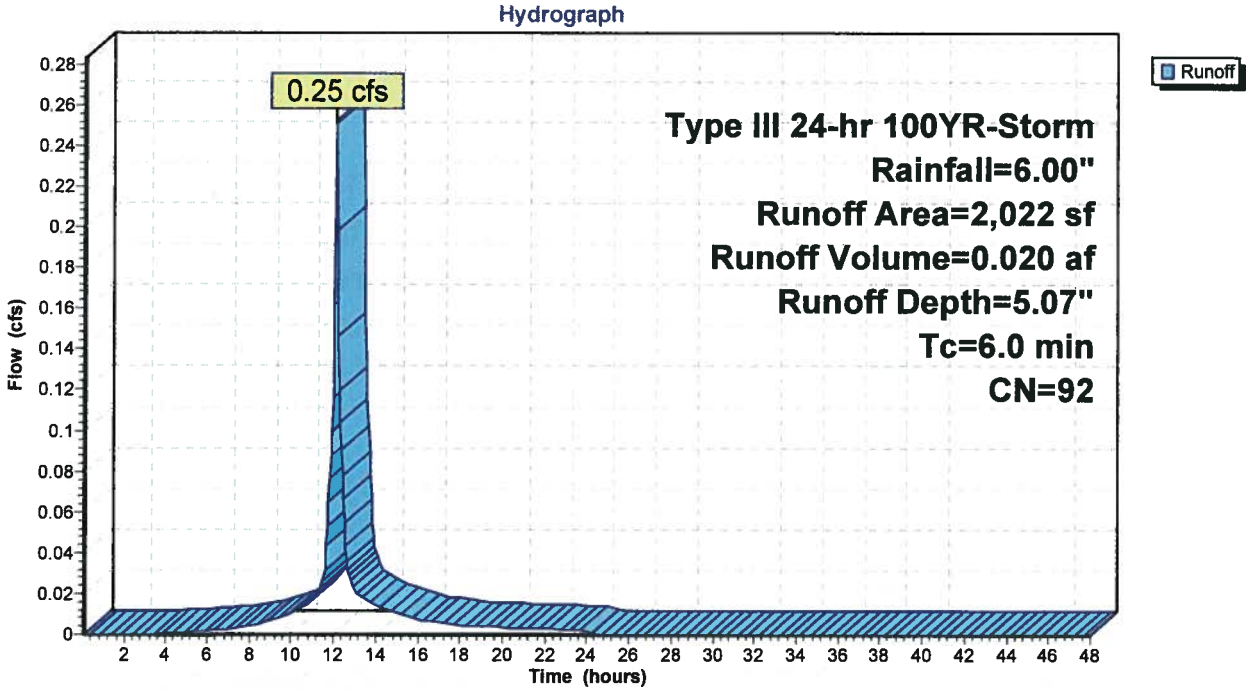
Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.020 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR-Storm Rainfall=6.00"

Area (sf)	CN	Description
1,622	98	Pavement
400	69	50-75% Grass cover, Fair, HSG B
2,022	92	Weighted Average
400		Pervious Area
1,622		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: PDA-6

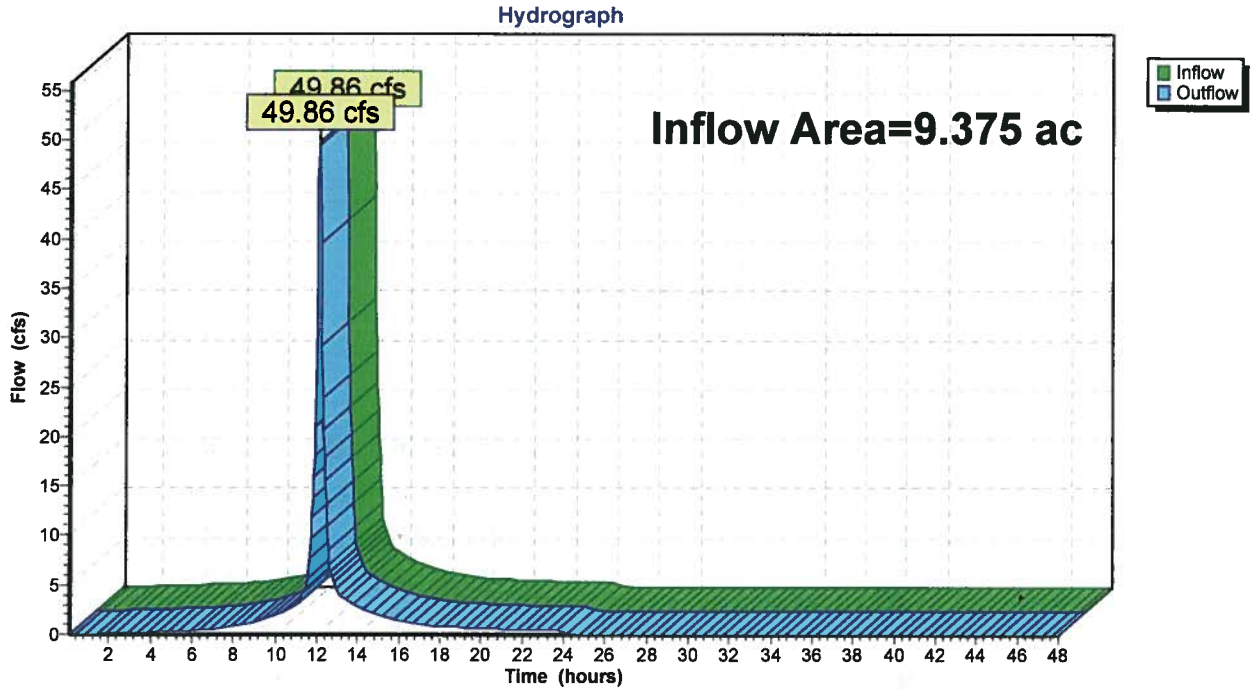


Reach 8R: wetlands

Inflow Area = 9.375 ac, Inflow Depth = 4.88" for 100YR-Storm event
Inflow = 49.86 cfs @ 12.09 hrs, Volume= 3.812 af
Outflow = 49.86 cfs @ 12.09 hrs, Volume= 3.812 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 3

Reach 8R: wetlands



Subcatchment 9S: PDA-9

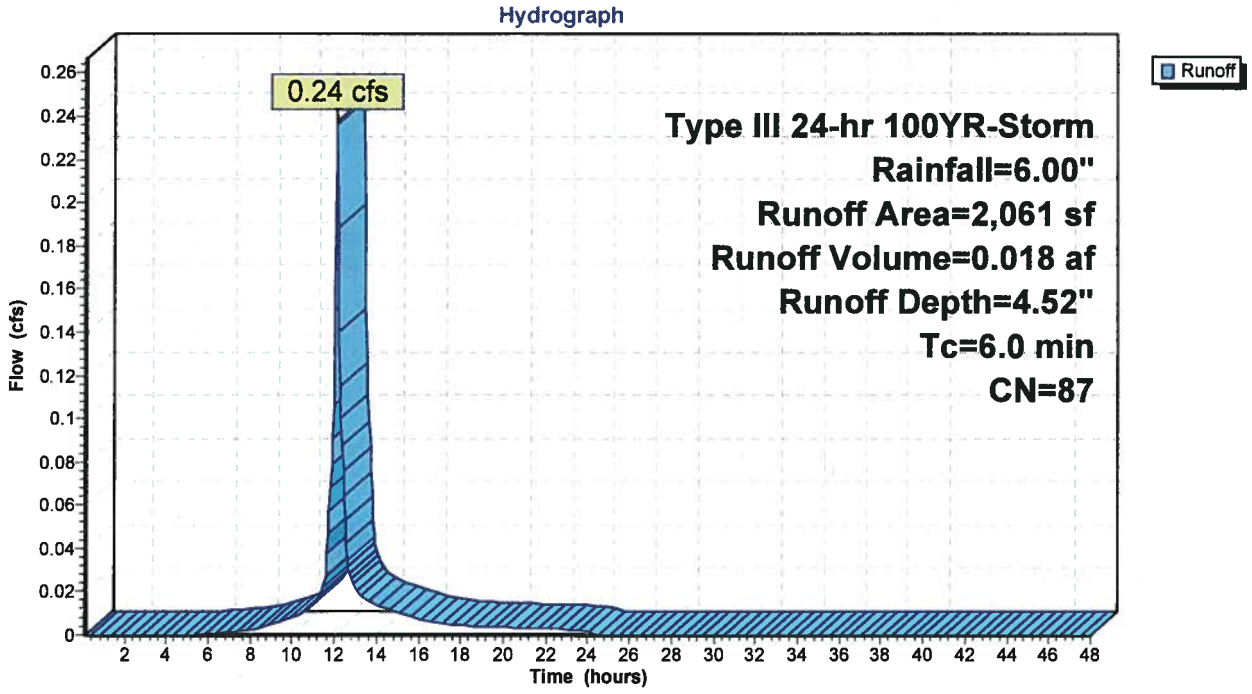
Runoff = 0.24 cfs @ 12.09 hrs, Volume= 0.018 af, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR-Storm Rainfall=6.00"

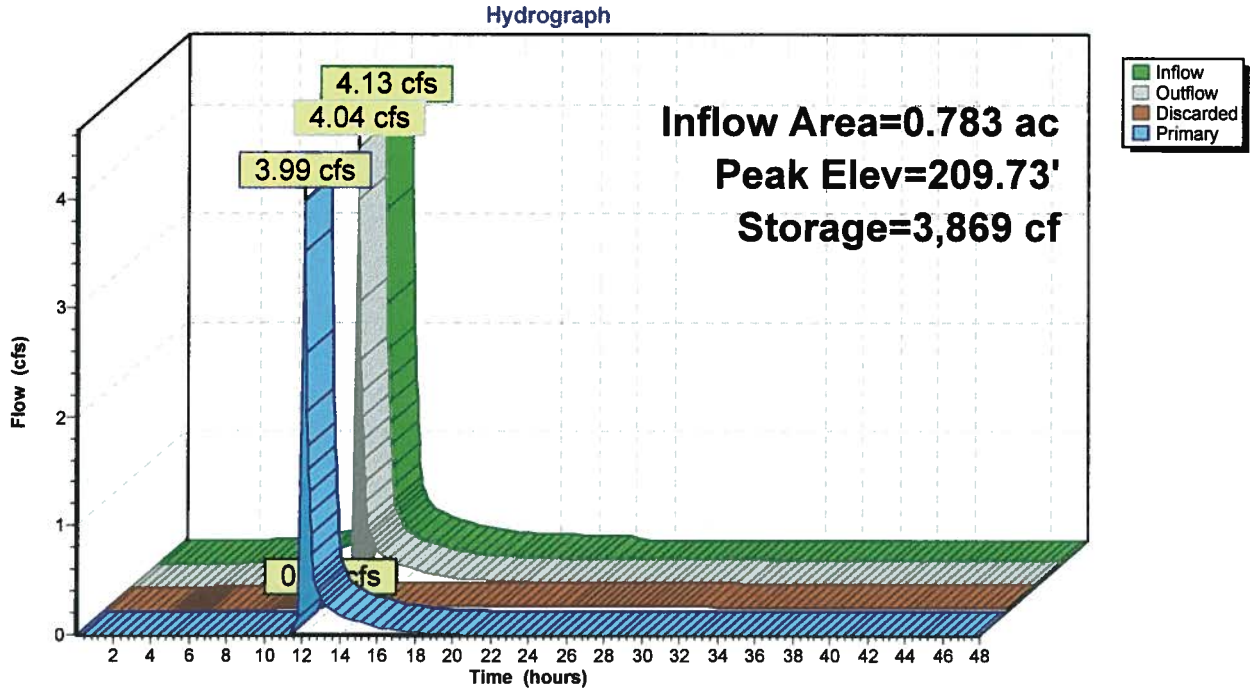
Area (sf)	CN	Description
2,061	87	Water
2,061		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 9S: PDA-9



Pond 10P: Pond



APPENDIX D: WATER QUALITY VOLUME CALCULATIONS

APPENDIX E: REQUIRED RECHARGE

APPENDIX F: TOTAL SUSPENDED SOLIDS

APPENDIX G: CONSTRUCTION PERIOD POLLUTION PLAN / EROSION AND SEDIMENTATION CONTROL PLAN

SECTION II: CONSTRUCTION SEQUENCING

Described below are the major construction activities. They are presented in the order (or sequence) they are expected to begin, but each activity will not necessarily be completed before the next begins. Also, these activities could occur in a different order if necessary to maintain adequate erosion and sedimentation control. All activities and the timeframe (beginning and ending dates) shall be recorded by the General Contractor:

1. Contractor to verify trees to be saved have been marked with orange construction fence.

2. Install stabilized construction entrance.

3. Cut and clear trees within the limit of work, unless otherwise noted.

4. Construct temporary and permanent erosion control facilities prior to any earth moving operations.

5. Grub trees and shrubs

6. Grade and seed compensatory flood storage area prior to filling within the bordering land subject of flooding area.

7. Grade and plant (season permitting).

8. Grade temporary sedimentation ponds.

9. Rough grade. All slopes shall be stabilized immediately after grading. All disturbed areas shall be stabilized no later than 72-hours after construction activities cease. If earthwork temporarily ceases on a portion of or on the entire site, and will not resume within 21-days, the area shall be stabilized. (Stabilize proposed pavement areas with compacted gravels and other disturbed areas with temporary grass seed). An area shall be considered stabile if one of the following has occurred:

    A. Base course gravels have been installed in areas to be paved;
    B. A minimum of 85% vegetated growth has been established;
    C. A minimum of 3"of non-erosive material such as stone or rip-rap has been installed; or
    D. Erosion control blankets have been properly installed.

10. Construct retaining walls along western property.

11. Construct grassed swaled areas. Place rip rap and other BMPs according to the plan. The Contractor shall stabilize all ditches, swales and ponds/basins prior to directing flow to them.

12. Install all underground utilities.

13. Construct solar panels and finish grade sites according to the plan. All slopes shall be stabilized immediately after grading.

STABILIZED CONSTRUCTION ENTRANCE

The stabilized construction entrance shall be installed after site clearing but before any earth moving activities. The exit should be maintained in a condition that will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic topdressing with additional stone. Remove mud and sediment tracked or washed onto public road immediately. Reshape pad as needed for drainage and runoff control. Repair any broken road pavement immediately. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization is achieved or after the temporary practices are no longer needed. Trapped sediment shall be removed or stabilized on site. Inspect the exit pad and sediment disposal area weekly and after heavy rains or heavy use.

TEMPORARY SURFACE AND SLOPE STABILIZATION

Any area of exposed soil that will remain unstabilized for a period of more than twenty days will be covered with a layer of straw or mulch until the time of final loam and seeding.

TEMPORARY SEEDING

A temporary vegetative cover of fast growing indigenous grasses will be established on areas of exposed soils that remain unstabilized for a period of twenty-one days. Depending on the slope, the seeded surfaces will be covered with a layer of mulch.

PERMANENT SEEDING

Upon completion of the final grading, any area not covered by pavement, other forms of stabilization, or other landscaped methods will be loamed and seeded with New England Erosion Control/Restoration Mix (for dry sites) produced by New England Wetland Plants, Inc. (or approved equivalent). This mix includes grasses and broad leaf herbaceous plants that are indigenous to the northeastern Massachusetts. Depending on slope the seeded area will be covered with mulch or erosion control blanket. The seed mix will be applied at a rate of 25lbs/acre.

GRASSED SWALE PROTECTION

The following practices should be implemented by the contractor in order to protect the in-situ soils in the location of the grassed swale area

- Fence swale areas off prior to construction;
- Never allow heavy construction equipment to drive across areas;
- Limit smearing and compacting of soils in infiltration areas;
- Do not construct grassed swale during winter or during a rain event;
- Rotary till or disc harrow to a depth of 12" to restore infiltration rates after final grading.
- It is not recommended that the grassed swale shall be used as sedimentation ponds during construction. However, if the areas are to be used, the accumulated sediments and top 6" of the native soil of the floor and sidewall areas be removed and replaced with soil amendments, such as course sand.

The operation and maintenance of all components of the proposed drainage system will be the responsibility of the following:

Contact Information:

Stormwater Management Practices Owner/Responsible Party for Operation and Maintenance

HAARTZ Corporation

87 Hayward Road

Acton, Massachusetts 01720

Engineer of Record

James E. Miller, P.E.

Miller Engineering

Plainville, MA

Overview

In accordance with the local, state, and federal regulations and the approved site plan for the project, the subject site contains stormwater management practices to collect and convey stormwater, control erosion and sediment, attenuate peak flow rates of runoff, and remove stormwater pollutants. Specific stormwater management practices for this project shall include street sweeping and a detention pond.

During and subsequent to construction, the following temporary and permanent erosion control measures will be utilized and maintained as follows in accordance with *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas*:

- Perimeter Sediment Controls: Combined hay bale / siltation barriers consisting of a filter fabric silt fence and hay bales will be erected in advance of construction along the perimeter of the project site in locations shown on the Erosion & Sedimentation Control Plan. Such barriers should be inspected immediately after each runoff-producing rainfall

- Proprietary Maintenance:

  1. Inspect and clean these units in strict accordance with manufacturers' recommendations and requirements

  2. Clean the units using the method specified by the manufacturer

  3. Vactor trucks are typically used to clean these units: as needed

  4. Remove sediment manually: as needed

- Construction Inspections: Construction inspections shall be performed by personnel from the site contractor and/or the Engineer of Record. Inspection forms shall be executed for each corresponding inspection.

  The following inspection plan shall be performed:

  1. Stabilization Measures: inspect monthly or as needed.

  2. Structural Controls: inspect every 14 days or as needed.

  3. Discharge Points: inspect every 14 days or as needed.

  4. Construction Entrances: inspect every 14 days or as needed.

  5. Storage areas: inspect every 14 days or a needed.

  6. All areas of erosion and sedimentation control shall be inspected after major storm events.

APPENDIX I: ILLICIT DISCHARGE STATEMENT

APPENDIX J: STORMWATER POLLUTION PREVENTION PLAN