

# Site Development Plan

## Theroux Dental Complex

### INDEX OF SHEETS

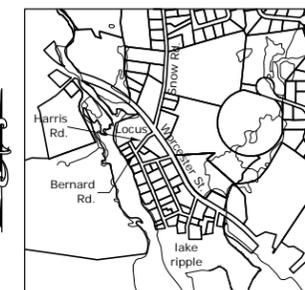
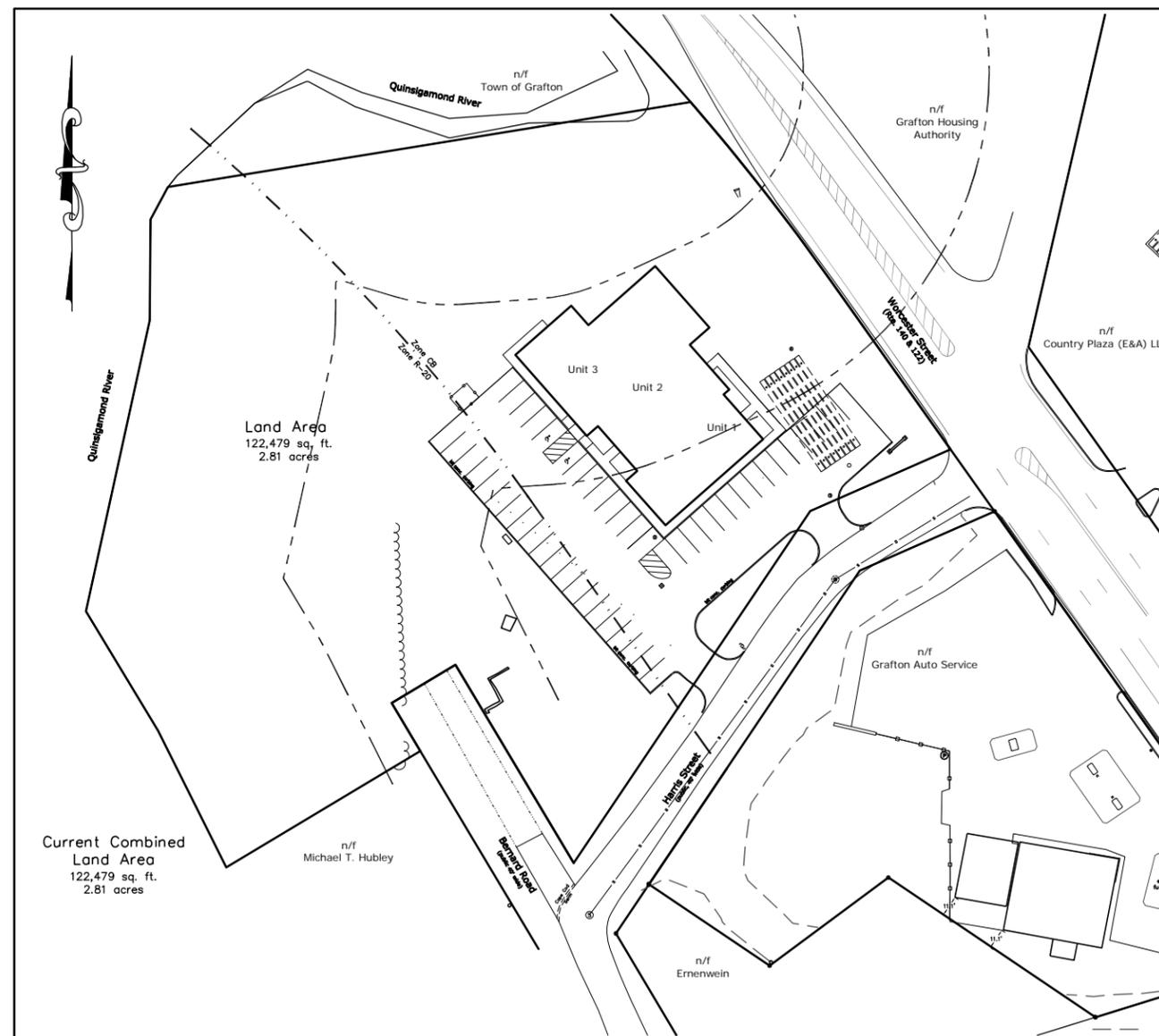
SHEET NO.	TITLE
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
3	SITE LAYOUT PLAN
4	GRADING AND UTILITY PLAN
5	SEDIMENT AND EROSION CONTROL PLAN
6	LANDSCAPE PLAN
7-8	DETAIL SHEETS

### Locus Legal References

ASSESSORS: map 46 parcels 15 and 19  
 DEED: deed book 14991 page 389  
 deed book 5751 page 139  
 PLAN: plan book 41 plan 14

### Purpose Statement

Design a 3 unit office building for medical/dental professionals.



Locus Map  
 scale 1" = 1000'  
 from MassGIS Oliver  
 level 3 parcels & DEP wetlands

DATE: 2/3/16  
 NORMAN G. HILL, PLS #41786

DATE: 2/3/16  
 NORMAN G. HILL, PE #31887

REVISIONS			
No.	Date	Design	Checked
1	2/2/16	BDH	NGH
2	2/29/16	BDH	NGH
3	3/11/16	BDH	NGH
4	4/7/16	BDH	NGH
5			
6			

Field By:	NH/SB	12/15
Designed By:	BDH	1/16
Drawn By:	BDH	1/16
Checked By:	NGH	1/16



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 508-966-4130

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 N. Grafton, MA 01536  
 508-839-9526

**Hanson**  
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 Hanson, MA 02341  
 781-294-4144

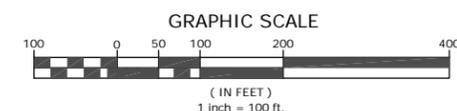
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Date	Jan. 26, 2016	Sheet No.	1
Job No.	G8723		

### Zoning Summary

	Community Business CB	Medium Density Residential R-20	103 Worcester St proposed
Frontage:	140 ft	125 ft	310.10 ft
Area:	40,000 ft <sup>2</sup>	20,000 ft <sup>2</sup>	122,479 ft <sup>2</sup>
Front Yard:	40 ft	30 ft	45.8 ft
Side Yard:	15 ft	15 ft	97.7 ft
Rear Yard:	15 ft	15 ft	97.7 ft
Bldg. coverage:	30%	30%	7.2%

Note: This site is located within the Water Supply Protection Overlay District



Located on  
 Worcester St., Harris St., & Bernard Rd.  
 Grafton, MA

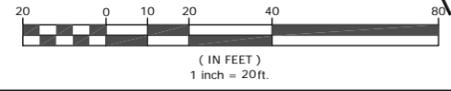
Site Development Plan  
 Theroux Dental Complex  
 located at  
 103 Worcester Street  
 2 Bernard Road  
 Grafton, MA  
 Owned By  
 the Bulger Family Trust  
 P O Box 176  
 Grafton, MA 01519-0176  
 January 26, 2016  
 Scale: 1" = 20'



- SW STONE WALL
- IPF IRON PIN FOUND
- DHF DRILL HOLE FOUND
- BOUND TO BE SET
- BOUND FOUND
- DRAIN MANHOLE
- CATCH BASIN
- UTILITY POLE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT GRADE
- LIGHT - WALL MOUNTED
- LIGHT - POLE MOUNTED
- SIGN
- ELECT., TEL. & CABLE
- WATER LINE
- SEWER LINE
- x WF-# WETLAND FLAG

100 Year flood elevation varies between 307 and 308 along this stretch of river

GRAPHIC SCALE



- Utility Notes**
1. Place 4" loam and seed all disturbed areas of the project not otherwise improved.
  2. All underground utility locations shown are based on field evidence and records provided to Land Planning, Inc.. These locations should be considered approximate. Other utilities may exist which are not evident or for which record information was not found. The contractor must contact all utility companies and "Dig Safe" before excavation begins. We assume no responsibility for damages incurred as a result of utilities omitted or inaccurately shown.
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  4. All work shall conform to Town of Grafton requirements and Massachusetts Highway Department construction standards as applicable.

0"-4"	A horizon, sandy loam
4"-16"	B horizon, sandy loam
16"-120"	C1 horizon, gravel & coarse sand
120"-156"	C2 horizon, sand
No mottles	
No water present	
Elevation = 330.6	
Groundwater = 317.6	
<b>DH-2</b>	
0"-8"	A horizon, sandy loam
8"-24"	B horizon, sandy loam
24"-120"	C1 horizon, gravel & coarse sand
120"-156"	C2 horizon, medium to coarse sa
No mottles	
No water present	
Elevation = 331.1	
Groundwater = 318.1	
<b>DH-3</b>	
0"-12"	A horizon, sandy loam
12"-30"	B horizon, sandy loam
30"-96"	C1 horizon, gravel & coarse sand
96"-74"	C2 horizon, medium to coarse sa
No mottles	
No water present	
Elevation = 332.1	
Groundwater = 317.6	

DATE: 2/3/16  
NORMAN G. HILL, PE #31887

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6			

Field By:	NH/SB	12/15
Designed By:	BDH	1/16
Drawn By:	BDH	1/16
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Bellingham, MA 02019  
508-966-4130

**North Grafton**  
214 Worcester St.  
N. Grafton, MA 01536  
508-839-9526

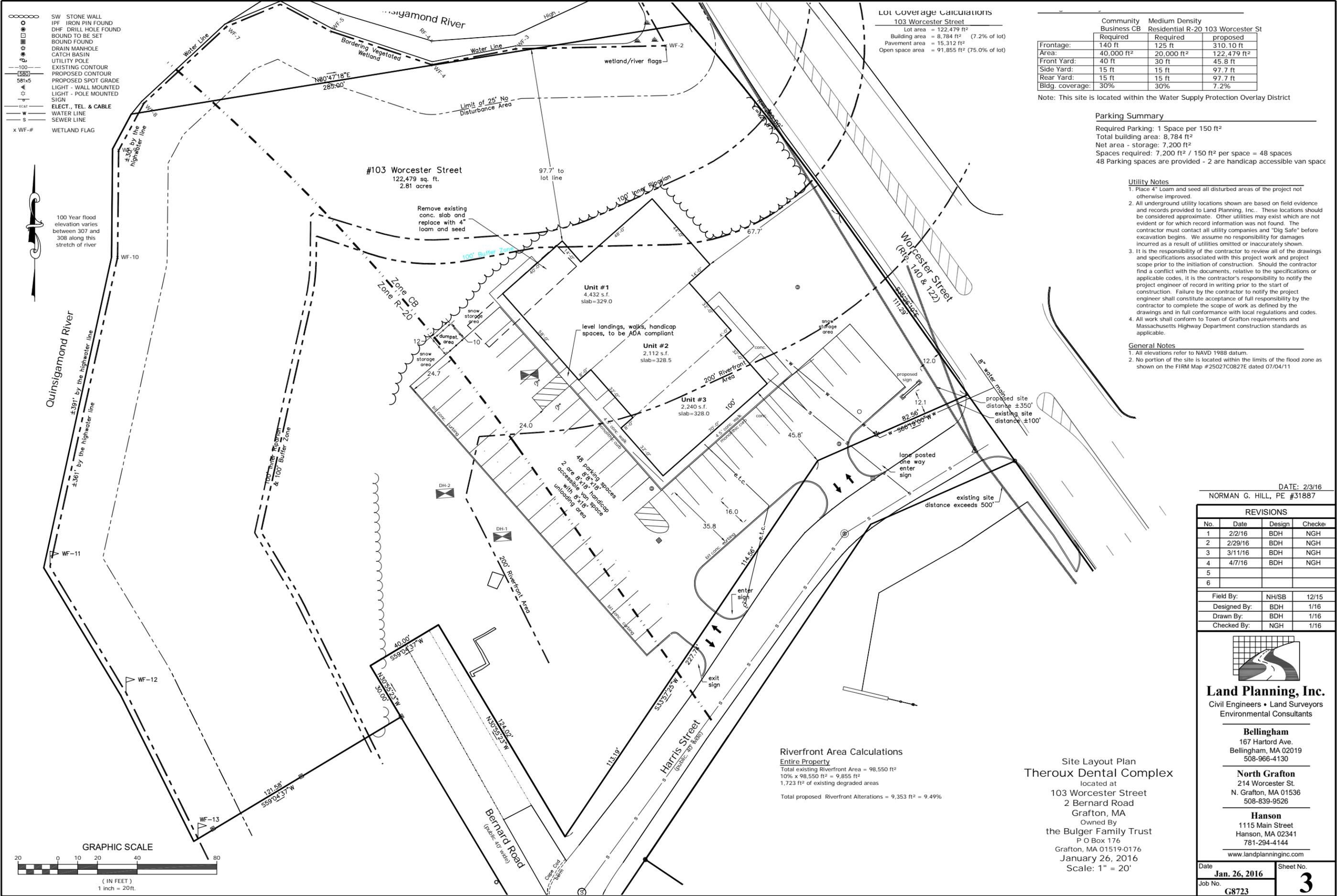
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1115 Main Street  
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Date	Jan. 26, 2016	Sheet No.	2
Job No.	G8723		

Riverfront Area Calculations (entire property)  
Total existing Riverfront Area = 98,550 ft<sup>2</sup>  
10% x 98,550 ft<sup>2</sup> = 9,855 ft<sup>2</sup>  
1,723 ft<sup>2</sup> of existing degraded areas

Existing Conditions Plan  
**Theroux Dental Complex**  
located at  
103 Worcester Street  
2 Bernard Road  
Grafton, MA  
Owned By  
Helen M Bulger  
trustee of the Bulger Family Trust  
P O Box 176  
Grafton, MA 01519-0176  
January 26, 2016  
Scale: 1" = 20'



**LOT Coverage Calculations**  
103 Worcester Street

Lot area	= 122,479 ft <sup>2</sup>
Building area	= 8,784 ft <sup>2</sup> (7.2% of lot)
Pavement area	= 15,312 ft <sup>2</sup>
Open space area	= 91,855 ft <sup>2</sup> (75.0% of lot)

	Community Business CB		Medium Density Residential R-20	
	Required	Required	Required	proposed
Frontage:	140 ft	125 ft	310.10 ft	
Area:	40,000 ft <sup>2</sup>	20,000 ft <sup>2</sup>	122,479 ft <sup>2</sup>	
Front Yard:	40 ft	30 ft	45.8 ft	
Side Yard:	15 ft	15 ft	97.7 ft	
Rear Yard:	15 ft	15 ft	97.7 ft	
Bldg. coverage:	30%	30%	7.2%	

Note: This site is located within the Water Supply Protection Overlay District

**Parking Summary**

Required Parking: 1 Space per 150 ft<sup>2</sup>  
 Total building area: 8,784 ft<sup>2</sup>  
 Net area - storage: 7,200 ft<sup>2</sup>  
 Spaces required: 7,200 ft<sup>2</sup> / 150 ft<sup>2</sup> per space = 48 spaces  
 48 Parking spaces are provided - 2 are handicap accessible van space

**Utility Notes**

- Place 4" Loam and seed all disturbed areas of the project not otherwise improved.
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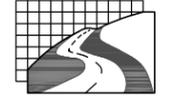
**General Notes**

- All elevations refer to NAVD 1988 datum.
- No portion of the site is located within the limits of the flood zone as shown on the FIRM Map #25027C0827E dated 07/04/11

DATE: 2/3/16  
 NORMAN G. HILL, PE #31887

REVISIONS			
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Field By:	NH/SB	12/15
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Date	Jan. 26, 2016	Sheet No.	3
Job No.	G8723		

**Riverfront Area Calculations**  
 Entire Property  
 Total existing Riverfront Area = 98,550 ft<sup>2</sup>  
 10% x 98,550 ft<sup>2</sup> = 9,855 ft<sup>2</sup>  
 1,723 ft<sup>2</sup> of existing degraded areas  
 Total proposed Riverfront Alterations = 9,353 ft<sup>2</sup> = 9.49%

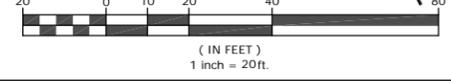
**Site Layout Plan**  
**Theroux Dental Complex**  
 located at  
 103 Worcester Street  
 2 Bernard Road  
 Grafton, MA  
 Owned By  
 the Bulger Family Trust  
 P O Box 176  
 Grafton, MA 01519-0176  
 January 26, 2016  
 Scale: 1" = 20'

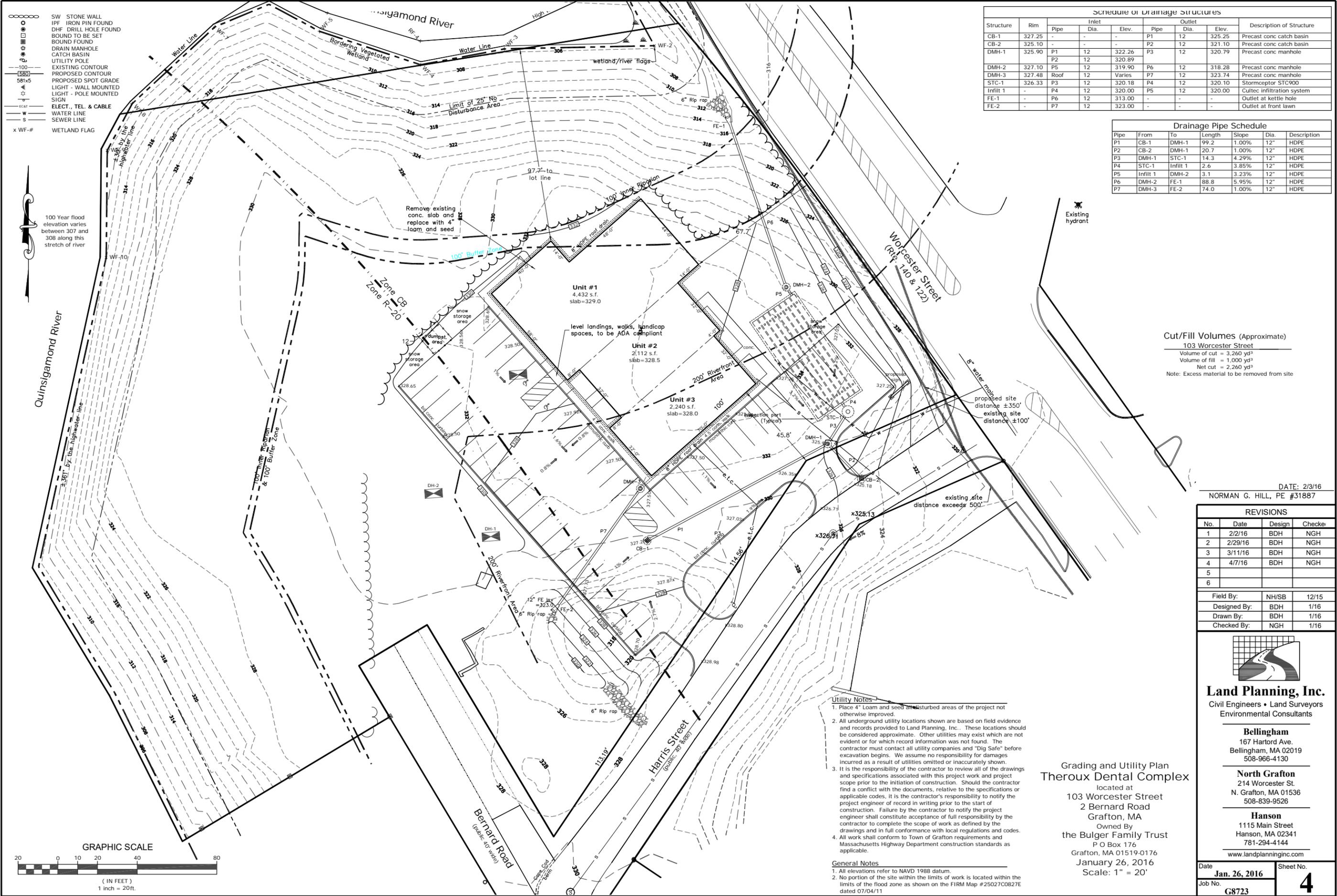
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- x WF-# WETLAND FLAG



100 Year flood elevation varies between 307 and 308 along this stretch of river

**GRAPHIC SCALE**





Schedule of Drainage Structures								
Structure	Rim	Inlet			Outlet			Description of Structure
		Pipe	Dia.	Elev.	Pipe	Dia.	Elev.	
CB-1	327.25	-	-	-	P1	12	325.25	Precast conc. catch basin
CB-2	325.10	-	-	-	P2	12	321.10	Precast conc. catch basin
DMH-1	325.90	P1	12	322.26	P3	12	320.79	Precast conc. manhole
		P2	12	320.89	-	-	-	
DMH-2	327.10	P5	12	319.90	P6	12	318.28	Precast conc. manhole
DMH-3	327.48	Roof	12	Varies	P7	12	323.74	Precast conc. manhole
STC-1	326.33	P3	12	320.18	P4	12	320.10	Stormceptor STC900
Infiltr 1	-	P4	12	320.00	P5	12	320.00	Cultec infiltration system
FE-1	-	P6	12	313.00	-	-	-	Outlet at kettle hole
FE-2	-	P7	12	323.00	-	-	-	Outlet at front lawn

Drainage Pipe Schedule					
Pipe	From	To	Length	Slope	Description
P1	CB-1	DMH-1	99.2	1.00%	12" HDPE
P2	CB-2	DMH-1	20.7	1.00%	12" HDPE
P3	DMH-1	STC-1	14.3	4.29%	12" HDPE
P4	STC-1	Infiltr 1	2.6	3.85%	12" HDPE
P5	Infiltr 1	DMH-2	3.1	3.23%	12" HDPE
P6	DMH-2	FE-1	88.8	5.95%	12" HDPE
P7	DMH-3	FE-2	74.0	1.00%	12" HDPE

**Cut/Fill Volumes (Approximate)**  
 103 Worcester Street  
 Volume of cut = 3,260 yd<sup>3</sup>  
 Volume of fill = 1,000 yd<sup>3</sup>  
 Net cut = 2,260 yd<sup>3</sup>  
 Note: Excess material to be removed from site

DATE: 2/3/16  
 NORMAN G. HILL, PE #31887

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Field By:	NH/SB	12/15
Designed By:	BDH	1/16
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Date	Jan. 26, 2016	Sheet No.	4
Job No.	C8723		

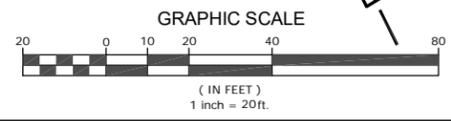
**Utility Notes**

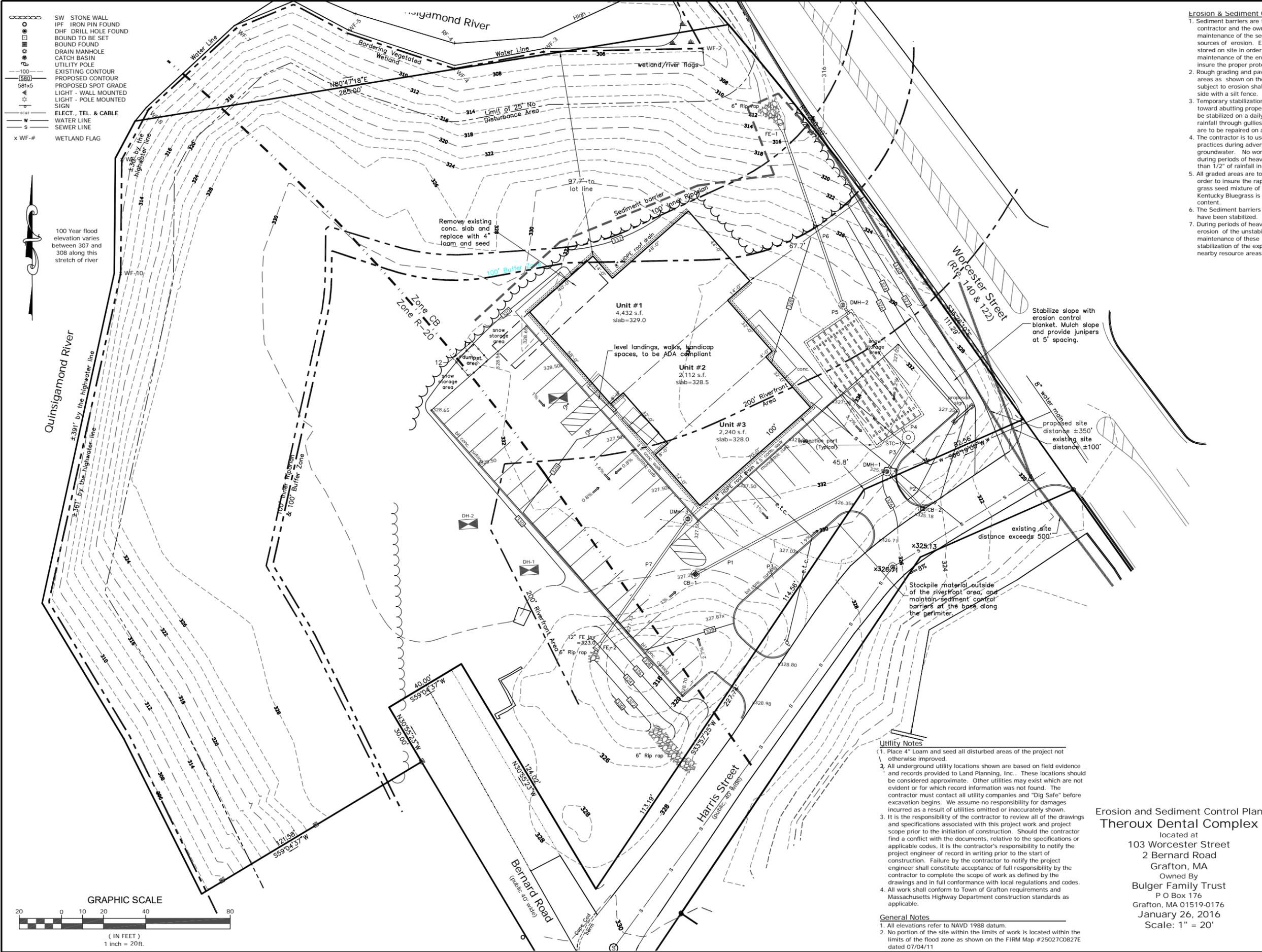
- Place 4" loam and seed in disturbed areas of the project not otherwise improved.
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- All work shall conform to Town of Grafton requirements and Massachusetts Highway Department construction standards as applicable.

**General Notes**

- All elevations refer to NAVD 1988 datum.
- No portion of the site within the limits of work is located within the limits of the flood zone as shown on the FIRM Map #25027C0827E dated 07/04/11

**Grading and Utility Plan**  
**Theroux Dental Complex**  
 located at  
 103 Worcester Street  
 2 Bernard Road  
 Grafton, MA  
 Owned By  
 the Bulger Family Trust  
 P O Box 176  
 Grafton, MA 01519-0176  
 January 26, 2016  
 Scale: 1" = 20'





- Erosion & Sediment Control Notes**
- Sediment barriers are to be installed where shown on this plan. The contractor and the owner are responsible for the proper maintenance of the sediment barriers and to identify and correct all sources of erosion. Extra sediment barrier materials are to be stored on site in order to quickly repair erosion prone areas. Periodic maintenance of the erosion control structures is required in order to insure the proper protection of the resource areas.
  - Rough grading and pavement construction are to be confined to areas as shown on these plans. Any stockpiled material that is subject to erosion shall be protected at its base on the down-slope side with a silt fence.
  - Temporary stabilization of disturbed areas is required to limit erosion toward abutting properties and public ways. All graded slopes are to be stabilized on a daily basis with special care taken to avoid routing rainfall through gullies toward the resource areas. Areas of erosion are to be repaired on a daily basis.
  - The contractor is to use proper judgment relative to construction practices during adverse weather conditions or periods of high groundwater. No work is to be performed near the wetland areas during periods of heavy rainfall. Inspection is required after more than 1/2" of rainfall in 24 hours.
  - All graded areas are to be loamed and seeded as soon as possible in order to insure the rapid stabilization of the erosion prone areas. A grass seed mixture of 20% Red Top, 60% Chewings Fescue and 20% Kentucky Bluegrass is recommended. "Hydroseed" with high fiber content.
  - The Sediment barriers shall remain in place until all upgradient areas have been stabilized.
  - During periods of heavy rainfall, it will be expected to experience erosion of the unstabilized slopes. Immediate attention to the maintenance of these eroded areas will further insure the successful stabilization of the exposed slopes while limiting the impacts to nearby resource areas.

DATE: 2/3/16  
NORMAN G. HILL, PE #31887

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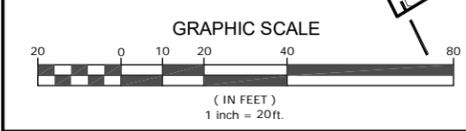
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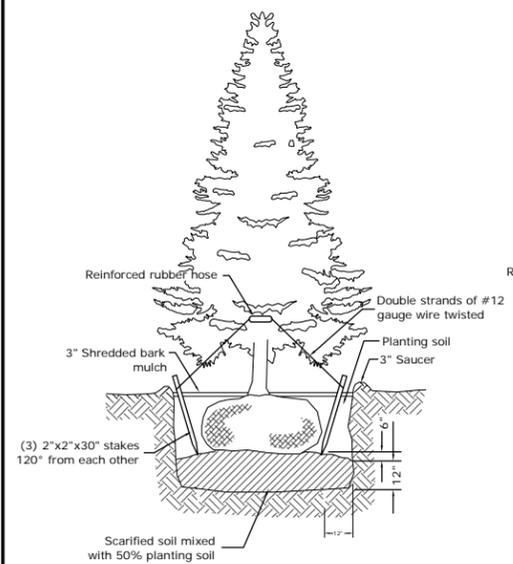
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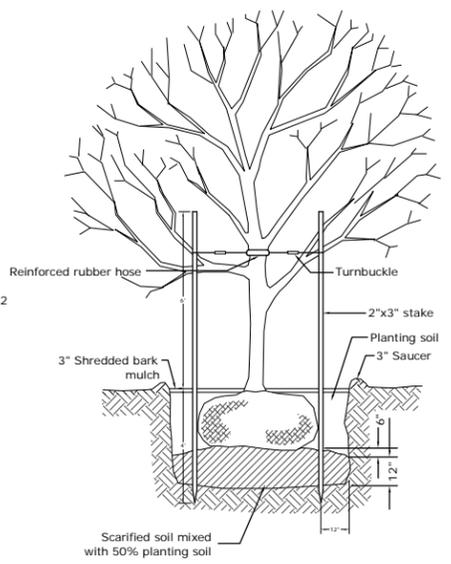
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**Erosion and Sediment Control Plan**  
**Theroux Dental Complex**  
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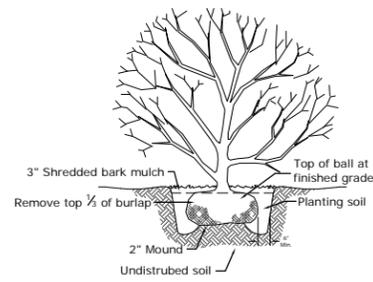


**EVERGREEN PLANTING DETAIL**  
(not to scale)



**TREE PLANTING DETAIL**  
(not to scale)

Note: Guying systems employing buckles & cables shall be brought to tension & turnbuckle threads be flattened to prevent loosening.



**SHRUB PLANTING DETAIL**  
(not to scale)

**Site Features**

The Lot falls in two zoning districts, Community Business near Worcester Street on the front 200' and Residential 20 in the back. The proposed business use does not extend more than 25' into the residential district. A 6' Vinyl stockade fence along the parking lot of the proposed business will act as screening for the abutting residential neighborhood.

The entire site is within the town of Grafton Aquifer Supply Protection Overlay district. Storm water management has been utilized to mitigate runoff and recharge ground water, creating a sustainable development for future generations.

The majority of the site is within the Riverfront Aone. Proposed Alterations do not exceed 10% and alterations have been proposed to the greatest extent possible away from the river.

There is flood plain along the shore line of the river only and does not affect the proposed site.

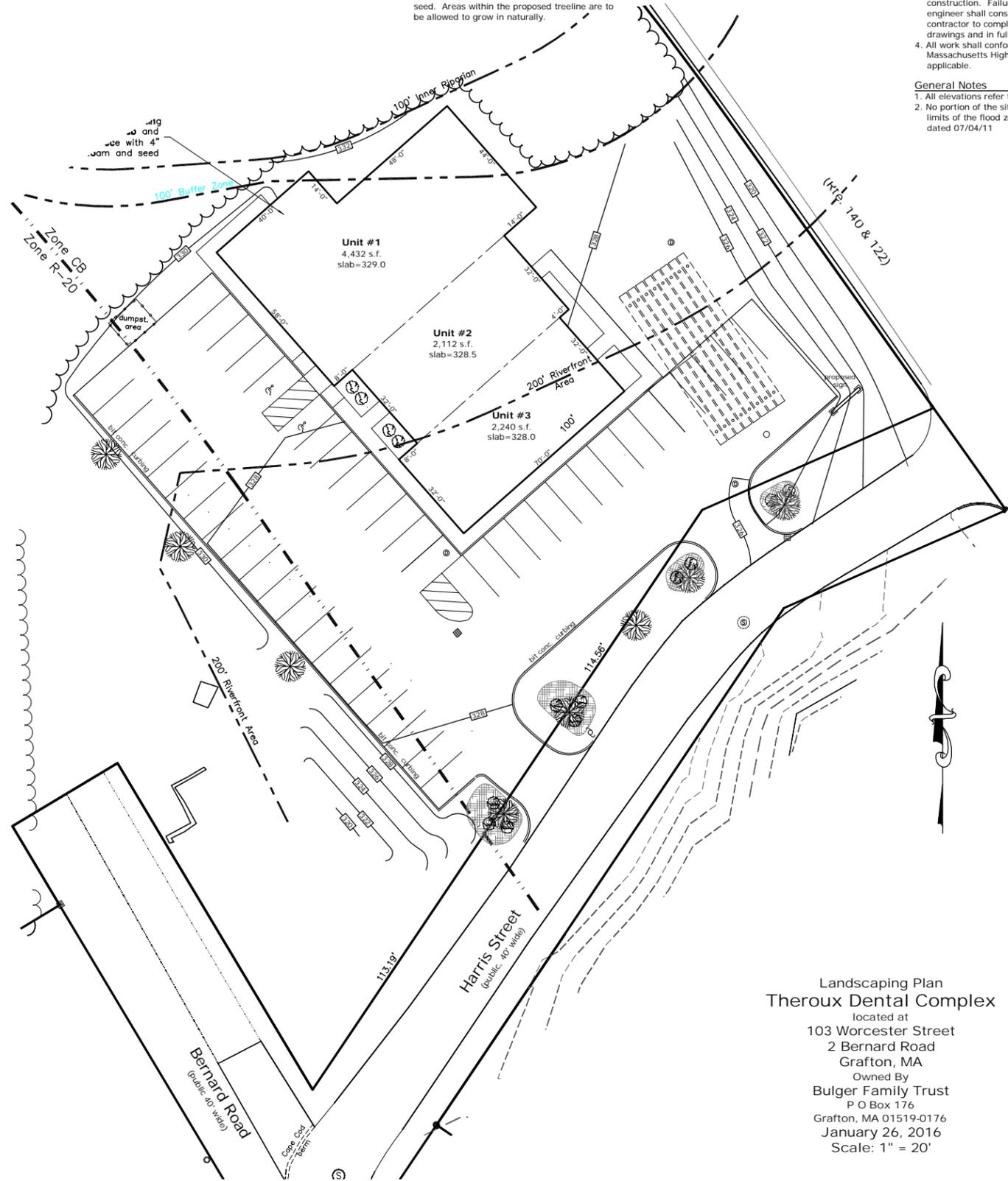
No work is proposed within the 100' wetland buffer.

An estimated 4,500 cubic yards of earth will be excavated for the proposed development; much of this for regrading of the slope at the intersection of Worcester Street. Some of this material will be used as fill within the parking area. The regrading will greatly improve visibility at the intersection. Any excess of material is to be stockpiled and protected from erosion until it is transported offsite.

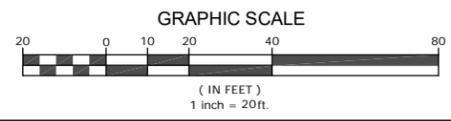
**LANDSCAPE LEGEND**

- (2) large growth shade tree - 2" caliper min.
- (12) decorative tree - 2" caliper min.
- (21) decorative shrub
- perennial garden with mulch

note: All other areas to be 4" min. loam and seed. Areas within the proposed treeline are to be allowed to grow in naturally.



- LEGEND**
- SW STONE WALL
  - IPF IRON PIN FOUND
  - DHF DRILL HOLE FOUND
  - BOUND TO BE SET
  - BOUND FOUND
  - DRAIN MANHOLE
  - CATCH BASIN
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  - EXISTING CONTOUR
  - PROPOSED CONTOUR
  - PROPOSED SPOT GRADE
  - STREET LIGHT
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  - ELECT., TEL. & CABLE



- Utility Notes**
1. Place 4" Loam and seed all disturbed areas of the project not otherwise improved.
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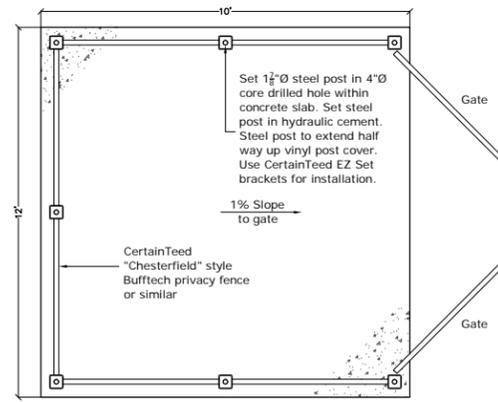
**North Grafton**  
214 Worcester St.  
N. Grafton, MA 01536  
508-839-9526

**Hanson**  
1115 Main Street  
Hanson, MA 02341  
781-294-4144

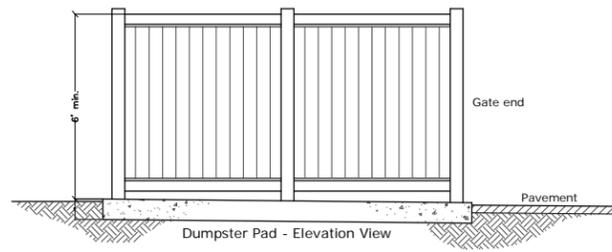
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Landscaping Plan  
Theroux Dental Complex  
located at  
103 Worcester Street  
2 Bernard Road  
Grafton, MA  
Owned By  
Bulger Family Trust  
P O Box 176  
Grafton, MA 01519-0176  
January 26, 2016  
Scale: 1" = 20'

Date	Jan. 26, 2016	Sheet No.	6
Job No.	G8723		

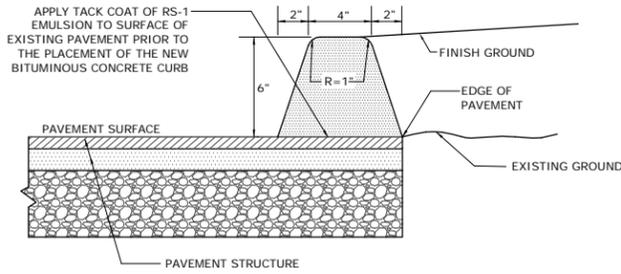


Dumpster Pad - Plan View

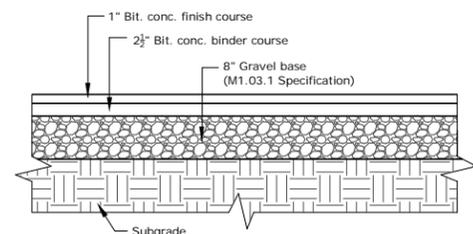


Dumpster Pad - Elevation View

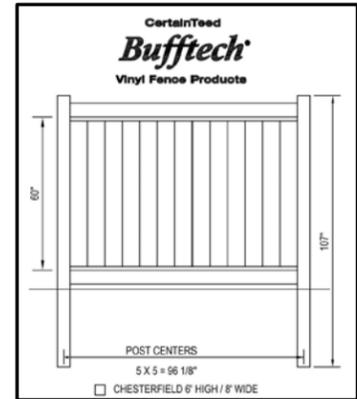
Dumpster Pad and Fence Detail  
not to scale



BITUMINOUS CONCRETE CURB DETAIL  
(not to scale)



BITUMINOUS CONCRETE PAVING DETAIL  
Cross Section  
(not to scale)



FENCE DETAIL  
(not to scale)

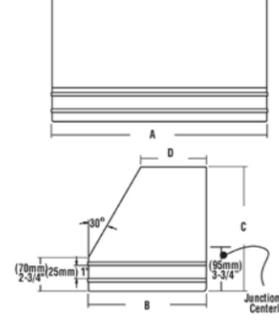
CertainTeed Bufftech Chesterfield style fence (or similar) to be as shown along perimeter of dumpster enclosure, and along parking lot and retaining wall, where shown. Dumpster gate to consist of (2) 5' wide pre-assembled aluminum framed gate units.

**GREENBRIAR® WALL SCONE**



Shown with optional decal striping  
Flat lensed fixtures meet IESNA full cutoff classification

**DIMENSIONS**



	A	B	C	D
Small	(448mm) 17-5/8"	(244mm) 9-5/8"	(257mm) 10-1/8"	(137mm) 5-3/8"

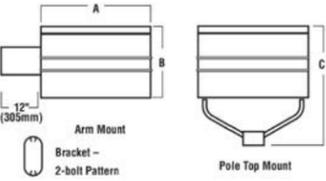
**BUILDING MOUNTED LIGHTING DETAIL**  
(not to scale)

**GREENBRIAR® - FLAT LENS**



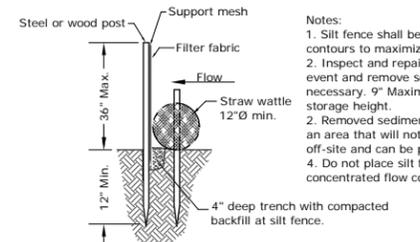
Shown with optional decal striping  
Flat lensed fixtures meet IESNA full cutoff classification

**DIMENSIONS**



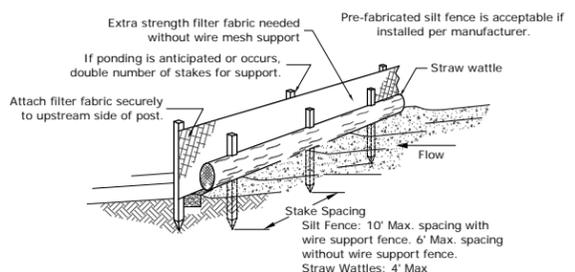
	A	B	C
GFM Arm Mount	21-5/8" (549mm)	12-3/4" (324mm)	-

**POLE MOUNTED LIGHTING DETAIL**  
(not to scale)



SEDIMENT BARRIER DETAIL  
(not to scale)

- Notes:
1. Silt fence shall be placed on slope contours to maximize ponding efficiency.
  2. Inspect and repair fence after each storm event and remove sediment when necessary. 9" Maximum recommended storage height.
  3. Removed sediment shall be deposited to an area that will not contribute sediment off-site and can be permanently stabilized.
  4. Do not place silt fence in streams or concentrated flow conditions.



Sign to be mounted on post at the head of parking space

Mount signs 5' min. to 8' max. to top of sign

**SIGN DETAILS**  
(not to scale)

DATE: 2/3/16  
NORMAN G. HILL, PE #31887

REVISIONS			
No.	Date	Design	Checked
1	2/2/16	BDH	NGH
2	2/29/16	BDH	NGH
3	3/11/16	BDH	NGH
4	4/7/16	BDH	NGH
5			
6			

Field By:	NH/SB	12/15
Designed By:	BDH	1/16
Drawn By:	BDH	1/16
Checked By:	NGH	1/16



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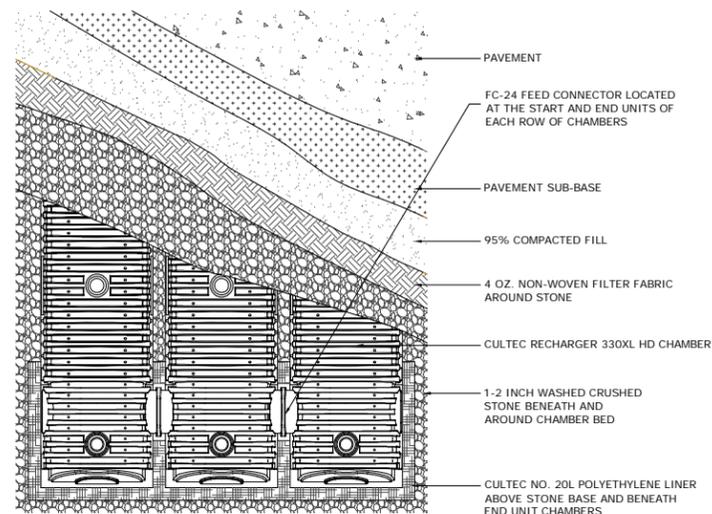
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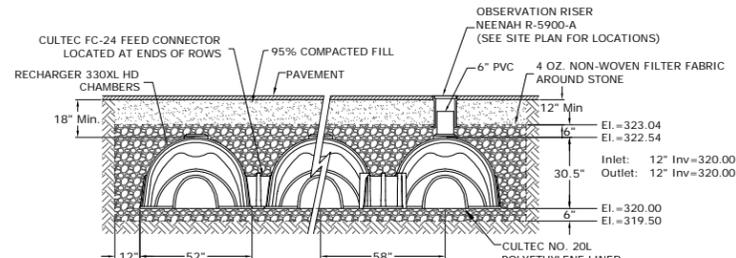
Detail Sheet 1  
**Theroux Dental Complex**  
located at  
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Grafton, MA  
Owned By  
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P O Box 176  
Grafton, MA 01519-0176  
January 26, 2016  
Scale: 1" = 20'

Date	Jan. 26, 2016	Sheet No.	7
Job No.	G8723		



**INFILTRATION SYSTEMS - PLAN VIEW**  
(not to scale)

The infiltration system shall consist of 8 rows of 8 Recharger 330XL HD units. All rows to be connected with FC-24 Feed Connectors between the end units of each row.



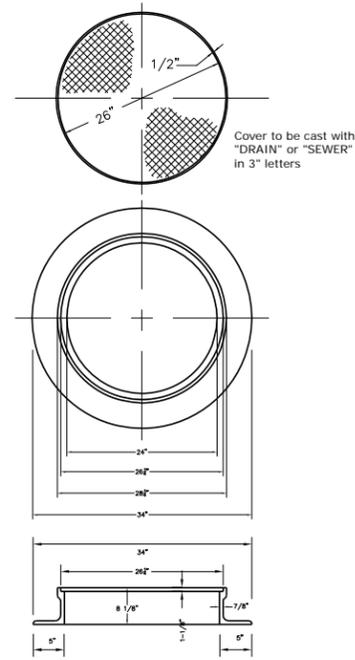
**GENERAL NOTES**  
RECHARGER 330XL HD BY CULTREC, INC. OF BROOKFIELD, CT. REFER TO CULTREC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.

**INFILTRATION SYSTEMS - CROSS SECTION**  
(not to scale)

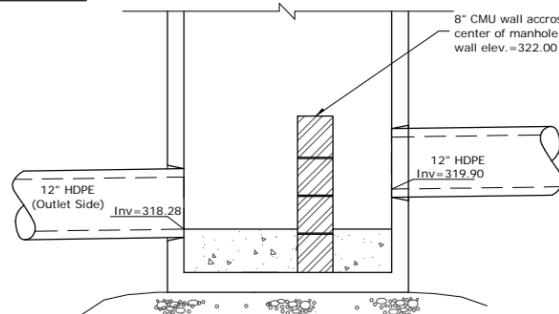
**INFILTRATION SYSTEM FILL SPECIFICATIONS:**  
Fill material required beneath the infiltration system shall consist of select on-site or imported soil material. The fill shall be comprised of clean granular sand, be free from organic matter and deleterious substances, and shall not contain Remediation Waste as that term is defined in 310 CMR 40.0000. Mixtures and layers of different classes of soil shall not be used. The fill shall not contain any material larger than two inches. A sieve analysis, using a #4 sieve, shall be performed on a representative sample of the fill. Up to 45% by weight of the fill sample may be retained on the #4 sieve. Sieve analyses also shall be performed on the fraction of the fill sample passing the #4 sieve, such analyses must demonstrate that the material meets each of the following specifications:

SIEVE SIZE	EFFECTIVE PARTICLE SIZE	% THAT MUST PASS SIEVE
# 4	4.75 mm	100%
# 50	0.30 mm	10% - 100%
#100	0.15 mm	0% - 20%
#200	0.075 mm	0% - 5%

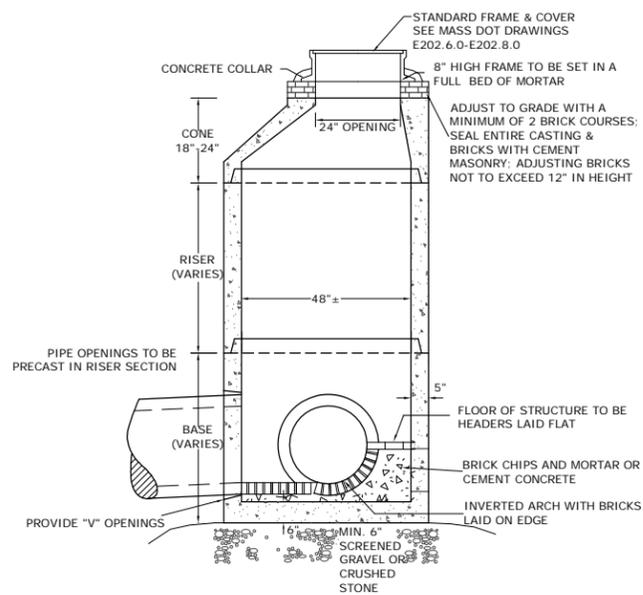
Any fill required to replace unsuitable or impermeable soils, the excavation of the unsuitable material shall extend a minimum of five feet laterally in all directions beyond the outer perimeter of the infiltration system to the depth of naturally occurring pervious material, and replaced with suitable fill material.



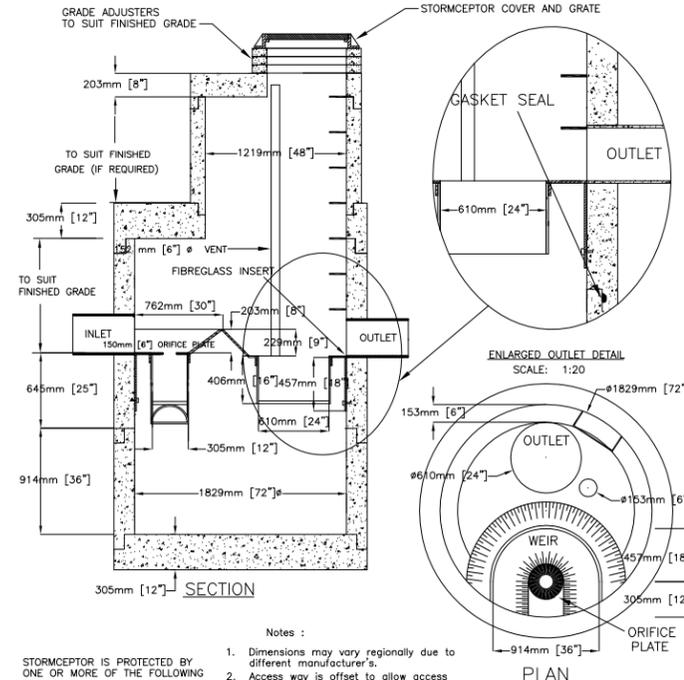
**MANHOLE FRAME & COVER DETAIL**  
(not to scale)  
Type A Frame  
Cast Iron - 265 Lbs.



**DMH-2 MANHOLE BASE DETAIL**  
(not to scale)



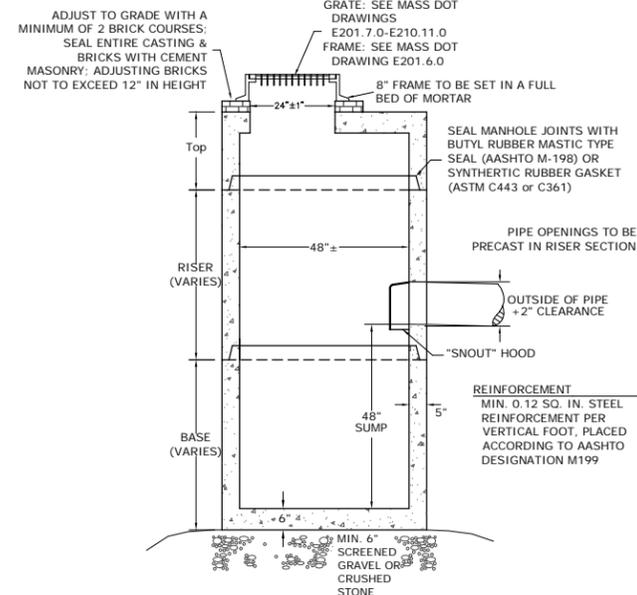
**PRECAST CONCRETE MANHOLE DETAIL**  
(not to scale)



STORMCEPTOR IS PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS:  
Canadian Patent No. 2,009,208  
Canadian Patent No. 2,137,942  
U.S. Patent No. 4,965,148  
U.S. Patent No. 4,498,331  
U.S. Patent No. 5,725,760  
U.S. Patent No. 5,753,115

- Notes:
- Dimensions may vary regionally due to different manufacturer's.
  - Access way is offset to allow access to the fiberglass bypass slab and to allow inspection and maintenance from the surface.
  - Pipe installation by grouting or flexible boots.
  - Flexible boots may not be suitable for all installations. Please contact your sales representative for further information.
  - 610 mm [24"] outlet to be used for cleanout access to the treatment chamber.
  - Safety grates for the 610 mm [24"] outlet are available.

**STC 900 PRECAST CONCRETE STORMCEPTOR**  
FIBREGLASS DISC DESIGN - 900 U.S. GALLON CAPACITY



**PRECAST CONCRETE CATCH BASIN DETAIL**  
(not to scale)

DATE: 2/3/16  
NORMAN G. HILL, PE #31887

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