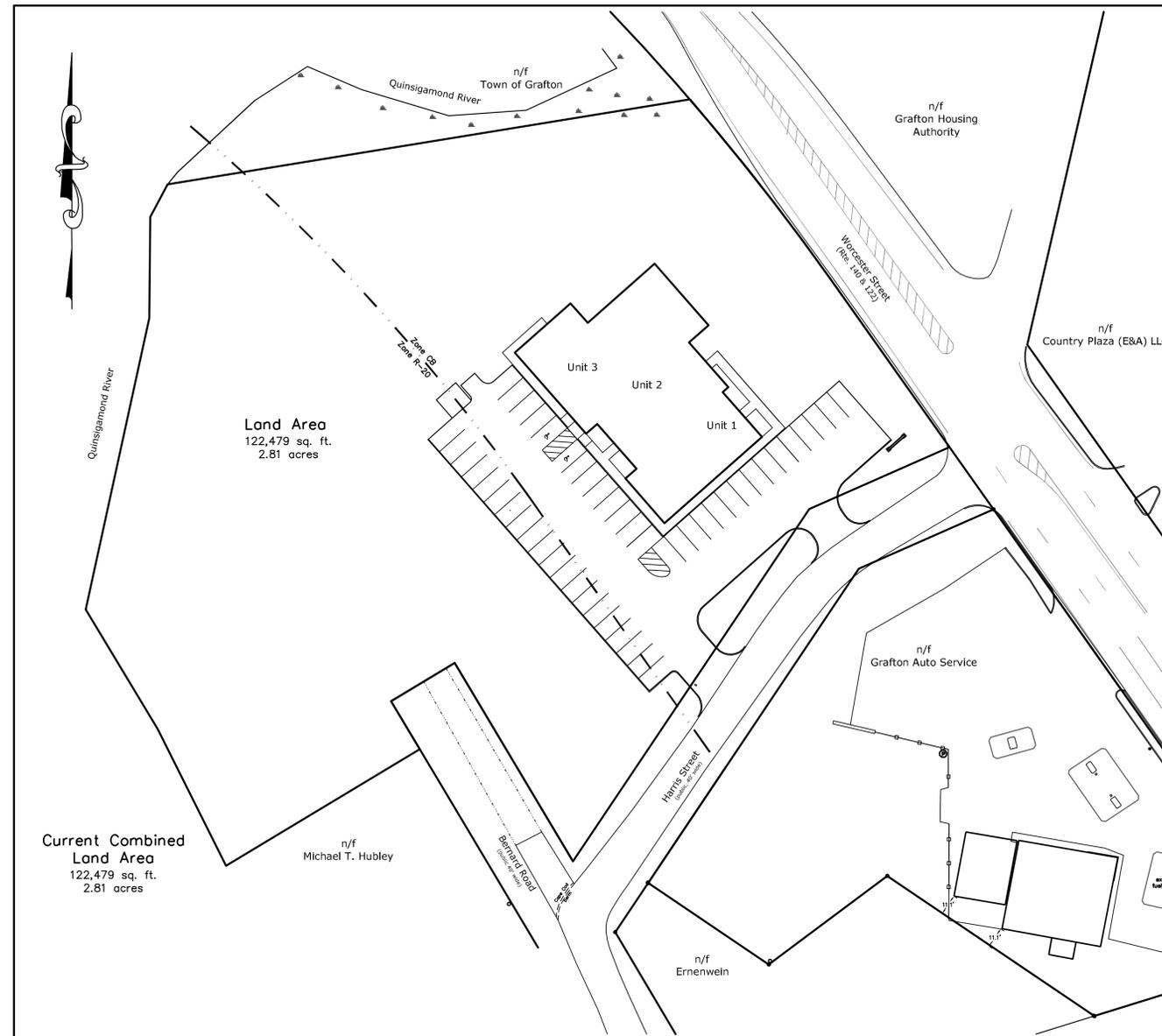


Site Development Plan

Theroux Dental Complex



INDEX OF SHEETS

SHEET NO.	TITLE
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
3	SITE LAYOUT PLAN
4	GRADING & UTILITY PLAN
5	EROSION & SEDIMENTATION CONTROL PLAN
6	LANDSCAPE PLAN
7	DETAIL PLAN
8	DRAINAGE DETAIL PLAN
9	UTILITIES DETAIL PLAN

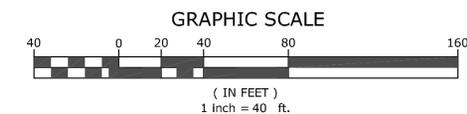
Locus Legal References

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

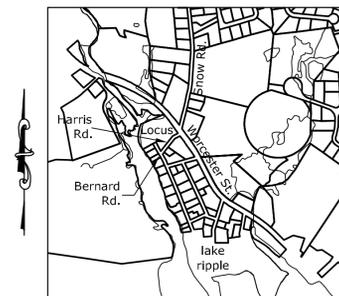
Zoning Summary

	Community Business CB	Medium Density Residential R-20	103 Worcester St
Frontage:	140 ft	125 ft	310.10 ft
Area:	40,000 ft ²	20,000 ft ²	122,479 ft ²
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



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

DATE:
 NORMAN G. HILL, PLS #41786

DATE:
 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	5/16/16	MHG	NGH
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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 508-839-9526

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

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Site Development Plan
Theroux Dental Complex
 located at
103 Worcester Street
2 Bernard Road
Grafton, MA

Prepared For
Marc Theroux
2 Stonegate Circle
Grafton, MA

Owned By
the Bulger Family Trust
P O Box 176
Grafton, MA 01519-0176

January 26, 2016
Scale: 1" = 40'

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

- LEGEND**
- 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
 - W WATER LINE
 - S SEWER LINE
 - x WF-# WETLAND FLAG

- 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

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

DH-1	
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	
DH-2	
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 sand
No mottles	
No water present	
Elevation = 331.1	
Groundwater = 318.1	
DH-3	
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 sand
No mottles	
No water present	
Elevation = 332.1	
Groundwater = 317.6	

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

Riverfront Area Calculations (entire property)
 Total existing Riverfront Area = 98,550 ft²
 10% x 98,550 ft² = 9,855 ft²
 1,723 ft² of existing degraded areas

DATE:
 NORMAN G. HILL, PE #31887

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

Field By:	NH/SB	12/15
Designed By:	BDH	1/16
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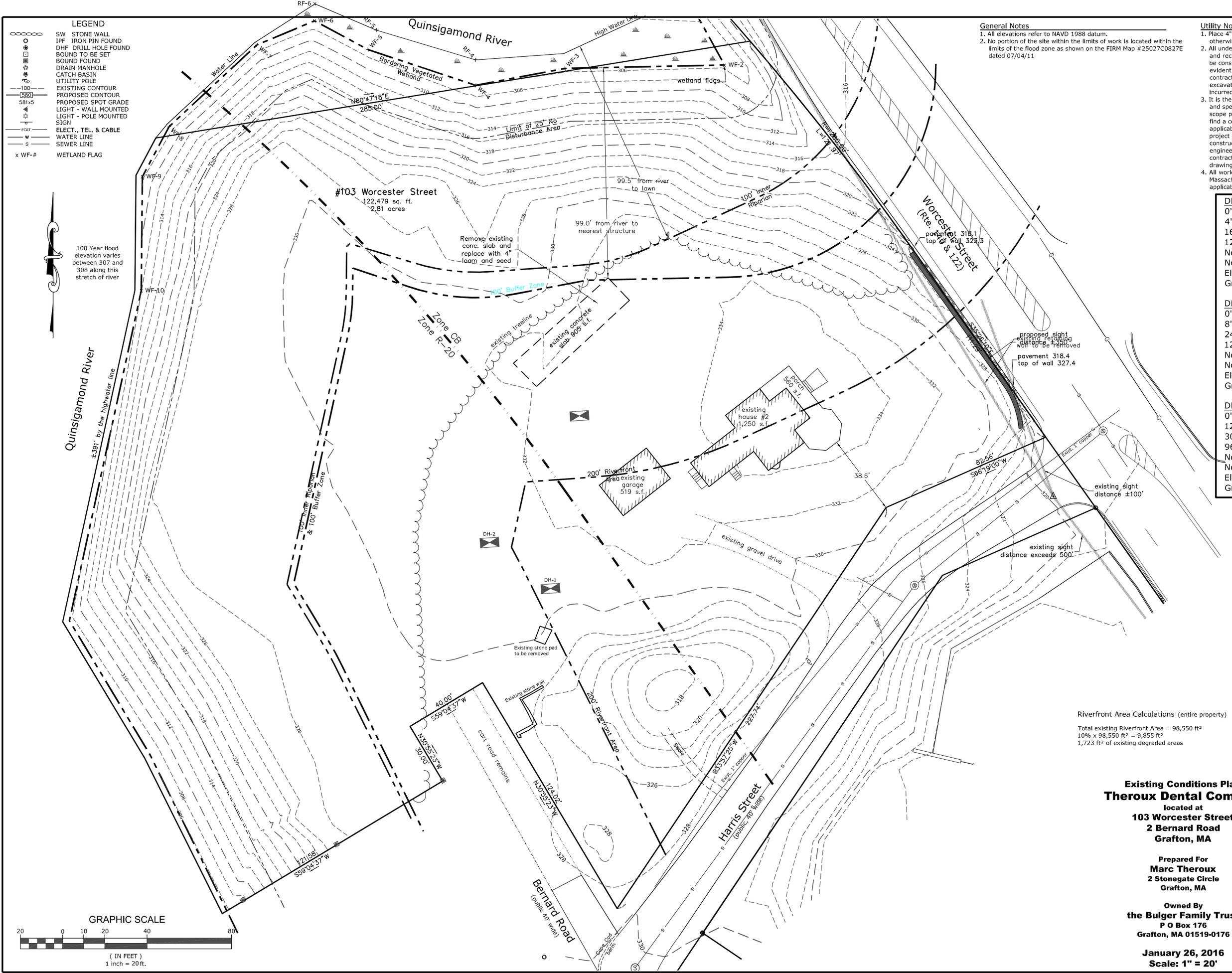
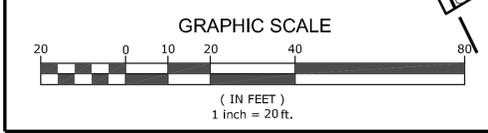
Existing Conditions Plan
Theroux Dental Complex
 located at
103 Worcester Street
2 Bernard Road
Grafton, MA

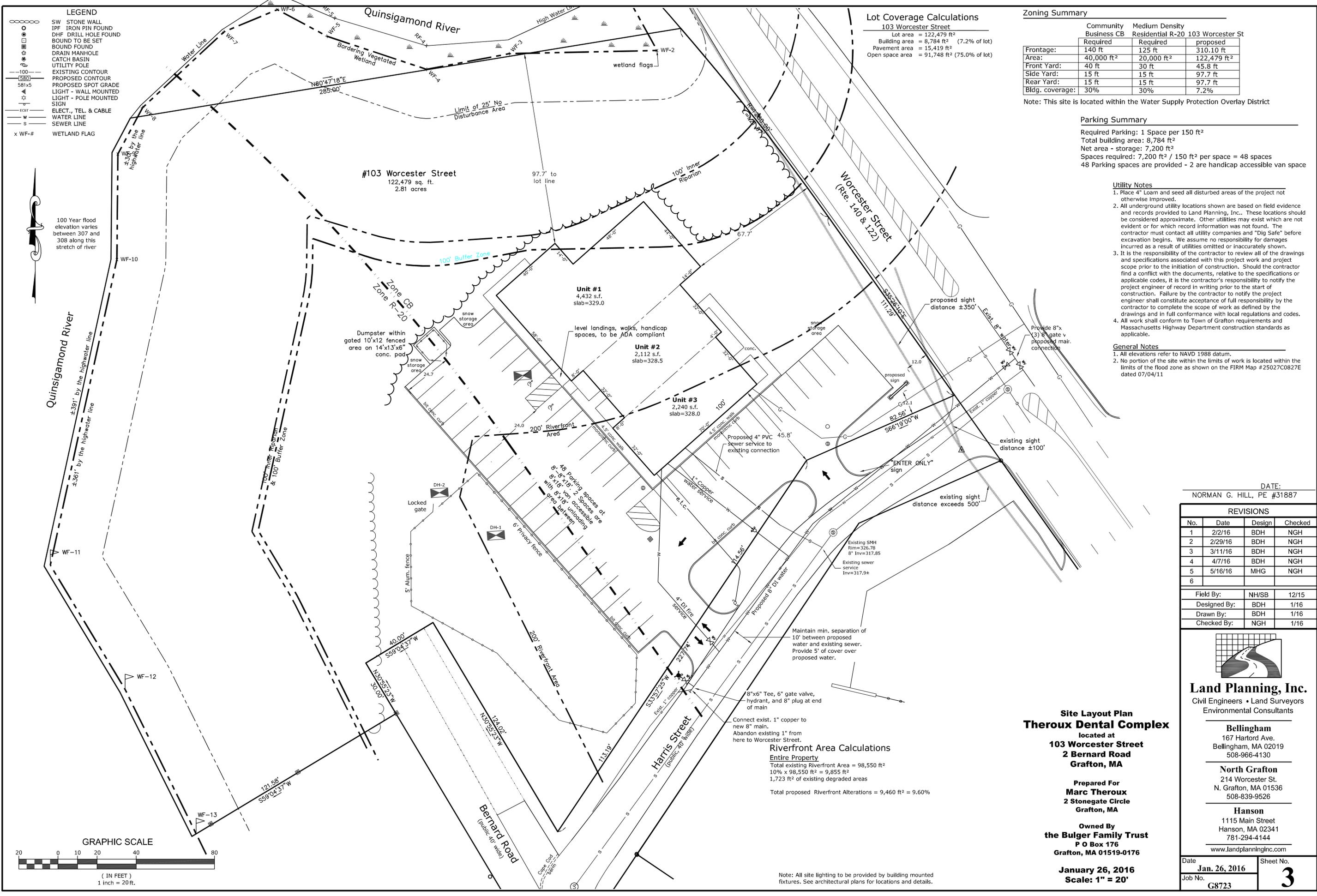
Prepared For
Marc Theroux
2 Stonegate Circle
Grafton, MA

Owned By
the Bulger Family Trust
 P O Box 176
 Grafton, MA 01519-0176

January 26, 2016
 Scale: 1" = 20'

Date	Jan. 26, 2016	Sheet No.	2
Job No.	G8723		





LEGEND

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

Lot Coverage Calculations
103 Worcester Street

- Lot area = 122,479 ft²
- Building area = 8,784 ft² (7.2% of lot)
- Pavement area = 15,419 ft²
- Open space area = 91,748 ft² (75.0% of lot)

Zoning Summary

	Community Business CB	Medium Density Residential R-20	103 Worcester St
	Required	Required	proposed
Frontage:	140 ft	125 ft	310.10 ft
Area:	40,000 ft ²	20,000 ft ²	122,479 ft ²
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 ft²
 Total building area: 8,784 ft²
 Net area - storage: 7,200 ft²
 Spaces required: 7,200 ft² / 150 ft² 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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 - 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

DATE:
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
 Checked By: NGH 1/16

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 508-839-9526

Hanson
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 Hanson, MA 02341
 781-294-4144
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Site Layout Plan
Theroux Dental Complex
 located at
103 Worcester Street
2 Bernard Road
Grafton, MA

Prepared For
Marc Theroux
2 Stonegate Circle
Grafton, MA

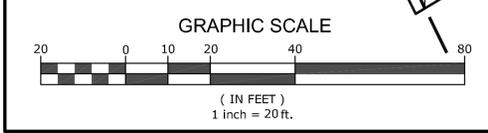
Owned By
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P O Box 176
Grafton, MA 01519-0176

January 26, 2016
Scale: 1" = 20'

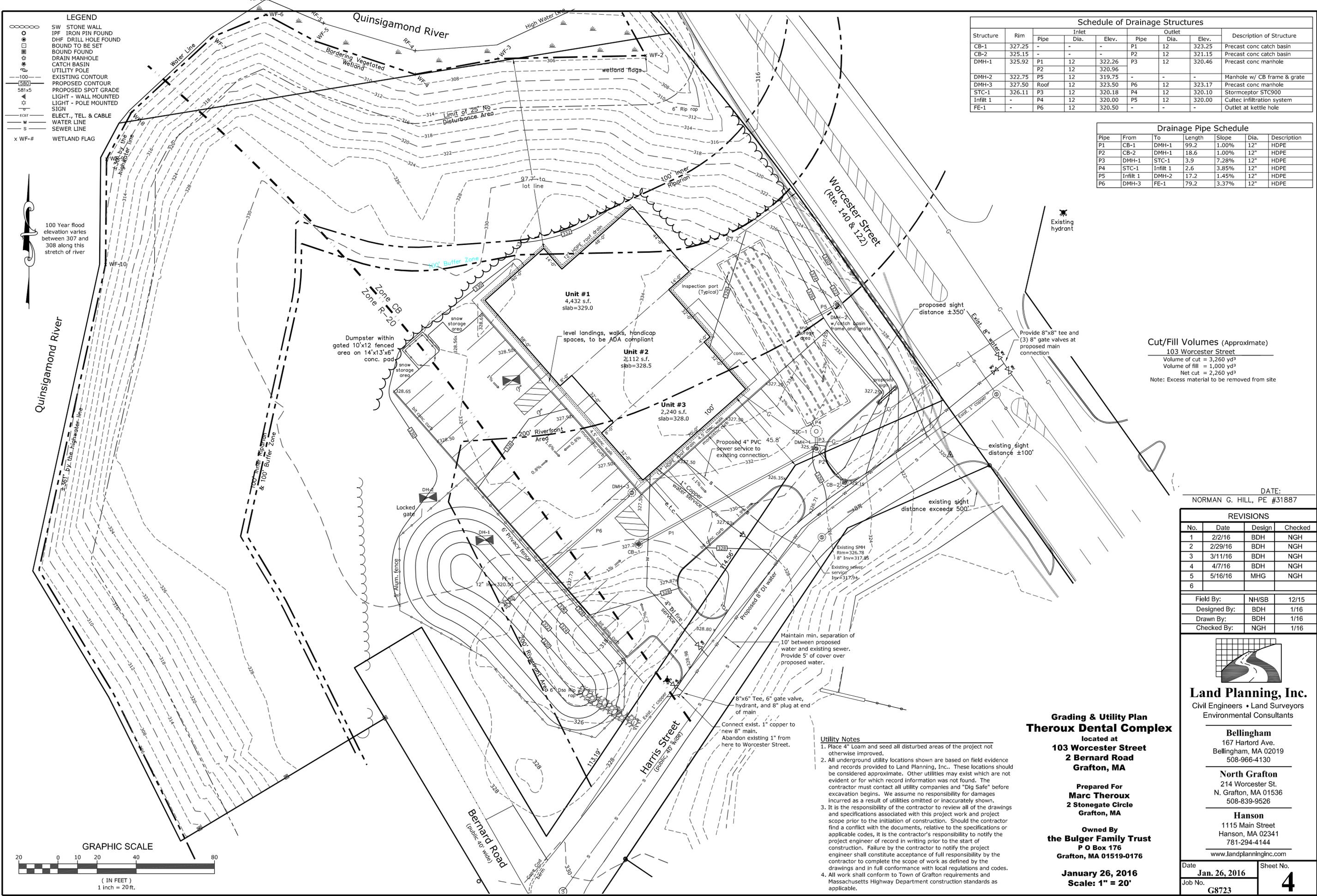
Riverfront Area Calculations

Entire Property
 Total existing Riverfront Area = 98,550 ft²
 10% x 98,550 ft² = 9,855 ft²
 1,723 ft² of existing degraded areas

Total proposed Riverfront Alterations = 9,460 ft² = 9.60%



Note: All site lighting to be provided by building mounted fixtures. See architectural plans for locations and details.



Schedule of Drainage Structures									
Structure	Rim	Inlet			Outlet			Description of Structure	
		Pipe Dia.	Elev.	Pipe Dia.	Elev.				
CB-1	327.25	-	-	P1	12	323.25	Precast conc catch basin		
CB-2	325.15	-	-	P2	12	321.15	Precast conc catch basin		
DMH-1	325.92	P1	12	322.26	P3	12	320.46	Precast conc manhole	
		P2	12	320.96	-	-			
DMH-2	322.75	P5	12	319.75	-	-	Manhole w/ CB frame & grate		
DMH-3	327.50	Roof	12	323.50	P6	12	323.17	Precast conc manhole	
STC-1	326.11	P3	12	320.18	P4	12	320.10	Stormceptor STC900	
Infil 1	-	P4	12	320.00	P5	12	320.00	Culcex infiltration system	
FE-1	-	P6	12	320.50	-	-	-	Outlet at kettle hole	

Drainage Pipe Schedule						
Pipe	From	To	Length	Slope	Dia.	Description
P1	CB-1	DMH-1	99.2	1.00%	12"	HDPE
P2	CB-2	DMH-1	18.6	1.00%	12"	HDPE
P3	DMH-1	STC-1	3.9	7.28%	12"	HDPE
P4	STC-1	Infil 1	2.6	3.85%	12"	HDPE
P5	Infil 1	DMH-2	17.2	1.45%	12"	HDPE
P6	DMH-3	FE-1	79.2	3.37%	12"	HDPE

Cut/Fill Volumes (Approximate)
 103 Worcester Street
 Volume of cut = 3,260 yd³
 Volume of fill = 1,000 yd³
 Net cut = 2,260 yd³
 Note: Excess material to be removed from site

DATE:
 NORMAN G. HILL, PE #31887

REVISIONS			
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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.	G8723		

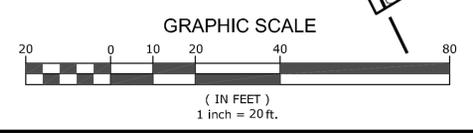
Grading & Utility Plan
Theroux Dental Complex
 located at
103 Worcester Street
2 Bernard Road
Grafton, MA

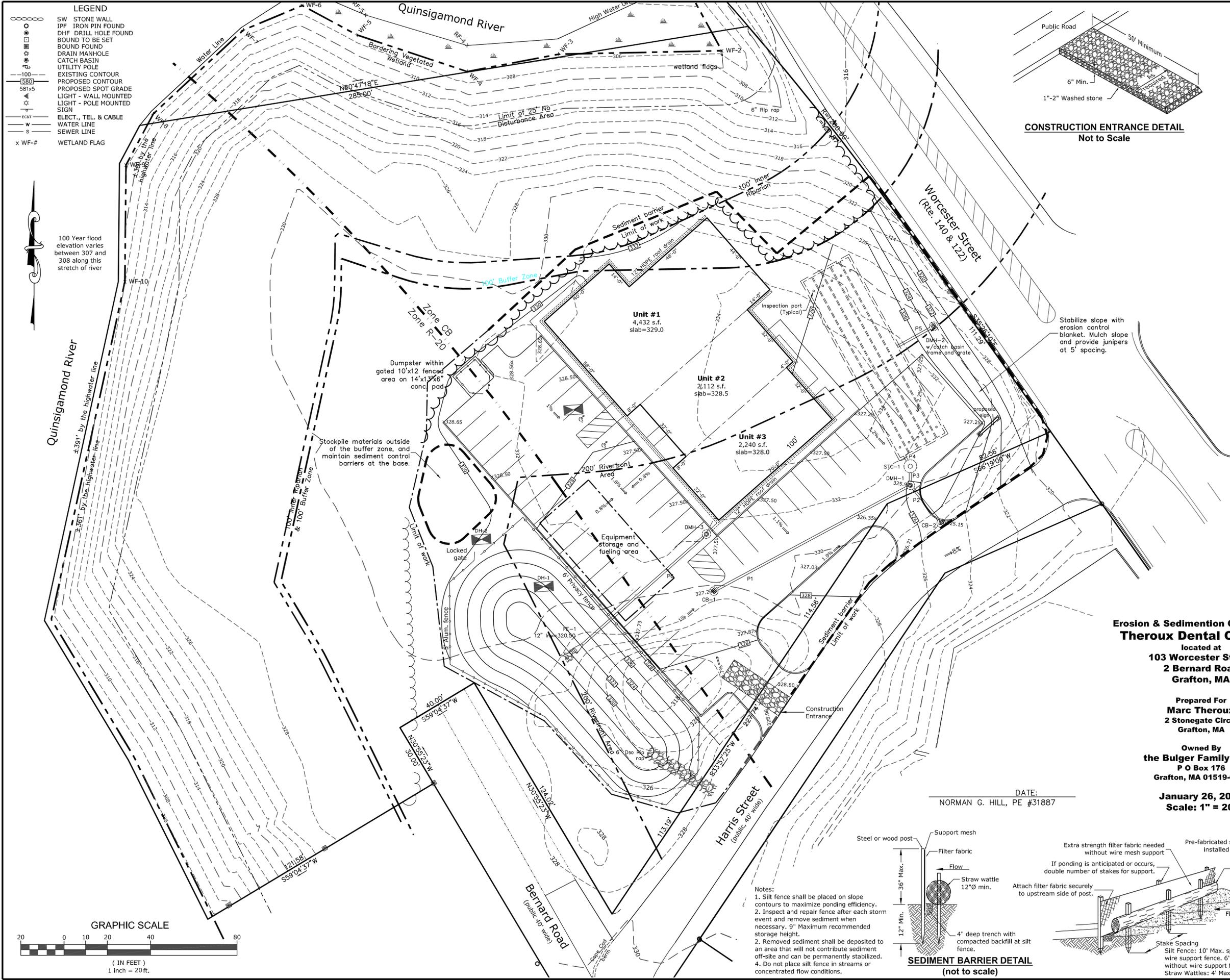
Prepared For
Marc Theroux
2 Stonegate Circle
Grafton, MA

Owned By
the Bulger Family Trust
P O Box 176
Grafton, MA 01519-0176

January 26, 2016
Scale: 1" = 20'

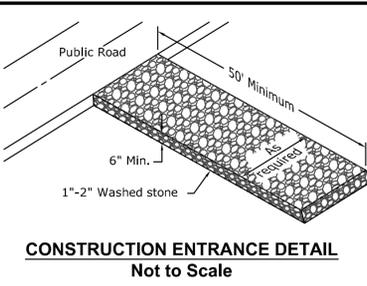
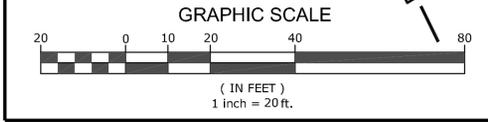
- Utility Notes**
- Place 4" Loam and seed all disturbed areas of the project not otherwise improved.
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- LEGEND**
- SW STONE WALL
 - IPF IRON PIN FOUND
 - DHF DRILL HOLE FOUND
 - BOUND TO BE SET
 - BOUND FOUND
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 - CATCH BASIN
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 - PROPOSED CONTOUR
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 - 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



- 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. "Hydeseed" 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.
 - See the Construction Stormwater Pollution Prevention Plan for additional practices and controls.

- Utility Notes**
- Place 4" loam and seed all disturbed areas of the project not otherwise improved.
 - 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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Stabilize slope with erosion control blanket. Mulch slope and provide junipers at 5' spacing.

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

located at
**103 Worcester Street
2 Bernard Road
Grafton, MA**

Prepared For
**Marc Theroux
2 Stonegate Circle
Grafton, MA**

Owned By
**the Bulger Family Trust
P O Box 176
Grafton, MA 01519-0176**

**January 26, 2016
Scale: 1" = 20'**

DATE:
NORMAN G. HILL, PE #31887

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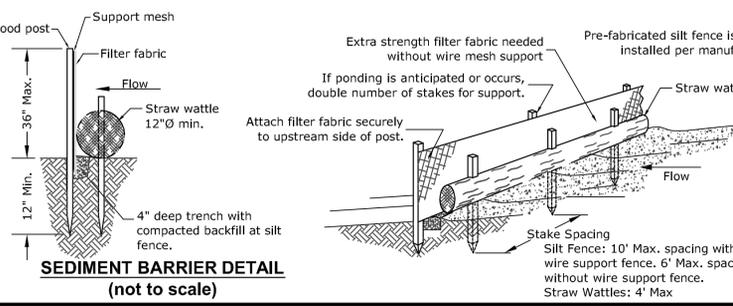
North Grafton
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N. Grafton, MA 01536
508-839-9526

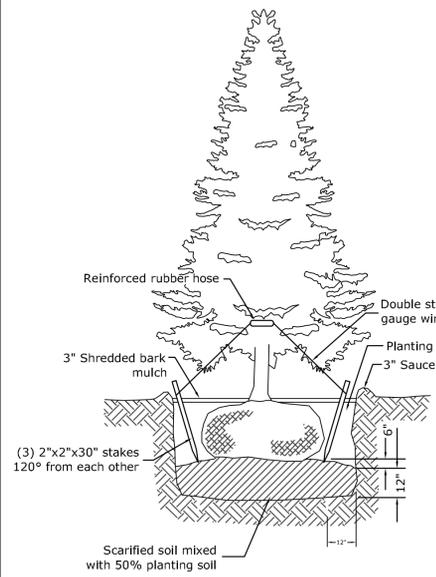
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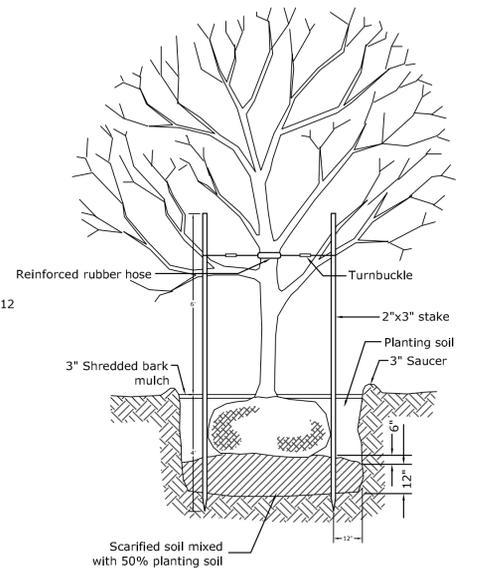
Date	Jan. 26, 2016	Sheet No.	5
Job No.	G8723		

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



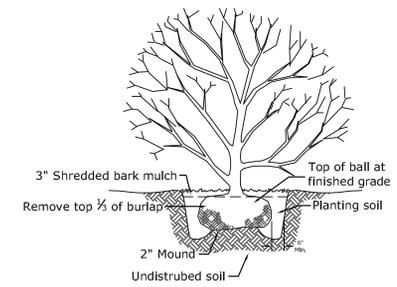


EVERGREEN PLANTING DETAIL
(not to scale)



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

TREE PLANTING DETAIL
(not to scale)



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.

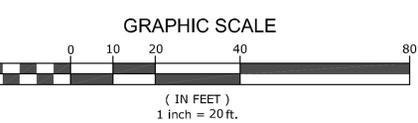
The entire site is within the town of Grafton Aquifer Supply Protection Overlay district. Storm water management has been utilized to mitigate runoff and recharge ground water, creating a sustainable development for future generations.

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 withing 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.



LEGEND

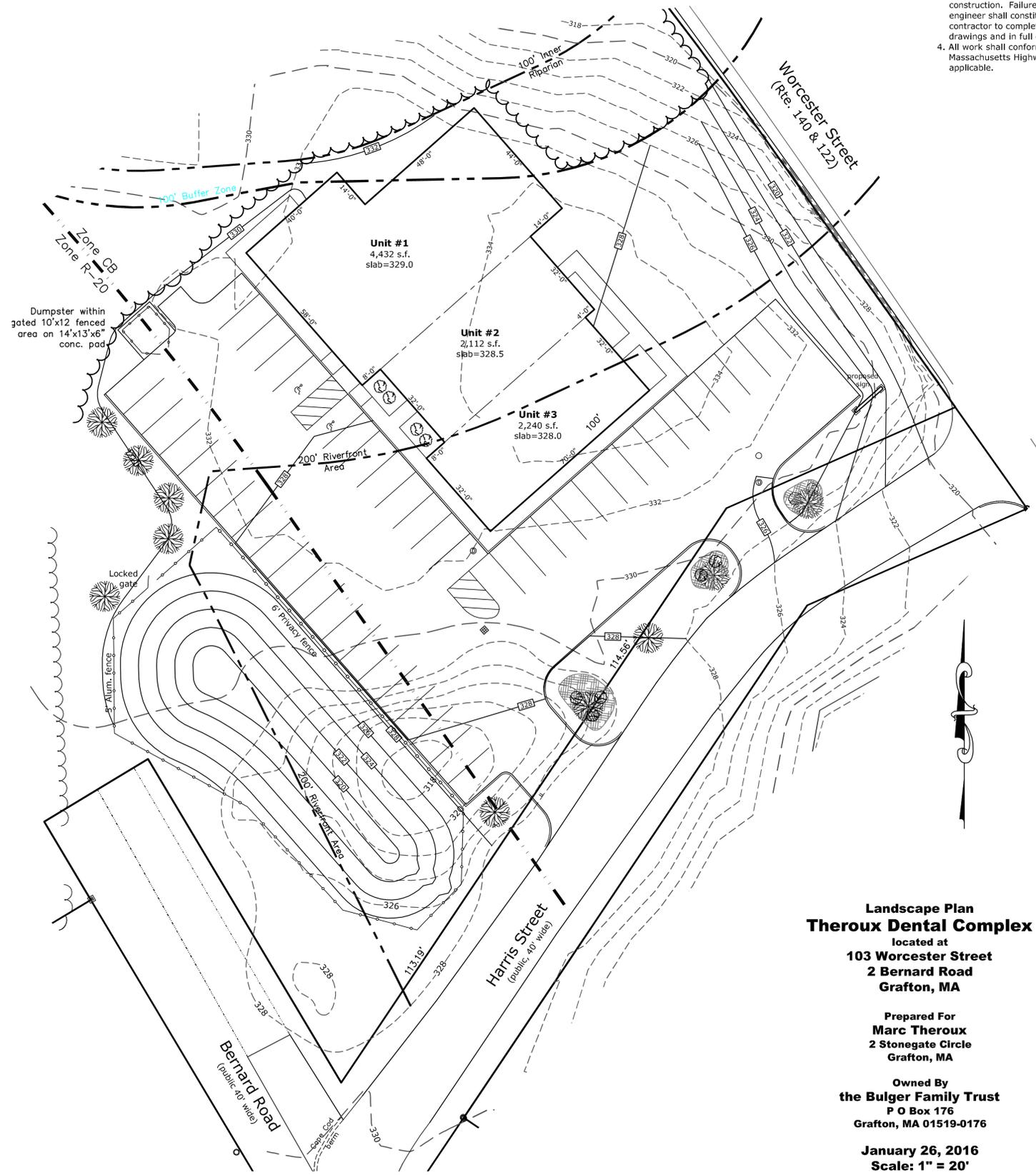
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---	PROPOSED CONTOUR
581x5	PROPOSED SPOT GRADE
☆	STREET LIGHT
⊙	SIGN
—EGBT—	ELECT., TEL. & CABLE

LANDSCAPE LEGEND

- (10) decorative tree - 2" caliper min.
 - (11) 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.

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.
3. It is the responsibility of the contractor to review all of the drawings and specifications associated with this project work and project scope prior to the initiation of construction. Should the contractor find a conflict with the documents, relative to the specifications or applicable codes, it is the contractor's responsibility to notify the project engineer of record in writing prior to the start of construction. Failure by the contractor to notify the project engineer shall constitute acceptance of full responsibility by the contractor to complete the scope of work as defined by the drawings and in full conformance with local regulations and codes.
4. All work shall conform to Town of Grafton requirements and Massachusetts Highway Department construction standards as applicable.



DATE:
NORMAN G. HILL, PE #31887

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Field By: NH/SB 12/15
Designed By: BDH 1/16
Drawn By: BDH 1/16
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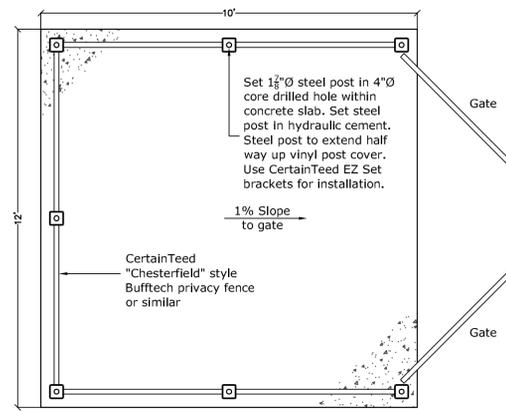
Landscape Plan
Theroux Dental Complex
located at
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Grafton, MA

Prepared For
Marc Theroux
2 Stonegate Circle
Grafton, MA

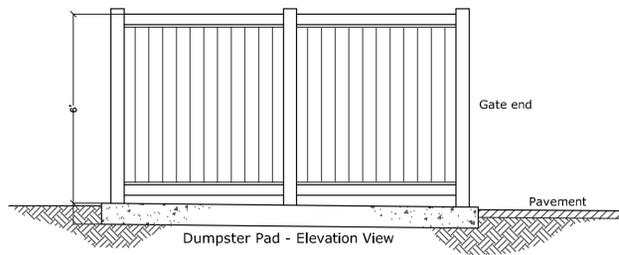
Owned By
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P O Box 176
Grafton, MA 01519-0176

January 26, 2016
Scale: 1" = 20'

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

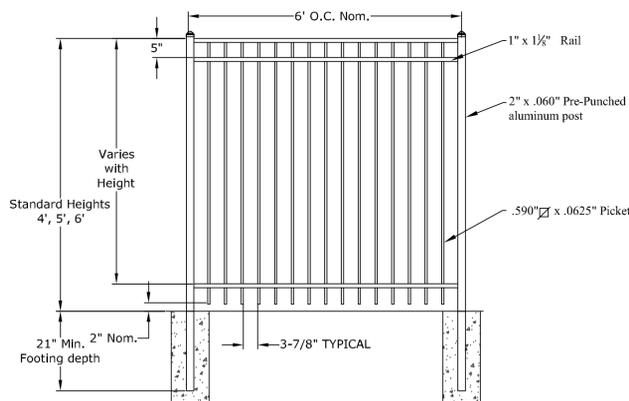


Dumpster Pad - Plan View

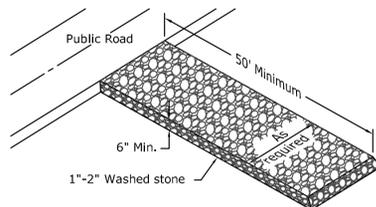


Dumpster Pad - Elevation View

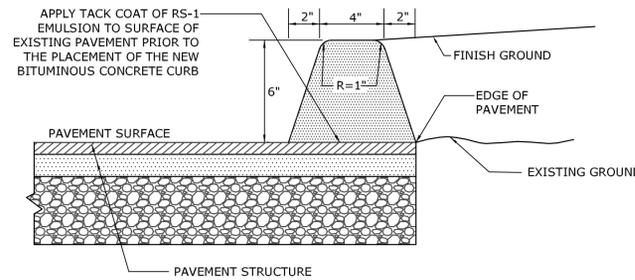
Dumpster Pad and Fence Detail not to scale



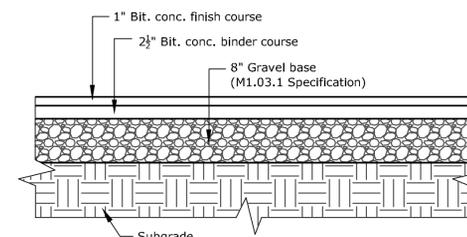
ALUMINUM FENCE DETAIL (not to scale)



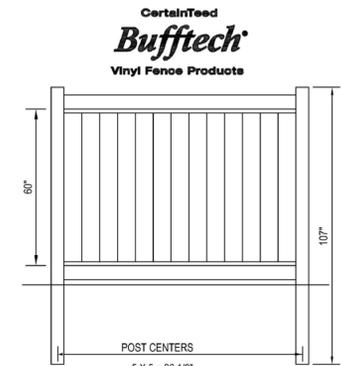
CONSTRUCTION ENTRANCE DETAIL Not to Scale



BITUMINOUS CONCRETE CURB DETAIL (not to scale)

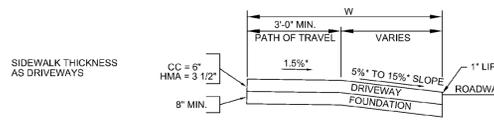
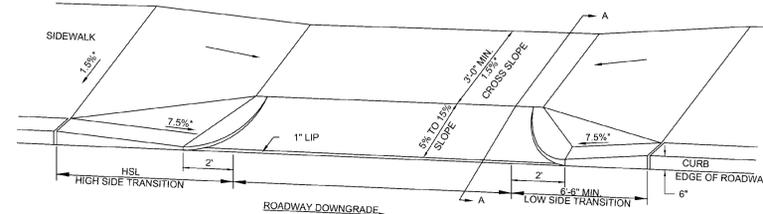


BITUMINOUS CONCRETE PAVING DETAIL Cross Section (not to scale)



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, where shown. Dumpster gate to consist of (2) 5' wide pre-assembled aluminum framed gate units.

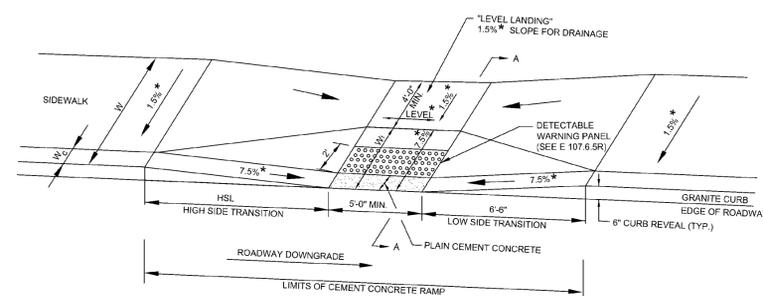


LEGEND
 HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0R)
 W = SIDEWALK WIDTH
 * = TOLERANCE FOR CONSTRUCTION ±0.5%
 CC = CEMENT CONCRETE
 HMA = HOT MIX ASPHALT

massDOT Highway Division
CONSTRUCTION STANDARDS

SIDEWALK THROUGH DRIVEWAYS WITH CURB RETURNS 2' CURB CORNERS

DATE OF ISSUE MARCH 2012
 DRAWING NUMBER **E 107.8.0**



LEGEND
 HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0R)
 W = SIDEWALK WIDTH
 Wc = CURB WIDTH
 Wp = PERPENDICULAR RAMP LENGTH
 CC = CEMENT CONCRETE
 * = TOLERANCE FOR CONSTRUCTION ±0.5%
 USABLE SIDEWALK WIDTH PER AAB = W-Wc
 RAMP LENGTH, W1 = W-4'-0" Min

massDOT Highway Division
CONSTRUCTION STANDARDS

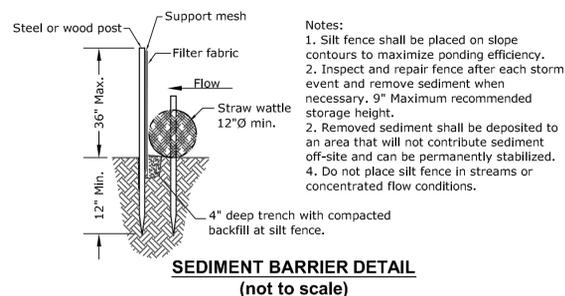
WHEELCHAIR RAMPS LESS THAN 12'-4" SIDEWALK

DATE OF ISSUE MARCH 2012
 DRAWING NUMBER **E 107.2.0R**

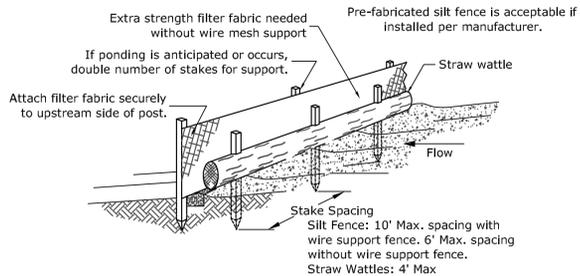


Sign to be mounted on post at the head of parking space

Mount signs 5' min. to 8' max. to top of sign
SIGN DETAILS (not to scale)



- 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.



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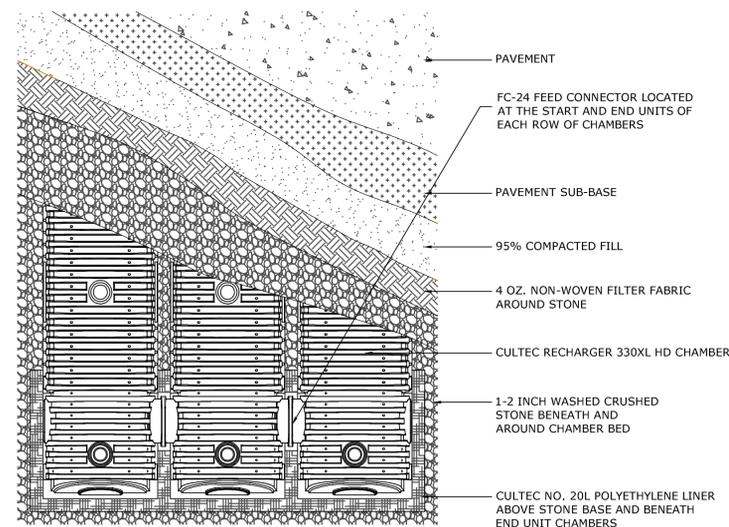
Detail Plan
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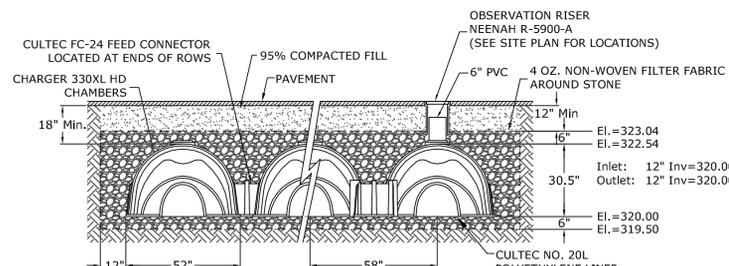
January 26, 2016
Scale: As Noted

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.

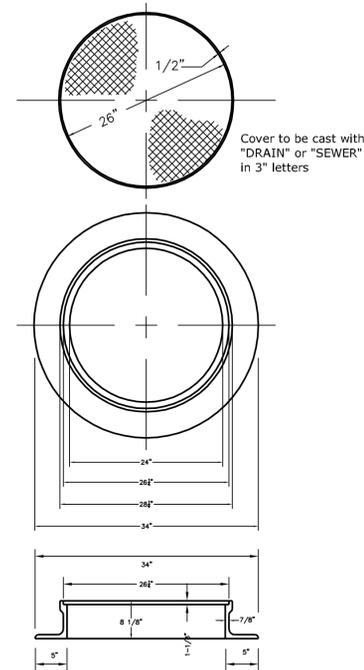
INFILTRATION SYSTEMS - CROSS SECTION
(not to scale)

INFILTRATION SYSTEM FILL SPECIFICATIONS:

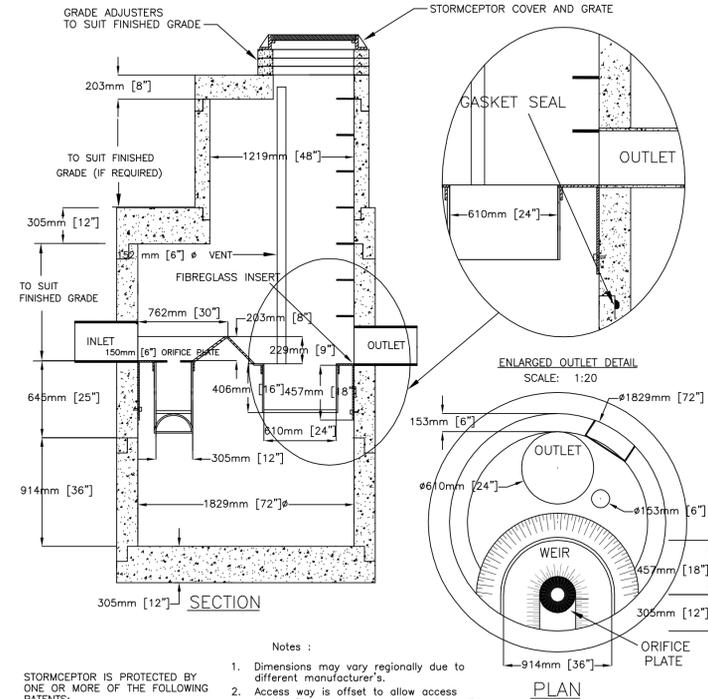
Fill material required beneath the infiltration system shall consist of select on-site or imported soil material. The fill shall be comprised of clean granular sand, be free from organic matter and deleterious substances, and shall not contain Remediation Waste as that term is defined in 310 CMR 40.0000. 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.

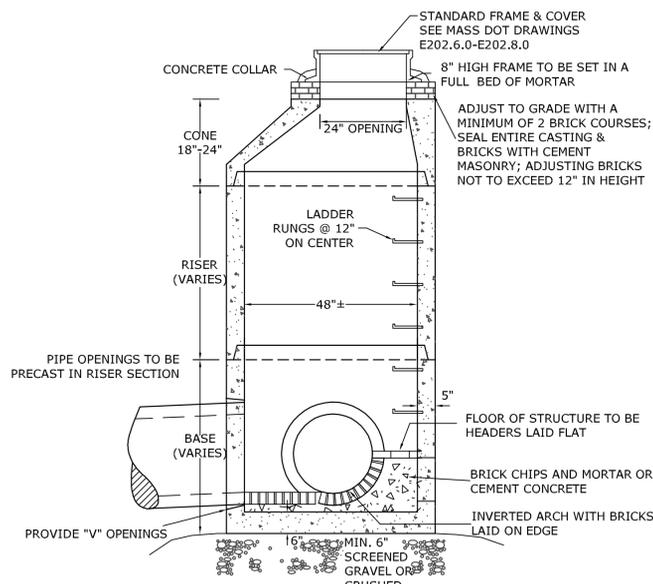


Notes:

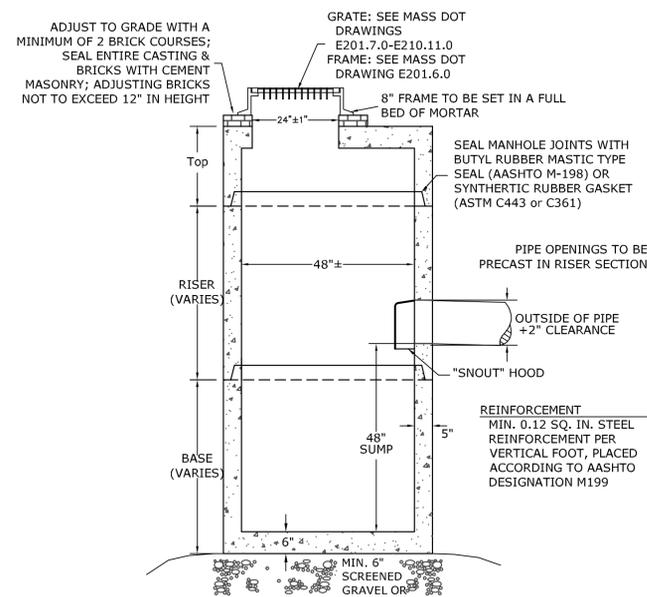
1. Dimensions may vary regionally due to different manufacturer's.
2. Access way is offset to allow access to the fiberglass bypass slab and to allow inspection and maintenance from the surface.
3. Pipe installation by grouting or flexible boots.
4. Flexible boots may not be suitable for all installations. Please contact your sales representative for further information.
5. 610 mm [24"] outlet to be used for cleanout access to the treatment chamber.
6. Safety grates for the 610 mm [24"] outlet are available.

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. 4,985,148
U.S. Patent No. 5,498,331
U.S. Patent No. 5,725,760
U.S. Patent No. 5,753,115

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



PRECAST CONCRETE MANHOLE DETAIL
(not to scale)

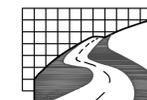


PRECAST CONCRETE CATCH BASIN DETAIL
(not to scale)

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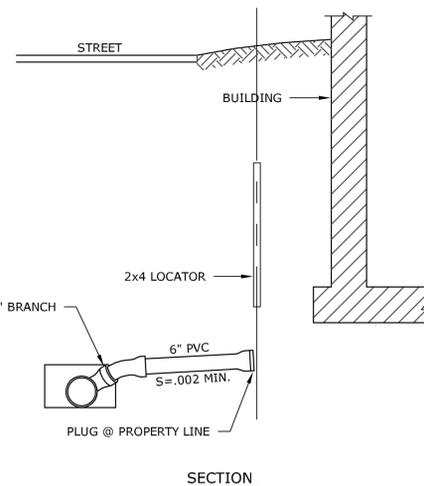
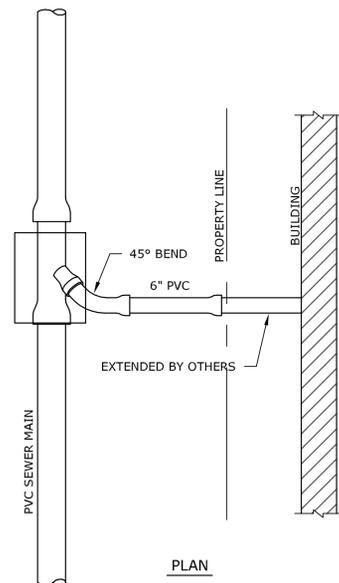
Drainage Detail Plan
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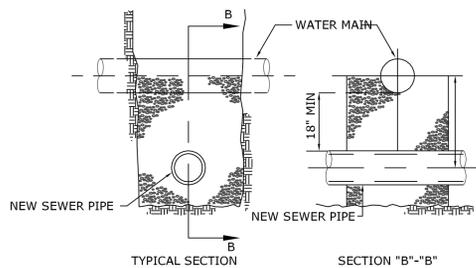
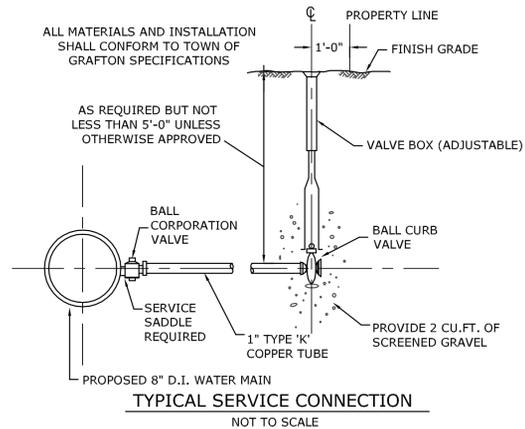
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Date: **Jan. 26, 2016** Sheet No. **8**
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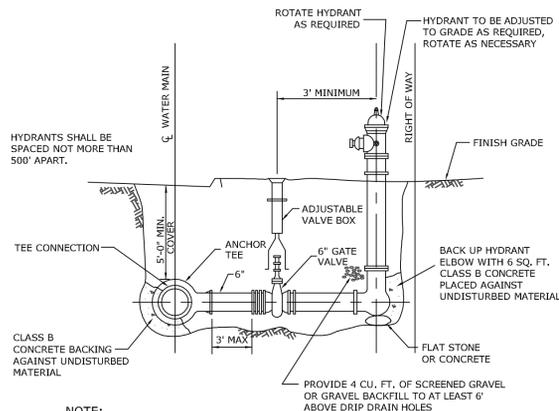


SERVICE CONNECTION DETAIL
NOT TO SCALE

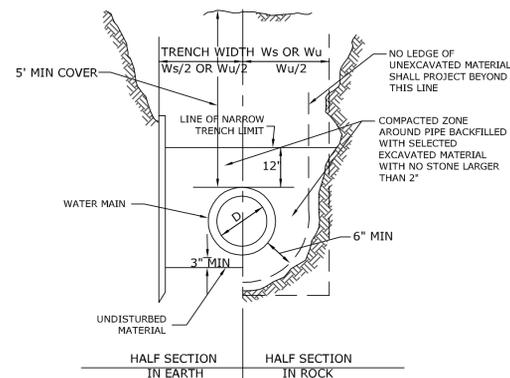


NOTE: IN THE EVENT OF A SEWER MAIN OR SEWER SERVICE CROSSING A WATER MAIN OR WATER SERVICE CLOSER THAN 10', THE SEWER MAIN OR SERVICE SHALL BE COMPLETELY ENCASED IN 6" OF 3,000 P.S.I. CONCRETE FOR A DISTANCE OF 10' ON EACH SIDE OF THE CROSSING.

UTILITY CROSSING DETAIL
N.T.S.



NOTE:
1. HYDRANT AND GATE VALVE TO BE RODDED TO ANCHOR TEE.
2. SEE FORCE MAIN THRUST BLOCK DETAIL FOR THE AREA OF CONCRETE REQUIRED



FOR SHEETED TRENCH $W_s = 4/D + 32"$ OR $50"$, WHICHEVER IS GREATER.
FOR UNSHEETED TRENCH $W_u = 4/3 D + 18"$ OR $36"$, WHICHEVER IS GREATER.

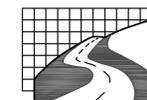
- NOTES:
- TRENCHES MAY BE EXCAVATED WIDER THAN THE TRENCH WIDTH W_s ABOVE THE "LINE OF NARROW TRENCH LIMIT".
 - BELOW THE "LINE OF NARROW TRENCH LIMIT" THE TRENCH SHALL NOT BE EXCAVATED BEYOND THE TRENCH WIDTH W_s .
 - SHEETING, IF USED, IN ALL CASES SHALL BE LEFT IN PLACE BELOW A LINE ONE FOOT ABOVE THE TOP OF THE PIPE, UNLESS OTHERWISE INDICATED OR DIRECTED.
 - "COVER" AT ANY POINT SHALL BE DEFINED AS THE VERTICAL DISTANCE FROM THE UPPERMOST POINT OF THE PIPE TO A LINE WHICH CONNECTS THE SURFACE OF UNDISTURBED GROUND AT EITHER SIDE OF THE TRENCH AND IS AT RIGHT ANGLES TO THE DIRECTION OF THE PIPE.
 - WHERE FUTURE EXTENSION OF A PLUGGED PIPE OR PLUGGED BRANCH WILL ENTAIL ROCK EXCAVATION, TRENCH EXCAVATION IN ROCK SHALL BE EXTENDED FOR A DISTANCE OF FIVE FEET BEYOND THE PLUG.

WATER MAIN TRENCH DETAIL
NOT TO SCALE

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