

GREEN MOUNTAIN ENGINEERING, INC.

1438 South Brownell Road
Williston, VT 05495
(802) 862-5590 (Fax) 862-7598

January 10, 2020

Ms. Valerie Capels, Town Administrator
Town of Bristol
P.O. Box 249
Bristol, VT 05443

RE: Basin Street Improvements Preliminary Engineering
GME Project No. 17-052

Dear Valerie and Selectboard Members;

Green Mountain Engineering, Inc., (GME) has prepared the following letter report summarizing the findings, conclusions and recommendations as they relate to the grade, drainage and surface improvements for the above-referenced project.

Section 1.0 Introduction

GME was originally retained by the Town of Bristol to perform a preliminary engineering study of a bank stabilization and streetscape project located at Basin and Main Streets in Bristol, Vermont in 2008. In October 2019, GME was contracted to perform a limited update of the study, including an evaluation of any changed existing conditions. The limits of the project are an existing eroded bank, bordered on the west by a driveway serving the Hendee property, on the north by Main Street and on the east by, and including, Basin Street.

In 2008, GME conducted a topographical survey of the project area and developed three (3) alternatives for review which:

- 1). Seek to provide an area on Basin Street sufficient for a vehicle to stop, prior to entering traffic on Main Street while reducing excessive grade on Basin Street.
- 2). Provide a uniform cross-section along Main Street including a guide rail, sidewalk, green strip, curb and parking lane, and
- 3). Provide alternatives for stabilization of the existing eroded bank.

GME utilized the services GeoDesign, Inc., of Windsor, Vermont to develop Conceptual Slope Rehabilitation Alternatives and their report is included in Appendix B, and discussed herein.

Since 2008, an alternative has been selected by the Town of Bristol. This was originally labeled as *Alternative No. 1* by GME. This other two alternatives were eliminated due to price, project limits, lack of simplicity compared to Alternative No. 1 and the recommendations from both GME and GeoDesign. Therefore, this letter report will only include updated necessary information regarding Alternative No. 1.

Section 2.0 Existing Conditions

Basin Street is a north-south, dead-end, collector street that presently services eight (8) residential properties and Town property (see Figure #1 in Appendix A).

Two (2) major issues regarding the existing condition of Basin Street are its excessive slope and the lack of a level approach to Main Street.

The existing slope of Basin Street within 200 feet of Main Street is in excess of 20%. This slope is a safety concern for local residents as well as delivery and service vehicles, Town road crews and emergency services.

Presently, it is very difficult for vehicles entering Main Street from Basin Street to stop at the intersection due to the lack of a level area. In some instances, vehicles will actually turn west at the top of Basin Street within the Main Street Right-of-Way and stop on the sidewalk before proceeding onto Main Street.

The first 200 feet of Basin Street is supported on both sides by retaining walls. The western wall is damaged beyond repair and should not be re-used. The eastern wall appears to be usable and could be incorporated into the anticipated alternatives given some precautions.

The existing streetscape on the south side of Main Street for a distance of about 200 feet west of Basin Street is suffering due to many factors.

The erosion of the existing bank has made the maintenance of a sidewalk and guard rail in this area nearly impossible. Recent flooding has also complicated this issue. Due to its proximity to Main Street, this area had historically been the local depository for snow collected from the downtown area. This has contributed to the poor condition of the existing guard rails and quite possibly the erosion of the bank during snowmelt.

Section 3.0 Development of the Alternative

As mentioned previously, the goals of this study are to:

- 1). seek to provide an area on Basin Street sufficient for a vehicle to stop, prior to entering traffic on Main Street while reducing excessive grade on Basin Street.
- 2). Provide a uniform cross-section along Main Street including a guide rail, sidewalk, green strip, curb and parking lane, and
- 3). Provide alternatives for stabilization of the existing eroded bank.

GME has initially developed three (3) alternatives which meet these goals and have since been narrowed down to Alternative No. 1 as the selected project option.

This project includes reconstruction of the streetscape and storm drain system along Main Street. Figure #2 in Appendix A shows the existing and recommended cross-section for this area. Drainage system improvements are shown on the drawings in Appendix C. Although parking is presently allowed on Main Street along the entire length of the project area, the proposed alternative will effectively reduce the available parking to provide improved sight distance for vehicles entering Main Street from both Basin Street and the existing driveway serving the Hendee property.

This project will also involve negotiations with existing property owners to either provide for relocation of the existing Right-of-Way or actual purchase of property by the Town. The current owner of the parcel is listed as ASMG Properties in the town land records.

Slope stabilization is discussed in detail in the GeoDesign, Inc., Report included in Appendix A. The report includes an analysis of earth fill embankment.

Below is a detailed description of the selected alternative.

For purposes of comparison of the three alternatives, this report assumes the least costly method of earth fill embankment will be utilized.

3.1 Alternative No. 1

Alternative No. 1 consists of re-alignment of the Basin Street / Main Street intersection approximately 30 feet south of the existing location. A slight curvature would be introduced to Basin Street to accomplish this, and the road would remain in its existing alignment beyond the project area.

The reason for the re-alignment is to add enough length to the road to provide a car length's landing at its intersection with Main Street (14ft section from the centerline at a 3% slope, then a 20ft section at 5% slope) and provide a maximum slope of 20% along Basin Street. This alternative is represented in Drawing No. 1 of 3 in Appendix C.

Section 4.0 Project Costs

Probable Cost for this alternative, as described in Section 3.0, presented in the following table, with a value of approximately \$584,000.

TABLE 4.1
 OPINION OF PROBABLE COST
 BASIN STREET - ALTERNATIVE NO. 1

Description	Quantity	Units	Unit Price	Total Cost
Permanent Pavement (3")	1200	S.Y.	\$30.00	\$36,000
Concrete Sidewalk (5' wide)	170	S.Y.	\$72.00	\$12,240
Concrete Curb	305	L.F.	\$30.00	\$9,150
Guardrail	305	L.F.	\$200.00	\$61,000
Loam & Seed	1,650	S.F.	\$1.00	\$1,650
Demolition of Basin Street (existing pave.)	1	L.S.	\$2,500.00	\$2,500
Electrical Allowance (relocation of pole)	2	EA.	\$3,500.00	\$7,000
Line Striping	1,050	L.F.	\$1.00	\$1,050
18" HDPE Drain, All Depths	145	L.F.	\$92.00	\$13,340
24" HDPE Drain, All Depths	114	L.F.	\$102.00	\$11,628
36" HDPE Drain, All Depths	194	L.F.	\$125.00	\$24,250
4-foot Diameter Drain Manhole	10	V.F.	\$750.00	\$7,500
Catch Basin (including frame & grate)	24	V.F.	\$750.00	\$18,000
Double Catch Basins	6	V.F.	\$750.00	\$4,500
Boulder Excavation	15	C.Y.	\$95.00	\$1,425
Exploratory Excavation	10	C.Y.	\$32.00	\$320
Slope Stabilization	1	L.S.	\$230,780.00	\$230,780
Contractor's Bond	1	L.S.	\$6,635.00	\$6,635
TOTAL CONSTRUCTION COST				\$448,968
TOTAL PROJECT COST (BASED ON 130% OF TOTAL CONSTRUCTION COST)				\$584,000

NOTE:

1. This Opinion of Probable Cost is based on preliminary phase estimates only.
 In addition to construction costs, there are other project costs for engineering, legal services, administration, land and financing. These costs have been estimated at 30% of construction costs. More detailed costs should be developed during Final Design Phase Engineering based on actual design quantities.
2. Costs prepared by Green Mountain Engineering, Inc. are dated January 2020 and reflect construction costs of work completed in 2020.

Section 5.0 Conclusions & Recommendations

As with any other municipal project of this magnitude, one of the first steps should be the identification of possible sources of funding for a project of this type.

Once funding sources are identified, the project can be further developed to maximize the use of available funds.

Affected property owners should be approached early in the process to garner support for the project and possibly identify other needs that can be accommodated.

Should the Town decide to proceed with the project at this point; subsurface exploration, including dye testing of the existing surface drainage, and permitting could be initiated, followed by final design and/or further evaluation of selected alternatives.

Following final design engineering, bidding, construction, construction observation and project close-out would complete the project.

We look forward to discussing this project with you in the near future.

Sincerely,

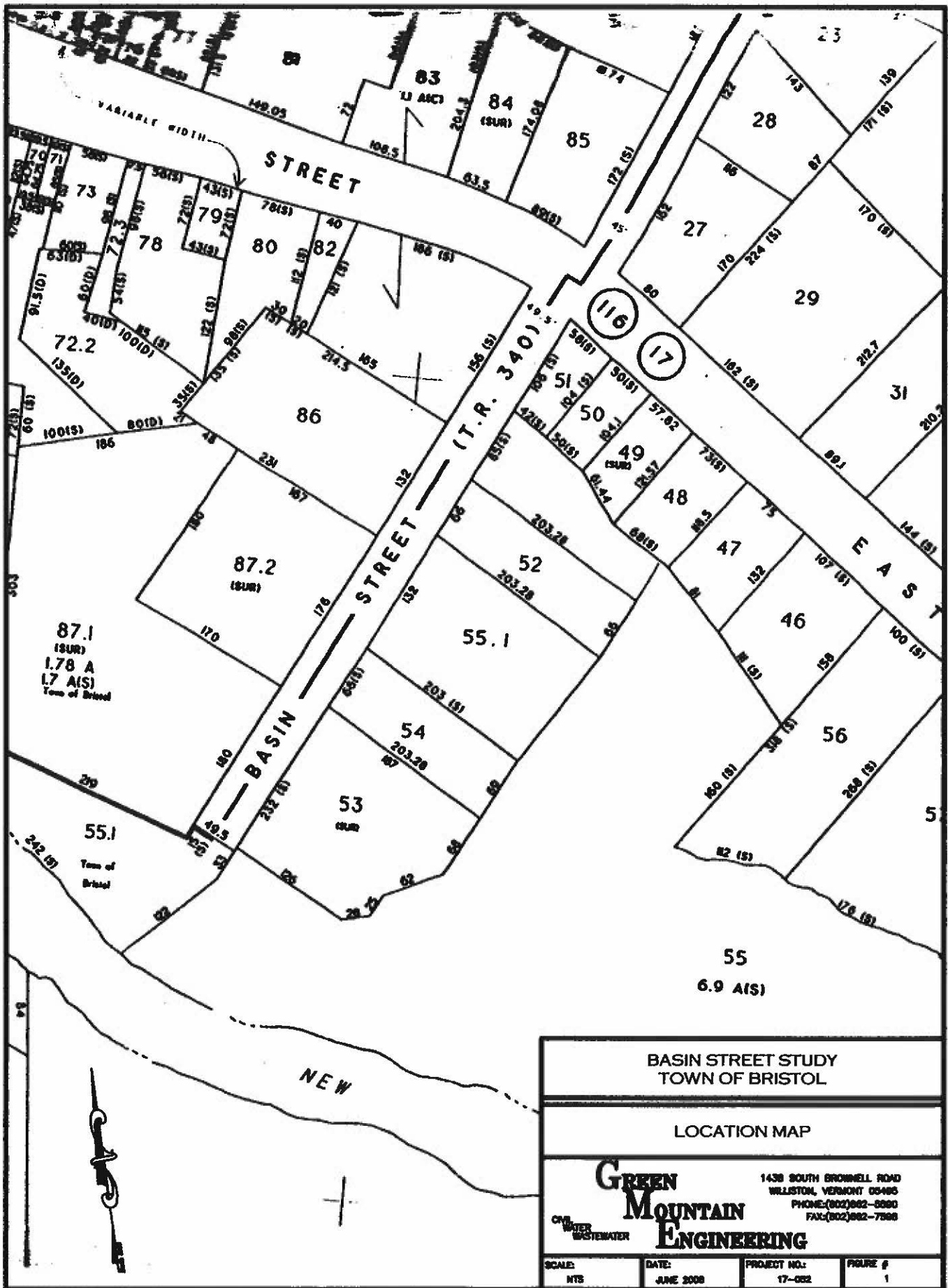
GREEN MOUNTAIN ENGINEERING, INC.



Alan Huizenga, P.E.
President

APPENDIX A

FIGURES

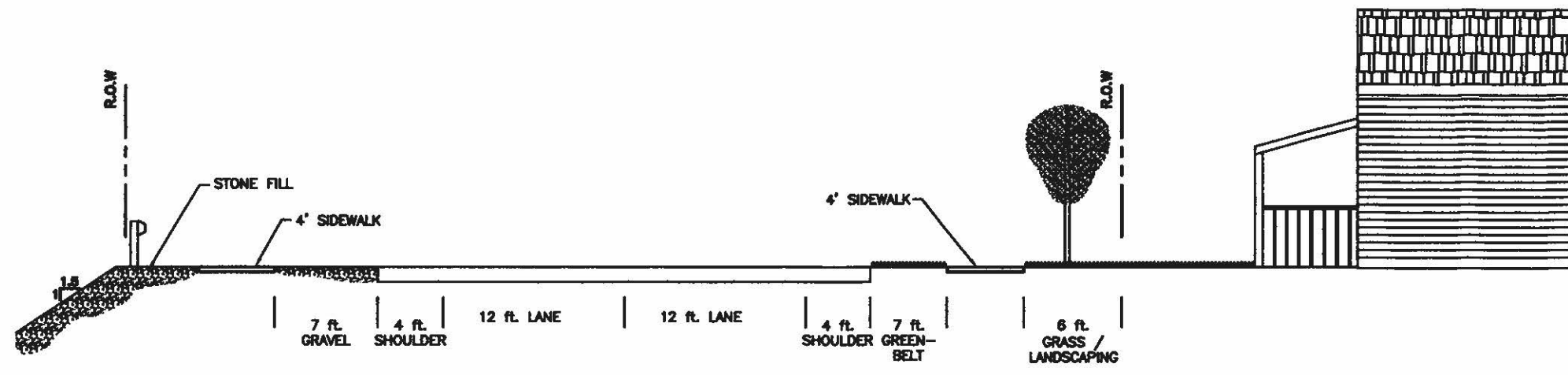


BASIN STREET STUDY
TOWN OF BRISTOL

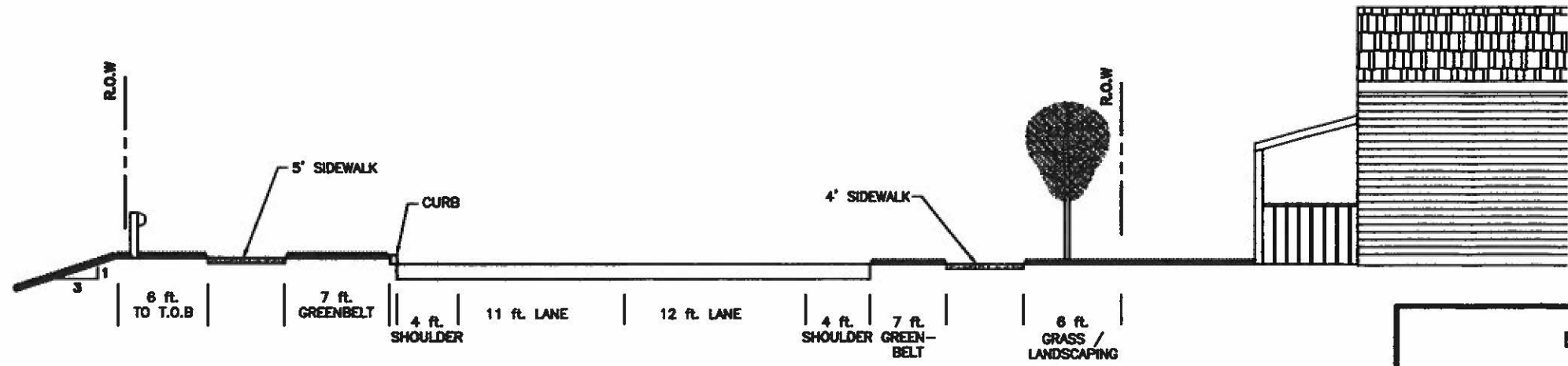
LOCATION MAP

GREEN MOUNTAIN ENGINEERING
 1438 SOUTH BRONNELL ROAD
 WILLISTON, VERMONT 05495
 PHONE: (802) 882-0880
 FAX: (802) 882-7588

SCALE: NTS	DATE: JUNE 2008	PROJECT NO.:	FIGURE #
		17-022	1



EXISTING ROAD CROSS SECTION - 66'± R.O.W
SCALE: NTS



PROPOSED ROAD CROSS SECTION - 66'± R.O.W
SCALE: NTS

BASIN STREET STUDY TOWN OF BRISTOL			
ROAD CROSS SECTION			
GREEN MOUNTAIN ENGINEERING <small>CIVIL WATER WASTEWATER</small>	1438 SOUTH BROWNELL ROAD WILLISTON, VERMONT 05495 PHONE: (802) 862-5500 FAX: (802) 862-7598		
	SCALE: NTS	DATE: JUNE 2008	PROJECT NO.: 17-052

APPENDIX B

**GEODESIGN, INC.
DECEMBER 6, 2019 MEMORANDUM**



GEODesign, Inc.
54 Main St.
PO Box 699
Windsor, VT 05089
(802) 674-2033

MEMORANDUM

TO: Alan Huizenga, P.E.– Green Mountain Engineering

FROM: Dan Howey, P.E. / Ulrich La Fosse, P.E. (Reviewer) – GEODesign

DATE: December 6, 2019

RE: Basin Street Conceptual Slope Rehabilitation Alternatives –
Supplemental Update Memorandum
Bristol, Vermont

FILE NO.: 0983-003.1

In accordance with our proposal dated September 12, 2019, we have visited the project site with you and are providing this supplemental memorandum. The intent of this memo is to update our prior site observations, our opinion of possible cost, and our conceptual recommendations related to the 3H:1V (horizontal to vertical) earth fill stabilization solution presented in our May 22, 2008 report.

BACKGROUND

The excessively steep existing slope south of Route 17 and west of Basin Street, combined with inadequate surface and ground water drainage control has resulted in reoccurring erosion and sloughing of the slope. The ongoing erosion and sloughing have required the Town to routinely repair and reconstruct the Rte. 17 roadway shoulder, sidewalk and guardrail along the slope crest. In addition, the steep existing grade of Basin Street makes it difficult and dangerous for traffic entering and exiting from, Basin Street.

Green Mountain Engineering (GME) and GEODesign (working as subconsultant to GME) were contracted by the Town circa 2008 to evaluate a conceptual reconfiguration of Basin Street and slope rehabilitation alternatives to address the difficult traffic access at the Basin Street-Route 17 intersection and the adjacent erosion-prone steep hillside.

GEODesign prepared a report dated May 22, 2008, which presented four conceptual slope stabilization alternatives. We understand the Town now wishes to move forward with the final design and construction phases of the slope stabilization and roadway re-configuration. We also understand that the Town has selected the Earth Fill Embankment slope stabilization alternative as presented in in our prior 5-22-08 report.

The intent of our currently authorized scope of work is to revisit the site, assess whether the condition of the slope has significantly changed and update our prior recommendations and opinions of possible cost related to implementation of the earth fill alternative.

AVAILABLE INFORMATION

GeoDesign is in receipt of the following information:

- Basin Street area topographic survey and roadway profile plan sheet (Existing Conditions Basin Street - Drawing No. 1) developed by GME, dated November 18, 2008; and,
- Conceptual Basin Street reconfiguration with earth fill slope stabilization alternative (Basin Street Grade & Drainage Improvements Alternative #1 – Drawing No. 2), developed by GME dated November 18, 2008.

These figures are included in Attachment 1.

SITE VISIT

We visited the site with you on November 7, 2019. It does not appear that the conditions of Basin Street or the adjacent slope have changed significantly since those at the time of our 2008 report. The sidewalk and guardrail along Rte. 17 at the slope crest appeared to be in fair condition, but you stated that the Town still has to frequently repair these features as the slope has continued to periodically slough and erode. You also stated that some of the storm drain alignments were not exactly known at this time and that the alignments shown on the existing conditions plan may need to be adjusted.

The surface of the slope consisted of a mix of brushy vegetation, a few trees, construction debris including rubble stone and concrete (old sections of sidewalk). The concrete raceway daylighting at the slope toe is still mostly intact. The storm drain that discharges near the crest of the slope southwest of intersection of Basin Street and Route 17 remains visible.

Similar to conditions in 2008, the existing retaining wall along the west side of Basin Street is in very poor condition and cannot be reused. The existing retaining wall along the east side of Basin Street appears to also be in a similar condition to 2008 and will need to be investigated as described below.

RECOMMENDATIONS

Rehabilitation Type

Without the benefit of knowing the land acquisition costs, the Town's desired roadway realignment alternative, and/or aesthetic desires, GeoDesign recommends an earth fill embankment rehabilitation as we did in our 2008 report. Barring prohibitive land acquisition costs, this alternative is the least expensive, most easily constructible (because most contractors are

experienced in earth moving construction), and has lowest risk of future failure as compared with the other alternatives.

The earth fill embankment rehabilitation involves stabilizing the slope by adding additional fill and constructing an earth fill embankment. Depending on the material used, GeoDesign anticipates that an embankment constructed from the existing Route 17 elevation down on a 1V:3H slope would be stable. Figure 1 presents a conceptual sketch of a typical earth fill embankment.

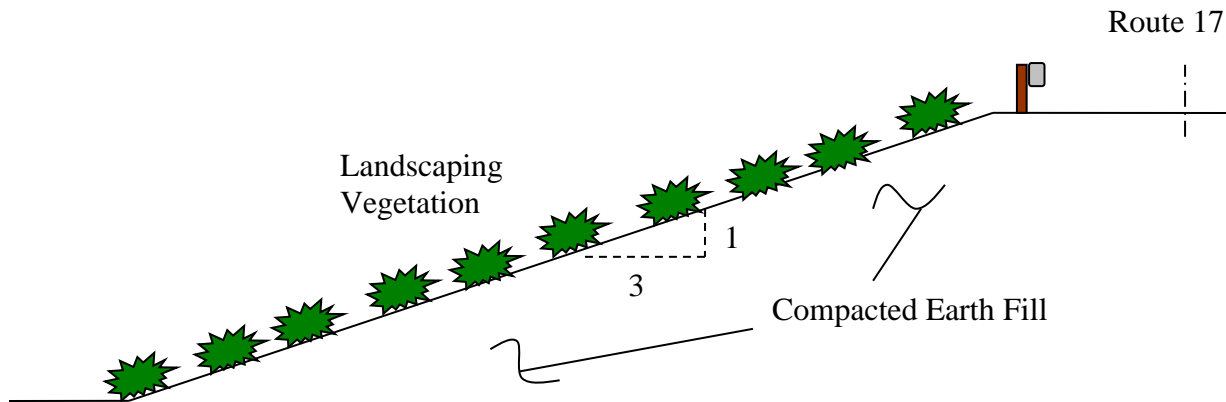


Figure 1: Conceptual sketch of earth fill embankment.

Subsurface Explorations

GeoDesign recommends performing a subsurface exploration program. The purpose of the subsurface exploration program is to obtain soil information in the fill slope area. This soil information will be used to design the earth embankment slope stabilization including evaluation of settlement and global stability.

Locate Existing Water Utilities

GeoDesign understands that existing water utilities are present beneath Route 17 and/or within the hillside, and that some of these utilities may convey large water flows. GeoDesign recommends that the Town locate these utilities and evaluate their integrity. If this evaluation indicates that their integrity is compromised or could be compromised during the life of the proposed slope rehabilitation, these utilities should be repaired or replaced as appropriate. This step is to avert possible water leakage from these utilities that could jeopardize the integrity of the constructed slope rehabilitation.

Drainage

GeoDesign recommends rehabilitating and (re)constructing surface drainage measures. The drainage measures should be designed to collect and remove surface water without erosion or destabilization. We recommend abandoning and removing (or filling with flowable fill where

removal not feasible) the existing drainage structures and piping within the proposed embankment fill area.

Surface water collection and removal systems could include: installing storm sewer and catch basins, drainage swales, etc. Any new or reconstructed drainage utility plans would need to consider the existing drainage utilities. GME is developing surface drainage recommendations for this project.

As part of the regular maintenance program for the slope stabilization, the Town should regularly monitor and cleanout the drainage system to reduce the risk of future drainage induced hillside erosion and instability.

Existing Basin Street Retaining Walls

There is one existing retaining wall supporting each side (east and west) of Basin Street near its intersection with Rte. 17. The west wall is damaged beyond repair and should not be reused. Although not as severe as the west wall, the east wall is also damaged as evidenced by cracking.

Based on the conceptual Basin Street reconfiguration with earth fill slope stabilization alternative drawing prepared by GME, the west wall would be removed as part of reconstruction.

Due to the age and condition of the east wall, the lowest risk option related to long term performance would be to replace or rehabilitate it whether or not it is subjected to any additional loads. The conceptual Basin Street reconfiguration with earth fill slope stabilization alternative drawing indicates flattening of existing roadway grades which will require filling along the east side of Basin Street. The filling would add additional load to the east wall and therefore, the east wall would need to be evaluated and likely replaced or rehabilitated as discussed further below.

GeoDesign recommends the following courses of action be taken if the Town would like to continue to use the east retaining wall and incorporate it into design:

1. Shift the relocation of Basin Street further to the west such that a buffer is maintained between the new road alignment (and associated filling) and the top of the existing wall. We recommend a distance of at least 6 feet (or 60 percent of the exposed wall height, whichever is greater), measured in plan view from the back of the wall to the eastern limits of any new filling required for the roadway regrading.
2. If additional load is to be added to the wall (e.g., placement of additional fill such as is presently proposed), a structural engineer should be retained to perform an evaluation of the wall's existing condition and structural capacity. In addition, a geotechnical evaluation of the wall's external stability (sliding, overturning, global stability) should be performed and include taking at least one soil boring. If these evaluations indicate that the wall can structurally and geotechnically support the additional planned load, the wall may be reused (or improved).

Some of these recommendations were included in our 2008 report. In addition to the foregoing recommendations, we also recommend the Town consider the following when deciding on whether to reuse the existing east wall:

Replacing or removing the wall at the time of the Basin Street reconfiguration and slope stabilization construction, would likely be more cost effective than removing or replacing the wall at a later date. The Town may wish to discuss reuse or removal wall with the adjacent landowner. It appears that it may be possible to replace the retaining wall with a fill slope without significantly impacting currently used space.

Overall Construction Observation

To maintain continuity between the design and construction phases, **GeoDesign** recommends that the Town include costs for construction observation and follow through. Construction observation would include:

- Review of geotechnical aspects of contractor/design submittals for consistency with the geotechnical design intent;
- Evaluate the acceptability of subgrade soils based on encountered conditions and that earthwork and subgrade surface preparation are performed per the construction documents;
- Observe excavation to confirm that the encountered excavated soil is similar to what was assumed in design;
- Communicate recommendations to field representative;
- Be available for consultation on construction questions; and
- Provide field reports (distributed regularly to the pertinent team members) documenting the work observed and any geotechnical recommendations.

OPINION OF POSSIBLE COSTS

This section summarizes an opinion of possible costs associated with the earth fill embankment slope stabilization concept. There are many things that may affect the actual costs that may not be incorporated in this cost opinion.

Table 1 presents a summary of the possible range in costs for the earth fill embankment slope stabilization concept. The possible cost has been broken up into design phase costs, construction costs, and construction observation costs. A more detailed breakdown of the cost estimate summarized in Table 1 is provided in Tables A2.1 and A2.2 in Attachment 2. The following costs are for slope stabilization only and do not include costs related to design or construction of the roadway realignment, including evaluation, removal, replacement, or rehabilitation of the east retaining wall.

Table 1: Opinion of Possible Cost Summary for Earth Fill Embankment

Phase	Earth Fill Embankment	
	Low	High
Design Engineering	\$28,000	\$62,000
Construction of Fill Slope	\$148,000	\$231,000
Construction Observation	\$20,000	\$60,000
Land Acquisition	?	?
Subtotal	\$196,000	\$353,000

Tables A2.1 and A2.2 indicate which items were specifically evaluated as part of this cost estimation. Additional costs, such as land acquisition, permitting, additional landscaping, surface drainage improvements, construction administration, etc. have not been included in this cost opinion.

GENERAL PROJECT RECOMMENDATIONS

GeoDesign recommends the Town consider the following items:

- Include budget costs to perform a subsurface evaluation, final design and construction observation in support of a slope stabilization design;
- Include budget costs to design and construct the Basin Street roadway realignment;
- Include budget costs to perform a structural evaluation and reconstruct/rehabilitate the existing retaining wall on the east side of Basin Street. The costs for this evaluation will vary depending on the horizontal distance from the relocated basin Street to the wall;
- Include a surface water drainage system for Route 17 and Basin Street to collect and relocate away from the stabilized hillside the surface water that will collect on these roadways;

MEMORANDUM LIMITATIONS

Review

This memo is not intended as a final design document. It is intended solely to provide a preliminary evaluation to assist in planning. Additional subsurface explorations and geotechnical engineering evaluation are required before implementing any design concepts addressed within this report.

Opinions of Possible Costs

GeoDesign has developed cost opinions to aid in the project without having performed a complete engineering evaluation and analysis. Consequently, assumptions were made that are believed reasonably conservative, but with further evaluation could prove unconservative. It is important

to understand the large uncertainties associated with developing a cost opinion during this preliminary planning stage and that **GeoDesign** does not warranty the accuracy of this opinion (either high or low).

Memorandum Use

This memo has been prepared for the exclusive use of **Town of Bristol** and their design team for specific application to the proposed **Basin Street Rehabilitation** project in **Bristol, VT** in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.

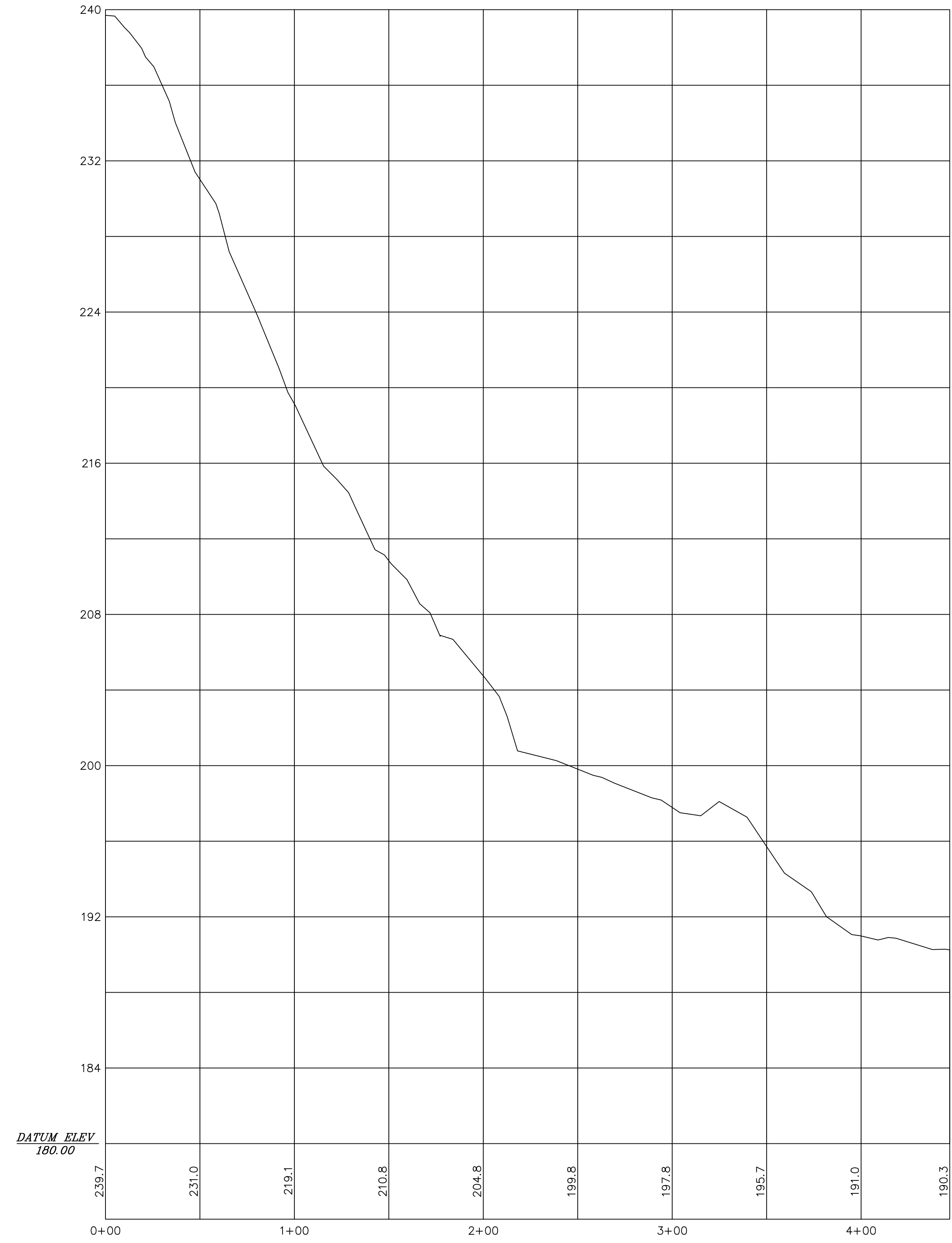
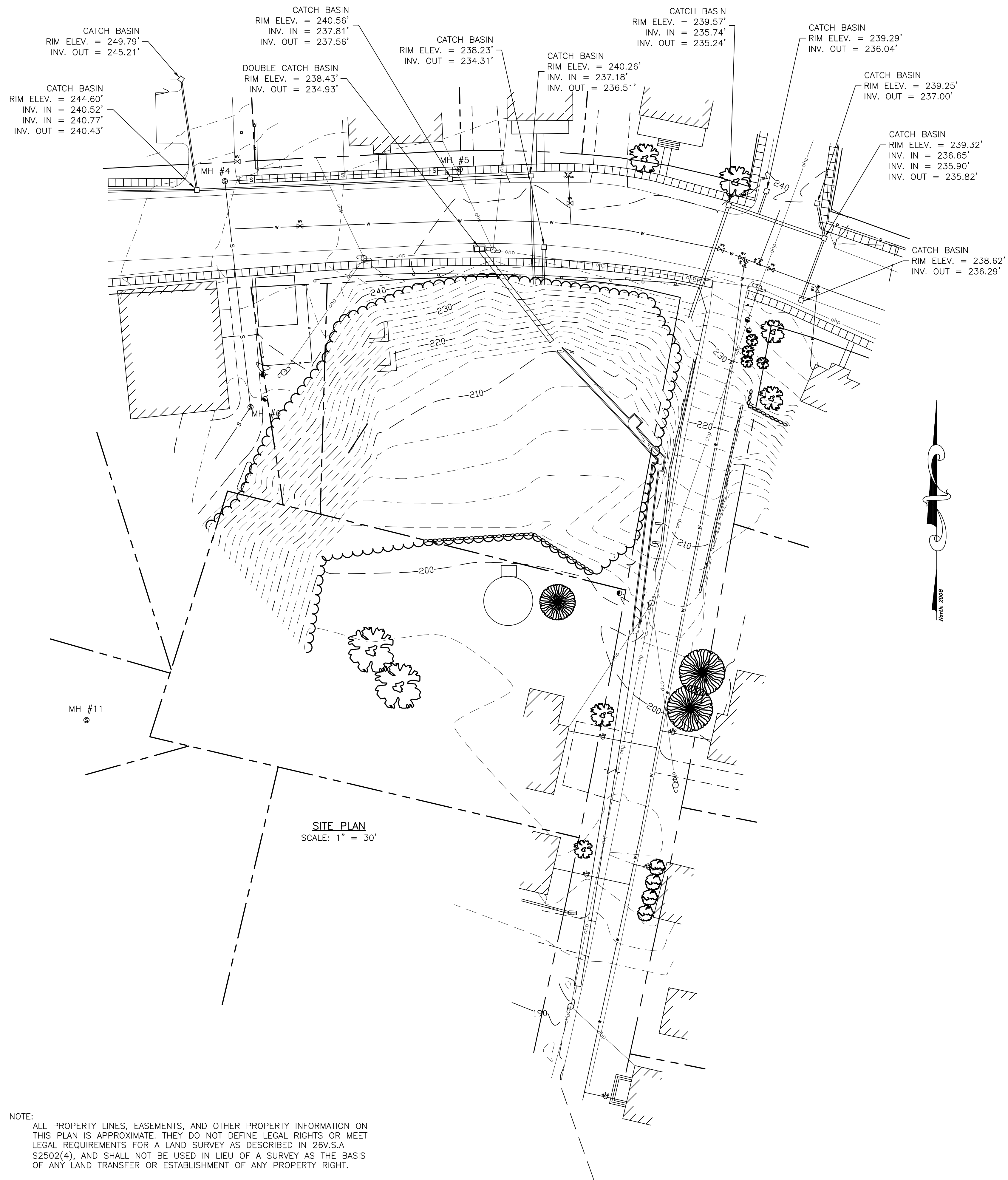
The geotechnical engineering portion of the memo has been prepared for this project by **GeoDesign, Inc.** This report is for preliminary planning purposes only and is not sufficient to prepare construction documents. Figures presented in this memo are conceptual only and are not for construction. Parties wishing a copy of the memo may secure it with the understanding that its scope is limited to planning considerations only.

Attachments:

Attachment 1 Green Mountain Engineering Drawing Nos. 1 and 2

Attachment 2 Opinion of Possible Cost Breakdown Tables A2.1 and A2.

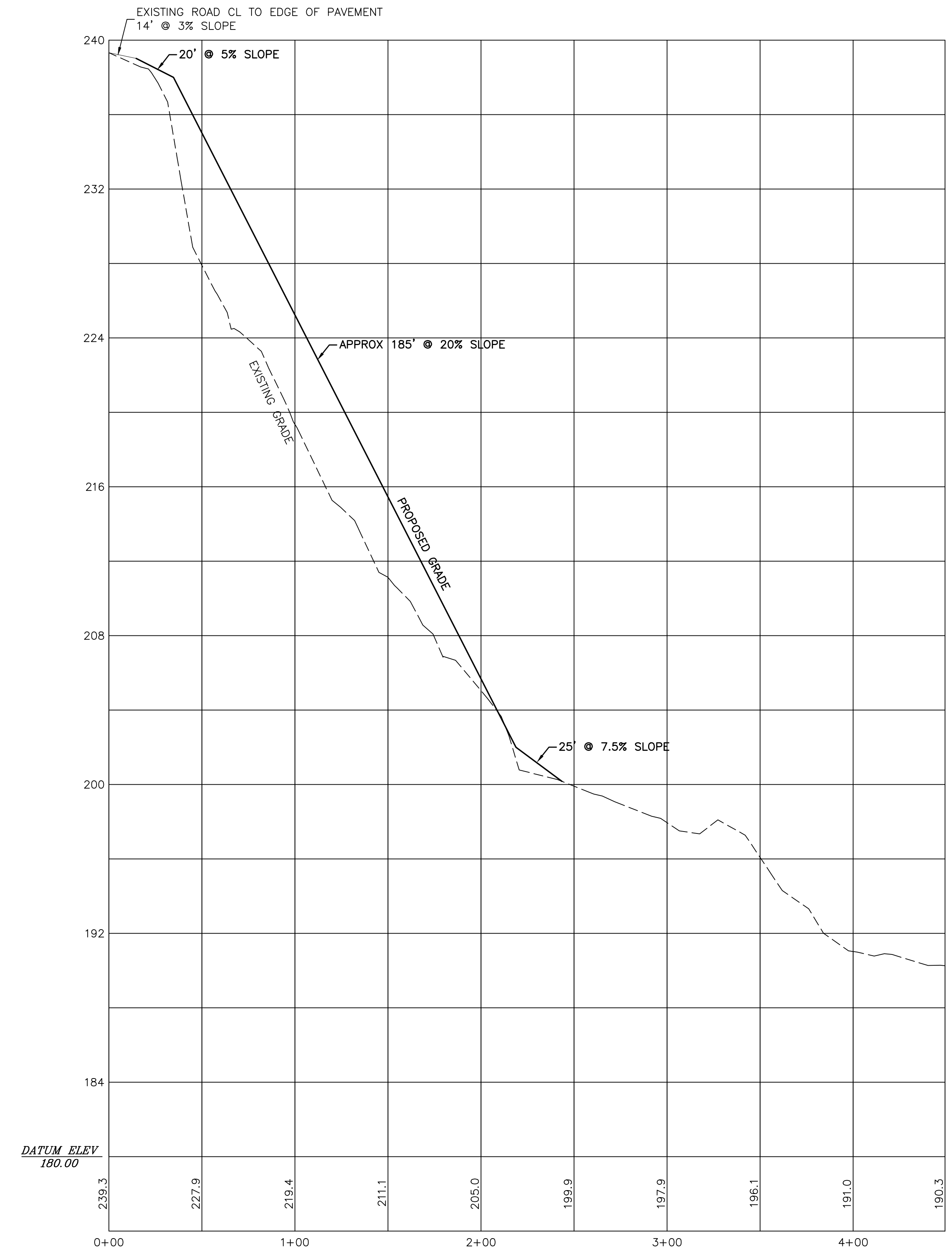
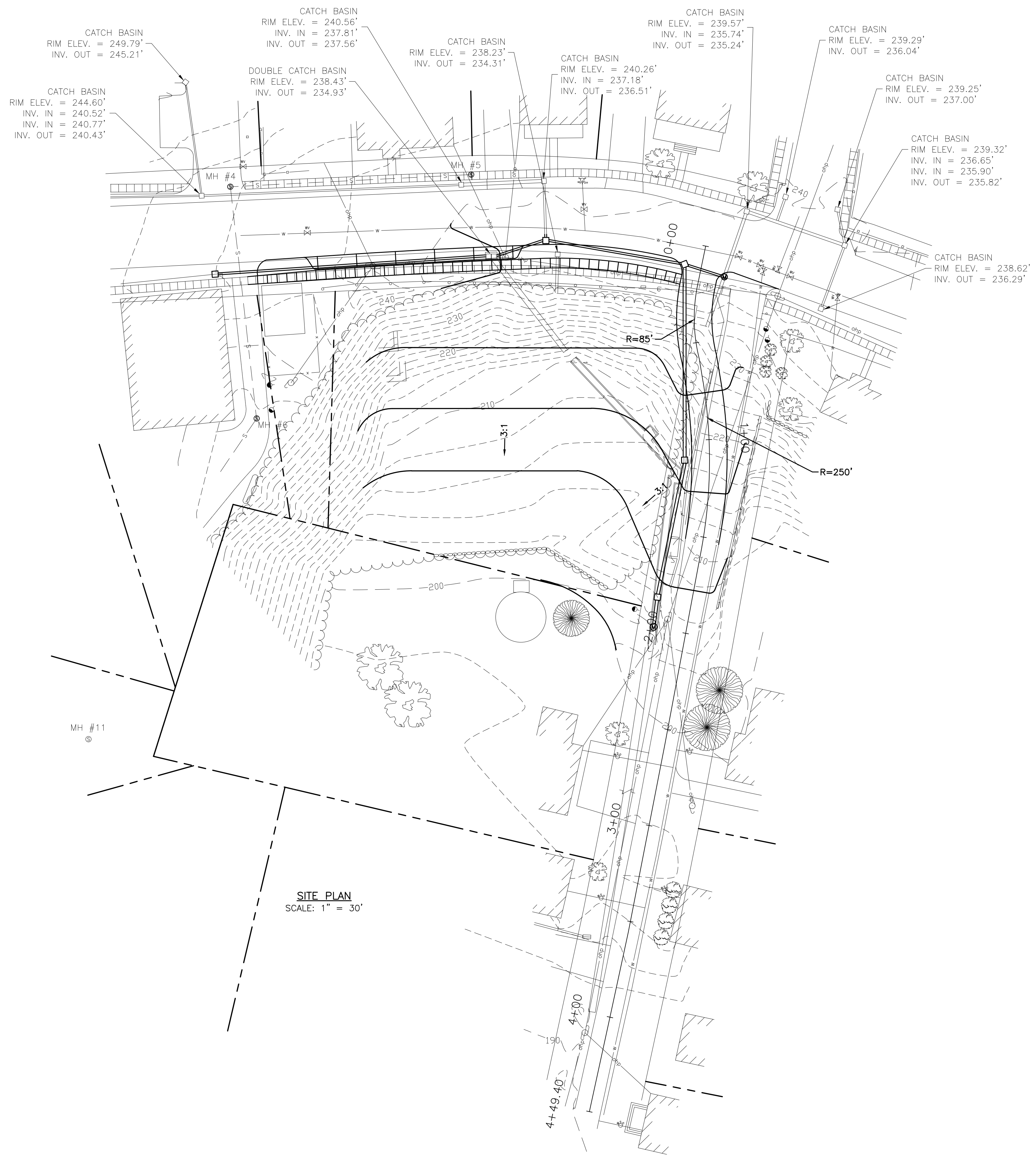
ATTACHMENT 1
GREEN MOUNTAIN ENGINEERING DRAWINGS



BASIN STREET ROAD PROFILE
 HORIZONTAL SCALE: 1" = 40'
 VERTICAL SCALE: 1" = 4'

NOTE:
 ALL PROPERTY LINES, EASEMENTS, AND OTHER PROPERTY INFORMATION ON THIS PLAN IS APPROXIMATE. THEY DO NOT DEFINE LEGAL RIGHTS OR MEET LEGAL REQUIREMENTS FOR A LAND SURVEY AS DESCRIBED IN 26V.S.A S2502(4), AND SHALL NOT BE USED IN LIEU OF A SURVEY AS THE BASIS OF ANY LAND TRANSFER OR ESTABLISHMENT OF ANY PROPERTY RIGHT.

GREEN MOUNTAIN ENGINEERING CIVIL WATER WASTEWATER 1438 SOUTH BROWNELL ROAD WILLISTON, VERMONT 05495 PHONE: (802)862-5590 FAX: (802)862-7598		FILENAME: Basin Street
		EXISTING CONDITIONS BASIN STREET
DESIGNED AH	PROJECT NO. 17-052	DRAWN RHW
CHECKED	PLOT DATE 11/18/08	DRAWING NO. 1
TOWN OF BRISTOL, VERMONT	SCALE AS SHOWN	DATE MARCH 2008
SHEET 1 OF 4	SHEET 1 OF 4	SHEET 1 OF 4



BASIN STREET ROAD PROFILE
HORIZONTAL SCALE: 1" = 40'
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		FILENAME: DETAILS	DESIGNED AH
BASIN STREET GRADE & DRAINAGE IMPROVEMENTS		DRAWN RHW	DRAWING NO. 2
		CHECKED	
ALTERNATIVE #1		PLOT DATE 11/18/08	SHEET 2 OF 4
TOWN OF BRISTOL, VERMONT		SCALE AS SHOWN DATE MARCH 2008	

ATTACHMENT 2
OPINION OF POSSIBLE COST BREAKDOWN TABLES

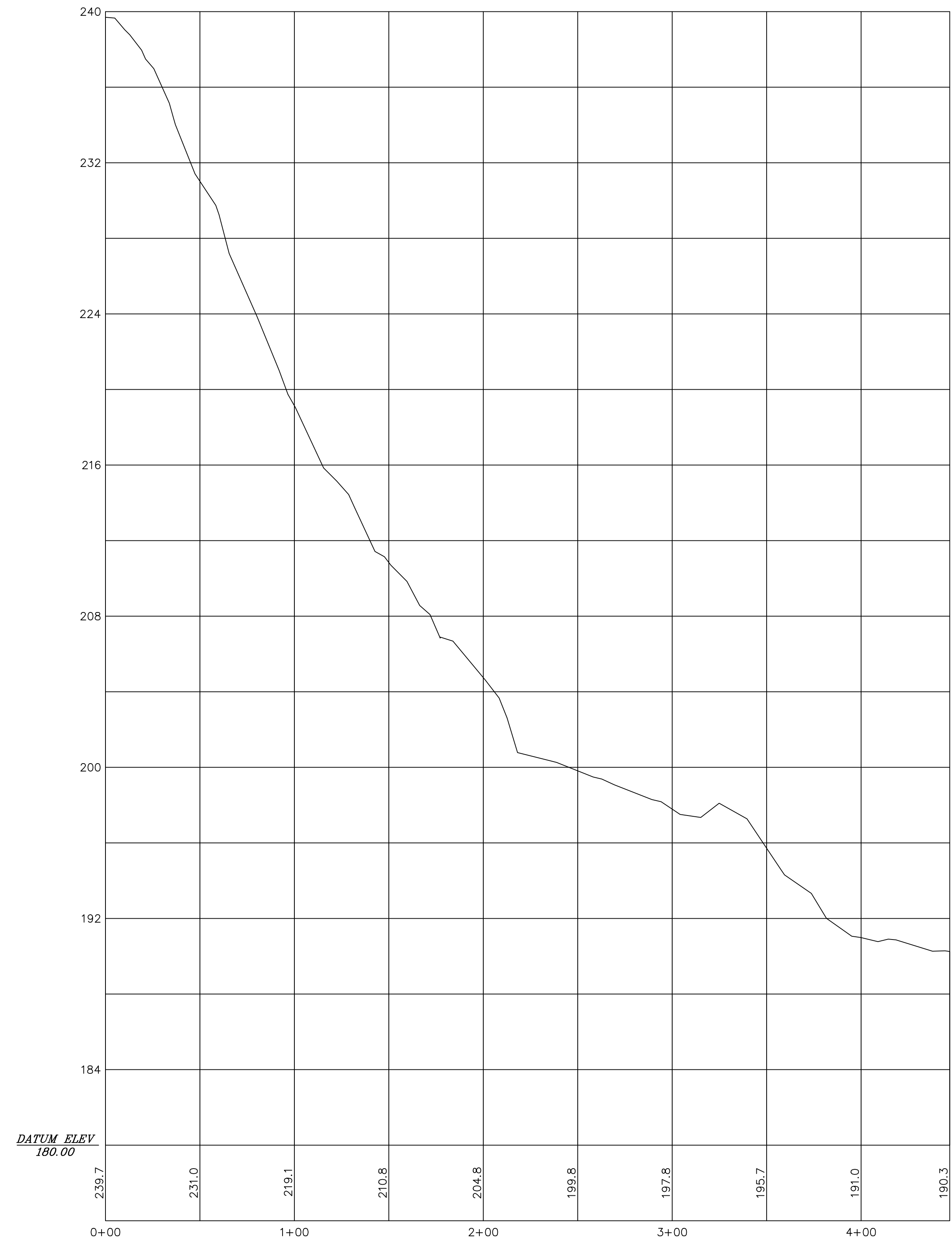
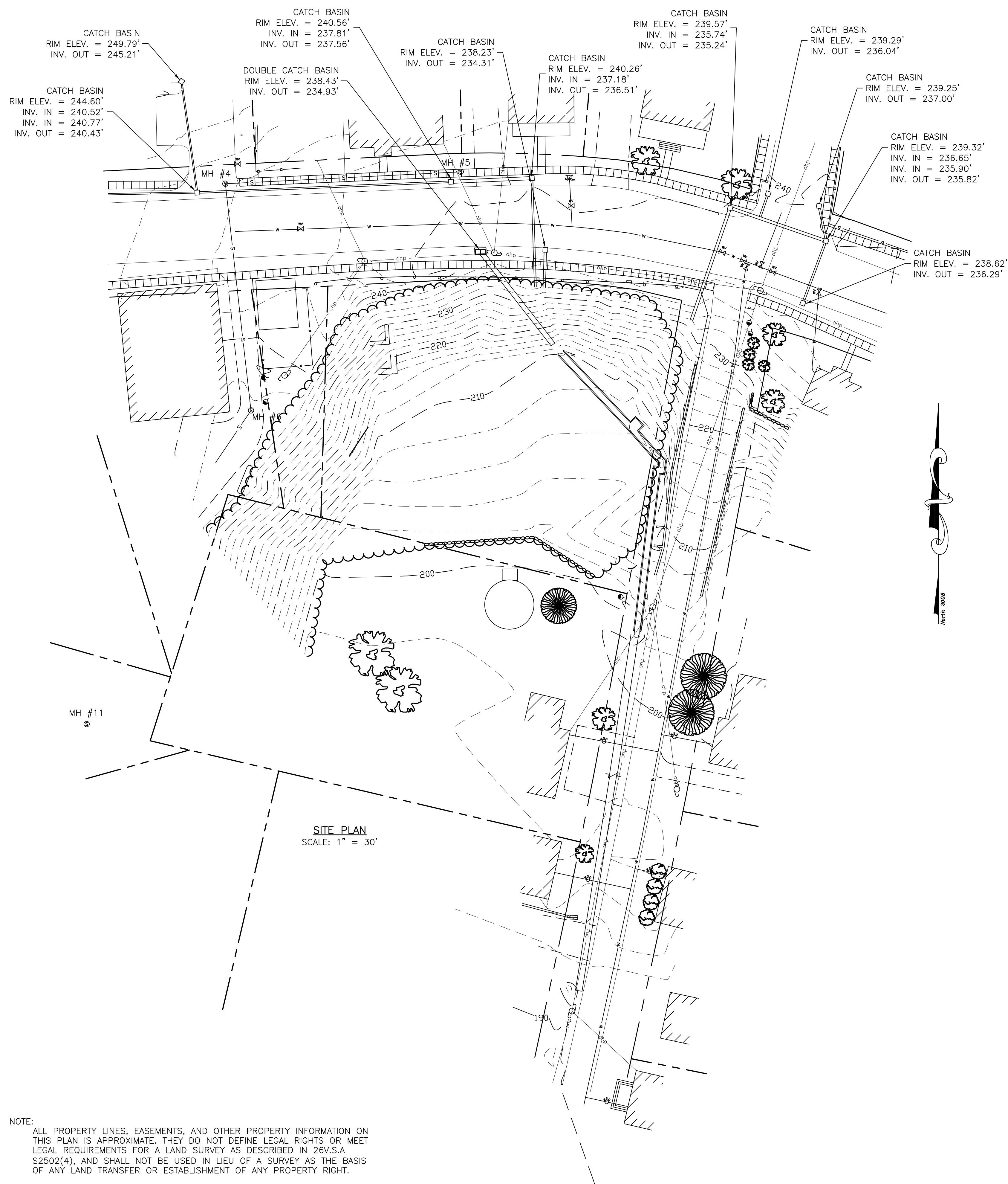
Table A2.1: Design and Construction Observation Opinion of Possible Cost

Item	Earth Fill Embankment	
	Low Estimate	High Estimate
<i>DESIGN ENGINEERING</i>		
Subsurface Exploration	\$6,000.00	\$11,000.00
Monitoring Plan	\$1,000.00	\$5,000.00
EPSC	\$2,000.00	\$6,000.00
Engineering Design	\$5,500.00	\$10,500.00
Drafting Construction Plans	\$10,500.00	\$16,000.00
Develop Specifications	\$1,000.00	\$6,500.00
Pre-bid Meeting	\$500.00	\$1,700.00
Bidding Assistance	\$500.00	\$1,600.00
Review Bids	\$500.00	\$800.00
Pre-Construction Meeting	\$500.00	\$2,000.00
Final Walk Through	\$0.00	\$1,000.00
<i>Design Engineering Subtotals</i>	\$28,000.00	\$62,100.00
<i>CONSTRUCTION OBSERVATION</i>		
Construction Observation	\$20,000.00	\$60,000.00

Table A2.2: Construction Opinion of Possible Cost

Pay Item	Item No.	Unit	Unit Price	Earth Fill Embankment			
				Low Quantity	Low Cost	High Quantity	High Cost
Clearing and Grubbing	201.11	Acre	\$26,000.00	0.5	\$13,000.00	1.5	\$39,000.00
Common Excavation	203.15	CY	\$15.00	1510	\$22,650.00	2060	\$30,900.00
Earth Borrow	203.30	CY	\$10.00	8390	\$83,900.00	11440	\$114,400.00
Mobilization	635.11	LS		---	\$5,000.00	---	\$15,000.00
Geotextile for Silt Fence	649.51	SY	\$10.00	73.3	\$733.00	117	\$1,170.00
Grubbing Material, Seed & Mulch		SY	\$7.00	3200	\$22,400.00	4330	\$30,310.00
					\$147,683.00		\$230,780.00

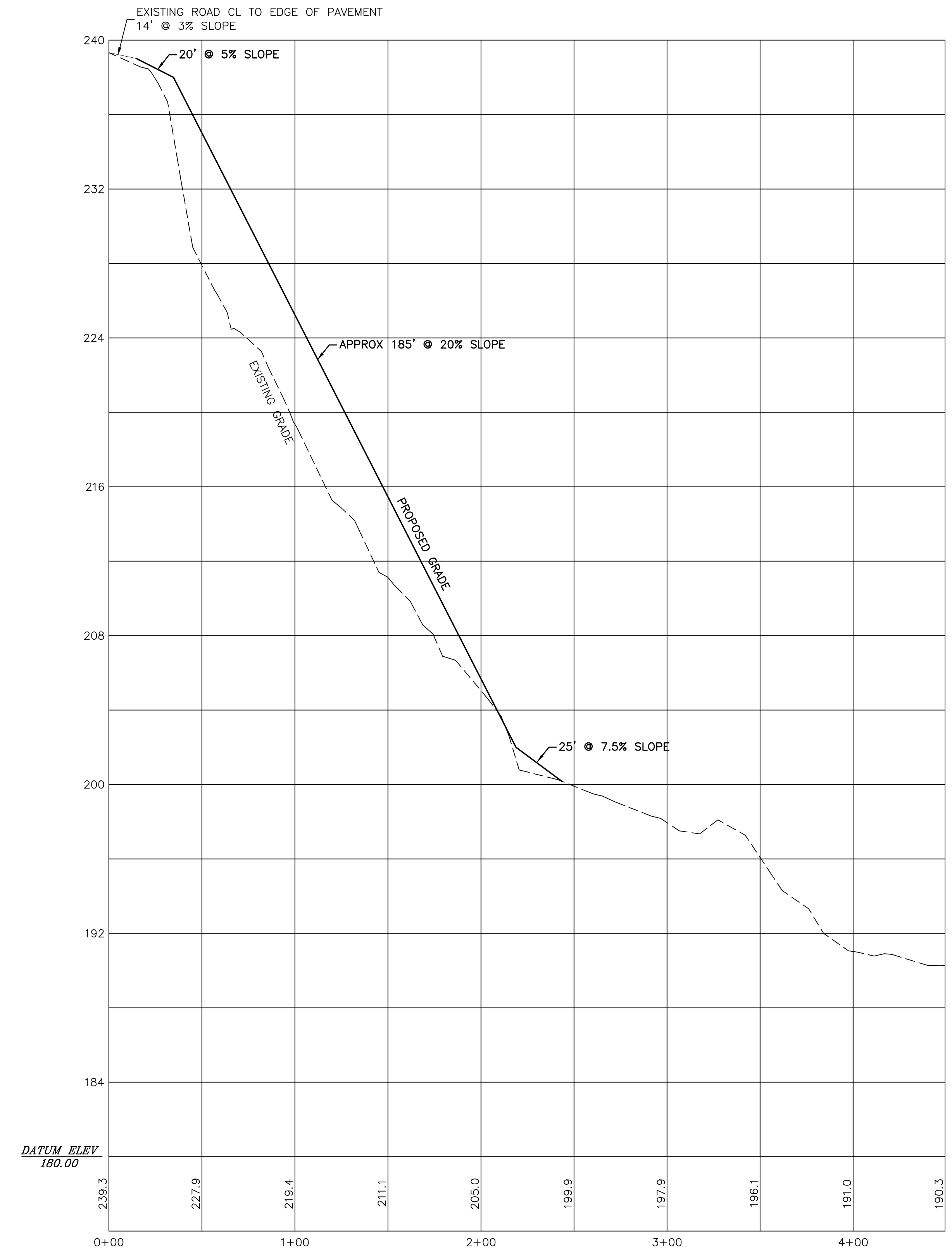
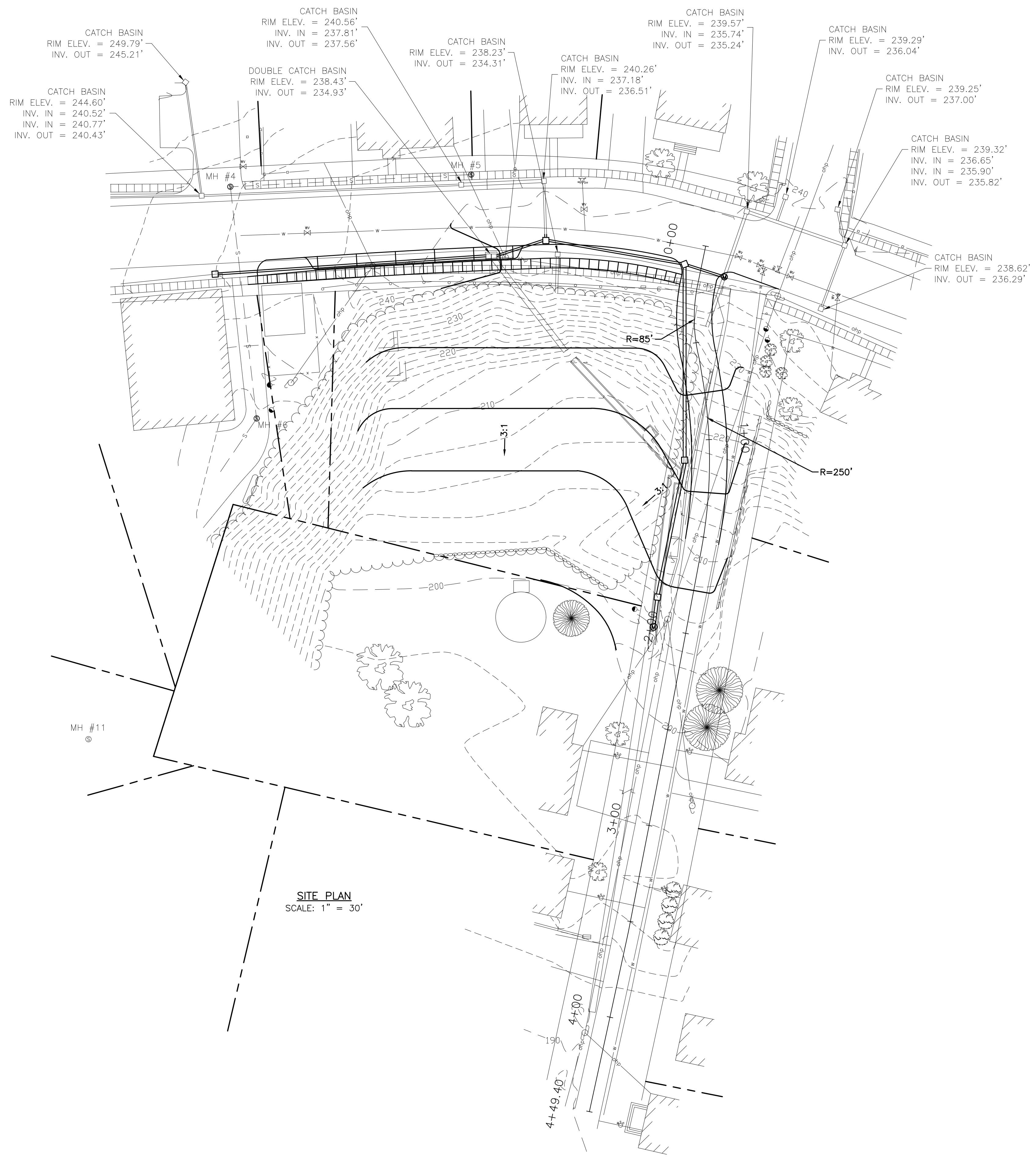
APPENDIX C
DRAWINGS



BASIN STREET ROAD PROFILE
 HORIZONTAL SCALE: 1" = 40'
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EXISTING CONDITIONS BASIN STREET		DESIGNED AH
DRAWN RHW		CHECKED
PLOT DATE 11/18/08		DRAWING NO. 1
SCALE AS SHOWN		DATE MARCH 2008
TOWN OF BRISTOL, VERMONT		SHEET 1 OF 4



BASIN STREET ROAD PROFILE
 HORIZONTAL SCALE: 1" = 40'
 VERTICAL SCALE: 1" = 4'

NOTE:
 ALL PROPERTY LINES, EASEMENTS, AND OTHER PROPERTY INFORMATION ON THIS PLAN IS APPROXIMATE. THEY DO NOT DEFINE LEGAL RIGHTS OR MEET LEGAL REQUIREMENTS FOR A LAND SURVEY AS DESCRIBED IN 26V.S.A S2502(4), AND SHALL NOT BE USED IN LIEU OF A SURVEY AS THE BASIS OF ANY LAND TRANSFER OR ESTABLISHMENT OF ANY PROPERTY RIGHT.

GREEN MOUNTAIN ENGINEERING CIVIL WATER WASTEWATER 1438 SOUTH BROWNELL ROAD WILLISTON, VERMONT 05495 PHONE: (802)862-5590 FAX: (802)862-7598		FILENAME: DETAILS
		DESIGNED AH DRAWN RHW CHECKED
BASIN STREET GRADE & DRAINAGE IMPROVEMENTS		PROJECT NO. 17-052
ALTERNATIVE #1		PLOT DATE 11/18/08 SCALE AS SHOWN DATE MARCH 2008
TOWN OF BRISTOL, VERMONT		DRAWING NO. 2 SHEET 2 OF 4