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Admitted in: MA, RI, NH

September 29, 2022

BY FEDERAL EXPRESS

Nicholas Iannuzzi, Chair
Town of Belmont
Zoning Board of Appeals
Office of Community Development
Home Municipal Building, 2nd Floor
19 Moore Street
Belmont, MA 02478

RE: Woodlands at Belmont Hills II Condominium Trust: Appeal of Denial of Zoning Enforcement Request Pursuant to G.L. c. 40A § 15.

Dear Mr. Iannuzzi and fellow members of the Zoning Board of Appeals:

The undersigned and this Firm represent the Woodlands at Belmont Hill II Condominium Trust (the "Condominium" or "Condominium Trust"). This is an appeal pursuant to M.G.L. c. 40A § 8 and 15 of the Building Inspector, Glenn R. Clancy's refusal to enforce the zoning laws of the Town of Belmont. On February 28, 2022, the Condominium Trust requested the Building Inspector enforce the provisions of the December 03, 2001 ARC – Belmont Campus Senior Housing Development Design and Site Plan Approval (the "2001 ARC DPSA") against McLean Hospital as the owner of the McLean Hospital redevelopment project, which was issued pursuant to the Town of Belmont Zoning By-Law Section 6A -the McLean District.¹ The 2001 ARC DPSA specifically indicates that the same is to be enforced by the Town of Belmont Building Inspector. On September 1, 2022, Mr. Glen Clancy denied the Association's enforcement request. A copy of the Denial is attached hereto as **EXHIBIT "A"**. It is noteworthy that Mr. Clancy the current Inspector of Buildings was the building inspector that approved Olmsted Drive's construction to proceed without referring the matter back to the Planning Board in 2005.

¹ The McLean District was adopted by Town Meeting in 1999 to establish a framework for the redevelopment of portions of McLean Hospital.

The Condominium Trust's enforcement request dated February 28, 2022, a copy of which is attached hereto as **EXHIBIT "B"**, specifically requested the Building Inspector to enforce the terms of the 2001 ARC DPSA and Section 6A of the Zoning By-Laws. Reduced to its essence, the Condominium Trust asserts that McLean failed to construct a required stormwater detention system to manage stormwater from McLean Hospital, (Zone 5) and the Upham Bowl area, ("Upham Bowl Detention Improvements"), "concurrent or prior to" construction of Olmsted Drive, as provided for, contemplated, and required by the 2001 ARC DPSA as well as the Declaration of Reciprocal Easements and Agreements dated January 24, 2005 (REA). Stormwater and drainage from this area is significant as the Condominium abuts and is down gradient from McLean Hospital and the Upham Bowl area. The Condominium Trust pointed out the requirement for the construction of the stormwater detention system in detail in its enforcement request with repeated citation to the provisions of the 2001 ARC DPSA.

The stormwater management system for the east portion of the McLean Campus as designed in 2001 was described by Vanasse Hangen Brustlin, Inc. (VHB) in a memorandum dated March 7, 2001, a copy of which is attached hereto as **EXHIBIT "C"**. Page 3 of the VHB Memorandum includes a conceptual plan submitted to the Town showing existing and anticipated stormwater flows. The design addresses three areas generating storm water flow (1) the existing Zone 5 and Upham Bowl area, (2) the proposed Zone 3 development area, and (3) the lower Olmsted Drive drainage area. The design addressed the existing, excessive, untreated storm water flow from the Hospital and Upham Bowl, which the construction of Olmsted Drive would impede.² . The largest stormwater detention tank anticipated by the proposed design was Tank 22 serving to detain and treat existing pre-development run-off from McLean Hospital (Zone 5) and the Upham Bowl prior to entering the Olmsted Drive Stormwater Management System which flows to the Town of Belmont stormwater system, which eventually flows to Beaver Brook. Through various design discussions and iterations which took place between March 07, 2001, and the final ARC Site Plan Approval issued December 03, 2001, Detention Tank 22 was relocated to Upham Bowl and revised to become the "a management system" or Upham Bowl Detention Improvements", most likely to conform with Section 6A.5(d) of the Zoning By-Law requiring "stormwater management solutions to be kept local within each Zone". The Condominium's wants to ensure that the Upham Bowl Detention Improvements be built as depicted on and based on the water flow direction indicated on the site the plan by the design engineer from VHB. See, **EXHIBIT "C", page 3.**

The applicable section of the 2001 ARC DPSA which requires this stormwater management system can be found at finding (F), sub-paragraph D of the 2001 ARC DPSA which states "The Upham Bowl will be addressed in a separate Agreement between the Town and McLean.". That finding is supported by the Exhibit B to the 2001 ARC DSPA The Cecil Group Final Report dated September 05, 2001, final comments item c "The stormwater design is found to be acceptable according to current engineering practice. The stormwater management plan is predicated on the construction of a management system in and for the McLean Hospital subdistrict." The Faye, Spofford & Thorndike peer review engineering analysis is also attached to the 2001 ARC DPSA and reiterates the requirement for the Upham Bowl Detention Improvements and states the requirement for this component of the stormwater management system to be constructed no later than "concurrent with the construction of Olmsted Drive".

² Fay Spofford obtained a peer review engineering analysis by the engineering Firm of Fay & Spofford which also supports the Upham Bowl stormwater improvements.

The logic for this interdependency and the need for the Upham Bowl Detention Improvements is straight forward, untreated water from Zone 5 flows downhill through Upham Bowl in an unregulated manner, and the new Olmsted Drive interrupts the that flow pattern. The Upham Bowl Detention Improvements were required and designed to address erosion and prior flooding events identified in the Fay Spofford & Thorndike peer review report. The proposed design met DEP requirements for Redevelopment Projects and the prescribed limits for Post-Development Flow and Treatment for Total Dissolved Solids and the By-Law requirements of Zone 6A(a).

In the fall of 2005 McLean Hospital through VHB, notified the Town of Belmont of their intention to proceed with the construction of Olmsted Drive in support of the ongoing development work on the McLean Campus, VHB stated "At this point in time, there are no plans to undertake any further construction for either the Zone 3 or 4 development, except for the infrastructure associated with Olmsted Drive and the utilities within and the grading needed adjacent to the driveway." At this time approximately 4-1/2 years had passed since VHB had assisted ARC in obtaining Site Plan Approval. VHB was now representing McLean Hospital developing the construction documents to implement the Olmsted Drive portion of the project. Based on the prior engineering calculations and stormwater modeling VHB should have been fully aware of the stormwater interdependencies between the various portions of the McLean Campus from their earlier role in the 2001 ARC DSPA, VHB's letter dated October 07, 2005, to Mr. Glan Clancy clearly states in the second paragraph that they had reviewed the prior permits etc., it is difficult to imagine that the requirement for a stormwater detention system in Upham Bowl was overlooked by VHB during this review. The letter contains a list of items 1 through 16 described as "The paragraphs below present a summary of how it is proposed that the construction of Olmsted Drive will address the specific Approval Conditions and Site Plan Approval." Item 6 of this letter fails to address directly, that the design indicated, and hydraulic calculations prepared have completely omitted any piping connections to/from Upham Bowl, the Upham Bowl Detention Improvements and any stormwater from Zone 5, this is documented in VHB's second memo to Mr. Clancy also dated October 07, 2005. Along with these omissions the letter(s) propose new temporary stormwater detention ponds to address only the net added impervious surface being added by the proposed construction of Olmsted Drive itself. These are material inconsistencies and non-conformities with the 2001 ARC DPSA which never should have been managed by the Office of Community Development without being referred to the Planning Board, per conditions 16 and 17 of the 2001 ARC DPSA.

Although the correspondence and the hydraulic calculations submitted for consideration for the construction of Olmsted Drive in 2005 did not include any drainage from Zone 5 or Upham Bowl, or reference the Upham Bowl Detention Improvements, the actual Construction Documents (Drawings) produced by VHB titled Contract 1 – Olmsted Drive Construction, McLean Hospital Latest Issue January 18, 2006 actually indicate some version of the Upham Bowl Detention Improvements on sheets C-4 and C-5, although the hydraulic calculations and stormwater modeling did not allow for a connection from Upham Bowl to the stormwater piping in Olmsted Drive (for the temporary condition), the plans indicate such connection, indicate some depth of a detention area, and include the following annotations; on C-4 in the Upham Bowl Area Catch Basin B4 notes Rim Elevation " R See WSS Plan", on Sheet C-5 in the same area the plan notes "See Uphams Bowl Detention Basis Plans by Others". Clearly VHB was aware of this potential work, and this should have been an open issue for the Building Inspector to resolve. Unfortunately, the submitted design plans were not followed relative to stormwater management from Upham Bowl, (i) as confirmed by the As-Built plans developed by Northland

Residential Development the piping in and around Upham Bowl was not constructed in accordance with the submitted design plans, (ii) the grading within Upham Bowl does not conform to the submitted plans and appears to conform with the 2001 existing conditions plans. The As-Built Plans confirm that the Upham Bowl watershed was piped into the Olmsted Drive Stormwater Management System without the prerequisite Upham Bowl Detention Improvements being constructed.

Obviously, this project has seen fits and starts and has been segmented into additional phases which were not anticipated by earlier approvals. Failure to install the required detention improvements along with proceeding with other work substantially out of conformance with the 2001 ARC DPSA constitutes a violation of the 2001 ARC DPSA, which should be enforced by the Building Inspector, as requested by the Condominium Trust.

The Condominium Trust's request to the Building Inspector although lengthy was relatively simple, "require McLean to complete the design and construct the stormwater management system that is required to address the McLean Hospital (Zone 5) and Upham Bowl stormwater. It is inconceivable that a redevelopment project of this magnitude would not have a compliant stormwater system particularly since the design was effectively near completion in 2001. It appears the connection piping was installed, and the work required to bring the system into conformance is minor when compared to the scale of the currently pending Zone 3 development.

In his denial, Mr. Clancy validates that (i) the 2001 ARC DPSA was the necessary permit to allow for the Construction of Olmsted Drive, and (ii) the 2001 ARC DPSA requires the Agreement between the Town and McLean regarding installation of the Upham Bowl stormwater system. Even though all the information to understand these requirements and their intention is contained within the approval, Mr. Clancy allowed Olmsted Drive to be constructed without requiring either the Agreement or the installation of the Upham Bowl Detention Improvements a clearly identified prerequisite, he also chose not to refer the matter back to the Planning Board, which was required by conditions 16 and 17 of the 2001 ARC DPSA.

In his denial Mr. Clancy says that the Senior Housing ARC project (that which was originally contemplated to be built in Zone 3 by the 2001 ARC DPSA) was never built, and therefore the stormwater system designed under that permit does not need to be built. Whether the original Zone 3 project was completed by the original applicant is irrelevant. Olmsted Drive was constructed under the 2001 ARC DPSA, therefore the prerequisite Upham Bowl Detention Improvements were also required.

Along with the potential for flooding along the Zone 2 east property line, the existing condition allows unregulated, untreated stormwater from Zone 5 to enter the Olmsted Drive stormwater management system at flow rates far exceeding system's design, this water contains elevated sediment and pollutants as no treatment has been applied. This water quickly finds its way to Beaver Brook. As the new zone 3 development project is imminent the Condominium just wants to ensure that its property is protected through the installation of what was designed more than twenty (20) years ago.

For all the above reasons and the detail accompanying this Appeal, the Zoning Board of Appeals should reverse the September 1, 2022, Decision of the Building Inspector denying the Condominium Trust's enforcement request and order the Building Inspector to enforce the 2001

DPSA by ordering McLean to build the Upham Bowl Detention Improvements as required, permitted, and contemplated by the 2001 DPSA.

Hopefully, the Zoning Board of Appeals will require what was originally permitted over twenty (20) years ago and the involvement of the Court system or the Massachusetts Department of Environmental Protection will not be necessary.

Thank you for your attention to this matter.

Very truly yours,

ALLCOCK & MARCUS, LLC

Edmund A. Allcock

Edmund A. Allcock

/EAA

cc: Woodlands at Belmont Hill
McLean Hospital

EXHIBIT “A”



OFFICE OF COMMUNITY DEVELOPMENT
TOWN OF BELMONT

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September 1, 2022

Mr. Mark Gouker
Chair, Board of Trustees
Woodlands at Belmont Hill, II

Sent via electronic mail: gouker.mark@gmail.com

Dear Mr. Gouker,

As Chair of the Board of Trustees of Woodlands at Belmont Hill II (collectively, the "Trustees"), you have asked me to require McLean to take certain mitigation measures, based mainly on the 2001 Design and Site Plan Approval ("2001 DSPA") for Zone 3 issued to American Retirement Corporation. For the reasons that follow, I find no zoning violation and decline to order enforcement.

Brief Review of Zone 3 Approvals

Belmont's 1999 Special Town Meeting adopted § 6A of the Belmont Zoning Bylaw ("Bylaw") to govern the McLean property. Section 6A created six McLean-specific subdistrict types. The land at issue here falls in a Senior Living Subdistrict, Zone 3, as well as an Open Space Subdistrict. Section 6A requires "Design and Site Plan Review" for "[a]ny activity requiring a Building Permit in any Subdistrict, and any proposed construction of a vehicular access way across land in the Open Space Subdistrict...." Bylaw § 6A.4.

On December 3, 2001, the Belmont Planning Board granted the 2001 DSPA to American Retirement Corporation to construct a 482-unit senior housing development in Zone 3 ("ARC Project"). 2001 DSPA at 1. Several of the findings and conditions in the 2001 DSPA spoke to stormwater management.

First, the Board adopted a proposed Stormwater Pollution Prevention Plan. *See* 2001 DSPA Findings (f)(d), (g); Condition 6a. The Stormwater Pollution Prevention Plan clearly stated: "[t]he Plan addresses full-build conditions and construction activities."

Second, the Board addressed drainage from the Upham Bowl area. McLean planned to construct a detention area in Upham Bowl as part of the ARC Project. The Upham Bowl detention area would "discharge into the stormwater management facilities operated and maintained by ARC" in Zone 3. 2001 DSPA Ex. B. A memorandum from the Town's engineering consultants acknowledged that, although "not part of Zone 3, [the Upham Bowl detention area] is an integral

McLean Zoning Response Letter

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part of the overall stormwater management system....” The 2001 DSPA anticipated that Upham Bowl drainage would “be addressed in a separate Agreement between the Town and McLean,” 2001 DSPA at 10. As far as I am aware, no such agreement was ever negotiated or executed.

In late 2005, the ARC Project had not yet been built. At that time, VHB wrote to notify the Town that McLean was “moving ahead with the design and construction of Olmsted Drive,” although there were no current plans to construct the ARC Project. VHB Letter 1 (Aug. 10, 2005) at 1. VHB proposed that Olmsted Drive would adhere to relevant portions of the 2001 DSPA Approval. *Id.* at 2-4. For stormwater management in particular, VHB stated that, consistent with the Stormwater Pollution Prevention Plan, it would implement erosion and sedimentation controls adjacent and downslope from the road, and that it would inspect for erosion weekly. It also promised to construct “temporary detention facilities . . . in currently open areas of the site to maintain the design stormwater runoff rates as approved in” the 2001 DSPA Approval. *Id.* at 2-3. On October 7, 2005, VHB sent two more letters restating its commitments in the August 10, 2005 letter, and proposing additional stormwater mitigation measures for the “interim build condition.” VHB Letter 2 (Oct. 7, 2005) at 2-3; VHB Letter 3 (Oct. 7, 2005) at 1.

The ARC Project was never built.

Although the August VHB letter stated that there were no current plans to construct any other part of the Zone 3 (or 4) developments, an email to me from June 2006 reflects that VHB or McLean expected to “start marketing for ARC (off Olmsted Drive) shortly (or already have) but will not start construction until 60% of the units are sold.”

In 2022, the Planning Board granted the Northland Residential Corporation a Design and Site Plan Approval (“2022 DSPA”) to build 152 units in Zone 3 (“NRC Project”). 2022 DSPA at 1. The 2022 DSPA approved proposed stormwater management infrastructure in Zone 3. The 2022 DSPA acknowledged that stormwater drainage from Upham Bowl “was an issue of significant discussion during the public hearings.” It ultimately found that there was no evidence “to support a finding that the existing ... facilities outside Zone 3 are inadequate”

Zoning Enforcement Requests

You asked that the Town require McLean to “complete the following[:]

- (a) design and construct the Upham Bowl Stormwater Detention improvements, including providing current hydraulic calculations of all flows into Upham Bowl, (inclusive of the outfall adjacent to the Chapel),
- (b) to complete an engineering review of the Olmsted Drive Stormwater Management System, which should include addressing all of the current ‘as-built’ connections to the piping system including but not limited to, (i) Meadows Lane, (ii) South Cottage Road,

- (iii) Waverly Woods, (iv) Lower Olmsted Drive, and (v) the currently anticipated Zone 3 discharge flows; the objective being to confirm that Structure 11 is adequate to effectively manage all of the flow it receives and that the necessary detention and treatment standard is being met.
- (c) to remove the paved area between the Hospital's MRI Facility and Olmsted Drive and Construct the walkway consistent with the approved Construction Plans and hydraulic calculations (area to be loamed and seeded), and
- (d) that the Hospital propose a methodology or condition to address either now or in the future how the Zone 4 temporary discharge will be brought into Zoning conformance."

Ruling

General Response

Based on the history and records that I have described above, I find that the 2005 construction of Olmsted Drive was carried out in the good faith belief that the ARC Project would eventually be completed, and that it was therefore authorized by the 2001 DSPA.¹ The ARC Project was subsequently abandoned. The 2001 DSPA as written does not contain any explicit requirements that I can enforce that pertain to the project if it was begun but abandoned after only one small element of the project infrastructure was built. The proper forum to determine what measures, if any, should have been required of the developer in the event of partial completion is the Planning Board, not my office. The Zoning Act (Chapter 40A) does not give me the authority to modify or add conditions to the 2001 DSPA under the guise of enforcement.

Had the construction of Olmsted Drive without necessary stormwater mitigation measures caused significant harm to surrounding or downgradient properties, and had such harm been brought to my attention in a timely fashion, I could have referred the matter to the Planning Board to clarify or amend the 2001 DSPA to address those problems. Under those circumstances, such an amendment might well have produced specific requirements, enforceable by my office, to mitigate those impacts. However, I am not aware of any such impacts, and I

¹ Because Olmsted Drive crosses an Open Space District, the construction of Olmsted Drive required design and site plan review. "Any proposed construction of a vehicular access way across land in the Open Space Subdistrict, shall require [Design and Site Plan Review] pursuant to this Section 6A.4...." Bylaw § 6A.4.

And because Section 6A of the Bylaw makes no provision for a design and site plan approval to lapse, the 2001 DSPA was still in effect in 2005. Also, as of 2006 VHB or McLean expected to "start marketing for ARC (off Olmsted Drive) shortly...."

Given that (1) construction of Olmsted Drive required Design and Site Plan Review, (2) the 2001 DSPA had not lapsed in 2005, and (3) McLean appears to have constructed Olmsted Drive in the good faith belief that the rest of the ARC Project would be completed, I conclude that Olmsted Drive was constructed pursuant to the 2001 DSPA.

also defer to the Planning Board's finding in the 2022 DSPA that no such impacts occurred and no additional mitigation is required.

In any event, because no enforcement action was pursued before Northland applied to the Planning Board for a new project with a new plan, these issues were re-addressed in the proper forum (the Planning Board) in the 2022 DSPA. I view the 2022 DSPA as superseding the 2001 DSPA with respect to the partial buildout under the latter (2001) approval.

With that general response, I will address your requests (a) through (d) in turn.

Upham Bowl Stormwater Detention improvements

The 2001 DSPA stated that the Upham Bowl stormwater detention area would be addressed in an agreement between McLean and the Town. No such agreement was ever negotiated or executed in the intervening two decades.

In fact, the 2001 DSPA envisioned the Upham Bowl stormwater detention area as part of the stormwater mitigation system for the fully-built ARC project. The Stormwater Pollution Prevention plan adopted in the 2001 DSPA was designed to "address[] full-build conditions and construction activities," rather than any stormwater impacts from the construction of Olmsted Drive alone. *See also* 2001 DSPA Ex. C at 6 (referring to "installation of the proposed systems in accordance with the SWPPP"). The 2001 DSPA did not require any particular stormwater mitigation for the interim-build conditions that currently exist (i.e., Olmsted Drive constructed, the rest of the ARC Project not constructed, and no construction ongoing).

It particularly did not require the Upham Bowl stormwater detention area. That area was part of the complete plan for stormwater management in the full-build conditions. This is reflected in the Town's engineering consultants' statement that the Upham Bowl stormwater detention area "is an integral part of the overall stormwater management system." The "overall" stormwater management system consisted of systems designed to address a project that, again, was never built. In fact, the Upham Bowl stormwater detention area was meant to discharge to the full-build Zone 3 stormwater facilities, which do not exist.

Moreover, the ARC Project has since been replaced by the NRC Project. In granting the 2022 DSPA for the NRC Project, the Planning Board considered what mitigation measures were necessary in and around Upham Bowl. The 2022 DSPA reflects that drainage from Upham Bowl "was an issue of significant discussion during the public hearings." The Planning Board nonetheless concluded that there was no evidence that existing facilities are inadequate, either for

existing conditions or for the conditions that will result after the NRC Project and its associated mitigation measures are built.²

In short, you are asking me to conclude that McLean violated zoning because it did not construct a particular mitigation measure that [1] was supposed to be reduced to an agreement twenty years ago and was not, [2] was designed as part of a larger system for a larger project which was never built, and [3] that the Planning Board has since decided is not necessary to address either existing conditions or the stormwater impacts of the NRC Project, which replaced the ARC Project. There is an insufficient legal and factual basis for the enforcement action you have requested me to take. Accordingly, I find no violation.³

Engineering Review of the Olmsted Drive Stormwater Management System

You have not identified any provision of any of the governing zoning decisions requiring McLean to complete such a study, and I am not aware of any. Accordingly, I find no violation.

Removing the Paved Area Between the Hospital's MRI Facility and Olmsted Drive

VHB's 2005 statement that it would remove this impermeable surface is not enforceable. As you contend, Olmsted Drive was constructed pursuant to the 2001 DSPA. Removing this impermeable surface was not a mitigation measure required by the 2001 DSPA. The Planning Board never approved an amendment of the 2001 DSPA, as would be required to make a new mitigation measure mandatory. Bylaw § 6A.4. Accordingly, I find no violation.

Bringing the Temporary Outfall into "Conformance"

Your complaint that "these oversights are violations of the Site Plan Approval conditions related to Stormwater Management within each Zone" seems to refer to the requirement of Bylaw § 6A.5(d) that "stormwater management solutions shall be kept local within each Zone." However, that requirement serves a specific goal: "minimiz[ing] accumulation and the need for larger structures." *Id.* As far as I am aware, the temporary outfall is not causing accumulation or driving a need for larger mitigation structures. Also, Olmsted Drive itself crosses multiple zones. Given that, it is not surprising or improper that some of its stormwater infrastructure also

² Although the Planning Board attempted to limit its finding to be "solely for purposes of this DSPR," I view the 2022 DSPA to be dispositive of any issues related to work performed under the authority of the 2001 DSPA.

³ To the extent that requiring McLean to "provid[e] current hydraulic calculations of all flows into Upham Bowl" is a separate and independent zoning enforcement request, I find no violation. You have not identified any authority, and I am not aware of any, requiring McLean to provide such calculations.

McLean Zoning Response Letter

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crosses multiple zones. The 2001 DSPA itself reflects that the stormwater management system would only "generally" keep stormwater in its own zone. Accordingly, I find no violation.

Conclusion

For the foregoing reasons, I decline to order any of the requested zoning enforcement.

In accordance with Chapter 40A, Sections 8 and 15 of the Massachusetts General Laws, any party aggrieved by this determination has the right to appeal my determination to the Zoning Board of Appeals. Any such appeal must be made within thirty (30) days of receipt of this letter.

Sincerely,



Glenn R. Clancy, P.E., C.B.O.
Inspector of Buildings
Zoning Enforcement Officer

EXHIBIT “B”

Transportation
Land Development
Environmental
Services



Vanasse Hangen Brustlin, Inc.

101 Walnut Street
Post Office Box 9151
Watertown
Massachusetts 02471

Memorandum To: Mr. Thomas Gatzuris
Director, Community Development
Office,
Town of Belmont
Date: March 7, 2001

Project No.: 06935

From: Frank DiPietro, P.E.

Re: ARC Drainage Design: Detention
Basin and Zoning Bylaw Compliance

In a separate memorandum, Ropes & Gray has provided background and discussion regarding the compliance of the proposed storm drainage system for the ARC, Zone 3, Senior Housing development with the provisions of the Zoning Bylaw. This memo, and the attached figures, provide a technical summary to indicate that the proposed storm drainage design for the ARC project complies with the requirements and provisions of the McLean District Zoning Bylaw.

The proposed ARC drainage system design addresses storm water runoff from three major drainage areas. These areas are (1) the "uphill" Zone 5 drainage area, mostly through Upham Bowl, and a portion of the access driveway area; and (2) the access driveway below Zone 3, through the Vehicular Access Easement portion of the Open Space area. For drainage areas (2) and (3), storm water is collected in a closed drainage system (with catch basins, manholes, pipes, and water quality treatment devices in accordance with Section 6A.5 (b) of the McLean Bylaw). These areas are depicted upon the accompanying site plan Figures 1 and 2.

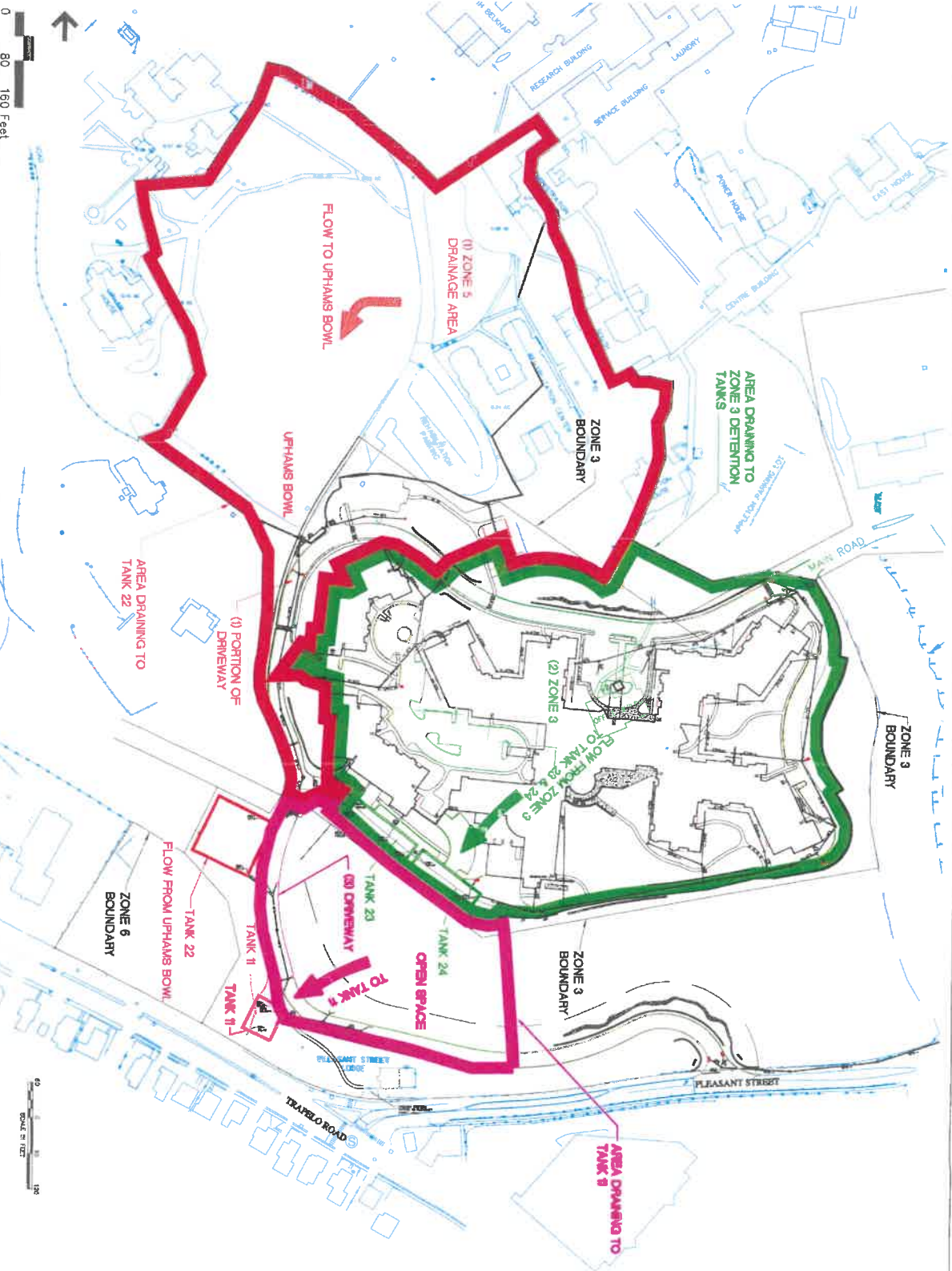
In order to manage storm water runoff as required by Section 6A.5 of the McLean Bylaw, four underground detention tanks (basins) are proposed to temporarily hold runoff and provide a controlled discharge of storm water over extended periods of time. Four tanks, rather than one or two very large tanks, are proposed in compliance with Zoning By-law Section 6A.5(d)'s policy against "accumulation and the need for larger structures." Detention tanks 23 and 24, located in Zone 3, handle the storm runoff from the Zone 3 development area, Drainage Area (2). Detention Tank 11, located adjacent to Trapelo Road at the location of the existing detention area, handles runoff from the access driveway within the Open Space, Drainage Area (3). Each of these detention tanks is designed to mitigate the peak storm water flows from the drainage area served and the zoning district where they are located. These tanks ensure that pre-development peak flow rates are maintained. These tanks, the drainage areas they serve, and the zoning districts in which they are located are shown on the accompanying Figure 1.

Mr. Thomas Czarnus, Director
Community Development Office
Town of Belmont
March 7, 2001

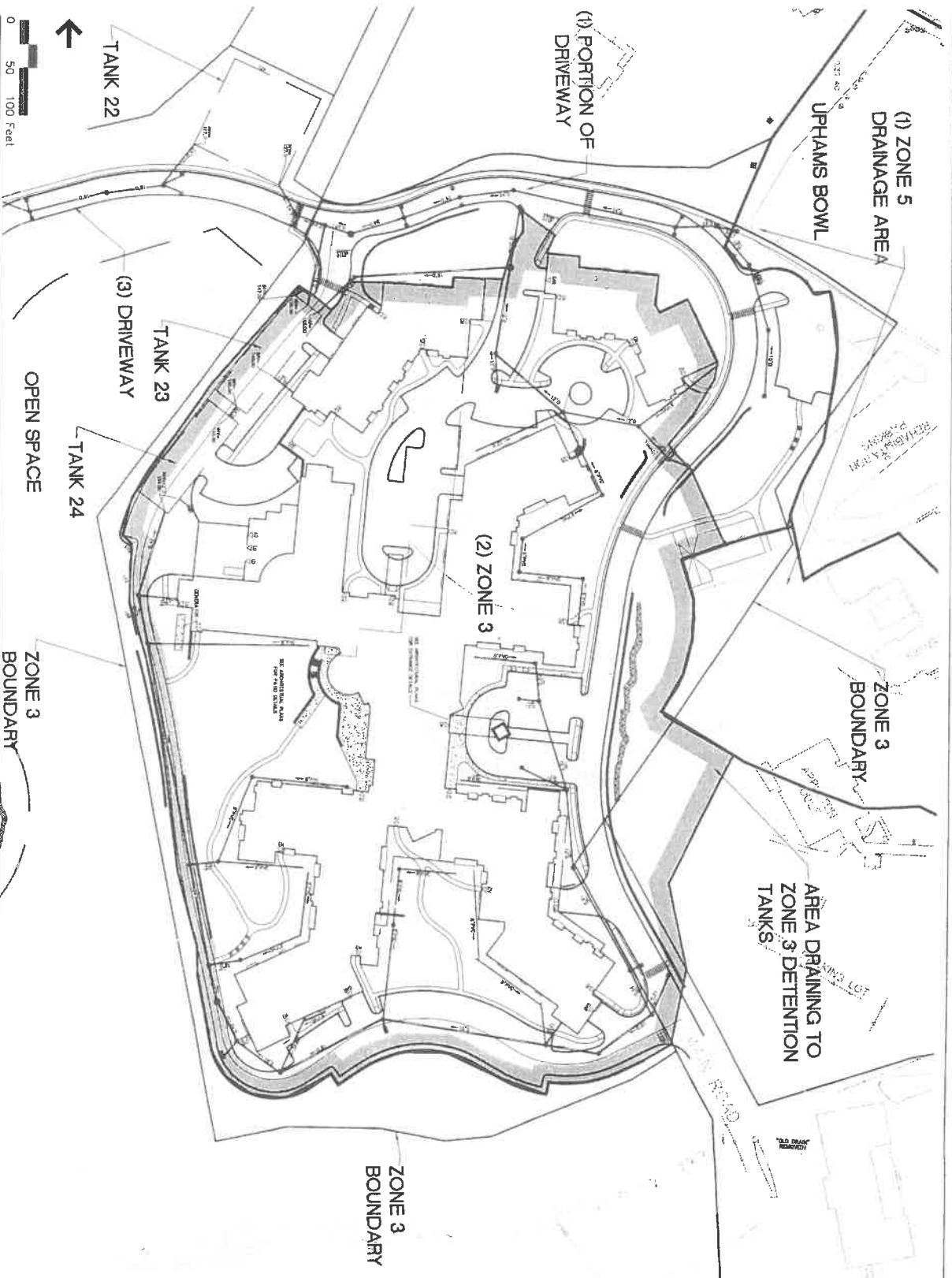
Detention Tank 22, located within the Open Space area southwesterly of Zone 3, collects the runoff from the "uphill" Zone 5, Upham Bowl area, and a portion of the proposed driveway running through Zone 3 and is designated Drainage Area (1) on Figure 1. Less than 2 % of the total volume of runoff from area (1), Tank 22 comes from the proposed increase in the impervious area from the driveway referenced above. As there is no new development currently proposed for Zone 5 or the Upham Bowl, and the new driveway replaces the existing driveway with an improved storm drainage system, no mitigation of increased storm water flows is required. However, existing runoff from this area reportedly has resulted in drainage problems on Trapelo Road. In response to requests from Tom Galzarus, Detention Tank 22 was proposed to attenuate the existing peak flows from Zone 5 through Upham Bowl to improve the drainage situation at Trapelo Road. We have been informed that Mr. Galzarus is of the opinion that Tank 22 is the appropriate engineering solution to this situation.

In summary, storm water runoff and drainage for the ARC Zone 3 development is handled by onsite Detention tanks 23 and 24 located within Zone 3. Detention Tank 11 handles runoff and drainage from the access drive in the Vehicular Access Easement portion of the Open Space, and Detention Tank 22 handles the runoff and drainage from the "uphill" McLean campus, (Zone 5) area and a portion of the proposed access drive. All have been designed to meet the requirements of Section 6A.5 of the McLean Bylaw. The overall drainage design for the Zone 3 development and the access drive provides a comprehensive system to control, treat and mitigate the storm water runoff from the proposed development which it serves, thereby improves existing drainage conditions at Trapelo Road.

The Site Plan Application of May 22, 2000, and the supplemental submission materials provided to the Town, depict in detail the proposed storm drainage system for the Zone 3 site and the access driveway. This system is shown on Site Plan Sheets C-6 and C-7, with design calculations contained in the Storm Water Management Report and a number of supplemental memoranda, calculations, and plans. These materials have been and continue to be reviewed as part of the ongoing Site Plan review process.



Vannise Hungen Brustin, Inc.
Figure 1
Arc Senior Living Project
Proposed Drainage Areas
Scale: 1"=160'
Date: 03/08/01



Vanasse Hangen Brustlin, Inc.
Figure 2
Arc Senior Living Project
Proposed Drainage Areas
Scale: 1"=100'
Date: 02/27/01

EXHIBIT “C”

February 28, 2022

Glenn R. Clancy
Community Development – Building Division
Director, Inspector of Buildings
19 Moore Street
Belmont, MA 02478

Re: McLean Hospital – Upham Bowl Storm Water Detention Improvements
Request for Zoning Enforcement

Dear Mr. Clancy,

This letter is in follow-up to our e-mail correspondence of 3 and 4 February 2022 regarding stormwater issues at the McLean Hospital Campus and our adjacent property at Woodlands II. As discussed, the Belmont Planning Board has taken a narrow view in their review of the site plan for the McLean District Zone 3 Overlay District with respect to the stormwater management. In particular, the consideration was limited to within Zone 3 exclusively and did not consider the documented deficiencies in the adjacent zones brought to their attention during the public comment period. Thus, the trustees of the Woodlands at Belmont Hill II Condominium Trust (“Woodlands II”) are herewith requesting that the Town consider the issuance of a Zoning Enforcement Order to McLean Hospital for failing to adequately design and install certain necessary stormwater measures required by the Zoning By-Law Section 6A, and subsequent Site Plan Approval, and for failure to comply with certain stormwater regulations required by the DEP Stormwater Management Standards.

ZONING BACKGROUND/ENTITLEMENT

The Town of Belmont Zoning By-Law Section **6A. – McLean District**, adopted by Special Town Meeting in 1999 established the framework for privatization and redevelopment of certain portions of the McLean Campus. Subsection “**6A.4 Design and Site Plan Review**” establishes requirements for site plan submittal and review relative to the Campus redevelopment and establishes the requirements relative thereto. Subsection “**6A.5 Stormwater Management Facilities**” similarly establishes standards and requirements relative to stormwater design and management for the various development zones of the Campus.

On 03 December 2001 after a lengthy submittal and approval process the ARC – Belmont Campus Senior Living Housing Development Project was approved by the Belmont Planning Board (ARC-Approval). While it has been argued by the Office of Community Development and the Planning Board that this Approval is applicable only to Zone 3 and was abandoned, and is no longer in force, we do not support that thinking and believe that making this conclusion is unsubstantiated. The submittal materials and subsequent review included components of the greater development outside of the limited footprint of Zone 3; specifically the submitted plans included, the design of Olmsted Drive including the intersection with Pleasant Street, and the section of Olmsted Drive within Zone 4, and all of the related

infrastructure within and adjacent to the private roadway; including but not limited to, walkways, stormwater drainage, domestic water distribution, electrical power, natural gas distribution, roadway lighting, communication, and sewer services, all of which are required elements of the Site Plan Approval described in the Zoning By-Law. The submittal also included graphic design (drawings) as well as hydraulic calculations demonstrating conformance with the Massachusetts Stormwater Handbook Volume 1.

In a recent letter addressed to Mr. Robert Eckert, 68 South Cottage Road, Belmont, MA 02478 dated February 11, 2022 you stated;

"The American Retirement Corporation Site Plan was never acted on. The project was never built and therefore any conditions associated with the project are no longer valid."

Having conducted extensive research including multiple "requests for public information", we are unaware of any other submitted Site Plan Review that address the design and construction of Olmsted Drive, its infrastructure and more specifically its stormwater drainage system. Therefore, our opinion is that the ARC – Site Plan Approval dated 03 December 2001 is the only relevant Planning Board approval that could grant the authority to construct Olmsted Drive and its related infrastructure which includes the stormwater management system. As such all conditions of the approval were in force at the time Olmsted Drive was constructed and remain in force today. As far as we are aware there are no 'self-termination' provisions within the Zoning By-Law, or expiration periods established by the Site Plan Review. Based on the preceding information we believe the Hospital as Owner of the land has full benefit of the original approval as granted, as well as conformance responsibility related thereto.

UPHAM BOWL – STORMWATER MANAGEMENT REQUIREMENT

In the memorandum from Sharon Raymond dated September 4, 2001, of Fay, Spofford & Thorndike, the Engineering firm hired by the Town of Belmont to conduct the stormwater management peer review, to Kenneth J. Buckland, AICP, of The Cecil Group the Town's Technical Consultant Review Team Leader, Exhibit B of the ARC-Approval, states:

"The stormwater management system for the ARC site and access driveway incorporates a proposed modification of the Upham Bowl area by the Hospital to provide detention of stormwater runoff from Hospital property. The proposed use of the Upham Bowl for detention will help to alleviate an existing problem caused by uncontrolled runoff from the Hospital property at the intersection of Trapelo Road and Pleasant Street. Although not part of Zone 3, the Upham Bowl detention area is an integral part of the overall stormwater management system and the construction of these facilities need to be implement concurrent or prior to the access road. The design of Upham Bowl detention basin is complete with the exception of a detailed final design drawing that should be provided prior to construction."

On September 05, 2001, Kenneth J. Buckland, AICP the Team Leader for The Cecil Group, the Town's Technical Consultant Team, conveyed their Final Report with draft recommendations to Mr. Timothy Higgins, Town of Belmont, Office of Community Development the following was conveyed in its draft findings Section f § (d) (misabeled c):

"The stormwater design is found to be acceptable according to current engineering practice. The stormwater management plan is predicated on construction of a management system in and for the McLean Hospital subdistrict. Based on the consultants team review, it is recommended that the Planning Board find the design acceptable to this standard."

The 03 December 2001 ACR -Approval memorializes the requirement from Fay, Spofford & Thorndike's Peer Review memorandum of September 04, 2001, and the correspondence from the Cecil Group in its findings, Section f § (d):

"There was coordination in the drainage designs between development Zones to keep storm water in its respective watershed. However, each Zone generally has its own, independent drainage system and large structures were avoided wherever possible and practical. The plans were modified in response to concerns expressed with the proposed drainage from the Upham Bowl area. (The Upham Bowl drainage will be addressed in a separate Agreement between the Town and McLean.) The Board's consulting team stated that this requirement has been adhered to and recommended approval of the storm water management system (Exhibit "B")."

Based on the preceding referenced documents we believe there is a clear zoning requirement for the construction of a Stormwater Detention System in Upham Bowl and that its construction was required to be precedent to or concurrent with the construction of Olmsted Drive. We also believe that without this system installed as anticipated, the post-development peak offsite stormwater runoff will exceed the pre-development values and violate DEP design standards.

Construction of Olmsted Drive – 2005-2006 Correspondence

On August 10, 2005, then again October 7, 2005, Vanasse Hangen Brustlin, Inc. (VHB) representing McLean Hospital sent you letters informing you that McLean Hospital was "moving ahead" with plans to construct Olmsted Drive and related infrastructure (attachments A & B). The assertion and statement in the letters are that the work to construct Olmsted Drive was proceeding in compliance with the Zoning By-Law (6A), and Site Plan Approval:

"Design & Site Plan Approval for the ARC Belmont Campus Senior Living Housing Development @ McLean District, Belmont, MA", as granted by the Belmont Planning Board and filed on December 3, 2001, with regards to Conditions, as these might apply to the proposed construction of Olmsted Drive."

Additionally on October 07, 2005, VHB submitted a memorandum to the Office of Community Development with hydraulic calculations (Attachment C), the conveying memo states that the temporary condition being created by the construction of Olmsted Drive would only increase impervious surface by .57 acres and proposed temporary measures to address the interim condition additional stormwater.

After the submittal of the above referenced letters VHB proceeded with development of construction documents for the roadway work. The Drawings titled "Construction Documents" with a revision date of January 18, 2006, appear to be the plans that Olmsted Drive was permitted under through the Office of Community Development. Drawing C-5 the Utility Plan indicates the Stormwater and other utilities, CB

B4 is indicated in the top right-hand corner of the drawing which contains the note "SEE UPHAMS BOWL DETENTION BASIS PLANS BY OTHERS". (Attachment D).

Non-Compliance / Potential Violations of Site Plan Approval Conditions

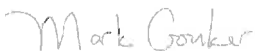
We believe the following items required by the Olmsted Drive Construction Documents and/or the Site Plan Approval or the By-Law itself are not in compliance:

- On Drawing C-4 (Attachment E) the area highlighted as "Remove Existing Pavement Loam & Seed", also the area indicated as "Truck Tire Washing Facility", indicates the removal of the previously existing Central Street and parking area from the MRI Facility to Olmsted Drive and a new sidewalk alignment. The removal of these two sections of previously installed impermeable surfaces were necessary support work to arrive at the .57 Acres of new impervious surface which the interim stormwater design calculations were based (Attachment C). This contributes to an increase in the post-development peak stormwater discharge rate, a violation of the Massachusetts Stormwater Management Standards, and a violation of the Site Plan Approval Conditions.
- On the attached blow-up of Drawing C-5 (Attachment D) Catch Basin CB-B4 is indicated adjacent to an area designated by the note "SEE UPHAMS BOWL DETENTION BASIS PLANS BY OTHERS", the plan clearly shows contours indicating a detention basin with an approximate six to eight foot depth, which would allow for a significant amount of stormwater detention, contrary to the zoning approvals and the design intent on the Construction Documents catch basin CB-B4 was installed at an existing low point in in Upham Bowl. This contributes to an increase in the post-development peak stormwater discharge rate, and most likely exceeds the capacity of Stormwater Structure 11 which design relies on the upgradient detention of the Upham Bowl discharge to address Zone 5 stormwater. As far as we are aware the Town has not been able to produce any documents indicating that the Upham Bowl stormwater receives any treatment to meet Stormwater Management Standard 4, for removal of Total Suspended Solids prior to discharging into the Town's municipal stormwater system. Along with being violations of the DEP standards these oversights are violations of the Site Plan Approval conditions related to Stormwater Management within each Zone.
- Also, on Drawing C-5 the temporary outfall, FES TEMP4 was not constructed in accordance with the Construction Documents, this section of the stormwater system collects stormwater from upper Olmsted Drive in Zone 4, and without detention conveys the discharge into Zone 3, which is a violation of the By-Law requiring all stormwater being treated within each specific development zone, it also increases post-development flow to the east. This outfall was submitted and approved as a temporary measure however in the currently pending Zone 3 Site Plan Approval this small system is being treated from an engineering standpoint as a pre-existing condition and detention of this outfall is not reflected in the current design.

In summary we are requesting that the Town follow-up on the requirement to have McLean Hospital complete the following (a) design and construct the Upham Bowl Stormwater Detention Improvements, including providing current hydraulic calculations of all flows into Upham Bowl, (inclusive of the outfall adjacent to the Chapel), (b) to complete an engineering review of the Olmsted Drive Stormwater Management System, which should include addressing all of the current 'as-built' connections to the

pipingsystem including but not limited to, (i) Meadows Lane, (ii) South Cottage Road, (iii) Waverly Woods, (iv) Lower Olmsted Drive, and (v) the currently anticipated Zone 3 discharge flows; the objective being to confirm that Structure 11 is adequate to effectively manage all of the flow it receives and that the necessary detention and treatment standard is being met. (c) to remove the paved area between the Hospital's MRI Facility and Olmsted Drive and Construct the walkway consistent with the approved Construction Plans and hydraulic calculations (area to be loamed and seeded), and (d) that the Hospital propose a methodology or condition to address either now or in the future how the Zone 4 temporary discharge will be brought into Zoning conformance.

We feel strongly that construction of the Upham Bowl Detention Improvements are a requirement of the Zoning By-Law, the REA, and the Massachusetts Stormwater Management Standards, which are all applicable. We have not been able to find any evidence that the Town ever received full engineering plans and hydraulic calculations supporting the hydraulic connection of Upham Bowl to the Olmsted Drive stormwater management system. We believe that the delays in the development schedules and the shifting of project phasing has allowed the construction of the Upham Bowl Stormwater Detention Improvements to effectively 'slip through the cracks.' Further, since the Planning Board has conducted a Zone 3 centric site plan review for the current proposed development, a zoning enforcement path is now the appropriate recourse for resolving this issue. Finally, we would like this issue resolved prior to the Construction of Zone 3 proceeding, after which trying to figure out who may have caused what stormwater events or problems will be difficult to unravel and could ultimately land on the financial shoulders of the Owners of Condominiums in Zone 2 & 3 and Waverly Woods.



Mark Gouker
Chair, Board of Trustees
Woodlands at Belmont Hill, II

cc: Scott Rauch, President, McLean Hospital
Lori Etringer, Chief Development Officer, McLean Hospital
Belmont Select Board
Belmont Planning Board
Woodlands at Belmont Hill, II Board of Trustees
John Gahan, Sullivan & Worcester LLP

ATTACHMENT A

August 10, 2005

Ref: 08145.01

Mr. Glenn Clancy
Director, Office of Community Development
Town of Belmont
Town Hall Annex
Belmont, Massachusetts 02478-0900

Re: Proposed Olmsted Drive
Design Plans
McLean Hospital
Belmont, MA

Dear Glenn,

As we discussed at our meeting a few weeks ago, McLean Hospital is moving ahead with the design and construction of Olmsted Drive from its intersection with Pleasant Street (driveway station 0+00 on the approved Site Plans) through Zone 3 and terminating within the "panhandle" portion of Zone 4 (driveway station 24+82 from the Site Plans). At this point in time, there are no plans to undertake any further construction for either the proposed Zone 3 or 4 development, except for the infrastructure associated with Olmsted Drive and the utilities within and the grading needed adjacent to the driveway. An exhibit plan that depicts the proposed driveway and associated work is enclosed for your reference.

We have reviewed the "Design & Site Plan Approval for the ARC Belmont Campus Senior Living Housing Development @ McLean District, Belmont, MA", as granted by the Belmont Planning Board and filed on December 3, 2001, with regards to Conditions, as these might apply to the proposed construction of Olmsted Drive.

The paragraphs below present a summary of how it is proposed that the construction of Olmsted Drive will address the specific Approval Conditions of the Design and Site Plan Approval

Glenn Clancy
Project No.: 08145.01
August 10, 2005
Page 2

1. **Performance Guarantee:** A performance guarantee will be provided to the Town for review and approval by the OCD prior to commencement of construction to cover Olmsted Drive and the infrastructure, utilities, landscaping, tree protection and erosion controls, directly associated with the driveway construction.
2. **Legal Requirements:** These have been completed.
3. **Project procedures:** The Construction Management Plan (Exhibit C of the Site Plan Approval) will be adhered to throughout the construction of Olmsted Drive. As these pertain to the work area for the driveway, the construction of Olmsted Drive will also comply with the Temporary Construction Fencing (Exhibit F), the Tree Evaluation and Protection Plan (Exhibit S), and the Blasting requirements of the Belmont Fire Department (Exhibit R) are adhered to during construction. Lastly, written reports detailing the status and progress of construction will be submitted to the Planning Board at least every three months.
4. **Water:** The 12-inch diameter water main loop within Olmsted Drive will be installed during the proposed driveway construction. The water main will be capped at each end (i.e. at the Zone 2 and Zone 4 boundaries) until the portions of the loop within those zones are completed and connected. The water main connection from Pleasant Street up Olmsted Drive will be completed as part of the construction of Olmsted Drive.
5. **Wastewater:** As there are no new sewer flows to be generated by building Olmsted Drive, no sewer mitigation is required at this time. However, the portion of the proposed sanitary sewer located within Olmsted Drive will be constructed with stubs, capped to prevent inflow of groundwater, to allow for connections into the new sewer for future building development without disrupting the driveway.
6. **Storm Water Management:** The construction erosion and sedimentation controls to be utilized for the construction of Olmsted Drive will meet DEP Stormwater Management Standards and an EPA NPDES permit application will be filed for this work. The construction of Olmsted Drive will comply, as is appropriate, with the requirements of Exhibits I and H of the Site Plan approval, which deal with the Stormwater Pollution Prevention Plan and permanent maintenance of the drainage system. Specifically, erosion and sedimentation controls will be limited to those areas adjacent to and down slope from the work limits for the roadway. Finally, as noted in the approval, there will be weekly inspections (at a minimum) and periodic reporting of the status of erosion controls to the Town.

FEES - RETAINING WALL
& ROADWAY

Glenn Clancy
Project No.: 08145.01
August 10, 2005
Page 3

Please note that, to avoid unnecessary disturbance to the vegetated areas of the site outside of Olmsted Drive, temporary detention facilities will be constructed in currently open areas of the site to maintain the design stormwater runoff rates as approved in the Site Plan approval. Information demonstrating this compliance with the approval will be provided as part of the Driveway Building Permit Application.

- a. **Access/Egress:** Olmsted Drive will be constructed in accordance with the approved plans to at least the pavement base course. Portions of the driveway design not completed at this time will include final landscaping, installation of roadway lighting, final pavement top course, final pavement markings, and installation of access controls. Access to Olmsted Drive will be controlled by the installation of emergency access gates at the intersection with Pleasant Street and to Zones 2 and 5.
7. **Landscaping:** As noted under Item 3 above, the construction of Olmsted Drive will be undertaken in compliance with Design Review Agreement, Temporary Construction Fencing, and Tree Evaluation and Preservation Plan, as these apply to the work area associated with the driveway.
8. **Dimensional Requirements:** Not applicable to Olmsted Drive.
9. **Chapel Rehabilitation:** Not applicable to Olmsted Drive.
10. **Site Signage:** Not applicable to Olmsted Drive.
11. **Compliance with Belmont Noise Bylaw:** The construction of Olmsted Drive will comply with the applicable portions of the Belmont Noise Bylaw.
12. **District Project Manager:** This will be undertaken in accord with the CCIA agreement.
13. **Material Safety Data Sheets:** The District Project Manager will address this issue before and during construction.
14. **Metes and Bounds Plan record:** This plan will be recorded prior to the commencement of construction.
15. **Construction Level Drawings:** The plans and other materials being prepared by VHB for submittal to the Town will comply with this requirement.

Glenn Clancy
Project No.: 08145.01
August 10, 2005
Page 4

16. **Modifications from Approved Plans and documents:** We believe that the work to be undertaken for the construction of Olmsted Drive is consistent with the Site Plan approval, and no modifications are needed to undertake this work.

It should be noted that the design of the Olmsted Drive-Pleasant Street intersection is being coordinated with the design of the Town's Pleasant Street Improvements, as specific details are finalized. Prior to commencement of construction, the final Pleasant Street plans will be reviewed relative to the Olmsted Drive plans to insure the intersection designs are coordinated with the latest design information.

Should you desire more information or have any questions, please feel free to contact me at your convenience.

Very truly yours,

VANASSE HANGEN BRUSTLIN, INC.

Frank DiPietro, P.E.
Project Manager
Land Development

Cc: Steve Kidder, Hemenway & Barnes
Michele Gougeon, McLean Hospital

ATTACHMENT B

Transportation
Land Development
Environmental
Services



imagination | innovation | energy Creating results for our clients and benefits for our communities

October 7, 2005

Vanasse Hangen Brustlin, Inc.

Ref: 08145.01

Mr. Glenn Clancy
Director, Office of Community Development
Town of Belmont
Town Hall Annex
Belmont, Massachusetts 02478-0900

Re: Proposed Olmsted Drive
Design Plans
McLean Hospital
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The paragraphs below present a summary of how it is proposed that the construction of Olmsted Drive will address the specific Approval Conditions of the Design and Site Plan Approval

101 Walnut Street
Post Office Box 9151
Watertown, Massachusetts 02471-9151
617.924.1770 • FAX 617.924.2286
email: info@vhb.com
www.vhb.com

1. **Performance Guarantee:** A performance guarantee will be provided to the Town for review and approval by the OCD prior to commencement of construction to cover Olmsted Drive and the infrastructure, utilities, landscaping, tree protection and erosion controls, directly associated with the driveway construction.
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Please note that, to avoid unnecessary disturbance to the vegetated areas of the site outside of Olmsted Drive, temporary detention facilities will be constructed in currently open areas of the site to maintain the design stormwater runoff rates as approved in the Site Plan approval. Information demonstrating this compliance with the approval will be provided as part of the Driveway Building Permit Application.

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15. **Construction Level Drawings:** The plans and other materials being prepared by VHB for submittal to the Town will comply with this requirement.
16. **Modifications from Approved Plans and documents:** We believe that the work to be undertaken for the construction of Olmsted Drive is consistent with the Site Plan approval, and no modifications are needed to undertake this work.



Glenn Clancy
Project No.: 08145.01
October 7, 2005
Page 4

It should be noted that the design of the Olmsted Drive-Pleasant Street intersection is being coordinated with the design of the Town's Pleasant Street Improvements, as specific details are finalized. Prior to commencement of construction, the final Pleasant Street plans will be reviewed relative to the Olmsted Drive plans to insure the intersection designs are coordinated with the latest design information.

Should you desire more information or have any questions, please feel free to contact me at your convenience.

Very truly yours,

VANASSE HANGEN BRUSTLIN, INC.



Frank DiPietro, P.E.
Project Manager
Land Development

Cc: Steve Kidder, Hemenway & Barnes
Michele Gougeon, McLean Hospital



C

ATTACHMENT C

Transportation
Land Development
Environmental
Services



Vanasse Hangen Brustlin, Inc.

101 Walnut Street
P. O. Box 9151
Watertown, MA 02471-9151
617 924 1770
FAX 617 924 2286

Memorandum

To: Glenn Clancy
Director, Office of Community
Development
Belmont, Massachusetts

Date: October 7, 2005

Project No.: 08145.01

From: Weston Ruthven, EIT

Re: McLean Hospital - Olmsted Drive
Construction (Contract I)
Interim Drainage Design

The following memorandum describes the design for the drainage system that is to be constructed as part of Olmsted Drive (Contract I). Portions of the proposed drainage system, as shown on the Olmsted Drive Construction - Contract I, Site Plans, are provided for the interim, until the full build out of the ARC site (the Site).

Previously shown on the plans was a large subsurface detention structure, which received runoff from a small portion of the Olmsted Drive roadway, and the entire roof and parking areas associated with the ARC development. It was determined that since Contract I only involves construction of the roadway, it would not be necessary to construct the entire Site drainage system at this time. The majority of the Site area will remain undeveloped at this time. Surface basins and grading are shown on the plans to receive and mitigate runoff during the interim condition.

It was assumed that the area to be analyzed for the interim condition is the additional impervious area created by the construction of the roadway. The existing "Office Building Parking Lot" is to be removed under this contract, creating additional impervious area. This paved area was subtracted from the additional paved area to balance overall onsite impervious surfaces and maintain existing runoff conditions. As a result, 0.57 acres of good grass cover under present conditions will be paved under this Contract. This area of increased pavement will be mitigated through the creation of a new, onsite detention basin.

The detention basin, approximately 20 feet x 30 feet, 5 feet deep with 1 to 1 side slopes and a 6-inch outlet is required to mitigate peak discharge. Runoff from paved areas which are collected by catch basins, but do not discharge to the detention basin is conveyed to riprap swales, which will act as level spreader type spillways to dissipate the flow overland. This basin will remain in place throughout the interim build condition.

A HydroCAD model, using TR-20 methodology, was developed to evaluate the existing and proposed drainage conditions. The results of the analyses indicate that there is no increase in peak discharge rates between the pre- and post-development conditions. See table below.

Peak Discharge Rates (cfs)

	1-year	2-year	10-year	100-year
Existing	0.06	0.21	0.77	1.91
Proposed	0.05	0.21	0.86	0.91

* expressed in cubic feet per second

Future contracts will remove the interim structures installed under Contract I and a complete closed pipe drainage system and a subsurface detention tank will be constructed, as previously approved.



EXISTING
CONDITIONS



PROPOSED
CONDITIONS

Detention Basin
(Contract I)



Subcatchment EX: EXISTING CONDITIONS

Runoff = 0.08 cfs @ 12.06 hrs. Volume= 0.011 af, Depth> 0.22"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 1-YEAR Rainfall=2.70"

Area (ac)	CN	Description		
0.570	61	>75% Grass cover, Good, HSG B		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0				Direct Entry, 5

Subcatchment PR: PROPOSED CONDITIONS

Runoff = 0.55 cfs @ 12.09 hrs. Volume= 0.038 af, Depth> 0.79"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 1-YEAR Rainfall=2.70"

Area (ac)	CN	Description		
0.240	98	Paved parking & roofs		
0.330	61	>75% Grass cover, Good HSG B		
0.570	77	Weighted Average		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0				Direct Entry,

Pond DET: Detention Basin (Contract I)

Inflow Area = 0.570 ac, Inflow Depth > 0.79" for 1-YEAR event
 Inflow = 0.55 cfs @ 12.09 hrs. Volume= 0.038 af
 Outflow = 0.05 cfs @ 13.48 hrs. Volume= 0.017 af, Atten= 90%, Lag= 83.6 min
 Primary = 0.05 cfs @ 13.48 hrs. Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 179.38' @ 13.48 hrs Surf Area= 0.017 ac Storage= 0.021 af
 Plug-Flow detention time= 206.7 min calculated for 0.017 af (46% of inflow)
 Center-of-Mass del. time= 114.3 min (932.2 - 817.9)

Volume	Invert	Avail. Storage	Storage Description
#1	178.00'	0.101 af	20.00'W x 30.00'L x 5.00'H Prismatoid Z=1.0
Device	Routing	Invert	Outlet Devices
#1	Primary	179.25'	6.0' x 100.0' long Culvert RCP, groove and projecting, Ks= 0.200 Outlet Invert= 178.00' S= 0.0125 % Cc= 0.900 n= 0.013

08145PHASEI

Prepared by Vanasse Hangen Brustlin, Inc.

HydroCAD® 7.10 s/n 001234 © 2005 HydroCAD Software Solutions LLC

CONTRACT I Detention Basin Sizing
Type III 24-hr 1-YEAR Rainfall=2.70"
Page 3

1/27/2005

Primary Outflow Max=0.05 cfs @ 13.48 hrs HW=179.38' (Free Discharge)
1=Culvert (Barrel Controls 0.05 cfs @ 1.9 fps)

Subcatchment EX: EXISTING CONDITIONS

Runoff = 0.21 cfs @ 12.04 hrs, Volume= 0.019 af, Depth> 0.39"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-YEAR Rainfall=3.20"

Area (ac)	CN	Description		
0.570	61	>75% Grass cover, Good, HSG B		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0				Direct Entry, 5

Subcatchment PR: PROPOSED CONDITIONS

Runoff = 0.79 cfs @ 12.08 hrs, Volume= 0.053 af, Depth> 1.11"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-YEAR Rainfall=3.20"

Area (ac)	CN	Description		
0.240	98	Paved parking & roofs		
0.330	61	>75% Grass cover, Good HSG B		
0.570	77	Weighted Average		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0				Direct Entry,

Pond DET: Detention Basin (Contract I)

Inflow Area = 0.570 ac, Inflow Depth > 1.11" for 2-YEAR event
 Inflow = 0.79 cfs @ 12.08 hrs, Volume= 0.053 af
 Outflow = 0.21 cfs @ 12.49 hrs, Volume= 0.033 af, Atten= 73%, Lag= 24.4 min
 Primary = 0.21 cfs @ 12.49 hrs, Volume= 0.033 af
 Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 179.52' @ 12.49 hrs Surf Area= 0.017 ac Storage= 0.024 af
 Plug-Flow detention time= 149.0 min calculated for 0.033 af (62% of inflow)
 Center-of-Mass det. time= 69.7 min (89.0 - 810.3)

Volume	Invert	Avail. Storage	Storage Description
#1	178.00'	0.101 af	20.00' W x 30.00' L x 5.00' H Prismatoid Z=1.0
Device	Routing	Invert	Outlet Devices
#1	Primary	178.25'	6.0' x 100.0' long Culvert RCP, groove and projecting, K= 0.200 Outlet Invert= 178.00' S= 0.0125' C= 0.900 n= 0.013

Primary Outflow Max=0.21 cfs @ 12.49 hrs HW=179.52' (Free Discharge)
1=Culvert (Barrel Controls 0.21 cfs @ 2.8 fps)

Subcatchment EX: EXISTING CONDITIONS

Runoff = 0.77 cfs @ 12.01 hrs. Volume= 0.049 af, Depth> 1.03"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-YEAR Rainfall=4.60"

Area (ac)	CN	Description			
0.570	61	>75% Grass cover, Good, HSG B			
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
0.0					Direct Entry, 5

Subcatchment PR: PROPOSED CONDITIONS

Runoff = 1.53 cfs @ 12.08 hrs. Volume= 0.101 af, Depth> 2.13"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-YEAR Rainfall=4.60"

Area (ac)	CN	Description			
0.240	98	Paved parking & roofs			
0.330	61	>75% Grass cover, Good, HSG B			
0.570	77	Weighted Average			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Pond DET: Detention Basin (Contract I)

Inflow Area = 0.570 ac, Inflow Depth > 2.13" for 10-YEAR event
 Inflow = 1.53 cfs @ 12.08 hrs. Volume= 0.101 af
 Outflow = 0.66 cfs @ 12.30 hrs. Volume= 0.080 af, Att= 57%, Lag= 13.2 min
 Primary = 0.66 cfs @ 12.30 hrs. Volume= 0.080 af
 Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 180.11' @ 12.30 hrs Surt Area= 0.019 ac Storage= 0.034 af
 Plug-Flow detention time= 91.4 min calculated for 0.080 af (79% of inflow)
 Center-of-Mass del. time= 38.0 min (833.7 - 795.7)

Volume	Invert	Avail. Storage	Storage Description
#1	178.00'	0.101 af	20.00'W x 30.00'L x 5.00'H Prismatoid Z=1.0
Device	Routing	Invert	Outlet Devices
#1	Primary	179.25'	6.0' x 100.0' long Culvert RCP, groove end projecting, Ke= 0.200 Outlet Invert= 178.00' S= 0.0125' Cc= 0.900 n= 0.013

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CONTRACT I Detention Basin Sizing
Type III 24-hr 10-YEAR Rainfall=4.60"
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Primary Outflow Max=0.66 cfs @ 12.30 hrs HW=180.1' (Free Discharge)
1-Culvert (Barrel Controls 0.66 cfs @ 3.4 fps)

Subcatchment EX: EXISTING CONDITIONS

Runoff = 1.91 cfs @ 12.01 hrs, Volume= 0.112 af, Depth> 2.35"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-YEAR Rainfall=6.80"

Area (ac)	CN	Description		
0.570	61	>75% Grass cover, Good, HSG B		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0				Direct Entry, 5

Subcatchment PR: PROPOSED CONDITIONS

Runoff = 2.79 cfs @ 12.08 hrs, Volume= 0.188 af, Depth> 3.92"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-YEAR Rainfall=6.80"

Area (ac)	CN	Description		
0.240	98	Paved parking & roofs		
0.330	61	>75% Grass cover, Good, HSG B		
0.570	77	Weighted Average		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0				Direct Entry

Pond DET: Detention Basin (Contract I)

Inflow Area = 0.570 ac, Inflow Depth > 3.92" for 100-YEAR event
 Inflow = 2.78 cfs @ 12.08 hrs, Volume= 0.188 af
 Outflow = 0.91 cfs @ 12.39 hrs, Volume= 0.165 af, Atten= 88%, Lag= 18.7 min
 Primary = 0.91 cfs @ 12.39 hrs, Volume= 0.165 af
 Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 181.51' @ 12.39 hrs, Surf Area= 0.023 ac, Storage= 0.064 af
 Plug-Flow detention time= 72.5 min calculated for 0.165 af (98% of inflow)
 Center-of-Mass det. time= 37.5 min (819.2 - 781.7)

Volume	Invert	Avail. Storage	Storage Description
#1	178.00'	0.101 af	20.00'W x 30.00'L x 5.00'H Prismatoid Z=1.0
Device	Routing	Invert	Outlet Devices
#1	Primary	179.25'	6.0" x 100.0' long Culvert RCP, groove end projecting, Ke= 0.200 Outlet Invert= 178.00' S= 0.0125' Cc= 0.900 n= 0.013

0814SPHASEI

Prepared by Vanasse Hangen Brustlin, Inc.

CONTRACT I Detention Basin Sizing
Type III 24-hr 100-YEAR Rainfall=6.80"

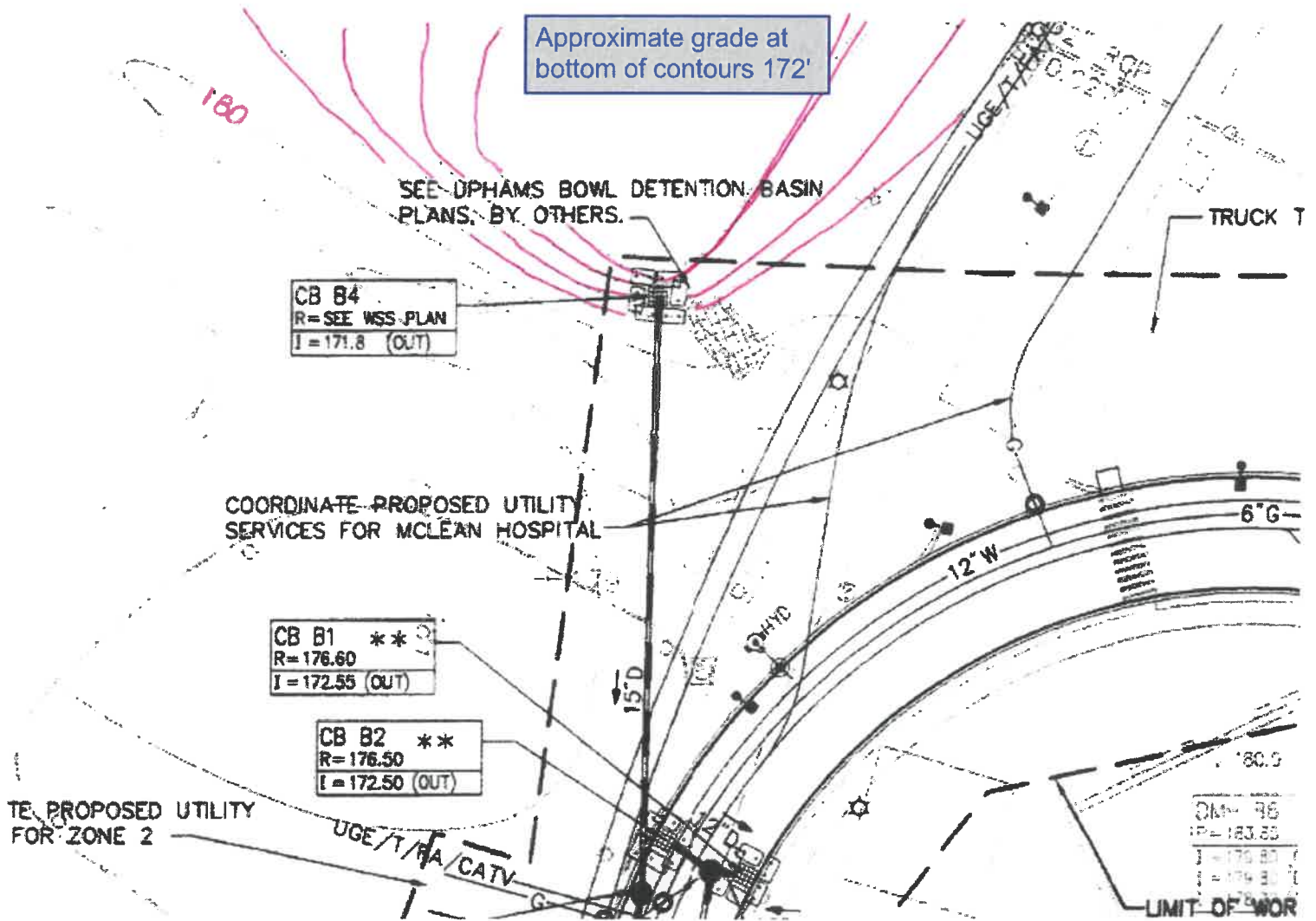
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10/7/2005

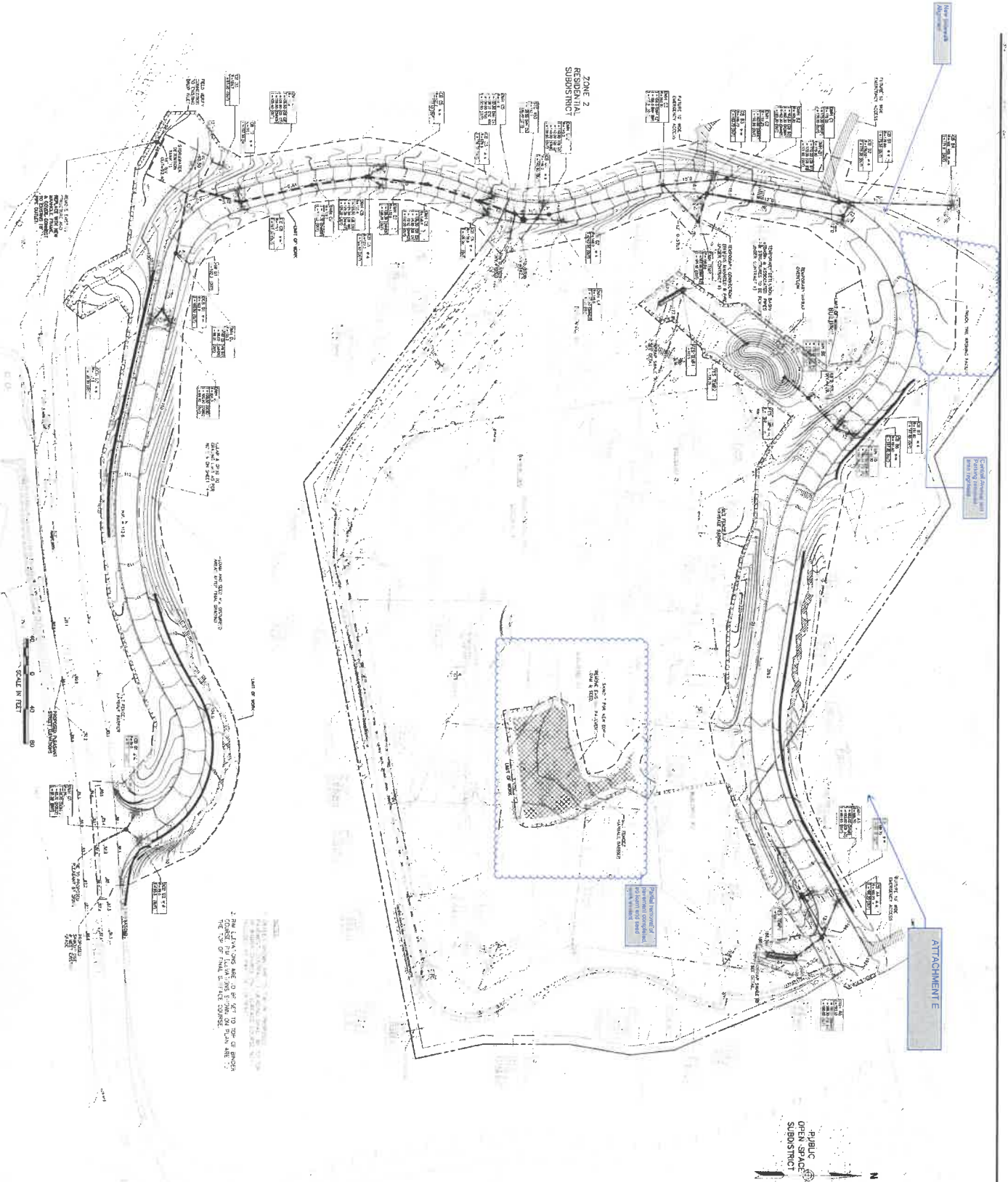
Primary Outflow Max=0.91 cfs @ 12.39 hrs HW=181.51' (Free Discharge)
1=Outlet (Barrel Controls 0.91 cfs @ 4.8 fps)

Attachment D

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Zone 2
Residential
Subdistrict



WHB
Wentworth-Hillier-Brown
100 Main Street, 20th Floor
Boston, Massachusetts 02111
617-552-1234

McLean Hospital
Crested Drive Construction
Belmont, Massachusetts

PUBLIC
OPEN SPACE
SUBDISTRICT

EROSION CONTROL NOTES:
1. ALL NEW WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE EROSION CONTROL MANUAL, 2ND EDITION, 1995, PUBLISHED BY THE NATIONAL SEDIMENTATION ENGINEERING SOCIETY, INC., 1000 N. 17TH AVENUE, SUITE 100, DENVER, CO 80202.
2. EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
3. EROSION CONTROL MEASURES SHALL BE DESIGNED TO PREVENT SOIL EROSION AND TO STABILIZE EXPOSED SOILS.
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10. EROSION CONTROL MEASURES SHALL BE DESIGNED TO PREVENT SOIL EROSION AND TO STABILIZE EXPOSED SOILS.

NO.	DESCRIPTION	DATE	BY	CHECKED
1	REVISION	10/1/00	JMB	JMB
2	REVISION	10/1/00	JMB	JMB
3	REVISION	10/1/00	JMB	JMB
4	REVISION	10/1/00	JMB	JMB
5	REVISION	10/1/00	JMB	JMB
6	REVISION	10/1/00	JMB	JMB
7	REVISION	10/1/00	JMB	JMB
8	REVISION	10/1/00	JMB	JMB
9	REVISION	10/1/00	JMB	JMB
10	REVISION	10/1/00	JMB	JMB



C-4
3 of 11
10/1/00

RE: SE

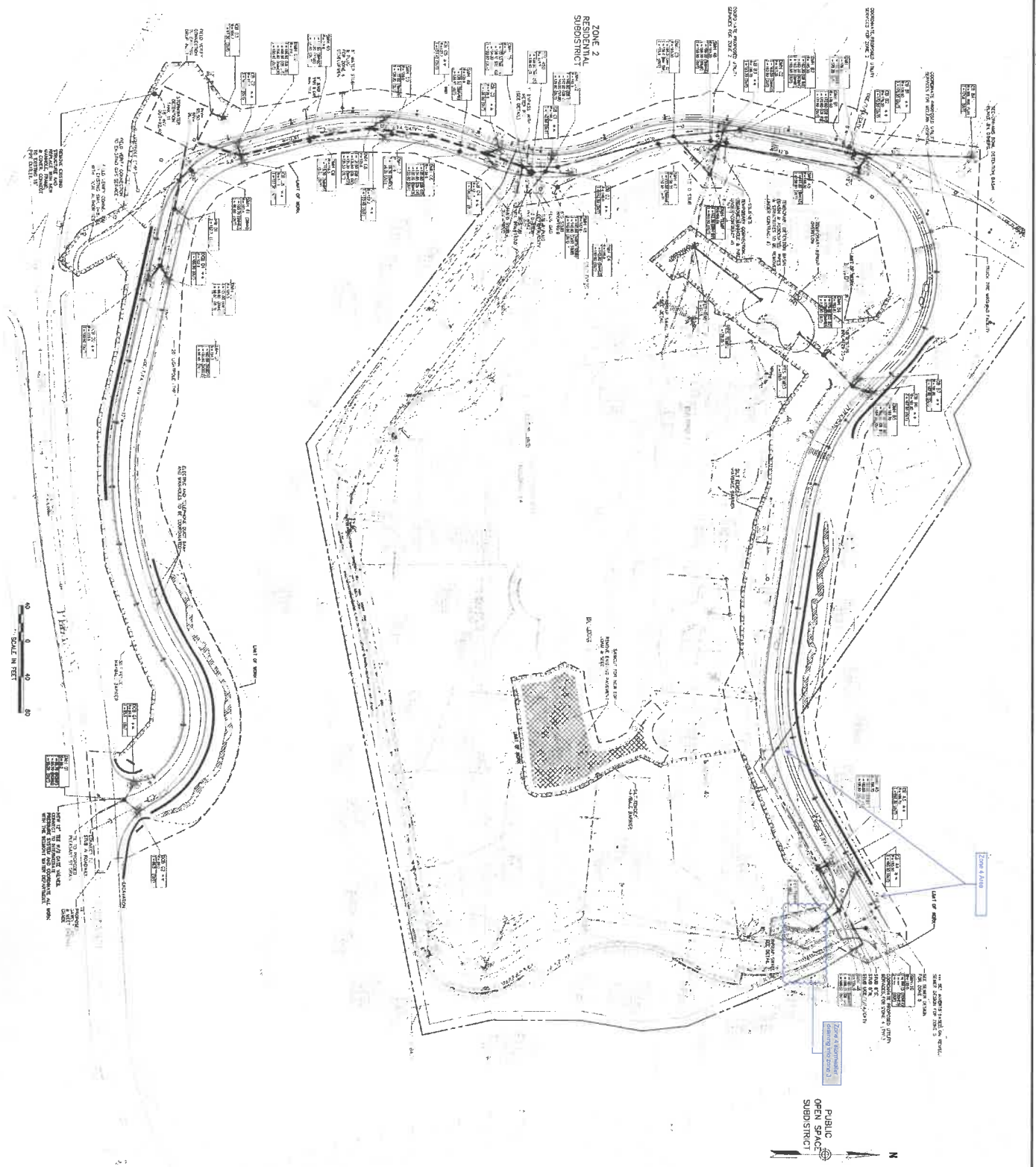


Vermont Hanger Brothers, Inc.

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NOTES

1. ALL DIMENSIONS ARE IN FEET AND INCHES.
2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.



Utility Plan

C-5

