ZONING PERMIT APPLICATION
STORRS CENTER PHASE 1A/1B

STORRS CENTER ALLIANCE, LLC
EDUCATION REALTY TRUST, INC.

January 13, 2011

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ZONING PERMIT APPLICATION
MANSFIELD PLANNING & ZONING COMMISSION

(See Article XI.C of the Zoning Regulations for applicability and permit requirements)

APPLICANT/OWNER SECTION **PERMIT #** _____

Complete this page and submit with application fee to the Zoning Agent

1. See attached / /
   Owners name — Mailing address — Telephone
   Storrs Center Alliance, LLC / P.O. Box 878, 233 Route 17, Tuxedo, NY 10987 845-351-2900
2. Education Realty Trust, Inc. /530 Oak Court Drive, Suite 300, Memphis, TN 38117 901-259-2540
   Applicants name (if different than owner) — Mailing address — Telephone
3. Dog Lane (see attached) 3.A. NO 3.B SC-SDD
   Address of proposed activity map block parcel — Scenic Road ??? — Zone

4. Statement of Use: fully describe the proposed construction or use, including the estimated cost of construction and the quantity of fill material to be brought onto, moved within, or removed from the property.

   See attached.

5. Plot Plan: The applicant shall submit a plot plan showing property lines, lot area, lot dimensions, location and size of existing and proposed structures, driveways, parking areas, wells and septic systems, bordering streets, inland wetlands, flood hazard areas and any other information deemed necessary by the Zoning Agent to determine compliance with the regulations. The plans shall be prepared by a licensed land surveyor unless waived by the Zoning Agent.

6. Building plans and/or other information necessary to determine compliance.

7. To demonstrate that the proposal complies with local Inland Wetlands, Health District and Public Works requirements, the following approvals are required and any conditions of approval shall be incorporated into the zoning permit.

   A. _____ / _____ / _____
   Signature of Director of Health — Date — Comments

   B. _____ / _____ / _____
   Signature of Inland Wetland Agent — Date — Comments

   C. _____ / _____ / _____
   Signature of Town Engineer — Date — Comments

8. Validity: If approved, the Zoning Permit shall be voided unless construction is commenced within six months of the date of issue and unless construction is completed within 18 months of the date of issue.

   Where a surveyors plot plan is required, no foundation for any structure or addition shall be constructed until the Zoning Agent has received a surveyors certification verifying that the foundation footings are installed per the approved plans.

9. Certification: The applicant accepts this Zoning Permit on the condition that all ordinances and regulations of the Town of Mansfield shall be complied with. The applicant further certifies that all information supplied to the Zoning Agent is true and accurate and that the land and structures subject to this permit shall not be occupied or used until a Certificate of Compliance has been issued. The applicant's signature authorizes the Zoning Agent to enter upon the property as needed to verify compliance with the permit and until a Certificate of Compliance has been issued.

Owner / Applicants signature — Education Realty Trust — 1/13/11
Owner / Applicant (printed) — Date

ZONING PERMIT APPLICATION
MANSFIELD PLANNING & ZONING COMMISSION
(See Article XI.C of the Zoning Regulations for applicability and permit requirements)

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2. Education Realty Trust, Inc. /530 Oak Court Drive, Suite 300, 901-259-2540
   Applicants name (if different than owner) — Mailing address Memphis, TN 38117 — Telephone
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Storrs Center Alliance, LLC

By: Howard Kaufman — Howard Kaufman — 1-11-11
Owner / Applicants signature — Owner / Applicant (printed) — Date

ZONING PERMIT APPLICATION
STORRS CENTER PHASE 1A/1B

STORRS CENTER ALLIANCE, LLC
EDUCATION REALTY TRUST, INC.

Statement of Use

Introduction

This application seeks approval of a zoning permit, pursuant to Mansfield Zoning Regulations Article X, Section S.6, for construction of Phases 1A and 1B within the Storrs Center project. The total land area involved in this application is approximately 8 acres (4 acres within Phase 1A, including the reconstructed Dog Lane, and 4 acres within Phase 1B).

Phase 1A will be located to the north of Dog Lane and will consist of the following improvements:

1. Two mixed-use buildings known as DL-1/DL-2 and TS-1. The mixed-use buildings will generally consist of commercial uses on the ground floor and residential uses on the upper floors. Details regarding the mix of uses are provided in this Statement of Use, and details regarding the design of the buildings are included in other parts of this application.
2. One one-story building to consist of an automotive repair use with three automobile bays.
3. Various on-street and off-street parking spaces, as shown on Plan Sheet SP-1A.
4. Landscaping, as shown on Plan Sheet LL-1.
5. Other miscellaneous site improvements such as sidewalks, retaining walls, fencing, dumpsters with enclosures, and transformer pads, as shown on Plan Sheet SP-1A.

Phase 1B will be located to the south of Dog Lane and will consist of the following improvements:

1. One mixed-use building known as TS-2. This mixed-use building will generally consist of commercial uses on the ground floor and residential uses on the upper floors. Details regarding the mix of uses are provided in this Statement of Use, and details regarding the design of the building are included in other parts of this application.
2. Various on-street and off-street parking spaces, as shown on Plan Sheet SP-1A/1B.
3. Landscaping, as shown on Plan Sheet LL-1.
4. Other miscellaneous site improvements such as sidewalks, retaining walls, fencing, dumpsters with enclosures, and transformer pads, as shown on Plan Sheet SP-1B.

Property Involved in Application

As depicted on the attached plans, the properties involved in this application include the following:

1. A 2.98-acre piece of property located at the northeast corner of Dog Lane and Storrs Road and which is a portion of a larger property identified by the Town of Mansfield Assessor as Map 16, Block 40, Lot 10, and is owned by the University of Connecticut (this property will become part of Phase 1A).
2. A 0.57-acre parcel of land located on the north side of Dog Lane with a street address of 13 Dog Lane and which is identified by the Town of Mansfield Assessor as Map 16, Block 40, Lot 9 and is owned by Steven H. Rogers, Douglas P. Donaldson, and Randall B. Bobb (this lot will become part of Phase 1A).
3. AAA 0.672-acre parcel of land located on the south side of Dog Lane with a street address of 10 Dog Lane and which is identified by the Town of Mansfield Assessor as Map 16, Block 41, Lot 16 and is owned by Esther W. Warzocha (a portion of this lot will become part of Phase 1B).
4. A 0.711-acre parcel of land located on the south side of Dog Lane with a street address of Dog Lane and which is identified by the Town of Mansfield Assessor as Map 16, Block 41, Lot 17, and is owned by the University of Connecticut (a portion of this lot will become part of Phase 1B).
5. A 2.75-acre piece of property located at the southeast corner of Dog Lane and Storrs Road and which is a portion of a larger property identified by the Town of Mansfield Assessor as Map 16, Block 41, Lot 13, and is owned by the University of Connecticut (this property will become part of Phase 1B).

The applicants shall acquire title to all properties involved in Phase 1A and 1B prior to issuance of building permits relative to that particular area. No subdivision applications are anticipated for the activities included in this zoning permit application. North of Dog Lane, the lot known as 13 Dog Lane will be acquired first, and additional land north of Dog Lane will be later added to that lot through lot line modification as it is acquired from the University of Connecticut. South of Dog Lane, the lot known as 10 Dog Lane will be acquired first, and additional land south of Dog Lane will be later added to that lot through lot line modification as it is acquired from the University of Connecticut.

Project Sequence

The improvements described in this zoning permit application shall be sequenced in the following general manner:

1. During the first and second quarter of 2011, existing tenants within the Phase 1A area will be vacating their premises after which the buildings will be deconstructed. Prior to building deconstruction, all appropriate abatement activities (such as removal of asbestos and lead-based paint) shall be completed in accordance with law.
2. Site grading and other site work in the Phase 1A area shall commence during or after deconstruction of all existing buildings in the Phase 1A area.
3. Construction of Phase 1A improvements (including buildings DL-1/DL-2 and TS-1 and related parking, landscaping and other improvements) is expected to commence during the second or third quarters of 2011.
4. Storrs Center Alliance intends to enter into an amended lease agreement with the University of Connecticut for the lease of certain off-site parking spaces located in the

area generally known as the Bishop Center parking lot, which is adjacent to land in the Phase 1A area. A total of approximately 139 parking spaces will be provided in this leased area. The applicants specifically request that these 139 parking spaces be approved to serve uses contained in Phase 1A.

5. During the second quarter of 2011, the Town of Mansfield intends to submit a zoning permit application for construction of a public parking garage and intermodal transit facility, a town square, and the Village Street Project, all on land within the overall Storrs Center area and adjacent to the Phase 1B area. The locations of these improvements are depicted on Plan Sheet LOC-1.
6. The Town of Mansfield intends to complete construction of the Village Street Project, which includes a street connection south to Post Office Road, before issuance of any final certificates of occupancy in Phases 1A and 1B.
7. After completion of Phase 1A, business tenants currently doing business in other parts of the Storrs Center area, which intend to relocate to space within buildings DL-1/DL-2 or TS-1 and have a lease arrangement with Storrs Center Alliance, shall do so.
8. Following completion of existing business relocations, all buildings within the Phase 1B area shall be deconstructed. Prior to building deconstruction, all appropriate abatement activities (such as removal of asbestos and lead-based paint) shall be completed in accordance with law.
9. Construction of Phase 1B (including building TS-2 and related parking, landscaping and other improvements) is expected to commence during the second quarter of 2012.
10. No final certificates of occupancy for building TS-2 shall be issued until a certificate of occupancy has been issued for the Town parking garage.

Consistency with Storrs Center Special Design District

The applicants believe that this application is consistent with all of the required elements of the Storrs Center Special Design District. Pursuant to Article X, Section S.6.c(vi) of the Zoning Regulations, the following statements have been prepared by a professional with expertise in the relevant subject area, demonstrating reasonable consistency with approved elements of the Storrs Center Special Design District:

1. Statement of Consistency with Preliminary Master Plan (section 5)
2. Statement of Consistency with Master Parking Study (section 6)
3. Statement of Consistency with Master Traffic Study (section 7)
4. Statement of Consistency with Master Stormwater Drainage Study (section 8)
5. Statement of Consistency with Design Guidelines (section 9)

Consistency with other Government Approvals

Storrs Center Alliance has obtained several government approvals in support of this application, including the following:

1. Inland wetland permit approval from the Mansfield Inland Wetland Commission (modification application pending).
2. United States Army Corps of Engineers approval of a section 404 permit.

3. State of Connecticut Department of Environmental Protection approval of a section 401 water quality certification.
4. Connecticut State Traffic Commission approval of a major traffic generator certificate of operation.

The Phase 1A/1B improvements proposed in this zoning permit application are consistent with each of these approvals.

Future Commercial Tenants

The ground floor commercial space to be constructed in the Phase 1A and 1B mixed use buildings will be built to a "plain vanilla box" level of interior completion. Future commercial tenants in Phase 1A and 1B will each make separate applications to the Town of Mansfield for any additional improvements to their respective tenant spaces. Such improvements may include interior improvements, signage, lighting, awnings, street furniture, storefront modifications or other similar improvements. The plans for all such commercial tenant improvements shall be reviewed and approved in writing by Storrs Center Alliance before such plans and related building permit applications may be submitted to the Town.

Water and Sewer Service

Public water and sewer service will be provided to Phase 1A and 1B by the University of Connecticut. A letter documenting the University's intent to serve the project is submitted under separate cover.

Intent to Submit Property to Common Interest Ownership Regime

It is the applicants' intent to submit the Phase 1A and 1B areas to a common interest ownership regime pursuant to Connecticut law. Generally speaking, the upper floor residential space, together with ground floor elevator lobbies serving the upper floors, shall become one condominium unit for residential uses, to be owned by co-applicant EDR. The remaining ground floor space shall become one condominium unit for commercial uses, to be owned by co-applicant Storrs Center Alliance. Within each condominium unit, individual tenant spaces will be rented to individual residential and commercial tenants, respectively. A condominium association shall be created, and it will be responsible for maintenance of common elements, such as building exteriors and outside improvements, with the power to enforce collection of common expenses by liens on the unit owners.

Plan for Managing Phase 1A/1B Construction Activity and Traffic

Construction traffic will be required to reach the Phase 1A and 1B areas via Storrs Road (State Route 195) or via South Eagleville Road (State Route 275). It is expected that the majority of construction traffic will be to and from the north on Storrs Road (State Route 195). No construction traffic will be allowed to use local streets, including Dog Lane east of the Greek Church.

In conjunction with the construction of Phase 1A, the Town of Mansfield will be undertaking certain municipal improvements, including the construction of a new alignment for Dog Lane at the intersection of Storrs Road. It is anticipated that a temporary road will be constructed to connect Dog Lane with the intersection of Bolton Road at Storrs Road, as depicted on Plan Sheet SP-1A. This temporary road will allow construction to occur on the new alignment of Dog Lane while minimizing traffic disruption.

For Phase 1A construction, traffic will access the site via Storrs Road (Route 195) or Dog Lane. For Phase 1B construction, traffic will access the site via Dog Lane or the temporary road and the Village Street, while construction of the balance of the public streets is completed by the Town. This will include the Village Street from Dog Lane south to Post Office Road, and the extension of Bolton Road east of Storrs Road to the intersection with the Village Street. When the Village Street is completed, access for Phase 1B construction will be via Post Office Road to the Village Street. The General Contractor will be responsible for coordination of construction traffic.

No construction deliveries, loading, or site clearing, grading or construction activity shall take place before the hour of 7:00 a.m. Monday through Saturday, or before the hour of 9:00 a.m. on Sundays and holidays. Furthermore, no construction deliveries, loading, or site clearing, grading or construction activity shall take place after 9:00 p.m. daily. It is anticipated that construction staging areas will include portions of the Bishop Center parking lot not being used for parking, as well as the areas behind the existing Store 24 building. The General Contractor shall be responsible for coordination of construction parking during construction activities.

Conservation Area

Storrs Center Alliance shall convey title to the conservation area to the Town of Mansfield before issuance of the first certificate of occupancy in Phase 1B. The conveyance shall include an access easement to be granted to Storrs Center Alliance for the purpose of fulfilling its obligations under wetland-related permits and approvals.

Future Phases

It is the intent of the applicant Storrs Center Alliance to submit additional zoning permit applications at a later date for development of additional areas within the Storrs Center Special Design District area.

Storrs Center

03C667-Q

Table Of Land Uses In Phase 1A/1B

1/13/2011

Building DL-1/2

	Net Commercial Area	Net Commercial Common Area	Net Residential Area	Residential Common Area	Net EDR office Area	Net Building Area 1	Gross Building Area 2
Basement	0	0	0	0			0
First Floor	13,471	1,145	0	1,693	1,202	17,511	18,767
Second Floor	0	0	14,709	2,847	306	17,862	18,362
Third Floor	0	0	14,971	2,891	0	17,862	18,362
Fourth Floor	0	0	14,971	2,891	0	17,862	18,362
Fifth Floor	0	0	10,923	2,332	0	13,255	13,638
Total	**13,471**	**1,145**	**55,574**	**12,654**	**1,508**	**84,352**	**87,491**
	15.4%	**1.3%**	**63.5%**	**14.5%**	**1.7%**	**96.4%**	**100.0%**

Building TS-1

	Net Commercial Area	Net Commercial Common Area	Net Residential Area	Residential Common Area	Net EDR office Area	Net Building Area 1	Gross Building Area 2
First Floor	12,854	0	0	1,767	0	14,621	15,563
Second Floor	0	0	12,408	2,242	0	14,650	15,068
Third Floor	0	0	12,408	2,242	0	14,650	15,068
Fourth Floor	0	0	12,408	2,242	0	14,650	15,068
Fifth Floor	0	0	12,408	2,242	0	14,650	15,068
Total	**12,854**	**0**	**49,632**	**10,735**	**0**	**73,221**	**75,835**
	16.9%	**0.0%**	**65.4%**	**14.2%**	**0.0%**	**96.6%**	**100.0%**

Building TS-2

	Net Commercial Area	Net Commercial Common Area	Net Residential Area	Residential Common Area	Net EDR office Area	Net Building Area 1	Gross Building Area 2
First Floor	42,669	2,671	0	1,873	0	47,213	48,422
Second Floor	0	0	26,758	6,540	0	33,298	34,800
Third Floor	0	0	29,503	5,900	0	35,403	37,003
Fourth Floor	0	0	29,503	5,900	0	35,403	37,003
Fifth Floor	0	0	29,503	5,900	0	35,403	37,003
Total	**42,669**	**2,671**	**115,267**	**26,113**	**0**	**186,720**	**194,231**
	22.0%	**1.4%**	**59.3%**	**13.4%**	**0.0%**	**96.1%**	**100.0%**
Grand Totals	**68,994**	**3,816**	**220,473**	**49,502**	**1,508**	**344,293**	**357,557**

See Commercial Use Summary For Detailed Breakout of Commercial Use Types

Note 1: Net building area is measured to the inside face of the exterior building walls.
Note 2: Gross building area is measured to the exterior face of the exterior building walls.

STORRS
RETHINK MAIN STREET
CENTER

BL Companies

Storrs Center

03C667-Q

Table Of Land Uses In Phase 1A/1B
Commercial Use Summary (Net leasable areas)

1/13/2011

Phase 1A

Builidng	Use	Retail	Sit Down Restaurant	Fast Food Restaurant	Office	Total
DL-1/2	Commercial		2,587			2,587
	EDR Offices				322	322
	EDR Offices				880	880
	Commercial	254				254
	Commercial				302	302
	Commercial	704				704
	Commercial	352				352
	Commercial	369				369
	Commercial	704				704
	Commercial				2,509	2,509
	Commercial				976	976
	Commercial		1,408			1,408
	Commercial			1,948		1,948
	Auto Repair	1,358				1,358
Total DL-1/2		3,741	3,995	1,948	4,989	14,673
TS-1	Commercial			2,311		2,311
	Commercial	1,293				1,293
	Commercial			1,153		1,153
	Commercial		3,133			3,133
	Commercial			2,023		2,023
	Commercial	586				586
	Commercial		1,745			1,745
	Commercial			610		610
Total TS-1		1,879	4,878	6,097	0	12,854
Total Phase 1A		**5,620**	**8,873**	**8,045**	**4,989**	**27,527**

Phase 1B

TS-2*	Commercial	30,913				30,913
	Commercial	997				997
	Commercial	1,855				1,855
	Commercial	2,697				2,697
	Commercial	3,643				3,643
	Commercial	1,042				1,042
	Commercial	1,522				1,522
Total TS-2		42,669	0	0	0	42,669
Total Phase 1B		**42,669**	**0**	**0**	**0**	**42,669**
Phase 1A & 1B		**48,289**	**8,873**	**8,045**	**4,989**	**70,196**

TO BE PROVIDED UNDER SEPARATE COVER (See Statement of Use)

STORRS CENTER PHASE IA AND 1B

Statement of Consistency with Preliminary Master Plan

The Preliminary Master Plan creates a development framework for Storrs Center. The development of Phase 1A and 1B will be the first phase of Storrs Center, and will set the tone for the remaining phases. As described in more detail below, the proposed construction of Phase 1A/1B is respectful of the key elements of the Preliminary Master Plan. These include:

- Public and Private Roadways and Pedestrian Access;
- Parking Management;
- Utility Infrastructure;
- Site Grading and Drainage Patterns;
- Public Safety, including emergency access fire lane widths and hydrant placement; and
- Public Open Space, including proposed Town Square dimensions.

The proposed Phase 1A/1B development is consistent with the Preliminary Master Plan, approved by the Mansfield Planning and Zoning Commission in July 2007. As anticipated at the time the Preliminary Master Plan was approved, additional details have been added during the preparation of materials in support of the Zoning Permit application, including:

- The addition of a drive alley behind buildings TS-1 and DL-1/DL-2 for access, loading and waste management;
- The expansion east of Building TS-2 to connect to the municipal parking garage (GR-1); and
- The incorporation of an expanded surface parking lot northeast of building DL-1/DL-2, through a long-term lease of an existing parking area from the University of Connecticut.

The site layout and technical elements of this zoning permit are consistent with the Preliminary Master Plan, as described below.

- The overall layout and width of the proposed streets remain unchanged.
- Curb radii at critical intersections are consistent with those in the Preliminary Master Plan.
- The location of proposed intersections with Storrs Road are identical, and on-street parking is accommodated on Storrs Road as well as on Dog Lane and the proposed new public streets.
- The location and dimensions of the proposed Town Square are unchanged
- The proposed building locations and perimeters are consistent with those in the Preliminary Master Plan.

- All new electrical and telephone utility infrastructure is proposed to be located underground.
- Water and sewer service will be provided to the project in a manner consistent with the Preliminary Master Plan.
- Site grading and drainage is consistent with the Preliminary Master Plan

The Preliminary Master Plan creates a development framework for Storrs Center. The proposed Phase 1A and 1B development is consistent not only with the technical aspects of the Preliminary Master Plan as detailed above, but also with the vision of the planners, residents and stakeholders that created and approved the original Preliminary Master Plan.

DESMAN
ASSOCIATES

STORRS CENTER
PHASE IA AND 1B PARKING SUPPLY / DEMAND ANALYSIS

BACKGROUND

Commencing in January 2007 Desman Associates has been developing Master Parking Studies for the Storrs Center Project addressing various program iterations. Our initial work included preparation of a Master Parking Study for the entire Storrs Center project, which was approved as part of the rezoning to the Storrs Center Special Design District. The analytical process that we utilized in preparing the Master Parking Study involved five steps. First the estimated master development program was identified by land use type. Second, base parking demand factors were identified for each land use type, consistent with accepted industry data. Third, adjustments were made to each base demand factor according to accepted methodologies of shared use analysis (e.g. availability of public transportation, proximity to UCONN, pedestrian connections and synergy of uses). Fourth, parking demand for the project was calculated by multiplying adjusted demand factors by the equivalent units of the development program across all hours of the day and evening. Finally the proposed parking supply was identified and compared with the peak parking demand for each phase of the development, thus insuring that adequate parking will be available not only at the completion of the project, but also at key points at the completion of each phase of the project. Our work product was peer reviewed by an independent consultant retained by the Town of Mansfield who are considered experts in the field.

The Mansfield Zoning Regulations require that as part of a zoning permit application within the SC-SDD area, a statement of consistency with the Master Parking Study must be prepared and submitted for review. Desman has been requested to prepare such a report by assessing the parking demands for Phase 1A/1B, which comprise the initial construction activity, and to determine if they are consistent with the parameters set forth in the Master Parking Study. In the natural development of projects similar to Storrs Center, the program for development will change over the years prior to finalization. This particular project has undergone several modifications affecting generation rates; however, the phased concept has never changed. This report concludes that the zoning permit application for Phase 1A/1B is consistent with the Master Parking Study.

DEMAND ANALYSIS – PHASES 1A AND 1B

Applying the approved shared use analysis zoning standards to the current program for Phase 1A, as illustrated in attached Table 2a, generates a peak weekday demand at 1 PM for 284 spaces, which is comprised of 159 reserved residential spaces and 125 shared, non-residential spaces. The operators of the residential apartments, Educational Realty Trust, have committed to the leasing of a total of 425 spaces for Phases 1A and 1B, including an estimate of 212 spaces in Phase 1A and 213 in Phase 1B, which exceeds the minimal zoning requirement. The reserved residential spaces will be located in the parking garage or the surface lot. The additional leased spaces will add 53 spaces to the reserved residential requirement for a total of 212 residential spaces in Phase 1A.

Pursuant to the zoning regulations, minimum practical capacity requirements must also be added to the non-residential spaces. Practical capacity refers to the operational efficiency of a parking lot, garage or system. Depending on the type of parker, that individual will perceive the facility to be full when occupancy levels reach a certain threshold. The addition of a minimum practical capacity requirement of 5% over the projected number of non-residential spaces translates into a parking

demand requirement of approximately 131 non-residential spaces. The addition of the 212 residential spaces to the 131 non-residential parking spaces results in a parking demand of 343 spaces upon completion of Phase 1A of which 212 must be located in the surface lot or parking garage and the balance of 131 throughout the available supply areas.

Applying the approved shared use analysis zoning standards to the current program for Phase 1A and 1B combined, as illustrated in Table 3a, generates a peak weekday demand at 1 PM that increases to 591 spaces, including 359 reserved residential spaces and 232 shared non-residential spaces. Upon completion of Phase 1B, the operators of the residential apartments, Educational Realty Trust, will be leasing 425 spaces for Phases 1A and 1B, exceeding the zoning requirement. The additional leased spaces at the completion of Phase 1B will add 66 additional spaces to the reserved residential requirement, raising the number of reserved residential spaces from 359 to 425, all of which will be located in the parking garage or surface lot.

Pursuant to the zoning regulations, minimum practical capacity requirements must also be added to the non-residential spaces. The addition of a minimum practical capacity requirement of 5% over the projected number of non-residential spaces translates into a parking demand requirement of approximately 244 non-residential spaces. The addition of the 425 reserved residential spaces to the 243 non-residential parking spaces results in a parking demand of 669 spaces upon completion of Phase 1B, of which 425 must be located in the surface lot or parking garage. The remaining 244 spaces may be located throughout the available supply areas.

SUPPLY ANALYSIS – PHASES 1A AND 1B

Upon opening of Phase 1A, nearly all parking associated with both Phases 1A and 1B will be complete. As a result, available parking will include the surface lot on Dog Lane, containing approximately 140 spaces, the structured parking facility, containing approximately 540 or more spaces, and on-street spaces along Storrs Road, Dog Lane, and along the alleyway behind Phase 1A, amounting to approximately 89 spaces. Additional spaces will become available in Phase 1 as the Town Square and the Village Street are completed. Based on the current phasing, the total number of spaces available at opening of Phase 1A will be approximately 769 spaces, including 680 in the surface lot and structured parking facility and 89 in other locations, far exceeding the total requirement for 345 spaces in Phase 1A. The 680 available spaces in the surface lot and parking garage will readily satisfy the Phase 1A reserved residential requirement of 212 spaces, leaving approximately 557 additional spaces, which readily satisfies the remaining Phase 1A non-residential demand of 133 spaces.

Upon completion of Phase 1B, cumulative parking supply will increase slightly beyond the 769 spaces at completion of Phase 1A based upon the addition of additional curb-side parking around the Town Square and along that portion of the Village Street included in Phase 1. For purposes of this analysis, those spaces have not been included and will ultimately enhance the availability of non-residential spaces. Using the number of spaces available upon completion of Phase 1A, the total number of 769 spaces will still exceed the total demand of 672 spaces upon completion of Phase 1B, including the leased spaces and the additional requirement for practical capacity. The 680 available spaces in the surface lot and parking garage will readily satisfy the combined Phase 1A and Phase 1B requirement for 425 reserved residential spaces. Deducting the residential spaces from the total supply leaves approximately 344 additional spaces, which will satisfy the remaining Phase 1A and Phase 1B non-residential demand of 247 spaces and will leave a surplus of 97 spaces plus any

additional spaces accumulated through the construction of the Town Square, extension of the Village Street, and the possible addition of more spaces in the structured parking facility.

All residential spaces will be reserved in dedicated locations in the parking garage and the surface lot on Dog Lane. Additional spaces in the surface lot on Dog Lane surface lot will accommodate non-residential uses which shall typically be located closer to Dog Lane. Residential spaces will be nested or reserved towards the north side of the lot. The structured parking facility will also accommodate both residential and non-residential spaces. Residential spaces will likely be nested in upper level areas with non-residential spaces concentrated on lower levels. On-street spaces will serve non-residential, transient, and short term uses.

CONCLUSION

When applied to the proposed program for Phases 1A and 1B, the prescribed shared use analysis as defined in the Storrs Center Parking Study yields a requirement of 603 spaces at completion of Phases 1A and 1B. With the addition of additional residential spaces to be leased by the residential users, the proposed parking demand increases to 672 spaces, exceeding the requirements of the minimum shared use analysis pursuant to the zoning regulations for the SC-SDD. The combination of the adjacent structured parking facility, the adjacent surface lot on Dog Lane, and on-street spaces located on Storrs Road, Dog Lane, around the Town Square, and in the alley behind Phase 1A will yield a supply of 769 spaces, all located within the designated walking distance for the project. This number will expand slightly with the addition of more on-street parking in Phase 1B around the Town Square and along the Village Street. Additional structured parking may also be added pursuant to ongoing analysis by the Town regarding the final design of the structured parking and intermodal facility. Based, however, upon an expectation of approximately 769 spaces to be completed in conjunction with Phase 1A, it is the determination of this analysis that the parking supply for Phases 1A and 1B, as reflected in the zoning permit plans prepared by BL Companies, is consistent with the requirements set forth for parking space demand and supply as delineated in the approved Storrs Center Master Parking Study.

DESMAN
ASSOCIATES

Storrs Center Parking Demand Analysis
Updated 01/12/11

Table 1: Phasing Summation

Storrs Center Cumulative Development by Phase

Land Use	Phase 1A		Phase 1B	
	Area (SF)	Units	Area (SF)	Units
General Residential		127		287
Restaurant				
- Sit Down Restaurant	8,895		8,895	
- Fast-Food/Grab-N-Go	8,055		9,910	
Office	5,007		5,007	
Community Shopping	5,034		45,918	

Table 2a: Phase 1A Weekday Hourly Parking Demand

Storrs Center Shared Use Analysis - Phase 1A
Representative Weekday Hourly Accumulation of Parkers

	Office	Retail	Restaurant		Residential		
			Sit Down	Fast Food	Reserved	Non-Reserved	
1. Size Factors>	5,007	5,034	8,895	8,055	127 units		
Hour of Day							**Total Parking Demand**
6:00 AM	0	0	3	2	159	0	**164**
7:00 AM	4	1	7	3	159	0	**173**
8:00 AM	10	2	14	7	159	0	**191**
9:00 AM	12	4	21	10	159	0	**205**
10:00 AM	13	7	38	18	159	0	**234**
11:00 AM	13	9	58	28	159	0	**267**
12:00 Noon	12	11	68	33	159	0	**283**
1:00 PM	12	12	68	33	159	0	**284**
2:00 PM	13	12	62	30	159	0	**275**
3:00 PM	13	12	41	20	159	0	**245**
4:00 PM	12	12	38	18	159	0	**238**
5:00 PM	7	10	41	20	159	0	**237**
6:00 PM	3	10	58	28	159	0	**258**
7:00 PM	1	9	55	26	159	0	**250**
8:00 PM	1	8	34	17	159	0	**218**
9:00 PM	0	6	21	10	159	0	**196**
10:00 PM	0	4	14	7	159	0	**183**
11:00 PM	0	1	7	3	159	0	**170**
12:00 Midnight	0	0	3	2	159	0	**164**

DESMAN
ASSOCIATES

Table 2b: Phase 1A Weekend Hourly Parking Demand

Storrs Center Shared Use Analysis - Phase 1A Representative Weekend Hourly Accumulation of Parkers							
	Office	**Retail**	**Restaurant**		**Residential**		
			Sit Down	Fast Food	Reserved	Non-Reserved	
1. Size Factors>	5,007	5,034	8,895	8,055	127	units	
Hour of Day							**Total Parking Demand**
6:00 AM	0	0	3	1	159	0	**163**
7:00 AM	0	1	6	3	159	0	**169**
8:00 AM	1	1	12	6	159	0	**179**
9:00 AM	2	4	18	9	159	0	**191**
10:00 AM	2	6	33	16	159	0	**216**
11:00 AM	2	8	52	25	159	0	**245**
12:00 Noon	2	10	61	29	159	0	**260**
1:00 PM	2	11	61	29	159	0	**261**
2:00 PM	1	12	55	26	159	0	**253**
3:00 PM	1	12	37	17	159	0	**226**
4:00 PM	0	12	33	16	159	0	**220**
5:00 PM	0	11	37	17	159	0	**224**
6:00 PM	0	10	52	25	159	0	**245**
7:00 PM	0	9	49	23	159	0	**240**
8:00 PM	0	8	30	14	159	0	**212**
9:00 PM	0	6	18	9	159	0	**192**
10:00 PM	0	4	12	6	159	0	**181**
11:00 PM	0	2	6	3	159	0	**170**
12:00 Midnight	0	0	3	1	159	0	**163**

Table 3a: Phase 1B Cumulative Weekday Hourly Parking Demand

Storrs Center Shared Use Analysis - Phase 1B Representative Weekday Hourly Accumulation of Parkers							
	Office	**Retail**	**Restaurant**		**Residential**		
			Sit Down	Fast Food	Reserved	Non-Reserved	
1. Size Factors>	5,007	45,918	8,895	9,910	287	units	
Hour of Day							**Total Parking Demand**
6:00 AM	0	1	3	2	359	0	**366**
7:00 AM	4	6	7	4	359	0	**379**
8:00 AM	10	17	14	8	359	0	**407**
9:00 AM	12	33	21	12	359	0	**437**
10:00 AM	13	61	38	22	359	0	**493**
11:00 AM	13	84	58	35	359	0	**548**
12:00 Noon	12	100	68	41	359	0	**580**
1:00 PM	12	112	68	41	359	0	**591**
2:00 PM	13	112	62	37	359	0	**582**
3:00 PM	13	112	41	24	359	0	**549**
4:00 PM	12	106	38	22	359	0	**537**
5:00 PM	7	95	41	24	359	0	**526**
6:00 PM	3	89	58	35	359	0	**544**
7:00 PM	1	84	55	33	359	0	**531**
8:00 PM	1	73	34	20	359	0	**487**
9:00 PM	0	56	21	12	359	0	**448**
10:00 PM	0	33	14	8	359	0	**414**
11:00 PM	0	11	7	4	359	0	**381**
12:00 Midnight	0	0	3	2	359	0	**364**

Table 3b: Phase 1B Cumulative Weekend Hourly Parking Demand

Storrs Center Shared Use Analysis - Phase 1B Representative Weekend Hourly Accumulation of Parkers							
	Office	**Retail**	**Restaurant**		**Residential**		
			Sit Down	Fast Food	Reserved	Non-Reserved	
1. Size Factors>	5,007	45,918	8,895	9,910	287	units	
Hour of Day							**Total Parking Demand**
6:00 AM	0	1	3	2	359	0	**365**
7:00 AM	0	6	6	4	359	0	**374**
8:00 AM	1	11	12	7	359	0	**391**
9:00 AM	2	33	18	11	359	0	**423**
10:00 AM	2	56	33	20	359	0	**470**
11:00 AM	2	73	52	30	359	0	**516**
12:00 Noon	2	89	61	36	359	0	**547**
1:00 PM	2	100	61	36	359	0	**558**
2:00 PM	1	112	55	32	359	0	**559**
3:00 PM	1	112	37	21	359	0	**529**
4:00 PM	0	106	33	20	359	0	**518**
5:00 PM	0	100	37	21	359	0	**517**
6:00 PM	0	89	52	30	359	0	**530**
7:00 PM	0	84	49	28	359	0	**520**
8:00 PM	0	73	30	18	359	0	**479**
9:00 PM	0	56	18	11	359	0	**443**
10:00 PM	0	39	12	7	359	0	**417**
11:00 PM	0	17	6	4	359	0	**385**
12:00 Midnight	0	0	3	2	359	0	**364**

Table 4 – Peak Hour Weekday and Weekend Parking Demand by Phase

	Peak Parking Demand	
	Weekday	**Weekend**
Phase 1A	284	261
Phase 1B	591	558

STORRS CENTER PHASE IA AND 1B
TRAFFIC ANALYSIS AND STATEMENT OF CONSISTENCY

Pursuant to Article X, Section S.6.c(vi) of the Zoning Regulations, BL Companies has reviewed the proposed Phase 1B/1B development plan for general consistency with that assumed in the Master Traffic Study for Storrs Center. (February 2007).

The Master Traffic Study does not address development phasing and was based on a development plan of 690 residential units and 210,750± square feet of commercial space.

Subsequent to Town approval, the Master Plan was approved by the State Traffic Commission (STC# 077-0804-01) along with certain traffic improvements.

Phase 1A/1B as proposed consists of buildings TS-1, TS-2 and DL-1/2.

The Master Traffic Study assumptions for the buildings that comprise Phase 1A/1B included about 289,500 square feet of gross floor area broken down as follows:

- 59,452 gross square feet of retail space
- 228,885 gross square feet of residential use, consisting of 189 units
- and 1,200 square feet of office space

As currently proposed under Phase 1A/1B, the plan consists of 357,817 square feet of gross floor area broken down as follows:

- 77,792 gross square feet of retail space
- and 280,025 gross square feet of residential use, consisting of 285 units

While the Phase 1A/AB development program is somewhat larger than the Master Traffic Study anticipated, the overall Storrs Center project will remain essentially as originally contemplated in the Master Traffic Study. The reallocation of development to one part of the overall site to another will have no significant impact.

The Phase 1A/1B development will be accompanied by the Storrs Road and Dog Lane traffic improvements required by STC for the entire Storrs Center build out. These off site improvements are currently under design by the Town's consultant and would be clearly adequate to accommodate Phase 1A/1B traffic. It is anticipated that these improvements will be completed when Phase 1A is ready for occupancy.

Additionally, it is anticipated that the Village Street connection to Post Office Road, currently in design by the Town will be completed in conjunction with Phase 1A and the structured parking facility also currently under design by the Town. This will have a further

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Pursuant to Article X, Section S.6.c(vi) of the Zoning Regulations, BL Companies has reviewed the proposed Phase 1B/1B development plan for general consistency with that assumed in the Master Traffic Study for Storrs Center. (February 2007).

The Master Traffic Study does not address development phasing and was based on a development plan of 690 residential units and 210,750± square feet of commercial space.

Subsequent to Town approval, the Master Plan was approved by the State Traffic Commission (STC# 077-0804-01) along with certain traffic improvements.

Phase 1A/1B as proposed consists of buildings TS-1, TS-2 and DL-1/2.

The Master Traffic Study assumptions for the buildings that comprise Phase 1A/1B included about 289,500 square feet of gross floor area broken down as follows:

- 59,452 gross square feet of retail space
- 228,885 gross square feet of residential use, consisting of 189 units
- and 1,200 square feet of office space

As currently proposed under Phase 1A/1B, the plan consists of 357,817 square feet of gross floor area broken down as follows:

- 77,792 gross square feet of retail space
- and 280,025 gross square feet of residential use, consisting of 285 units

While the Phase 1A/AB development program is somewhat larger than the Master Traffic Study anticipated, the overall Storrs Center project will remain essentially as originally contemplated in the Master Traffic Study. The reallocation of development to one part of the overall site to another will have no significant impact.

The Phase 1A/1B development will be accompanied by the Storrs Road and Dog Lane traffic improvements required by STC for the entire Storrs Center build out. These off site improvements are currently under design by the Town's consultant and would be clearly adequate to accommodate Phase 1A/1B traffic. It is anticipated that these improvements will be completed when Phase 1A is ready for occupancy.

Additionally, it is anticipated that the Village Street connection to Post Office Road, currently in design by the Town will be completed in conjunction with Phase 1A and the structured parking facility also currently under design by the Town. This will have a further positive effect on traffic operations in the vicinity of the site by providing alternate routes of access.

STORRS CENTER PHASE IA AND 1B
MASTER STORMWATER DRAINAGE STUDY FOR STORRS CENTER
PHASE 1A/1B UPDATE

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Note: All appendices have been provided to the Town of Mansfield under separate cover in the complete updated Master Stormwater Drainage Study for Storrs Center, dated December 29,2010. These appendices were part of the original Master Stormwater Drainage Study Submitted as part of the Master Plan approved by CTDEP, ACOE and Town of Mansfield PZC.

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- Report Excerpts from "Storrs Center Development, Storrs, Connecticut," by Haley & Aldrich, dated October 2, 2003
- Table 2-2, Technical Release 55 (TR-55), Urban Hydrology for Small Watersheds, USDA, SCS, 2nd Edition, June 1986

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Appendix H Postdevelopment Conditions
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- HydroCAD Output for the 1-, 2-, 10-, 25-, 50- and 100-year storms – Southern Watercourse, Major Watershed B
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Appendix J CTDEP Water Quality Calculations – WQF and WQV
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- StormCAD Reports for 10-year Storm – B Pipes
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Appendix L Operation and Maintenance
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- Maintenance Inspection Checklist, 2004 CTDEP Water Quality Manual

Appendix M Maps
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- ED.02 Predevelopment Subwatersheds and Analysis Points
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- PD.03 Postdevelopment Facility Locations and Identification
- PD.04 Postdevelopment Catch Basin Drainage Areas
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INTRODUCTION

Storrs Center is a proposed commercial/retail development located on Storrs Road in Mansfield, Connecticut. The Master Stormwater Drainage Study was originally developed in conjunction with Master Planning for the Storrs Center site and has been updated to reflect the design plans for the proposed Phase 1A/1B construction, scheduled to begin in Spring 2011. Included in this updated report are discussions of the existing drainage patterns and natural features on site and of postdevelopment stormwater management for the site. The goals of the drainage study were to determine how stormwater will be managed under the developed condition while minimizing disturbance and without causing undo impacts to existing natural features, such as wetlands and vernal pools. This analysis discusses the proposed water quality and water quantity treatment Best Management Practices (BMPs) for the site, includes analyses of Groundwater Recharge Volumes (GRV), Water Quality Flows (WQF), Water Quality Treatment Volumes (WQV), and peak flow controls.

STATEMENT OF CONSISTENCY WITH STORRS CENTER SPECIAL DESIGN DISTRICT AND THE APPROVED MASTER STORMWATER DRAINAGE STUDY FOR STORRS CENTER

This update of the Master Stormwater Drainage Study for Phase 1A/1B development is based on the same stormwater management model and strategy that was prepared for the original Storrs Center Special Design District (SC-SDD) Master Stormwater Drainage Study. That document provided the technical basis for the applicant's applications to the US Army Corps of Engineers for section 404 approval and to the Connecticut Department of Environmental Protection (CTDEP) for section 401 Water Quality Certification, both of which were approved. The stormwater management techniques and best management practices (BMPs) proposed in Phase 1A/1B are consistent with those proposed in the SC-SDD approvals, as are the resultant reduction in peak stormwater runoff and improvements in stormwater quality.

A significant effort was made during the design of the stormwater management system to closely match the areas within each major watershed from predevelopment to post development conditions to minimize any potential downstream impacts. This effort is reflected in the Phase 1A/1B design.

PROJECT NARRATIVE

Storrs Center is proposed to be constructed on 47.727 acres of land located on Storrs Road in Mansfield, CT. The project is 25.1% redevelopment (12.0-acres) of existing strip malls, office buildings, and parking lots, 16.9% proposed new development (8.06-acres) concentrated in a compact, New Urbanist village, and 58% (27.667-acres) of forests and wetlands to be dedicated as an open space conservation area. The conservation area adjoins (and is ecologically contiguous with) the protected land holdings of the Joshua Trust. The design of Storrs Center was arrived at by first studying the ecology and hydrology of the site, then by fashioning a development that is in harmony with the natural features of the site.

PHASE 1A/1B

Phase 1A consists of the construction of two buildings on the north side of Dog Lane, east of Storrs Road, referred to as buildings TS-1 and DL-1/DL-2.

Phase 1B consists of the construction of building TS-2 on the south side of Dog Lane, and immediately east of the proposed Town Square.

This report also includes in its analysis the proposed construction of parking structure GR-1, by others, to be built concurrently with Phase 1A.

PROJECT SITE

The site is bounded to the northwest by existing commercial development and an existing church. Southwest of the site is the existing Post Office Drive, and undeveloped land is northeast and southeast of the site. The majority of the site is undeveloped, excepting existing retail and commercial properties along Dog Lane and Storrs Road. The undeveloped portions of the property include the central and eastern portions, which are wooded with 2 watercourses, a vernal pool and an intermittent watercourse. Both watercourses flow from southwest to northeast across the site, with the headwaters for both watercourses near the existing developed corridor along Storrs Road. Figure 1 in Appendix A shows the site location overlaid on the Spring Hill USGS 7.5 Minute Topographic Quadrangle, while Figure 2 (Appendix A) shows the site location overlaid on the Spring Hill USGS Digital Orthophoto Quarter Quadrangle.

Topography on the site ranges from an elevation of approximately 560-feet in the northwest corner of the property to an elevation of approximately 628-feet near the intersection of Post Office Road and Storrs Road at the southern property corner. Soils, taken from the NRCS Soil Survey Geographic (SSURGO) Database for Connecticut, 2005, are shown on Figure 3 in Appendix B. Table 1 summarizes the Map Symbols and Map Unit Names, along with each soil type's associated Hydrologic Soil Groups, from the NRCS Soil Survey. Soil reports from the NRCS Soil Survey Geographic (SSURGO) Database detailing other soil properties such as erodibility, permeability, depth, texture and soil structure can be found in Appendix B.

The Master Plan for the development clusters most of the proposed development along the existing developed corridor along Storrs Road. The intersection of Dog Lane and Storrs Road is reconfigured to improve the geometry of the intersection and develop the entrance green opposite E. O. Smith High School. Various proposed sidewalk, streetscape, and landscaped median islands are shown along Storrs Road for traffic calming and pedestrian safety. Most of the eastern portion of the site will be undeveloped open space that encompasses the Northern and Southern wetland corridors, the large vernal pool, and the woodlands that are ecologically contiguous with the Joshua Trust Open Space tract.

Table 1
Soils Data

Map Symbol	Hydrologic Soil Group	Map Unit Name	Slope (percent)
3	D	Ridgebury, Leicester, and Whitman soils, extremely stony	-
17	D	Timakwa and Natchaug soils	-
18	D	Catden and Freetown soils	-
45B	C	Woodbridge fine sandy loam	3-8 %
47C	C	Woodbridge fine sandy loam, extremely stony	2-15 %
51B	B	Sutton fine sandy loam, very stony	2-8 %
59C	A	Gloucester gravelly sandy loam, extremely stony	3-15 %
61C	B	Canton and Charlton soils, very stony	8-15 %
62D	B	Canton and Charlton soils, extremely stony	15-35%
73C	B	Charlton-Chatfield complex, very rocky	3-15%
84B	C	Paxton and Montauk fine sandy loams	3-8%
85C	C	Paxton and Montauk fine sandy loams, very stony	8-15%
306	C	Udorthents-Urban land complex	-

There are no floodplains on the site according to FEMA FIRM 090128 0005C and 090128 0010C for the Town of Mansfield, Tolland County, Connecticut (Appendix C). Wetlands are present on-site adjacent to the two watercourses and the vernal pool. There is a central ridge that creates a divide between the two watercourses, with the vernal pool located on the top of the ridge at the northeast portion of the property. The outlet to the vernal pool is an intermittent watercourse that flows north down the hill to the northern watercourse near the swamp and northeast property line. Along all wetlands, a minimum 50-foot buffer, which will remain undisturbed, is incorporated into the Master Plan for the site.

Figures B-1 and B-2 in Appendix D show the vernal pool's Critical Upland Habitat Zone (100' to 750' from the vernal pool, Calhoun and Klemens, 2002), and the watershed tributary to the vernal pool, respectively. Calhoun and Klemens (2002) recommend that development within a vernal pool's Critical Upland Habitat Zone be limited to less than 25% to maintain the viability of the vernal pool. These calculations are also included in Appendix D.

The northern watercourse, with a CTDEP surface water classification of "AA", extends approximately 1200 linear feet (LF) in a northeasterly direction across the site. The corridor along the watercourse is wooded and the watercourse has a relatively steep slope of approximately 4-percent. This watercourse receives road sand and trash from the commercial businesses along Dog Lane and Storrs Road, which is transported down the watercourse due to the relatively steep and narrow channel. Most of the trash and road sand is trapped in the wetland immediately behind the commercial development. This wetland consists of the upper 200-LF of the watercourse, which is bounded by an existing road under which a 24-inch reinforced concrete pipe (RCP) regulating flows from the wetland

crosses. The channel meanders within a 35- to 50-foot wide wetland corridor, eventually becoming a well-defined channel near the northeast property boundary. Beyond the northeast property boundary the watercourse flows northeasterly for approximately 2900-feet before its confluence with the southern watercourse.

The southern watercourse, also with a CTDEP surface water classification of "AA", extends approximately 1180-LF to the eastern property boundary. Its corridor is also wooded and is forked near the Post Office, with a shallower 2.3-percent slope and a wider wetland corridor typically ranging from 120- to 200-feet. Gravel from an adjacent gravel Town parking lot is eroding into adjoining offsite wetlands. Road sand and runoff from the Post Office parking lot is also being piped into the western branch of the south watercourse. Additionally, a lot of trash and debris is entering the southern watercourse from the commercial parking lots above. Beyond the property boundary, the southern watercourse flows generally easterly for approximately 2300-feet before its confluence with the northern watercourse.

The combined, unnamed watercourse, also having a CTDEP surface water classification of "AA", flows approximately 3000-feet further east to its confluence with the Fenton River. The Fenton River is part of the Thames River Basin and the watercourses are located within CTDEP Basin Number 3207-13-1. The watercourses are also part of the Willimantic Water Department's public water supply watershed. None of these watercourses are listed on Connecticut's 303(d) list of impaired waters.

Ground water flow is expected to mirror the topography of the site and flow from the upland areas to the northeast, and east. The central ridge running approximately east to west through the site creates a drainage divide through the center of the site, isolating ground water flow in the two basins. According to boring information summarized in a 2003 report by Haley & Aldrich (H&A), the depth to ground water near the wetlands is approximately 2-3 feet below ground surface. H&A encountered ground water in three borings B101, B104 and B106, where the depth to water in these borings varied from 7 to 18.5 feet below ground surface. Excerpts from the 2003 Haley & Aldrich report are included in Appendix C.

The majority of the site drains to the two watercourses. There is a high point within Storrs Road that directs runoff from the remainder of the site either south or north along Storrs Road. Areas along Storrs Road closest to Dog Lane drain northwest to Mirror Lake, while areas along Storrs Road near Post Office Road drain southeast towards an off-site watercourse located south of Hanks Hill Road. Mirror Lake and its tributary areas are identified as CTDEP Basin 3207-12-1-L1. The areas draining to the off-site watercourse are identified as CTDEP Basin 3207-14-1. Both of these watersheds are located with the larger Fenton River Basin.

PROPOSED STORMWATER BMPS

The proposed stormwater management system for this site will incorporate a variety of Best Management Practices (BMPs) designed for water quality treatment, mitigation of proposed peak flows, groundwater recharge and stream channel protection. Given the presence of the vernal pool at the rear of the site, further consideration was given to the use of BMPs that would not create decoy vernal pools. The minimization of total disturbance and of impacts to the existing woodlands for the construction of the site was also considered.

Structured parking, rather than using extensive surface parking, to service the development is proposed in order to reduce impervious cover and allow greater flexibility in preserving existing woodlands. Storm runoff from roadways and adjacent walkways will be directed toward roadside filters incorporated with street trees (Roadside Tree Box Filter) to provide water quality treatment. During the water quality storm (1" rainfall) and similar small storms, runoff will enter the filters via curb inlets, where runoff will be treated through the filter. All catch basins will have a minimum 4-foot sump depth, and a hooded outlet (SNOUT or approved equal). Where a roadside tree filter is not feasible, runoff will be routed to an oil-grit separator (Vortechnics brand or approved equal) to provide water quality treatment to meet the 80% Total Suspended Solids (TSS) removal standards required by Connecticut. In and around the existing Post Office, where there is currently no water quality treatment, retrofit facilities to help improve the water quality of the existing runoff will be incorporated. Retrofit water quality treatment facilities to handle stormwater from the existing commercial/retail properties to remain (Map 16, Block 41, Lots 14 and 15) will also be incorporated.

The clean storm runoff will then be discharged to a combination of underground detention systems beneath the proposed roadways and surface detention in the rear of the site closest to the existing wetlands to provide peak flow attenuation. The detention systems will temporarily store runoff, allowing for groundwater recharge where possible, and gradually discharge the remainder of the runoff to the two watercourses via metered outlets. This metered outflow will protect the watercourses from increased flow rates, increased velocities and associated streambank erosion. Underground detention facilities include underground storage vaults (StormTrap or approved equal), one of which will incorporate infiltration through the bottom of the facility. In most cases, stormwater will flow through and received treatment (quality and quantity) from more than one BMP, creating a "treatment train." A table summarizing the different treatment trains proposed for Storrs Center is included in Appendix E. All BMPs will incorporate design criteria presented in the CTDEP's 2004 Water Quality Manual. Specific design criteria anticipated for each BMP are listed below, with additional information and preliminary construction details included in Appendix E.

Underground Vault Detention (StormTrap or similar product)

- Primarily provides detention (peak flow attenuation) during larger storms.
- Pretreatment provided upstream by roadside tree box filters, sumped catch basins with hooded outlets, sedimentation structures, oil-grit separators or a combination thereof.

- Where soils and proposed site conditions permit, infiltration is incorporated through the bottom of facility to provide groundwater recharge.
- Conventional staged outlet structure

Water Quality Swale/Infiltration Trench

- Provides water quality treatment during small storms; during larger storms provides conveyance of runoff to a detention facility.
- Pretreatment provided upstream by roadside tree box filters, sumped catch basins with hooded outlets, sedimentation structures, oil-grit separators or a combination thereof.
- Check dams provided
- During low flows, water will be infiltrated and during higher flow; swale will convey water to downstream facility for detention.

Roadside Tree Box Filter

- Provides primary water quality treatment of roadway runoff.
- Underdrain collection system to convey treated water to downstream detention facility.
- Some infiltration (and groundwater recharge) will occur through the bottom of the system where soil conditions permit.
- Underdrain collection system will ensure the system fully drains.
- A sumped catch basin with a hooded outlet collects flows that bypass the filter and conveys them into the storm sewer system.

CALCULATIONS AND METHODOLOGY

The Phase 1A/1B analysis uses the same calculations and methodologies used in the development of the stormwater management plan for the entire site. The specific calculations discussed in this section include: Groundwater Recharge Volume (GRV) calculations; Water Quality Flow (WQF) calculations; Water Quality Volume (WQV) calculations and Peak Flow Control calculations.

Methodology

Runoff rates are computed for the 1-, 2-, 10-, 25-, 50- and 100-year 24-hour frequency rainfall events. Pre- and postdevelopment flows are computed using the SCS Runoff Curve Number Method as presented in Technical Release 55 (TR-55), Urban Hydrology for Small Watersheds, USDA, SCS, 2nd Edition, June 1986, and further described in detail in Part 4 of the National Engineering Handbook (NEH-4), SCS 1985. Curve numbers are taken from Tables 2-2a and 2-2b of the TR-55 manual. Weighted composite curve numbers are calculated for each subwatershed. A Type III storm distribution with an average antecedent moisture condition is used and the rainfall depths associated with the design storms are presented in Table 2. Times of concentrations are calculated using methods presented in Chapter 3 of the TR-55 Manual. Peak flows are calculated using the software package HydroCAD, Version 7.10 and a time increment of 0.01-hours.

Table 2
Rainfall

Return Period	24-hr Rainfall Depth
1-year	2.60 inches
2-year	3.20 inches
10-year	4.80 inches
25-year	5.50 inches
50-year	6.20 inches
100-year	6.90 inches

Storm sewers calculations are performed using the computer program, StormCAD, Version 5.5, using Connecticut Department of Transportation (CTDOT) rainfall-intensity-duration (IDF) curves and rational coefficients recommended in the 2002 CTDOT Drainage Manual. The StormCAD uses the Rational Method to determine peak design flows for the analyzed storms. All BMPs incorporate design criteria presented in the CTDEP's 2004 Water Quality Manual.

Predevelopment Conditions Watersheds and Characteristics

Under predeveloped conditions, the site has four distinct major watersheds: areas draining to the south along Storrs Road ('A' watersheds); areas draining to the existing watercourse located in the southern portion of the site ('B' watersheds); areas draining to the existing watercourse located in the northern part of the site ('C' watersheds); and areas draining to the north along Storrs Road, eventually discharging to Mirror Lake ('D' watersheds). The Predevelopment Conditions watersheds and analysis points are depicted on maps ED.01 and ED.02 in Appendix M. Phase 1A/1B development impacts watersheds C and D only. The total watershed draining to the on-site vernal pool is also shown on ED.01. No development is proposed within the vernal pool watershed, nor are any stormwater discharges proposed to this watershed.

The total drainage areas contained within the major watersheds are summarized in Table 3 along with and characteristics (area, CN and t_C) for each subwatershed are summarized in Table 3. All calculation details may be found in Appendix F.

Table 3
Predevelopment Drainage Area Characteristics

Subwatershed ID	Area (acres)	Composite Curve Number (CN)	Time of Concentration (minutes)
A1	1.100	92	5.0
A	**1.100**		
B1	8.166	76	14.0
B2	2.013	83	13.2
B3	0.367	92	5.0
B4	2.171	83	19.9
B5	9.892	64	19.2
B	**22.609**		
C1	1.960	94	7.3
C2	2.881	90	5.9
C3	3.622	74	7.3
C4	6.389	65	13.3
C	**14.852**		
D1	8.471	90	8.6
D	**8.471**		

Postdevelopment Conditions Watersheds and Characteristics

As seen on the postdevelopment watershed maps (PD.01, PD.02) in Appendix M, the site is divided into major watersheds based on the pre-development watersheds, and then further divided into subwatersheds based on the locations of proposed BMPs and the proposed storm sewer network. As in predevelopment conditions, the site has four distinct major watersheds: areas draining to the south along Storrs Road ('A' watersheds); areas draining to the existing watercourse located in the southern portion of the site ('B' watersheds); areas draining to the existing watercourse located in the northern part of the site ('C' watersheds); and areas draining to the north along Storrs Road, eventually discharging to Mirror Lake ('D' watersheds). A significant effort was made during the design of the stormwater management system to closely match the areas within each major watershed from predevelopment to postdevelopment conditions to minimize any potential downstream impacts. As mentioned previously, no development is proposed within, nor are any stormwater discharges proposed to, the vernal pool watershed.

Table 4 summarizes the total drainage area within the major subwatersheds and the difference from predevelopment to postdevelopment conditions. Characteristics (area, CN and t_C) for each postdevelopment subwatershed are summarized in Tables 5a through 5d. All calculation details may be found in Appendices G and H and postdevelopment drainage area maps are included in Appendix M.

Table 4
Comparison of Pre- and Postdevelopment Major Watershed Areas

Major Watershed	Drainage Area (acres)		
	Pre	Post	Δ
A	1.100	1.271	+0.171
B	22.609	23.826	+1.218
C	14.852	15.053	+0.201
D	8.471	7.242	-1.229

Table 5a
Postdevelopment Drainage Area Characteristics
Major Watershed A

Subwatershed ID	Area (acres)	Composite Curve Number (CN)	Time of Concentration (minutes)
PA1	1.271	91	5.0
A	**1.271**		

Table 5b
Postdevelopment Drainage Area Characteristics
Major Watershed B

Subwatershed ID	Area (acres)	Composite Curve Number (CN)	Time of Concentration (minutes)
PB1	3.006	72	17.8
PB4	1.664	73	19.9
PB5	6.037	63	16.3
P-FB-B1	1.268	87	5.0
P-FB-B2	1.620	91	5.0
P-FB-B3	2.279	94	5.0
P-FB-B4	0.303	96	5.0
P-WM-B1	2.710	88	5.0
P-WM-B2	0.195	61	5.7
P-WM-B3	0.260	61	7.1
P-ST-B1	0.543	98	5.0
P-ST-B4	2.167	98	5.0
P-ST-B5	0.612	98	5.0
P-ST-B6	0.617	95	6.9
P-WQ-B1	0.545	94	5.0
B	**23.826**		

Table 5c
Postdevelopment Drainage Area Characteristics
Major Watershed C

Subwatershed ID	Area (acres)	Composite Curve Number (CN)	Time of Concentration (minutes)
PC4	4.922	66	10.5
PC108	2.592	91	5.7
P-FB-C1	0.558	82	5.0
P-FB-C2	1.359	88	5.0
P-ST-C1	3.428	97	8.1
P-ST-C2	1.260	98	5.0
P-ST-C3	0.934	98	5.0
C	**15.053**		

Table 5d
Postdevelopment Drainage Area Characteristics
Major Watershed D

Subwatershed ID	Area (acres)	Composite Curve Number (CN)	Time of Concentration (minutes)
PD1	7.242	93	8.6
D	**7.242**		

Groundwater Recharge Volume (GRV)

The total groundwater recharge volume to be maintained under postdevelopment conditions was calculated to be approximately 0.186-acre-feet (8,102-cubic feet) during the 1-inch water quality storm. The 2004 CT Water Quality Manual recommends that recharge opportunities be provided in the most permeable soils on the site; however, in order to maintain the hydrology to the existing wetlands, it was also important to consider the amount of recharge occurring within major watersheds B and C. To approximate the groundwater recharge necessary in each major watershed, the percentage of each soil type included in each major watershed is determined, then applied to the total GRV for the site.

No new recharge opportunities are proposed within major watersheds A and D as they include existing developed properties. All recharge opportunities are created within the BMPs proposed within major watersheds B and C. The most permeable soils onsite are also found in major watersheds B and C. The total calculated volume of recharge provided during the 1-inch water quality storm is 0.256 acre-feet (11,152 cubic feet). This recharge is provided in several facilities located within major watersheds B and C. Figure GRV.01 in Appendix I illustrates where groundwater recharge is occurring under predevelopment conditions. Similarly, Figure GRV.02 illustrates where groundwater recharge can be anticipated to occur under postdevelopment conditions and where new recharge opportunities are provided. The GRV calculations can also be found in Appendix I.

Water Quality Flow (WQF)

Water quality treatment may be provided using flow-based BMPs or volume-based BMPs. Storrs Center proposes a combination of both BMP types. Five flow-based water quality treatment units are proposed: four oil-grit separators (Vortechnics or approved equal) and one 2-chamber sedimentation structure. The water quality flow to each proposed unit was determined in order to aid in the sizing of the units. These are the only facilities currently proposed for which sizing by the water quality flow parameters versus the water quality volume parameters is recommended.

The first oil-grit separator unit (P-WQ-C1) is proposed to be located off-line, within major watershed C, near the existing catch basin identified as CB-107. This catch basin collects stormwater runoff from existing developed areas located along Storrs Road that are not included within this project, but which drain through the project area. This unit will provide water quality treatment for stormwater runoff that is currently receiving no treatment prior to discharging into the northern wetlands and watercourses.

Two oil-grit separator units (P-WQ-C2, P-WQ-C3) are proposed, within major watershed C, to provide water quality treatment for runoff from the two proposed parking garages (GR-1, GR-2). These units will provide treatment for this runoff prior to its discharge into proposed underground detention facility P-ST-C2.

The fourth oil-grit separator (P-WQ-D1) is proposed within major watershed D. This unit will provide water quality treatment for runoff from existing developed areas along Storrs Road prior to its discharge into Mirror Lake. The unit is proposed to be off-line and will be installed when improvements to Storrs Road are constructed.

A 2-chamber sedimentation structure is also proposed off line within major watershed B, near a proposed manhole identified as MH-522, at the rear of proposed building MP-1. This structure will provide treatment for existing developed areas along Storrs Road prior to its discharge into proposed underground detention basin P-ST-B4.

All water quality flow calculations can be found in Appendix J.

Water Quality Volume (WQV)

Water quality volume calculations are performed for those areas of development not treated by a flow-based BMP. Volume based BMPs that will provide water quality treatment include roadside tree box filters, filter basins, water quality swale/infiltration trenches, wet meadows and underground infiltration systems.

WQV calculations are performed for each individual catch basin area containing a roadside tree box filter. The WQV for each catch basin area is then compared against a typical calculation of the total water quality volume a roadside tree box filter can be expected to treat to determine whether there are sufficient roadside tree box filters proposed. Within most catch basin areas, several roadside tree box filters are proposed in series, such that the stormwater runoff that may bypass a roadside tree box filter will flow to the next downstream roadside tree box filter. As seen in the preliminary construction details found in Appendix E, these units are not proposed to have a structural bottom and will contain a

filter bed with an underdrain, which will convey treated flows to the next downstream catch basin. In sag locations a double-sized roadside tree box filter is proposed.

The filter bed of the roadside tree box filter will be constructed of sand with an average infiltration rate of approximately 20 feet per day (10 inches per hour). It is important to note that if CTDOT rainfall IDF relationships for Connecticut are considered, the generated IDF curves yield an approximate intensity of 4.6-inches per hour for a 2-year return frequency storm with a 5-minute duration and an approximate intensity of less than 0.6-inches per hour for a 2-year return frequency storm with a 24-hour duration (Table B-2.1, Appendix B, CTDOT Drainage Manual, October 2000). These intensities are less than the anticipated filtration rate of the filter sand media. As the roadside tree box filters are only designed for a 1-inch water quality storm, the consideration of rainfall intensity serves as a check that the roadside tree box filters will function as intended and provide sufficient water quality treatment for the water quality volume.

Groundwater recharge within proposed BMPs provides the additional benefit of aiding in providing water quality treatment. For several of the proposed facilities, treatment of the water quality volume is provided through infiltration, and no other treatment is necessary for the tributary area to the BMP. For these facilities, the water quality volume needing treatment in the facility is determined and compared against the anticipated groundwater recharge volume. Where the WQV is greater than the anticipated GRV, further treatment is necessary; where the WQV is less than the anticipated GRV, no further treatment is needed. For the filter basins, wet meadows and other proposed volume-based BMPs, the total area not receiving water quality treatment by an upstream BMP is determined and compared against any anticipated groundwater recharge. The difference between the two volumes represents the minimum volume for which water quality treatment must be provided within the facility. The size of the facility needed to provide the treatment required is then determined and compared to the actual proposed size of the facility.

Figures WQV.01 and WQV.02 in Appendix J illustrate how water quality treatment will be provided in major watersheds B and C, respectively. Water quality volume calculations for each catch basin inlet area, along with a comparison of the number of roadside tree box filters needed for each catch basin inlet area, can also be found in Appendix J.

Analysis Points

It was necessary to establish several analysis points where comparison of flows, volumes and velocities, could be made between predevelopment and postdevelopment conditions. Watersheds A and D do not have any subwatersheds for the purposes of this analysis and thus, no further analysis points were necessary.

Watershed B required several additional analysis points due to the desire to mimic existing conditions as closely as possible to provide sufficient hydrology to the existing wetlands, while protecting the existing watercourses from potential erosion. As such, three analysis points were used to compare pre- and postdevelopment conditions. The first analysis point (Analysis Point #B-1) considered is located at the outlet of the predevelopment B1 subwatershed, and corresponds to the outlet of the postdevelopment PB1 subwatershed. Similarly, the second analysis (Analysis Point #B-2) point to be considered is located at the

outlet of the predevelopment subwatershed B4, which corresponds to the postdevelopment subwatershed PB4. The final analysis point to be considered within the B watershed (Analysis Point #B-3) corresponds not only to the location of the outlets of predevelopment subwatershed B5 and postdevelopment subwatershed PB5, but also the outlet from Watershed B itself. These points are clearly depicted on PD.02 in Appendix M.

Watershed C required two analysis points to aid in the development of the stormwater management system for the site. The first analysis point (Analysis Point #C-1) is located at the downstream end of the existing culvert found at the outlet of predevelopment subwatershed C3. The outlet from the proposed underground detention system to serve postdevelopment subwatersheds P-ST-C1, P-ST-C2, P-ST-C3 will tie into this culvert. The second analysis point (Analysis Point #C-2) is located at the outlet of the major watershed, which corresponds to the outlet of the predevelopment subwatershed C4 and postdevelopment subwatershed PC4. These points are clearly depicted on PD.02 in Appendix M.

Peak Flow Control

Several proposed BMPs incorporate infiltration into their design. In order to estimate the flows, and thus, volumes, which will be lost, or "discarded" from the peak flow control model, a separate stage-discharge curve is created for each facility using Darcy's Law, which described the instantaneous discharge rate of a fluid through a porous medium, and entered into the peak flow control model. The saturated hydraulic conductivities presented in the Physical Soil Properties tables found in the NRCS Soil Survey Geographic (SSURGO) Database for Connecticut, 2005, are used to estimate the infiltration rates at the bottom of the proposed facility. Infiltration tests in the field at the location and elevation of the proposed facilities will be conducted prior to construction. These stage-discharge curves are included in Appendix G, along with reference material detailing how the curves were determined.

A rating curve for the proposed water quality swale/infiltration trench P-DS-C1 is also determined using FlowMaster, Version 6.1 (Appendix G). For a 1-year storm, the anticipated depth of flow in the swale is approximately 0.21-feet (2.5-inches), with an average velocity of less than 2.97 feet per second. For a 100-year storm, the anticipated depth of flow in the swale is approximately 0.42-feet (5.0-inches), with an average velocity of less than 4.37 feet per second. Permanent check dams are proposed for this channel to allow shallow ponding and enhance infiltration opportunities.

Separate calculations for emergency outlet sizing are not necessary as the emergency outlet for each facility is included in the peak flow control model.

The storm sewer conveyance system is designed for a 10-year storm event. All storm sewer calculations can be found in Appendix K.

Within major watershed C, an existing culvert will be used to convey flows into the northern watercourse from proposed underground detention basin, P-ST-C2. This point is also identified as Analysis Point #C-1. At the point where the existing culvert discharges into the northern watercourse, the watercourse is channelized. Due to this condition, the flow into

the watercourse during a 2-year storm under postdevelopment conditions is reduced to the 1-year, predevelopment flow, in order to provide additional stream channel protection.

For all other analyzed storms, the goal is for the postdevelopment peak flow to be less than or equal to the predevelopment peak flow. The peak flows were examined at each analysis point previously identified and described. Tables 6 through 10 summarize the pre- and postdevelopment peak flows, volumes and velocities for each analysis point.

Table 6
Comparison of Pre- and Postdevelopment Conditions
Analysis Point # B-1

Storm Frequency	Peak Flow (cfs)			Total Runoff Volume (ac-ft)		
	Pre	Post	Δ	Pre	Post	Δ *
1-yr	5.46	5.27	-0.19	0.759	1.331	0.572
2-yr	8.85	7.59	-1.29	1.126	1.702	0.576
10-yr	19.33	14.06	-5.27	2.235	2.660	0.425
25-yr	24.29	17.04	-7.25	2.759	3.088	0.329
50-yr	29.39	20.05	-9.34	3.297	3.521	0.224
100-yr	34.59	23.06	-11.53	3.846	3.955	0.109

* The difference in runoff volume is not a linear relationship. Underground Detention Basin P-ST-B4 has a secondary outlet that does not operate during smaller storms. This secondary outlet directs a portion of its outflow away from Analysis Point #B-1, to Filter Basin P-FB-B2 during large storm events.

Table 7
Comparison of Pre- and Postdevelopment Conditions
Analysis Point # B-2

Storm Frequency	Peak Flow (cfs)			Total Runoff Volume (ac-ft)		
	Pre	Post	Δ	Pre	Post	Δ
1-yr	1.92	0.71	-1.21	0.205	0.120	-0.085
2-yr	2.76	1.24	-1.52	0.291	0.196	-0.095
10-yr	5.15	3.27	-1.88	0.542	0.424	-0.118
25-yr	6.22	4.17	-2.05	0.657	0.532	-0.125
50-yr	7.30	5.09	-2.21	0.774	0.643	-0.131
100-yr	8.38	6.00	-2.38	0.893	0.757	-0.136

Table 8
Comparison of Pre- and Postdevelopment Conditions
Analysis Point # B-3

Storm Frequency	Peak Flow (cfs)			Total Runoff Volume (ac-ft)		
	Pre	Post	Δ	Pre	Post	Δ
1-yr	7.35	5.78	-1.57	1.216	1.844	0.628
2-yr	12.65	9.27	-3.38	1.878	2.598	0.720
10-yr	30.43	21.17	-9.26	3.974	5.033	1.059
25-yr	39.35	27.60	-11.75	4.993	6.198	1.205
50-yr	48.70	39.51	-9.19	6.055	7.396	1.341
100-yr	58.42	55.73	-2.69	7.151	8.618	1.467

Table 9
Comparison of Pre- and Postdevelopment Conditions
Analysis Point # C-1

Storm Frequency	Peak Flow (cfs)			Total Runoff Volume (ac-ft)			Average Velocity (fps)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
1-yr	10.80	7.89	-2.91	0.911	1.310	0.399	4.9	3.8	-1.1
2-yr	14.59	9.89	-4.70	1.249	1.699	0.450	5.4	4.1	-1.3
10-yr	22.28	15.08	-7.20	2.222	2.751	0.529	7.1	4.8	-2.3
25-yr	24.66	17.22	-7.44	2.667	3.216	0.549	7.8	5.5	-2.3
50-yr	26.73	19.32	-7.41	3.120	3.684	0.564	8.5	6.1	-2.4
100-yr	28.28	22.36	-5.92	3.579	4.151	0.572	9.1	7.1	-1.7

Table 10
Comparison of Pre- and Postdevelopment Conditions
Analysis Point # C-2

Storm Frequency	Peak Flow (cfs)			Total Runoff Volume (ac-ft)		
	Pre	Post	Δ	Pre	Post	Δ
1-yr	11.11	8.52	-2.59	1.090	1.648	0.558
2-yr	16.48	11.86	-4.62	1.569	2.227	0.658
10-yr	30.21	21.75	-8.46	3.032	3.886	0.854
25-yr	35.47	26.30	-9.17	3.729	4.652	0.923
50-yr	40.52	31.27	-9.25	4.450	5.434	0.984
100-yr	45.45	38.08	-7.37	6.229	6.237	0.008

Tables 11 through 14 summarize the predevelopment peak flows, postdevelopment peak flows and the differences between them by major watershed.

Table 11
Comparison of Pre- and Postdevelopment Conditions
Major Watershed A

Storm Frequency	Peak Flow (cfs)		
	Pre	Post	Δ
1-yr	2.36	1.41	-0.95
2-yr	3.07	1.85	-1.22
10-yr	4.95	3.03	-1.92
25-yr	5.77	3.54	-2.23
50-yr	6.58	4.05	-2.53
100-yr	7.39	4.56	-2.83

Table 12
Comparison of Pre- and Postdevelopment Conditions
Major Watershed B

Storm Frequency	Peak Flow (cfs)		
	Pre	Post	Δ
1-yr	7.35	5.87	-1.48
2-yr	12.65	9.38	-3.27
10-yr	30.43	21.34	-9.09
25-yr	39.35	30.06	-9.29
50-yr	48.70	41.15	-7.55
100-yr	58.42	57.52	-0.90

Table 13
Comparison of Pre- and Postdevelopment Conditions
Major Watershed C

Storm Frequency	Peak Flow (cfs)		
	Pre	Post	Δ
1-yr	11.11	8.57	-2.54
2-yr	16.48	11.91	-4.57
10-yr	30.21	21.77	-8.44
25-yr	35.47	26.34	-9.13
50-yr	40.52	31.77	-8.75
100-yr	45.45	37.79	-7.66

Table 14
Comparison of Pre- and Postdevelopment Conditions
Major Watershed D

Storm Frequency	Peak Flow (cfs)		
	Pre	Post	Δ
1-yr	14.67	13.64	-1.03
2-yr	19.50	17.94	-1.56
10-yr	32.41	29.39	-3.02
25-yr	38.03	34.37	-3.66
50-yr	43.62	39.32	-4.30
100-yr	49.20	44.25	-4.95

CONCLUSIONS

The approach of the original Master Stormwater Drainage Study was to study the existing site and to determine how stormwater will be managed under the developed condition, while minimizing impacts to the existing natural features on site. The plans for Phase 1A/1B of the Storrs Center project are fully consistent with the methodology, analysis, best management practices, and conclusions of the Master Stormwater Drainage Study.

This project will deliver additional stormwater benefits to the Town. Retrofit water quality treatment BMPs to treat the runoff from the existing commercial/retail properties (which is currently untreated) will be incorporated into the project. As a result of this development, redeveloped areas that previously had no BMPs are now incorporated into the stormwater management plan for the site.

The water quality of the runoff ultimately entering the adjacent wetlands and watercourses will be improved over predevelopment conditions. There is also no anticipated change to the extent of inundation in the wetlands as the stormwater management system is designed to mimic existing conditions as closely as possible to provide sufficient hydrology to the existing wetlands, while protecting the existing watercourses from erosion. In addition to peak flow attenuation, water quality treatment and groundwater recharge is provided by a variety of BMPs. All BMPs chosen for the site are designed according to the CTDEP 2004 Water Quality Manual.

Statement of Consistency with Design Guidelines for Storrs Center
Phase 1A and 1B

Town Square Area

The fundamental goal of the design guidelines is to create an architecture that will define the town center, enhance, enliven, and support the focus upon the public spaces and the life of the street. It must provide streetscapes and defined street walls that support and enhance the experiences of daily life, with particular emphasis on the ground plane and lower level, where the perception of the project by pedestrians, patrons, and passers-by is the strongest. Buildings must work together as an extension of the urban plan to reinforce the focus on the public realm as the shared setting of public and commercial activity. Successful street walls will hold together as a background to the places that they define, while allowing for variety and an organic quality. The occasional individual building may become a focus in the streetscape – but only as a foil to the collective of buildings that work together to define public spaces and streetscapes.

As part of the design process in conjunction with the goals stated above, the design team looked to the tradition of vernacular and regional architecture as well as local climate, land conditions, and the culture of the region. Inspiration was sought in forms that were often developed by local custom, using regional materials or sustainable equivalents with similar appearance, techniques, and forms. To avoid the trap of being dated by conforming to an accepted concept of style or form, the design team sought a sense of authenticity that does not derive simply from the duplication of past styles but primarily from the recognition of the role that buildings play in defining the landscape of daily life and interaction. Like the vernacular, the architecture of Storrs Center responds practically to the place and purpose for which it is built with a collective focus on the creation of a lasting and sustainable backdrop to life and culture in Mansfield.

Early in the design process massing studies were done to establish standards for height, scale, and mass in basic building fabric that would be strong enough to tie the first phase of the project together while allowing enough flexibility in form to accommodate key architectural gestures where appropriate to the urban context and the essential vistas. The strength of the overall massing and fabric should be such that it allows for the architectural variation that will create a localized, pedestrian oriented sense of scale at the street level. At the same time we were aware that the Town Square is the largest civic space in Storrs Center. At the larger urban scale, buildings surrounding the Town Square need to function collectively to reinforce and define the sense of space within the Town Square Area and bear a proportional relationship to this large public space and neighboring institutions.

The general form we chose to address these needs was traditional sturdy vernacular building form that has a strong single story “base” that would house the commercial uses, a three story “body” with a uniform plane of siding punctuated with rhythmical windows in the middle of the building, and a single story “cap” created with a trim band and a change of materials. The single story cap at the top of the building can be altered to

variegate the roof line and allow for greater diversity of architectural form. Different roof types, profiles, and features, such as dormers provide the variety of roof line that delineates the architectural perimeter of the Town Square. The three-story body of the building is large and strong enough maintain the pleasant building proportions even as the height of the ground story changed with the grade of the streetscape. The strong horizontal bands established by the repetition of building base, body and cap also creates a strong common element among all the buildings that allows the buildings to function collectively to define the large civic space of the Town Square. Breaking these same horizontal bands also presents the opportunity to introduce localized, site specific architectural gestures, such as bays, prominent symmetries and vertical elements to demarcate key terminating vistas such as the end of Bolton Road, the corner of the northerly building on the Town Square, the view towards Dog Lane, and the terminal view from the Village Street into the Town Square.

Based on the massing models and design philosophy that was applied to the buildings in Phases 1A and 1B, elevations were gradually developed and presented to the Mansfield Downtown Partnership design committee on two occasions. Building TS-1, located at the northern end of the Town Square with elevations that face both Storrs Road and Dog Lane, is distinguished by a strong corner element with a two-story base and prominent gable top. TS-2 addresses the eastern side of the Town Square with a strong frontal façade along the Town Square and a prominent, vertical gable form that terminates the vista down Bolton Road. Building DL-1/2, stretching up Dog Lane, includes a tower-like feature at its western end adjacent to the Town Square to frame the view diagonally across the Town Square give urban presence to that corner of the Town Square. Careful consideration was given to the perception at ground plane of the pedestrian and visitors to the Town Square. Not only should the architecture provide cohesiveness and clarity to the main civic space of the Square; but this singular experience must be juxtaposed against changing urban vistas and architectural streetscapes as visitors move around and through this central civic space.

At the Planning and Design Committee meetings there was general agreement with the overall approach to the design, but there was also a general consensus that the individual facades should be further segmented to provide a scalar breakdown indicative of multiple buildings with a vertical orientation to the street. It was also suggested that the façade of building TS-1 that faces north towards Buckley Hall should be developed to present a stronger first image of the new town center when approached from the direction of the University. As a result of the feed back from the meetings, major adjustments were made to the façades by breaking the scale of the buildings down into smaller elements and introducing a greater variety of building types and forms within each of the three primary building masses. The north end of building TS-1 was redesigned to make it more prominent and signatory of the buildings forms to come as one enters the Town Square.

Design participation by the committee has produced a much stronger project. The overall scale and mass of the buildings that make up a neighborhood now play a key role in providing the critical threshold of development needed to attract patrons, pedestrians, and activities to a particular area. Buildings provide the perimeter walls for streets and public

spaces and are designed in a manner that is consistent with the nature of the spaces that they define. Buildings also share with their neighbors a sense of harmony that reveals a shared focus on defining high quality, vibrant public spaces. In the town center, the primary focus of building design is on the whole – the creation of a clearly defined public and outdoor space as a collective expression that uses carefully crafted individual building facades to create a harmonious civic experience. In summary, the design of the buildings for Phases 1A and 1B is consistent with the letter and spirit of the design guidelines.

5.2 DESIGN CERTIFICATION FORM

The application is consistent with the attached design review checklist.

Phase 1A/1B (DL-1/DL-2, TS-1, TS-2)
Name and Location of Building

Andrew Graves
Architect of Record

January 13, 2011
Date

5.3 STORRS CENTER DESIGN REVIEW CHECKLIST

Building/Site Description: Storrs Center Phase 1A/1B

Location: Buildings DL-1/DL-2, TS-1, TS-2

Area: Town Square

Architect/Engineer: A.Graves, G. Fitzgerald, BL Companies, Meriden, CT

Contact/Phone: (800) 301-3077

Initial Review Date: January 13, 2011

All questions should be answered Yes/No/NA unless specific information is requested. For 'No' answers, please include explanatory Comments/Notes. In these regulations "reasonable consistency" means that some variation or deviation from specific provisions is acceptable provided that the overall intent of the provision is achieved.

Section 1.3 Preliminary Master Plan

Is the overall plan contained in the zoning permit application reasonably consistent with the Preliminary Master Plan?

Y	N	NA
Y		

Comments/Notes:

The Phase 1A/1B site layout and technical elements are notably consistent with the Master Plan. The overall layout and width of the proposed streets remains unchanged. The location and dimensions of the proposed Town Square is unchanged, and the proposed building locations and perimeters are consistent with those in the master plan. As noted on the site plans, all new electrical, and telephone utility infrastructure is proposed to be located underground.

Sections 2.3 – 2.6 Area Specific Requirements

Is the site plan reasonably consistent with the area specific design standards for its location (i.e., Town Square, Market Square, Village Street, Residential)?

	Y	N	NA
Allowable Uses	Y		

Building Setback	Y		
Building Height	Y		
Façade Setback	Y		
Eave Projection	Y		
Roof Profile	Y		
Recessed Entries	Y		
Awnings			NA
Balconies	Y		
Covered Arcades/Galleries	Y		

Comments/Notes:

Allowable uses: Phase 1A and 1B buildings contain residential and commercial uses consistent with SDD requirements (see the Table of Uses).
Building Setbacks: Front and side yard set backs are 0 ft in the Town Square Area as long as there is 8' between the face of the building and the back of the street curb. Building locations meet these requirements.
Building Height: Town Square Area has a maximum height limitation of 85'. Maximum proposed building height is 70'.
Façade Setbacks: Setbacks are permitted to be up to 2' at the building face and 12' at the penthouse level. There are currently no façade setbacks in the project.
Eave Projections: Projections are permitted to be up to 3'. Current design meets this eave projection limitation in some locations but does not exceed these requirements. Dimensions are provided on the elevations.
Roof Profile: Single slope roofs adhere to the maximum slope requirement of 12-in-12, multiple slope roofs conform to traditional forms and proportions.
Recessed Entries: The majority of building entrances are flush with the exterior façades. Where residential lobby entrances are recessed, they are less than the 4' as permitted in the SDD guidelines.
Awnings: Space has been provided between the trim band at the bottom of the residential portion of the building and the top of the storefront of the commercial spaces on the first floor to allow for the placement of awning by the commercial tenants when they fit out there spaces. Tenant façade improvements including the place and configuration of awnings will be reviewed for conformance with the SDD guidelines. All commercial tenants are required to submit proposed improvements to Storrs Center Alliance for review and written approval prior to submitting applications to the Town.
Balconies: Balconies are provided on street facades of the buildings in accordance with SDD guidelines. No balconies are provided along Storrs Road, which would exceed the 18" maximum. Balconies are provided along Dog Lane and the Village Street, which project less than the permitted 48".
Covered Arcade/Galleries: Covered arcades and/or galleries are provided at the west end of building DL-1/2 but are not provided along Storrs Road where not permitted.

Are the streets reasonably consistent with the roadway design standards for their location?

	Y	**N**	**NA**
Lane Widths	Y		
Parking Lane Widths	Y		
Turning/Curb Radius	Y		
Curb Heights	Y		

Comments/Notes:

Lane widths are the same as those proposed in the Preliminary Master Plan. Curb radii at all critical intersections are consistent with those in the Preliminary Master Plan. Curb heights are consistent with the Design Guidelines, with curbs along Storrs Road being 6" reveal, and curb heights along Dog Lane and the Storrs Center Village Streets being 4" reveal. The location of proposed intersections with Storrs Road are identical to the Preliminary Master Plan, and on-street parking is accommodated on Storrs Road as well as on Dog Lane and the proposed new public streets.

Are the streetscape elements reasonably consistent with the design standards for their location?

	Y	**N**	**NA**
Sidewalks	Y		
Terraces	Y		
Combined Sidewalk/Terrace Areas	Y		
On-street Parking	Y		
Street Trees	Y		
Street Lighting	Y		
Street Furniture	Y		

Comments/Notes:

Due to a State Traffic Commission requirement to increase depth of parallel parking spaces along Storrs Road, combined sidewalk/terrace areas in front of TS-1 are slightly less than 18 feet in some areas along the east side of Storrs Road. However, in the areas where there is no on-street parking, the sidewalk/terrace areas are well in excess of 18 feet.

Is the building scale and composition reasonably consistent with the applicable Building

Composition diagrams?

	Y	**N**	**NA**
Massing and Scale	Y		
Horizontal/Vertical Divisions	Y		

Comments/Notes:

Massing and Scale: Building façades facing the Town Square have large prominent symmetrical massing elements with a uniform rhythm vertically proportioned windows and tower elements. Key vistas are terminated with strong building elements with two story masonry bases and prominent vernacular gable forms at the end of Bolton Road and at the corner of Storrs Road and Dog Lane. As the façades of the buildings move away from the Town Square up Dog Lane and down the Village Street the scale of building elements is reduced by the use of smaller scale roof elements, less prominent street façades and banding and material changes along the top story of the building.
Horizontal/Vertical Divisions: A strong horizontal band at the second floor deck of most buildings clearly defines and segregates the first floor commercial spaces for the residential spaces above except where it has been raised in a few select locations for special emphasis as mentioned above. Building facades are vertically proportioned by the use of vertical divisions between different building façades and vertical compositional elements within each façade.

Is the building orientation and façade design reasonably consistent with

the applicable Building Composition diagrams?

In accordance with the guidelines, prominent architectural elements have been placed at the terminus of Bolton Road, the corner of Dog Lane and Storrs Road and at the end of building DL-1/2 where the west end of the building approaches the Town Square. These important locations define key vistas, views across the Town Square and the terminus of key axes.

	Y	**N**	**NA**
Location of entrances	Y		
Location of special elements and architectural gestures	Y		

Comments/Notes:

Locations of Entrances: Entrances to first floor commercial spaces are integrated into the storefront façades along the streetscape. Where the potential for larger retail spaces exist, more prominent entrances are provided particularly where the façade of TS-2 fronts on the Town Square. Residential entrances to the apartments above the first floor are clearly defined both at the point of entry on the first floor and with fenestration and roof patterns above.

Location of special elements and architectural gesture: Important architectural gestures are constrained to the key vistas and axes described above.

Section 3 Lot and Building Standards

Section 3.2.1 Site Layout Standards

Is the Site Layout reasonably consistent with the Site Layout Standards?

	Y	**N**	**NA**
Site features	Y		
Visual patterns	Y		
Building entrances	Y		
Major parking areas	Y		

Section 3.3.2 Building Layout and Design Standards

Is the scale of the building mass reasonably compatible with existing or planned nearby buildings?

Y	**N**	**NA**
Y		

Are the roof mass and building façade reasonably compatible as a building composition?

Y	**N**	**NA**
Y		

Does the design reasonably incorporate weather protection, convenience and safety features for pedestrians?

Y	**N**	**NA**
Y		

Comments/Notes:

Compatible Building Scale: Building scale and massing is consistent with the adjacent university buildings to the north, the SDD guidelines, and the proposed future development to take place in the remainder of the SDD project area. Building TS-1, TS-2 and DL-2 are all 5 stories tall, a half story less than permitted. Building DL-1, which is attached to the east end of DL-2, is 4 stories tall with a single story barn style garage to the north.
Roof mass and façade composition: Building façades are generally divided into a traditional first story commercial base, 3 story residential body and single story cap consisting of a variety of dormer or roof forms. Strong top story gable forms are used at visually important locations.
Weather Protection, Convenience and Safety: Residential entrances have lobby vestibules for easy access and convenience; large retail space entrances have permanent canopies, and architectural allowances have been provided for the installation of awnings for smaller first floor commercial tenants. Building roofs will be internally drained where flat, or will have gutters and snow guards when sloped.

Section 3.3.3 Floor Heights

Are the floor-to-floor heights reasonably consistent with the design guidelines?

Y	N	NA
Y		

Comments/Notes:

Floor-to Floor Heights: First floor commercial floor-to-floor heights vary due to the change in the street elevations but are at a minimum between the 15' and 20' specified in the guidelines. Floor-to-floor spacing on the residential floors is 11'-0" which provides for 9' ceilings in the residential units and the appropriate structural floor thickness.

3.4 Façade Composition

3.4.1 Building Walls

Are the windows reasonably compatible with the building design?

Y	N	NA
Y		

Are the windows generally vertically proportioned?

Y	N	NA
Y		

Are the windows rhythmically spaced in a pattern reasonably compatible with the building form?

Y	N	NA
Y		

Are the windows on upper floors generally smaller than the ground floor display windows?

Y	N	NA
Y		

Are the windows generally recessed in their openings?

Y	N	NA
Y		

Comments/Notes:

Windows compatible with building design: Building forms are generally based on 19th and early 20th century forms of American vernacular architecture. Windows are double hung and casements with a variety of lite patterns consistent with the buildings they are in.
Windows vertically proportioned: Windows do vary somewhat from façade to façade, but are generally twice as tall as they are wide.
Windows rhythmically spaced: Windows are generally spaced at a consistent rhythm of 10' to 12' on center. Where appropriate, window rhythms vary to accentuate building entrances and roof forms.
Windows smaller than the ground floor display windows: Upper story windows are significantly smaller than commercial first floor storefront openings.
Recessed Window openings: Fixed, double hung and casement windows are all conventional sash and frame windows where window sash will be recessed behind the surface of the building façades.

3.4.2 Window Openings

Are the window openings designed to be reasonably consistent with the design guidelines?

Y	N	NA
Y		

Comments/Notes:

Windows and rhythmically spaced, vertically proportioned and contextually appropriate for the façades that they are placed in.

3.4.3 Shutters

Are shutters designed to be reasonably consistent with the design guidelines?

Y	N	NA
		NA

Comments/Notes:

Shutters are not provided in this phase of the project.

3.4.4 Balconies

Are balconies designed to be reasonably consistent with the design guidelines?

Y	N	NA
Y		

Comments/Notes:

Balconies: Balconies are provided on street facades of the buildings in accordance with SDD guidelines. No balconies are provided along Storrs Road which would exceed the 18” maximum. Balconies are provided along Dog Lane and the Village Street, which project less than the permitted 48”.

3.4.5 Entries

Are primary building entrances clearly defined and articulated?

Y	N	NA
Y		

Does the main entrance face a major street?

Y	N	NA
Y		

If the building has a prominent corner location, is an entrance located at the corner (if applicable)?

Y	N	NA
Y		

Are the Americans with Disabilities Act (ADA) standards for building entries addressed in the documentation?

Y	N	NA
Y		

Comments/Notes:

Building Entrances: Entrances to first floor commercial spaces are integrated into the storefront façades along the streetscape. Where the potential for larger retail spaces exist more prominent entrances are provided particularly where the façade of TS-2 fronts on the Town Square. Residential entrances to the apartments above the first floor are clearly defined both at the point of entry on the first floor and with fenestration and roof patterns above. Building entrances are directly off Dog Lane or the Village Street.
American with Disabilities Act: All entrances are ADA compliant as required by the Connecticut Building Code.

3.5 Commercial Storefronts

NOTE: Zoning approval plans may not include final individual storefronts and signage pending identification of actual tenants and application for tenant fit-out permits. If not included with zoning approval package, signage and storefronts for individual tenant fit-outs must demonstrate compliance with these design guidelines as part of applications for permitting of individual tenant fit-out construction. In addition, all commercial tenants are required to submit proposed improvements to Storrs Center Alliance for review and written approval prior to submitting to the Town.

3.5.2 Composition

Where included, are the storefronts reasonably consistent with framework of traditional storefront design?

Y	N	NA
Y		

Is there diversity of character and individuality among the various storefronts?

Y	N	NA
		NA

Are storefront entrances clearly marked?

Y	N	NA
		NA

Is the relationship of indoor to outdoor reasonably well established using transparency or, at terraces, operable doors and windows?

Y	N	NA
Y		

Comments/Notes:
Commercial storefronts are rhythmical and vertically proportioned and appropriately scaled for the façades in which they are placed. A large proportion of the ground floor street front façades are glazed to provide a strong connection between commercial spaces and the streetscape. Individuation of storefronts, placement of awnings, entrances, and transoms will be proposed by individual tenants leasing the spaces.

3.5.4 Materials

What materials are used for the storefronts?

Storefronts shall consist of large tempered insulated glass panels set in thermally broken aluminum frames with a kynar finish wrapped with painted trim.

Are materials used reasonably consistent with the design guidelines?

Y	N	NA
Y		

Comments/Notes:

Materials described are consistent with SDD guidelines

3.6 Roof and Cornice Form

Is the building designed with a cornice or parapet wall in accordance with the design guidelines?

Y	N	NA
Y		

Where applicable, do traditional roof forms reasonably follow historic precedent?

Y	N	NA
Y		

Are the roofs consistent to the height limitations in the design guidelines?

Y	N	NA
Y		

Comments/Notes:

Cornice and Parapets: Where provided, Parapets extend at least 30" above roof planes behind in accordance with the guidelines. Cornice widths are at least 10" in accordance with the guidelines, but are typically wider in proportion to the façade below.
Roof Forms: Roof forms are typically single sloped gable, hip, shed and mansard forms with pitches between 4 and 12-in-12 in keeping with traditional vernacular forms and the design guidelines. Double sloped gambrel roofs are also used in conjunction with shed and gable form dormers.
Roof Heights: Roof heights are limited to 70', 15' less than the permitted height set forth in the SDD guidelines.

3.6.3 Materials and Colors

What are the roof materials and colors?

Standing seam metal roofs and fiberglass shingles are both used. Colors are warm grays and earth tones consistent with natural roofing materials. Colors will also be consistent with SRI index required by the sustainability guidelines.

Are materials and colors reasonably consistent with the design guidelines?

Y	N	NA
Y		

Comments/Notes:

Selected materials and colors are consistent with the design guidelines.

3.6.4 Mechanical Equipment

Is roof-mounted equipment (HVAC, plumbing, exhaust fans, etc.) reasonably concealed from view?

Y	N	NA
Y		

Are wall mounted grilles, vents and louvers reasonably integrated into the façade design?

Y	N	NA
Y		

Comments/Notes:

Roof Mounted HVAC equipment: Roof mounted equipment is typically located near the center of building roofs which are protected from view by parapets and mansard roofs that are at least 30" higher than the roof plane that the equipment is situated on.
Wall mounted grills: Wall mounted grills will be painted to match the siding color. Multiple vents will be combined where possible.

3.7 Building Materials

3.7.2 Appropriate Materials

What building materials are used?

Facades: Clapboard siding, brick, cast stone, painted panels, and board and batten siding

Windows: Vinyl fixed, double hung and casements with painted trim.

Doors: Aluminum and glass, painted hollow metal (rear of buildings). Aluminum surfaces will have a factory finished color

Trim: Pre-finished or painted Fiber cement or PVC

Visible Roofing: Standing seam metal or fiberglass shingles.

Are the materials used appropriate and compatible to those of adjacent buildings and reasonably consistent with the design guidelines?

Y	N	NA
Y		

Comments/Notes:

Selected materials are all specifically permitted by the SDD guidelines.

3.8 Colors

Is the paint color scheme reasonably consistent with the design guidelines?

Y	N	NA
Y		

Comments/Notes:

Colors are limited typically to two or three colors per building façade with a base trim and accent color. Colors are traditional, similar to the Benjamin Moore Historic Color palette.

3.9 Building Lighting Design

If applicable, is the lighting plan design for the building reasonably consistent with the design guidelines?

Y	N	NA
		NA

Are the fixtures compatible with the design guidelines?

Y	N	NA
		NA

Comments/Notes:

Storefront lightning will be proposed on an individual basis as tenants fit out their spaces. Tenant lighting will be reviewed for consistency with the design guidelines prior to being submitted for approval. All commercial tenants are required to submit proposed lighting plans to Storrs Center Alliance for review and written approval prior to submitting applications to the Town.

3.10 Building Signage

NOTE: Zoning approval plans may not include final individual storefronts and signage pending identification of actual tenants and application for tenant fit-out permits. If not included with zoning approval package, signage and storefronts for individual tenant fit-outs must demonstrate compliance with these design guidelines as part of applications for permitting of individual tenant fit-out construction.

If included, is the building signage design reasonably consistent with the design guidelines?

Y	N	NA
		NA

Comments/Notes:

Building signage will be permitted on an individual basis as tenants fit out their spaces. Tenant signage will be reviewed for consistency with the design guidelines prior to being submitted for approval. All commercial tenants are required to submit proposed signage plans to Storrs Center Alliance for review and written approval prior to submitting applications to the Town.

3.11 Building Safety Issues

Are applicable building safety issues addressed in the plans?

Y	N	NA
Y		

Comments/Notes:

Plans have been developed in accordance with the current codes applicable in the State of Connecticut. Detailed conformance with pertinent code requirements will be addressed in documents submitted for the building permit.

Section 4 Site Improvement Standards

4.2 Street Trees

What street tree species are used?

Is the size and spacing of trees reasonably consistent with the design guidelines?

Y	N	NA
Y		

Comments/Notes:

Tree Species used include:

Aesculus x carnea (RED HORSECHESTNUT)
Acer rubrum 'October Glory' (OCTOBER GLORY RED MAPLE)
Cercidiphyllum japonicum (KATSURA TREE)
Ginko biloba 'Princeton Sentry' (GINKO)
Gleditisia triacanthos var. inermis 'Shademaster' (SHADEMASTER THORNLESS HONEYLOCUST)
Liquidambar styraciflua (SWEETGUM)
Platanus x acerifolia 'Bloodgood' (LONDON PLANE TREE)
Quercus palustris (PIN OAK)
Tilia cordata 'Greenspire' (GREENSPIRE LINDEN)
Ulmus americana 'Valley Forge' (AMERICAN ELM)
Zelkova serrata 'Village Green' (VILLAGE GREEN ZELKOVA)

Size, spacing, and grouping of tree species is consistent with the Design Guidelines. A monoculture of species is avoided, yet groupings of the same tree are provided to create a strong identity for distinct areas.

4.3 Public Space Details

Is a continuous clear passage width of five feet maintained on all public sidewalks?

Y	N	NA
Y		

What materials are used for public sidewalks, outdoor terraces, and plaza spaces?

Are the materials used reasonably consistent with the design guidelines?

Y	N	NA
Y		

Is the design of the street tree planting beds reasonably compatible with the design guidelines?

Y	N	NA
Y		

Are the materials used in private walks compatible with the materials used in public sidewalks?

Y	N	NA
Y		

Does the plan include:

	Y	N	NA
Bus stop shelter, if applicable	Y		
Bike racks	Y		
Directional signage		N	
Benches	Y		

Comments/Notes:

Hardscape materials proposed include concrete, colored concrete, and stamped concrete. Details for Bus Stop shelter, bike racks, and benches are included in the plan detail sheets. Directional Signage is being developed by the design team and will be incorporated into the Village Street design by the Town.

4.4.2 Parking Structures

Do parking structures have reasonably appropriate architectural cladding or building liners where exposed on street fronts?

Y	N	NA
		NA

On perimeters visible from surrounding areas, are parking structures appropriately screened with landscaping?

Y	N	NA
		NA

Comments/Notes:

The parking structure GR-1 will be the subject of a separate Zoning Permit Application.

4.4.3 Off-Street Surface Parking

Are surface parking areas located to the side or rear of buildings where possible?

Y	N	NA
Y		

Is the number of contiguous parking spaces generally consistent with the design guidelines?

Y	N	NA
Y		

Do surface parking areas have appropriate landscaping or screening?

Y	N	NA
Y		

Comments/Notes:

4.5 Service and Utility Areas

Are service areas located in the rear or side yards, where possible?

Y	N	NA
Y		

Are walls, fences, or landscaping used to screen service areas?

Y	N	NA
Y		

Are refuse containers enclosed with an opaque wall?

Y	N	NA
Y		

Is the service area contained in a recess of the building or enclosed where possible?

Y	N	NA
Y		

Are service areas sized to address Mansfield recycling requirements?

Y	N	NA
Y		

Comments/Notes:

Mansfield recycling requirements: A waste management plan consistent with town requirements has been submitted for review

4.6 Site Lighting

Is the site lighting pedestrian scaled?

Y	N	NA
Y		

Does the site lighting complement the architectural design?

Y	N	NA
Y		

Is the site lighting focused downward to illuminate appropriate areas and to avoid spill-off into other areas?

Y	N	NA
Y		

Comments/Notes:

Proposed site lighting is the "Battery Park" fixture by Sentry, or the "Providence" LED by Architectural Area Lighting (AAL). The fixtures, poles and pole heights are consistent with the Design Guidelines. Cross bars for banner/planter hanging are provided, as is an electrical receptacle in each base. The Sentry fixture is the same fixture used by the Town of Mansfield in the Community Center Pedestrian Connection on the north side of Town Hall. The Providence LED is a high-efficiency Light Emitting Diode fixture.

4.7 Site Signage

Is the site signage plan reasonably consistent with the guidelines?

Y	N	NA
		NA

Has adequate signage been provided to guide visitors in the vicinity of the building(s)?

Y	N	NA
		NA

Comments/Notes:

Site Signage will be subject to subsequent review and approval.

4.9 Site Safety Issues

Are applicable site safety issues addressed in the plans?

Y	N	NA
Y		

Have Mansfield Fire Lane standards been addressed?

Y	N	NA
Y		

Comments/Notes:

All known public safety issues are addressed in the plans, and Fire Lane standards, radii and lane widths are consistent with the Storrs Center Preliminary Master Plan, which was specifically reviewed for these issues with the Mansfield Fire Marshal.

PLANS

(PROVIDED UNDER SEPARATE COVER)