

**TOWN OF CARRBORO  
APPEARANCE COMMISSION  
AGENDA**

**September 3<sup>rd</sup>, 2020**

**7:30 PM**

**\*Remote Meeting**

7:30- 8:30

I. Joint Review Meeting Items:

- A. Concept Plan- Subdivision of 721 Jones Ferry Road
- B. Concept Plan- Conditional Use Permit for 1716 Smith Level Road
- C. Club Nova- Modification to Conditional Use Permit

8:30- 8:45

II. Review of proposed mural on side of Gray Squirrel Coffee Shop

8:45-9:00

III. Review of proposed mural on side of 111 North Merritt Mill Road

9:00- 9:30

III. Discussion of Joint Review Items

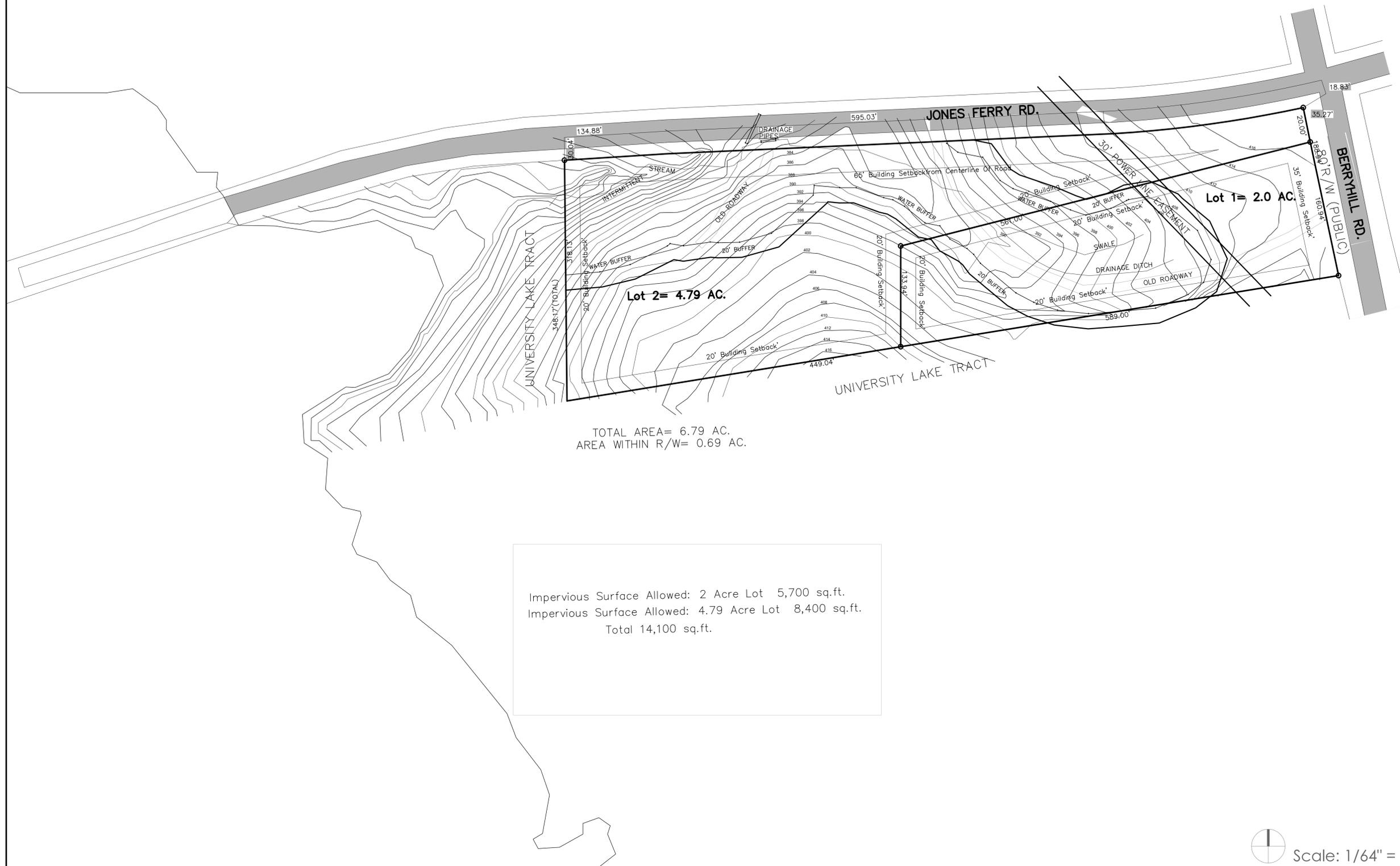
Adjourn

\*To view the advisory board meeting, please email James Thomas at [jthomas@townofcarrboro.org](mailto:jthomas@townofcarrboro.org) to receive an invitation to view the meeting. If you wish to make public comment, at the time of the public comment, the staff person will be able to allow speakers to remotely enter the meeting one-by-one to comment. Please send any written statement or materials to the same email provided above. Requests to remotely attend the meeting shall be made within 24 hours of the meeting start time. The requester should also specify if they wish to make any comments in the email. All written statements and materials will be forwarded to the advisory board members.

# SZOSTAK DESIGN

QUINSEY HOUSE

CHAPEL HILL, NC



NOT FOR CONSTRUCTION

NOTE: IF THIS DRAWING IS NOT 24"x36", IT IS A REDUCED PRINT. REFER TO GRAPHIC SCALE.

JULY 24, 2020

NO.	DATE	DESCRIPTION
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SITE PLAN

SCHEMATIC DESIGN  
JULY 5, 2020

The above Drawings, specifications, ideas, designs and arrangements represented thereby are and shall remain the property of the architect. No part thereof shall be copied, disclosed to others or used in connection with any work or project other than the specific project for which they have been prepared or reviewed without the written consent of the architect.



Scale: 1/64" = 1'-0"

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1716 Smith Level Rd Building Style



# JOINT REVIEW

## AGENDA ITEM ABSTRACT

MEETING DATE: THURSDAY, SEPTEMBER 3, 2020

SUBJECT: CLUB NOVA CUP MAJOR MODIFICATION, 103 W. MAIN STREET

<b>DEPARTMENT:</b> PLANNING DEPARTMENT	<b>PUBLIC HEARING:</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>ATTACHMENTS:</b> A. STAFF REPORT B. PROJECT PLANS C. CONDITIONAL USE PERMIT DOCUMENTS D. JOINT REVIEW 2019 CONCEPT RECOMMENDATIONS E. APPLICANT NARRATIVE F. SATELLITE PARKING AGREEMENTS G. APPLICANT BIKE PARKING REDUCTION JUSTIFICATION H. STORMWATER REPORT I. ENGINEERING DRAWINGS J. EROSION CONTROL PLANS K. DLA AND ULA DOCUMENTS L. APPEARANCE COMMISSION RECOMMENDATIONS (PENDING) M. CONSTRUCTION MANAGEMENT PLAN N. BUILDING CONTEXT ELEVATIONS O. NIM SIGN-IN SHEET AND NOTES	<b>FOR INFORMATION CONTACT:</b>  Marty Roupe, Development Review Administrator, 919-918-7333 or <a href="mailto:mroupe@townofcarrboro.org">mroupe@townofcarrboro.org</a>

### PURPOSE

Club Nova Community, Inc. has made an application for a Major Modification to the Club Nova Conditional Use Permit. This modification proposes the construction of a 9,056 sf two-story (with mezzanine) building that will replace both the existing detached club house and thrift store buildings.

The project involves major changes to the existing site arrangements.

### INFORMATION

The proposed use of this building will remain primarily office and retail (use categories #2.110 and #3.110) and is unchanged from the existing uses. The original 2002 Conditional Use Permit (CUP) allowed the construction of twenty-four (24) single-room occupancy units in a three-story apartment building located behind the existing club house and thrift store. As part of the 2002 permit, the existing office building (a converted house) and the brick annex building would remain in place on the property. The new proposal will combine these uses into the new 9,056 sf replacement building; this will increase the total combined square footage of the existing situation by 3739 sf.

## RECOMMENDATIONS

Town staff recommends that the Joint Review Boards review the conditions below, offer comment as needed, and prepare summary recommendations:

1. That prior to construction plan approval, the applicant receive a driveway permit from NCDOT in accordance with any conditions imposed by such agency including but not limited to encroachment / maintenance agreements for lighting and sidewalks.
2. That twenty-two (22) parking spaces shall be required for the project due to the project's proximity to a bus line, proximity to a municipal parking lot, low rate of expected vehicular ownership amongst the residential population, and, complementary hours of operation between the office use and retail use.
3. That the Board of Aldermen hereby finds that that the loading and unloading areas shown on the plans are sufficient to accommodate delivery operations in a safe and convenient manner though they do not satisfy the provisions of Section 15-300 by allowing this loading area to be located within a parking aisle. The Board makes this finding by accepting the applicant's written justification for this arrangement.
4. That the six (6) bicycle parking spaces (4 of which are covered) shall be found to be sufficient for both Club Nova and the CASA based on the finding that Section 15-292 (b-1) grants such flexibility for 1) developments that are oriented toward persons with disabilities.
5. Per Section 15-263.1 of the Land Use Ordinance, that the developer shall include a detailed stormwater system maintenance plan, specifying responsible entity and schedule. The plan shall include scheduled maintenance activities for each Stormwater Control Measure (SCM) in the development, performance evaluation protocol, and frequency of self-reporting requirements (including a proposed self-reporting form) on maintenance and performance. The plan and supporting documentation shall be submitted to the Town engineer and Environmental Planner for approval prior to construction plan approval.
6. That the applicant shall provide to the Zoning Division, prior to the recordation of the final plat for the project or before the release of a bond if some features are not yet in place at the time of the recording of the final plat, Mylar and digital as-builts for the stormwater features of the project. Digital as-builts shall be in DXF format and shall include a base map of the whole project and all separate plan sheets. As-built DXF files shall include all layers or tables containing storm drainage features. Storm drainage features will be clearly delineated in a data table. The data will be tied to horizontal controls.
7. That, prior to certification of an SCM, the Town may require a performance security be posted for a period of two years per the provisions of Section 15-263(i) of the Land Use Ordinance.
8. That the developer provide a written statement from the electrical utility stating that electric service can be provided to all locations shown on the construction plans prior to the approval of the construction plans;
9. That fire flow calculations and building-sprinkler design (as required) must be submitted and approved by the Town Engineer and Town Fire Department prior to construction plan approval.
10. That the Board hereby grants a deviation from the 10' sidewalk width requirement of 15-126 (c-2) by providing an 8' sidewalk that substantially addresses the intention of 15-221(f) while remaining compatible with the surrounding sidewalk system.
11. That the Town Council hereby finds the project's design acceptable per the provisions of LUO Section 15-178 (b).
12. That prior to construction plan approval, the applicant demonstrate compliance with the provisions of the Land Use Ordinance pertaining to Construction Management Plans (Section 15-49(c-1)).
13. That the Town Council hereby finds that the proposed building satisfies the three findings of Section 15-55.1 of the Land Use Ordinance.

STAFF REPORT

**TO:** Joint Review

**DATE:** Thursday, September 3, 2020

**PROJECT:** A request for a Major Modification to the Club Nova Conditional Use Permit: Club House/Thrift Store replacement. The original CUP was issued on April 9<sup>th</sup>, 2002

**APPLICANT:** Club Nova Community, Inc  
103 W. Main St  
Carrboro, NC 27510

**PURPOSE:** Conditional Use Permit Modification to allow construction of a 9,056 sf building addition to replace the existing Club House and Thrift Shop buildings. The proposal necessitates major site revisions.

**EXISTING ZONING:** B-1(g), DNP (Downtown Neighborhood Protection (Overlay district)

**PIN** 9778862027

**LOCATION:** 103 West Main Street

**TRACT SIZE:** 0.69 acres (30,211.5 square feet)

**EXISTING PERMITTED LAND USES:** (Combination Use) consisting of: Use # 1.340 (Single-Room Occupancy), Use # 2.110 (Retail), and Use #3.110

**PROPOSED LAND USE:** No change

**SURROUNDING LAND USES:** North: B-1(g), B-1(g) –CZ, Veterinarian, Retail, Inter Faith Council.  
South: R-7.5, Apartments and Single-Family Residence  
East: B-1(c), Restaurant, Retail  
West: B-1(g), Kava Bar, Apartments

**ZONING HISTORY:** B-1(g), since 1986

## ANALYSIS

### Background

Club Nova Community, Inc. has made an application for a Major Modification to the Club Nova Conditional Use Permit. This modification proposes the construction of a 9,056 sf two-story (with mezzanine) building that will replace both the existing detached club house and thrift store buildings. The proposed use of this building will remain primarily office and retail (use categories #2.110 and #3.110) and is unchanged from the existing uses (Attachment B).

The original 2002 Conditional Use Permit (CUP) for this property allowed the construction of twenty-four (24) single-room occupancy units in a three-story apartment building located behind the existing club house and thrift store (Attachment C). As part of the 2002 permit, the existing office building (a converted house) and the brick annex building would remain in place on the property. These buildings now comprise the existing Club Nova Club House and Club Nova Thrift Store with a combined square footage of 5,317 square feet.

The new proposal will combine these existing uses into the new 9,056 sf replacement building; this will increase the total combined square footage by 3739 sf.

### Concept Plan

Club Nova presented a slightly different concept plan to the Joint Review Boards on November 7, 2019, the current application is similar to this concept but smaller in square footage and removes one of the driveways to allow the site to be reconfigured. The Advisory Board recommendations from this meeting are attached (Attachment D).

### Access, Transportation Impact, Automobile Parking, Loading Zone, Bicycle Parking

#### Access

The existing traffic circulation pattern for the property relies upon two driveways and a one-way travel way with angled, parallel and perpendicular parking spaces.

The proposed site plan change this pattern by removing the eastern-most driveway and upgrading the parking lot for two-way circulation and parking. (Attachment B). The new spaces will be 90 degree only and a portion of the parking is sheltered by the new building. The new driveways and parking areas will be paved. These arrangements satisfy the related provisions of the LUO pertaining to parking area design and paving requirements.

#### Transportation Impact

Club Nova currently has about 120 active members, and hopes, with the new facility, to increase membership to 150. The applicant asserts that the majority of the users of the property depend upon outside transportation thus lessening potential transportation impacts. Please see Attachment E for more information. NCDOT will need to issue a

driveway permit for the project and for this reason the following condition is recommended:

- That prior to construction plan approval, the applicant receive a driveway permit from NCDOT in accordance with any conditions imposed by such agency including but not limited to encroachment / maintenance agreements for lighting and sidewalks.

#### Automobile Parking

Under condition #3 of the *original* 2002 Conditional Use Permit (Attachment C), the Board of Aldermen granted a deviation from the required number of parking spaces (which was 23 spaces based on a 1 space/ 200 sf ratio) finding that 17 spaces was sufficient; this condition reads as follows:

*“That seventeen (17) parking spaces shall be required for the project due to the project’s proximity to a bus line, proximity to a municipal parking lot, low rate of expected vehicular ownership amongst the residential population, and complementary hours of operation between the office use and retail use in the context of use of parking spaces.”*

The proposed modification will add 3739 square feet of new commercial space to this original situation and will increase the existing parking count by 5 spaces. This will result in 22 parking spaces on-site (1 HC, 15 standard & 6 compact). The LUO presumptive parking requirement, based on a 1 space/400 sf parking ratio, is 29 spaces.

In order to justify this arrangement see the “Parking and Transportation Plan” section of the applicant’s attached narrative (Attachment E). This justification describes the transportation needs of the staff and clientele and projects how this arrangement will work for anticipated growth.

The applicant finds that the project’s proximity to a bus line, the low rate of expected vehicular ownership among the CASA residents, the use of van transportation for clientele, and, the complementary hours of operation between the office use and retail use to be sound justification for the request for a reduction in required parking.

To make up for occasional parking shortfalls, the applicant has secured satellite parking at three locations that add up to over seven spaces (one of the agreements doesn’t specify the number of spaces) (see Attachment F). For reference, satellite spaces are required by 15-298 of the LUO to be within 1000’ of the main entrance of the building. The three locations in the agreements meet this requirement.

Again, the applicant will request a deviation from the presumptive parking provisions of the LUO. Section 15-292 of the LUO allows the permit-issuing authority flexibility in the application of these provisions.

While the staff cannot recommend approval of the proposed site plan due to the parking non-conformity, the Board is authorized to approve this arrangement per the provisions

of 15-292(c), pursuant to a condition describing the deviation, being placed on the permit. Such a condition might read as follows:

- That twenty-two (22) parking spaces shall be required for the project due to the project's proximity to a bus line, proximity to a municipal parking lot, low rate of expected vehicular ownership amongst the residential population, and, complementary hours of operation between the office use and retail use.

#### Loading Zone

The kitchen and retail components of Club Nova require occasional deliveries. Currently, the kitchen receives truck deliveries approximately once every two weeks while the retail facility receives random drop-offs. With the new facilities, the deliveries may increase to weekly. Section 15-300 specifies that loading zones be provided for land uses that include such deliveries as part of normal operations. Per the ordinance, based on square footage, one such space should be provided at Club Nova. The applicant is unable to provide the loading zone (there isn't one there currently) and expect deliveries to take place in generally the same manner as they do now.

While staff cannot recommend approval of the arrangement, Board is authorized to approve this arrangement per the provisions of 15-292(c), pursuant to a condition describing the deviation, being placed on the permit. Such a condition might read as follows:

- That the Board of Aldermen hereby finds that that the loading and unloading areas shown on the plans are sufficient to accommodate delivery operations in a safe and convenient manner though they do not satisfy the provisions of Section 15-300 by allowing this loading area to be located within a parking aisle. The Board makes this finding by accepting the applicant's written justification for this arrangement.

#### Bicycle Parking

The proposed plan provides a total of six (6) bicycle parking spaces, four (4) of which are covered, which satisfy the requirements for the office and retail uses on the property. The apartments, meanwhile, require a total of 36 bicycle parking spaces to be brought into compliance with the current ordinance. The applicant has stated that Club Nova and CASA do not believe they need this additional bicycle parking. Section 15-292-(b-1) allows the Board to grant deviations to the bicycle parking requirement when it finds at least one of the following:

- (1) A residential development is irrevocably oriented toward the elderly, and or persons with disabilities; or
- (2) A residential or commercial development is located on a lot, constrained by size or topography, such that the installation of the presumptive number bicycle parking spaces that comply with the Design Standards for Bicycle Parking in

Section 15-295.1 is impracticable. In those cases, the development shall instead provide the maximum number of bicycle parking spaces practicable.

The CASA apartments (the existing residential component) serve the needs of people with disabilities and therefore satisfies the first finding. The applicant has submitted the attached justification letter further describing their position (Attachment G). If the Board concurs that the required findings of the ordinance have been satisfied and that the justification is reasonable, the following condition is recommended:

- That the six (6) bicycle parking spaces (4 of which are covered) shall be found to be sufficient for both Club Nova and the CASA based on the finding that Section 15-292 (b-1) grants such flexibility for 1) developments that are oriented toward persons with disabilities.

#### Drainage, Grading, Erosion Control

The project adds 2,468 sf of new impervious surface. The LUO requires that pre and post development stormwater peak runoff flows be the same or improved. To this end, underground detention pipes are being utilized. Water quality will be managed by a state-approved filtering device that is located underground. The site currently drains toward W. Main Street and W. Carr Street. The stormwater system is designed to *not* increase the amount of this drainage to both of these streets during the design storms which include the 1, 2, 10 and 25 year, 24 hour rainfall events.

The additional stormwater volume created by the new impervious surface is within the maximum allowable without treatment. The stormwater volume increase of the new system is 12% and the maximum increase allowable by Section 15-263 is 50%.

The stormwater plans and calculations have been reviewed by the Town Engineer and are found to satisfy the applicable provisions of the Land Use Ordinance. To review the project engineer's summary report with the associate site plans see Attachments H & I.

As is customary, the following condition is recommended:

- Per Section 15-263.1 of the Land Use Ordinance, that the developer shall include a detailed stormwater system maintenance plan, specifying responsible entity and schedule. The plan shall include scheduled maintenance activities for each Stormwater Control Measure (SCM) in the development, performance evaluation protocol, and frequency of self-reporting requirements (including a proposed self-reporting form) on maintenance and performance. The plan and supporting documentation shall be submitted to the Town engineer and Environmental Planner for approval prior to construction plan approval.
- That the applicant shall provide to the Zoning Division, prior to the recordation of the final plat for the project or before the release of a bond if some features are not yet in place at the time of the recording of the final plat, Mylar and digital as-builts for the stormwater features of the project. Digital as-builts shall be in DXF format and shall include a base map of the whole project and all separate plan

sheets. As-built DXF files shall include all layers or tables containing storm drainage features. Storm drainage features will be clearly delineated in a data table. The data will be tied to horizontal controls.

- That, prior to certification of an SCM, the Town may require a performance security be posted for a period of two years per the provisions of Section 15-263(i) of the Land Use Ordinance.

#### Grading, Erosion Control

Grading and land disturbance is expected to be in excess of 20,000 sf and the project will therefore require an Orange County Erosion Control Permit. To this end, the applicant has provided an erosion control plan that has been reviewed and approved by the county (see related sheet in Attachment J). Additional review will be required by the county when the applicant submits for construction plan approval.

#### Utilities, Fire Safety, Lighting and Refuse Collection

##### Utilities

The plans have been reviewed by OWASA and found to be acceptable subject to construction plan review. The changes to the site will necessitate relocating various existing water and sewer utilities. In addition, a grease trap will be required for the kitchen facility. Regarding electrical services, the following condition is recommended to avoid potential difficulties during construction:

- That the developer provide a written statement from the electrical utility stating that electric service can be provided to all locations shown on the construction plans prior to the approval of the construction plans;

##### Fire Safety

The plans have been found to be satisfactory by the Fire Department subject to construction plan review. There are two existing fire hydrants located on the north side of W. Main Street, each less than 500' feet from the property thereby satisfying related provisions in the LUO. There is on-site a dedicated Fire Department Connection (FDC) for the purpose of charging the sprinkler system on the apartment building should their water supply fail. The proposed building will be required to follow all applicable fire safety provision of the state's building code. The following is a standard recommended condition regarding the performance of the propose fire safety system:

- That fire flow calculations and building-sprinkler design (as required) must be submitted and approved by the Town Engineer and Town Fire Department prior to construction plan approval.

##### Lighting

The existing lighting will remain as it was approved during the original permitting except that a pole light will be relocated and shielded to be brought into compliance with the related lighting standards of Section 15-242.5 of the LUO. No new lighting poles are proposed. The plans include a note that requires the project complies with the lighting provisions of the LUO. Such compliance will remain a continuing condition of the

permit. To date, the proposed site lighting is primarily mounted on the new buildings and facing downward.

#### Refuse Collection

The applicant has reconfigured the dumpster arrangement for the property with a dumpster enclosure (with recycling receptacles) located interior to site. Access to the containers has been found to be acceptable by Orange County Solid Waste and Public Works. The containers are screened and enclosed in compliance with Section 15-250 of the LUO.

### Landscape Plans, Screening, Shading, Canopy

#### Landscape Plans

The new addition and site plan will necessitate the removal of the existing trees and shrubs that now are located within the Club Nova yard. New plantings will include six (6) trees (1 Laurel Oak, 3 Southern Sugar Maples & 1 Atlantic White Cedar) and one (1) understory tree (Serviceberry).

#### Downtown Livability Areas/Urban Amenities

Section 15-204 requires that residential projects developed in the B-1(g) zoning district provide “downtown livability areas” and “urban amenities” to serve positive functions in the urban environment. Some of these functions include providing places for social gathering, promoting walking, providing wildlife habitat and providing relief from the high density urban environment.

This provision requires *downtown livability areas* equal to at least 12% of the total land area remains permanently as downtown livability area. To complement these areas and in addition, the provision requires that *urban amenities* equal to at least 7% of the assessed value of the land be provided. The calculations and exhibits pertaining to these requirement can be found on Attachment K. Murals, the widened sidewalk, the pollinator garden and, donor pavers are a few of the things listed in these calculations.

#### Screening

The project screening remains in compliance with respect to the adjacent properties. Shrubs will be used to screen some of the parking located near the sidewalk.

#### Vehicle Accommodation Area (VAA) Shading

Section 15-317 of the LUO requires that 35% of vehicle accommodation areas be shaded by trees. For this project, this amounts to 35% of a VAA area of 7,750 sf or 2,713 sf. To this end, the applicant is providing 2,828 sf or about 36% (see sheet SP-1 of Attachment B).

#### Canopy

Section 15-319 requires that properties in the B-1(g) district have 15% tree canopy coverage. This is a percentage of the total lot size, which in this case is 28,775 sf. The ordinance also allows the lot size to be reduced by the area of existing easements on the property. The applicant is using the existing CASA access easement and site triangle

easements to reduce this lot total to 21,464 sf. This amount multiplied by 15% creates a canopy requirement of 3,120 sf. The combination of existing and proposed trees on this site will exceed this amount (they are providing 5,500 sf) and therefore is in compliance.

Existing Non-Conformities Requested to Remain (15-126(c-2)):

Section 15-126(c-2) of the LUO, allows applicant's with existing facilities to provide written justification to allow certain ordinance non-conformities to remain if they can demonstrate that the benefit of complying with the ordinance is substantially disproportionate to the to the cost of compliance. The applicant is making such a case for the following item; please see Attachment E.

1. 10' sidewalks: Section 15-221(f) of the LUO requires that sidewalks be widened to a full ten feet.

The proposed site plan shows a sidewalk that is widened up to the edge of the right-of-way (about 8 feet) and joins with a concrete apron in front of the building (at the same grade as this sidewalk). The applicant is requesting that the lack of 10' sidewalk width in this area be allowed to remain.

Because of this, the following condition is recommended:

- That the Board hereby grants a deviation from the 10' sidewalk width requirement of 15-126 (c-2) by providing an 8' sidewalk that substantially addresses the intention of 15-221(f) while remaining compatible with the surrounding sidewalk system.

Section 15-178 Architectural Standards for Downtown Development.

Per the requirements of Section 15-178, developments in the downtown business districts are to demonstrate compliance with the standards presented therein. The applicant has provided a related narrative (see Attachments B & E).

Note that 15-178(a-4) requires that parking areas are substantially shielded from view. To accomplish this, the applicant some parking that is covered by the building. The remaining parking has shrubs to soften the view of the parking area.

Because the elevations vary from the provisions of this section, they require review and recommendation by the Appearance Commission. In particular, 15-178 recommends the amount of glazing (windows) on the street level to be 60% and for the whole street façade to be 40%; the proposed building has 29% and 24% glazing for these two categories respectively.

Section 15-178(b) grants the applicant the ability to participate in an alternative design review which allows flexibility in the design parameters so long as the Appearance Commission certifies that the design substantially achieves the purpose statement of 15-178(a). The Appearance Commission has made these findings (Attachment L - Pending). If the Council finds these materials acceptable, the following condition is recommended:

- That the Town Council hereby finds the project's design acceptable per the provisions of LUO Section 15-178 (b).

#### Construction Management Plan

Section 15-49 (c-1) of the LUO requires the applicant provide a Construction Management Plan and to this end they have provided the attached excerpt from their review response letter (Attachment M). Staff finds that additional information will be necessary for this plan to fully comply with the LUO and recommends the following condition.

- That prior to construction plan approval, the applicant demonstrate compliance with the provisions of the Land Use Ordinance pertaining to Construction Management Plans (Section 15-49(c-1)).

#### Downtown "Guidelines for Design

Regarding the *Downtown "Guidelines for Design"* planning document, street furniture (trash receptacles, bike racks, & public benches) identified by the blue urban "color code" are recommended. The applicant is not providing these amenities.

#### Burden of Proof requirement for Tall Buildings in Commercial areas

The 41'-5" tall building is located in the B-1(g) zoning district and is taller than the existing buildings in the adjacent lots. Because of this it is subject to Section 15-55.1 of the LUO which requires the applicant demonstrate the following findings:

- Will not substantially injure the value of adjoining or abutting property; and
- Will be in harmony with the area in which it is to be located. The manner in which a project is designed to accommodate additional building height including, but not limited to, scale, architectural detailing, compatibility with the existing built environment and with adopted policy statements in support of vibrant and economically successful and sustainable, mixed- use, core commercial districts shall be among the issues that may be considered to make a finding that a project is or is not in harmony with the area in which it is to be located. The applicant may use a variety of graphic and descriptive means to illustrate these findings.
- Will be in general conformity with the Land Use Plan, Thoroughfare Plan, and other plans officially adopted by the Board.

To this end the applicant has provided the attached exhibits showing the relative scale of the building with regards to the surrounding streetscape (Attachment N). If the Council finds this acceptable for the above findings, the following condition is recommended.

- That the Town Council hereby finds that the proposed building satisfies the three findings of Section 15-55.1 of the Land Use Ordinance.

#### Downtown Neighborhood Protection Overlay zone

Portions of the project are located within the Downtown Neighborhood Protection overlay zone. The purpose of this zone is to mitigate the effects of high density and/or commercial development on adjacent residential areas. The location of the proposed

Club House does not activate any of the provisions of this overlay zone which only applies to the first 50' of the property adjacent to the residentially zoned properties to the south.

Neighborhood Information Meeting

The applicant conducted a neighborhood information meeting on-site on November 5<sup>th</sup>, 2019. The sign in sheet and notes are attached (Attachment O).

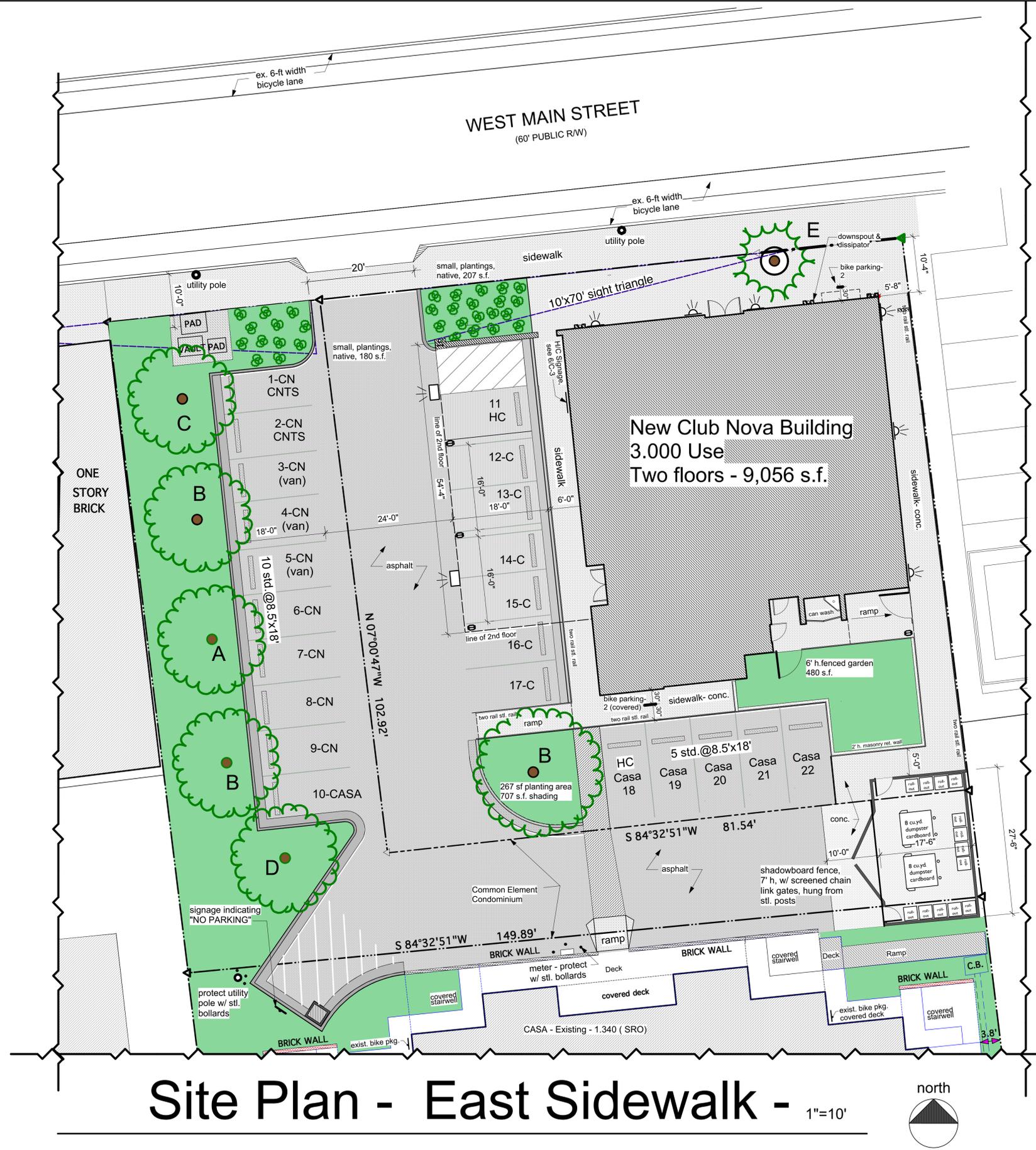
**RECOMMENDATIONS**

Town staff recommends that the Joint Review Boards review the conditions below, offer comment as needed, and prepare summary recommendations:

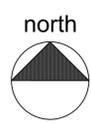
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3. That the Board of Aldermen hereby finds that that the loading and unloading areas shown on the plans are sufficient to accommodate delivery operations in a safe and convenient manner though they do not satisfy the provisions of Section 15-300 by allowing this loading area to be located within a parking aisle. The Board makes this finding by accepting the applicant's written justification for this arrangement.
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12. That prior to construction plan approval, the applicant demonstrate compliance with the provisions of the Land Use Ordinance pertaining to Construction Management Plans (Section 15-49(c-1)).
13. That the Town Council hereby finds that the proposed building satisfies the three findings of Section 15-55.1 of the Land Use Ordinance.



Site Plan - East Sidewalk - 1"=10'



## Parking, Shading, Canopy & Lighting Notes

**Parking Summary**

<b>Required (presumptive)</b>		
Club Nova - 9,056 s.f. (1 per 400 gross s.f. of building)		<b>23 spaces</b>
Apartments - 1,340 (apartments - SRO)		<b>29 spaces</b>
24 units/ 1 space for every 4 units		<b>6 spaces</b>
<b>Total Presumptively Required</b>		<b>29 spaces</b>
<b>Parking Spaces Provided on site</b>		<b>22 spaces</b>
<b>Parking Spaces Secured by Agreement:</b>		<b>5 spaces</b>
<b>Club Nova will continue to seek satellite parking agreements</b>		

**Bike Parking (see Site Plan for locations)**  
 Required Bike Parking Spaces: 29 car spaces, see above, 5 bike spaces required, minimum Existing - 2 sheltered spaces (@ CASA), New - 4 spaces (2 sheltered) Total - 6  
 The lot is constrained by size and current uses to remain. L.U.O. §15-292 (a1) allows relief from the bike parking requirements if it is impracticable to satisfy due to the size of the lot and uses to be retained. The site is readily served by bus lines, with a bus stop directly in front of the lot and across the street from the lot; the lot is located in the central business district; and CN and CASA actively monitor and limit available parking. Neither Club Nova nor CASA believes additional bike parking is required.

### Screening Requirements:

Per Town of Carrboro Land Use Ordinance, § 15-306:  
 Screening should be flexibly administered  
 North - Main St. - Type C required, and provided  
 West - 3,000 use to 3,000 - no screening required  
 South - No change to priority approved screening  
 East - No change to priority approved screening

### Tree Legend -

All trees listed are new, each letter identifies a specific tree.  
 All roots of proposed trees will be balled and wrapped in burlap.

Mark	Quantity	Name & Size @ Planting
A	1	Laurel Oak (Quercus laurifolia) - 2 1/2" caliper, balled and burlap
B	3	Southern Sugar Maple (Acer saccharum) - 2 1/2" caliper, balled and burlap
C	1	Southern Catalpa (Catalpa bignonioides) - 2 1/2" caliper, balled and burlap
D	1	Atlantic White Cedar (Chamaecyparis thyoides) - 1 1/2" caliper, balled and burlap
E	1	Serviceberry (Amelanchier spp.) - 1 1/2" caliper, balled and burlap, planted in 5' dia. tree grate

### Shading Requirements (Vehicle Accomodation Area (V.A.A.), §15-318)

Proposed Vehicle Accomodation Area -	7,750 s.f.
Appendix E-3 of the Land Use Ordinance:	
7,750 s.f. x .35 = (req'd area to be shaded)	2,713 s.f.
Proposed: Two large trees -	1,414 s.f.
Four large perimeter trees -	1,414 s.f.
<b>Total Shading Proposed</b>	<b>2,828 s.f.</b>

### Canopy Notes

Lot size: 28,775 s.f. (4 land condominiums)  
 Sight triangles: - 205 s.f.  
 Access "easement" from Main.St. to CASA (Common Element) - 7,106 s.f.  
 21,464 s.f. adjusted lot area  
 Required canopy coverage - 21,464 x .15 = 3,120 s.f.  
 Coverage - Existing and Proposed  
 Existing Trees - 4 trees @ 500 s.f. ea. = 2,000 s.f. (see EC-1, southern end of lot)  
 Proposed trees - 7 trees @ 500 s.f. ea. = 3,500 s.f.  
**Total Proposed Canopy - 5,500 s.f.**  
 See EC-1 for tree protection fencing @ rear of CASA

### Site Lighting

Site and building lighting shall comply with §15-245.5. Footcandles will not exceed 2 footcandles at property line. Where there is parking under the building, the lighting will not exceed 10 footcandles at perimeter of building, per §15-242.6. Light footprints will be submitted with construction drawings. Any existing non-conforming fixtures will be removed.

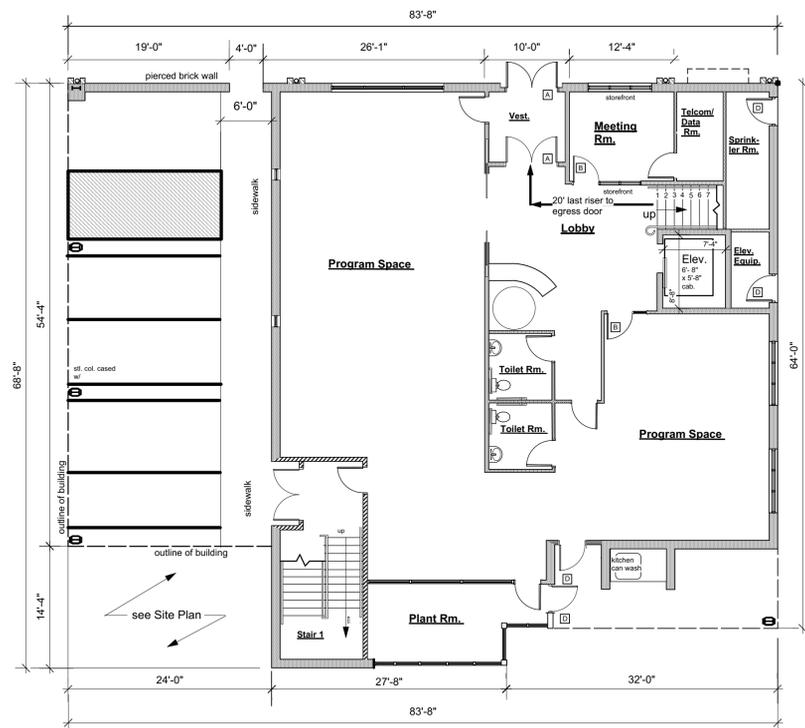
- wall-mounted site light, fully-shielded
- ⊙ wall-building light

**Jack Haggerty, Architect Inc.**  
 205 W. Main St., Ste. 211 Carrboro, NC 27510  
 919.967.5191 jack@jackhaggertyarchitect.com

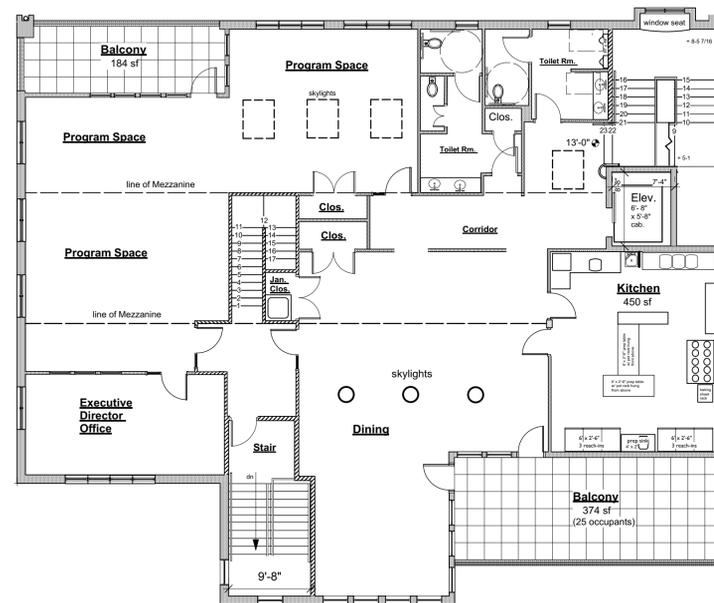
**Club Nova Building & Sitework**  
 103 W. Main St. Carrboro, NC  
 Owner: Club Nova Community Inc., T. 919 967-6985, F. 919 968-2522

preliminary - not for construction modification to conditional use permit

2.24.2020	SP-1
4.29.2020	



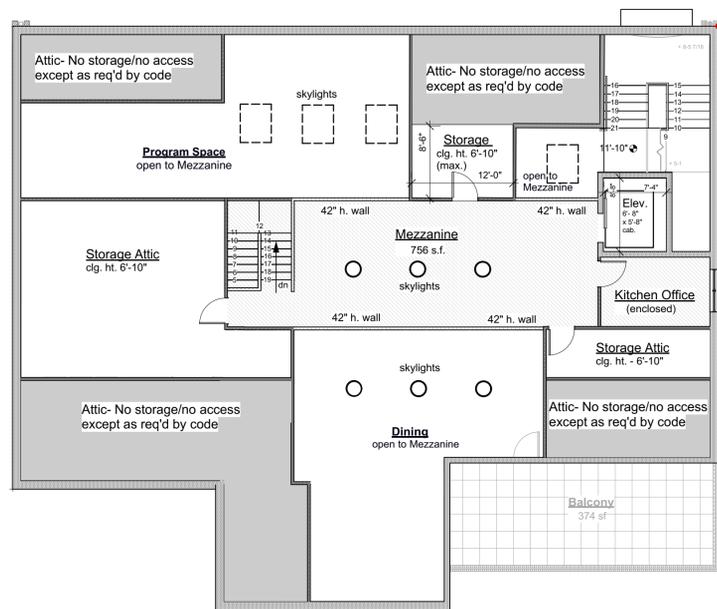
○ First Floor Plan - 1"=10'



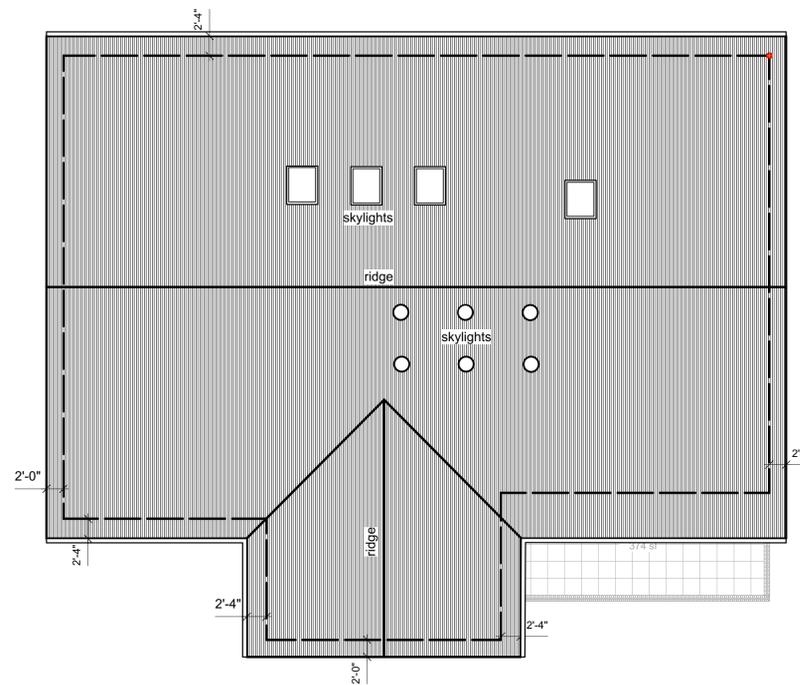
○ Second Floor Plan - 1"=10'

**Square Footage Summary**  
(conditioned space)

First Floor -	3,660 s.f.	(37.02 occupants)
Second Floor -	4,640 s.f.	(100.76 occupants)
Mezzanine -	756 s.f.	(7.62 occupants)
<b>Total</b>	<b>9,056 s.f.</b>	<b>(145 occupants)</b>



○ Mezzanine Plan - 1"=10'



○ Roof Plan - 1"=10'

**Jack Haggerty, Architect Inc.**  
205 W. Main St., Ste. 211 Carrboro, NC 27510  
919.967.5191 jack@jackhaggertyarchitect.com

**Club Nova  
New Building & Sitework**  
103 W. Main St. Carrboro, NC  
Owner: Club Nova Community Inc., T. 919 967-6985, F. 919 968-2522

preliminary - not  
for construction -  
**Modification to  
CUP**

April 24, 2020 **A-1**



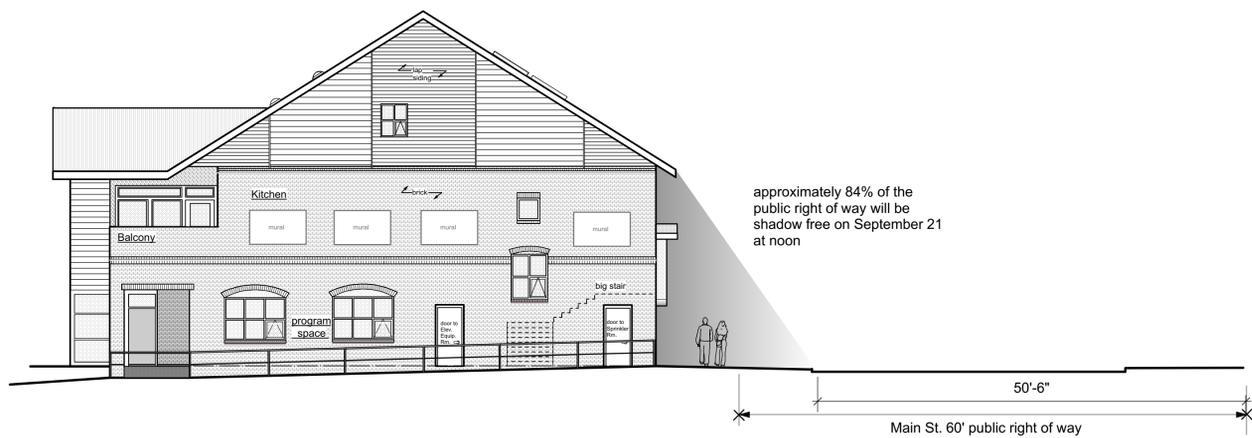
Main St./North Elevation

Note on Main St. (North) Elevation & L.U.O. §15-178 - Applicant will go before the Appearance Commission in an alternative design review process.

- Note: §15-178(2) Summary
- a. Area of Street Elevation @ ground level - 972 s.f.
  - Required Glazing @ street level (60%) - 583 s.f.
  - Area of Glazing Proposed (29%) - 115 s.f.\*
  - \* does not include: 1. arched opng. to parking, 2. full-glazed entry doors, 3. pierced brick wall
  - b. Area of Street Elevation - 1,847 s.f.
  - Required Glazing Entire Elevation (40%) - 739 s.f.
  - Area of Glazing Proposed (24%) - 443 s.f.



South Elevation (toward CASA)



East Elevation (toward Wendy's)



West Elevation

Jack Haggerty, Architect Inc.

205 W. Main St., Ste. 211 Carrboro, NC 27510  
919.967.5191 jack@jackhaggertyarchitect.com

Club Nova  
New Building & Sitework  
103 W. Main St. Carrboro, NC  
Owner: Club Nova Community Inc., T. 919 967-6985, F. 919 968-2522

preliminary - not for construction - Modification to CUP

April 24, 2020

A-2

PREPARED BY AND RETURN TO:  
 TOWN CLERK  
 TOWN OF CARRBORO  
 301 West Main Street  
 CARRBORO, NORTH CAROLINA 27510



ATTACHMENT C-1

BOOK 2598 PAGE 163

**NORTH CAROLINA**  
**ORANGE COUNTY**

**TOWN OF CARRBORO**  
**CONDITIONAL USE PERMIT GRANTED**

9778-85-1938  
 PB

On the date(s) listed below, the Board of Aldermen of the Town of Carrboro met and held a public hearing to consider the following application:

<b>APPLICANT: OPC Foundation</b>
<b>OWNER: OPC FOUNDATION</b>
<b>PROPERTY LOCATION (Street Address): 103 West Main Street</b>
<b>TAX MAP, BLOCK, LOT(S): 7.99.B.7</b>
<b>PROPOSED USE OF PROPERTY: Construction of a 24-unit single-room occupancy apartment building. An existing office building and an existing retail building would remain on the property.</b>
<b>CARRBORO LAND USE ORDINANCE USE CATEGORY: Combination Use (27.000), consisting of Single-Room Occupancy (1.340), Retail (2.110) and Office (3.110)</b>
<b>MEETING DATES: April 9, 2002</b>

Having heard all the evidence and arguments presented at the hearing, the Board finds that the application is complete, that the application complies with all of the applicable requirements of the Carrboro Land Use Ordinance for the development proposed, and that therefore the application to make use of the above described property for the purpose indicated is hereby approved, subject to all applicable provisions of the Land Use Ordinance and the following conditions:

1. The applicant shall complete the development strictly in accordance with the plans submitted to and approved by this Board, a copy of which is filed in the Carrboro Town hall. Any deviations from or changes in these plans must be submitted to the Development Review Administrator in writing and specific written approval obtained as provided in Section 15064 of the Land Use Ordinance.
2. If any of the conditions affixed hereto or any part thereof shall be held invalid or void, then this permit shall be void and of no effect.
3. That seventeen (17) parking spaces shall be required for the project due to the project's proximity to a bus line, proximity to a municipal parking lot, low rate of expected vehicular ownership amongst the residential population, and complementary hours of operation between the office use and retail use in the context of use of parking spaces; and
4. That the applicant shall dedicate to the Town additional right-of-way along West Main Street to a distance of three-feet (3') beyond the back edge of the existing sidewalk; and

- 5. That the applicant be required to submit letters from all utility companies expected to serve the development prior to construction plan approval. The letters shall state that the utility company is able and willing to serve the proposed development.
- 6. That fire flow calculations be submitted to and approved by the Town of Carrboro Fire Chief and Town Engineer prior to construction plan approval.
- 7. That an intercom system be incorporated into the construction plan to enhance the level of communication and accessibility between residents and visitors to the complex.
- 8. That a painted crosswalk be added to the construction plans located between the clubhouse and the main entrance to the apartment building.

This permit shall automatically expire within two years of the date of issuance if the use has not commenced or less than 10 percent (10%) of total cost of construction has been completed or there has been non-compliance with any other requirements of Section 15-62 of the Carrboro Land Use Ordinance.

All street construction on those streets proposed for acceptance by the Town of Carrboro shall be certified by an engineer. Engineering certification is the inspection by the developer's engineer of the street's subgrade, base material, asphalt paving, sidewalks and curb and gutter, when used. The developer's engineer shall be responsible for reviewing all compaction tests that are required for streets to be dedicated to the town. The developer's engineer shall certify that all work has been constructed to the town's construction specifications.

If this permit authorizes development on a tract of land in excess of one acre, nothing authorized by the permit may be done until the property owner properly executes and returns to the Town of Carrboro the attached acknowledgment of the issuance of this permit so that the town may have it recorded in the Orange County Registry.

NORTH CAROLINA

ORANGE COUNTY

IN WITNESS WHEREOF, the Town of Carrboro has caused this permit to be issued in its name, and the undersigned being all of the property above described, do hereby accept this Conditional Use Permit together with all its conditions, as binding upon them and their successors in interest.



ATTEST:

*Sarah C. Williamson* (SEAL)  
Town Clerk

THE TOWN OF CARRBORO

BY *Robert W. Morgan*  
Town Manager

I, Jane L. Tuohy, a Notary Public in and for said County and State, do hereby certify that Sarah C. Williamson, Town Clerk for the Town of Carrboro, personally came before me this day and being by me duly sworn says each for himself that she knows the corporate seal of the Town of Carrboro and that the seal affixed to the foregoing instrument is the corporate seal of the Town of Carrboro, that Robert W. Morgan, Town Manager of said Town of Carrboro and Sarah C. Williamson, Town Clerk for the Town of Carrboro subscribed their names thereto; that the corporate seal of the Town of Carrboro was affixed thereto, all by virtue of a resolution of the Board of Aldermen, and that said instrument is the act and deed of the Town of Carrboro.

IN WITNESS THEREOF, I have hereunto set by hand and notarial seal this the 14 day of May, 2002.



*Jane L. Tuohy* (SEAL)  
Notary Public

My Commission Expires: 12-01-2003

BOOK 2598 PAGE 165

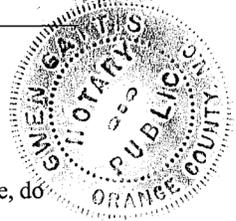
TOWN OF CARRBORO  
CONDITIONAL USE PERMIT (con't)  
Page #3

Notary Public

I (We), OPC Foundation for Mental Health, owner(s), do hereby acknowledge receipt of this Conditional Use Permit. The undersigned owner(s) do further acknowledges that no work may be done pursuant to this permit except in accordance with all of its conditions and requirements and that this restriction shall be binding upon them and their successors in interest.

Sue Baker, Chairperson  
Owner OPC Foundation

\_\_\_\_\_  
Owner



NORTH CAROLINA  
ORANGE COUNTY

I, Gwen Gathis, a Notary Public in and for said County and State, do hereby certify that Sue Baker, Chairperson- OPC Foundation appeared before me this day and acknowledged the due execution of the foregoing instrument.

WITNESS my hand and notarial seal this the 6<sup>th</sup> day of May, 2002.

Gwen Gathis  
Notary Public

My Commission Expires: June 28, 05

(Not valid until fully executed and recorded)

STATE OF NORTH CAROLINA  
COUNTY OR ORANGE

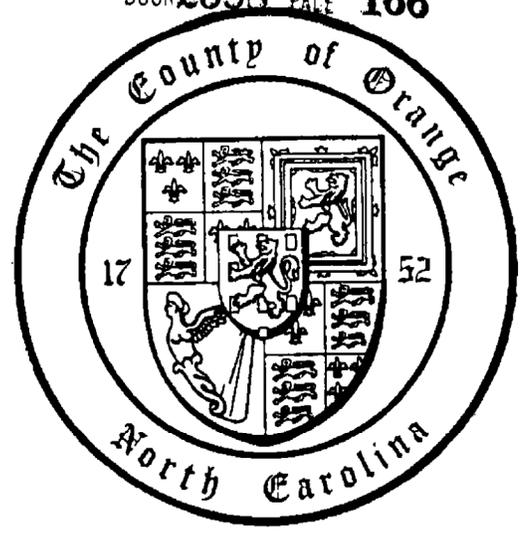
The foregoing certificate(s) of \_\_\_\_\_ Notary/Notaries Public of the designated governmental units (is) (are) certified to be correct.

This the \_\_\_ day of \_\_\_\_\_, A.D. 2002.

\_\_\_\_\_  
Register of Deeds

By: \_\_\_\_\_  
Assistant/Deputy Register of Deeds

**PREPARED BY AND RETURN TO:**  
  
**TOWN CLERK  
TOWN OF CARRBORO  
301 West Main Street  
CARRBORO, NORTH CAROLINA 27510**



Joyce H. Pearson  
 Register of Deeds  
 Orange County  
 North Carolina

FILED  
 23 MAY 2002, at 04:26:21pm  
 Book 2598, Page 163 - 166  
 Joyce H. Pearson  
 Register of Deeds,  
 Orange County, N. C.

State of North Carolina, County of Orange

The foregoing certificate/s of Jane L. Tuohey and Gwen Gattis, Notary/Notaries Public for the Designated Governmental units is/are certified to be correct. See filing certificate herein.

This day May 23, 2002

JOYCE H. PEARSON, REGISTER OF DEEDS By:

*Linda C. Clayton*  
 Deputy/Assistant Register of Deeds

FILED Joyce H. Pearson  
Register of Deeds Orange COUNTY, NC  
BY: *Wendy R. Moran*  
Deputy

*9778-86-2027.001 thru 9778-86-2027.003  
7.99.B.7 7.99.B.7E*

Prepared by and return to: Town Clerk, Town of Carrboro  
NORTH CAROLINA 301 W. Main Street  
ORANGE COUNTY Carrboro, N.C. 27510



**TOWN OF CARRBORO**

**CONDITIONAL USE PERMIT - AMENDMENT**

THIS DOCUMENT IS FILED TO AMEND THE ORIGINAL CONDITIONAL USE PERMIT DATED APRIL 9, 2002, THAT IS ON FILE IN THE ORANGE COUNTY REGISTRY IN BOOK 2598, PAGE 763.

The Board of Aldermen granted the amendment to the conditional use permit requested by Giles Blunden on April 8, 2003. This modification will allow an increase in the size of the building footprint and elevations as well as slight changes in the site design necessitated by the larger building

The following conditions are added to the permit:

- 1) That the boardwalks to be constructed of composite decking material and will meet the following requirements of the Carrboro Land Use Ordinance:
  - a. Such walkways would serve the residents of the development as adequately as concrete sidewalks; and
  - b. Such walkways would be more environmentally desirable.
- 2) That the 17 parking spaces shall continue to be required for the project due to the project's proximity to a bus line, proximity to a municipal parking lot, low rate of expected vehicular ownership amongst the residential population, and complementary hours of operation between the office and retail uses.
- 3) That the proposed deviation from Town standards, permitting the applicant to use a small diameter plastic pipe instead of the required 15-inch reinforced concrete pipe along the eastern side of the proposed building, meets the following requirement per the provisions of Section 15-262(g) of the Carrboro Land Use Ordinance:
  - a. That the deviation is warranted upon recommendation and is subject to approval by the Town Engineer.

NORTH CAROLINA

ORANGE COUNTY

IN WITNESS WHEREOF, the Town of Carrboro has caused this permit to be issued in its name, and the undersigned being all of the property above described, do hereby accept this Conditional Use Permit, together with all its conditions, as binding upon them and their successors in interest.



THE TOWN OF CARRBORO

ATTEST:

Sarah C. Williamson (SEAL)  
Town Clerk  
NORTH CAROLINA-ORANGE COUNTY

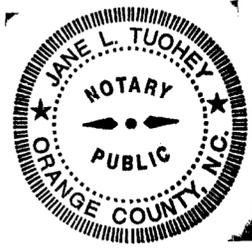
BY Steven E. Stewart  
Town Manager

I, JANE L. TUOHY, a Notary Public in and for said County and State, do hereby certify that Sarah C. Williamson, Town Clerk for the Town of Carrboro, personally came before me this day and being by me duly sworn says each for himself that she knows the corporate seal of the Town of Carrboro and that the seal affixed to the foregoing instrument is the corporate seal of the Town of Carrboro, that Steven E. Stewart, Town Manager of said Town of Carrboro and Sarah C. Williamson, Town Clerk for the Town of Carrboro subscribed their names thereto; that the corporate seal of the Town of Carrboro was affixed thereto, all by virtue of a resolution of the Board of Aldermen, and that said instrument is the act and deed of the Town of Carrboro.

IN WITNESS THEREOF, I have hereunto set by hand and notarial seal this the 28 day of October, 2003.

My Commission Expires: 12-01-2003

Jane L. Tuohy (SEAL)  
Notary Public



We, Club Nova Apartments LLC, owners, do hereby acknowledge receipt of this Conditional Use Permit. The undersigned owners do further acknowledges that no work may be done pursuant to this permit except in accordance with all of its conditions and requirements and that this restriction shall be binding upon them and their successors in interest.

CLUB NOVA APARTMENTS LLC  
BY: Manager Member  
103 West Main Street, Inc.

Doug Miller  
Doug Miller, President

NORTH CAROLINA  
DURHAM COUNTY

I, L. Lane Sarver, a Notary Public of the County and State aforesaid, certify that Doug Miller personally came before me this day and acknowledged that he is President of 103 WEST MAIN STREET, INC., a North Carolina corporation, which is manager of CLUB NOVA APARTMENTS, LLC (the "Company") and that by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by him as President on behalf of the Company as manager thereof all by authority duly given.

Witness my hand and official seal this 25 day of October, 2003.  
Notary Public, North Carolina  
County of Durham  
L. Lane Sarver  
My Commission Expires \_\_\_\_\_

L. Lane Sarver  
Notary Public

My Commission Expires: 3/27/2006

(Not valid until fully executed and recorded)

STATE OF NORTH CAROLINA  
COUNTY OR ORANGE

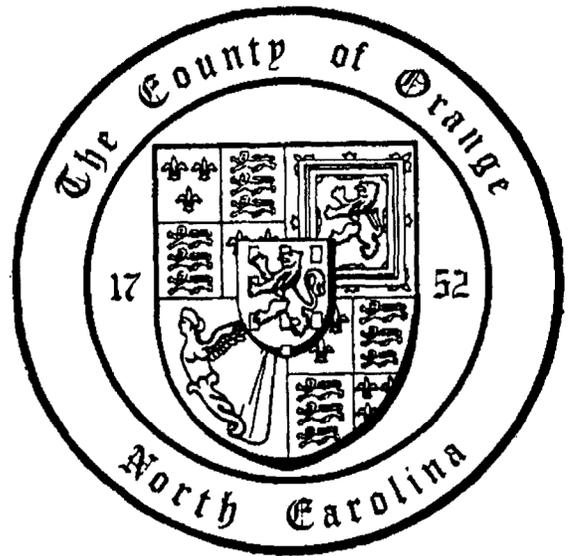
The foregoing certificate(s) of \_\_\_\_\_ Notary/Notaries Public of the designated governmental units (is) (are) certified to be correct.

This the \_\_\_ day of \_\_\_\_\_, A.D. 2003.

\_\_\_\_\_  
Register of Deeds

By: \_\_\_\_\_  
Assistant/Deputy Register of Deeds

PREPARED BY AND RETURN TO:  
TOWN CLERK  
TOWN OF CARRBORO  
301 West Main Street  
CARRBORO, NORTH CAROLINA 27510



Joyce H. Pearson  
Register of Deeds  
Orange County  
North Carolina

---

**State of North Carolina, County of Orange**

The foregoing certificate(s) of JANE L. TUOHEY, NOTARY PUBLIC, L. LANE SARVER, NOTARY PUBLIC for the Designated Governmental units is/are certified to be correct. See filing certificate herein.

This day November 11, 2003.

Joyce H. Pearson, Register of Deeds

BY: Wendy R. Dixie  
Deputy / ~~Assistant~~ Register of Deeds

**THURSDAY, November 7<sup>th</sup>, 2019**

**Conditional Use Permit Major Modification for Club Nova**

The Appearance Commission Advisory Board reviewed the plans for Conditional Use Permit Major Modification for Club Nova (tear down and replacement of existing thrift shop and club house with a single building that will combine the two uses) and had the following recommendations:

Architectural Standards for Downtown Development,  
Alternative Design Review Findings (15-178)

1. We certify that the plan does substantially achieve the purposes set in 15-178 (a) if and only if it is built using varying red brick shades to achieve a look in line with Carr Mill, and uses varying materials as shown in the facade drawing. We also encourage additional glazing, greenery, flowers, art, or amenities to enhance the appearance of the front to the extent possible.

Proposed Conditional Use Permit Major Modification for Club Nova

1. The AC supports the proposed Conditional Use Permit Major Modification for Club Nova and the recommended Staff Conditions except that a single member favors the Site Plan layout with the additional trees.

VOTING:

AYES: (Vickie Brown, Nicholas Johnson, Sharon Reilly, Laura Szpir)

NOES: N/A

ABSENT: (Hallee Haywood)



---

Staff Liaison on behalf of AC chair.

11-7-2019  
Date



# TOWN OF CARRBORO

## Environmental Advisory Board

*301 West Main Street, Carrboro, North Carolina 27510*

# RECOMMENDATION

November 7, 2019

### **Conditional Use Permit (CUP) for Cub Nova Major Modification**

Motion was made by Sinclair and seconded by O'Connor that the EAB recommends that the applicant consider the following recommendations:

1. We appreciate the work you have done on the project, including on stormwater management. We also agree with the variances you are requesting except for the request to deviate from the Vehicle Accommodation Area (VAA) shading. While the shade ordinance could likely be met from the building, the trees are doing more to combat climate change than just shading. Trees have other benefits as well, including stormwater management, improving mental health, and providing food and habitat for wildlife. The Town needs to stand by the rules that have been put in place which protect the climate.

Our recommendation is to find satellite parking and put trees in to meet the VAA requirements. If you cannot find these 5 spaces, consider working with the Town to install two native canopy street trees along the sidewalk instead of in the VAA. Another option would involve decreasing the building footprint to accommodate a larger canopy tree.

2. We would like to make sure that the gardens in the front of the building next to the sidewalk are protected from dogs and pedestrians.
3. We are glad to see the possible solar array on the plans and would hope you follow-through with this installation. Since you are a non-profit, you might consider pursuing solar leasing to take advantage of Duke Energy's generous non-profit rebates. EAB members offer their time and expertise to help Club Nova explore this possibility. One advantage of leasing is that the upfront cost is minimal. Solar panels will save Club Nova on energy bills. It would also not increase the cost much to install wiring in anticipation of solar. Another option would involve installing a solar canopy over the parking lot.
4. Please include wiring for electric vehicle charging stations in 20% of the spaces in the parking lot.
5. Include parking for e-bikes and scooters in front of building.
6. We appreciate the use of native species. Inkberry (*Ilex glabra*) or wax myrtle (*Morella cerifera*) would be good choices for screening. Consider replacing the ginkgo tree listed on the plans with a species that is native to the Piedmont, such as an Eastern redbud tree (*Cercis canadensis*) or an additional serviceberry.
7. Consider moving or reusing the existing historic house.
8. For additional guidance, please review the attached EAB Project Evaluation Template.

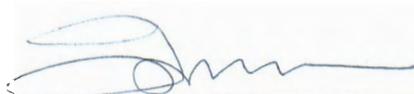
VOTE:

AYES: (4) Turner, Sinclair, Kaufman, O'Connor

ABSENT/EXCUSED: (3) Desai, Barnhouse, Gavin

NOES: (0)

ABSTENTIONS: (0)

  
\_\_\_\_\_  
(Chair) 11-7-19  
(Date)



# TOWN OF CARRBORO

## Transportation Advisory Board

*301 West Main Street, Carrboro, North Carolina 27510*

---

# R E C O M M E N D A T I O N

NOVEMBER 7, 2019

### Club Nova Conditional Use Permit Major Modification

Motion was made by Mark and seconded by Dave that the **TAB** recommends that the Board of Aldermen **reject** the draft ordinance.

#### **VOTE:**

AYES: Kurt, Dave, David, Mark, Diana, Rob (6)

ABSENT/EXCUSED: Linda (1)

NOES: (0)

ABSTENTIONS: (0)

#### Associated Findings

By a unanimous show of hands, the **TAB** membership also indicated that no members have any financial interests that would pose a conflict of interest to the adoption of this amendment.

The TAB would consider recommending approval if the following comments were properly addressed:

- Keep standard 10 foot sidewalk width, especially for downtown area.
- Add a sidewalk pedestrian connection along the inbound driveway to provide connectivity to the CASA apartments.
- If the site needs more parking, reduce the width of the inbound driveway and rework the site
- Reduce on-site parking further to provide additional space for tree coverage to meet the ordinance for VCA shading given that a parking reduction is already being granted, which would remove the need to an LUO text amendment to accommodate this site in meeting the shading requirements.
- Ensure that sidewalk crossing of driveways along E Main Street is a level surface.

- Consider reverting to the previous design which minimized the number of driveways but still met requirements for solid waste and fire access.
- Increase bike parking and locate it proximate to front entrances to building.
- The design which includes two driveways conflicts with the previously stated goal of enhancing downtown livability.

**VOTE:**

AYES: Kurt, Dave, David, Mark, Diana, Rob (6)

ABSENT/EXCUSED: Linda (1)

NOES: (0)

ABSTENTIONS: (0)

  
\_\_\_\_\_  
(On behalf of Chair)

11/12/2019  
\_\_\_\_\_  
(Date)

**Club Nova  
Modification of Existing CUP  
Feb. 17, 2020**

**Compiled Narrative**

**Description and Operations**

Club Nova is a non-profit which addresses the needs of Orange County residents living with mental illness. Club Nova provides an environment designed to promote rehabilitation and reintegration of its member into the community. Club Nova has various “units” in which the members participate. The participation of the member in a unit isn’t training; it is purposeful involvement and inclusion. The various units are Community Relations (fundraising and grants); Culinary (planning and preparation of meals); Program and Administration (attendance, orientation of new members, transitional employment); and the Thrift Shop Unit (customer service; display design, accounting). There are no residents of Club Nova. The apartment component (at the rear of the lot) is a separate entity, CASA.

The Clubhouse hours:

Monday: 8:00 AM – 6:00 pm

Tuesday: 8:00 AM – 5:00 PM

Wednesday: 8:00 AM – 5:00 PM

Thursday: 8:00 AM – 8:00 PM

Friday: 8:00 AM – 5:00 PM

Saturday: 11:00 AM – 4:00 PM (hours may vary depending on what we are doing)

Sunday – At some point, our goal is to be open 365 days per year- Probably would open for 4 to 5 hours in the afternoon

Note: As our program expands, we plan to open one or two additional evenings a week.

The Thrift Shop is open:

Monday- Friday 10:00 AM – 6:00 PM

Saturday: 10:00AM – 5:00PM

Note: Thrift Shop workers arrive thirty minutes prior to opening and depart thirty minutes after closing.

**Parking and Transportation Plan**

There are 22 parking spaces proposed. See drawing SP-1 for the parking breakdown.

The residential building, now CASA, was originally permitted with six spaces: they are indicated on SP-1 (CASA). The remaining spaces are for Club Nova members and staff and the Thrift Shop, if Club Nova continues the thrift shop in the new building.

Club Nova currently has 10 full-time staff, but not all are present on a given day. There are four part-time drivers. Typically, there are up to two drivers in the morning and two drivers in the evening. The drivers are parking at Club Nova early in the morning (6:30-9:30) and then again at the end of the workday (5:00-7:30 PM). Currently, Club Nova has an average daily attendance of 45. These 45 individuals are rarely present at the same time. The parking has been designed to accommodate the longer wheelbase of three of the Club Nova vans.

The majority of our members who attend on a routine basis do not have cars. Of

our ~120 active members, with an average daily attendance of 45, approximately 4-6 members may drive in on a routine basis and those are not necessarily present at the same time. Attendance varies. One person may be here all day, while another person may stop in for an hour.

Not counting the residents who are members, of our 120 members, approximately 20% have cars and drive to Club Nova.

- After Construction, First Two Years: As Club Nova expands its membership and staff, after the construction project is complete, the first two years we anticipate a full-time staff of 12-14, with 5-6 part-time drivers, and an increased membership up to 100 members per day. Based on history, this would mean 8-12 members may drive to Club Nova on a given day.

- Five Year Projection: Based on percentage, over the course of 5 years, we anticipate having the capacity to serve 150 members per day. All 150 will not be attending at the same time. Of those 150, we anticipate that 25-30 may have cars. Based on the similar numbers, there could be 12-24 members who have cars and could potentially drive to Club Nova. Again, it would be unusual for this many to be present at the same time.

- Plan for Parking: Obviously, with limited parking, some staff will need to park off-site or utilize public transportation. Members will be encouraged to utilize the public transit system, Club Nova transportation, or satellite parking. The site is served by regular Chapel Hill Transit bus service, with a J route stop directly in front of the project, and there are stops for the F and CW routes within one block of Club Nova. Municipal lot parking is available South Greensboro St. and at the West Weaver St. lots. There are several members who are elderly and therefore, to maximize access, will drive and park at Club Nova. We have another member who drives a member who would otherwise likely not be able to attend Club Nova. We anticipate there will always be circumstances where members need to park at Club Nova.

- Club Nova is the process of securing satellite parking agreements.

- With all of the other "ground requirements," Club Nova cannot provide a loading space. Currently, the only delivery truck that regularly visits the site (a small tractor trailer, a 28' "High Cube" Trailer) can be accommodated on site by the loop drive (at the rear of the proposed building). This food delivery is usually accomplished swiftly. We have provided a wider than required driveway entrance (20' width, with 18' required) and wider drive aisles. The frequency of food deliveries may increase to weekly.

### **Site Demolition ( w/ Tree Removal Justification)**

The existing Club House will be removed. Club Nova would be happy to have it removed by others and relocated for re-use.

All existing trees are to be removed from the front part of the lot– see Site Plan (SP-1) and Existing Conditions drawings (EC-1) for the proposed and existing trees to remain (these are behind the CASA building). The lot is zoned B-1(G). It is a general business zone, located in the downtown. The original use of the lot was residential, and the trees surrounded the original residence. Club Nova is applying to build a considerably larger facility. In keeping with the nature of the zoning and the street, the new structure will be along W. Main St. Consequently, all of the existing trees around the current clubhouse will need to be removed. Attempting to retain any of the existing trees would greatly complicate, and likely make impossible, any realistic and reasonable new facility. The proposed building and

the associated parking; the dumpster pad and required maneuvering space for vehicles; maintaining access to the CASA building; the required parking lot shade trees, the widened sidewalk at the street and other town- required site features all compete for ground area on this downtown site.

\* \* \* \* \*

**Architectural Standards for Downtown Development and Guidelines for Design**

See SP-1, A-2, building plans and A-3, building elevations. The Applicant will go before the Appearance Commission for alternative design review.

1. The front entrance to the proposed structure on Main St.: it is recessed.
2. See A-3, building elevations, for glazing calculations, Main Street/North Elevation.
3. See shade drawing on A-3.
4. Parking is substantially shielded by a combination of the proposed building, a pierced brick wall and plantings.
5. None of the proscribed materials are proposed.

**Guidelines for Design**

Two design elements are suggested in the Guidelines: brick edged sidewalk and benches at bus stops. As to the former there are none nearby, and we don't propose to add an anomaly, and as to the latter, we don't wish to encourage loitering near Club Nova, as it is, the members are frequently importuned for change and cigarettes

\* \* \* \* \*

**Good Neighbor Performance Standards**

There is no expectation that Club Nova will violate any of the "Good Neighbor" standards. These standards include: generation of dust, smoke, fumes, vapors, gases and odors. Additional standards include: noise above the stated decibel level, vibrations, air pollution or the creation of electrical disturbances or interferences.

The operation of Club Nova does not entail the disposal of liquid.

No new uses – 4.000, 9.000 or 2.150 – are proposed. The current uses will continue: 2.000 (retail), 3.000, (office) and the residential use (1.340 SRO, CASA).

\* \* \* \* \*

**Downtown Livability and Urban Amenities** – see attached DLA document.

\* \* \* \* \*

**Existing Non-Conformities To Remain**

The existing non-conformities on the site have been addressed - see below. Where we have not fully remedied them, it is because compliance is not reasonably possible or is disproportional to the benefits of eliminating the non-conformity.

**- W. Main St. Sidewalk:** At the northeast corner of the lot are site utilities that serve the CASA building at the back end of the lot. The location of these utilities precludes providing an 10' wide sidewalk. The existing sidewalk is just shy of 4' in width. Club Nova is proposing an 8' wide sidewalk across the whole W. Main St. length of the lot.

**-Site Lighting** - The existing non-compliant light fixture at the southeast corner of the lot will be removed.

AGREEMENT FOR PARKING

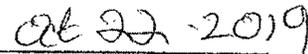
This Agreement is in reference to parking for staff and employees of Club Nova, 103 W Main St., Carrboro, during off hours of business with Krave CH, LLC, 105 W Main St, Carrboro, parking lot.

- 1) Off hours parking for Krave CH, LLC is 9 am to 11:30 pm, Monday through Friday.
- 2) Vehicles from Club Nova parking must have parking permits displayed on dashboards.
- 3) Krave CH, LLC, staff members are allowed access to Club Nova off hours of business parking during the following times:
  - a. 6pm to 12 am Mondays
  - b. 5pm to 12 am Tuesdays, Wednesdays & Fridays
  - c. 8pm to 12 am Thursdays
- 4) Off hours parking at Club Nova is limited to the parallel parking spaces next to the Krave building. **4 SPACES**
- 5) Krave vehicles must have a parking permit displayed on dashboards. Club Nova will provide permits.
- 6) Parking at either Club Nova or Krave can be restricted during special events held on premises. Advance notice will be provided to staff of either business.
- 7) Parking during construction is expected to begin Summer 2021 and will be limited to residents of Club Nova and this Agreement will be suspended. Upon conclusion of construction, this Agreement will once again be active.
- 8) Either party may call the other when a vehicle is needed to be removed upon necessary occasion. Club Nova may be contacted at 919-968-6682 and Krave may be contacted at 561-667-3956.
- 9) By signing this Agreement for parking, the business owner allowing parking per these terms affirms this space is for use by the business is not for any other user as parking.
- 10) Club Nova is on notice that the business contracting in this Agreement is only a tenant, and Krave CH, LLC is not the property owner, thereby this Agreement is only valid so long as Krave CH, LLC is a tenant at 105 W Main St, Carrboro.
- 11) Club Nova hereby 100% indemnifies and holds harmless Krave CH, LLC and Holton Rentals from any liability from or associated with the parking, and people acting under this Agreement from Club Nova or through their relationship with Club Nova as outlined herein.
- 12) Krave Ch, LLC hereby 100% indemnifies and holds harmless Club Nova from any liability from or associated with the parking, and people acting under this Agreement from Krave CH, LLC or through their relationship with Krave CH, LLC as outlined herein.
- 13) This Agreement does not bind the property owner and it may be cancelled by Krave CH, LLC with 60 days written notice.
- 14) All other agreements made previous to this written Agreement are null and void as lacking official capacity to give such authorization are hereby null and void.

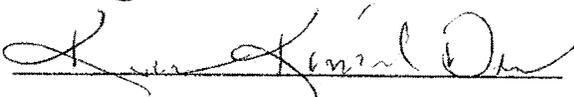
Business Owner:



Date:



Recipient:



Date:



**Town of Carrboro  
Satellite Parking Agreement**

- Date: **October 2, 2019**

- Recipient of Off-Site Parking Spaces for use as Satellite Parking (per Town of Carrboro, LUO §15-298):

Name: **Club Nova**  
Address: **103 W. Main St., Carrboro, NC, 27510**

- Property Owner allowing Satellite Parking

Name: **Fitch Lumber**  
Address: **309 N. Greensboro St. Carrboro, NC, 27510**

- Number of Parking Spaces Reserved for Use of Recipient:   3  

- Can the Recipient Install a Sign Indicating reservation of space(s) for Club Nova's Use: Y or N

- Any time limits or use restriction on spaces – eg, hours and days of allowed use, parking space must be vacant at specific times to allow access, etc.)

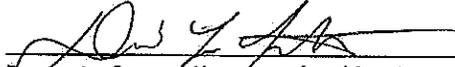
Days or Hours of Use of Parking space(s) by Recipient:

**Anytime except 8am – 5pm Monday – Friday and Saturday 9am – Noon.**

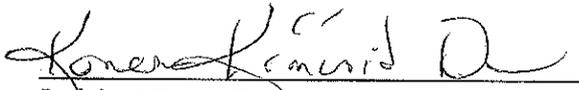
- Terms of Agreement:

- If the Property Owner terminates use of the parking space(s) by Recipient, Recipient must seek replacement parking spaces for those spaces to continue the validity of the land use permit associated with Satellite Parking requirement.
- By signing, Property Owner allowing satellite parking affirms that the space for use of recipient is not for any other User as parking, including Property Owner, unless such use is outside the hours allowed for recipient's use.
- Property owner shall not be responsible for damage or loss to possessions or for items left in any vehicle or other such loss or damage either to Recipient or Recipient's vehicles.
- Property owner shall not be responsible for damage to Recipient's vehicles or any other type of damage. Recipient assumes all such liability while on or using the surface parking lot.

DAVID LEE FITCH - PRESIDENT

  
\_\_\_\_\_  
Property Owner Signature (Parking Space Donor)

10/2/19  
Date

  
\_\_\_\_\_  
Recipient Owner Signature

2/12/2020  
Date

**Town of Carrboro  
Satellite Parking Agreement**

- Date: 4/22/20
- Recipient of Off-Site Parking Spaces for use as Satellite Parking (per Town of Carrboro, LUO §15-298):

Name: **Club Nova**  
 Address: **103 W. Main St., Carrboro, NC**

- Number of Parking Spaces for Use of Recipient: \_\_\_\_\_
- Property Owner allowing Satellite Parking

Name: **Miller Property Management, LLC**  
 Address: **116 W. Main St. Carrboro, NC 27510**

- Any time limits or use restriction on spaces – eg. hours and days of allowed use, parking space must be vacant at specific times to allow access, etc.)

Days or Hours of Use of Parking space(s) by Recipient:

- Terms of Agreement:

- If the Property Owner terminates use of the parking space(s), Recipient must seek replacement parking spaces for those lost spaces to continue the validity of the land use permit associated with Satellite Parking requirement.
- By signing, Property Owner allowing satellite parking affirms that the space for use of recipient is not for any other user as parking, including Property Owner, unless such use is outside the hours allowed for recipient's use.

*Miller for Miller Property Management LLC*  
**Property Owner Signature (Parking Space Donor)**

4-22-20  
**Date**

*Karen Kniss Don*  
**Recipient Owner Signature**

4/24/2020  
**Date**

**Club Nova – New Building and Site Work  
September 19, 2019**

**Vehicle and Bike Parking –  
§15-292 Request for Flexibility in Administration Required**

The Club Nova/CASA site, on which there are both residential and commercial uses, is constrained in the fulfillment of the presumptive parking requirements by the lot size, the uses on the lot, and the facilities and requirements the lot must accommodate. Compliance with the parking requirements for both vehicles and bicycles would result “...in a waste of money as well as a waste of space that could more desirably be used for valuable development or environmentally useful open space.” Further, additional bike spaces would prove impractical and unnecessary. See drawing SP-1 and DLA/UA drawing for the site plan and site amenities.

**Vehicle Parking Reduction Justification:**

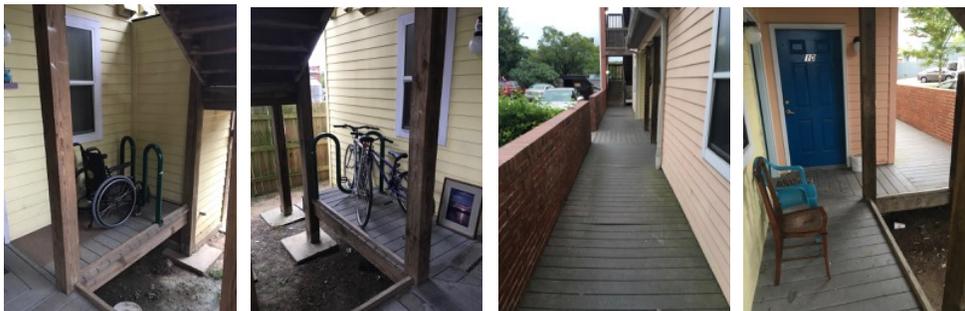
1. The lot is located on a bus line (J), with a bus stop located directly in front of the lot, and with other bus stops serving the CW and F routes nearby.
2. The lot is located in close proximity to the central business district.
3. The existing C.U.P limits required parking for the residential use on the lot (CASA) to 6 spaces, which are provided - see SP-1.
4. Club Nova provides van service for many of its members.
5. Club Nova will submit satellites parking agreements.
6. Club Nova will require staff to use satellite spaces and public transportation.

**Bike Parking Reduction Justification**

1. The provision of more bike parking than is shown on SP-1 is impractical due to the lot constraints, nor is there any need for it according to Club Nova and CASA. See email exchange below with Neil Ritter, Facilities Manager at CASA. There have been no complaints or concerns regarding the current amount bike parking at CASA (4 existing bike spaces, covered).

The applicant requests the amount of vehicle and bike parking shown on sheet SP-1 be approved. See also “Compiled Narrative”, Parking and Transportation Plan.

The photos below show existing bike parking at CASA and additional photos show that the circulation spaces are not obstructed by bicycles (see also email exchange w/ N. Ritter.)





**Jack Haggerty** @

Yesterday at 4:56 PM



Re: question CN application

[Details](#)

To: Neil Ritter, Cc: Karen Kincaid Dunn, kdunn@clubnova.org

Hi Neil, That's exactly what I was looking for.  
Here are pictures of the bike parking locations at CASA.  
Thanks. J



[See More from Neil Ritter](#)

**Neil Ritter**

September 3, 2019 at 3:25 PM



RE: question CN application

To: Jack Haggerty, Karen Kincaid Dunn, kdunn@clubnova.org

Jack,

Kelly & I can verify that there is one for sure, under the right side stairwell. We aren't certain of a second bike parking, covered or not. I'm not sure if it meets current ordinances or not. If you are asking if it meets our current need, then I would say yes, as neither of us have heard about any concerns or complaints, regarding the current Bike parking at the property. I'm not sure if that is exactly what you were looking for or not, so please let me know.

Kind regards,  
Neil

[See More from Jack Haggerty](#)

**SGI Technical Services**  
(License No. C-2092)  
200 North Greensboro Street Suite B-13A  
Carrboro, NC 27510  
phone: (919) 942-7612  
email:sgit@earthlink.net

26 February 2020

Town of Carrboro  
Stormwater Program Manager  
301 West Main Street  
Carrboro, NC 27510

Attn: Mr. Jeff Kleaveland

Re: Stormwater Impact Analysis (SIA) update  
Club Nova Development – 103 E. Main Street  
Carrboro, Orange County, NC

Dear Mr. Kleavland:

Demolition, new construction and site upgrades are proposed on a previously developed tract designated as Club Nova, 0.661-acres, (pin no. 9778-86-2027 (.001, .002, .003)), located at 103 W. Main Street in the Town of Carrboro, NC. Following is a brief Stormwater Impact Analysis (SIA) that includes a description of the existing and proposed site conditions, and a summary of the results of stormwater runoff calculations for peak flows and nutrient mitigation. Copies are attached of the stormwater and drainage calculations including nutrient model output.

**Summary** The Club Nova upgrade project will take place on a 0.661-ac. (28,775-sf) parcel within the downtown area that, according to information provided, was created in ~1970. Project north is assumed toward the front of the site along the W. Main Street side of the property.

The Club Nova property is an active parcel located in the downtown commercial area. The parcels on the west and east of the Club Nova property are of similar area and terrain and are commercially developed. The areas south, southwest and southeast are residential, both single and multi-family. The proposed site modifications include demolition of the existing “Club House” and “Thrift Shop”, and construction of a commercial-business

structure with the required paved parking, stormwater structures, and solid waste facilities. To satisfy local stormwater requirements, installing a ConTech Storm Filter and a sub-surface detention structure are proposed.

**APPLICABLE RULES** The Club Nova parcel lies in the Jordan Lake Unprotected Watershed within the Cape Fear River Basin. It is located within the B-1g zoning area in the Town of Carrboro commercial district. In accordance with State of NC stormwater rules, the Club Nova development is considered a high-density project, and in the post-development condition, the built upon area (impervious surfaces) will cover ~72% of the total land area.

According to the site survey and information on the USGS Chapel Hill Quadrangle 7.5 minute Topographic Map, no streams flow within or near the boundaries of this parcel. There are no flood plains encroaching onto the property or near it. According to the Orange County GIS map, there are no FEMA Special Flood Hazard areas on this parcel, nor have any Jurisdictional Wetlands been identified on or near the site.

**Management of Stormwater** This parcel lies within the commercial district of the Town of Carrboro, as defined in Section 15-136, and is already developed to the extent that it contains greater than 10,000-sf of impervious surfaces (18,309-sf existing). The proposed project, which adds net 2,468-sf of impervious surface, will cost in excess of \$100,000.00. The Stormwater Management requirements of the Town of Carrboro as described in section **15-263 (a)(6)** of the LUO, especially including the requirements for Water Quality Management and Runoff Release Rate Management, may apply at least in part. To comply with these requirements, it is required that the peak runoff discharge rate resulting from the 1-yr, 2-yr, 5-yr, 10-yr and 25-yr, 24-hr rainfall events be limited to the pre-development levels (**15-263 (g)(1)**); that 85% of TSS (total suspended solids) be removed from the first 1-in of stormwater runoff (**15-263 (b)(2)**); and to the extent possible, that post-development annual stormwater runoff volume shall not exceed the pre-development volume by more than 50% (CN>78) (**15-263 (g)(3)**).

This site may also be subject to the threshold nutrient loading requirements (**15-263 (c-f)**) of the Upper New Hope (unprotected) zone. In general, the nitrogen (N) loading in runoff contributed by the new development cannot exceed 2.2 pounds per acre per year,

and the phosphorus (P) loading contributed by the new development cannot exceed 0.82 pounds per acre per year. Optionally, the N&P discharge requirements can also be satisfied by achieving a minimum 35% reduction to Nitrogen (N) loading rate and a minimum 5% reduction to the Phosphorus (P) loading rate when comparing pre-development and post-development levels. For N and/or P loading in excess of these limits, on-site treatment may be necessary to reduce the concentrations to the required levels or to levels that satisfy the aforementioned alternate requirements.

If implementation of the engineered stormwater controls results in a Nitrogen loading rate of 10 lb/ac/yr or less, the developer/owner will have the option of off-setting the remainder of the N&P loading requirements using measures such as offset options purchased from an approved local mitigation bank, if available, or otherwise purchased from the North Carolina Ecosystem Enhancement Program. Offsite offset measures must reduce loading rates to below the threshold levels described above, 2.2 lbs/ac/yr N and 0.82 lbs/ac/yr N.

**Disturbed Area** It will be the responsibility of the owner/contractor to prevent off-site migration of sediments and pollutants and to prevent contamination of the site and surrounding drainageways. The area that will be disturbed by the project is estimated to be approximately 20,142-sf. (~0.46-ac) Since the potential disturbance will be in excess of 20,000-sf, an erosion control plan approved by the Orange County Erosion Control office will be required.

**SITE AND PROJECT DESCRIPTION** Club Nova is a residential/commercial development on a 0.66-ac. (28,775-sf) parcel located on the southern side of 103 W. Main Street, in the downtown commercial district of the Town of Carrboro. The W. Main Street pavement width (asphalt) is ~37-ft (bc/bc), within a 60-ft width public R-O-W (right-of-way). Concrete curb and gutter and 6-ft width bicycle lanes bound either edge of the asphalt pavement. Public sidewalks are within the R-O-W along both sides of the street. Within the ROW, overhead utilities, electric, phone, and etc. are parallel to the street on both sides. Public sewer and water mains and a gas main are beneath the public street. Street drainage is via a curb and gutter system installed along both sides of the pavement. Flow is eastward toward inlets, then southward along S. Greensboro St. in the local subsurface system that

ultimately discharges to Morgan Creek, then to Jordan Lake.

The Club Nova property is currently occupied by three commercial and residential structures with associated driveways, access-ways and parking areas (~64% impervious surface, ~36% landscaped). Two of the existing buildings will be demolished and replaced by a single structure as part of the proposed project. The post-development site will be ~72% impervious surfaces and ~28% landscaped or otherwise pervious.

Along the W. Main St frontage, commercial developments occupy the properties on either side of Club Nova. A Wendy's Restaurant adjoins the eastern boundary and a rental commercial building adjoins the western property boundary. Residential properties, both single-family and multi-family, abut the southern boundary of the Club Nova site and the rear (southern) portion of the western property boundary.

Access-to and egress-from the Club Nova property to W. Main St. is currently provided by two single-lane paved driveways that are perpendicular to the street; one located along the eastern side and the other at the western side of the property. W. Main Street is a paved east-west NCDOT artery. As part of the proposed upgrade, the two existing driveway entrances will be demolished and a new single-driveway connection to West Main Street will be installed.

The native soil on this site is described as luB, Iredell Urban on 1%-8% slopes. This is a group C/D soil with slow to very slow infiltration characteristics.

There are no FEMA flood zones on this site, nor are there any waterways or stream buffers.

The Club Nova site utilities are connected to existing systems located within the W. Main Street public R-O-W. Existing sewer and water systems will remain, and the proposed new building will be connected to the existing sewer and water systems, if feasible. Connecting the proposed fire sprinkler system to an existing system may prove feasible, but it is assumed that a new connection to the main will be necessary. The existing sewer lateral serving building 3 – The Apartments - currently lies beneath the site of the proposed

new building, at some depth. It is proposed that, space and slope permitting, an alternative sewer lateral be installed, bypassing the new building and connecting to the existing sewer lateral near the street, north of the new building. Similarly, to provide clearance for the proposed stormwater treatment system, the water lines serving building 3, may also be re-located. Existing electrical service connections to the Thrift Store will be removed and connections to the new building will be located underground., The existing sewer lateral from the house, will be re-used by the new building. A grease interceptor will be installed adjacent to the proposed new building.

**Site Drainage** The Club Nova property lies within the Jordan Lake Unprotected Watershed. Stormwater runoff originating on the Club Nova property drains primarily on the surface both northward toward the W. Main St. system and southward through a subgrade system in a private easement to the roadside ditch flowing westward along the northern side of W. Carr St. From the W. Carr St. roadside ditch, the runoff flows southward through the surface system located west of Old Pittsboro Rd to the intersection of NC Hwy 54 bypass and S. Greensboro St, then via Morgan Creek to Jordan Lake. In the existing condition, stormwater runoff generated on approximately 24,291-sf of the Club Nova property (84%), including 16,214-sf of impervious surface, is discharged southward to the W. Carr Street system via a yard inlet located at the rear of the property. Stormwater runoff generated on the remaining 4,484-sf of the Club Nova property (16%), including 2,095-sf of impervious surface, flows northward on the surface to the W. Main Street system.

Roof runoff generated on the three existing buildings on the site is discharged southward. Runoff from building 1 – The Thrift Shop - is directed southward through a roof outlet located at the rear of the building. Runoff from building 2 – The Club House – is discharged partially to the surface and partially through a subsurface roof drainage collector system that is assumed to discharge at the rear of the site. Roof runoff from building 3 – the Apartments (CASA) – is discharged to the surface along the northern frontage of the building, and directly to the yard inlet in the rear of the building via a collector system. Runoff does not flow onto this property from the surrounding tracts. In the post construction condition, there will be 20,777-sf (~72%) of impervious surfaces on this property, an increase of 2,468-sf. Pre-construction drainage breaks are shown on the existing conditions drawing EC-1 and in an illustration.

In the post-development condition, the peak runoff discharging northward toward E. Main Street will remain substantially as it is, as will the peak runoff discharged southward from the apartment area. In the proposed project area, post-development peak discharges will increase, but will be detained. Part of the runoff will also be treated using a ConTech Stormfilter system, again with controlled outflows.

As currently proposed, the existing drainage area northward will be reduced in total area from 4,484-sf to 3,434-sf. In this zone, impervious surfaces generating runoff will be increased from 2,095-sf to 3,244-sf, while landscaped areas generating runoff will be reduced from 2,389-sf to 190-sf. As a result of these changes to the post-development surface conditions, the peak runoff rates discharging northward will be equal to the pre-development peak discharge rates.

The site drainage area discharging southward toward W. Carr St. consists of two zones: (1) the area of the apartment building and the landscaped areas immediately surrounding it, which will be reduced slightly from 9,721-sf to total 9,653-sf; and (2) the proposed project area which will increase from 14,570-sf to a total of 15,688-sf with impervious surfaces in this area increased by 1,399-sf. Peak runoff discharged from the first zone, the apartment area, will remain substantially the same. All runoff generated in the second area will be collected then detained in subsurface pipes with controlled discharge or will be treated in the ConTech Stormfilter system. The ConTech treatment system will filter runoff generated on at least 2,468-sf of impervious surfaces, the area of increased impervious surface for the project. As a result of the detention, the peak discharges flowing southward will be reduced 1%-to-3% in the 2-yr, 5-yr, 10-yr and 25-yr, 5-min peak rainfall events.

Currently, runoff from approximately 40% of the southward flowing portion of the project zone is directed southeastward through an existing catch basin and subsurface pipe lying along the eastern side of the apartment building. From the buried pipe, the runoff is discharged through a diverter located on the surface at the rear. This discharge then flows westward across a grassed surface to the yard inlet. The remaining approximately 60% of the runoff generated on the southward flowing mid-section area is directed southwestward

on the surface and along the western side of the apartment building, toward the rear SW corner of the site, where it then flows eastward across a grassed surface to the yard inlet.

The catch basin and subsurface pipe on the eastern side of the apartment building will remain as currently configured, however flow to it will be reduced to a minimum. Along the western side of the apartment building, it is proposed that a catch basin be installed at the southwestern edge of the parking lot, and that a buried pipe connect it to the rear yard inlet. This system will transport surface runoff collected from the project area of the site after it passes through the treatment and detention systems.

In the area around the apartment building, the surface is grassed, but improvements will be necessary to prevent erosion, and to prevent runoff from impacting the building foundations. It should be noted that the surface parameters used to design the rear pipe drainage system to West Carr St. assumed 20,771-sf of undetained, impervious surface would be drained through the rear yard inlet. The southward flowing impervious surface runoff anticipated to result after the proposed construction is a total of 17,533-sf, with the significant portion of that runoff slowed by detention.

## **MANAGEMENT OF STORMWATER**

**Runoff Volume Control Management (15-263 (g)(3))** Employing the NCDENR Jordan Lake Watershed Model (SNAP), and assuming Group D soil with treatment of 1-inch runoff from 2,468-sf of the roof area, the annual runoff volume for this total site that results from the proposed development including treatment and detention will increase from 63,573-cf to 71,455-cf. This 12% (7,882-cf) increase is less than the 50% maximum increase allowed by the TOC LUO.

**Water Quality Management (15-263 (b)(2))** A stormwater treatment and peak outflow control system, consisting of a ConTech StormFilter and a group of subsurface stormwater detention pipes, will be used to limit peak outflow from the 1-yr, 2-yr, 10-yr and 25-yr, 24-hr rainfall events to the pre-development levels and to treat and control the initial 1-in runoff generated on impervious surfaces equal to the increased impervious area.

Discharge from the StormFilter system will bypass the detention system and will flow directly to the site drainage system.

The ConTech Storm Filter, with a design WQV of 166-cf, will collect runoff generated on ~2,468-sf of impervious surface area, consisting solely of roof drainage, and will treat the first 1-in runoff for 85% TSS removal. This treatment system is approved/certified by the NCDEQ to treat the initial 1-in runoff, and to limit and treat total solids (TSS), Phosphorus, and Nitrogen. This system, selected in accordance with NCDEQ Appendix A-8, "Guidance on SCM Selection" and constructed in accordance with the guidelines of the "NCDEQ Stormwater Design Manual" is considered by the NCDEQ to be a primary SCM capable of adequately treating the design storm (1-in).

**Peak Discharge Management (15-263 (g)(1))** A net increase of 2,468-sf impervious surface is estimated, resulting in total impervious coverage of ~72%. To control stormwater flow, a detention system consisting of a series of subsurface stormwater detention pipes will be used to limit peak outflow generated by the 1-yr, 2-yr, 5-yr, 10-yr and 25-yr, 24-hr rainfall events to the pre-development levels. The detention will be designed such that drainage from the portions of the development not served by detention, coupled with drainage from StormFilter system do not exceed the pre-development values for the total site. Additionally, in this particular case, with the detention system as proposed, the post-development southward and northward peak flows maintain their pre-development balance.

Following is a summary of the pre- and post-development peak runoff flows generated on the 0.66-ac. Club Nova property. The Rational Method was used with pre-development composite  $C=0.79$  for the total site and post-development composite  $C=0.83$  for the total site. Copies of the calculations are attached.

**Peak runoff flows****Pre-development peak flows – entire site and by section**

<b>Description</b>	<b>25-yr 5-min (cfs)</b>	<b>10-yr 5-min (cfs)</b>	<b>5-yr 5-min (cfs)</b>	<b>2-yr 5-min (cfs)</b>	<b>1-yr 5-min (cfs)</b>
<b>Total SITE area 0.661-ac</b>	<b>4.29</b>	<b>3.78</b>	<b>3.45</b>	<b>3.02</b>	<b>2.41</b>
Drainage North area 0.103-ac	0.60	0.53	0.48	0.42	0.34
Drainage South Rear area 0.223-ac	1.35	1.19	1.09	0.95	0.76
Drainage South mid-section 0.334- ac	2.33	2.06	1.88	1.64	1.31

**Post-development peak flows – entire site and by section – No detention**

<b>Description</b>	<b>25-yr 5-min (cfs)</b>	<b>10-yr 5-min (cfs)</b>	<b>5-yr 5-min (cfs)</b>	<b>2-yr 5-min (cfs)</b>	<b>1-yr 5-min (cfs)</b>
<b>Total SITE area 0.661-ac</b>	<b>4.50</b>	<b>3.97</b>	<b>3.62</b>	<b>3.17</b>	<b>2.53</b>
Drainage North area 0.079-ac	0.60	0.53	0.48	0.42	0.34
Drainage South Rear area 0.222-ac	1.35	1.19	1.08	0.95	0.76
Drainage South mid-section 0.360- ac	2.55	2.25	2.05	1.80	1.44

**Post-development peak flows – entire site and by section – With detention**

<b>Description</b>	<b>25-yr 5-min (cfs)</b>	<b>10-yr 5-min (cfs)</b>	<b>5-yr 5-min (cfs)</b>	<b>2-yr 5-min (cfs)</b>	<b>1-yr 5-min (cfs)</b>
<b>Total SITE – pre area 0.661-ac</b>	<b>4.29</b>	<b>3.78</b>	<b>3.45</b>	<b>3.02</b>	<b>2.41</b>
Drainage North area 0.079-ac	0.60	0.53	0.48	0.42	0.34
Drainage South Rear area 0.222-ac	1.35	1.19	1.08	0.95	0.76
<b>Drainage South mid-section detained 0.360-ac</b>	<b>2.27</b>	<b>1.95</b>	<b>1.76</b>	<b>1.56</b>	<b>1.29</b>
<b>Post-Total with detention &amp; treatment</b>	<b>4.24</b>	<b>3.69</b>	<b>3.35</b>	<b>2.95</b>	<b>2.41</b>

Note The 3-ft diameter x 155-ft pipe length prevailed in the routing design.

**SUMMARY - Post-development peak flows – entire site and by section – With detention**

Description	25-yr 5-min (cfs)	10-yr 5-min (cfs)	5-yr 5-min (cfs)	2-yr 5-min (cfs)	1-yr 5-min (cfs)
Pre - Total Site area 0.661-ac	4.29	3.78	3.45	3.02	2.41
Post- Total Site with detention & treatment	4.24	3.69	3.35	2.95	2.41

**Nitrogen (N) and Phosphorus (P) Management (15-263 (c-f))** Based upon calculations employing the NCDENR Jordan Lake Model (SNAP), assuming the StormFilter SCM and Group D soil, the Nitrogen (N) and Phosphorus (P) loading rates for this site will be increased slightly or remain the same. As a result of the proposed construction and treatment of the increased impervious surface by the SCM, the Total Nitrogen loading rate on the site will increase from 8.03 lb/ac/yr to 8.42 lb/ac/yr, and the Total Phosphorus loading rate on the site will remain at its current level of 1.04 lb/ac/yr.

The increases to N&P discharged due to the proposed construction are Nitrogen: 0.39 lb/ac/yr and Phosphorus: 0.00 lb/ac/yr.

**Stormwater Impact** Runoff that originates on the 0.661-ac Club Nova property is directed generally northward as surface sheet flow to the street and southward in subsurface pipes to the roadside ditch, south of the site. In both cases, the runoff ultimately travels southward through various systems to Jordan Lake and the Cape Fear River system.

Significant alteration of the pre-development site hydrology of the site is not anticipated. With the exception of areas that will be graded for construction and the increased impervious surface, the existing slopes and drainage paths across the majority of the property will not be altered by the proposed development, except to maintain the pre-development balance between flows to front and rear. The peak flows leaving the site will not be increased. On the Club Nova property, increased runoff pollution and peak flow rates that result from added impervious surfaces will be mitigated by detention and treatment.

It is anticipated that the Club Nova development project will have minimal impact on the off-site stormwater system or on the downstream structures. While the changes that

occur to the site may increase the total volume of runoff, the runoff flow rates and volumes will be mitigated by the installation of detention pipes to collect and control the runoff. The stormwater structures will retard the flow rates into the downstream system, and will treat it.

If there are questions or comments, or if additional information is necessary, please do not hesitate to contact SGI Technical Services at (919) 942-7612.

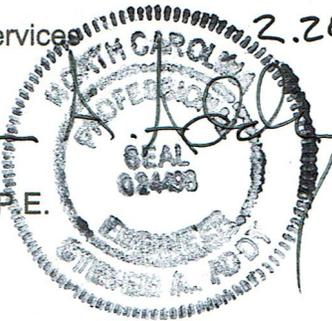
Sincerely,  
SGI Technical Services

2.26.20



024498

Steven A. Addy, P.E.



**CALCULATIONS SUMMARY**

*S. Adley*  
2.26.20  
024498



**Pages 1-4:** Calculation of pre- and post-development peak discharge flows for: 1. the entire site; 2. the discharge northward to E. Main St; 3. the discharge southward from the CASA apartments; and 4. the discharge from the remainder of the site directed to detention and treatment. The Rational Method was employed.

**Illustrations (5-sheets)**

**Page 5:** A summary of the pre- and post- site discharges from above assuming no detention and a second summary of the discharges using treatment and detention. Note that the pipe length required to limit the 1-yr discharge prevailed and total 155-ft is the length of the proposed 3-ft dia. detention pipe for the site.

**Page 6:** The design data provided by ConTech for treatment of first 1-in. from 0.09-ac. of impervious surface runoff. The input values were reduced by one-third for 0.06-ac. acres impervious surface to be treated in the current design iteration.

**Page 7:** Calculation of composite CN (curve number) values for the pre-development site, used for confirming the increase to annual runoff volume, and for the post-development drainage area to detention, used for developing routing parameters.

**Pages 8-9:** Development of the stormwater routing parameters using the Rooney Chainsaw Routing Method.

**Pages 10-14:** Routing results for the 25-yr, 24-hr event, the 10-yr, 24-hr event, the 5-yr, 24-hr event, the 2-yr, 24-hr event and the 1-yr, 24-hr event. A summary of the discharge results is included on page 5 above. Note the 3-ft x 155-ft pipe length, required to detain the 1-yr storm prevailed.

**Page 15:** Pipe sizing for drainage piping to rear, overflow piping from treatment and detention, roof drainage piping.

**Nutrient Model sheets 1, 2a & 2b and 3:** These are the result sheets from the NCDENR SNAP Model. The first (1) and second (2a, 2b) sheets contain the input data and the third sheet (3) shows the results assuming the influence of the StormFilter SCM. The increase to annual runoff volume is shown on the third sheet as are the increases to N&P due to the increased impervious surfaces and StormFilter treatment system.

Club Nova  
Peak discharge - site

2.9.20 soil type luB type C/D created before 1993 Jordan Lake Unprotected	Club Nova soil type luB Iredell-Urban group C/D 1-8% slopes							impervious %			
	Zoned B1-g	desc	a (sf)	a(ac)	c	cx					
	<b>pre-dev composite c</b>										
	5/13/19	buildings (1,2,3)	8976	0.206	0.96	0.198					
		driveway&park (paver)	9037	0.207	0.96	0.199	0.96		18309		
		concrete pads	296	0.007	0.96	0.007					
		impervious (gravel)	0	0.000	0.90	0.000	0.90		0	18309	
		landscaped 2%-7%	9852	0.226	0.50	0.113					
		decks	614	0.014	0.50	0.007					
			28775.00	0.661	<b>0.79</b>						
									<b>63.6%</b>		
	<b>post composite c</b>										
		buildings (1)	5054	0.116	0.96	0.11					
		new building roof	5605	0.129	0.96	0.124					
		driveway&park (paver)	10066	0.231	0.96	0.222					
		concrete pads	52	0.001	0.96	0.001	0.96			20777	
		impervious (gravel)	0	0.000	0.90	0.000	0.90			0	
	other C=0.90	0	0.000	0.90	0.000						
	landscaped (storm, la)	7384	0.170	0.50	0.085		20777				
	decks	614	0.014	0.50	0.007		2468				
		28775.00	0.661	<b>0.83</b>							
							<b>72.2%</b>				
							0				
							0				

pre-development peak runoff		2-yr-5 min	5-yr-5 min	10-yr-5 min	25-yr-5 min	50-yr-5 min	1-yr-5 min
generated on site	A (ac)=	0.661	0.661	0.661	0.661	0.661	0.661
	C=	0.79	0.79	0.79	0.79	0.79	0.79
	I (in/hr)=	5.76	6.58	7.22	8.19	8.96	4.61
<b>TOTAL generated on site</b>	<b>Q (cfs)=</b>	<b>3.02</b>	<b>3.45</b>	<b>3.78</b>	<b>4.29</b>	<b>4.69</b>	<b>2.41</b>
post-development runoff		2-yr-5 min	5-yr-5 min	10-yr-5 min	25-yr-5 min	50-yr-5 min	1-yr-5 min
generated on site	A (ac)=	0.661	0.661	0.661	0.661	0.661	0.661
	C=	0.83	0.83	0.83	0.83	0.83	0.83
	I (in/hr)=	5.76	6.58	7.22	8.19	8.96	4.61
<b>TOTAL generated on site</b>	<b>Q (cfs)=</b>	<b>3.17</b>	<b>3.62</b>	<b>3.97</b>	<b>4.50</b>	<b>4.93</b>	<b>2.53</b>
<b>increase</b>		<b>0.15</b>	<b>0.17</b>	<b>0.19</b>	<b>0.21</b>	<b>0.23</b>	<b>0.12</b>

**verify Kirpach for flow in site**

Estimate Qp (peak discharge) by any applicable means-use Rational Method under 2 sq. mi. for estimating Qp, use storm length equal to tc (time of maximum concentration) for site.

rear peak to inlet

Qp (estimated 25-yr, 5-min)=

Q (cfs)	0.45
C	0.83
I (in/hr)	8.2
A (acres)	0.66

tc=

tc (min)	02.147
L (ft)	235
H (ft)	6

g, h= factors unique for area and return period, from table or derived

I (in/hr)=	8.3
tc (min)=	5.0
g	232
h	23

clearance drainage-way

Club Nova  
Peak discharge - northward

2.10.20 Club Nova soil type luB Iredell-Urban group C/D 1-8% slopes							impervious %		
soil type luB	Zoned B1-g	desc	a (sf)	a(ac)	c	cx <sub>a</sub>			
created before 1919	pre-dev composite c	buildings (3)	0	0.000	0.96	0.000			<b>total pre-impervious</b>
Jordan Lake Unprotected		driveway&park (paver)	2052	0.047	0.96	0.045	0.96	2095	
		concrete pads	43	0.001	0.96	0.001			
Drainage northward to street		impervious (gravel)	0	0.000	0.90	0.000	0.90	0	2095 total
		landscaped 2%-7%	2389	0.055	0.50	0.027			
		decks	0	0.000	0.50	0.000			
			4484	0.103	<b>0.71</b>				<b>46.7%</b>
	<i>post composite c</i>	buildings (1,3)	0	0.000	0.96	0.00			
		new building	2539	0.058	0.96	0.056			<b>total post-impervi</b>
		driveway,park,walk (pav)	705	0.016	0.96	0.016		3244	<b>increase</b>
		concrete pads	0	0.000	0.96	0.000	0.96	0	
		impervious (gravel)	0	0.000	0.90	0.000	0.90	0	3244
		other C=0.90	0	0.000	0.90	0.000			1149
		landscaped (storm, la)	190	0.004	0.50	0.002			
		decks	0	0.000	0.50	0.000			
			3434	0.079	<b>0.93</b>				<b>94.5%</b>
-1050									
<b>pre-development peak runoff</b>									
generated on site		2-yr-5 min	5-yr-5 min	10-yr-5 min	25-yr-5 min	50-yr-5 min	1-yr-5 min		
	A (ac)=	0.103	0.103	0.103	0.103	0.103	0.103		
	C=	0.71	0.71	0.71	0.71	0.71	0.71		
	I (in/hr)=	5.76	6.58	7.22	8.19	8.96	4.61		
<b>TOTAL generated on site</b>	<b>Q (cfs)=</b>	<b>0.42</b>	<b>0.48</b>	<b>0.53</b>	<b>0.60</b>	<b>0.66</b>	<b>0.34</b>		
<b>post-development runoff</b>									
generated on site		2-yr-5 min	5-yr-5 min	10-yr-5 min	25-yr-5 min	50-yr-5 min	1-yr-5 min		
	A (ac)=	0.079	0.079	0.079	0.079	0.079	0.079		
	C=	0.93	0.93	0.93	0.93	0.93	0.93		
	I (in/hr)=	5.76	6.58	7.22	8.19	8.96	4.61		
<b>TOTAL generated on site</b>	<b>Q (cfs)=</b>	<b>0.42</b>	<b>0.48</b>	<b>0.53</b>	<b>0.60</b>	<b>0.66</b>	<b>0.34</b>		
<b>increase</b>		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		

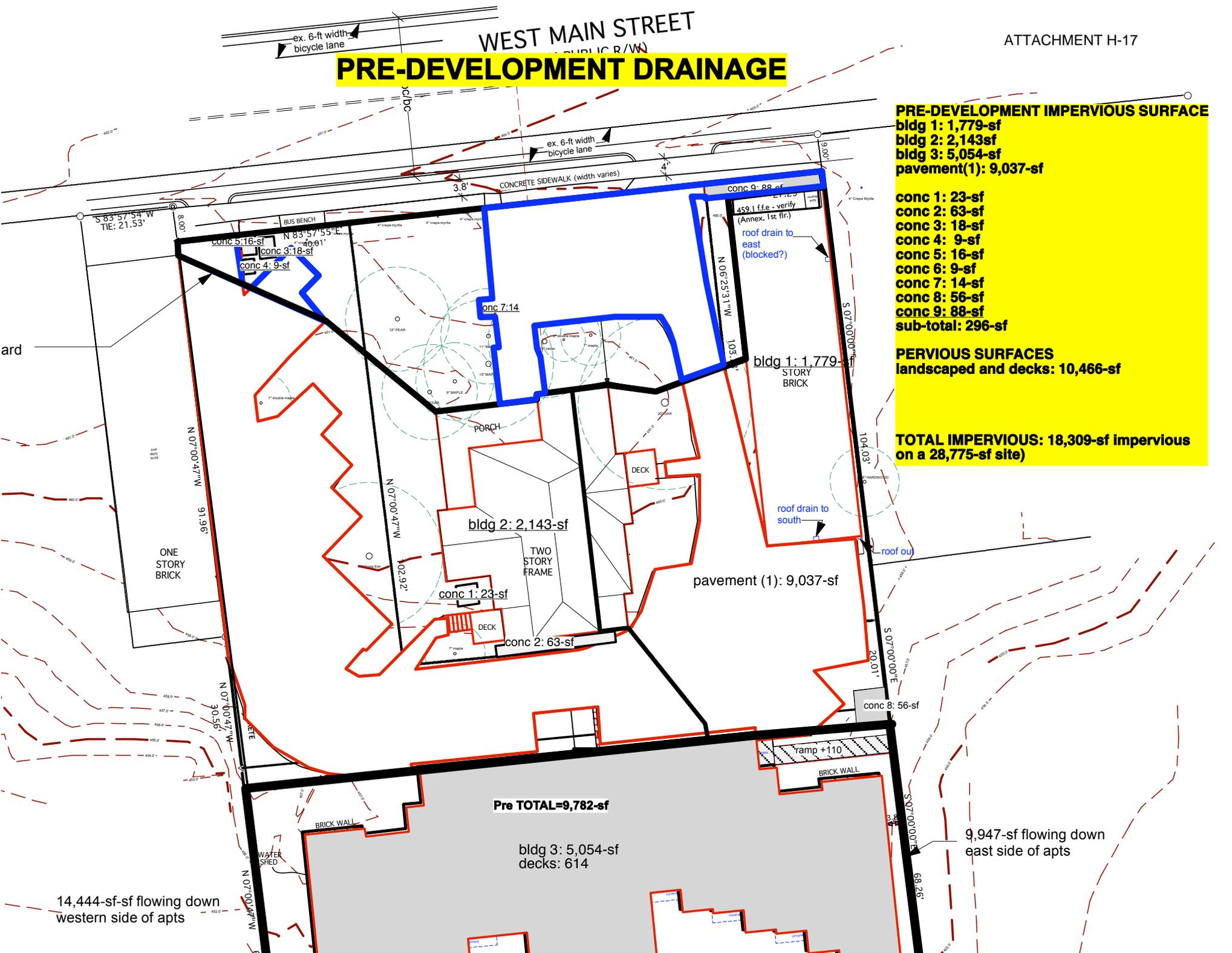
Club Nova  
Peak discharge - southward (Apartments)

2.9.20 Club Nova soil type luB Iredell-Urban group C/D 1-8% slopes							impervious %		
soil type luB	Zoned B1-g	desc	a (sf)	a(ac)	c	cx <sub>a</sub>			
created before 1919	pre-dev composite c	buildings (3)	5054	0.116	0.96	0.111			
Jordan Lake Unprotected		driveway&park (paver)	0	0.000	0.96	0.000	0.96	5063	<b>total pre-impervious</b>
		concrete pads	9	0.000	0.96	0.000			
<b>Drainage area of rear apartments</b>		impervious (gravel)		0.000	0.90	0.000	0.90	0	5063 total
		landscaped 2%-7%	4044	0.093	0.50	0.046			
		decks	614	0.014	0.50	0.007			
			9721	0.223	<b>0.74</b>				<b>52.1%</b>
	<i>post composite c</i>	<i>desc</i>	<i>a (sf)</i>	<i>a(ac)</i>	<i>c</i>	<i>cx<sub>a</sub></i>			
		buildings (1,3)	5054	0.116	0.96	0.11			
		new building	0	0.000	0.96	0.000			<b>total post-impervious</b>
		driveway&park (paver)	0	0.000	0.96	0.000	0.96	5063	<b>increase</b>
		concrete pads	9	0.000	0.96	0.000			
		impervious (gravel)	0	0.000	0.90	0.000	0.90	0	
		other C=0.90	0	0.000	0.90	0.000			5063
		landscaped (storm, la	3976	0.091	0.50	0.046			0
		decks	614	0.014	0.50	0.007			
			9653	0.222	<b>0.74</b>				<b>52.5%</b>
								-68	
<b>pre-development peak runoff</b>									
	generated on site		2-yr-5 min	5-yr-5 min	10-yr-5 min	25-yr-5 min	50-yr-5 min	1-yr-5 min	
	A (ac)=		0.223	0.223	0.223	0.223	0.223	0.223	
	C=		0.74	0.74	0.74	0.74	0.74	0.74	
	I (in/hr)=		5.76	6.58	7.22	8.19	8.96	4.61	
	<b>TOTAL generated on site</b>	<b>Q (cfs)=</b>	<b>0.95</b>	<b>1.09</b>	<b>1.19</b>	<b>1.35</b>	<b>1.48</b>	<b>0.76</b>	
<b>post-development runoff</b>									
	generated on site		2-yr-5 min	5-yr-5 min	10-yr-5 min	25-yr-5 min	50-yr-5 min	1-yr-5 min	
	A (ac)=		0.222	0.222	0.222	0.222	0.222	0.222	
	C=		0.74	0.74	0.74	0.74	0.74	0.74	
	I (in/hr)=		5.76	6.58	7.22	8.19	8.96	4.61	
	<b>TOTAL generated on site</b>	<b>Q (cfs)=</b>	<b>0.95</b>	<b>1.08</b>	<b>1.19</b>	<b>1.35</b>	<b>1.47</b>	<b>0.76</b>	
	<b>increase</b>		<b>0.00</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>0.00</b>	

Club Nova  
Peak discharge - southward (project area-detained)

2.10.20 Club Nova soil type luB Iredell-Urban group C/D 1-8% slopes							impervious %		
<b>soil type luB</b>	Zoned B1-g	<b>desc</b>	<b>a (sf)</b>	<b>a(ac)</b>	<b>c</b>	<b>cx<sub>a</sub></b>			
<b>created before 1990</b>	<b>pre-dev composite c</b>	buildings (3)	3922	0.090	0.96	0.086			
<b>Jordan Lake Unprotected</b>		driveway&park (pavc)	6985	0.160	0.96	0.154	0.96	11151	<b>total pre-impervious</b>
		concrete pads	244	0.006	0.96	0.005			
<b>REMAINDER OF SITE</b>	<b>Mid-section</b>	impervious (gravel)	0	0.000	0.90	0.000	0.90	0	11151 total
<b>drainage to treatment/detention</b>		landscaped 2%-7%	3419	0.078	0.50	0.039			
		decks	0	0.000	0.50	0.000			
			14570	0.334	<b>0.85</b>				<b>76.5%</b>
	<b>post composite c</b>	<b>desc</b>	<b>a (sf)</b>	<b>a(ac)</b>	<b>c</b>	<b>cx<sub>a</sub></b>			
		buildings (1,3)	0	0.000	0.96	0.00			
		new building	3066	0.070	0.96	0.068			<b>total post-impervious</b>
		driveway&park (pavc)	9361	0.215	0.96	0.206			<b>increase</b>
		new concrete	43	0.001	0.96	0.001	0.96	12470	
		impervious (gravel)	0	0.000	0.90	0.000	0.90	0	
		other C=0.90	0	0.000	0.90	0.000			12470
		landscaped (storm, la	3218	0.074	0.50	0.037			1319
		decks	0	0.000	0.50	0.000			
			15688	0.360	<b>0.87</b>				<b>79.5%</b>
<b>pre-development peak runoff</b>									
	generated on site		2-yr-5 min	5-yr-5 min	10-yr-5 min	25-yr-5 min	50-yr-5 min	1-yr-5 min	
	A (ac)=		0.334	0.334	0.334	0.334	0.334	0.334	
	C=		0.85	0.85	0.85	0.85	0.85	0.85	
	I (in/hr)=		5.76	6.58	7.22	8.19	8.96	4.61	
	<b>TOTAL generated on site</b>	<b>Q (cfs)=</b>	<b>1.64</b>	<b>1.88</b>	<b>2.06</b>	<b>2.33</b>	<b>2.55</b>	<b>1.31</b>	
<b>post-development runoff</b>									
	generated on site		2-yr-5 min	5-yr-5 min	10-yr-5 min	25-yr-5 min	50-yr-5 min	1-yr-5 min	
	A (ac)=		0.360	0.360	0.360	0.360	0.360	0.360	
	C=		0.87	0.87	0.87	0.87	0.87	0.87	
	I (in/hr)=		5.76	6.58	7.22	8.19	8.96	4.61	
	<b>TOTAL generated on site</b>	<b>Q (cfs)=</b>	<b>1.80</b>	<b>2.05</b>	<b>2.25</b>	<b>2.55</b>	<b>2.79</b>	<b>1.44</b>	
	<b>increase</b>		<b>0.15</b>	<b>0.18</b>	<b>0.19</b>	<b>0.22</b>	<b>0.24</b>	<b>0.12</b>	

# PRE-DEVELOPMENT DRAINAGE



**PRE-DEVELOPMENT IMPERVIOUS SURFACE**  
 bldg 1: 1,779-sf  
 bldg 2: 2,143sf  
 bldg 3: 5,054-sf  
 pavement(1): 9,037-sf

conc 1: 23-sf  
 conc 2: 63-sf  
 conc 3: 18-sf  
 conc 4: 9-sf  
 conc 5: 16-sf  
 conc 6: 9-sf  
 conc 7: 14-sf  
 conc 8: 56-sf  
 conc 9: 88-sf  
 sub-total: 296-sf

**PERVIOUS SURFACES**  
 landscaped and decks: 10,466-sf

**TOTAL IMPERVIOUS: 18,309-sf impervious**  
 on a 28,775-sf site)

**Pre TOTAL=9,782-sf**

bldg 3: 5,054-sf  
 decks: 614

9,947-sf flowing down  
 east side of apts

14,444-sf flowing down  
 western side of apts

ard

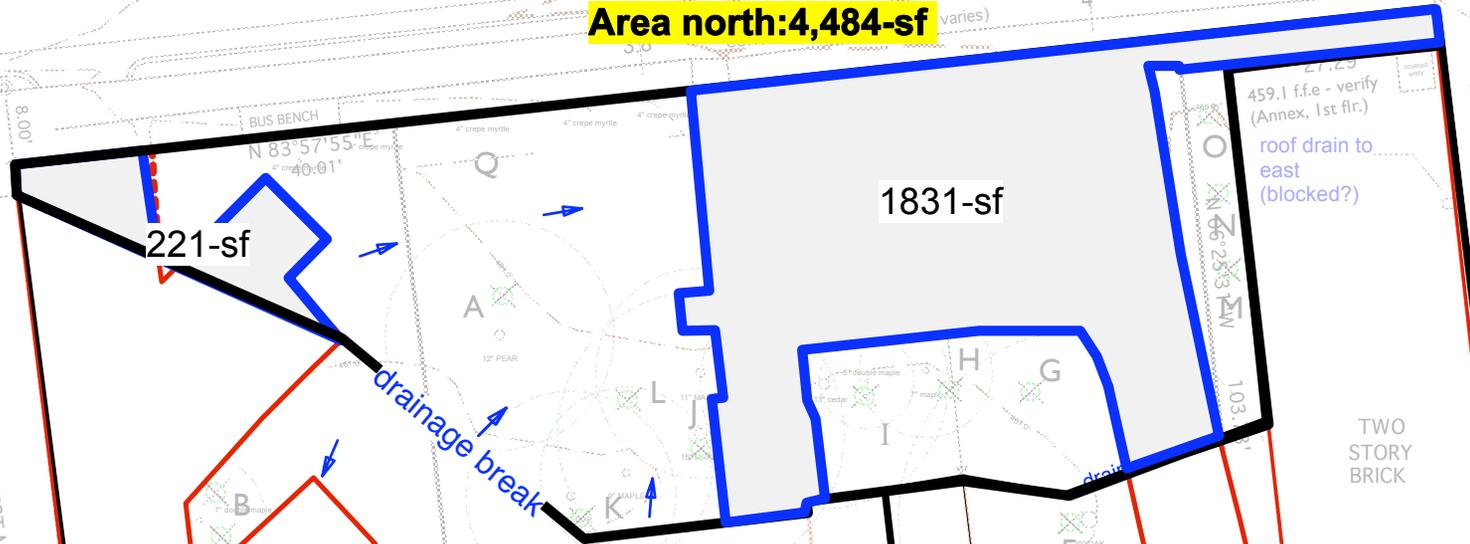
ard

ard

WEST MAIN STREET  
(60' PUBLIC R/W)

**PRE-DEVELOPMENT FLOW TO MAIN STREET**

**Area north: 4,484-sf**



**FLOW NORTHWARD TO W. MAIN St. - 4,484-sf  
pavement (221+1831): 2,052-sf  
conc pads: 43-sf  
landscaped: 2,389-sf**

pavement (1)

bldg 2: 2,143-sf

conc 1: 23-sf

conc 2: 63-sf

pavement (1): 9,037-sf

conc 8: 56-sf

459.1 f.f.e - verify  
(Annex, 1st flr.)  
roof drain to  
east  
(blocked?)

roof drain to  
south

roof out

100 S. Gree  
PIN: 9778-8  
Wendys Intr  
Zoning - BI  
Use - 8.400

TWO  
STORY  
BRICK

TWO  
STORY  
FRAME

ONE  
STORY  
BRICK

HOLTON RENTALS, LLC  
105-B WEST MAIN STREET  
PIN: 9778-86-0041  
D.B. 3331-431

e &  
clg  
ty

pav  
par

ref.

control  
corner

S 83°57'54"W  
TIE: 21.53'

N 83°57'55"E  
40.01'

N 07°00'47"W  
91.96'

N 07°00'  
30.0

07°00'47"W  
102.92'

N 66°25'31"W  
103.1'

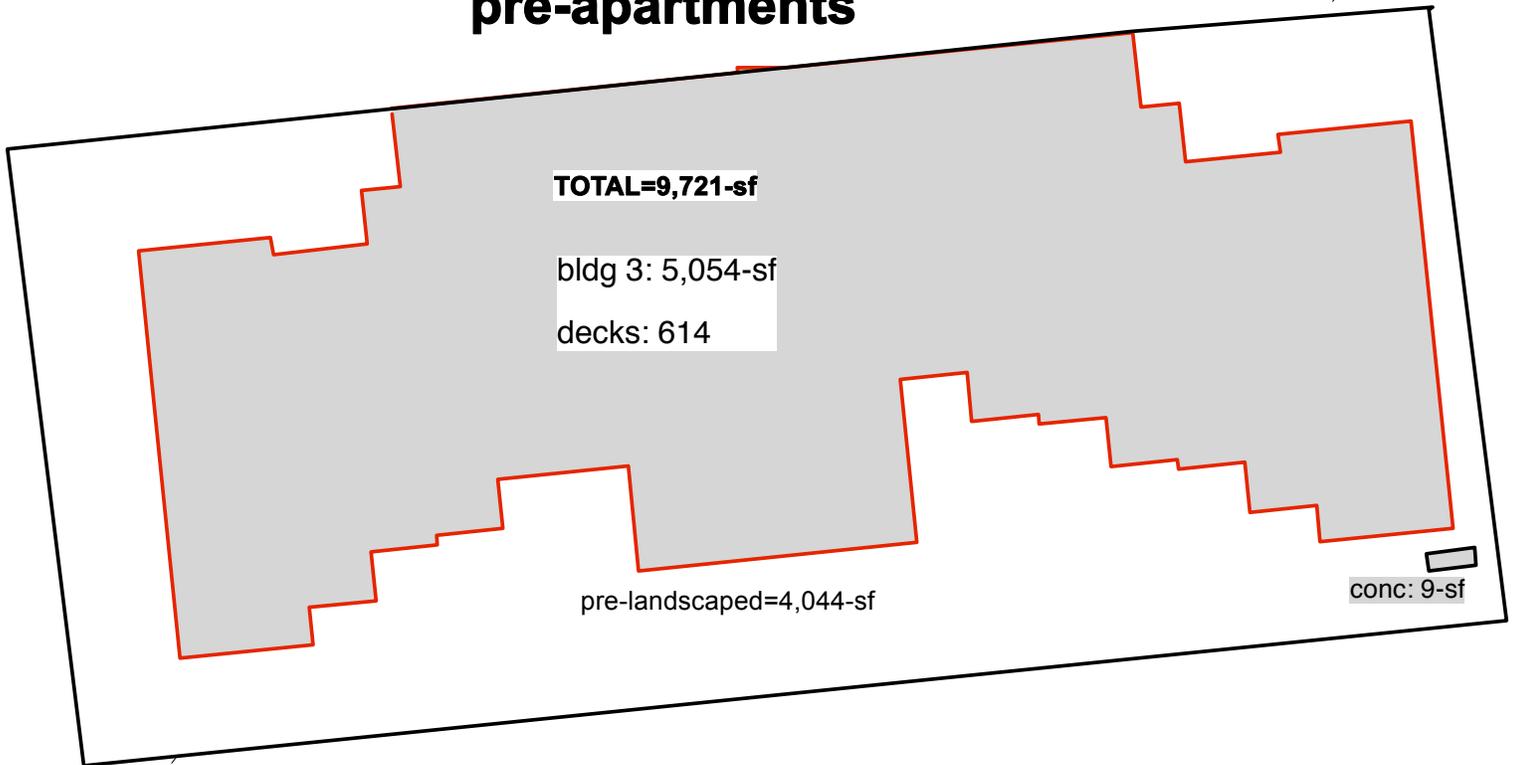
S 07°00'00"E

104.03'

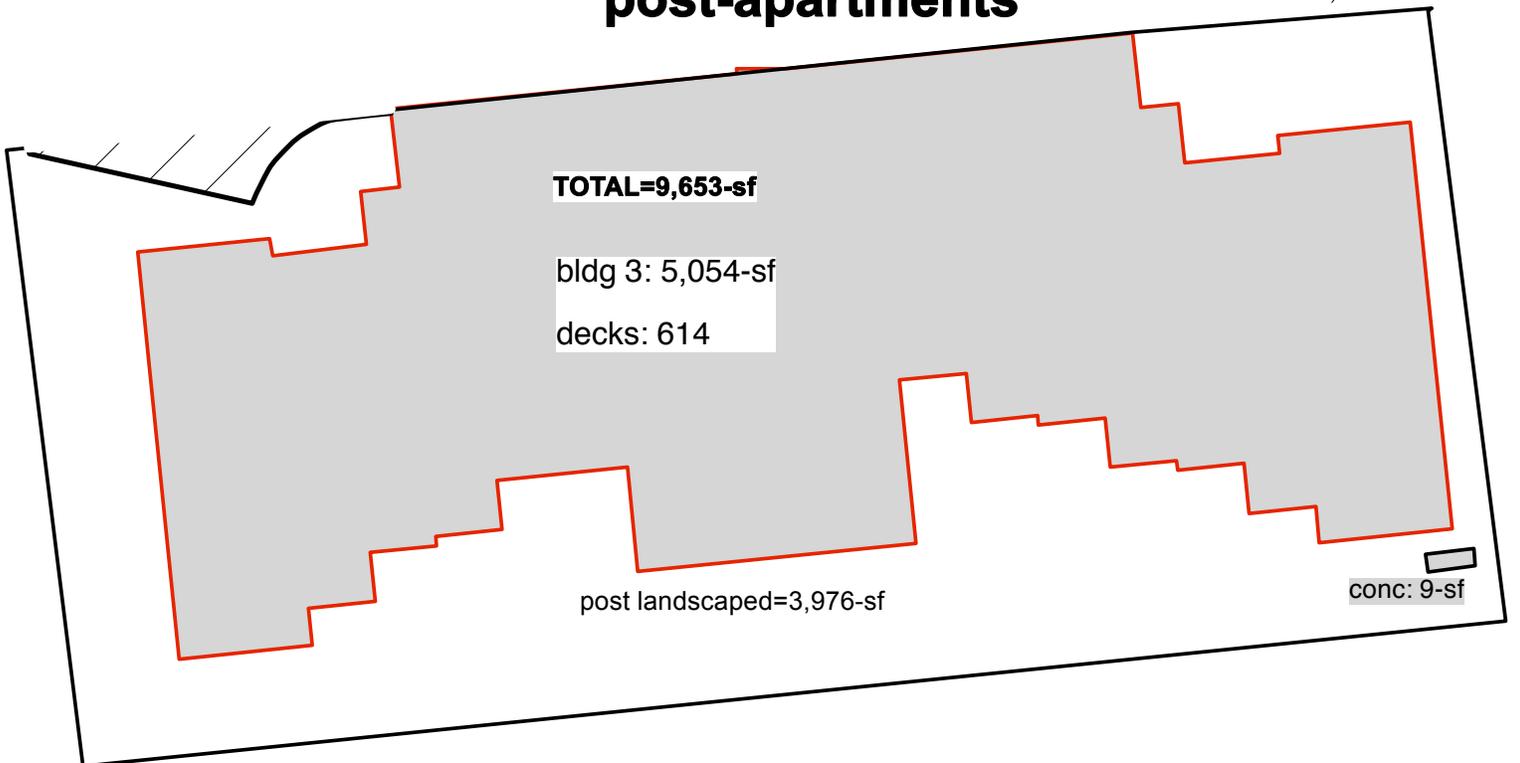
S 07°00'00"E  
20.01'

# APARTMENT DRAINAGE

## pre-apartments



## post-apartments







Club Nova  
Peak discharges - summary

<b>SUMMARY-PRE</b>					
	<b>1-yr-5 min</b>	<b>2-yr-5 min</b>	<b>10-yr-5 min</b>	<b>25-yr-5 min</b>	<b>5-yr-5-min</b>
drain to street N.	0.34	0.42	0.53	0.60	0.48
mid-area	1.31	1.64	2.06	2.33	1.88
apts drain to ditch S.	0.76	0.95	1.19	1.35	1.09
<b>sub</b>	<b>2.41</b>	<b>3.02</b>	<b>3.78</b>	<b>4.29</b>	<b>3.45</b>
<b>Total Site</b>	<b>2.41</b>	<b>3.02</b>	<b>3.78</b>	<b>4.29</b>	<b>3.45</b>
<b>SUMMARY-POST (no detention)</b>					
	<b>1-yr-5 min</b>	<b>2-yr-5 min</b>	<b>10-yr-5 min</b>	<b>25-yr-5 min</b>	<b>5-yr-5-min</b>
drain to street N.	0.34	0.42	0.53	0.60	0.48
mid- to mitigate	1.44	1.80	2.25	2.55	2.05
apts drain to ditch S.	0.76	0.95	1.19	1.35	1.08
<b>sub</b>	<b>2.53</b>	<b>3.17</b>	<b>3.97</b>	<b>4.50</b>	<b>3.62</b>
<b>Total Site</b>	<b>2.53</b>	<b>3.17</b>	<b>3.97</b>	<b>4.50</b>	<b>3.62</b>

<b>max detention discharge:</b>	<b>1-yr-5 min</b>	<b>2-yr-5 min</b>	<b>10-yr-5 min</b>	<b>25-yr-5 min</b>	<b>5-yr-5-min</b>	
maximum allowed site discharge rate:	2.41	3.02	3.78	4.29	3.45	cfs
peak discharge north:	0.34	0.42	0.53	0.60	0.48	cfs
peak discharge south (apts):	0.76	0.95	1.19	1.35	1.08	cfs
discharge from treatment:	0.02	0.02	0.02	0.02	0.02	cfs
<b>MAX ALLOWED PEAK DISCHARGE DETENTION:</b>	<b>1.30</b>	<b>1.63</b>	<b>2.04</b>	<b>2.32</b>	<b>1.86</b>	<b>cfs</b>
Actual discharge peak from detention	1.29	1.56	1.95	2.27	1.76	cfs
<b>total site discharge peak (with detention)</b>	<b>2.41</b>	<b>2.95</b>	<b>3.69</b>	<b>4.24</b>	<b>3.35</b>	<b>cfs</b>
detention pipe 3-ft-length modeled	155	155	155	155	155	ft
reduction in northward peak	0%	0%	0%	0%	0%	
reduction in southward peak	0%	2%	3%	1%	3%	
reduction in total peak	0%	2%	2%	1%	3%	

# ConTech

## Calculations to Treat 3,767-sf of Impervious Surface



### Determining Number of Cartridges for Volume-Based Design in NC

Design Engineer:	<b>LRS</b>	<b>Blue Cells = Input</b>
Date	4/7/2017	<b>Black Cells = Calculation</b>
<b>Site Information</b>		
Project Name	<b>Carrboro Proj</b>	
Project State	<b>North Carolina</b>	
Project Location	<b>Carrboro Proj</b>	
Drainage Area, Ad	<b>0.09</b> ac	
Impervious Area, Ai	<b>0.09</b> ac	
Pervious Area, Ap	<b>0.00</b>	
% Impervious	<b>100%</b>	
Runoff Coefficient, Rv	<b>0.95</b>	=0.05+0.9*(Ai/Ad)
<b>Water Quality Volume Calculations</b>		
Design storm rainfall depth, Rd	<b>1.0</b> in	
Water quality volume, WQV	<b>310.4</b> ft <sup>3</sup>	=Ad*Rv*Rd*(43560/12)
<b>Storage Component Calculations</b>		
Capture 75% of WQV	<b>232.8</b> ft <sup>3</sup>	=0.75*WQV
Pretreatment credit (estimated or calculated), %pre	<b>30%</b>	
<b>Mass loading calculations</b>		
Mean Annual Rainfall, P	<b>46</b> in	
Agency required % removal	<b>85%</b>	
Percent Runoff Capture (% capture)	<b>90%</b>	
Mean Annual Runoff, V <sub>t</sub>	<b>12,849</b> ft <sup>3</sup>	=P*Ad*Rv*(43560/12)*%capture
Event Mean Concentration of Pollutant, EMC	<b>70.0</b> mg/l	(Suggestion: Use 60 for residential, 70 for Commercial, 100 for Industria
Annual Mass Load, M <sub>total</sub>	<b>56.12</b> lbs	=EMC*Vt*(28.3)*(0.000001)*(2.2046)
<b>Filter System</b>		
Filtration brand	<b>StormFilter</b>	
Cartridge height	<b>18</b> in	
<b>Cartridge Quantity Calculation</b>		
Mass removed by pretreatment system, M <sub>pre</sub>	<b>17</b> lbs	=Mtotal * %removal
Mass load to filters after pretreatment, M <sub>pass1</sub>	<b>39</b> lbs	=Mtotal - Mpre
Estimate the required filter efficiency, E <sub>filter</sub>	<b>79%</b>	=1+(%removal - 1)/(1 - %pre)
Mass to be captured by filters, M <sub>filter</sub>	<b>31</b> lbs	=Mpass1 * Efilter
Maximum Cartridge Flow rate, Q <sub>cart</sub>	<b>7.5</b> gpm	=q * (7.5 ft <sup>2</sup> /cartridge)
Mass load per cartridge, M <sub>cart</sub> (lbs)	<b>36</b> lbs	=lookup mass load per cartridge
Number of Cartridges required, N <sub>mass</sub>	<b>1</b>	=ROUNDUP(Mfilter/Mcart,0)
Maximum Treatment Capacity	<b>0.02</b>	=Nmass*(Qcart/449)
<b>SUMMARY</b>		
Maximum Treatment Flow Rate, cfs	0.02	
Cartridge Flow Rate, gpm	7.5	
Number of Cartridges	1	

Club Nova  
Composite curve values

<b>Total site pre-development</b>				<b>post - detention/treatment drainage area</b>			
<b>composite CN</b>	<b>area (ac)</b>	<b>SOIL GROUP C/D</b>	<b>%acxCN</b>	<b>composite CN</b>	<b>area (ac)</b>	<b>SOIL GROUP C/D</b>	<b>%acxCN</b>
		<b>CN</b>				<b>CN</b>	
roof	0.42	98	62.356	roof	0.286	98	77.898
gravel	0.00	90	0.000	gravel	0.000	90	0.000
landscaped, BMPs	0.24	81	29.461	landscaped, BMPs	0.074	81	16.615
<b>summation composite CN</b>	<b>0.661</b>		<b>92</b>	<b>summation composite CN</b>	<b>0.360</b>		<b>95</b>

6/8/19

General:  
 $ds/dt=I-O$   
 $ds/dt$ =rate of change of storage with respect to time  
 $I$ =inflow rate  
 $O$ =outflow rate

3 sets of source data  
 1. inflow hydrograph  
 2. size and shape of container  
 3. hydraulics of the outlet device

**A. Inflow hydrograph:**  
 various methods available  
 HEC1 COE  
 TR-20 (SCS)  
 TR-55 (SCS) (for smaller watersheds)  
 unit hydrograph synthesis  
 Small-Watershed Hydrograph-Formulation Method (Malcolm)  
 used for small watersheds, feasibility studies, and site selection in larger watersheds  
 3 aspects of formulation - peak discharge, volume of water under the hydrograph, shape of the hydrograph

**1. using step function for approximation of the SCS dimensionless unit hydrograph**  
 $Q_p$ =(cfs) peak discharge of the design hydrograph  
 $T_p$ =(minutes)time to peak of the design hydrograph, measured from the time of significant rise of the rising limb to the time at which the estimated peak occurs  
 $t$ =(minutes)time of interest at which the discharge is to be estimated  
 (arguments are in radians)  
 (e=exponential)  
 for  $0 \leq t \leq 1.25 * T_p$   
 $Q = (Q_p/2) * (1 - (\cos(\pi * t / T_p)))$   
 for  $t > 1.25 * T_p$   
 $Q = 4.34 * Q_p * e^{-1.30 * (t / T_p)}$

$Vol$ =volume of water under the hydrograph  
 $Vol = 1.39 * Q_p * T_p$  (note units are not consistent, this is hydrograph integrated)  
 $T_p = Vol / (1.39 * Q_p)$   
 $Q_p = (inches) \text{ runoff depth}$   
 $Q = (cfs) \text{ discharge}$   
 $A = \text{acres}$   
 $Q_p = (cfs) \text{ peak discharge}$   
 $T_p = (43.5 * Q_p * A) / Q_p$  (units are consistent when  $Vol = 1.39 * Q_p * T_p$ )

$T_p = ((inches * acre) / cfs) * (1ft/12in) * 43560sq.ft/acre * (1min/60sec) \rightarrow ((ac-in) / cfs) * (43.5)$

<p>Peak discharge post-development: drainage to bio-garden</p> <p><b>1-yr, 2-yr, 5-yr, 10-yr, 25-yr, 100-yr storms</b></p> <p>drainage area 0.360 composite C 0.87</p> <p>(1 yr-5 min)=4.6-inches/hour                  (2 yr-5 min)=5.76-inches/hr                  (5 yr-5 min)=6.58-inches/hr                  (10 yr-5 min)=7.22-inches/hr                  (25yr-5 min)=8.19-inches/hr                  (50 yr-5 min)=8.96-inches/hr                  (100 yr-5 min)=9.72-inches/hr</p>	<p>ac.</p> <p>Estimate <math>Q_p</math> (peak discharge) by any applicable means-use Rational Method under 2 sq. mi. for estimating <math>Q_p</math>, use storm length equal to <math>t_c</math> (time of maximum concentration) for site.</p> <table border="1"> <tr> <td><b>Qp10 (estimated)=</b></td> <td>Q (cfs) 02.3 C 0.87 I (in/hr) 7.22 A (acres) 0.36</td> <td><b>Qp(2) (estimated)=</b></td> <td>Q (cfs) 01.8 C 0.87 I (in/hr) 5.76 A (acres) 0.36</td> </tr> <tr> <td><b>Qp25 (estimated)=</b></td> <td>Q (cfs) 02.6 C 0.87 I (in/hr) 8.20 A (acres) 0.36</td> <td><b>Qp(1) (estimated)=</b></td> <td>Q (cfs) 01.4 C 0.87 I (in/hr) 4.6 A (acres) 0.36</td> </tr> <tr> <td><b>Qp100 (estimated)=</b></td> <td>Q (cfs) 03.0 C 0.87 I (in/hr) 9.72 A (acres) 0.36</td> <td><b>Qp(5) (estimated)=</b></td> <td>Q (cfs) 02.1 C 0.87 I (in/hr) 6.58 A (acres) 0.36</td> </tr> </table>	<b>Qp10 (estimated)=</b>	Q (cfs) 02.3 C 0.87 I (in/hr) 7.22 A (acres) 0.36	<b>Qp(2) (estimated)=</b>	Q (cfs) 01.8 C 0.87 I (in/hr) 5.76 A (acres) 0.36	<b>Qp25 (estimated)=</b>	Q (cfs) 02.6 C 0.87 I (in/hr) 8.20 A (acres) 0.36	<b>Qp(1) (estimated)=</b>	Q (cfs) 01.4 C 0.87 I (in/hr) 4.6 A (acres) 0.36	<b>Qp100 (estimated)=</b>	Q (cfs) 03.0 C 0.87 I (in/hr) 9.72 A (acres) 0.36	<b>Qp(5) (estimated)=</b>	Q (cfs) 02.1 C 0.87 I (in/hr) 6.58 A (acres) 0.36	<p><b>Total site pre-development</b></p> <table border="1"> <thead> <tr> <th>composite CN</th> <th>area (ac)</th> <th>SOIL GROUP C/D CN</th> <th>%acCN</th> </tr> </thead> <tbody> <tr> <td>roof</td> <td>0.42</td> <td>98</td> <td>62.356</td> </tr> <tr> <td>gravel</td> <td>0.00</td> <td>90</td> <td>0.000</td> </tr> <tr> <td>landscaped, BMPs</td> <td>0.24</td> <td>81</td> <td>29.461</td> </tr> <tr> <td><b>summation composite CN</b></td> <td>0.661</td> <td></td> <td><b>92</b></td> </tr> </tbody> </table>	composite CN	area (ac)	SOIL GROUP C/D CN	%acCN	roof	0.42	98	62.356	gravel	0.00	90	0.000	landscaped, BMPs	0.24	81	29.461	<b>summation composite CN</b>	0.661		<b>92</b>
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Club Nova  
Calculation of Routing Parameters

C/D soil composite CN=96 residential, driveway and landscaped, composite  
 Estimate the volume under the hydrograph  
 suggestion - use 24 hour, center weighted design storm  
 use volume from 24-hour precipitation for the return period of interest  
 depth of precipitation from table  
 runoff depth estimated using SCS Curve number method

$S = (1000/CN) - 10$   
 $Q_p = ((P - (0.2 * S))^2) / (P + (0.8 * S))$   
 S=(inches) ultimate soil storage  
 P=(inches) precipitation depth  
 Qp=(inches) runoff depth  
 CN=SCS curve number

(1 yr-24 hour)=3-inches  
 (2 yr-24 hour)=3.60-inches  
 5 yr-24 hour)=4.65-inches  
 (10 yr-24 hr)=5.38-inches  
 (25 yr-24 hr)=6.41-inches  
 (50 yr-24 hr)=7.21-inches  
 (100 yr-24 hr)=8.00-inches

Volume of runoff=  $Q_p * A$  (must corrected for units as shown above)  
 $T_p = (43.5 * Q_p * A) / Q_p$  (units are consistent when  $Vol = 1.39 * Q_p * T_p$ )

	25 year	2 yr	1 yr
S=	S= 00.58 CN= 95	S= 00.58 CN= 95	S= 00.58 CN= 95
Qp=	Qp= 05.76 P (in) 06.41 S 00.58 24 hr	Qp= 02.99 P (in) 03.60 S 00.58 24 hr	Qp= 02.40 P (in) 03.00 S 00.58 24 hr
Vol=	Vol= 02.08 Qp (in)= 05.76 A (acres) 0.36	Vol= 01.08 Qp (in)= 02.99 A (acres) 0.36	Vol= 00.86 Qp (in)= 02.40 A (acres) 0.36
Tp=	Tp (min)= 35.3 Vol (in-ac)= 02.08 Qp (cfs)= 02.6	Tp (min)= 26.1 Vol (in-ac)= 01.08 Qp (cfs)= 01.8	Tp (min)= 26.2 Vol (in-ac)= 00.86 Qp (cfs)= 01.4
	<b>5 yr</b>	<b>10 yr</b>	<b>100 yr</b>
S=	S= 00.58 CN= 95	S= 00.58 CN= 95	S= 00.58 CN= 95
Qp=	Qp= 04.02 P (in) 04.65 S 00.58 24 hr	Qp= 04.74 P (in) 05.38 S 00.58 24 hr	Qp= 07.34 P (in) 08.00 S 00.58 24 hr
Vol=	Vol= 01.45 Qp (in)= 04.02 A (acres) 0.36	Vol= 01.71 Qp (in)= 04.74 A (acres) 0.36	Vol= 02.64 Qp (in)= 07.34 A (acres) 0.36
Tp=	Tp (min)= 30.7 Vol (in-ac)= 01.45 Qp (cfs)= 02.1	Tp (min)= 33.0 Vol (in-ac)= 01.71 Qp (cfs)= 02.3	Tp (min)= 38.0 Vol (in-ac)= 02.64 Qp (cfs)= 03.0

	return-->	1-yr	2-yr	5-yr	10-yr	25-yr
	Qp (cfs)	01.43	01.80	02.05	02.25	02.56
	Tp (min.)	26.2	26.1	30.7	33.0	35.3
Qp (pre)	max. cfs out	<b>1.30</b>	<b>1.63</b>	<b>1.86</b>	<b>2.04</b>	<b>2.32</b>
Qp (limit mit. area)	max. cfs out	1.31	1.64	1.88	2.06	2.33

Club Nova  
Routing 25-yr, 24-hr event

-166-cf in BMP 36"x24-ft

Chainsaw routing procedure - Malcolm:

ds/dt=I-O A (sf) D (in) d/2 d (ft)  
 Δs/Δt=I-O over a time increment t 0.287 7.25 0.302 0.604  
 Δs(from i to j)=I (at time i)\*Δt (from i to j) 0.196 6 0.250 0.500  
 Δt should be ~0.1\*Tp

25 year

Qp (cfs) 02.96 25-yr peak for 0 ≤ t ≤ 1.25\*Tp Q=(Qp/2)\*(1-(cos((π\*t)/Tp)))  
 Tp (min) 35.3 for t > 1.25\*Tp Q=4.34\*Qp\*t^(-1.30\*(t/Tp))  
 1.25 Tp 44.2  
 dt (0.1\*Tp) 3.5  
 Ks 0  
 b 0.00

Time (minutes)	Inflow (cfs) to detention	3-ft d x 155-ft let Storage (cu ft) in detention	Stage (ft above base=100')	H Elevation ft. above invert 100.0'	h (ft above centerline) elev. 100.302' or 0'	full > 0. x	partial	Overflow 8'd out at 103' (cfs)	Outflow total (min-cfs)	total input (cu ft) retained
						Outflow 7.25' orifice at 100.00' (cfs)	Outflow 7.25' orifice at 100.00' (cfs)			
0.0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
2.0	0.02	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
4.0	0.08	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2
6.0	0.18	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12
8.0	0.31	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33
10.0	0.47	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71
12.0	0.66	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	127
14.0	0.87	41	0.24	0.24	0.00	0.00	0.19	0.00	0.19	166
16.0	1.09	123	0.51	0.51	0.00	0.00	0.59	0.00	0.59	0
18.0	1.32	183	0.67	0.67	0.37	0.84	0.00	0.00	0.84	0
20.0	1.54	240	0.82	0.82	0.51	0.99	0.00	0.00	0.99	0
22.0	1.76	306	0.97	0.97	0.67	1.13	0.00	0.00	1.13	0
24.0	1.96	381	1.14	1.14	0.84	1.26	0.00	0.00	1.26	0
26.0	2.14	465	1.32	1.32	1.02	1.40	0.00	0.00	1.40	0
28.0	2.29	554	1.51	1.51	1.21	1.52	0.00	0.00	1.52	0
30.0	2.42	647	1.72	1.72	1.41	1.64	0.00	0.00	1.64	0
32.0	2.50	740	1.92	1.92	1.62	1.76	0.00	0.000	1.76	0
34.0	2.55	829	2.12	2.12	1.82	1.86	0.00	0.00	1.86	0
36.0	2.55	911	2.33	2.33	2.02	1.97	0.00	0.00	1.97	0
38.0	2.52	981	2.52	2.52	2.21	2.06	0.00	0.00	2.06	0
40.0	2.45	1037	2.69	2.69	2.39	2.14	0.00	0.00	2.14	0
42.0	2.34	1074	2.84	2.84	2.54	2.20	0.00	0.00	2.20	0
44.0	2.20	1091	2.95	2.95	2.65	2.25	0.00	0.00	2.25	0
46.0	2.04	1084	2.79	2.79	2.49	2.18	0.00	0.0000	2.18	0
48.0	1.90	1068	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0
50.0	1.76	1296	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0
52.0	1.64	1507	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0
54.0	1.52	1704	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0
56.0	1.41									
58.0	1.31									
60.0	1.22									
62.0	1.13									
64.0	1.05									
66.0	0.98									
68.0	0.91									
70.0	0.84									
72.0	0.78									
74.0	0.73									
76.0	0.68									
78.0	0.63									
80.0	0.58									
82.0	0.54									
84.0	0.50									
86.0	0.47									
88.0	0.44									
90.0	0.40									
92.0										0

max storage= 1704 max elevation= 102.95 Q=Cv (Hw^2.5) Q=Cw\*L\*(H^1.5) 2.25 peak flow  
 102.95 Q=Cd\*A\*(2\*gh)^.5 0.020 add'l 2.27 total  
 2.32 allowable 2.33 prefer less than

Club Nova  
Routing 10-yr, 24-hr event

-166-cf in BMP

Chainsaw routing procedure - Malcolr

ds/dt=I-O  
 Δs/Δt=I-O over a time increment t  
 Δs(from i to j)=I (at time i)-O (at time i)\*Δt (from i to j)

A (sf)      D (in)      d/2      d (ft)

0.349      8      0.333      0.667

0.287      7.25      0.302      0.604

10 year

Qp (cfs)      02.25  
 Tp (min)      33.0  
 L.25 Tp      41.3  
 dt (0.1\*Tp)      3.3  
 Ks      0  
 b      0.00

10-yr peak

for  $0.5t \leq 1.25*Tp$

for  $t > 1.25*Tp$

$Q = (Qp/2)^{(1 - (\cos((\pi t)/Tp)))}$

$Q = 4.34*Qp^{0.8}*(1.30*(t/Tp))$

Cw=3

L=x

Time (minutes)	Inflow (cfs) to detention	Storage (cu ft) in detention	Stage (ft above base=100')	H Elevation ft. above invert 100.0'	h (ft above centroid elev. 100.302' or 0')	Outflow 7.25' orifice at 100.00' (cfs)	Outflow 7.25' orifice at 100.00' (cfs)	Overflow 8" d out at 103' (cfs)	Outflow total (min-cfs)	total input (cu ft) retained
0.0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
2.0	0.02	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
4.0	0.08	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2
6.0	0.18	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12
8.0	0.31	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34
10.0	0.47	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71
12.0	0.66	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	127
14.0	0.86	40	0.24	0.24	0.00	0.00	0.19	0.00	0.19	166
16.0	1.07	121	0.50	0.50	0.00	0.00	0.58	0.00	0.58	0
18.0	1.28	180	0.66	0.66	0.36	0.82	0.00	0.00	0.82	0
20.0	1.49	235	0.80	0.80	0.50	0.98	0.00	0.00	0.98	0
22.0	1.69	297	0.95	0.95	0.65	1.11	0.00	0.00	1.11	0
24.0	1.86	366	1.10	1.10	0.80	1.24	0.00	0.00	1.24	0
26.0	2.01	441	1.27	1.27	0.96	1.36	0.00	0.00	1.36	0
28.0	2.13	519	1.44	1.44	1.14	1.48	0.00	0.00	1.48	0
30.0	2.20	597	1.61	1.61	1.31	1.58	0.00	0.00	1.58	0
32.0	2.25	672	1.76	1.76	1.46	1.67	0.00	0.000	1.67	0
34.0	2.25	741	1.92	1.92	1.62	1.76	0.00	0.00	1.76	0
36.0	2.21	799	2.06	2.06	1.76	1.83	0.00	0.00	1.83	0
38.0	2.13	844	2.16	2.16	1.86	1.88	0.00	0.00	1.88	0
40.0	2.01	874	2.23	2.23	1.93	1.92	0.00	0.00	1.92	0
42.0	1.87	885	2.26	2.26	1.96	1.93	0.00	0.00	1.93	0
44.0	1.73	877	2.24	2.24	1.94	1.92	0.00	0.00	1.92	0
46.0	1.60	853	2.18	2.18	1.88	1.89	0.00	0.0000	1.89	0
48.0	1.48	818	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0
50.0	1.36	995	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0
52.0	1.26	1158	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0
54.0	1.17	1310	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0
56.0	1.08	1449	0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0
58.0	1.00									
60.0	0.92									
62.0	0.85									
64.0	0.79									
66.0	0.73									
68.0	0.67									
70.0	0.62									
72.0	0.57									
74.0	0.53									
76.0	0.49									
78.0	0.45									
80.0	0.42									
82.0	0.39									
84.0	0.36									
86.0	0.33									
88.0	0.31									
90.0	0.28									
92.0										0

max storage= 1449      max elevation= 102.26  
 102.26

$Q=Cv(Hw^{2.5})$        $Q=Cv^{1.48}(P1.5)$   
 $Q=Cd^2A^2(2^2g^2h)^{0.5}$

1.93 peak flow  
 0.020 add'l  
 1.95 total  
 2.04 allowable  
 2.06 prefer less than

Club Nova  
Routing 5-yr, 24-hr event

-166-cf in BMP 36"x24-ft

Chainsaw routing procedure - Male

ds/dt=I-O	A (sf)	D (in)	d/2	d (ft)
Δs/Δt=I-O over a time increment t	0.349	8	0.333	0.667
Δs(from i to j)=I (at time i)-O (at time j)*Δt (from i to j)	0.287	7.25	0.302	0.604

5 year	Qp (cfs)	02.05	5-yr peak	for 0.5ts<1.25*Tp	$Q=(Qp/2)*(1-(cos((\pi*t)/Tp)))$
	Tp (min)	30.7		for t>1.25*Tp	$Q=4.34*Qp*t^2*(1-1.30*(t/Tp))$
	1.25 Tp	38.4			
	dt (0.1*Tp)	3.1			
	Ks	0			
	b	0.00			

Time (minutes)	Inflow (cfs)	3-ft d x 150-ft Storage (cu ft) In detention	Stage (ft above base=100')	H Elevation ft. above invert 100.0'	h (ft above centroid elev. 100.302' or 0')	Outflow		Outflow 8'd out at 103' (cfs)	Outflow total (min-cfs)	total input (cu ft) retained
						7.25' orifice at 100.00' (cfs)	partial			
0.0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
2.0	0.02	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
4.0	0.08	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3
6.0	0.19	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13
8.0	0.32	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35
10.0	0.49	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74
12.0	0.68	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	133
14.0	0.88	49	0.27	0.27	0.00	0.00	0.23	0.00	0.23	166
16.0	1.09	128	0.53	0.53	0.00	0.00	0.62	0.00	0.62	0
18.0	1.30	185	0.68	0.68	0.37	0.85	0.00	0.00	0.85	0
20.0	1.49	239	0.81	0.81	0.51	0.99	0.00	0.00	0.99	0
22.0	1.67	301	0.96	0.96	0.66	1.12	0.00	0.00	1.12	0
24.0	1.82	367	1.11	1.11	0.81	1.24	0.00	0.00	1.24	0
26.0	1.93	436	1.26	1.26	0.96	1.35	0.00	0.00	1.35	0
27.0	1.98	471	1.34	1.34	1.04	1.41	0.00	0.00	1.41	0
28.0	2.01	505	1.41	1.41	1.11	1.45	0.00	0.00	1.45	0
29.0	2.04	539	1.48	1.48	1.18	1.50	0.00	0.00	1.50	0
30.0	2.05	571	1.55	1.55	1.25	1.54	0.00	0.00	1.54	0
31.0	2.05	601	1.61	1.61	1.31	1.58	0.00	0.00	1.58	0
32.0	2.04	629	1.67	1.67	1.37	1.62	0.00	0.00	1.62	0
33.0	2.02	654	1.73	1.73	1.43	1.65	0.00	0.00	1.65	0
34.0	1.99	677	1.78	1.78	1.48	1.68	0.00	0.00	1.68	0
35.0	1.95	696	1.82	1.82	1.52	1.70	0.00	0.00	1.70	0
36.0	1.90	711	1.85	1.85	1.55	1.72	0.00	0.00	1.72	0
37.0	1.85	722	1.88	1.88	1.58	1.74	0.00	0.00	1.74	0
38.0	1.78	728	1.89	1.89	1.59	1.74	0.00	0.00	1.74	0
39.0	1.71	730	1.90	1.90	1.59	1.74	0.00	0.00	1.74	0
40.0	1.64	728	1.89	1.89	1.59	1.74	0.00	0.00	1.74	0
41.0	1.57	722	1.88	1.88	1.58	1.74	0.00	0.00	1.74	0
42.0	1.50	712	1.88	1.88	1.58	1.74	0.00	0.00	1.74	0
43.0	1.44	802	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
44.0	1.38	889	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
45.0	1.33	972	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
46.0	1.27	1051	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
47.0	1.22	1128	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
48.0	1.17									
49.0	1.12									
50.0	1.07									
51.0	1.03									
52.0	0.99									
53.0	0.94									
54.0	0.91									
55.0	0.87									
56.0	0.83									
57.0	0.80									
58.0	0.76									
59.0										0

max storage= 1128      max elevation= 101.90      Q=Cv (Hw^2.5)      Q=Cv\*L\*(H1^1.5)      1.74 peak flow  
 101.90      Q=Cd\*A\*(2\*g\*h)^.5      0.020 add'l  
 1.76 total  
 1.86 allowable  
 1.88 prefer less than

Club Nova  
Routing 2-yr, 24-hr event

-166-cf in BMP 36"x24-ft

Chainsaw routing procedure - Malcolr

ds/dt=I-O

Δs/Δt=I-O over a time increment t

Δs(from i to j)=I (at time i)-O (at time i)\*Δt (from i to j)

A (sf)	D (in)	d/2	d (ft)
0.349	8	0.333	0.667
0.287	7.25	0.302	0.604

2 year

Qp (cfs)	01.80	2-yr peak
Tp (min)	26.1	
L25 Tp	32.6	
dt (0.1*Tp)	2.6	
Ks	0	
b	0.00	

for 0.5ts 1.25\*Tp

for t > 1.25\*Tp

$$Q = (Qp/2)^{1 - (\cos((\pi t)/Tp))}$$

$$Q = 4.34 * Qp * t^{-1.30 * (t/Tp)}$$

Cw=3

L=x

Time (minutes)	Inflow (cfs) to detention	3-ft d x 155-ft lcc Storage (cu ft) in detention	Stage (ft above base=100')	H Elevation ft. above invert 100.0'	h (ft above centroid elev. 100.302' or 0')	Outflow 7.25' orifice at 100.00' (cfs)	Outflow 7.25' orifice at 100.00' (cfs)	Outflow 8" d out at 103' (cfs)	Outflow total (min-cfs)	total input (cu ft) retained
0.0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
2.0	0.03	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
4.0	0.10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3
6.0	0.22	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15
8.0	0.39	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42
10.0	0.58	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89
12.0	0.79	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	158
14.0	1.00	86	0.40	0.40	0.00	0.00	0.41	0.00	0.41	166
16.0	1.21	157	0.60	0.60	0.30	0.76	0.00	0.00	0.76	0
18.0	1.40	211	0.74	0.74	0.44	0.92	0.00	0.00	0.92	0
20.0	1.57	270	0.89	0.89	0.58	1.06	0.00	0.00	1.06	0
22.0	1.69	331	1.03	1.03	0.72	1.18	0.00	0.00	1.18	0
24.0	1.77	393	1.16	1.16	0.86	1.28	0.00	0.00	1.28	0
26.0	1.80	451	1.29	1.29	0.99	1.37	0.00	0.00	1.37	0
28.0	1.77	502	1.40	1.40	1.10	1.45	0.00	0.00	1.45	0
30.0	1.70	541	1.48	1.48	1.18	1.50	0.00	0.00	1.50	0
32.0	1.58	564	1.53	1.53	1.23	1.53	0.00	0.000	1.53	0
34.0	1.43	569	1.55	1.55	1.24	1.54	0.00	0.00	1.54	0
36.0	1.29	555	1.52	1.52	1.21	1.52	0.00	0.00	1.52	0
38.0	1.17	528	1.46	1.46	1.16	1.49	0.00	0.00	1.49	0
40.0	1.06	490	1.40	1.40	1.10	1.45	0.00	0.00	1.45	0
42.0	0.96	418	1.30	1.30	1.00	1.37	0.00	0.00	1.37	0
44.0	0.87	333	1.18	1.18	0.92	1.28	0.00	0.00	1.28	0
46.0	0.79	237	1.03	1.03	0.72	1.18	0.00	0.0000	1.18	0
48.0	0.71									
50.0	0.64									
52.0	0.58									
54.0	0.53									
56.0	0.48									
58.0	0.43									
60.0	0.39									
62.0	0.35									
64.0	0.32									
66.0	0.29									
68.0	0.26									
70.0	0.24									
72.0	0.21									
74.0	0.19									
76.0	0.18									
78.0	0.16									
80.0	0.14									
82.0	0.13									
84.0	0.12									
86.0	0.11									
88.0	0.10									
90.0	0.09									
92.0										0

max storage=	837	max elevation=	101.55	Q=Cv (Hw^2.5)	Q=Cv*L^1.48(P1.5)	1.54 peak flow
			101.55	Q=Cd*A^3((2*g*h)^1.5)		0.020 add'l
						1.56 total
						1.63 allowable
						1.64 prefer less than

Club Nova  
Routing 1-yr, 24-hr event

-166-cf in BMP

Chainsaw routing procedure - Malco

ds/dt=I-O  
 $\Delta S/\Delta t=I-O$  over a time increment t  
 $\Delta S(\text{from } i \text{ to } j)=I \text{ (at time } i)\text{-}O \text{ (at time } j)\Delta t$  (from i to j)

A (sf) 0.349 D (in) 8 d/2 0.333 d (ft) 0.667  
 0.287 7.25 0.302 0.604

1 year Qp (cfs) 01.43 1-yr peak for  $0.5 \leq t \leq 1.25 \cdot T_p$   $Q = (Q_p/2) * (1 - \cos(\pi * t / T_p))$   
 Tp (min) 26.2  
 1.25 Tp 32.8 for  $t > 1.25 \cdot T_p$   $Q = 4.34 * Q_p * e^{-1.30 * (t / T_p)}$   
 dt (0.1 \* Tp) 2.6  
 Ks 0  
 b 0.00

Time (minutes)	Inflow (cfs) to detention	Storage (cu ft) in detention	Stage (ft above base=100')	H Elevation ft. above invert 100.0'	h (ft above centroid elev. 100.302' or 0')	Outflow		Overflow 8" d out at 103' (cfs)	Outflow total (min-cfs)	total input (cu ft) retained
						full > 0. x 7.25" orifice at 100.00' (cfs)	partial 7.25" orifice at 100.00' (cfs)			
0.0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
2.0	0.02	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
4.0	0.08	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2
6.0	0.18	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12
8.0	0.30	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33
10.0	0.46	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70
12.0	0.62	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	125
14.0	0.79	33	0.20	0.20	0.00	0.00	0.15	0.00	0.15	166
16.0	0.96	110	0.48	0.48	0.00	0.00	0.53	0.00	0.53	0
18.0	1.11	162	0.62	0.62	0.31	0.78	0.00	0.00	0.78	0
20.0	1.24	202	0.73	0.73	0.42	0.90	0.00	0.00	0.90	0
22.0	1.34	244	0.82	0.82	0.52	1.00	0.00	0.00	1.00	0
24.0	1.41	285	0.92	0.92	0.62	1.09	0.00	0.00	1.09	0
26.0	1.43	324	1.01	1.01	0.71	1.16	0.00	0.00	1.16	0
27.0	1.43	340	1.05	1.05	0.75	1.19	0.00	0.00	1.19	0
28.0	1.42	354	1.08	1.08	0.77	1.21	0.00	0.00	1.21	0
29.0	1.40	367	1.11	1.11	0.81	1.24	0.00	0.00	1.24	0
30.0	1.36	376	1.13	1.13	0.83	1.26	0.00	0.00	1.26	0
31.0	1.32	382	1.14	1.14	0.84	1.27	0.00	0.00	1.27	0
32.0	1.27	385	1.15	1.15	0.85	1.27	0.00	0.00	1.27	0
33.0	1.21	385	1.15	1.15	0.85	1.27	0.00	0.00	1.27	0
34.0	1.15	382	1.14	1.14	0.84	1.27	0.00	0.00	1.27	0
35.0	1.10	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
36.0	1.05	441	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
37.0	1.00	504	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
38.0	0.95	563	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
39.0	0.90	620	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
40.0	0.86	674	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
41.0	0.82	726	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
42.0	0.78									
43.0	0.74									
44.0	0.70									
45.0	0.67									
46.0	0.64									
47.0	0.61									
48.0	0.58									
49.0	0.55									
50.0	0.52									
51.0	0.50									
52.0	0.47									
53.0	0.45									
54.0	0.43									
55.0	0.41									
56.0	0.39									
57.0	0.37									
58.0	0.35									
59.0										0



**Project Area Land Cover Characteristics**

PROJECT AREA LAND COVERS	TN EMC (mg/L)	TP EMC (mg/L)	Pre- Project Area (ft <sup>2</sup> )	Post- Project Area (ft <sup>2</sup> )
Roof	1.18	0.11	8,976	10,659
Roadway	1.64	0.34		
Parking/Driveway/Sidewalk	1.42	0.18	9,333	10,118
Protected Forest	0.97	0.03		
Other Pervious/Landscaping	2.48	1.07	10,466	7,998
CUSTOM LAND COVER 1				
CUSTOM LAND COVER 2				
CUSTOM LAND COVER 3				
LAND TAKEN UP BY SCM	1.18	0.11	0	0

LAND COVER AREA CHECK	
Net Change of Land Covers (ft <sup>2</sup> ):	2,468
Total Project Area Entered (ft <sup>2</sup> ):	28,775
Total Pre-Project Calculated Area (ft <sup>2</sup> ):	28,775
Total Post-Project Calculated Area (ft <sup>2</sup> ):	28,775

**Equations Used and Project Area Calculations**

SIMPLE METHOD

Runoff Coefficient,  $R_v$

$$R_v = 0.05 + (0.009 * I)$$

where I = percent impervious (%)

Average Annual Pollutant Load, L

$$L = (P_j * R_v * (P/12)) * (C * A * 2.72)$$

where C = event mean concentration (mg/L)

Stormwater Runoff Volume Generated, V

$$V = P_j * R_v * (P/12) * A$$

where A = drainage area (ft<sup>2</sup>)

$P_j$  = fraction of rain events with runoff

P = average annual rainfall depth (in)

Pre-Project:		Post-Project:	
A = 0.6606	ac	A = 0.6606	ac
P = 47.31	in.	P = 47.31	in.
V = 63573	ft <sup>3</sup>	V = 71455	ft <sup>3</sup>
I = 64%		I = 72%	
$R_v$ = 0.62		$R_v$ = 0.70	
$P_j$ = 0.9		$P_j$ = 0.9	
$C_{TN}$ = 1.34	mg/L	$C_{TN}$ = 1.32	mg/L
$C_{TP}$ = 0.17	mg/L	$C_{TP}$ = 0.16	mg/L
$L_{TN}$ = 5.31	lb/yr	$L_{TN}$ = 5.89	lb/yr
$L_{TP}$ = 0.69	lb/yr	$L_{TP}$ = 0.72	lb/yr

<b>Catchment ID</b>	<b>1</b>
<b>SCM ID</b>	<b>101</b>
<b>Type of SCM</b>	<b>Custom SCM/BMP</b>
<b>Predominant hydrologic soil group at SCM location</b>	<b>D</b>
<b>SCM Description</b>	<b>StormFilter</b>
<b>Design Storm Size (inches/24hrs)</b>	<b>1.00</b>
<b>Percent of Full Size</b>	<b>100%</b>
<b>Hydrologic Value - Percent Annual Effluent</b>	<b>90%</b>
<b>Hydrologic Value - Percent Annual Overflow</b>	<b>10%</b>
<b>Hydrologic Value - Percent Annual ET/Infiltrated</b>	<b>0%</b>
<b>SCM Effluent TP EMC (mg/L)</b>	<b>0.03</b>
<b>SCM Effluent TN EMC (mg/L)</b>	<b>0.48</b>
<b>SCM Land Cover TP EMC (mg/L)</b>	<b>0.11</b>
<b>SCM Land Cover TN EMC (mg/L)</b>	<b>1.18</b>
<b>Drains to SCM ID</b>	<b>0</b>
<b>Catchment Routing (Source Catchment)</b>	<b>Catchments Draining to SCM 101</b>
<b>Catchment 1</b>	
<b>Catchment 2</b>	
<b>Catchment 3</b>	
<b>Catchment 4</b>	
<b>Catchment 5</b>	
<b>Catchment 6</b>	

SCM ID:	101	102	103			
SCM Drainage Area Land Covers	Area Draining Directly to SCM 101 (ft <sup>2</sup> )	Area Draining Directly to SCM 102 (ft <sup>2</sup> )	Area Draining Directly to SCM 103 (ft <sup>2</sup> )	Total Land Use Area Treated By All SCMs (ft <sup>2</sup> )	Allowable Total Land Use Area to be Treated Based on Post-Project Areas (ft <sup>2</sup> )	Post-Project Untreated Land Area (ft <sup>2</sup> )
Roof	2,468			2,468	10,659	8,191
Roadway				0	0	0
Parking/Driveway/Sidewalk				0	10,118	10,118
Protected Forest				0	0	0
Other Pervious/Landscaping				0	7,998	7,998
CUSTOM LAND COVER 1				0	0	0
CUSTOM LAND COVER 2				0	0	0
CUSTOM LAND COVER 3				0	0	0
LAND TAKEN UP BY SCM				0	0	0
<b>TOTAL AREA DRAINING TO SCM (ft<sup>2</sup>):</b>	<b>2,468</b>	<b>0</b>	<b>0</b>	<b>2,468</b>	<b>28,775</b>	<b>26,307</b>
<b>CATCHMENT AREA (ft<sup>2</sup>):</b>	<b>2,468</b>					

### Project Summary

<b>Project Name:</b>	Club Nova IV			<b>Submission Date:</b>	February 19, 2020
<b>Project Area (ft<sup>2</sup>):</b>	28,775	ft <sup>2</sup>	0.6606	acres	
<b>Disturbed Area (ft<sup>2</sup>):</b>	20,142	ft <sup>2</sup>	0.4624	acres	
<b>County:</b>	Orange			<b>Local Jurisdiction:</b>	Carrboro
<b>Development Land Use Type:</b>	Mixed-Use			<b>Owner Type:</b>	Private
<b>Development Activity Type:</b>	Development - Expansion			<b>Designated Downtown Area?</b>	yes
<b>Nutrient Management Watershed:</b>				<b>Subwatershed:</b>	
<b>Phosphorus Delivery Zone:</b>				<b>Nitrogen Delivery Zone:</b>	
<b>Phosphorus Delivery Factor (%):</b>				<b>Nitrogen Delivery Factor (%):</b>	
<b>Phosphorus Loading Rate Target (lb/ac/yr):</b>				<b>Nitrogen Loading Rate Target (lb/ac/yr):</b>	
<b>Phosphorus Load Target at Site (lb/yr):</b>				<b>Nitrogen Load Target at Site (lb/yr):</b>	
<b>Phosphorus Load Leaving Site w/SCMs (lb/yr):</b>	0.69			<b>Nitrogen Load Leaving Site w/SCMs (lb/yr):</b>	5.56
<b>P Offsite Buy-Down Threshold Loading Rate (lb/ac/yr):</b>				<b>N Offsite Buy-Down Threshold Loading Rate</b>	
<b>Total P Load Reduction Needed (lb/yr):</b>				<b>Total N Load Reduction Needed (lb/yr):</b>	
<b>P Load Treatment Balance at Site (lb/yr):</b>				<b>N Load Treatment Balance at Site (lb/yr):</b>	
<b>P Load Treatment Balance at Lake (lb/yr):</b>				<b>N Load Treatment Balance at Lake (lb/yr):</b>	

### Nutrient Export Summary

	Pre-Project Whole Site Conditions	Post-Project Whole Site without SCMs	Post-Project Whole Site with SCMs	Post-Project SCM-Treated Area	Post-Project Untreated Area
Percent Impervious (for runoff calculation) (%)	63.6%	72.2%	72.2%	100.0%	69.6%
Percent Built-Up Area (BUA) (%)	63.6%	72.2%	72.2%	100.0%	69.6%
Annual Runoff Volume (ft <sup>3</sup> /yr)	63,573	71,455	71,455	8,319	63,136
Annual Runoff % Change (relative to pre-D)	0%	12%	12%		
Total Nitrogen EMC (mg/L)	1.34	1.32	1.25	0.55	1.34
Total Nitrogen Load Leaving Site (lb/yr)	5.31	5.89	5.56	0.29	5.28
Total Nitrogen Loading Rate (lb/ac/yr)	8.03	8.92	8.42	5.03	8.74
Total Nitrogen % Change (relative to pre-D)	0%	11%	5%		
Total Phosphorus EMC (mg/L)	0.17	0.16	0.15	0.04	0.17
Total Phosphorus Load Leaving Site (lb/yr)	0.69	0.72	0.69	0.02	0.67
Total Phosphorus Loading Rate (lb/ac/yr)	1.04	1.10	1.04	0.35	1.11
Total Phosphorus % Change (relative to pre-D)	0%	6%	0%		

### SCM/Catchment Summary

SCM ID and Type	Volume Reduction (%)	TN Out (mg/L)	TP Out (mg/L)	TN Out (lbs/ac/yr)	TP Out (lbs/ac/yr)	TN Reduction (%)	TP Reduction (%)
<b>Catchment 1</b>	0.00%	0.55	0.04	5.03	0.35	53.49%	65.53%
101: Custom SCM/BMP	0.00%	0.55	0.04	5.03	0.35	53.49%	65.53%
102: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
103: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
<b>Catchment 2</b>	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
201: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
202: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
203: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
<b>Catchment 3</b>	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
301: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
302: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
303: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
<b>Catchment 4</b>	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
401: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
402: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
403: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
<b>Catchment 5</b>	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
501: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
502: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
503: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
<b>Catchment 6</b>	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
601: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
602: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%
603: NA	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00%

SCM rows in red have a data entry error for the SCM that makes an error in the calculation.

CONTACT the National "Call Before You Dig" 811 to have underground facilities located before beginning any excavation.

Town of Carboro Note

Prior to issuance of a CO for this project, as-built drawings must be submitted, and the Engineer of Record must certify that that Stormwater BMPs are constructed in accordance with the approved construction plan.

General Notes

- 1. Prior to any construction within the right-of-way, owner will secure permit from NCDOT and/or Town of Carboro.
2. Disturbed areas within right-of-way shall be repaired (by contractor) as specified by NCDOT and/or Town of Carboro DPW.
3. Owner will maintain property in accordance with Carboro Land Use Ordinance Section 15-67 so that all facilities described in this document can be used or will perform in manner intended.
4. Property owner will store large construction vehicles and equipment on site owner's property.
5. Owner/Developer will coordinate pre-construction meetings with applicable local approving agencies prior to site disturbance.
6. Existing driveway turnouts shall be removed and replaced per Town of Carboro specifications for 6" vertical curb with standard 24" gutter. Sidewalks will be repaired/replaced/installed in accordance with Town standards. Town Department of Public Works shall be contacted in advance of all removals for inspections (DPW, Construction Inspection: (919) 918-7425). Driveway permits, obtainable from DPW, and/or NCDOT, as applicable, will be required prior to installation of new driveways.
7. All damages to Public Infrastructure shall be restored in accordance with Town of Carboro standards. Approval by Town representative shall be required prior to issuance of CO.
8. Construction vehicles, equipment, and related materials shall not be delivered, temporarily placed or stored within any portion of the public right-of-way. All materials stored on-site shall be confined and secured.
9. Signage will not be part of the project. No sign permit is being sought at this time.

Pavement (New and Repairs)

- 1. NOTE: Adhere to recommended controls for traffic closure whenever construction activities impact or take place upon E. Main St. See typical asphalt pavement repair detail on sheet C-3.
2. All work within W. Main St R-O-W shall be reviewed and coordinated with NCDOT and/or Carboro Public Works (Contact: DPW, TOC Construction Inspector: (919) 918-7425), prior to any disturbances within the public right-of-way.
3. Asphalt cuts shall be sharp and neat. Asphalt pavement and subgrade shall be restored to original or design elevation and condition in accordance with the regulations of the Town of Carboro Development Ordinance, NCDOT requirements and in cooperation with the TOC Department of Public Works. Subgrade and fill below it must be replaced with suitable, compactable material placed and compacted in maximum 8 inch lifts. Upper 6 inches of subgrade shall be compacted to 100% AASHTO T 99 as confirmed by independent test. Fill that is found to be loose, or soft, or composed of unsuitable materials must be replaced.
5. Unless directed otherwise by Department of Public Works, base course shall consist of 8 inch thickness of NCDOT Type ABC crushed stone. Stone shall be free of foreign materials and shall be handled and placed in 4 inch lifts, watered if necessary, and compacted to 100% AASHTO T 99 specifications in accordance with NCDOT guidelines.
6. Pavement surfaces shall meet NCDOT specifications for Type I-2 asphalt or NCDOT approved equivalent. The asphalt shall be handled and placed in a two 1-1/2 inch layers in accordance with NCDOT guidelines.

Erosion & Sediment Control

- 1. Owner/developer is required to adhere to NC Sediment Control Act, the Orange County Soil Erosion and Sedimentation Ordinance and Sections 15-262 and 15-264 of the TOC LUO. Owner/Developer shall provide site controls to prevent off-site sediment migration including temporary storm construction entrances to minimize or eliminate transport of sediments from site to public right-of-way. Public road and sidewalk surfaces shall be continuously maintained and kept clear of debris and sediments. A permit from Orange County is required.
2. During construction activities, owner/contractor shall install temporary Dandy Curb Bags or approved equivalent inlet protection devices at each area inlet or catch basin that may intercept surface runoff from the construction site. Note: protect all inlets that may be affected during site perimeter.
3. During construction activities, owner/contractor shall install temporary Check Dams in roadside ditches that may intercept surface runoff from the construction site.
4. Construction entrances shall be constructed as shown in detail on sheet C-3.
5. Collected runoff or groundwater water that is pumped from site must be discharged through approved sediment filtering bag.

Site Grading and Soil Replacement

- 1. Subgrade repairs will be necessary where high plasticity or other soils not suitable for supporting structures are encountered.
2. Following removal of existing structures, gravel, asphalt and concrete, a licensed Geotechnical engineer shall direct and approve all excavation and soil repairs/replacement.
3. All soils from either on or off-site that are used as structural fill must be approved by geotechnical engineer. Adequate soil placement and soil density must be verified by third party testing.
4. Slabs-on-grade support - Minimum 4" thickness stone placed beneath concrete slabs (minimum 6" beneath parking area) shall be ABC, not #57 or #67. No high plasticity soils shall be present within final 12-inches of soil subgrade. Adequate compaction shall be verified by third party.
5. Parking lot paving - Use 2-in thickness I-2 or equivalent asphalt over minimum 8-in stone base. In traffic aisles or areas subject to light truck traffic, use 3-in thickness I-2 or equivalent asphalt over minimum 8-in stone base. Pavement in areas subject to heavy truck loading should be 2-in I-2 asphalt over 2" binder and 6-in ABC.
6. All areas to be paved or re-paved shall be proofrolled in presence of geotechnical engineer prior to placement of base coarse stone. Soil repair shall be directed by engineer. In all cases, adequate subgrade support and compactive effort shall be verified by third party testing.
7. If dewatering such as trenching, ditching, sumping and/or pumping is required to control surface water and/or groundwater during construction, note 5 under Sediment and Erosion Control will apply.

Pipe, Valve & Inlet Installation

- 1. All RCP shall be Class III or stronger. Alternate drainage pipe materials must be pre-approved by engineer/architect/TOC.
2. Manufacturer's recommendations for pipe and material loading, unloading, storage, handling and installation are assumed part of this specification.
3. Where feasible, existing stormwater piping may be integrated into new subsurface stormwater system. Pipes, inlets or any other ancillary equipment that might be re-used must be approved in advance by the Town DPW if proposed use is within or connected to the public stormwater drainage system. For other possible re-use, advance approval by owner/architect/engineer will be required.
4. Material and installation requirements as specified in the NC Fire, Plumbing, Mechanical, Electrical and Building Codes will apply.
5. Drainage Structures - Where applicable, all street storm water curb inlet hoods shall have the following message imprinted into the casting - fish logo with "Dump No Waste - Drains to Jordan Lake". Public storm water manholes shall have the following imprinted into the casting - "Town of Carboro - Entry Permit Required - Storm Water - Danger". Private manholes/covers shall replace "Town of Carboro" with "Private".
6. All public street water valves, sanitary and storm sewer manhole adjustments and new installations require that concrete stabilization pads be placed around the utility access points within the roadway. Refer to OWASA Stds. 513.02 and 532.06-1.

Handicapped curb cut/sidewalk connections

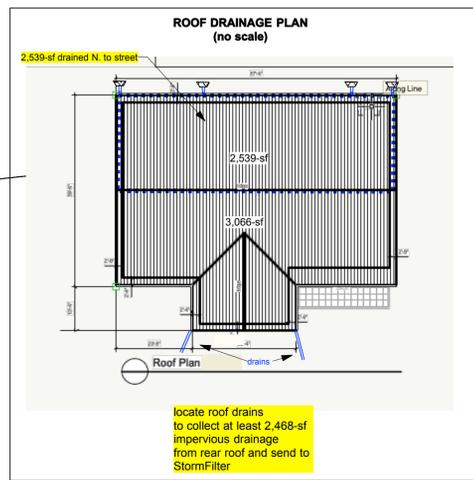
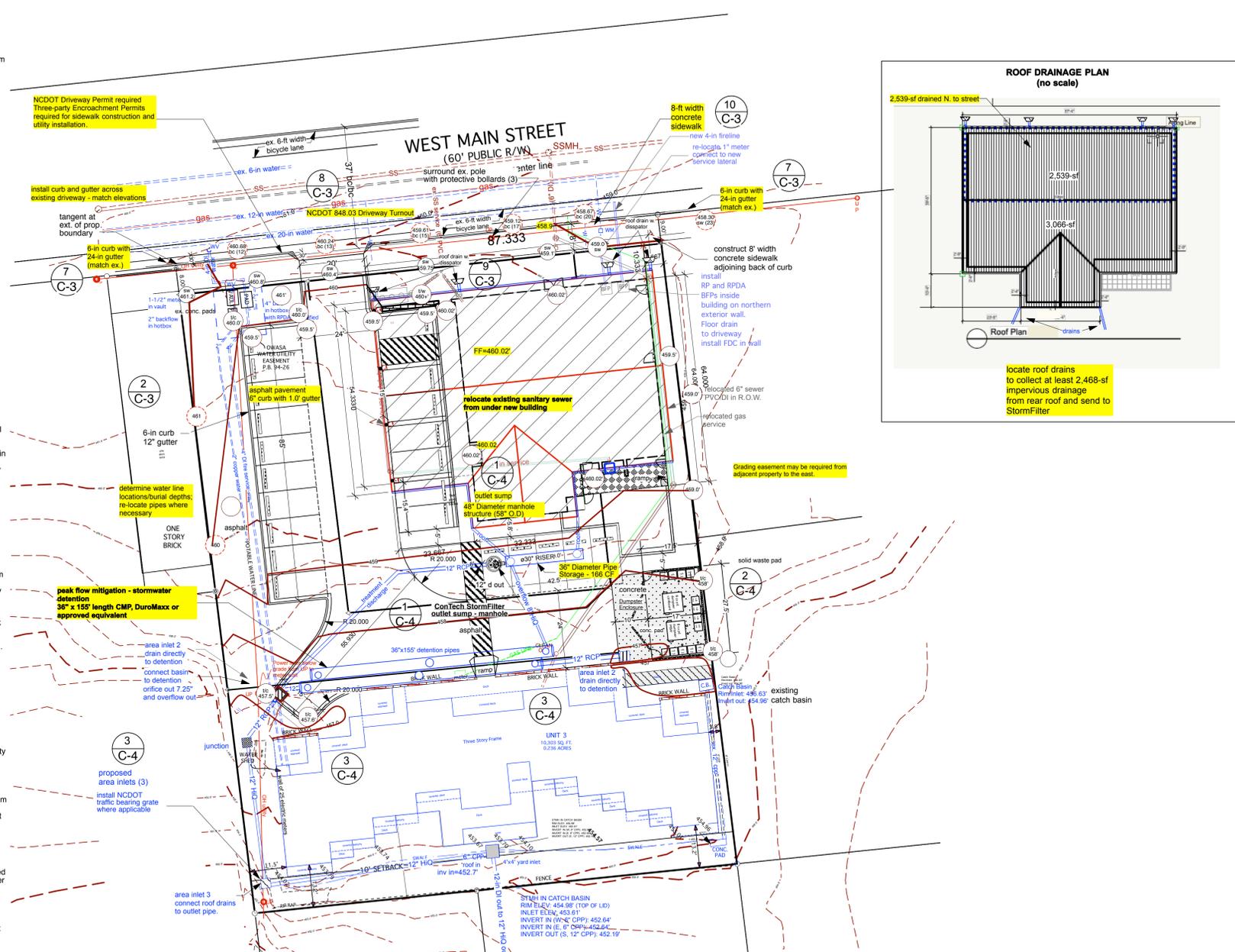
- 1. The required detectable truncated zone surfacing within the approach ramp must be red modular truncated dome units set on 4" thick 3000 psi concrete with bedding sand.
2. Slopes of access ramps shall be maximum 12(1):1(V) in all cases.

NCDOT

- 1. All curb and gutter, drainage, sidewalk, and wheel chair ramps, etc. within the NCDOT right of way shall meet NCDOT standards.
2. No work shall be performed prior to issuance of approved NCDOT encroachment agreements. Encroachment agreements shall be issued upon receipt of approved plans and any necessary performance bonds.

Pre-Construction Meeting

Prior to any demolition or construction activity on the site, applicant will hold a pre-demolition, pre-construction conference that includes representatives of OC Solid Waste, OC Erosion Control Division, NCDOT, Town of Carboro DPW, Town of Carboro Inspections and Zoning, the mechanical grading and utility contractors, the Project Engineer and Architect, and other involved parties.



Site Description
1. Name: Club Nova
2. Address: 103 W. Main St, Carboro, NC 27510
3. Parcel ID: PIN #9778862027
4. Area: 0.66-ac. +/- (~28,775-sf)
5. Application: CUP
6. Zoning: B1(g)
7. Existing Use: commercial, residential development
8. Soil Type: luB, Iredell Urban, slopes 1%-8%, group C/D

DRAINAGE SUMMARY
SITE (no donations): 0.66-ac. (28,775-sf)
pre-development impervious surfaces:
buildings (3): 8,976-sf
concrete pads: 286-sf
pavement (conc.): 9,037-sf
TOTAL pre-development site impervious area: 18,309-sf (63.6% of area)
pre-d area draining to W. Main Street: 4,484-sf (incl. ~11.4% of imp. sur.)
post-development impervious surfaces:
buildings (2): 10,659-sf
pavements (asph&conc.): 10,118-sf
TOTAL post-development impervious area: 20,777-sf (72.2% of area)
post-d area draining to W. Main Street: 3,434-sf (incl. ~15.6% of imp. sur.)
TOTAL increased impervious surface: 2,468-sf
CN (composite curve number): 92 (pre-development)
Maximum allowable increase in annual stormwater runoff volume: 50%
pre-development runoff volume: 63,573-cf
post-development runoff volume: 71,455-cf (no BMPs)
post-development runoff volume: 71,455-cf (SCM)
post-development increase: % +7,882-cf (-12% increase)
Q(p) - peak discharges (25-yr, 5-min. event)
total site: Qp(25) pre: 4.29-cfs
Qp(25) post: 4.50-cfs (undetained, +0.21-cfs)
peak northward to W. Main St.: Qp(25) pre: 1.35-cfs
Qp(25) post: 1.35-cfs
peak southward to W. Carr St. (detained area): Qp(25) pre: 2.33-cfs
Qp(25) post: 2.27-cfs
total site peak discharge with detention: 4.24-cfs
Total N Loading pre-development (total site): 8.03 lb/acyr
Total N Loading post-dev. (total site with StormFilter): 8.42 lb/acyr
N increase (2.2 max): 0.39 lb lb/acyr
Total P Loading pre-development (total site): 1.04 lb/acyr
Total P Loading post-dev. (total site with StormFilter): 1.04 lb/acyr
P increase (0.82 max): 0.00 lb/acyr
design impervious area for 12-in pipe to W. Carr St.: 20,771-sf
post-development impervious area to W. Carr St.: 17,538-sf, (12,470-cf detained)

Scale 1" = 20'
1 foot contour interval
LEGEND
stream buffer
spot elevations - existing
spot elevations - proposed
existing contours
proposed contours
planting, screening
deciduous tree
roof drain
disturbed area
tree protection fence
silt fence
check dam
stormwater BMP
power pole
fire hydrant
gas pipe
RCP (SW)
stormwater
sanitary sewer
water
bicycle rack
stormwater detention
Denotes Approx. Tree Line

All topographic and boundary information is from survey drawings provided by Freehold Surveyors, dated various 2012-2018, and from field measurements. A guarantee of accuracy is not implied or intended. Prior to beginning field activities, contractor should verify locations of all existing easements, utilities, structures, and other appurtenances both aboveground and below. It will be contractor's responsibility to report deviations from design drawings. Contractor will be responsible for repairs to damages and site restoration.

PRELIMINARY NOT FOR CONSTRUCTION

SGI Technical Services
200 North Greensboro Street Suite B-13A
Carboro, NC 27510
phone: (919) 942-7612 fax: (919) 942-3647
email: sgit@earthlink.net

Project Name:
CLUB NOVA NEW BUILDING
AND SITE WORK
CUP Modification

Developer/Owner/Applicant:
CLUB NOVA Community INC.
103 W. MAIN ST.
CARRBORO, NC 27510

Drawing Title:
SITE DRAINAGE
STORMWATER MANGEMENT

Revisions table with columns: Number, Description, Date. Includes entries for submittal 4, 5, and 6.

Drawn by: SAA
Checked by:
Date: 23 April 2020
Sheet: of
Scale: 1"=20'

C-1

Proposed Site Modifications

NEW STABILIZATION TIMEFRAMES (Effective Aug. 3, 2011)
Table with columns: SITE AREA DESCRIPTION, STABILIZATION, TIMEFRAME EXCEPTIONS. Includes rows for Perimeter dikes, swales, ditches, slopes; High Quality Water (HQW) Zones; Slopes steeper than 3:1; Slopes 3:1 or flatter; All other areas with slopes flatter than 4:1.

CONTACT the National "Call Before You Dig" 811 to have underground facilities located before beginning any excavation.
Prior to undertaking field activities, it will be necessary to map the underground utilities on this property both horizontally and vertically.

**NCDDOT R-O-W**

- Specifications from the latest version of the "Policies and Procedures for Accommodating Utilities on Highway Rights of Way" by NC Division of Highways are applicable to this project. Please refer to this document for information not specifically cited on this drawing. The following list is a summary only and is not intended to be a comprehensive listing of NCDDOT requirements and specifications.
- An NCDDOT Encroachment Agreement must be obtained by owner/contractor in order to perform work within the E. Main St. Public R-O-W (right-of-way).
- The NCDDOT Division Engineer or his representative shall be notified prior to performing work within the Public R-O-W in order to establish work schedule.
- Materials shall not be stored in the public roadway. Vehicles shall not be parked within the traveled way. There shall be no blockage of drainage.
- NCDDOT material requirements are applicable for pipe installations within the E. Main St St. public R-O-W. Ductile iron pipe shall be class 50 min. strength. Copper pipe for sizes 3/4"-to-2" shall be Type K meeting ASTM specification B-88. Smooth Wall Steel Pipe shall meet API 5L Grade B specifications. Spiral Welded Steel Pipe shall meet ASTM specification A-211. Circular Black Steel Pipe shall meet ASTM specification A-120 or A-589. Additional materials are listed in the NCDDOT document cited in Item #1. Materials not specifically listed must be approved in advance by NCDDOT. Pipelines that are not of ferrous material shall have locating tape installed.
- Top of pipes installed within public R-O-W shall be at least 3'-ft below the surface.
- Open cuts shall not exceed 10-ft depth. Pipe shall be properly bedded on uncontaminated soil uniformly firm over entire length and adjacent to pipe for at least 10% of outside diameter. If rock is encountered in excavation, it shall be undercut at least 6-in and backfilled with suitable material. Soil shall be compacted to at least 95% of standard density (ASTM D-1557). Excess excavated material shall be removed and disposed of outside limits of R-O-W in manner approved by NCDDOT.
- All areas disturbed during the construction or maintenance shall be restored to the satisfaction of the Division Engineer or his representative.
- Contractor shall exercise every caution to prevent erosion of soil or off-site migration of sediments or pollutants. NCDDOT, NCCENR and Orange County Erosion Control and Mitigation rules apply. Disturbed surfaces shall be restored in manner specified by NCDDOT immediately upon completion of disturbing activity.
- 10'x70' site triangle shall be free of construction and plants greater than 2-ft height.

**TOWN OF CARRBORO - GENERAL NOTES TO OWNER/CONTRACTORS:**

- Per section 15-246 of the LUO, all new utilities as well as re-located utilities must be located underground.
- Per section 15-248 of the LUO, please note that as-built drawings must be submitted to the Town for any utilities installed within the public right-of-way (water) service. All utilities installed by a utility company (electric, gas, cable, telephone) should be shown on as-built drawings maintained by the utility company.
- Coordinate two-lane controls for traffic closure with Town DPW and/or NCDDOT whenever construction activities impact or take place upon E. Main Street. See typical asphalt pavement repair detail.
- All work within the public R-O-W must be reviewed and coordinated with Carrboro Public Works. Contact DPW Construction Inspection: (919) 916-7425, prior to any disturbances within the public right-of-way.

**TOWN OF CARRBORO - FIRE DEPARTMENT**

- The 2012 North Carolina Fire Code (NFC) and/or the International Fire Code (IFC) with North Carolina Amendments apply to this project.
- All fire line installations shall comply with OWASA and NFPA 24 Standards.
- NOTIFICATION** - Contractor shall notify Fire Marshal at least 24-hrs prior to flushing all fire lines. Flushing must be witnessed by fire department personnel.

**OWASA CONSTRUCTION:**

- Sprinkler System, Water Meters, Service Laterals, Pipe, Backflow Preventers and ancillary equipment must comply with OWASA specifications for materials and installation.
- Where meters and valves are installed outside of public ROW, an access and maintenance easement must be provided to OWASA.
- If a fire hydrant is to be installed, location must be approved by OWASA, Town and owner.
- Sewer service connections to building must be DIP within OWASA easements, but can be PVC outside OWASA easements.
- Use Town recommended two-lane controls for traffic closure if construction activities impact or take place on E. Main St. See typical asphalt pavement repair details.
- All public street water valves, sanitary and storm sewer manhole adjustments and new installations require concrete stabilization pads to be placed around the utility access points within the roadway. Refer to OWASA Std. 513.02 (water valve) and Std. 532.06-1 (sewer and storm detail).
- For water and sewer extensions into the public right of way - Contractor must obtain approved NCDDOT Encroachment Agreement prior to any work within the roadway. Contractor shall be responsible for pavement restoration in accordance with NCDDOT and/or Town pavement repair specifications.
- Install thrust blocks per OWASA specifications wherever directional changes occur in Water Main.

**PIPE INSTALLATION:**

- Pipe shall be handled, unloaded, stored and installed per manufacturer's instructions. If there is any conflict between manufacturer's recommendations and OWASA specifications, the OWASA rules shall apply unless agreed upon between contractor, manufacturer and OWASA. All pipe and materials shall conform to requirements of NC Building/Plumbing Code and local ordinances; installation and storage shall be in accordance with NC Building/Plumbing Code and local ordinances. Adhere to manufacturer specifications for storage and installation.
- All work shall conform to the best practices of the trade and standards set forth in the specifications. OWASA regulations shall apply especially as regards worker safety in excavations. Contractor is responsible for caving and all damages resulting thereof. Contractor is responsible for establishing correct line and grade between manholes.
- All piping shall have a minimum of 3-ft of cover. Pipes will not be installed with less cover unless arranged in writing with OWASA in advance.
- Where applicable, excavation width shall be at least 24" plus nominal pipe diameter to allow room for making joints.
- When directed by the Project Engineer, the Chief Engineer or OWASA representative, unsuitable material shall be replaced to a suitable depth and width.
- Pipe shall not be placed in water. Removal and proper disposal of water in trenches shall be the responsibility of contractor (see instructions regarding removal of collected water).
- All rock shall be excavated to a minimum depth of 6-in below the barrel of the pipe. At least 6-in clearance shall be provided on each side of pipe for the full depth of the excavation. ASTM #67 washed stone shall be placed in all areas where rock has been excavated.
- Pipe shall be placed per OWASA instructions directly upon stone bedding or approved backfill. In no case shall pipe be brought to grade by blocking under the pipe barrel. Pipe shall be uniformly supported along its entire length. After it has been brought to grade, each ft shall be placed carefully and tamped to hold pipe in position.
- At end of day's progress, open pipe shall be plugged to prevent entry by water or silt. The pipe cannot be used to remove groundwater from excavation. Collected runoff or groundwater that is pumped from site must be discharged through approved sediment filtering bag.
- Dechlorination requirements (where applicable) shall be as specified by OWASA.

**ASPHALT PAVEMENT REPAIRS:**

- Asphalt cut shall be neat. Asphalt pavement and subgrade shall be restored to original elevations and condition on-site. Repairs within R-O-W shall be in accordance with NCDDOT requirements and the Town of Carrboro Development Ordinance and in cooperation with the Town Department of Public Works.
- Within R-O-W, subgrade and fill below it must be replaced with suitable, compactible material placed and compacted in maximum 8 inch lifts. Upper 6 inches of subgrade shall be compacted to 100% AASHTO T99 as confirmed by independent test. Fill that is found to be loose, or soft, or composed of unsuitable materials must be replaced.
- Within R-O-W, base course shall consist of 8 inch thickness of NCDDOT Type ABC crushed stone. Stone shall be free of foreign materials and shall be handled and placed in 4-inch lifts, watered if necessary, and compacted to 100% AASHTO T99 specifications in accordance with NCDDOT guidelines. Pavement or pavement repairs in ROW or public streets must be acceptable to NCDDOT and Town. Base course may be reduced to six inches in non-driveway or non-access-way areas.
- The pavement surface shall meet NCDDOT specifications for Type I-2 asphalt or current NCDDOT equivalent. The asphalt shall be handled and placed in a single 2-inch layer in accordance with NCDDOT guidelines.

**SIDEWALK REPAIRS:**

- All public sidewalks shall be restored to original width and condition and constructed of concrete in accordance with specifications set forth in Appendix C of the Town of Carrboro LUO, especially C-12. Sidewalks
- Owner/contractor is responsible for fully restoring all damaged sidewalk, curbing, street surfaces, and damages within the public right-of-way.
- Owner/contractor must discuss sidewalk replacement and installation with NCDDOT and Town of Carrboro Department of Public Works, coordinate all finish elevations to restore original preventing conflicts with drainage, access, utilities and services.

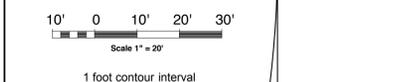
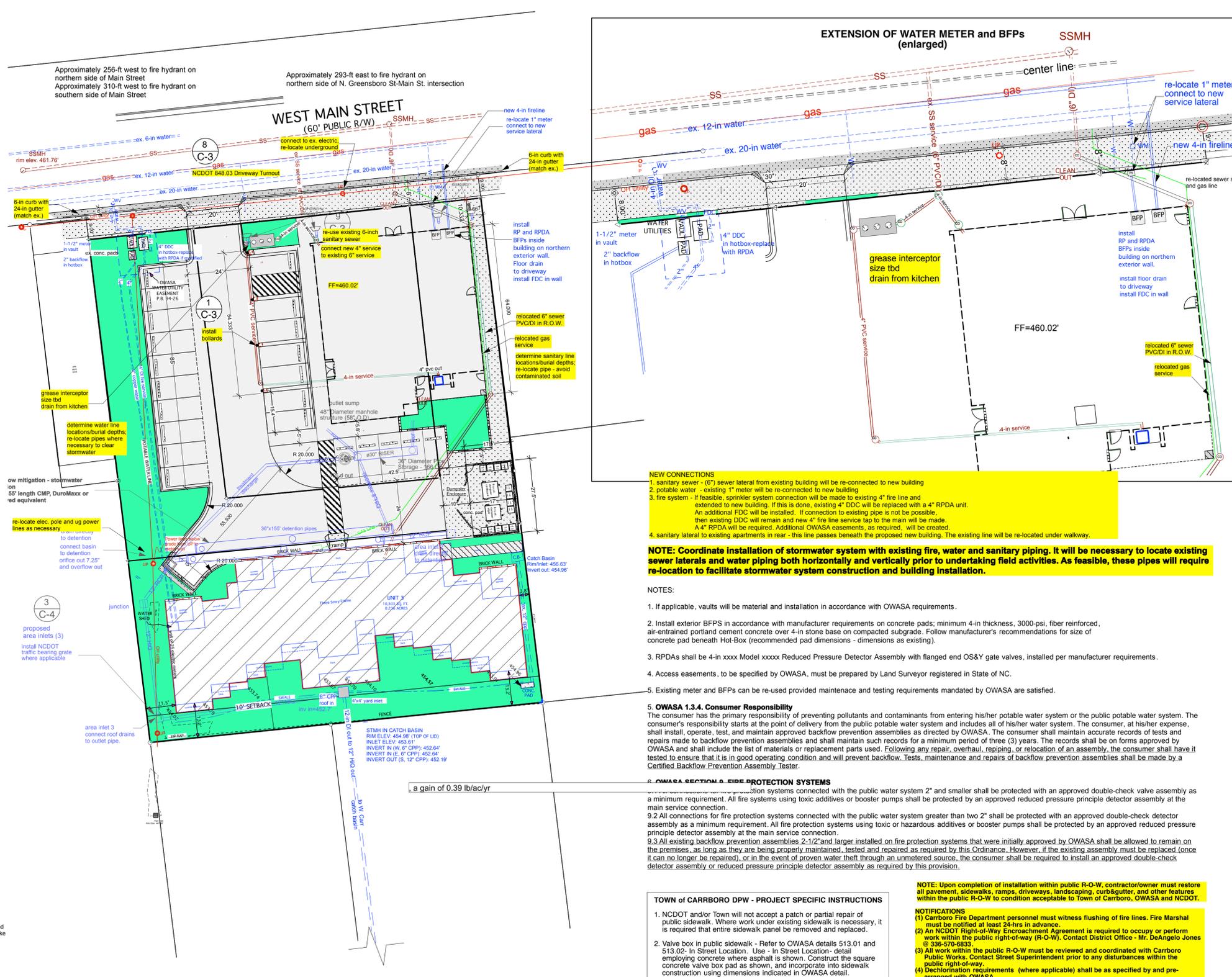
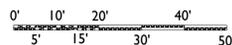
**DUKE POWER LINES AND POLES:**

- Construction activities near power poles and guide wires shall be performed in accordance with guidelines and specifications of Duke Power. Installation, removal and relocation of power lines shall be coordinated with Duke Power.

**SITE UTILITY NOTES:**

- Existing overhead power lines that will be re-used will be re-located underground where feasible
- Existing overhead power lines that will not be re-used will be removed
- Where possible, existing sewer/water service laterals will be removed in accordance with OWASA specifications
- Sewer service laterals shall be ductile iron within OWASA easements and public rights of way (R-O-W). PVC of type specified in current NC Plumbing Code is permissible outside of OWASA easements or R-O-W.
- All water service piping must be copper of type specified in current NC Plumbing Code and OWASA requirements
- Minimum 4-in diameter sewer cleanouts shall be installed on all sewer service laterals in accordance with NC Plumbing Code requirements
- Locations of sewer and water service laterals can be adjusted to accommodate site conditions, however,
- A minimum spacing of 5-ft must be maintained between sewer and water service laterals.

**UTILITIES**



**LEGEND**

- stream buffer
- spot elevations - existing
- spot elevations - proposed
- existing contours
- proposed contours
- planting, screening
- deciduous tree
- roof drain
- disturbed area
- tree protection fence
- silt fence
- check dam
- stormwater BMP
- power pole
- fire hydrant
- gas pipe
- stormwater
- sanitary sewer
- water
- bicycle rack
- stormwater detention

Denotes Approx. Tree Line

**NEW CONNECTIONS**

- sanitary sewer - (6") sewer lateral from existing building will be re-connected to new building
- potable water - existing 1" meter will be re-connected to new building
- fire system - If feasible, sprinkler system connection will be made to existing 4" fire line and extended to new building. If this is done, existing 4" DDC will be replaced with a 4" RPDA unit. An additional FDC will be installed. If connection to existing pipe is not possible, then existing DDC will remain and new 4" fire line service tap to the main will be made. A 4" RPDA will be required. Additional OWASA easements, as required, will be created.
- sanitary lateral to existing apartments in rear - this line passes beneath the proposed new building. The existing line will be re-located under walkway.

**NOTE: Coordinate installation of stormwater system with existing fire, water and sanitary piping. It will be necessary to locate existing sewer laterals and water piping both horizontally and vertically prior to undertaking field activities. As feasible, these pipes will require re-location to facilitate stormwater system construction and building installation.**

- NOTES:**
- If applicable, vaults will be material and installation in accordance with OWASA requirements.
  - Install exterior BFPs in accordance with manufacturer requirements on concrete pads; minimum 4-in thickness, 3000-psi, fiber reinforced, air-entrained portland cement concrete over 4-in stone base on compacted subgrade. Follow manufacturer's recommendations for size of concrete pad beneath Hot-Box (recommended pad dimensions - dimensions as existing).
  - RPDAs shall be 4-in xxxx Model xxxx Reduced Pressure Detector Assembly with flanged end OS&Y gate valves, installed per manufacturer requirements.
  - Access easements, to be specified by OWASA, must be prepared by Land Surveyor registered in State of NC.
  - Existing meter and BFPs can be re-used provided maintenance and testing requirements mandated by OWASA are satisfied.

**OWASA 1.3.4. Consumer Responsibility**  
 The consumer has the primary responsibility of preventing pollutants and contaminants from entering his/her potable water system or the public potable water system. The consumer's responsibility starts at the point of delivery from the public potable water system and includes all of his/her water system. The consumer, at his/her expense, shall install, operate, test, and maintain approved backflow prevention assemblies as directed by OWASA. The consumer shall maintain accurate records of tests and repairs made to backflow prevention assemblies and shall maintain such records for a minimum period of three (3) years. The records shall be on forms approved by OWASA and shall include the list of materials or replacement parts used. Following any repair, overhaul, repiping, or relocation of an assembly, the consumer shall have it tested to ensure that it is in good operating condition and will prevent backflow. Tests, maintenance and repairs of backflow prevention assemblies shall be made by a Certified Backflow Prevention Assembly Tester.

**OWASA SECTION 9. FIRE PROTECTION SYSTEMS**  
 9.1 All fire protection systems connected with the public water system 2" and smaller shall be protected with an approved double-check valve assembly as a minimum requirement. All fire systems using toxic additives or booster pumps shall be protected by an approved reduced pressure principle detector assembly at the main service connection.  
 9.2 All connections for fire protection systems connected with the public water system greater than two 2" shall be protected with an approved double-check detector assembly as a minimum requirement. All fire protection systems using toxic or hazardous additives or booster pumps shall be protected by an approved reduced pressure principle detector assembly at the main service connection.  
 9.3 All existing backflow prevention assemblies 2-1/2" and larger installed on fire protection systems that were initially approved by OWASA shall be allowed to remain on the premises, as long as they are being properly maintained, tested and repaired as required by this Ordinance. However, if the existing assembly must be replaced (once it can no longer be repaired), or in the event of proven water theft through an unmetered source, the consumer shall be required to install an approved double-check detector assembly or reduced pressure principle detector assembly as required by this provision.

**TOWN OF CARRBORO DPW - PROJECT SPECIFIC INSTRUCTIONS**

- NCDDOT and/or Town will not accept a patch or partial repair of public sidewalk. Where work under existing sidewalk is necessary, it is required that entire sidewalk panel be removed and replaced.
- Valve box in public sidewalk - Refer to OWASA details 513.01 and 513.02. In Street Location. Use - In Street Location - detail employing concrete where asphalt is shown. Construct the square concrete valve box pad as shown, and incorporate into sidewalk construction using dimensions indicated in OWASA detail.
- An NCDDOT Right-of-Way Encroachment Agreement is required to occupy or perform work within the public right-of-way (R-O-W). Contact District Office - Mr. DeAngelo Jones @ 336-570-6833. A three party encroachment agreement with NCDDOT and OWASA will be necessary. A pedestrian and/or traffic control plan will be required.

**NOTE: Upon completion of installation within public R-O-W, contractor/owner must restore all pavement, sidewalks, ramps, driveways, landscaping, curb&gutter, and other features within the public R-O-W to condition acceptable to Town of Carrboro, OWASA and NCDDOT.**

- NOTIFICATIONS**
- Carrboro Fire Department personnel must witness flushing of fire lines. Fire Marshal must be notified at least 24-hrs in advance.
  - An NCDDOT Right-of-Way Encroachment Agreement is required to occupy or perform work within the public right-of-way (R-O-W). Contact District Office - Mr. DeAngelo Jones @ 336-570-6833.
  - All work within the public R-O-W must be reviewed and coordinated with Carrboro Public Works. Contact Street Superintendent prior to any disturbances within the public right-of-way.
  - Dechlorination requirements (where applicable) shall be as specified by and pre-arranged with OWASA.

**CONTACT the National "Call Before You Dig" 811 to have underground facilities located before beginning any excavation.**  
**Prior to undertaking field activities, it will be necessary to locate the existing underground utilities on this property both horizontally and vertically.**

**PRELIMINARY NOT FOR CONSTRUCTION**

**SGI Technical Services**  
 200 North Greensboro Street Suite B-13A  
 Carrboro, NC 27510  
 phone: (919) 942-7612 fax: (919) 942-3647  
 email: sgit@earthlink.net

Project Name:  
**CLUB NOVA NEW BUILDING and SITE WORK CUP Modification**

Developer/Owner/Applicant:  
**CLUB NOVA Community INC. 103 W. MAIN ST. CARRBORO, NC 27510**

Drawing Title:  
**UTILITIES**

Revisions:

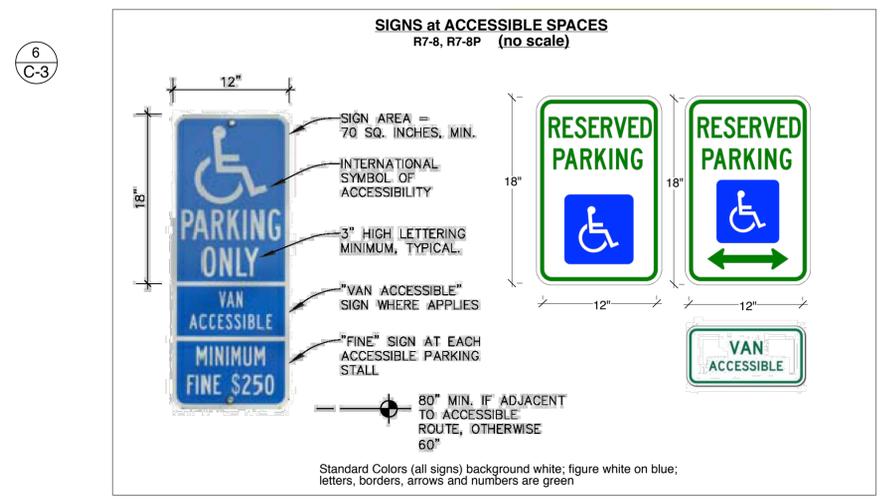
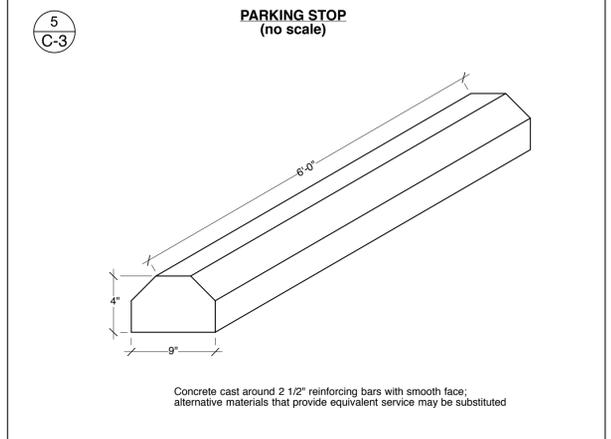
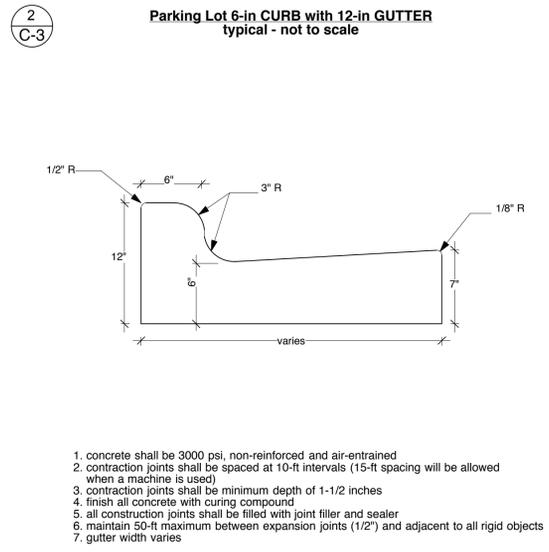
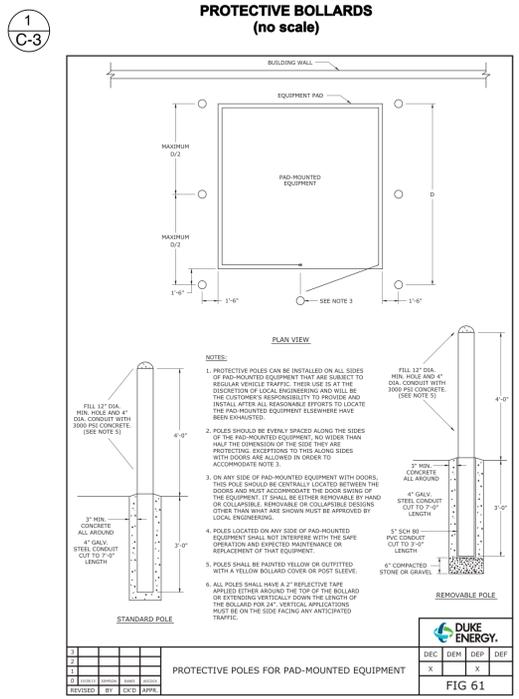
Number	Description	Date
submittal 4	revised submittal	June 2019
submittal 5	revised submittal	Feb 2020
submittal 6	revised submittal	April 2020

Drawn by: **SAA**

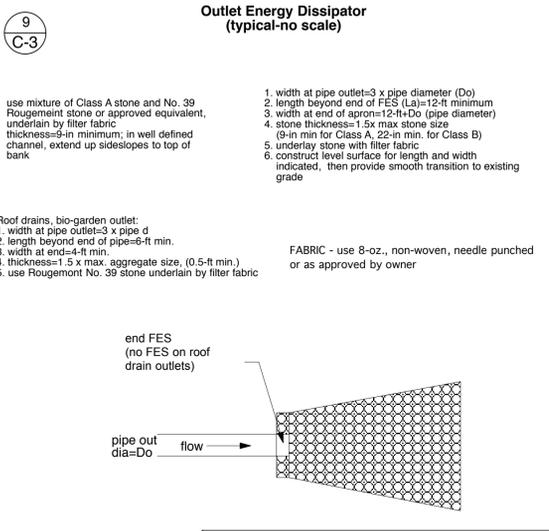
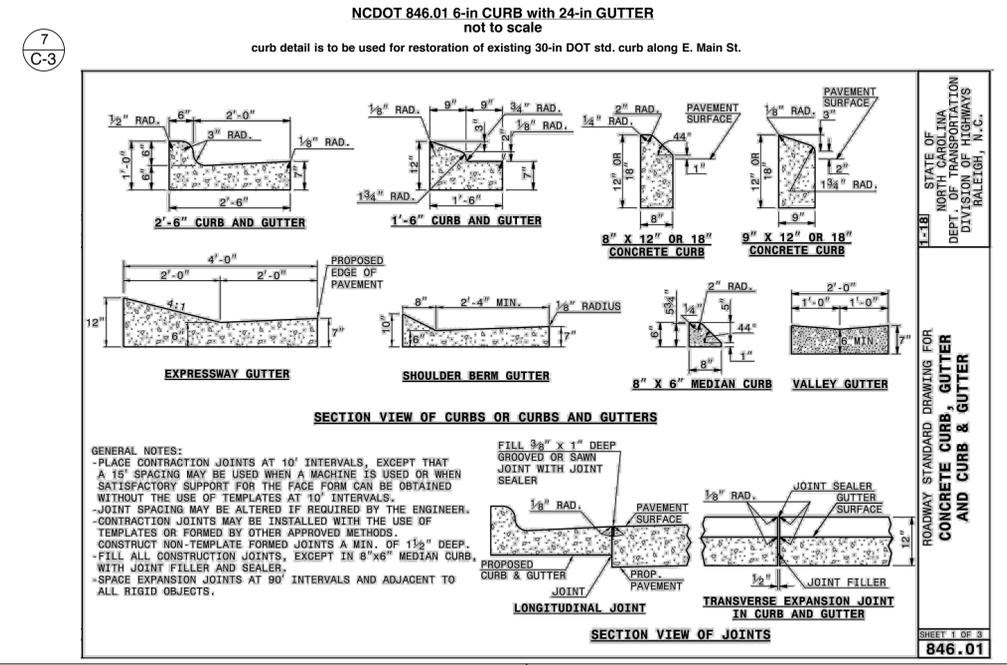
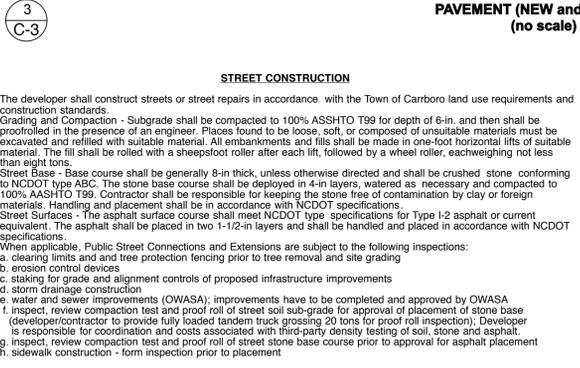
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Date: **23 April 2020** Scale: **1"=20'**

**C-2**



**NOTE: BOLLARDS ARE NOT ALLOWED WITHIN THE NCDOT R-O-W**



**PRELIMINARY NOT FOR CONSTRUCTION**

**SGI Technical Services**  
 200 North Greensboro Street Suite B-13A  
 Carboro, NC 27510  
 phone: (919) 942-7612 fax: (919) 942-3647  
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**CLUB NOVA NEW BUILDING and SITE WORK CUP Modification**

Developer/Owner/Applicant:  
**CLUB NOVA Community INC.**  
 103 W. MAIN ST.  
 CARRBORO, NC 27510

Drawing Title:  
**DETAILS**

Revisions:

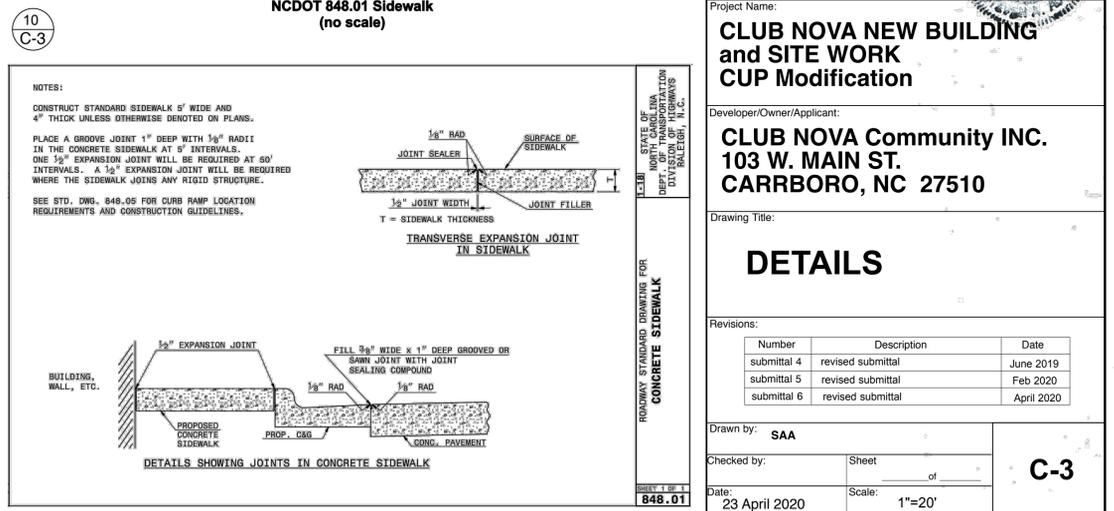
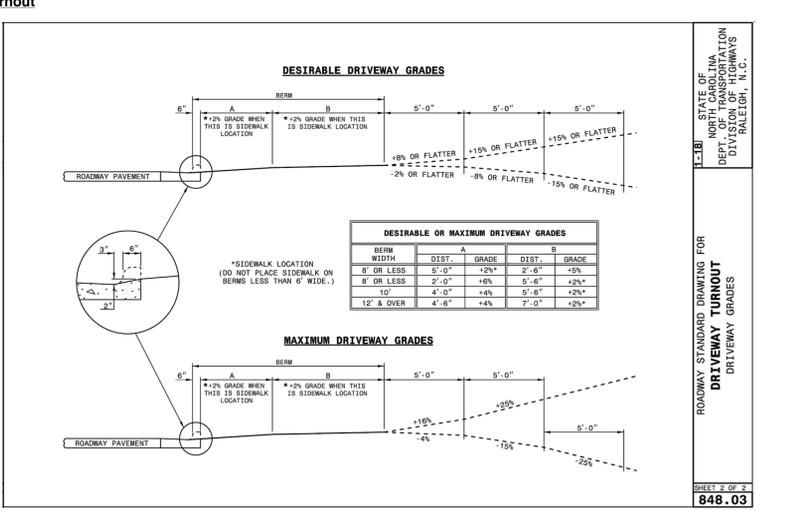
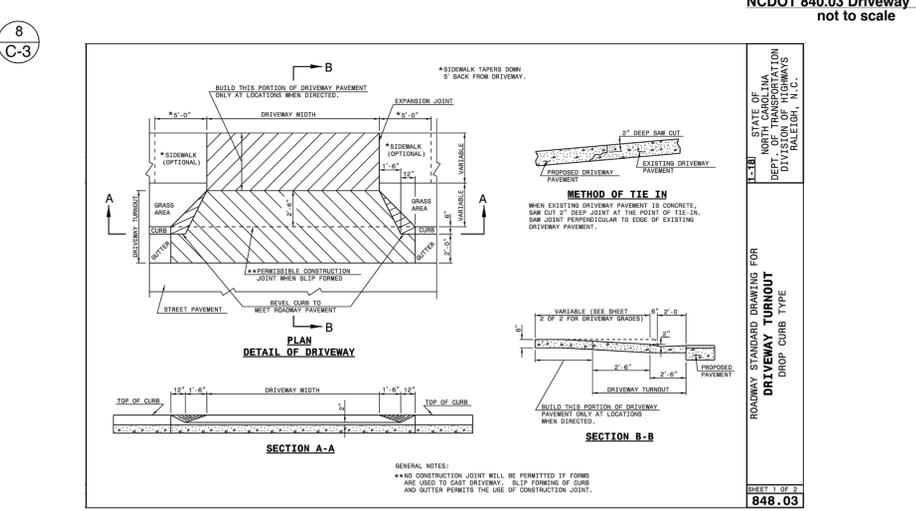
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Drawn by: **SAA**

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Date: 23 April 2020 Scale: 1"=20'

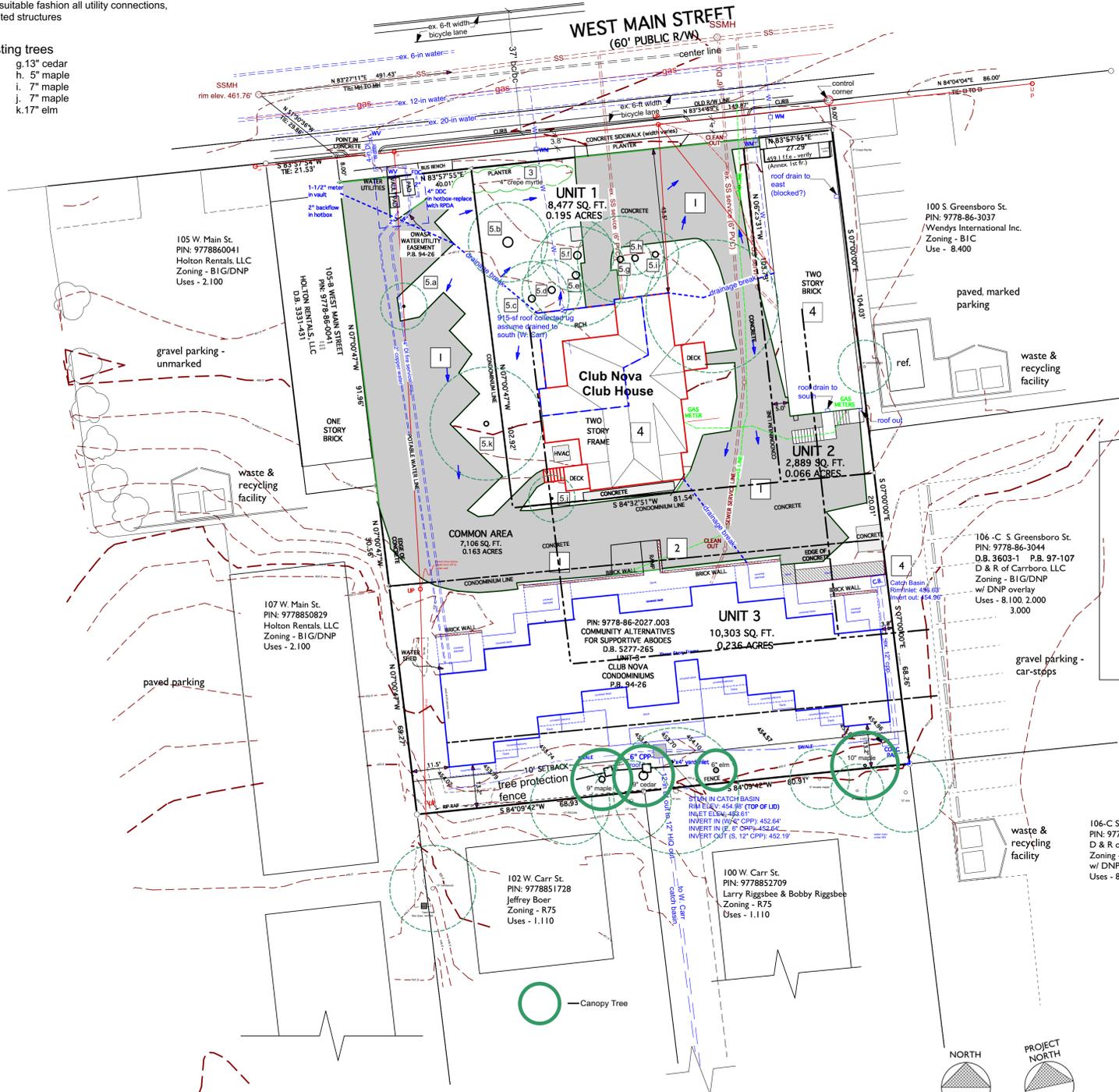
**C-3**



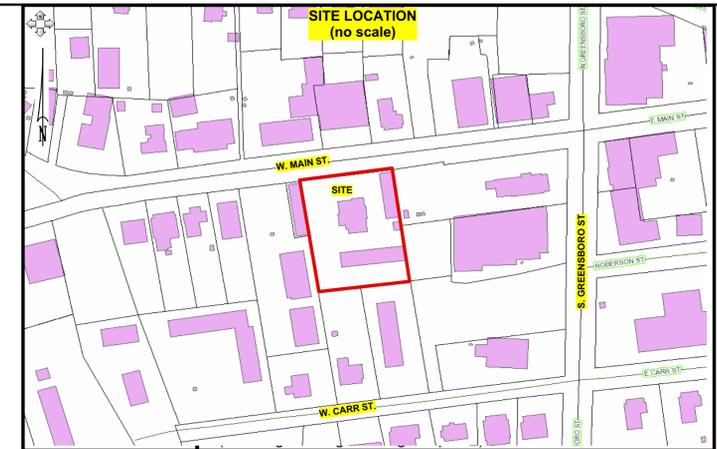
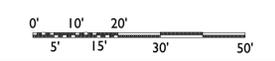
**Demolition Notes**

- 1 remove existing concrete
- 2 remove existing ramp
- 3 remove existing plantings @ street
- 4 remove existing Clubhouse and Annex  
- terminate in suitable fashion all utility connections, remove indicated structures
- 5 remove existing trees  
a. 7" maple  
b. 12" pear  
c. 11" cedar  
d. 9" maple  
e. 15" maple  
f. 11" maple  
g. 13" cedar  
h. 5" maple  
i. 7" maple  
j. 7" maple  
k. 17" elm

PRELIMINARY-NOT FOR RECORDING OR CONVEYANCE



**Existing Conditions - 1" = 20'**



**Project Summary**

**Owner - Club Nova Community Inc.**  
**Applicant - Jack Haggerty, Architect Inc.**  
**Permit Sought - Modification to Conditional Use Permit (no addition of uses)**  
**Address - 103 W. Main St., Carrboro, NC 27510**  
**PIN & Tract Size -**  
 9778862027 - 0.66 ac. / 28,775 s.f. (entire lot)  
 9778862027.001 - Unit 1 - 0.195 ac. / 8,477 s.f.  
 9778862027.002 - Unit 2 - 0.066 ac. / 2,889 s.f.  
 9778862027.003 - Unit 3 - 0.236 ac. / 10,303 s.f.  
**Common Area - 0.163 ac. / 7,106 s.f.**  
**Zoning District - B-1G**  
**Overlay Zoning Districts - None**  
**Existing Permitted Use Categories - 1,340 (SRO), 2,110 (retail), 3,110 (office)**  
**Proposed Uses - No new proposed uses**  
**Maximum Building Height Permitted - 4 stories**  
**Building Height - 2 story, 41' +/-**  
**Building Size - 9,056 s.f.**  
**Building Setbacks - B-1-g - no property line setbacks, except 30' from street centerline, 10' from rear if adjoining property zoned R-7.5**

**Miscellaneous Project Notes**

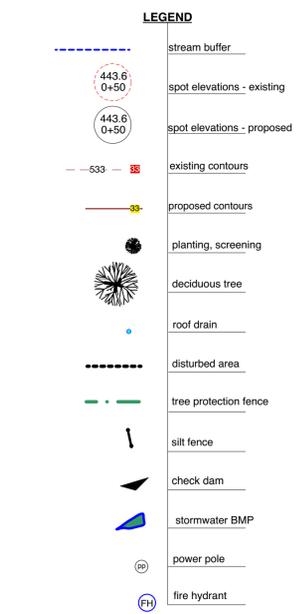
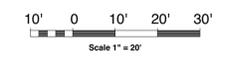
- Owner will maintain property in accordance with Carrboro Land Use Ordinance Section 15-67 so that all facilities described in this document can be used or will perform in manner intended.
- Developer/Owner/Contractor is required to schedule and coordinate an on-site Pre-Construction Meeting prior to site disturbance w/ representatives of all approving applicable agencies.
- Developer/Owner/Contractor is required to provide appropriate and sufficient controls to alleviate depositing mud, stone and other construction related materials on public roadway surfaces. Any materials deposited on the roadway shall be removed promptly either manually, mechanically and/or street washing.
- All construction vehicles, equipment and related materials cannot be placed, stored and/or kept within any portion of the public right of way at any time. All on-site materials shall be secured and confined to the lot under construction.
- All outdoor lighting is required to meet the applicable requirements of Article XV of the Town of Carrboro Land Use Ordinance
- Fire lane striping, as needed, will be coordinated with the Fire Marshal prior to the issuance of a CO per Chapter 12 of the Carrboro Town Code.
- An all-weather travel surface must be in place on the roadway prior to receiving building permits.
- Per §15-67; The recipient of any zoning, special use, conditional use or sign permit or his successor, shall be responsible for maintaining all common areas, improvements or facilities required by this chapter or any permit issued in accordance with its provisions, except those areas, improvements or facilities with respect to which an offer of dedication to the public has been accepted by the appropriate public authority. As illustrations, and without limiting the generality of the foregoing, this means that private roads and parking areas, water and sewer lines, and recreational facilities must be properly maintained so that they can be used in the manner intended, and required vegetation and trees for screening, landscaping, or shading must be replaced if they die or are destroyed.

**OCSW Construction Waste Requirements:**

1. All existing structures 500 square feet and larger shall be assessed prior to the issuance of a demolition permit to ensure compliance with the County's Regulated Recyclable Materials Ordinance (RRMO) and to assess the potential for deconstruction and/or the reuse of salvageable materials. **Contact the Orange County SW Enforcement Officer at 919- 968-2788 to arrange for the assessment.**
2. Pursuant to the County's RRMO, clean wood waste, scrap metal, and corrugated cardboard present in construction or demolition waste must be recycled.
3. Pursuant to the County's RRMO, all haulers of mixed construction and demolition waste which includes any regulated recyclable materials shall be licensed by Orange County.
4. Prior to any demolition or construction activity on the site, the applicant shall hold a pre-demolition/pre-construction conference with Solid Waste staff. This may be the same pre-construction meeting held with other development/enforcement officials.
5. The presence if any asbestos containing materials ('ACM') and/or other hazardous materials shall be handled in accordance with any and all local, state, and federal regulations and guidelines.

**Sheet Index**

- EC-1 - Existing Conditions, Demolition Notes, Project Notes
- SP-1 - Enlarged Site Plan, Shading & Screening Notes
- C-1 - Site Modifications - Drainage & Stormwater
- C-2 - Site Modifications - Utilities
- C-3 - Details
- C-4 - Details
- C-5 - Erosion Control
- A-2 - Preliminary Floorplans
- A-3 - Preliminary Elevations



All topographic and boundary information is from survey drawings provided by Freehold Surveyors, dated various 2012-2018, and from field measurements. A guarantee of accuracy is not implied or intended. Prior to beginning field activities, contractor should verify locations of all existing easements, utilities, structures, and other appurtenances both aboveground and below. It will be contractor's responsibility to report deviations from design drawings. Contractor will be responsible for repairs to damages and site restoration.

**PRELIMINARY NOT FOR CONSTRUCTION**

**Jack Haggerty, Architect Inc.**  
 205 W. Main St., Ste. 211  
 Carrboro, NC 27510  
 919.967.5191 jack@jackhaggertyarchitec.com

**Sgt Technical Services**  
 200 North Greensboro Street Suite B-13A  
 Carrboro, NC 27510  
 phone: (919) 942-7812 fax: (919) 942-3647  
 email: sgt@earthlink.net

**Club Nova New Building and Site Work CUP Modification**

Developer/Owner/Applicant:  
**CLUB NOVA COMMUNITY INC.**  
 103 W. MAIN ST.  
 CARRBORO, NC 27510

Drawing Title:  
**EXISTING CONDITIONS**

Revisions:

Drawn by: **SAA**  
 Checked by: \_\_\_\_\_ Sheet \_\_\_\_\_ of \_\_\_\_\_  
 Date: **March 9, 2020** Scale: **1"=20'**

# Club Nova- New Building & Site Work

Jack Haggerty, Architect Inc.



PRELIMINARY - 9.20.19

Preliminary

### D.L.A Summary

Total Lot Area -	28,775 s.f.
DLA Required - (12% of total land area)	3,453 s.f.
DLA Provided-	5,203 s.f.

### Urban Amenity Summary \* per J.Kleaveland, ToC (\$20.87/s.f.)

Land Value \$600,514* x 7% =	\$42,036
Amenities - Building Plaque -	\$ 1,800.00
Widened Sidewalk - 285 s.f. x \$4.50/s.f. =	\$ 1,282.00
Garden - 475 s.f. x \$20.00/s.f. =	\$ 9,500.00
Pollinator Garden - 787 s.f. x \$20.00/s.f. =	\$15,740.00
Donor Pavers - 70 s.f. x \$80.00/s.f. =	\$ 5,600.00
Murals 6 @ - \$2,500.00 =	\$15,000.00
Open Deck (@ rear of CASA, shared) 210 s.f. x \$45.00/s.f. =	\$9,450.00
<b>Total Urban Amenity Cost</b>	<b>\$58,372.00</b>

Club Nova, 9.16.19, Murals – Urban Amenity



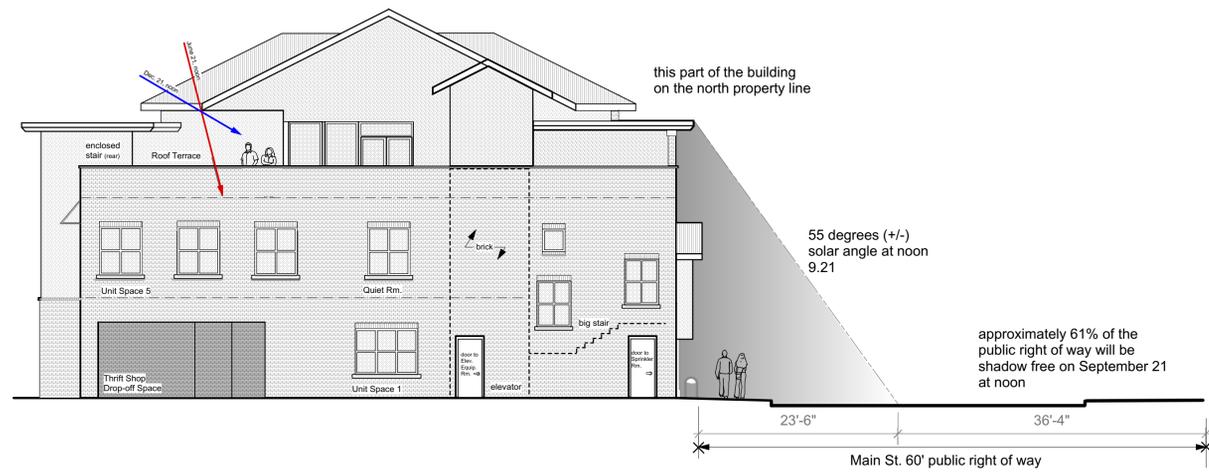


These murals were sponsored by Club Nova and produced in a community effort, design and painting. There are six murals, currently displayed on the east wall of the Annex (towards Wendy's). Murals are approximately 6' x 4'. See West and South Elevations on following page for proposed mural locations.

Cost of donor bricks plus cost of installation (+/- \$1.50/brick) = \$80.00/s.f.

Note – donor brick has an exposed face of 32 sq.in.. 4.5 bricks make a s.f. – \$17.50 x 4.5= \$78.75 (sq.ft. brick).

Size	Quantity Sold	Cost Per Brick	Sold Price Per Brick	Total Cost	Total Profit
4x8	100	\$17.50	\$100.00	\$1,750.00	\$8,250.00
4x8	500	\$17.50	\$100.00	\$8,750.00	\$41,250.00
4x8	1000	\$17.50	\$100.00	\$17,500.00	\$82,500.00
4x8	2501	\$15.50*	\$100.00	\$38,765.50	\$211,334.50
8x8	100	\$29.50	\$175.00	\$2,950.00	\$14,550.00
8x8	500	\$29.50	\$175.00	\$14,750.00	\$72,750.00
8x8	1000	\$29.50	\$175.00	\$29,500.00	\$145,500.00
8x8	2501	\$27.50*	\$175.00	\$68,777.50	\$368,897.50



East Elevation (& ROW Shading Diagram)

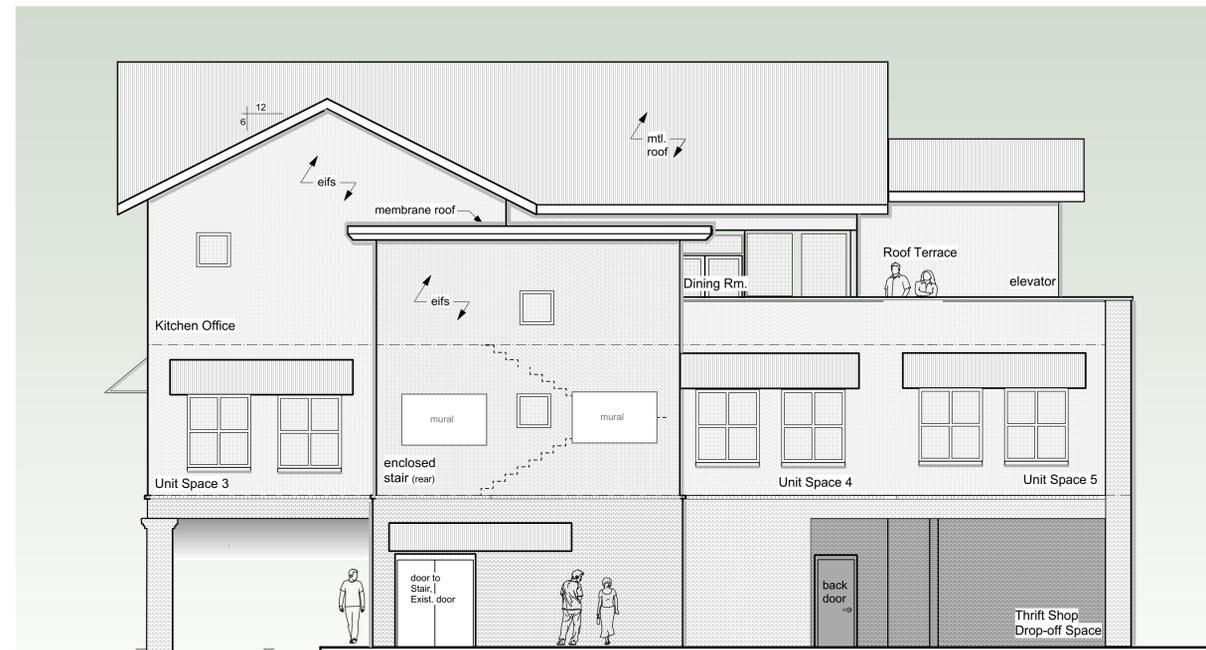
Note on Main St. (North) Elevation & L.U.O. §15-178 - Applicant will go before the Appearance Commission in an alternative design review process.

Note: §15-178(2) Summary

- a. Area of Street Elevation @ ground level - 703 s.f.
- Required Glazing @ street level (60%) - 422 s.f.
- Area of Glazing Proposed - (29%) - 205 s.f.
- b. Area of Street Elevation - 2,359 s.f.
- Required Glazing Entire Elevation (40%) - 944 s.f.
- Area of Glazing Proposed (21%) - 491 s.f.



North Elevation (Main St. Elevation)



South Elevation



West Elevation

Jack Haggerty, Architect Inc.

205 W. Main St. Ste. 211 Carrboro, NC 27510  
919.967.5191 jack@jackhaggertyarchitect.com

Club Nova  
New Building & Sitework  
103 W. Main St. Carrboro, NC  
Owner: Club Nova Community Inc., T. 919 967-6985, F. 919 968-2522

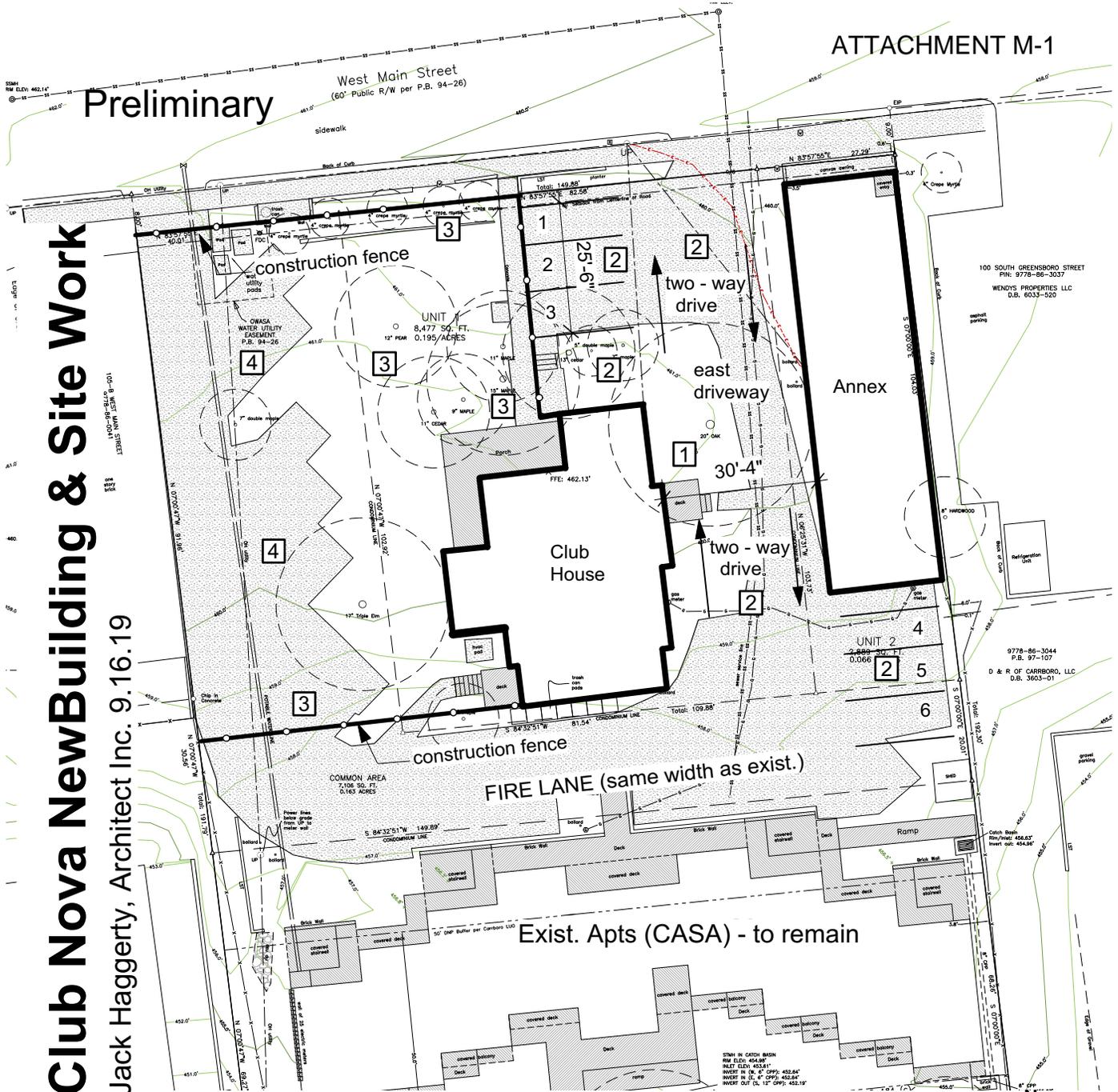
preliminary - not for construction - Modification to CUP

June 13, 2019  
July 23, 2019  
July 30, 2019

A-3

# Club Nova New Building & Site Work

Jack Haggerty, Architect Inc. 9.16.19

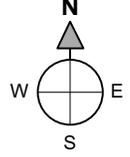


## Construction Management Plan

Access to apartments must be provided and maintained 24 hrs. a day, seven days a week .

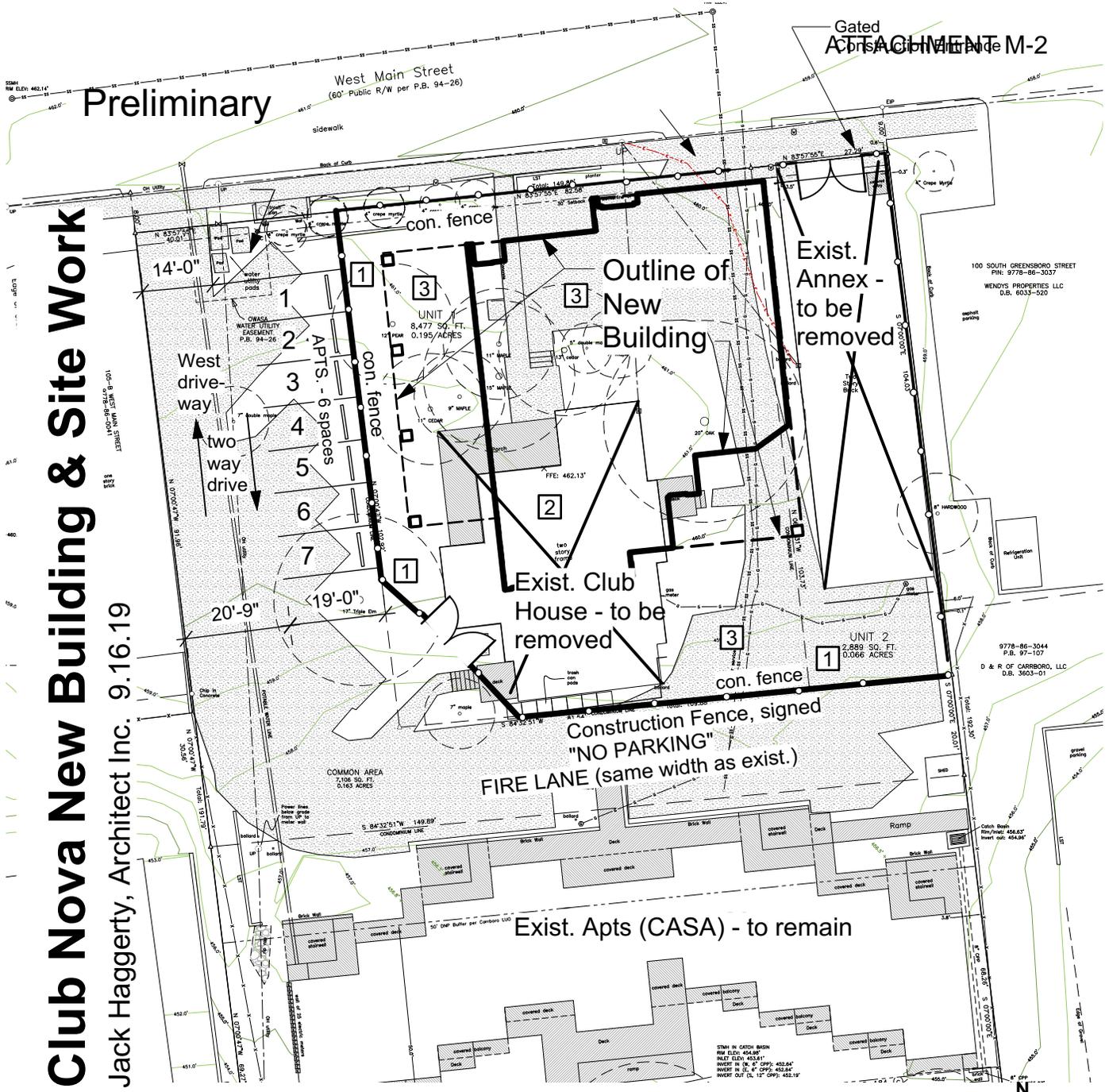
Six spaces are provided throughout construction period for CASA, per CUP permit

- 1 Club House and Annex will no longer be occupied. Remove east entry deck @ Club House.
- 2 Remove trees @ north and east side of Club House - see EC-1. Place gravel as req'd to establish stable driveway (two way) and parking spaces for CASA residents.
- 3 Place 6' h, screened construction fence where indicated. Remove crepe myrtles @ sidewalk (no pedestrian diversion req'd). Remove trees @ west side of Club House and prepare east driveway for CASA, Fire Dept., Solid Waste ingress/egress and CASA parking.
- 4 Place gravel as req'd (in addition to exist. concrete) to establish two-way drive, west side of property.

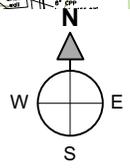


# Club Nova New Building & Site Work

Jack Haggerty, Architect Inc. 9.16.19



## Construction Management Plan

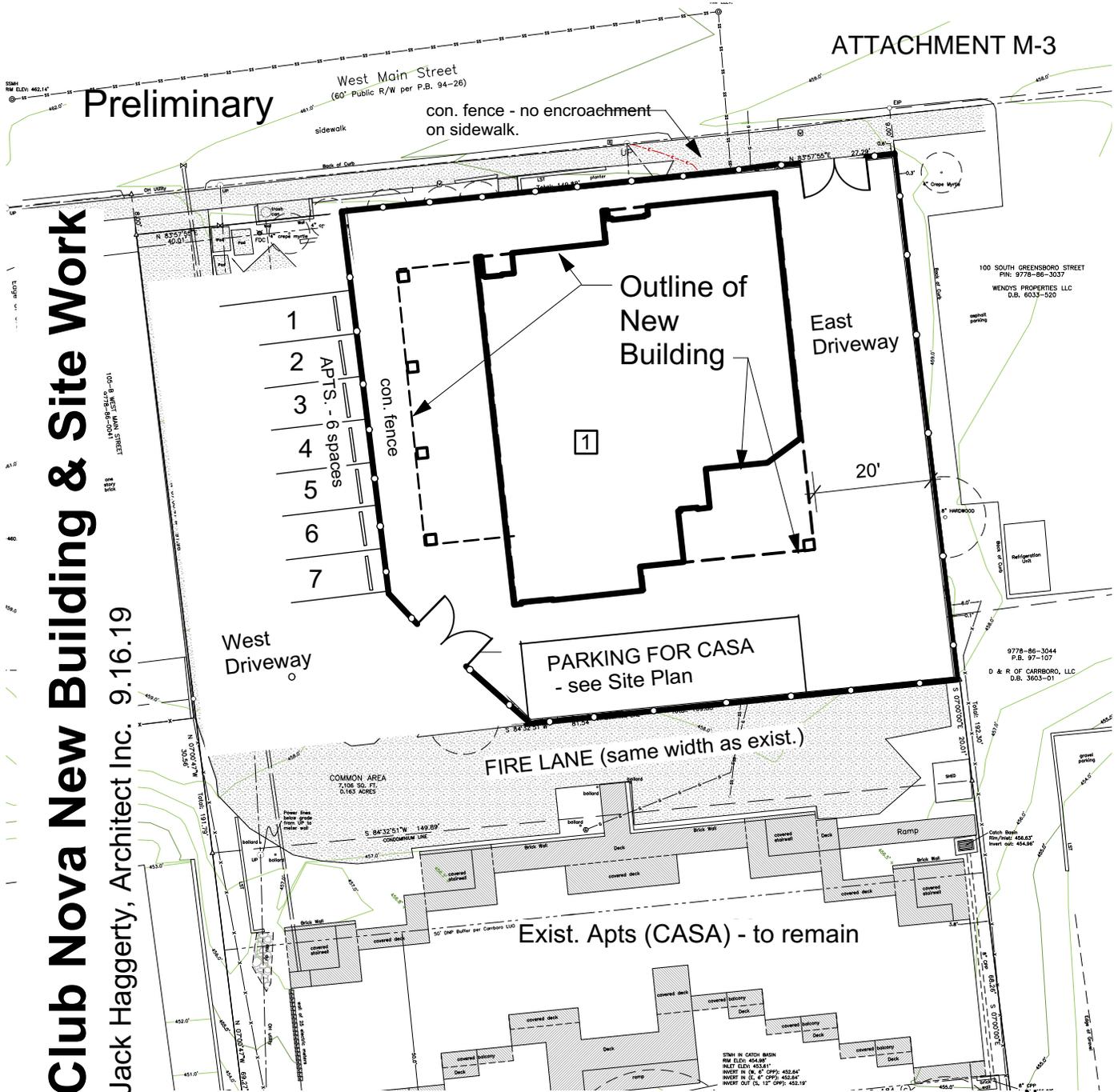


- 1 Re-work construction fence as indicated.
- 2 Remove remaining trees w/in perimeter of construction fence. Remove Annex and Club House. Abandoned utilities will be closed in place.
- 3 Coordinate utilities to remain, for both new building and CASA, and begin installation of storm water system. Utilities no longer required will be closed in place or removed, as feasible.

This work completes the demolition phase of the project. When possible construction access shall be by the Main St. gate. Construction parking will be w/in the construction area or off-site.

# Club Nova New Building & Site Work

Jack Haggerty, Architect Inc. 9.16.19



## Construction Management Plan

**1** Construct New Building, East Driveway and permanent parking for CASA. This will be the longest phase of the anticipated 12 mos. construction period.

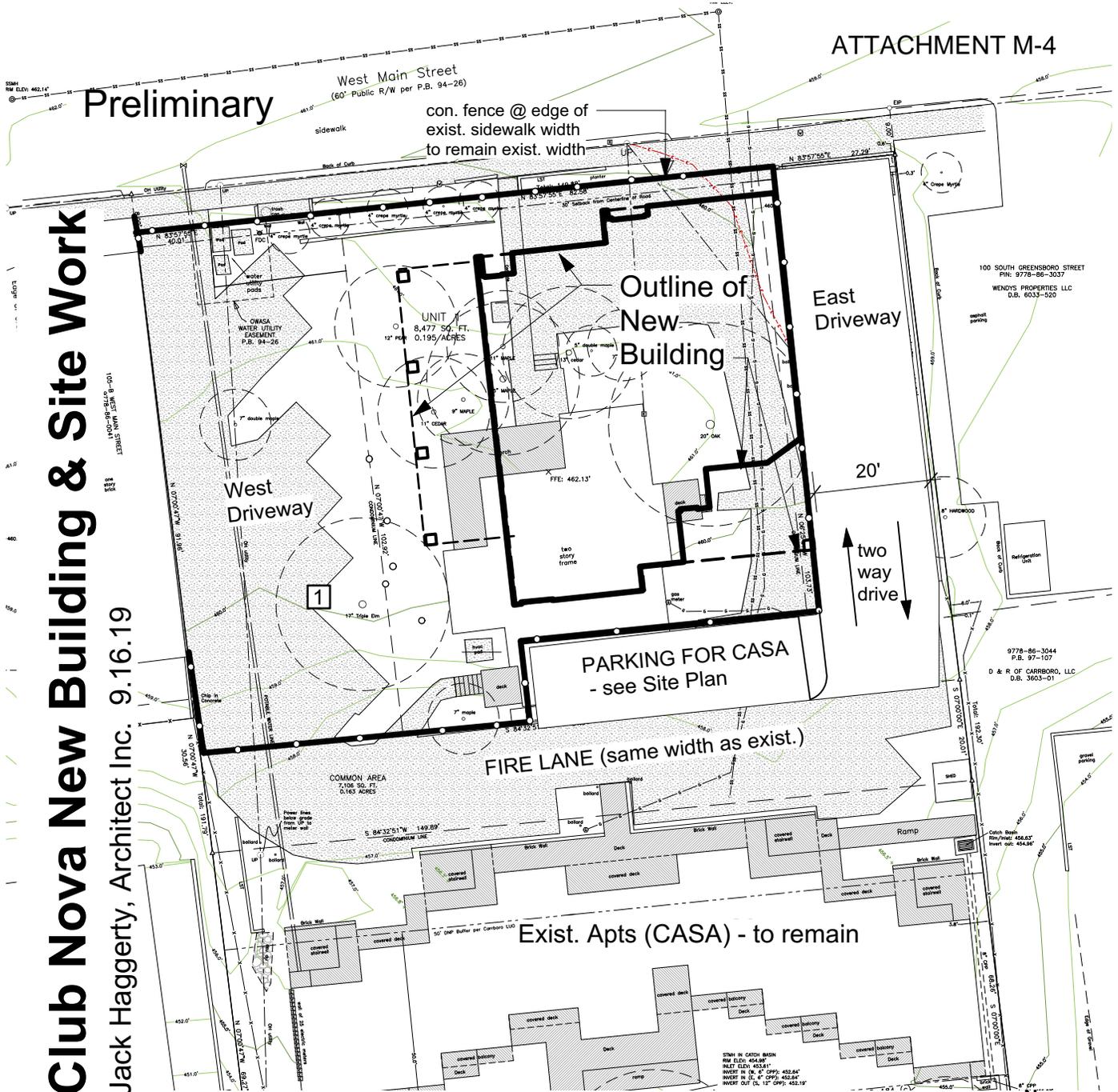
During construction General Contractor shall employ measures to contain construction activity w/in the construction site.

Materials will be stored w/in the confines of the construction fence. Off-loading of materials will not be done in the right of way.

Construction will not interfere with sidewalk or bus stop - see location of construction fencing and sidewalk/bus stop.

# Club Nova New Building & Site Work

Jack Haggerty, Architect Inc. 9.16.19



## Construction Management Plan

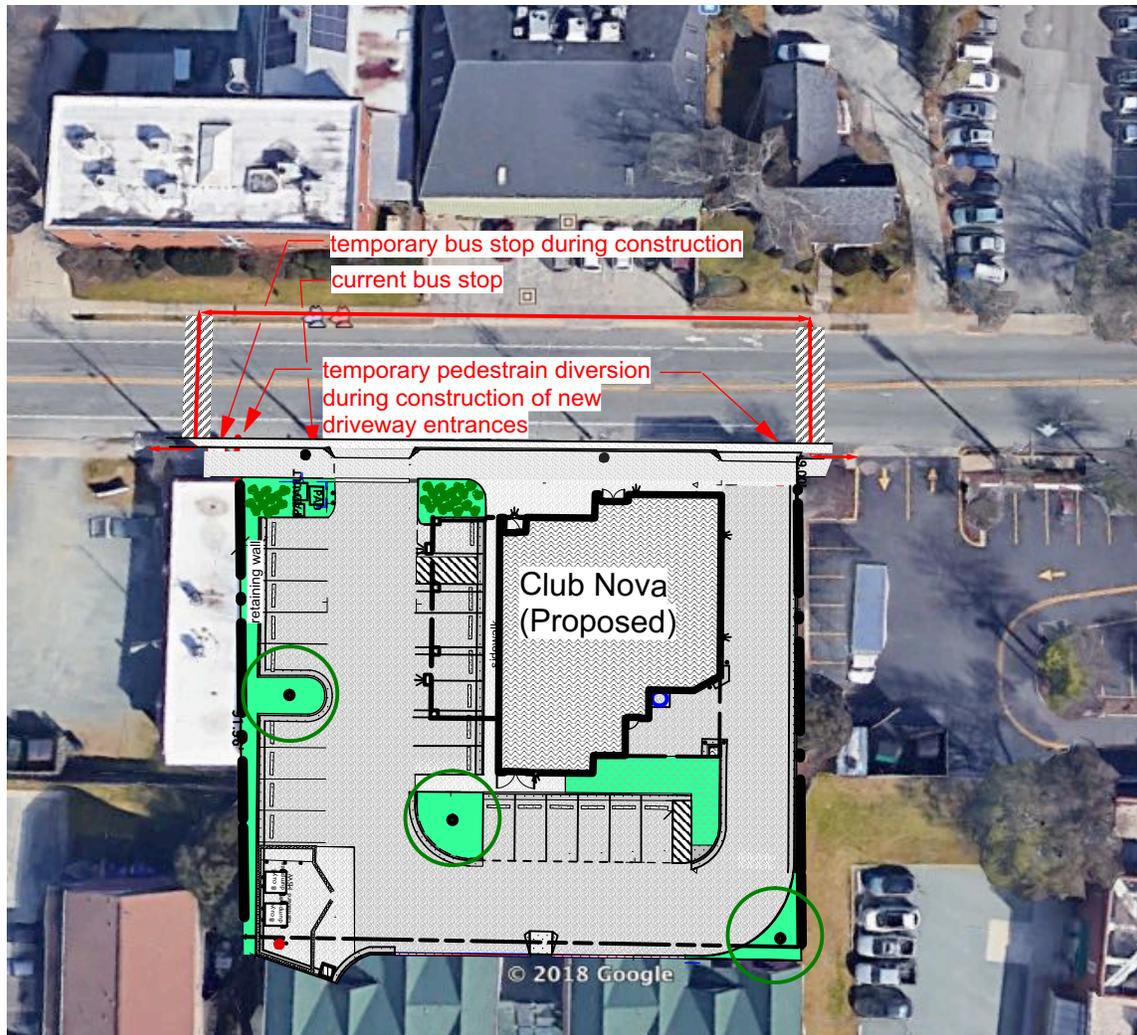
- 1 On-going construction of New Building and construction of permanent West Driveway and adjacent parking. W. Main St. sidewalk will remain open: no pedestrian diversion required.

Note: Throughout demolition and construction of the new building, driveways and permanent parking, the construction fencing will be in place. This fence will be on the property line and does not impinge of the existing sidewalk of bus stop - both are fully within the right of way.

# Club Nova - New Building & Site Work

Jack Haggerty, Architect Inc. 9.16.19

Pedestrian Diversion during new drive entrances



## Construction Management Plan

One completed driveway be closed, and the new driveway entry (from street) and remaining sidewalk @ W. Main St. will be completed and then the other so that access to CASA and the parking is always provided. See drawing above for pedestrian diversion. The General Contractor will coordinate w/ Club Nova, and Club Nova will coordinate and keep CASA informed on the construction start date and significant construction events (eg. temporary utility interruption) throughout construction. General Contractor shall keep public right of way clear of materials, mud and construction debris. During application of any exterior finishes, reasonable care shall be taken to assure that any excess material remain w/in the bounds of the construction fencing using manufacturer's recommended procedures and measures.

Hours of construction will typically be 7 am - 5 pm., w/ occasional weekend work.

**Club Nova New Building and Site Work Modification  
Attachment to Construction Management Plan**

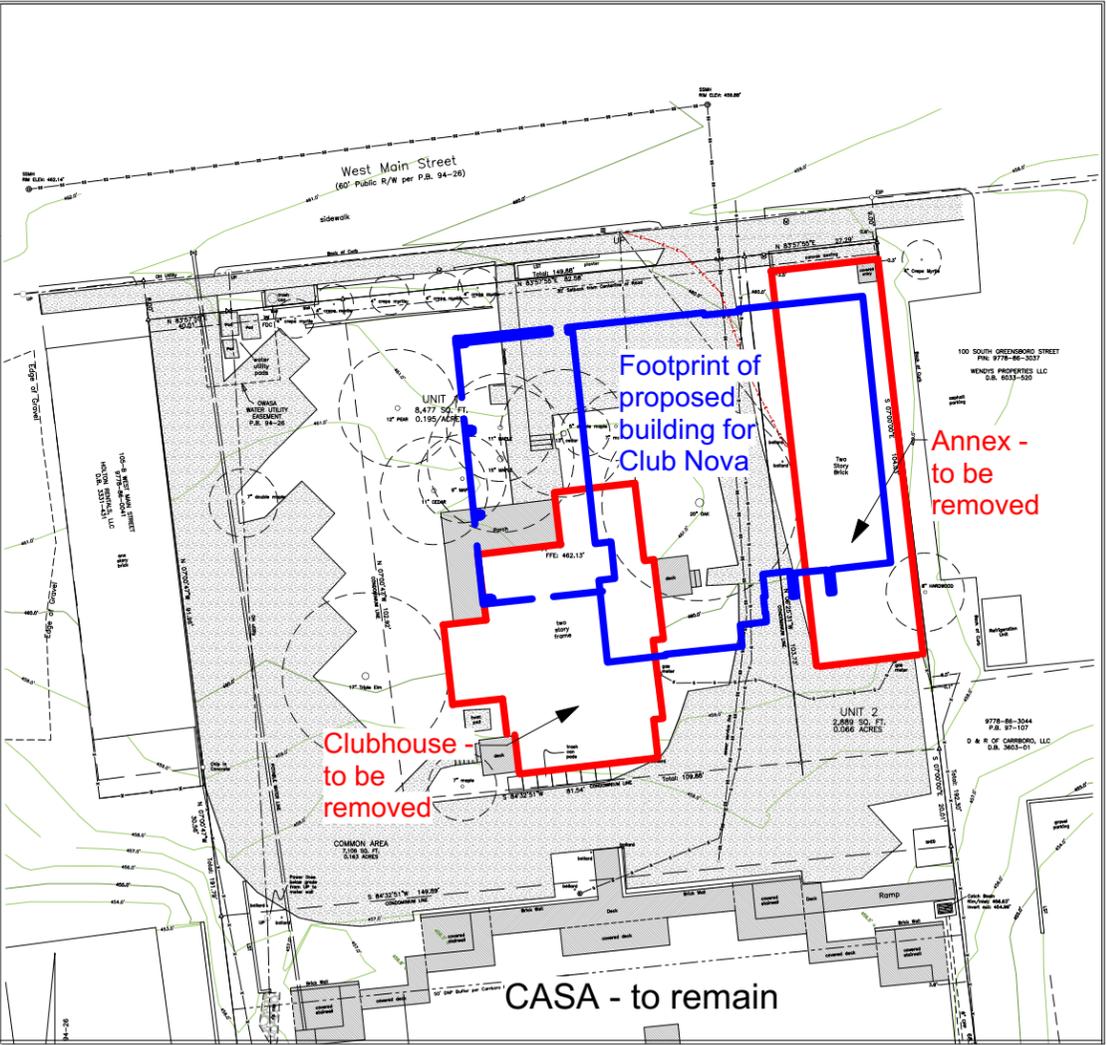


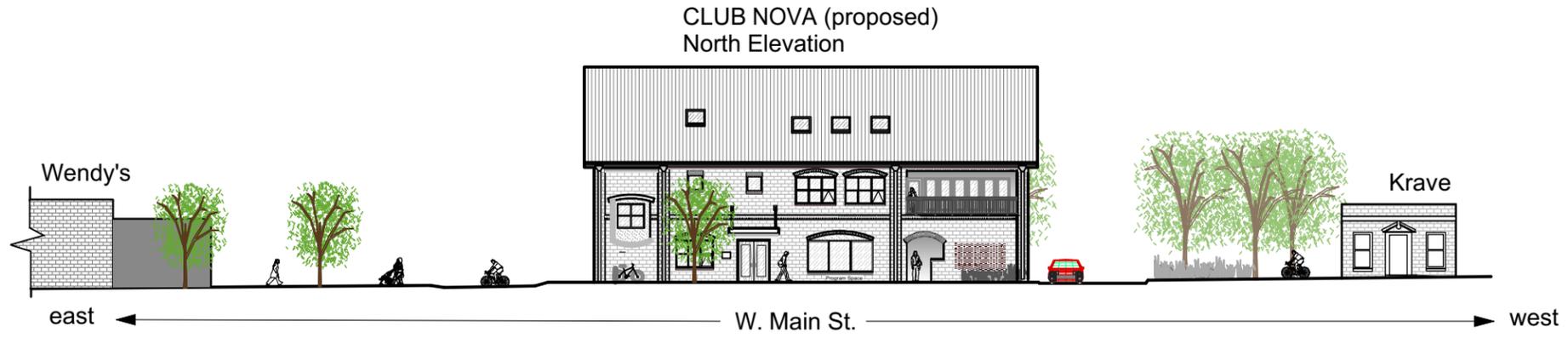
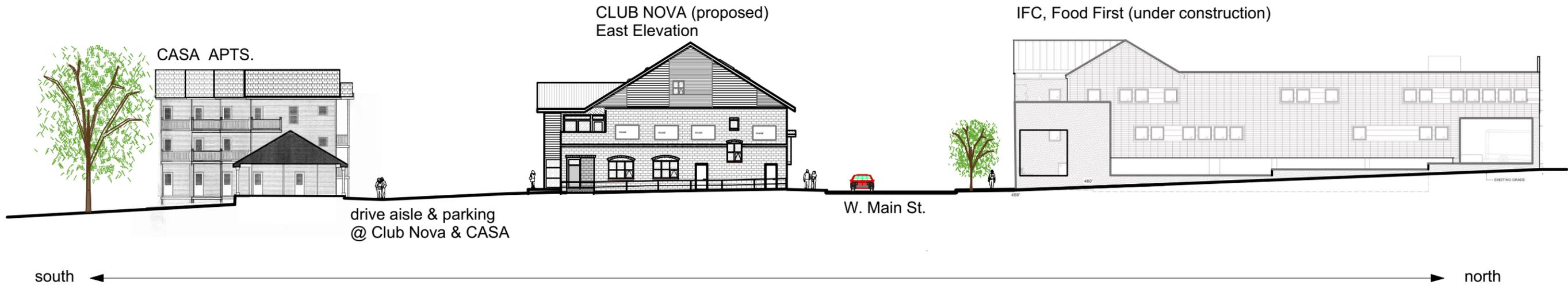
**Current construction management at the site across the street. No pedestrian diversion appears to have been required.**



Club Nova  
New Building  
and Site Work  
C.U.P. Modification

Context Drawing:  
Aerial  
Jack Haggerty, Architect  
4.27.20





**Club Nova  
New Building  
and Site Work  
C.U.P. Modification**

Context Drawing:  
North to South &  
East to West

**Jack Haggerty, Architect**  
4.27.2020

Club Nova Neighborhood Information Meeting  
November 5, 2019

Name

1. Tracey Hagan
2. Tim PECK
3. Grace Holton
4. Meg Holton
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

**From:** [Jack Haggerty](#)  
**Sent:** Wednesday, November 06, 2019 10:04 AM  
**To:** [Jeff Kleaveland](#); [Karen Kincaid Dunn](#)  
**Subject:** CN NIM  
**Attachments:** CN NIM Sign-in.PDF

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Jeff,

We had the NIM yesterday evening at Club Nova. I attach the sign-in sheet.

I took notes. Here are the comments/questions:

Will the proposed maple buckle nearby paving (s.e. corner)?

Concern about proximity of trees to building on the west property line (Holtons).

Concerns about drainage from the Holtons.

We will be sending Meg Holton a set of the application drawings.

Please let me know if you need anything from us for JAB. I will be bringing a powerpoint to make our presentation.

See Thursday evening, 7:30. J

