510 Hopper Lane | Certificate of Appropriateness

Version 3.0 – Issued 24rd June 2021

510 Hooper Lane

Project Overview

The purpose of this presentation is to provide clarification on the necessity of performing minor and major works on the property situated at 510 Hooper Lane, located within the boundaries of the Franklin-Rosemary Historic District of the Town of Chapel Hill, to preserve the structural integrity of the building allowing it to be maintained and preserved as an important historical asset to the local community and to its residents.

The scope of the works proposed in this presentation are summarized below:

A – Change of grading of the front yard.
B – Provision of a retaining structure to allow a change of slope in the front yard, including new steps.
C – Provision of a new entrance walkway, with access to existing driveway and north-west side of building.
D – Reintroduction of landscaping features of the front yard to fit with the overall character of the Franklin-Rosemary Historic District and specific site characteristics.

This presentation will provide evidential documentation on existing conditions of the property, discussion and documentation regarding drainage problems regarding the site and its consequences in the structural stability and safety of the property and provide explanation and documentation on the proposed changes to address the mentioned issues.

510 Hooper Lane

Approval from the Town of Chapel Hill for Current State of the Project

Found in Sent - iCloud Mailbox

Kimberly levell

April 9, 2021 at 10:48 AM

KL

Re: Application

To: Gene Poveromo

Hi Gene,
Thank you! I would need to excavate the area in front of the wall and install the #57 gravel, drains, and then top with the Chapel Hill stone. This would allow any future storm water to have a place to go other than my basement. Everything that runs off the adjacent property would hit this space and either absorb or drain onto the driveway which then transfers the water to the back yard.
Can I finish this work?
Thanks,
Kim

Sent from my iPhone

Found in Inbox - iCloud Mailbox

Gene Poveromo

April 9, 2021 at 11:12 AM

GP

RE: Application

To: Kimberly levell

Siri found new contact info in this email: Gene Poveromo gpoveromo@townofchapelhill.org add to Contacts...

Hello Kim,

Yes, that sounds reasonable. You should also establish a temporary ground cover (seed/straw) on any exposed soil.

Have a nice weekend.

Gene

Gene Poveromo, Zoning/Code Enforcement Coordinator
Building and Development Services
405 Martin Luther King Jr Blvd. Chapel Hill, NC 27514-5705
Town of Chapel Hill www.townofchapelhill.org
gpoveromo@townofchapelhill.org
t: (919) 969-5069, m: (919) 619-5389
Fax (919) 969-2014

In keeping with the NC Public Records Act, e-mails, and all attachments, may be released to others upon request for inspection and copying without prior notification.

From: Kimberly levell [mailto:greeneyedgardener@icloud.com]
Sent: Friday, April 9, 2021 10:49 AM
To: Gene Poveromo <gpoveromo@townofchapelhill.org>
Subject: Re: Application

External email: Don't click links or attachments from unknown senders. To check or report forward to reportspam@townofchapelhill.org

Hi Gene,
See More

510 Hooper Lane

Approval from the Town of Chapel Hill for Current State of the Project

Found in Sent - Google Mailbox

kimmylevell@gmail.com April 26, 2021 at 7:51 AM

Re: Kim Levell phone call request

To: Anya Grahn

I have the hard scape scheduled today. It has to go in for water to drain off the yard.
This house cannot take on more water.
I don't know what to do about approval they hdc but is has to be done.
I checked on the code violation end and has no problem with it.
This is what I need to discuss.
Thanks,
Kim

Sent from my iPhone

> On Apr 26, 2021, at 7:35 AM, Anya Grahn <agrahn@townofchapelhill.org> wrote:

☆ **Anya Grahn** April 26, 2021 at 8:22 AM

Details

RE: Kim Levell phone call request

To: kimmylevell@gmail.com, Cc: Gene Poveromo

I don't believe Gene and I have any issue with you completing the necessary work to stabilize the site until the HDC has time to review your plans for the site improvements.

Anya

-----Original Message-----
From: Kim Levell <kimmylevell@gmail.com>
Sent: Monday, April 26, 2021 7:51 AM
To: Anya Grahn <agrahn@townofchapelhill.org>
Subject: Re: Kim Levell phone call request

External email: Don't click links or attachments from unknown senders. To check or report forward to reportspam@townofchapelhill.org

See More from Kimmy Levell

The scope of the works proposed in this application are summarized below:

A – Change of grading of the front yard.

B – Provision of a retaining structure to allow a change of slope in the front yard, including new steps.

C – Provision of a new entrance walkway, with access to existing driveway and north-west side of building.

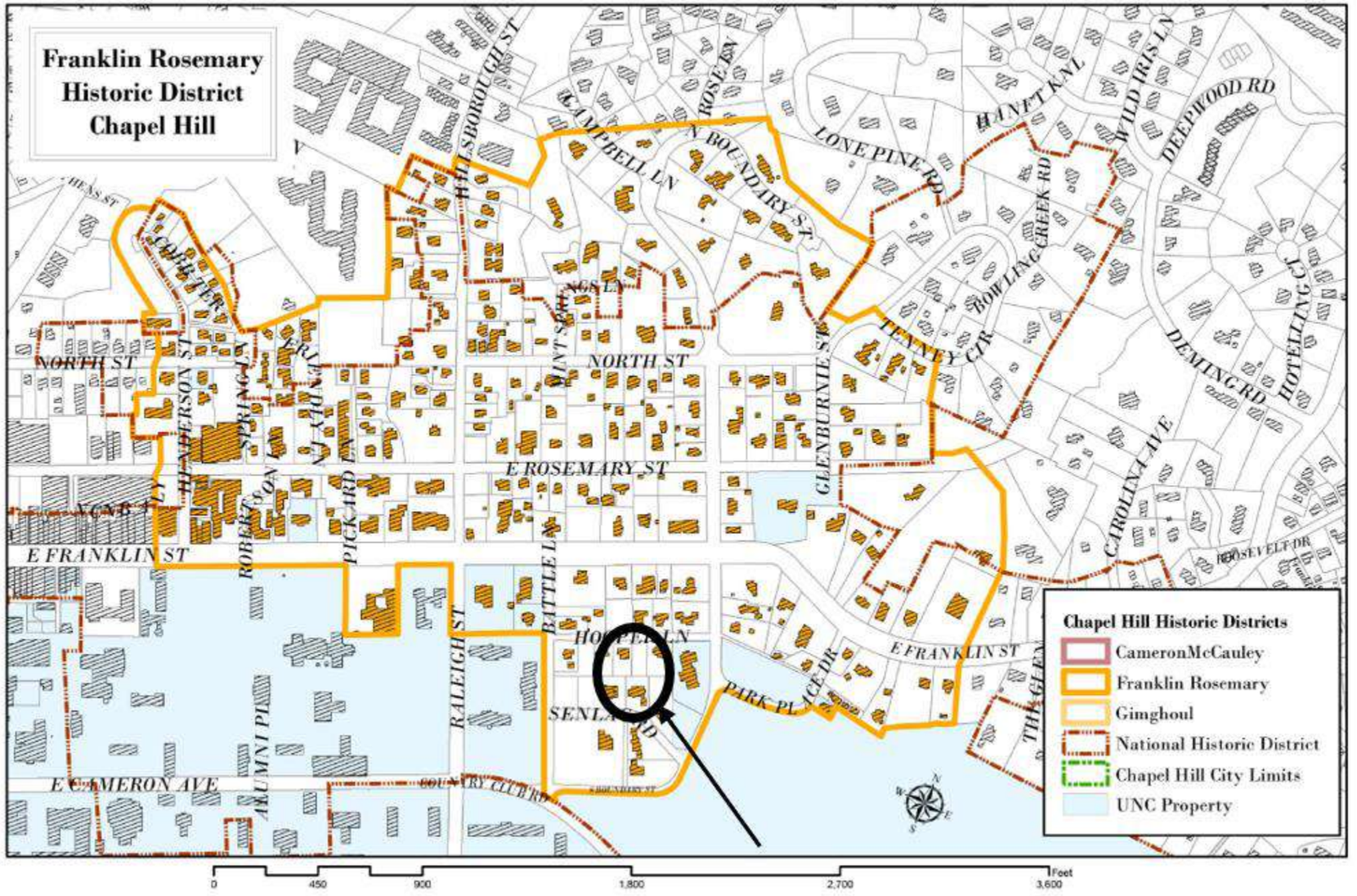
D – Reintroduction of landscaping features of the front yard to fit with the overall character of the Franklin-Rosemary Historic District and specific site characteristics.

Work Breakdown Structure (WSB):

1. Removal of existing Parking Pad.
2. Removal of two dogwood trees.
3. Removal of existing stone walkway.
4. Regrading of the front yard.
5. Installation of new walkway system on the front yard.
6. Reintroduction of fieldstone wall on the front of the property.
7. Reintroduction of two Dogwood Trees on the front yard.

510 Hooper Lane

Site Context - Location



510 Hooper Lane

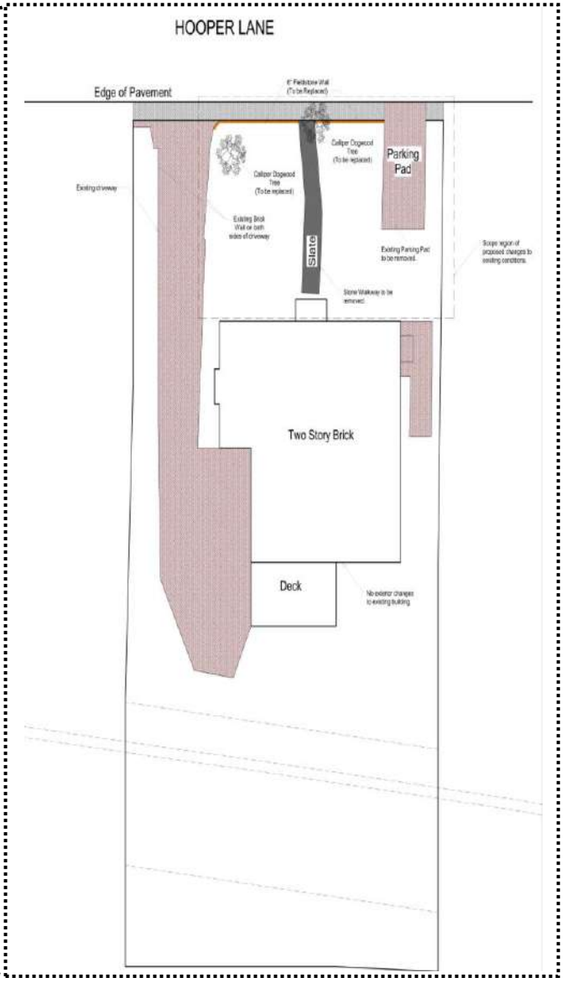
Satellite Imagery Comparison – 2008 versus 2013

Image 1 | Satellite Image - 2008

Image 2 | Satellite Image 2013

510 Hooper Lane

Site Location



SITE | 510 Hooper Lane, Chapel Hill, NC

Site Plan

Site Location

510 Hooper Lane

Historical Imagery – Street View 2012

Image 1 | Front View – Parking Pad

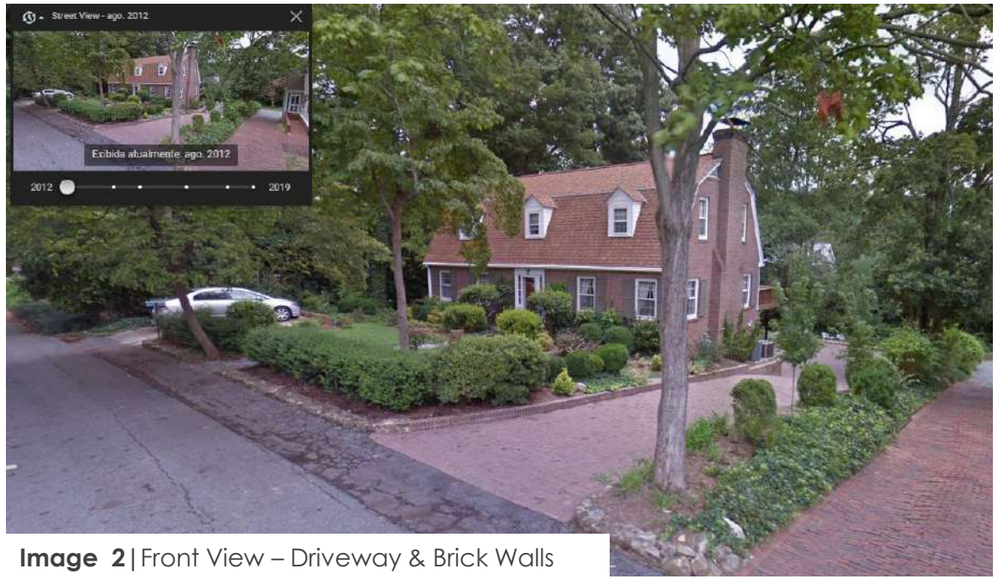


Image 2 | Front View – Driveway & Brick Walls

Image 3 | Front View - Driveway

Image 4 | Front View – Stone Walkway

510 Hooper Lane

Approval Evidence of Driveway Finish – 510 Hooper Lane

PLANNING
Town of Chapel Hill
405 Martin Luther King Jr. Blvd.
Chapel Hill, NC 27514

phone (919) 968-2728 *fax* (919) 969-2014
www.townofchapelhill.org

July 28, 2006

Chris and Caroline Martens
510 Hooper Lane
Chapel Hill, NC 27514

Re: 510 Hooper Lane - Certificate of Appropriateness for Driveway Renovation (File No. 7.74.F.3)

Dear Mr. and Mrs. Martens:

At its July 27, 2006 meeting, the Chapel Hill Historic District Commission approved your application for a Certificate of Appropriateness for driveway renovation at 510 Hooper Lane.

The Historic District Commission based its action on plans submitted with the application dated June 8, 2006, discussion, and material presented at the meeting. The Historic District Commission must review any change from the approved plans.

The enclosed Certificate of Appropriateness must be displayed at the site during construction.

Construction must begin by July 27, 2007.

If you have any questions, please call me at 968-2728.

Sincerely,

Dana C. Stidham, AICP
Planner

cc: Gene Poveromo, Current Development Coordinator
Maggie Bowers, Zoning Enforcement Officer
Lance Norris, Director of Inspections
Stan Stutts, 2267 Manns Chapel Rd, Pittsboro, NC 27312

HISTORIC DISTRICT

Town of Chapel Hill, North Carolina

CERTIFICATE OF APPROPRIATENESS

HAS BEEN ISSUED FOR

Date: July 27, 2006

_____**Alteration-Repair of Existing Structure(s) –** driveway
_____**Construction of New Structure(s)**
_____**Demolition of Existing Structure(s)**
_____**Other**

Located at: 510 Hooper Lane **Tax Map 74** **Block F** **Lot 3**

	Chris and Caroline Martens	Stan Stutts
Chapel Hill Historic District Commission	**Property Owner**	**Applicant**

This card must be kept posted in a conspicuous location until all phases of the described project are completed. The work must conform with the Code of Ordinances of the Town of Chapel Hill and laws of the State of North Carolina.

510 Hooper Lane

Site Context – Neighbouring Buildings












510 Hooper Lane

Site Context – Neighbouring Buildings – 508 Hooper Lane



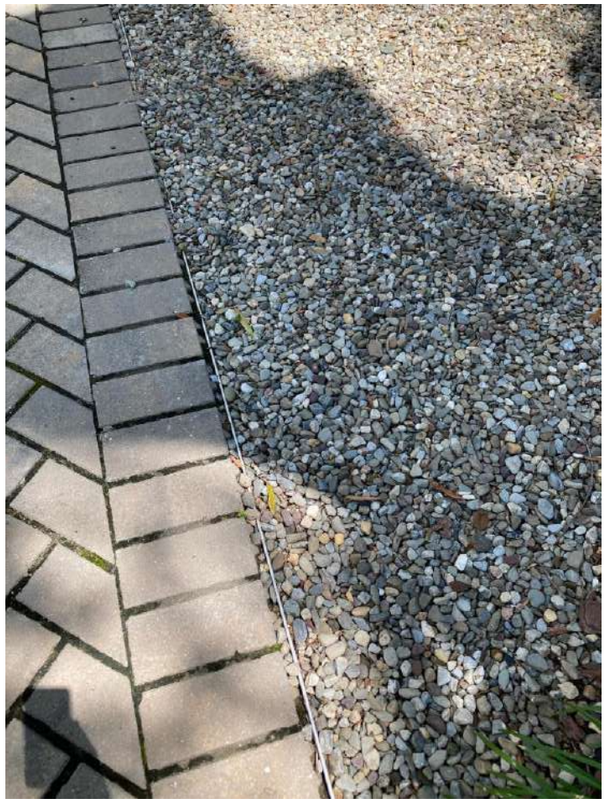
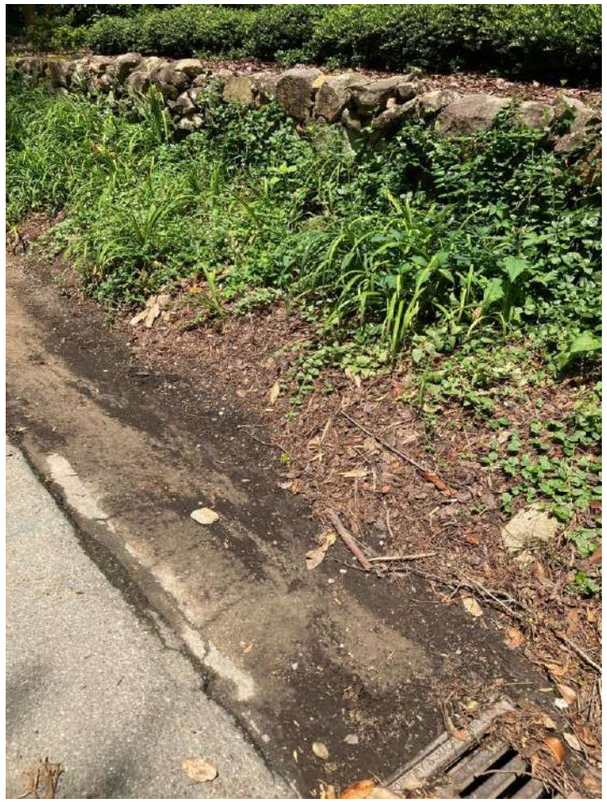

- The hardscape that meets the street at the driveway for the 1st 12” is cracked asphalt. The driveway is made of NC Red Brick in the colors of dark brown, orange, light brown and medium brown.

- The front walkways are also the same material. There are similar color brick steps on the side of the house visual from the street as well as the entry steps which are capped in concrete.

- The area between street and the yard consists of 3 visual materials grey 1”-2” gravel (#57) stone, broken asphalt, and dry stacked stone.

510 Hooper Lane

Site Context – Neighbouring Buildings – 517 Hooper Lane

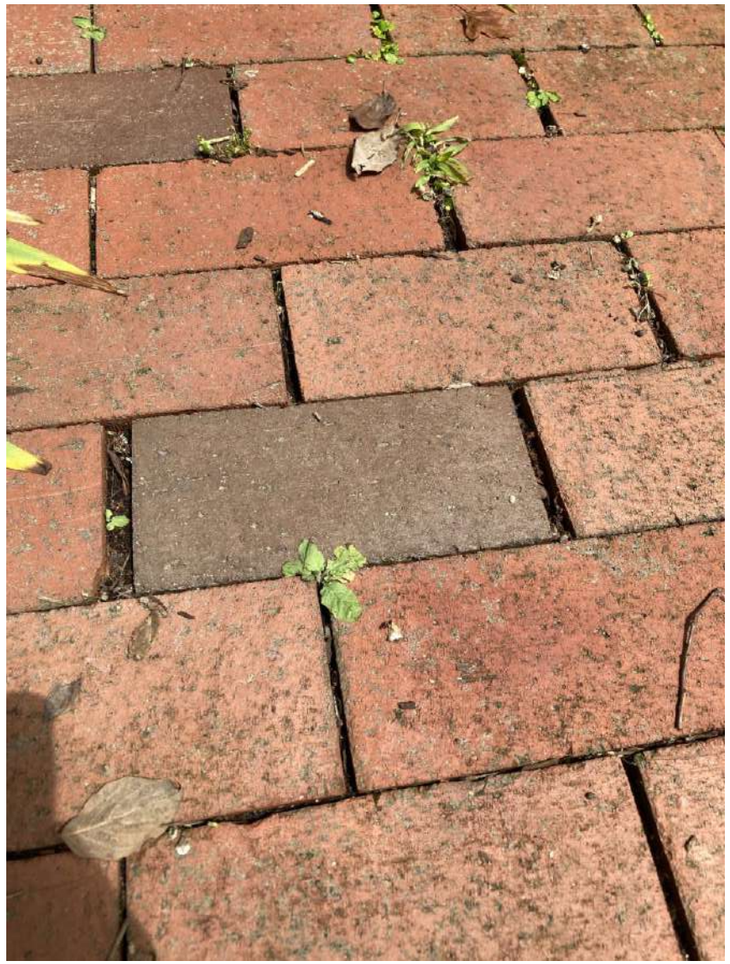





The driveway meets the street with cracked asphalt for the 1st 7’. Then transitions to cement pavers and a blend of grey and brown river pebbles.

- The driveway is cement pavers in a blend of tan and charcoal 4x8 in herringbone pattern.
- Driveway: Grey white brown driveway pebbles.
- The 3’ that’s meets the street is soil and beyond this it is a mix of vines mulch and day lilies.
- Approximate 8’ back there is a dry stack NC stone wall that is visually about 4’ higher than Hooper Lane.
- The front steps are made from an NC grey stone with joints and not visible from the street.

510 Hooper Lane

Site Context – Neighbouring Buildings – 519 Hooper Lane

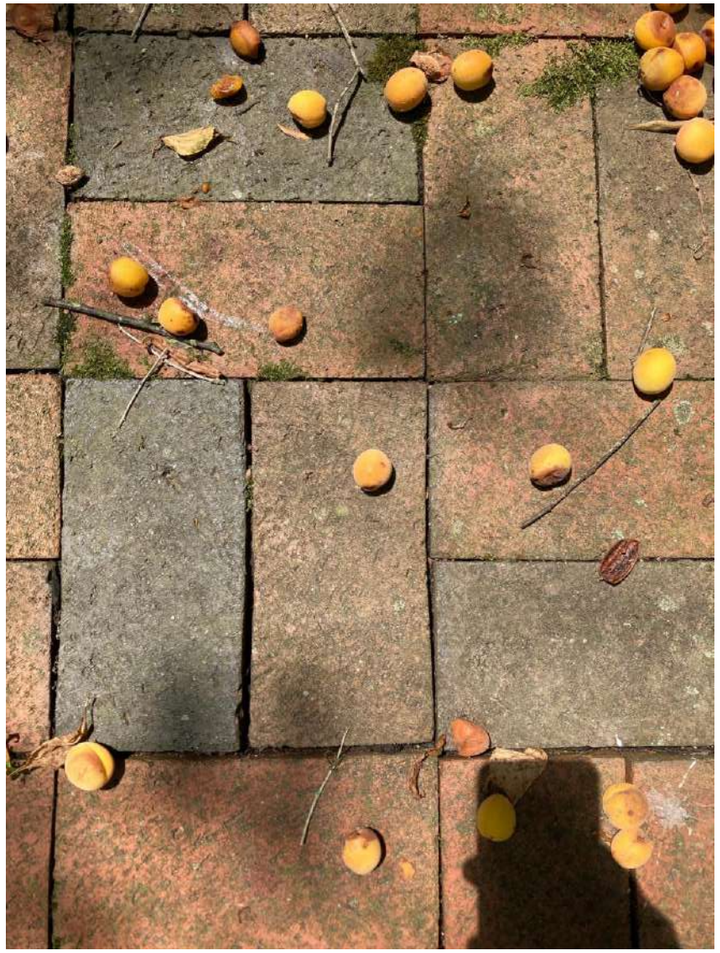


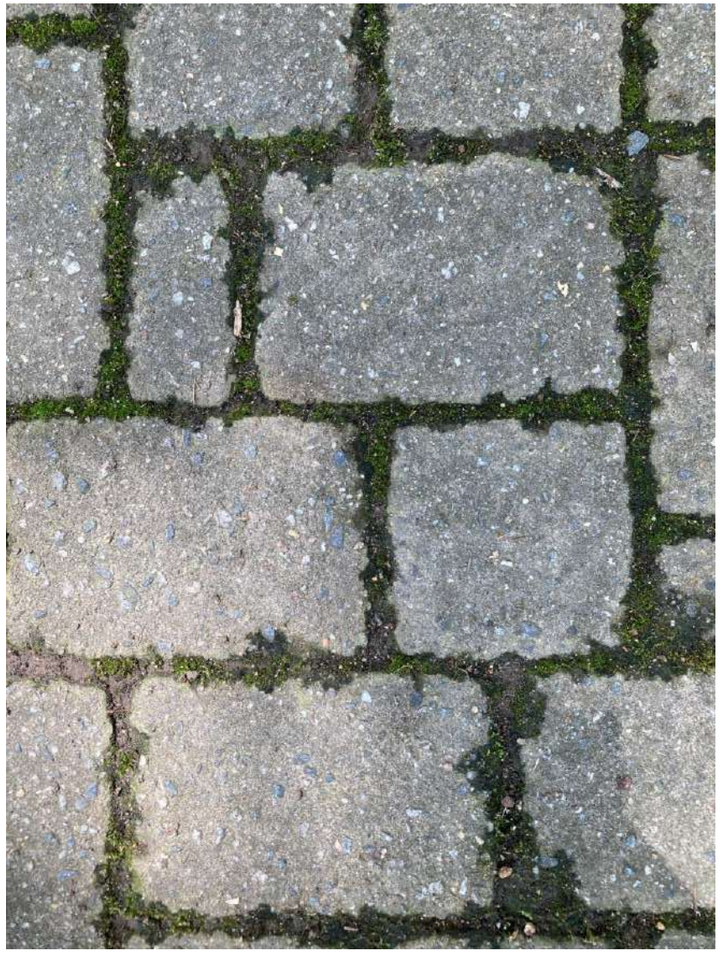
The driveway apron is a red color of NC “red brick” in the first 10’ of the driveway and the rest of the driveway is red granite. The walkways are steps to the home are shades of red and brown NC brick. The street meets mulch and occasional lilies but mostly cypress mulch. The steps that meet Hooper are made of mortar joint stone in random pattern.

1 - Mulch meets street some plants; 2 - Street meets brick apron of 10’ and red gravel; 3 - Red and brown colored NC “red brick”

510 Hooper Lane

Site Context – Neighbouring Buildings – 520 Hooper Lane





Area between street pavement and wall:

- A mix of plant material: Dwarf mondo, liriope, and NC weeds.
- Blend of plants weeds and soil.
- The walkways consist of NC Brick in the colors of red and dark brown.
- The driveway is Grey cement paver material with moss joints.
- The wall approx. 4’ from street is NC stone dry stack no mortar joints with black iron.

510 Hooper Lane

Site Context – Neighbouring Buildings – 521 Hooper Lane

This is 521 it’s has 2 shades of brown colored NC “red brick” and grey gravel for its hard cape which walkways, driveways, steps, and driveway border. The space between driveway and street is iris and Holly trees in soil.

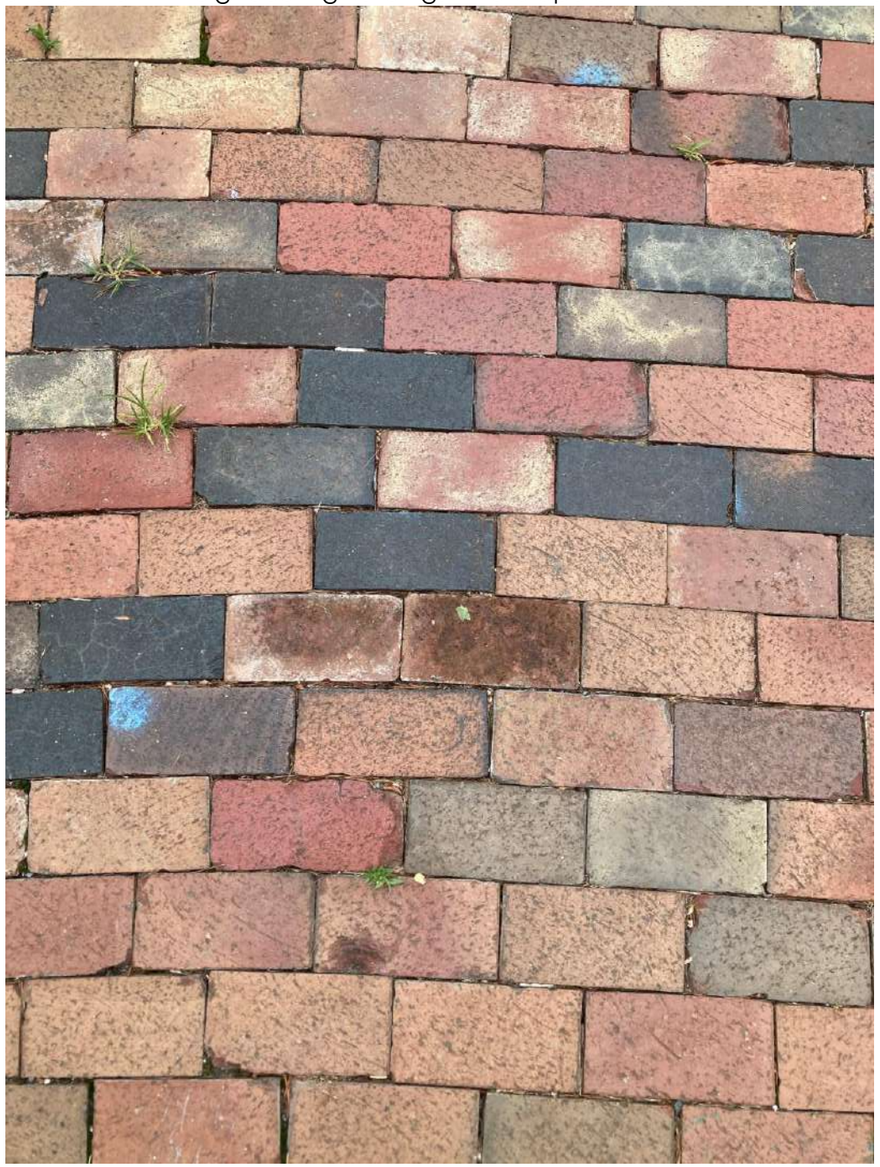
510 Hooper Lane

Site Context – Neighbouring Buildings – The lot across from 510 Hooper Lane

The lot across from 510 Hooper Lane - The space between street and berm is a mix of soil, leaves, weeds, ivy and debris. There is an older stone stairway that leads into the lot.

510 Hooper Lane

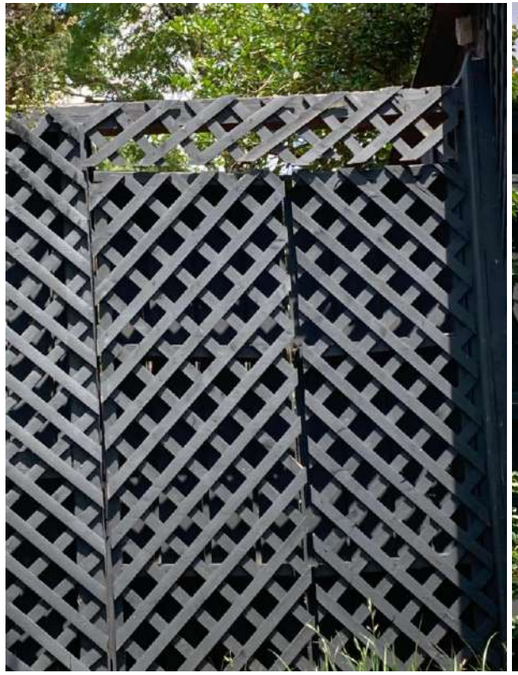
Site Context – Neighbouring Buildings – Hard ape on the corner of Boundary and Hooper

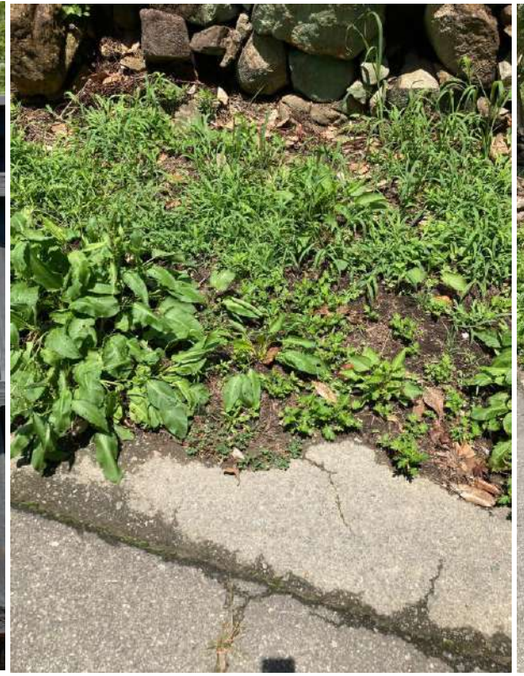


The sidewalk in front of UNC Press in NC RED Brick is a variation of the colors pink, red, light brown, orange, dark brown, and red.

510 Hooper Lane

Site Context – Neighbouring Buildings – Lot adjacent from 508 Hooper Lane

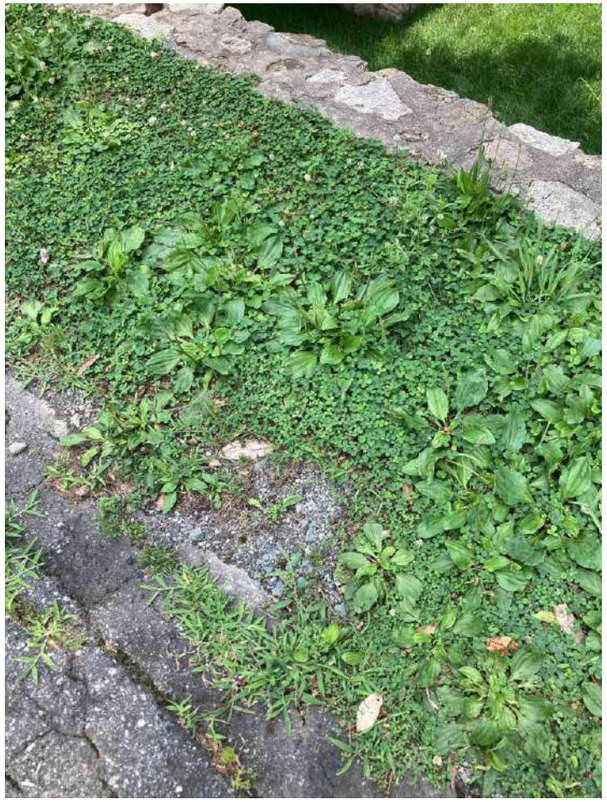




- The first 12” is a blend of asphalt and mixed NC weeds.
- The remaining 6’ between the street and a falling down pile of NC rock to look like a wall is all mixed NC weeds.
- Landscape fabric is also visible.
- The other site line is a deteriorating wood fence in disrepair.
- Sagging lattice work.

510 Hooper Lane

Site Context – Neighbouring Buildings – 119 Battle Lane backyard

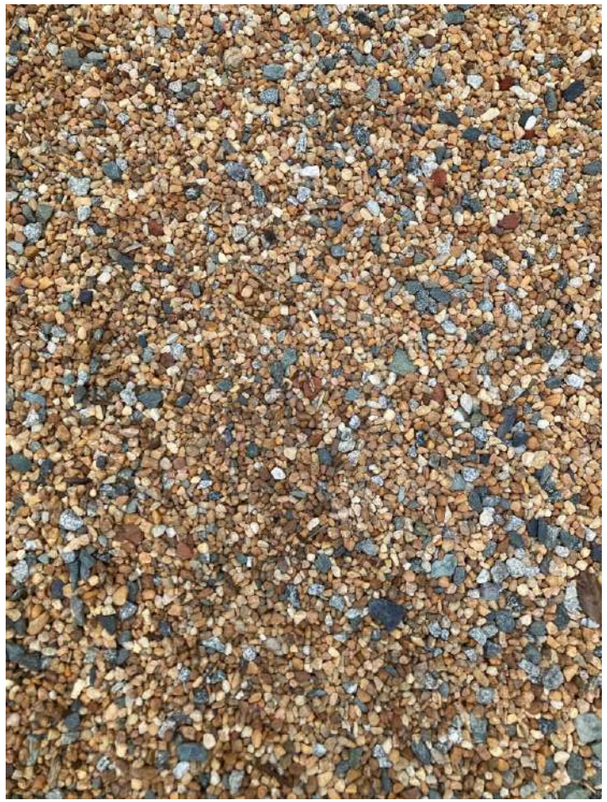


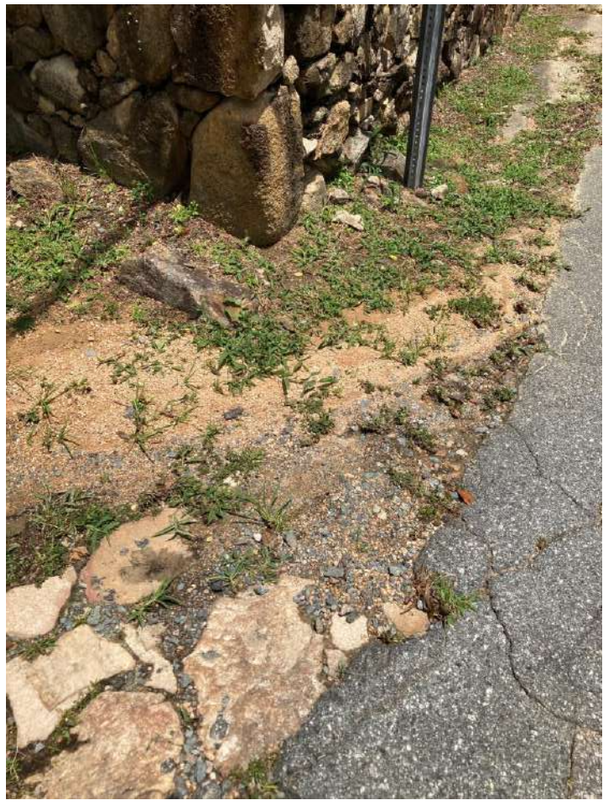
119 Battle backyard but front of the home on Hooper Lane

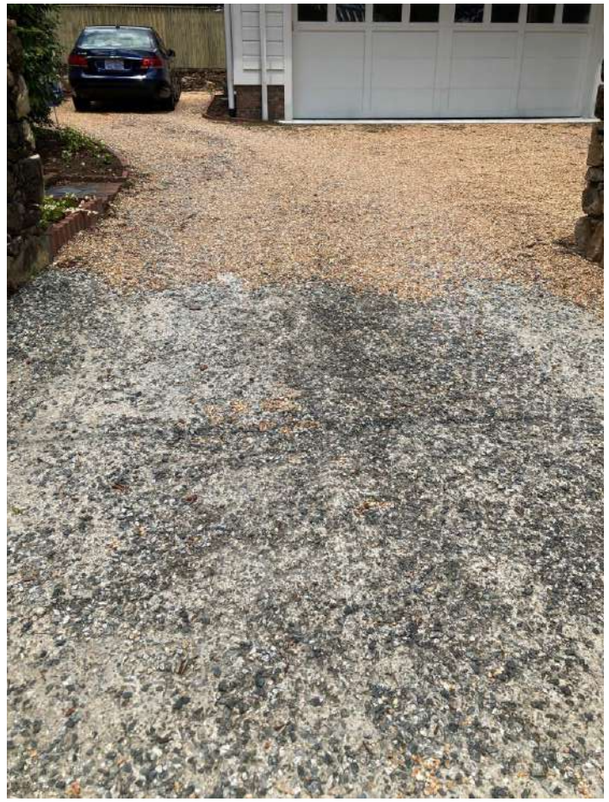
- Consists of front walkway in IPE lumber, stainless steel wire railing with IPE wood cap.
- The area between the street and stacked stone wall with mortar joints is a mix of weeds, broken asphalt and gravel. There is a solid NC stone blended with IPE wood for a step.
- Also visible from the street a wall of concrete block faced in NC stone.

510 Hooper Lane

Site Context – Neighbouring Buildings – 111 Battle Lane side property on Hooper Lane



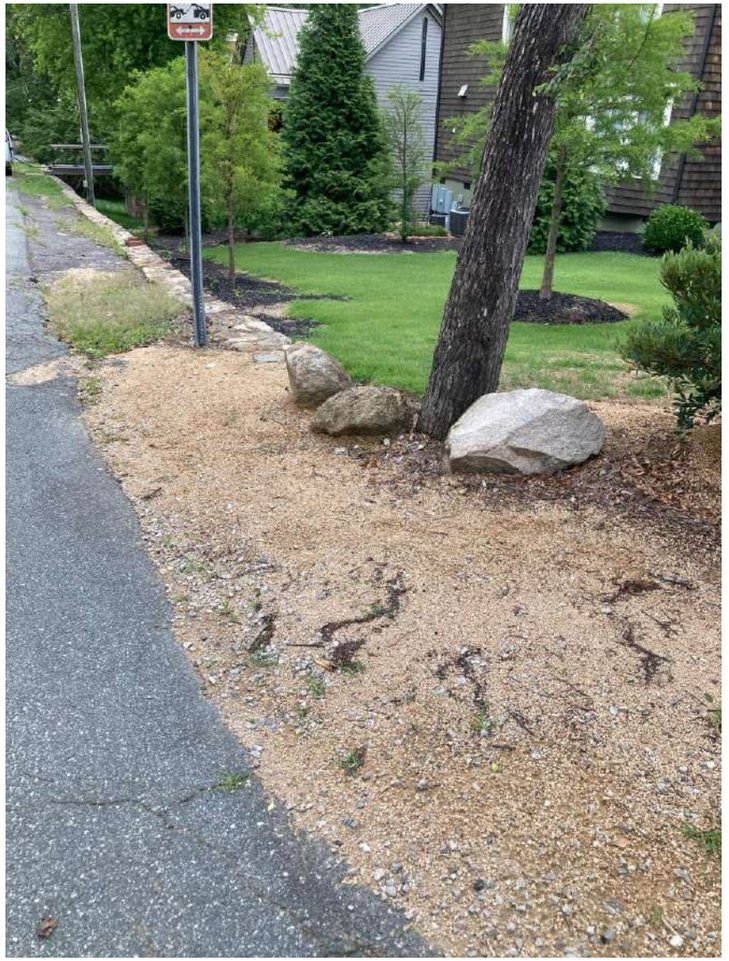




- The hardscape or driveway consists the first 9 feet blended grey gravel and concrete then thereafter gold pea gravel.
- The area between the wall and the street is a blend of broken asphalt and mulch.
- 4 feet from the street is a dry stack stone wall with taller landscaping behind it.
- At the corner of Hooper Lane and Battle lane there is Chapel Hill grit, NC stone, and grey gravel.

510 Hooper Lane

Site Context – Neighbouring Buildings – 115 Battle Lane

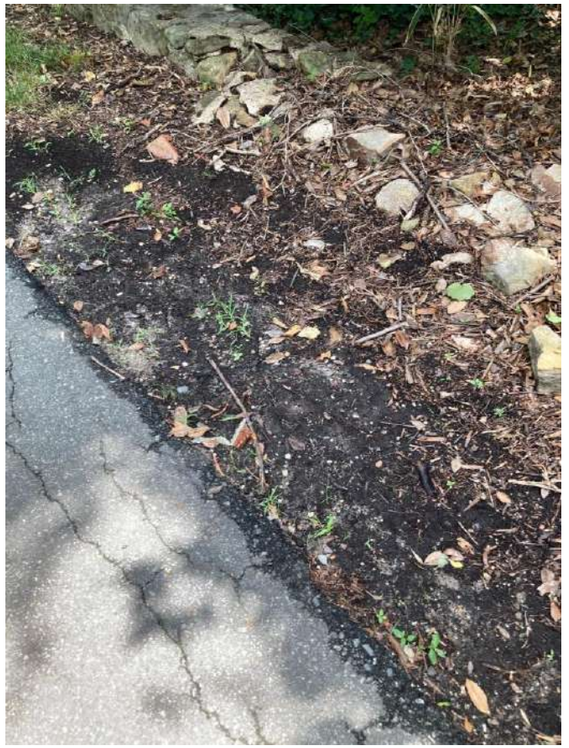


- The property sits on the corner of Hooper and Battle.
- The side yard consists of Chapel Hill Grit, weeds, and aging asphalt.
- There is a stacked stone wall top exposed with mortar joints.

510 Hooper Lane

Site Context – Neighbouring Buildings – Property adjacent to 521 Hooper



- The property located across from 521 Hooper lane consists, visually from the street, of grass, exposed soil, and debris.
- There is a partially deteriorated stone wall approximately 12” tall stacked with mortar joints.
- Also visible are NC Red Brick walls and walkways with the colors of red, orange, and brown blended.

510 Hooper Lane

Site Context – Neighbouring Buildings - COMPARISON CHART

HOOPER LANE HOME BY HOME DRIVEWAY/SIDEWALK THAT MEETS HOOPER LANE

- Concrete and gravel with river pebble in gold _____1 HOME
- Asphalt and Blended Brick (brown, red, orange) _____1 HOME
- Ipe Wood and a block of stone _____1 HOME
- Brown and Grey concrete Pavers and brown blended river rock _____1 HOME
- All Red Color Brick and red Granite Gravel #98 Angular stone _____1 HOME
- Brown Brick in two shades _____1 HOME
- Walkway Dark brown and red color brick _____1 HOME

THERE ARE NO HOMES ALIKE ON HOOPER LANE 510 Hooper Lane is consistent and congruous with the design of Hooper Lane.

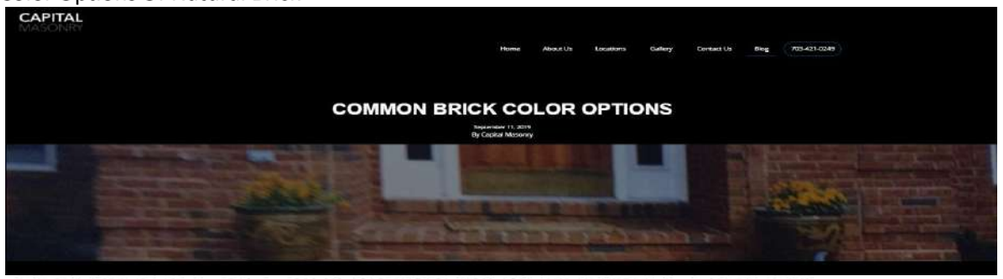
COMPARISON CHART AREA BETWEEN STREET AND 1ST 4' OR 'EASEMENT AREA'

Broken Asphalt and Grey Gravel _____1 HOME
Broken Asphalt and Chapel Hill Grit _____1 HOME
Weeds and Soil _____1 HOME
Weeds and Debris _____1 HOME
Soil Weed/sand Landscaping _____1 HOME
Soil Landscaping and Mulch _____3 HOMES
Sod, weeds, and debris _____1 HOME

THE REDESIGN OF 510 HOOPER LANE WILL BE CONSISTENT WITH 3 OF THE OTHER HOMES ON THE LANE and therefore congruous

510 Hooper Lane

Color Options Of Natural Brick



YOUR COLOR OPTIONS IN NATURAL BRICK

Brick is one of the best building materials. When properly installed, it is nearly indestructible. It resists rot, mold, pest infestation and all types of weather conditions.

It is also naturally beautiful, imparting a look of classic elegance to any setting and blending with any style.

What colors are available in natural brick? You can find a brick that has various shadings of pink, red, tan, yellow and cream.

HOW BRICKS ARE MADE

The process of making bricks is fairly straightforward. The processor uses a mixture of sand, clay and other minerals mixed with water to form a paste. The paste is molded into a brick shape. Firing at high temperature turns the clay into a solid block called a brick.

Every brick contains the following elements:

- Silica or sand: Sand and clay are the main ingredients of brick.
- Alumina or clay: Good bricks contain at least 50% to 60% clay.
- Lime: A small amount of lime helps fuse the clay and sand together during firing.
- Iron oxide: This makes bricks strong and also gives them their reddish color.
- Magnesia: This helps bricks retain their shape.

True brick should not contain:

- Excessive amounts of lime or magnesium.
- Iron pyrites.
- Organic materials.

NATURAL COLORS

The different colors in natural bricks come from the mineral content of the clay. Clay colors can have regional differences. Adding higher concentrations of other minerals also produces different colors.

RED

Clay gives brick the classic red color that can range in tone from scarlet to deep burgundy. The longer the clay is heated, the darker the red tone becomes. Darker brick tends to have a more uniform tone.

The best composition of brick elements usually yields deep red brick. If you want a unified look and a lasting structure, choose dark red brick for your building project.

PINK

Pink brick results from clay that has high amounts of iron. The iron adds a white cast to the clay that makes it pale. Natural pink brick can range from nearly white to brick that has variegated shades of blush and brownish pink. You can create a visually arresting display with a mix of pink tones.

BEIGE OR BROWN

Bricks with high levels of lime can come out in various shades of brown, beige or tan. These can be very elegant, but it's important to make sure you are getting well-made bricks. Adding too much lime can weaken the brick's structure. Get your bricks from a trusted masonry to ensure they are durable enough for your project.

YELLOW

Some clay is naturally high in alumina. This produces brick that is a pale yellow color. In the 1800s, Milwaukee became famous for its cream-colored bricks that earned the city the nickname "Cream City." Cream brick is very attractive, but it is not as durable as a red brick.

BRICK BLENDING

Professional bricklayers don't just pile random bricks onto a structure and start slapping on the mortar. They use a process called brick blending to ensure that they evenly spread out the different brick tones. This creates a balanced, attractive pattern of varying colors and tones.

CHOOSE LASTING BEAUTY

When you choose brick for your project, you're choosing a natural product that is made to last. Choose shades and colors that you'll enjoy for many years.

We provide expert guidance on brick selection in addition to professional installation and maintenance of all your masonry projects. If you have questions about our natural brick colors, contact Capital Masonry today.

NATURAL COLORS

The different colors in natural bricks come from the mineral content of the clay. Clay colors can have regional differences. Adding higher concentrations of other minerals also produces different colors.

RED

Clay gives brick the classic red color that can range in tone from **scarlet to deep burgundy**. The longer the clay is heated, the darker the red tone becomes. Darker brick tends to have a more uniform tone.

Reference: https://capitalmasonry.net/blog/common-brick-color-options/

https://www.beldenbrick.com/onlinecatalog/brick-colors/red-bricks

510 Hooper Lane

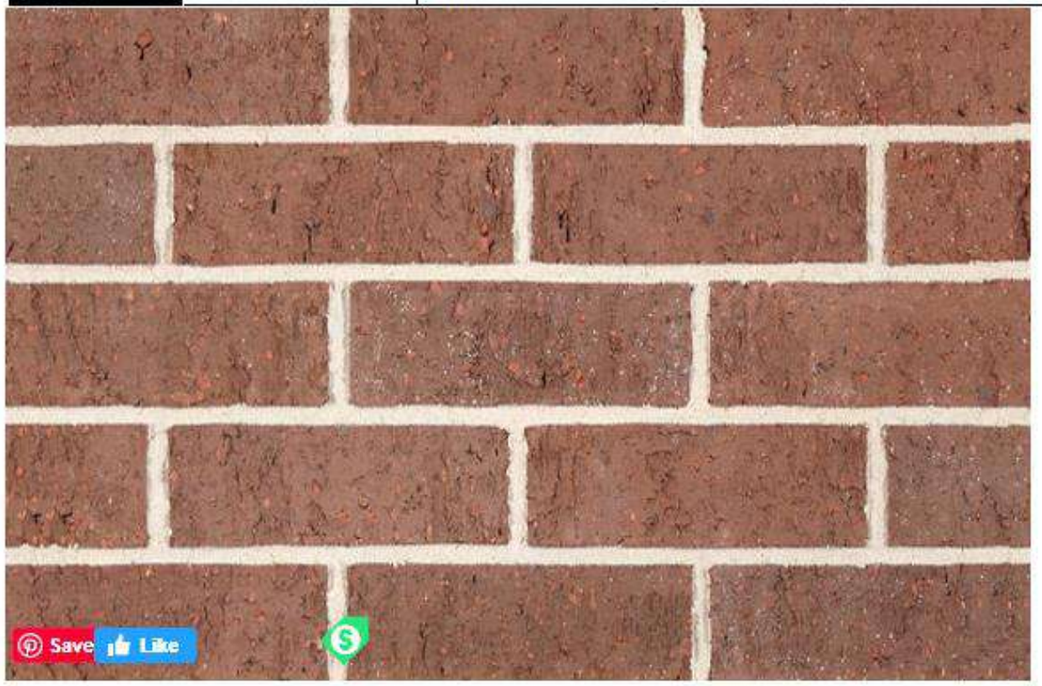
Red Brick

Red Bricks: 830 Dart-Tex

SPL ID: 00001620

DT DART-TEX

	STANDARDS	TYPE	TEXTURE	COMP.	CW	IRA	TEST REPORT
PLANT 8 EXTRUDED	FACE BRICK C216, SW	FBS	Dart-Tex	15587	1.7400	4.4000	PDF
	Cleaning Recommendation	Belden Brick recommends using Vanatrol® to clean this product. Alternatively, EaCo Chem NMD 80® can be used to clean any of our brick.					



510 Hooper Lane

Item B: Proposed Retaining Structure and New Steps – Comments and Review

- The design and features of the new retaining wall were conceptualized to fit with all elements relevant to the site and its surroundings while at the same time to not jeopardize the external look of the property and its historical character.

- The new retaining wall is not meant to be visible from the street and its main function is to retain the soil providing a way to change the slope of the front yard.

1.3 Walls & Fences: Standards (Page 48)

- 1.3.7. Construct new walls using traditional materials and designs that are compatible in configuration, height, material, scale, and detail with the character of the building, site, and district.

a. Walls in front and side yards should generally not exceed 30" and should be constructed of red brick or fieldstone.
b. Walls constructed of cut stone, bare concrete block, or with thin stone veneers applied to concrete or other structural block are not appropriate in locations visible from the street.

RETAINING WALL IS LESS THAN 30"
RETAINING WALL IS NOT VISIBLE FROM THE STREET.

510 Hooper Lane

Item B: Proposed Retaining Structure and New Steps

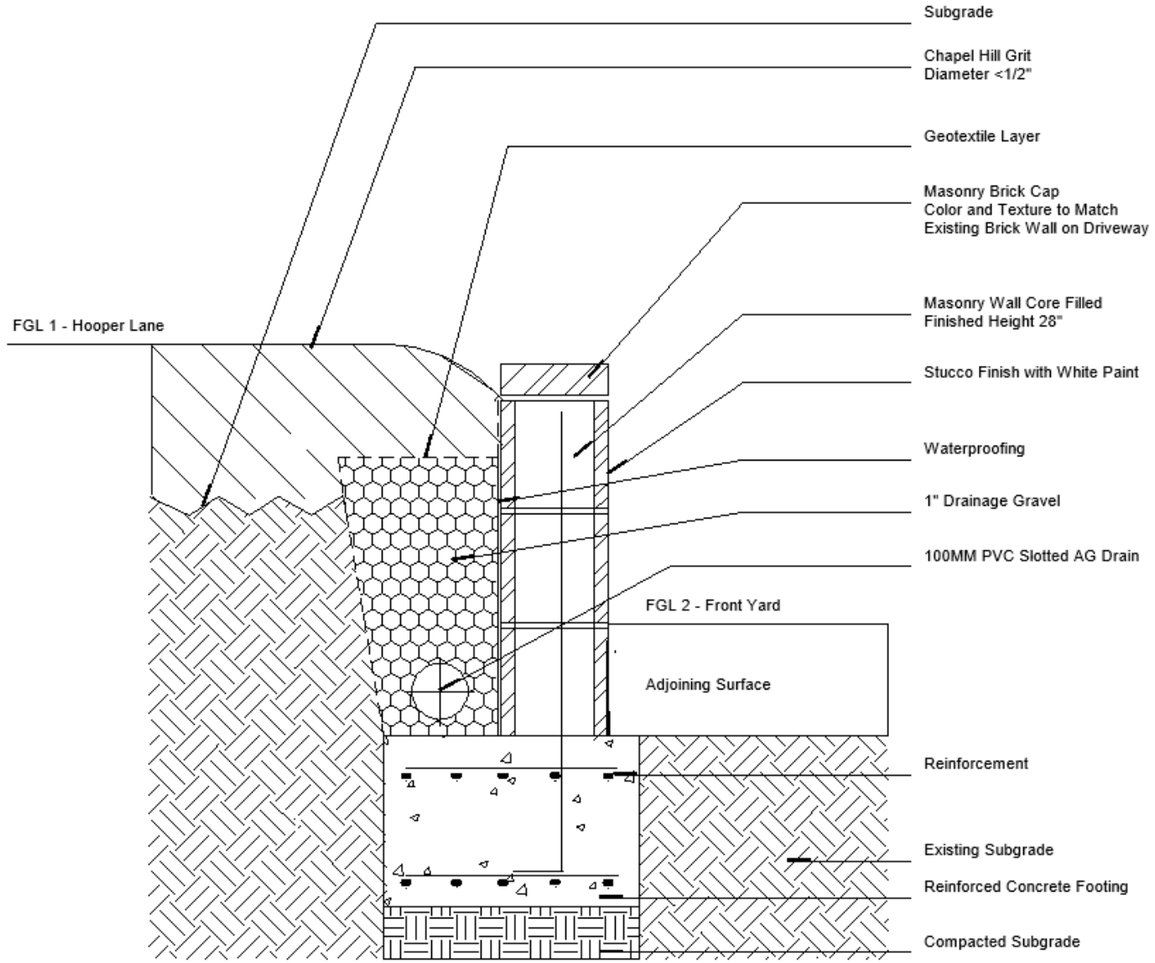


Image 1 | Retaining Wall – Cross Section

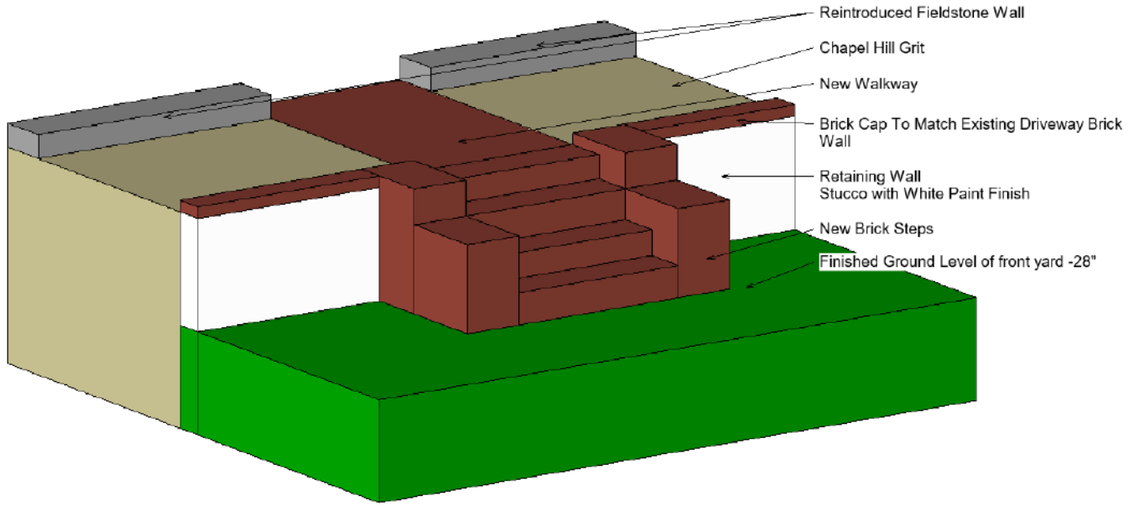


Image 2 | New Steps Diagram

Design Considerations:

- Finished level of first 12' from the edge of the pavement to be maintained.
- Installation of a reinforced masonry wall with core filled with concrete and rebar, with a poured reinforced concrete footing.
- Finished Level of the front yard to be 28' bellow street level.
- Structure to provide drainage for excess storm water coming from the street and surrounding properties.
- The new steps were located on the center of the site to match a straight route from the street to the existing front porch of the house.

510 Hooper Lane

Site Context – Neighbouring Buildings - Steps

Image 1 | 104 N Boundary St

Image 2 | New Construction – Rosemary St

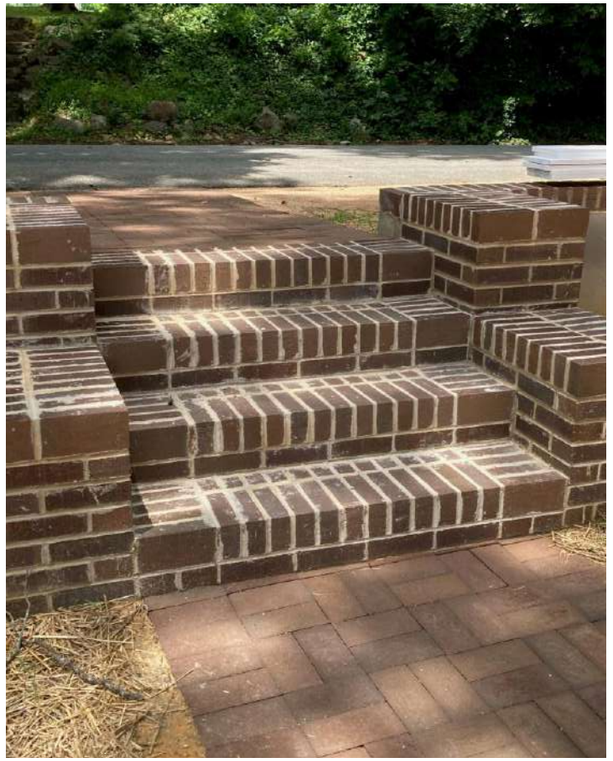


Image 3 | Steps - 510 Hooper Lane

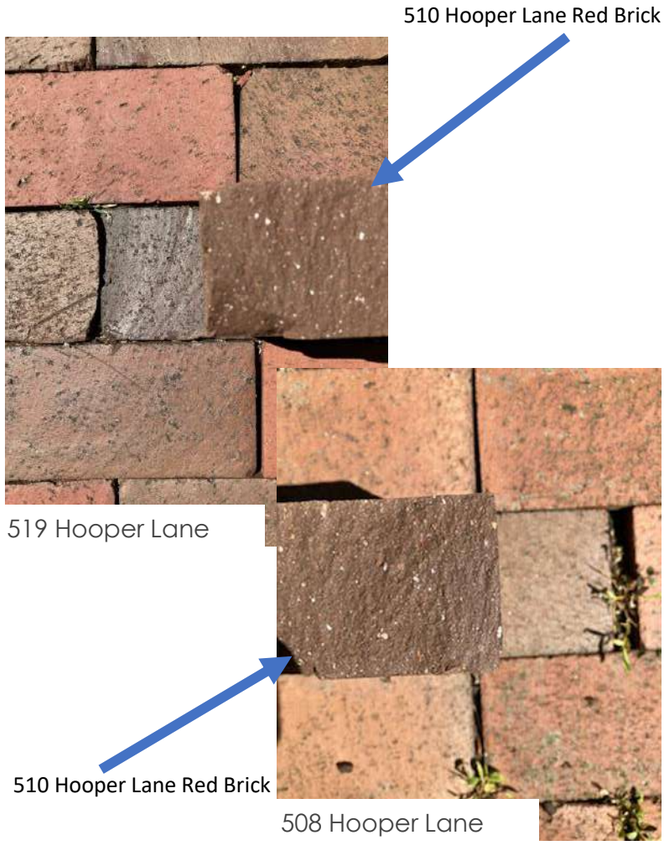


Image 3 | Comparison between red bricks used on Hooper Lane

510 Hooper Lane

Item B: New Brick wall & Brick Stairs – Additional Evidence

Image 1 | Brick Color and Pattern

Image 2 | White Siding

Image 3 | White Trim And Wall

Image 4 | 3D Model

- The brick cap on the new wall was designed to match with the brick wall of the driveway to make it seem part of the property and not just a new element that does not fit.
- The brick cap will also not be visible from the street and any sign of the wall will be covered by the reintroduction of a fieldstone wall. The retaining wall will be completely covered by plant material.
- The wall received a stucco treatment and white paint on its interior side). The white paint was relevant to the site as it matches with overall colors of the property, and it is not visible from any angle outside the property.
- The new steps are constructed with same brick of brick cap to match with existing driveway and brick wall on its edges.

510 Hooper Lane

Item C: Proposed New Walkway System

Image 1 | Existing Stone Walkway

- The previously installed stone walkway, as previously suggested, was installed sometime between 2008/2010.
- The stone walkway was deteriorated and presented a safety risk because of its configuration, setting and roughness.
- The walkway did not match with any finish or color of other walkways in the site or adjoining properties and did not provide a safe or pleasant walk, which is required as functionality for the main and only path with access to the front door.

1.4 Walkways, Driveways, & Off-street Parking: Standards (Page 52)

1.4.4. If a historic walkway, driveway, or off-street parking area is completely missing, or if deterioration necessitates its replacement, replace it to match the original in material, design, dimension, configuration, detail, texture, and pattern, based upon physical and documentary evidence. Otherwise, replace it with a new feature that is compatible in material, design, scale, and detail with the overall historic character of the site and district.

1.4.5. Design new walkways, driveways, and off-street parking to conform with the spacing, width, configuration, and materials of character-defining walkways, driveways, and off-street parking areas in the district.

510 Hooper Lane

Item C: Proposed New Walkway System Layout and Functionality

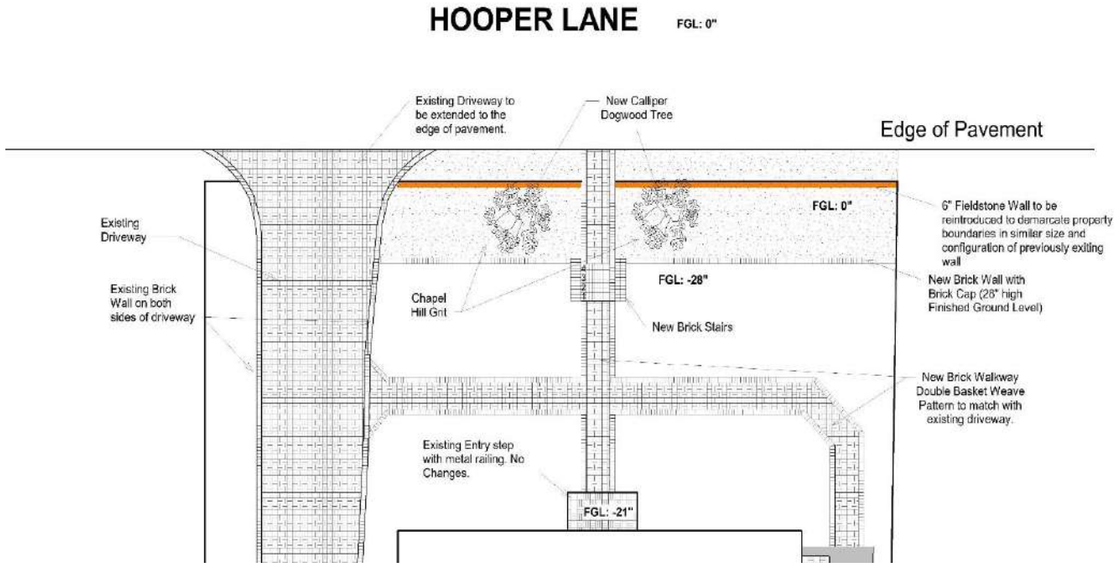


Image 1 | Proposed new Arrangement

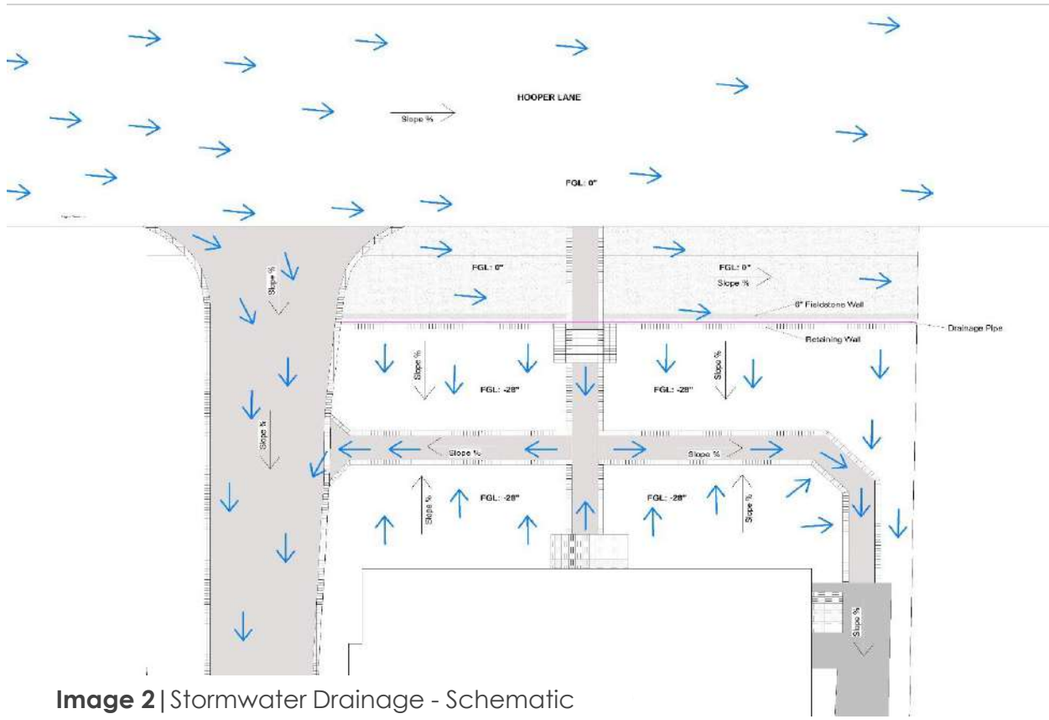


Image 2 | Stormwater Drainage - Schematic

- The new walkways were proposed to be constructed of brick pavers that match existing driveway in color and pattern and are consistent with surrounding properties within the historic district in its current state.

- In the previous existing configuration, the site had no access steps or footpath to the driveway or the side of the building where the side porch is located. This meant having to walk across the landscape damaging grass and surround plants or around the entire property.

- The new Walkway System acts as an open drainage path for stormwater to flow away from the building structure and foundations.

510 Hooper Lane

Item D: Fieldstone Wall

Image 1 | Fieldstone Wall Northeast Side

Image 2 | Fieldstone Wall Northwest Side

Image 3 | Fieldstone Wall Northwest Side – Connection with Brick Wall

510 Hooper Lane

Item D: Reintroduction of Fieldstone Wall

Image 1 | Fieldstone Wall Northwest Side

- With the change of slope of the front yard the original 6” high fieldstone wall had to be removed.
- Similar material will be used to replicate the original look of the wall, size and shape as well as covering any signs of newly installed retaining wall and its brick cap.

1.3 Walls & Fences: Standards

1.3.5. If a historic wall or fence is completely missing, or if deterioration necessitates its replacement, replace it to match the original in material, design, dimension, pattern, detail, texture, and color, based upon physical and documentary evidence. Otherwise, replace it with a new feature that is compatible in material, design, scale, and detail with the building, site, and district.

510 Hooper Lane

Item D: Reintroduction of Trees and Landscaping Features

- In the process of changing the landscaping of the front yard, two trees had to be removed. These trees will be replaced with the same species and be placed in very similar locations to their original positions.

- Plantings will be replaced for similar species taking into consideration the Design Principles and Standards recommendations of specimens on pages 175 to 178 to restore the appearance of the site.

Image 1 | Existing Dogwood Trees

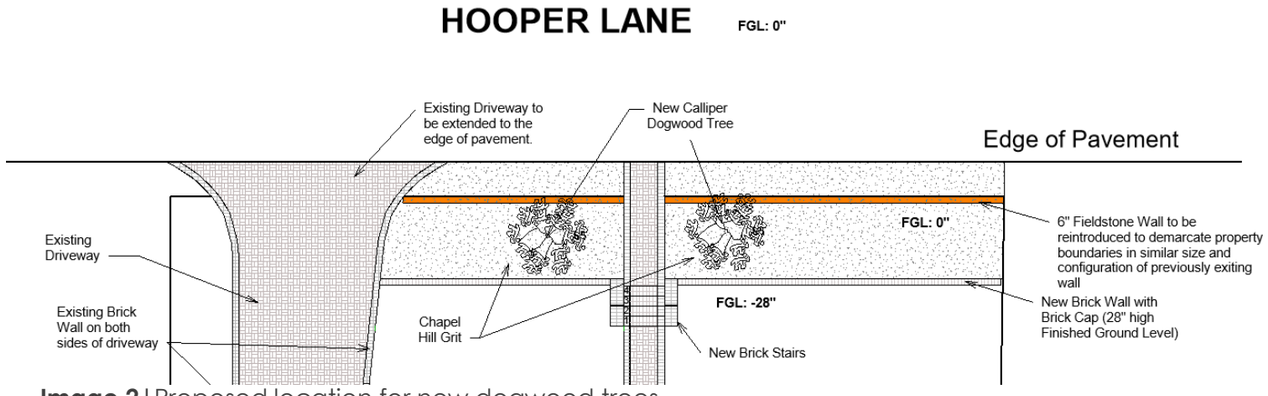


Image 2 | Proposed location for new dogwood trees.

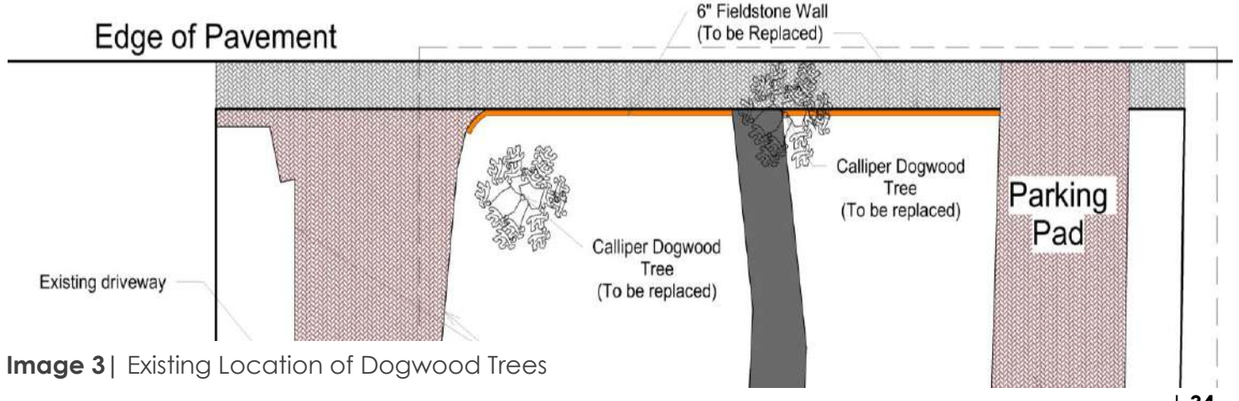


Image 3 | Existing Location of Dogwood Trees

510 Hooper Lane

Final Discussion - Existing and Proposed New Arrangement

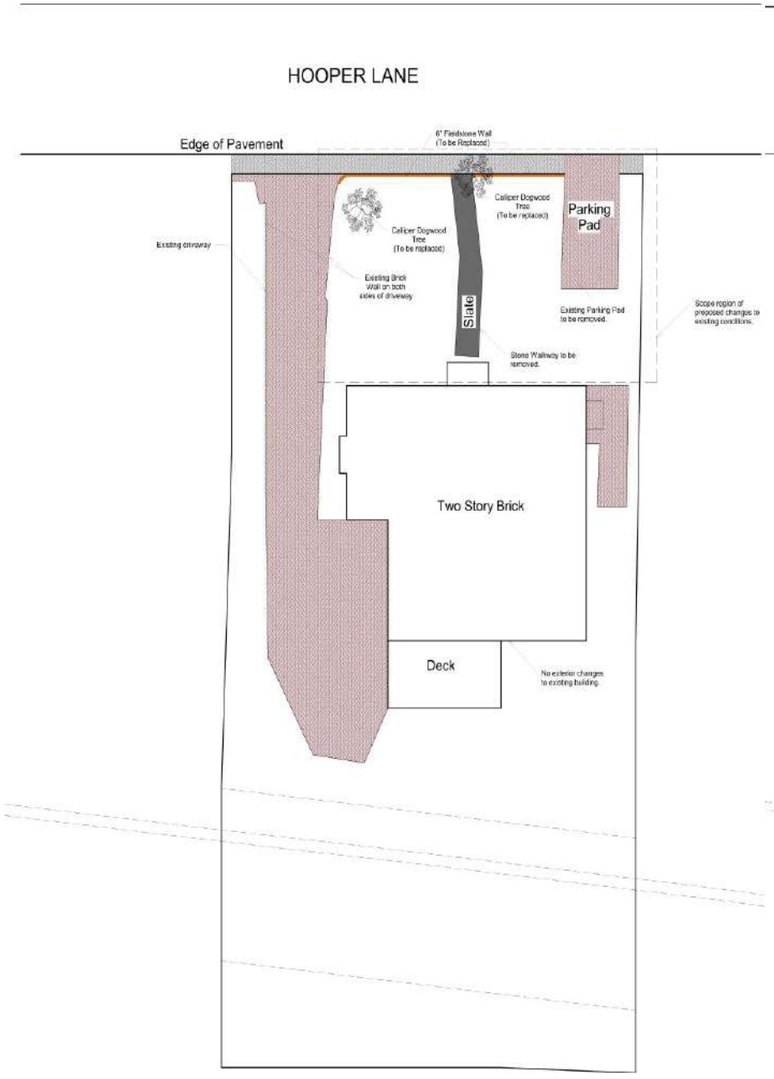


Image 1 | Existing Conditions

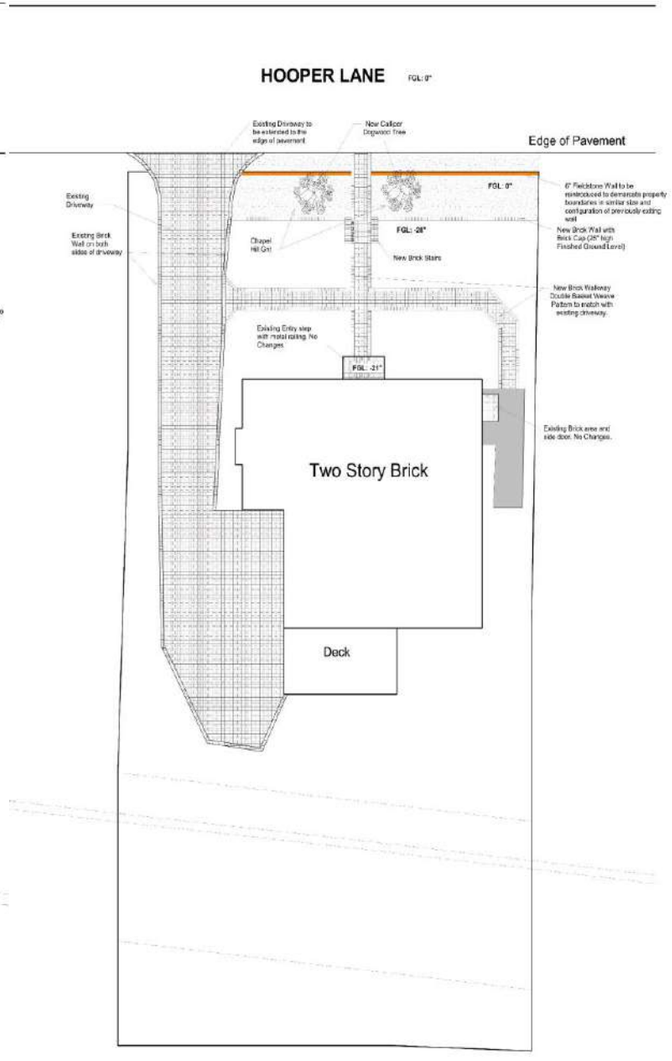


Image 2 | Proposed New Arrangement

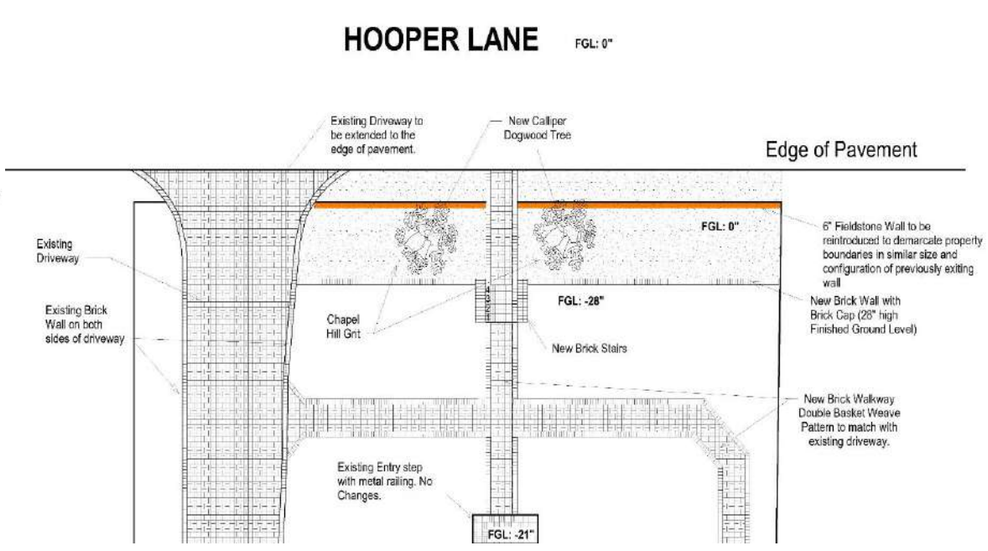


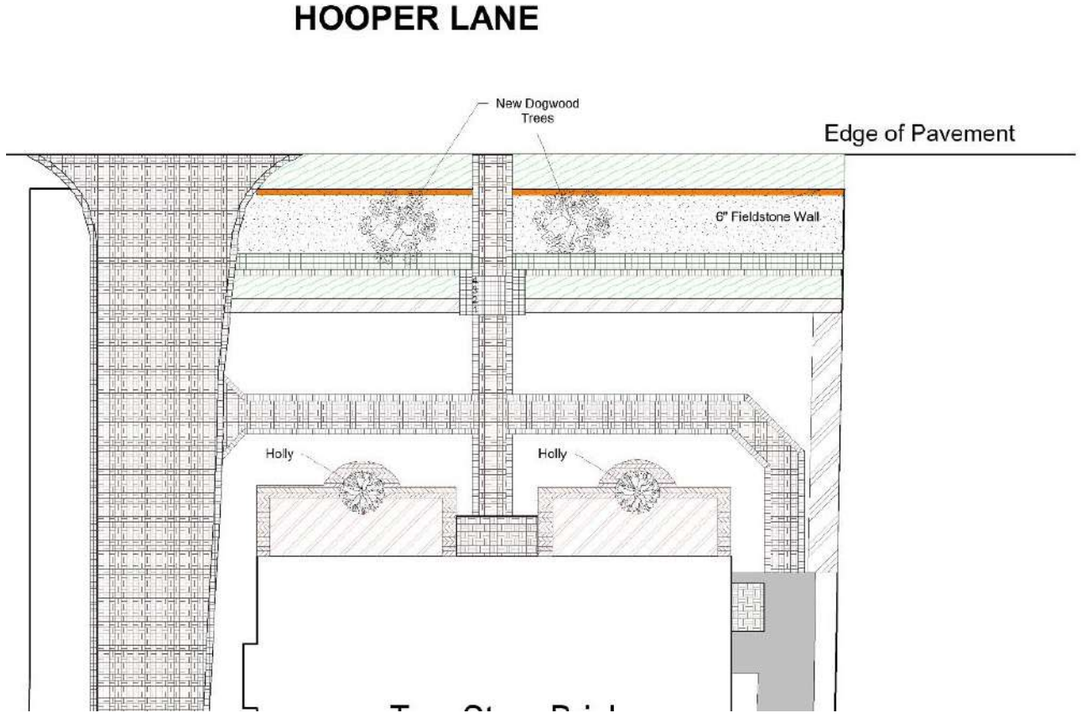
Image 3 | Close up Front Yard

Overview:

1. Removal of existing Parking Pad.
2. Removal of two calliper dogwood trees.
3. Removal of existing stone walkway.
4. Regrading of the front yard.
5. Installation of retaining wall with new steps.
6. Installation of new walkway system on the front yard.
7. Reintroduction of fieldstone wall on the front of the property on the property line.
8. Reintroduction of two Dogwood Trees on the front yard.

510 Hooper Lane

Landscaping Plan



LEGEND:

- Dogwood Tree
- Holly
- Lirope
- 12" Boxwood
- Flowers
- Camellia
- 24" Boxwood Round
- Fieldstone Wall

Lirope

Holly

Nandina

510 Hooper Lane

3D Model Presentation

510 Hooper Lane

Attachments

HISTORIC DISTRICT

Town of Chapel Hill, North Carolina

CERTIFICATE OF APPROPRIATENESS

HAS BEEN ISSUED FOR

Date: July 27, 2006

_____Alteration-Repair of Existing Structure(s) – driveway

_____Construction of New Structure(s)

_____Demolition of Existing Structure(s)

_____Other

Located at: 510 Hooper Lane **Tax Map 74** **Block F** **Lot 3**

_____	Chris and Caroline Martens	Stan Stutts
Chapel Hill Historic District Commission	**Property Owner**	**Applicant**

This card must be kept posted in a conspicuous location until all phases of the described project are completed. The work must conform with the Code of Ordinances of the Town of Chapel Hill and laws of the State of North Carolina.

PLANNING
Town of Chapel Hill
405 Martin Luther King Jr. Blvd.
Chapel Hill, NC 27514

phone (919) 968-2728 *fax* (919) 969-2014
www.townofchapelhill.org

July 28, 2006

Chris and Caroline Martens
510 Hooper Lane
Chapel Hill, NC 27514

Re: 510 Hooper Lane - Certificate of Appropriateness for Driveway Renovation (File No. 7.74.F.3)

Dear Mr. and Mrs. Martens:

At its July 27, 2006 meeting, the Chapel Hill Historic District Commission approved your application for a Certificate of Appropriateness for driveway renovation at 510 Hooper Lane.

The Historic District Commission based its action on plans submitted with the application dated June 8, 2006, discussion, and material presented at the meeting. The Historic District Commission must review any change from the approved plans.

The enclosed Certificate of Appropriateness must be displayed at the site during construction.

Construction must begin by July 27, 2007.

If you have any questions, please call me at 968-2728.

Sincerely,

Dana C. Stidham, AICP
Planner

cc: Gene Poveromo, Current Development Coordinator
Maggie Bowers, Zoning Enforcement Officer
Lance Norris, Director of Inspections
Stan Stutts, 2267 Manns Chapel Rd, Pittsboro, NC 27312

WIKIPEDIA

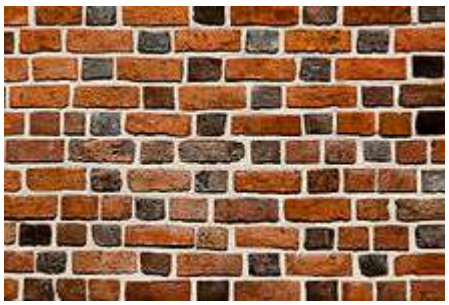
Brick

A **brick** is a type of block used to build walls, pavements and other elements in masonry construction. Properly, the term *brick* denotes a block composed of dried clay, but is now also used informally to denote other chemically cured construction blocks. Bricks can be joined together using mortar, adhesives or by interlocking them.[1][2] Bricks are produced in numerous classes, types, materials, and sizes which vary with region and time period, and are produced in bulk quantities.

A single brick

Block is a similar term referring to a rectangular building unit composed of similar materials, but is usually larger than a brick. Lightweight bricks (also called lightweight blocks) are made from expanded clay aggregate.

Fired bricks are one of the longest-lasting and strongest building materials, sometimes referred to as artificial stone, and have been used since circa 4000 BC. Air-dried bricks, also known as mudbricks, have a history older than fired bricks, and have an additional ingredient of a mechanical binder such as straw.



A wall constructed in glazed-headed Flemish bond with bricks of various shades and lengths

Bricks are laid in *courses* and numerous patterns known as *bonds*, collectively known as brickwork, and may be laid in various kinds of mortar to hold the bricks together to make a durable structure.

An old brick wall in English bond laid with alternating courses of *headers* and *stretchers*

Contents

History

Middle East and South Asia

The ancient Jetavanaramaya stupa of Anuradhapura in Sri Lanka is one of the largest brick structures in the world.

The earliest bricks were *dried brick*, meaning that they were formed from clay-bearing earth or mud and dried (usually in the sun) until they were strong enough for use. The oldest discovered bricks, originally made from shaped mud and dating before 7500 BC, were found at Tell Aswad, in the upper Tigris region and in southeast Anatolia close to Diyarbakir.[3] The South Asian inhabitants of Mehrgarh also constructed, and lived in, air-dried mudbrick houses between 7000–3300 BC.[4] Other more recent findings, dated between 7,000 and 6,395 BC, come from Jericho, Catal Hüyük, the ancient Egyptian fortress of Buhen, and the ancient Indus Valley cities of Mohenjo-daro, Harappa,[5] and Mehrgarh.[6] Ceramic, or *fired brick* was used as early as 3000 BC in early Indus Valley cities like Kalibangan.[7]

China

The brickwork of Shebeli Tower in Iran displays 12th-century craftsmanship

The earliest fired bricks appeared in Neolithic China around 4400 BC at Chengtoushan, a walled settlement of the Daxi culture.[8] These bricks were made of red clay, fired on all sides to above 600 °C, and used as flooring for houses. By the Qujialing period (3300 BC), fired bricks were being used to pave roads and as building foundations at Chengtoushan.[9]

Bricks continued to be used during 2nd millennium BC at a site near Xi'an.[10] Fired bricks were found in Western Zhou (1046–771 BC) ruins, where they were produced on a large scale.[11][12][13] The carpenter's manual *Yingzao Fashi*, published in 1103 at the time of the Song dynasty described the brick making process and glazing techniques then in use. Using the 17th-century encyclopaedic text *Tiangong Kaiwu*, historian Timothy Brook outlined the brick production process of Ming Dynasty China:

> ...the kilnmaster had to make sure that the temperature inside the kiln stayed at a level that caused the clay to shimmer with the colour of molten gold or silver. He also had to know when to quench the kiln with water so as to produce the surface glaze. To anonymous labourers fell the less skilled stages of brick production: mixing clay and water, driving oxen over the mixture to trample it into a thick paste, scooping the paste into standardised wooden frames (to produce a brick roughly 42 cm long, 20 cm wide, and 10 cm thick), smoothing the surfaces with a wire-strung bow, removing them from the frames, printing the fronts and backs with stamps that indicated where the bricks came from and who made them, loading the kilns with fuel (likelier wood than coal), stacking the bricks in the kiln, removing them to cool while the kilns were still hot, and bundling them into pallets for transportation. It was hot, filthy work.

Europe

Early civilisations around the Mediterranean adopted the use of fired bricks, including the Ancient Greeks and Romans. The Roman legions operated mobile kilns,[14] and built large brick structures throughout the Roman Empire, stamping the bricks with the seal of the legion.

The Roman Basilica Aula Palatina in Trier, Germany, built with fired bricks in the 4th century as an audience hall for Constantine I

During the Early Middle Ages the use of bricks in construction became popular in Northern Europe, after being introduced there from Northern-Western Italy. An independent style of brick architecture, known as brick Gothic (similar to Gothic architecture) flourished in places that lacked indigenous sources of rocks. Examples of this architectural style can be found in modern-day Denmark, Germany, Poland, and Kaliningrad (former East Prussia).

This style evolved into Brick Renaissance as the stylistic changes associated with the Italian Renaissance spread to northern Europe, leading to the adoption of Renaissance elements into brick building. A clear distinction between the two styles only developed at the transition to Baroque architecture. In Lübeck, for example, Brick Renaissance is clearly recognisable in buildings equipped with terracotta reliefs by the artist Statius von Düren, who was also active at Schwerin (Schwerin Castle) and Wismar (Fürstenhof).

Malbork Castle of the Teutonic Order in Poland – the largest brick castle in the world

Long-distance bulk transport of bricks and other construction equipment remained prohibitively expensive until the development of modern transportation infrastructure, with the construction of canal, roads, and railways.

Industrial era

Production of bricks increased massively with the onset of the Industrial Revolution and the rise in factory building in England. For reasons of speed and economy, bricks were increasingly preferred as building material to stone, even in areas where the stone was readily available. It was at this time in London that bright red brick was chosen for construction to make the buildings more visible in the heavy fog and to help prevent traffic accidents.[15]

The transition from the traditional method of production known as hand-moulding to a mechanised form of mass-production slowly took place during the first half of the nineteenth century. Possibly the first successful brick-making machine was patented by Henry Clayton, employed at the Atlas Works in Middlesex, England, in 1855, and was capable of producing up to 25,000 bricks daily with minimal supervision.[16] His mechanical apparatus soon achieved widespread attention after it was adopted for use by the South Eastern Railway Company for brick-making at their factory near Folkestone.[17] The Bradley & Craven Ltd 'Stiff-Plastic Brickmaking Machine' was patented in 1853, apparently predating Clayton. Bradley & Craven went on to be a dominant manufacturer of brickmaking machinery.[18] Predating both Clayton and Bradley & Craven Ltd. however was the brick making machine patented by Richard A. Ver Valen of Haverstraw, New York, in 1852.[19]

The demand for high office building construction at the turn of the 20th century led to a much greater use of cast and wrought iron, and later, steel and concrete. The use of brick for skyscraper construction severely limited the size of the building – the Monadnock Building, built in 1896 in Chicago, required exceptionally thick walls to maintain the structural integrity of its 17 storeys.

Following pioneering work in the 1950s at the Swiss Federal Institute of Technology and the Building Research Establishment in Watford, UK, the use of improved masonry for the construction of tall structures up to 18 storeys high was made viable. However, the use of brick has largely remained restricted to small to medium-sized buildings, as steel and concrete remain superior materials for high-rise construction.[20]

Methods of manufacture

Three basic types of brick are un-fired, fired, and chemically set bricks. Each type is manufactured differently.

Brick making at the beginning of the 20th century

Mudbrick

Unfired bricks, also known as mudbricks, are made from a wet, clay-containing soil mixed with straw or similar binders. They are air-dried until ready for use.

Fired brick

Fired bricks are burned in a kiln which makes them durable. Modern, fired, clay bricks are formed in one of three processes – soft mud, dry press, or extruded. Depending on the country, either the extruded or soft mud method is the most common, since they are the most economical.

Normally, bricks contain the following ingredients:[21]

1. Silica (sand) – 50% to 60% by weight
2. Alumina (clay) – 20% to 30% by weight
3. Lime – 2 to 5% by weight
4. Iron oxide – ≤ 7% by weight
5. Magnesia – less than 1% by weight

Shaping methods

Raw bricks sun-drying before being fired

Three main methods are used for shaping the raw materials into bricks to be fired:

- Molded bricks – These bricks start with raw clay, preferably in a mix with 25–30% sand to reduce shrinkage. The clay is first ground and mixed with water to the desired consistency. The clay is then pressed into steel moulds with a hydraulic press. The shaped clay is then fired ("burned") at 900–1000 °C to achieve strength.
- Dry-pressed bricks – The dry-press method is similar to the soft-mud moulded method, but starts with a much thicker clay mix, so it forms more accurate, sharper-edged bricks. The greater force in pressing and the longer burn make this method more expensive.
- Extruded bricks – For extruded bricks the clay is mixed with 10–15% water (stiff extrusion) or 20–25% water (soft extrusion) in a pugmill. This mixture is forced through a die to create a long cable of material of the desired width and depth. This mass is then cut into bricks of the desired length by a wall of wires. Most structural bricks are made by this method as it produces hard, dense bricks, and suitable dies can produce perforations as well. The introduction of such holes reduces the volume of clay needed, and hence the cost. Hollow bricks are lighter and easier to handle, and have different thermal properties from solid bricks. The cut bricks are hardened by drying for 20 to 40 hours at 50 to 150 °C before being fired. The heat for drying is often waste heat from the kiln.

Kilns

Xhosa brickmaker at kiln near Ngcobo in 2007

In many modern brickworks, bricks are usually fired in a continuously fired tunnel kiln, in which the bricks are fired as they move slowly through the kiln on conveyors, rails, or kiln cars, which achieves a more consistent brick product. The bricks often have lime, ash, and organic matter added, which accelerates the burning process.

The other major kiln type is the Bull's Trench Kiln (BTK), based on a design developed by British engineer W. Bull in the late 19th century.

An oval or circular trench is dug, 6–9 metres wide, 2-2.5 metres deep, and 100–150 metres in circumference. A tall exhaust chimney is constructed in the centre. Half or more of the trench is filled with "green" (unfired) bricks which are stacked in an open lattice pattern to allow airflow. The lattice is capped with a roofing layer of finished brick.

In operation, new green bricks, along with roofing bricks, are stacked at one end of the brick pile. Historically, a stack of unfired bricks covered for protection from the weather was called a "hack".[22] Cooled finished bricks are removed from the other end for transport to their destinations. In the middle, the brick workers create a firing zone by dropping fuel (coal, wood, oil, debris, and so on) through access holes in the roof above the trench.

The advantage of the BTK design is a much greater energy efficiency compared with clamp or scove kilns. Sheet metal or boards are used to route the airflow through the brick lattice so that fresh air flows first through the recently burned bricks, heating the air, then through the active burning zone. The air

continues through the green brick zone (pre-heating and drying the bricks), and finally out the chimney, where the rising gases create suction that pulls air through the system. The reuse of heated air yields savings in fuel cost.

As with the rail process, the BTK process is continuous. A half-dozen labourers working around the clock can fire approximately 15,000–25,000 bricks a day. Unlike the rail process, in the BTK process the bricks do not move. Instead, the locations at which the bricks are loaded, fired, and unloaded gradually rotate through the trench.[23]

Influences on colour

The fired colour of tired clay bricks is influenced by the chemical and mineral content of the raw materials, the firing temperature, and the atmosphere in the kiln. For example, pink bricks are the result of a high iron content, white or yellow bricks have a higher lime content. Most bricks burn to various red hues; as the temperature is increased the colour moves through dark red, purple, and then to brown or grey at around 1,300 °C (2,372 °F). The names of bricks may reflect their origin and colour, such as London stock brick and Cambridgeshire White. *Brick tinting* may be performed to change the colour of bricks to blend-in areas of brickwork with the surrounding masonry.

Yellow London Stocks at Waterloo station

An impervious and ornamental surface may be laid on brick either by salt glazing, in which salt is added during the burning process, or by the use of a slip, which is a glaze material into which the bricks are dipped. Subsequent reheating in the kiln fuses the slip into a glazed surface integral with the brick base.

Chemically set bricks

Chemically set bricks are not fired but may have the curing process accelerated by the application of heat and pressure in an autoclave.

Calcium-silicate bricks

Swedish Mexitegel is a sand-lime or lime-cement brick.

Calcium-silicate bricks are also called sandlime or flintlime bricks, depending on their ingredients. Rather than being made with clay they are made with lime binding the silicate material. The raw materials for calcium-silicate bricks include lime mixed in a proportion of about 1 to 10 with sand, quartz, crushed flint, or crushed siliceous rock together with mineral colourants. The materials are mixed and left until the lime is completely hydrated; the mixture is then pressed into moulds and cured in an autoclave for three to fourteen hours to speed the chemical hardening.[24] The finished bricks are very accurate and uniform, although the sharp arrises need careful handling to avoid damage to brick and bricklayer. The bricks can be made in a variety of colours; white, black, buff, and grey-blues are common, and pastel shades can be achieved. This type of brick is common in Sweden, Belarus, Russia and other post-Soviet countries, especially in houses built or renovated in the 1970s. A version known as fly ash bricks, manufactured

using fly ash, lime, and gypsum (known as the FaL-G process) are common in South Asia. Calcium-silicate bricks are also manufactured in Canada and the United States, and meet the criteria set forth in ASTM C73 – 10 Standard Specification for Calcium Silicate Brick (Sand-Lime Brick).

Concrete bricks

A concrete brick-making assembly line in Guilinyang Town, Hainan, China. This operation produces a pallet containing 42 bricks, approximately every 30 seconds.

Bricks formed from concrete are usually termed as blocks or concrete masonry unit, and are typically pale grey. They are made from a dry, small aggregate concrete which is formed in steel moulds by vibration and compaction in either an "egglayer" or static machine. The finished blocks are cured, rather than fired, using low-pressure steam. Concrete bricks and blocks are manufactured in a wide range of shapes, sizes and face treatments – a number of which simulate the appearance of clay bricks.

Concrete bricks are available in many colours and as an engineering brick made with sulfate-resisting Portland cement or equivalent. When made with adequate amount of cement they are suitable for harsh environments such as wet conditions and retaining walls. They are made to standards BS 6073, EN 771-3 or ASTM C55. Concrete bricks contract or shrink so they need movement joints every 5 to 6 metres, but are similar to other bricks of similar density in thermal and sound resistance and fire resistance.[24]

Compressed earth blocks

A brick kiln in India

Compressed earth blocks are made mostly from slightly moistened local soils compressed with a mechanical hydraulic press or manual lever press. A small amount of a cement binder may be added, resulting in a *stabilised compressed earth block*.

Types

There are thousands of types of bricks that are named for their use, size, forming method, origin, quality, texture, and/or materials.

Categorized by manufacture method:

- Extruded – made by being forced through an opening in a steel die, with a very consistent size and shape.
  - Wire-cut – cut to size after extrusion with a tensioned wire which may leave drag marks
- Moulded – shaped in moulds rather than being extruded
  - Machine-moulded – clay is forced into moulds using pressure
  - Handmade – clay is forced into moulds by a person
- Dry-pressed – similar to soft mud method, but starts with a much thicker clay mix and is compressed with great force.

Categorized by use:

- Common or building – A brick not intended to be visible, used for internal structure
- Face – A brick used on exterior surfaces to present a clean appearance
- Hollow – not solid, the holes are less than 25% of the brick volume
  - Perforated – holes greater than 25% of the brick volume
- Keyed – indentations in at least one face and end to be used with rendering and plastering
- Paving – brick intended to be in ground contact as a walkway or roadway
- Thin – brick with normal height and length but thin width to be used as a veneer

This wall in Beacon Hill, Boston, shows different types of brickwork and stone foundations

Specialized use bricks:

- Chemically resistant – bricks made with resistance to chemical reactions
  - Acid brick – acid resistant bricks
- Engineering – a type of hard, dense, brick used where strength, low water porosity or acid (flue gas) resistance are needed. Further classified as type A and type B based on their compressive strength
  - Accrington – a type of engineering brick from England
- Fire or refractory – highly heat-resistant bricks
  - Clinker – a vitrified brick
  - Ceramic glazed – fire bricks with a decorative glazing

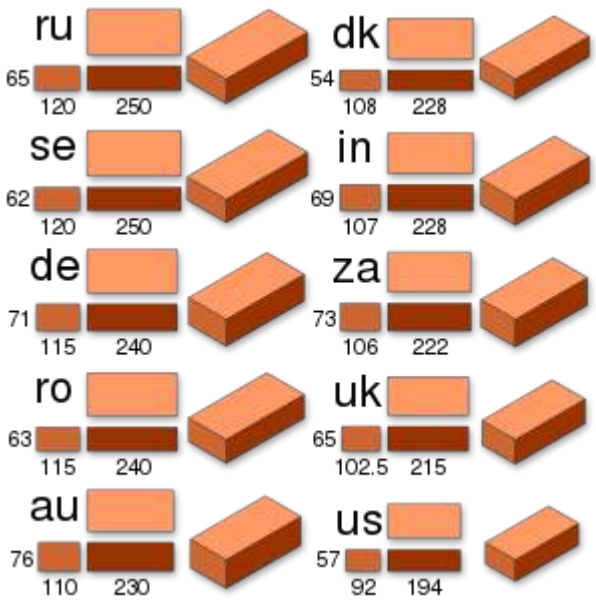
Bricks named for place of origin:

- Cream City brick – a light yellow brick made in Milwaukee, Wisconsin
- Dutch brick – a hard light coloured brick originally from the Netherlands
- Fareham red brick – a type of construction brick
- London stock brick – type of handmade brick which was used for the majority of building work in London and South East England until the growth in the use of machine-made bricks
- Nanak Shahi bricks – a type of decorative brick in India
- Roman brick – a long, flat brick typically used by the Romans
- Staffordshire blue brick – a type of construction brick from England

Optimal dimensions, characteristics, and strength

For efficient handling and laying, bricks must be small enough and light enough to be picked up by the bricklayer using one hand (leaving the other hand free for the trowel). Bricks are usually laid flat, and as a result, the effective limit on the width of a brick is set by the distance which can conveniently be spanned between the thumb and fingers of one hand, normally about 100 mm (4 in). In most cases, the length of a brick is twice its width plus the width of a mortar joint, about 200 mm (8 in) or slightly more. This allows bricks to be laid *bonded* in a structure which increases stability and strength (for an example, see the illustration of bricks laid in *English bond*, at the head of this article). The wall is built using alternating courses of *stretchers*, bricks laid longways, and *headers*, bricks laid crossways. The headers

tie the wall together over its width. In fact, this wall is built in a variation of *English bond* called *English cross bond* where the successive layers of stretchers are displaced horizontally from each other by half a brick length. In true *English bond*, the perpendicular lines of the stretcher courses are in line with each other.



Comparison of typical brick sizes of assorted countries with isometric projections and dimensions in millimetres

A bigger brick makes for a thicker (and thus more insulating) wall. Historically, this meant that bigger bricks were necessary in colder climates (see for instance the slightly larger size of the Russian brick in table below), while a smaller brick was adequate, and more economical, in warmer regions. A notable illustration of this correlation is the Green Gate in Gdansk; built in 1571 of imported Dutch brick, too small for the colder climate of Gdansk, it was notorious for being a chilly and drafty residence. Nowadays this is no longer an issue, as modern walls typically incorporate specialised insulation materials.

The correct brick for a job can be selected from a choice of colour, surface texture, density, weight, absorption, and pore structure, thermal characteristics, thermal and moisture movement, and fire resistance.

Face brick ("house brick") sizes, (alphabetical order)

Standard	Metric (mm)	Imperial (inches)
Australia	230 mm × 110 mm × 76 mm	9.1 in × 4.3 in × 3.0 in
China	240 × 155 × 53	9.4 × 6.1 × 2.1
Denmark	228 × 108 × 54	9.0 × 4.3 × 2.1
Germany	240 × 115 × 71	9.4 × 4.5 × 2.8
India	228 × 107 × 69	9.0 × 4.2 × 2.7
Japan	210 × 100 × 60	8.3 × 3.9 × 2.4
Romania	240 × 115 × 63	9.4 × 4.5 × 2.5
Russia	250 × 120 × 65	9.8 × 4.7 × 2.6
South Africa	222 × 106 × 73	8.7 × 4.2 × 2.9
Sweden	250 × 120 × 62	9.8 × 4.7 × 2.4
United Kingdom	215 × 102.5 × 65	8.5 × 4.0 × 2.6
United States	194 × 92 × 57	7.6 × 3.6 × 2.2

In England, the length and width of the common brick remained fairly constant from 1625 when the size was regulated by statute at 9 x 4½ x 3 inches[25] (but see brick tax), but the depth has varied from about two inches (51 mm) or smaller in earlier times to about 2½ inches (64 mm) more recently. In the United Kingdom, the usual size of a modern brick (from 1965)[26] is 215 mm × 102.5 mm × 65 mm (8½ in × 4 in × 2½ in), which, with a nominal 10 millimetres (⅜ in) mortar joint, forms a *unit size* of 225 by 112.5 by 75 millimetres (9 in × 4½ in × 3 in), for a ratio of 6:3:2.

In the United States, modern standard bricks are specified for various uses;[27] The most commonly used is the modular brick has the *actual dimensions* of $7\frac{5}{8}$ × $3\frac{5}{8}$ × $2\frac{1}{4}$ inches (194 × 92 × 57 mm). With the standard $\frac{3}{8}$ inch mortar joint, this gives the *nominal dimensions* of 8 x 4 x $2\frac{2}{3}$ inches which eases the calculation of the number of bricks in a given wall.[28] The 2:1 ratio of modular bricks means that when they turn corners, a 1/2 running bond is formed without needing to cut the brick down or fill the gap with a cut brick; and the height of modular bricks means that a soldier course matches the height of three modular running courses, or one standard CMU course.

Some brickmakers create innovative sizes and shapes for bricks used for plastering (and therefore not visible on the inside of the building) where their inherent mechanical properties are more important than their visual ones.[29] These bricks are usually slightly larger, but not as large as blocks and offer the following advantages:

- A slightly larger brick requires less mortar and handling (fewer bricks), which reduces cost
- Their ribbed exterior aids plastering
- More complex interior cavities allow improved insulation, while maintaining strength.

Blocks have a much greater range of sizes. Standard co-ordinating sizes in length and height (in mm) include 400×200, 450×150, 450×200, 450×225, 450×300, 600×150, 600×200, and 600×225; depths (work size, mm) include 60, 75, 90, 100, 115, 140, 150, 190, 200, 225, and 250. They are usable across this range as they are lighter than clay bricks. The density of solid clay bricks is around 2000 kg/m^3: this is reduced by frogging, hollow bricks, and so on, but aerated autoclaved concrete, even as a solid brick, can have densities in the range of 450–850 kg/m^3.

Bricks may also be classified as *solid* (less than 25% perforations by volume, although the brick may be "frogged," having indentations on one of the longer faces), *perforated* (containing a pattern of small holes through the brick, removing no more than 25% of the volume), *cellular* (containing a pattern of holes removing more than 20% of the volume, but closed on one face), or *hollow* (containing a pattern of large holes removing more than 25% of the brick's volume). Blocks may be solid, cellular or hollow

The term "frog" can refer to the indentation or the implement used to make it. Modern brickmakers usually use plastic frogs but in the past they were made of wood.

The compressive strength of bricks produced in the United States ranges from about 7 to 103 MPa (1,000 to 15,000 lbf/in^2), varying according to the use to which the brick are to be put. In England clay bricks can have strengths of up to 100 MPa, although a common house brick is likely to show a range of 20–40 MPa.

Uses

In the United States, bricks have been used for both buildings and pavements. Examples of brick use in buildings can be seen in colonial era buildings and other notable structures around the country. Bricks have been used in pavements especially during the late 19th century and early 20th century. The introduction of asphalt and concrete reduced the use of brick pavements, but they are still sometimes installed as a method of traffic calming or as a decorative surface in pedestrian precincts. For example, in the early 1900s, most of the streets in the city of Grand Rapids, Michigan, were paved with bricks. Today, there are only about 20 blocks of brick-paved streets remaining (totalling less than 0.5 percent of all the streets in the city limits).[30] Much like in Grand Rapids, municipalities across the United States began replacing brick streets with inexpensive asphalt concrete by the mid-20th century.[31]

Bricks in the metallurgy and glass industries are often used for lining furnaces, in particular refractory bricks such as silica, magnesia, chamotte and neutral (chromomagnesite) refractory bricks. This type of brick must have good thermal shock resistance, refractoriness under load, high melting point, and satisfactory porosity. There is a large refractory brick industry, especially in the United Kingdom, Japan, the United States, Belgium and the Netherlands.

Bricked Front Street along the Cane River in historic Natchitoches, Louisiana

In Northwest Europe, bricks have been used in construction for centuries. Until recently, almost all houses were built almost entirely from bricks. Although many houses are now built using a mixture of concrete blocks and other materials, many houses are skinned with a layer of bricks on the outside for aesthetic appeal.

Engineering bricks are used where strength, low water porosity or acid (flue gas) resistance are needed.

In the UK a red brick university is one founded in the late 19th or early 20th century. The term is used to refer to such institutions collectively to distinguish them from the older Oxbridge institutions, and refers to the use of bricks, as opposed to stone, in their buildings.

Colombian architect Rogelio Salmona was noted for his extensive use of red bricks in his buildings and for using natural shapes like spirals, radial geometry and curves in his designs.[32] Most buildings in Colombia are made of brick, given the abundance of clay in equatorial countries like this one.

Limitations

Starting in the 20th century, the use of brickwork declined in some areas due to concerns about earthquakes. Earthquakes such as the San Francisco earthquake of 1906 and the 1933 Long Beach earthquake revealed the weaknesses of unreinforced brick masonry in earthquake-prone areas. During seismic events, the mortar cracks and crumbles, so that the bricks are no longer held together. Brick masonry with steel reinforcement, which helps hold the masonry together during earthquakes, has been used to replace unreinforced bricks in many buildings. Retrofitting older unreinforced masonry structures has been mandated in many jurisdictions.

A panorama after the 1906 San Francisco earthquake.

Gallery

Chile house in Hamburg, Germany.

A block of Bricks manufactured in Nepal to build Ancient Stupa.

Ishtar Gate of Babylon in the Pergamon Museum, Berlin, Germany

Roman opus reticulatum on Hadrian's Villa in Tivoli, Italy (2nd century)

Frauenkirche, Munich, Germany, erected 1468–1488, looking up at the towers

Eastern gable of church of St. James in Toruń (14th century)

Decorative pattern made of strongly fired bricks in Radzyń Castle (14th century)

Mudéjar brick church tower in Teruel, Spain, (14th century)

Brick sculpting on Thornbury Castle, Thornbury, near Bristol, England. The chimneys were erected in 1514

A typical brick house in the Netherlands.

A 19th-century brick church in Loppi, Finland

The bricks used to built Ancient Shakya Capital of Lord Budha in Nepal.

A typical Dutch farmhouse near Wageningen, Netherlands

Baroque brick Parish of San Sebastián Mártir, Xoco in Mexico City, was completed in 1663[33]

Decorative bricks in St Michael and All Angels Church, Blantyre, Malawi

Virgilio Barco Public Library, Bogotá, Colombia

FES Building, Cali, Colombia

A brick kiln, Tamil Nadu, India

Brick sidewalk paving in Portland, Oregon

Brick sidewalk in Cambridge, Massachusetts

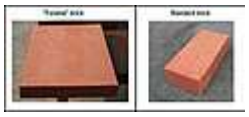
Porotherm style clay block brick

Moulding bricks, Poland

Brick made as a byproduct of ironstone mining Normanby – UK

Fired, clay bricks in Hainan, China

The largest brick warehouse in the world, Stanley Dock Tobacco Warehouse, Liverpool, UK



Medieval heir to the Roman brick in the Toulouse region, the "Foraine" brick has kept the same large and flat format.

The Albi Cathedral (France) was built using "Foraine" bricks.

See also

- Autoclaved aerated concrete – Lightweight, precast building material
- Banna'i – Use of glazed tiles alternating with plain brick for decorative purposes
- Ceramic building material – Archaeological term for baked clay building material
- Glossary of British bricklaying – List of bricklaying terms and their meanings
- Opus africanum – A form of ashlar masonry used in Carthaginian and ancient Roman architecture
- Opus latericium – An ancient Roman form of construction in which coarse-laid brickwork is used to face a core of opus caementicium
- Opus mixtum – Combination of Roman construction techniques
- Opus spicatum – Herringbone pattern of masonry construction used in Roman and medieval times
- Opus vittatum – Roman construction technique using horizontal courses of tuff blocks alternated with bricks
- Polychrome brickwork – Use of bricks of different colours for decoration
- Stockade Building System – Building block system using compressed wood shavings
- Surfaced block – A concrete masonry unit with a durable, slick surface
- Wienerberger – Manufacturer of bricks, pavers and pipes

References

1. "Interlocking bricks & Compressed stablized earth bricks - CSEB" (https://www.buildupnepal.com/interlocking-bricks/). *Buildup Nepal*.
2. "Bricks that interlock" (https://vlaanderen-circulair.be/en/cases-in-flanders/detail/facadeclick).
3. (in French) IFP Orient – Tell Aswad (http://wikis.ifporient.org/archeologie/index.php/Tell_Aswad) Archived (https://web.archive.org/web/20110726171607/http://wikis.ifporient.org/archeologie/index.php/Tell_Aswad) 26 July 2011 at the Wayback Machine. Wikis.ifporient.org. Retrieved 16 November 2012.
4. Possehl, Gregory L. (1996)
5. History of brickmaking (http://www.britannica.com/EBchecked/topic/79195/brick/76609/History-of-brickmaking), *Encyclopædia Britannica*.
6. Kenoyer, Jonathan Mark (2005), "Uncovering the keys to the Lost Indus Cities", *Scientific American*, **15** (1): 24–33, doi:10.1038/scientificamerican0105-24sp (https://doi.org/10.1038%2Fscientificamerican0105-24sp), PMID 12840948 (https://pubmed.ncbi.nlm.nih.gov/12840948)
7. Khan, Aurangzeb; Lemmen, Carsten (2013), *Bricks and urbanism in the Indus Valley rise and decline* (https://www.academia.edu/1285495), arXiv:1303.1426 (https://arxiv.org/abs/1303.1426), Bibcode:2013arXiv1303.1426K (https://ui.adsabs.harvard.edu/abs/2013arXiv1303.1426K)
8. Yoshinori Yasuda (2012). *Water Civilization: From Yangtze to Khmer Civilizations* (https://books.google.com/books?id=n00CnC84MIcC). Springer Science & Business Media. pp. 30–31. ISBN 9784431541103.
9. Yoshinori Yasuda (2012). *Water Civilization: From Yangtze to Khmer Civilizations* (https://books.google.com/books?id=n00CnC84MIcC). Springer Science & Business Media. pp. 33–35. ISBN 9784431541103.
10. Brook, 19–20
11. Earliest Chinese building brick appeared in Xi'an (中國最早磚類建材在西安現身) (https://web.archive.org/web/20100416132054/http://www.takungpao.com/news/10/01/28/_IN-1208245.htm). takungpao.com (28 January 2010)
12. China's first brick, possible earliest brick in China (http://big5.xinhuanet.com/gate/big5/news.xinhuanet.com/collection/2010-01/29/content_12896997.htm) Archived (https://web.archive.org/web/20100204025148/http://big5.xinhuanet.com/gate/big5/news.xinhuanet.com/collection/2010-01/29/content_12896997.htm) 4 February 2010 at the Wayback Machine (藍田出土"中華第一磚" 疑似我國最早的"磚")
13. 西安發現全球最早燒制磚 (Earliest fired brick discovered in Xi'an) (https://web.archive.org/web/20100306112243/http://news.sina.com.tw/article/20100130/2743984.html). Sina Corp.com.tw. 30 January 2010 (in Chinese)
14. Ash, Ahmed (20 November 2014). *Materials science in construction : an introduction*. Sturges, John. Abingdon, Oxon. ISBN 9781135138417. OCLC 896794727 (https://www.worldcat.org/oclc/896794727).
15. Peter Ackroyd (2001). *London the Biography* (https://books.google.com/books?id=3ZQl3C5BAHsC). Random House. p. 435. ISBN 978-0-09-942258-7.
16. "Henry Clayton" (http://www.google.com/patents/US13123). Retrieved 17 December 2012.
17. *The Mechanics Magazine and Journal of Engineering, Agricultural Machinery, Manufactures and Shipbuilding* (https://books.google.com/books?id=S54AAAAAMAAJ&pg=GBS.PA361). 1859. p. 361.
18. *The First Hundred Years: the Early History of Bradley & Craven, Limited, Wakefield, England* by Bradley & Craven Ltd (1963)
19. "US Patent 9082" (http://www.google.com/patents/US9082). Retrieved 26 September 2014.
20. "The History of Bricks" (http://www.dehoopsteenwerwe.co.za/information03.html). De Hoop:Steenwerve Brickfields.

21. Punmia, B.C.; Jain, Ashok Kumar (2003), *Basic Civil Engineering* (https://books.google.com/books?id=sWZxu_muxyIC&pg=PA33), p. 33, ISBN 978-81-7008-403-7
22. Connolly, Andrew. *Life in the Victorian Brickyards of Flintshire and Denbigshire*, p34. 2003, Gwasg Carreg Gwalch.
23. Pakistan Environmental Protection Agency, Brick Kiln Units (PDF file) (http://www.environment.gov.pk/EA-GLines/I1B-Brick%20Kilns.pdf) Archived (https://web.archive.org/web/20070616090248/http://www.environment.gov.pk/EA-GLines/I1B-Brick%20Kilns.pdf) 16 June 2007 at the Wayback Machine
24. McArthur, Hugh, and Duncan Spalding. *Engineering materials science: properties, uses, degradation and remediation*. Chichester, U.K.: Horwood Pub., 2004. 194. Print.
25. Burton, Joseph & William (1911). "Brick" (https://en.wikisource.org/wiki/1911_Encyclop%C3%A6dia_Britannica/Brick). In Chisholm, Hugh (ed.). *Encyclopædia Britannica*. **4** (11th ed.). Cambridge University Press. p. 518.
26. "Brick sizes, variations and standardisation" (https://www.scottishbrickhistory.co.uk/brick-sizes-variations-and-standardisation/). Retrieved 28 April 2021.
27. [1] (http://www.gobrick.com/portals/25/docs/technical%20notes/tn9a.pdf) Archived (https://web.archive.org/web/20161229030920/http://www.gobrick.com/portals/25/docs/technical%20notes/tn9a.pdf) 29 December 2016 at the Wayback Machine. Brick Industry Association. Technical Note 9A, Specifications for and Classification of Brick. Retrieved 28 December 2016.
28. [2] (http://www.gobrick.com/Portals/25/docs/Technical%20Notes/TN10.pdf) Archived (https://web.archive.org/web/20170511021920/http://www.gobrick.com/Portals/25/docs/Technical%20Notes/TN10.pdf) 11 May 2017 at the Wayback Machine bia.org. Technical Note 10, Dimensioning and Estimating Brick Masonry (pdf file) Retrieved 8 November 2016.
29. Crammix *Maxilite* (https://web.archive.org/web/20081206161820/http://www.crammix.co.za/maxilite.htm). crammix.co.za
30. Michigan | Success Stories | Preserve America | Office of the Secretary of Transportation | U.S. Department of Transportation (https://web.archive.org/web/20090704104107/http://ostpxweb.dot.gov/preserveamerica/stories/michigan/index.cfm).
31. Schwartz, Emma (31 July 2003). "Bricks come back to city streets" (http://usatoday30.usatoday.com/news/nation/2003-07-31-brick-roads_x.htm). *USA Today*. Retrieved 4 May 2017.
32. Romero, Simon (6 October 2007). "Rogelio Salmona, Colombian Architect Who Transformed Cities, Is Dead at 78" (https://www.nytimes.com/2007/10/06/arts/06salmona.html?_r=1&ref=obituaries&oref=slogin). *The New York Times*.
33. Alejandro Porcel Arraut (16 October 2018). "Desarrollo inmobiliario en Xoco: relato de ciudades enfrentadas" (https://labrujula.nexos.com.mx/?p=2110). *Nexos (magazine)* (in Spanish).

Further reading

- Aragus, Philippe (2003), *Brique et architecture dans l'Espagne médiévale*, Bibliothèque de la Casa de Velazquez, 2 (in French), Madrid
- Campbell, James W.; Pryce, Will, photographer (2003), *Brick: a World History*, London & New York: Thames & Hudson
- Coomands, Thomas; VanRoyen, Harry, eds. (2008), "Novii Monasterii, 7", *Medieval Brick Architecture in Flanders and Northern Europe*, Koksijde: Ten Duinen
- Das, Saikia Mimi; Das, Bhargab Mohan; Das, Madan Mohan (2010), *Elements of Civil Engineering*, New Delhi: PHI Learning Private Limited, ISBN 978-81-203-4097-8
- Kornmann, M.; CTTB (2007), *Clay Bricks and Roof Tiles, Manufacturing and Properties*, Paris: Lasim, ISBN 978-2-9517765-6-2
- Plumbridge, Andrew; Meulenkamp, Wim (2000), *Brickwork. Architecture and Design*, London: Seven Dials, ISBN 1-84188-039-6

- Dobson, E. A. (1850), *Rudimentary Treatise on the Manufacture of Bricks and Tiles*, London: John Weale
- Hudson, Kenneth (1972) *Building Materials*; chap. 3: Bricks and tiles. London: Longman; pp. 28–42
- Lloyd, N. (1925), *History of English Brickwork*, London: H. Greville Montgomery

External links

- Brick in 20th-Century Architecture (http://www.ochshorndesign.com/cornell/writings/brick.html)
- Brick Industry Association (http://www.gobrick.com) United States
- Brick Development Association (http://www.brick.org.uk) UK
- Think Brick Australia (http://www.thinkbrick.com.au)
- International Brick Collectors Association (http://www.ibcabrick.com/)

TABLE OF CONTENTS

FACE BRICK

Have a Question? Contact Us

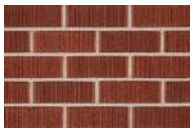
Red Bricks

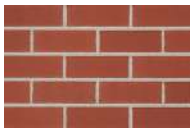
RED BRICKS

Timeless, classic red bricks. Red is the most traditional color of brick and is ideal for traditional architecture such as colonial style homes. Red brick is extremely versatile too, and can be used on towering city office buildings and sports stadiums.

We offer a very wide variety of red brick, from smooth to rough texture, from single-colored bricks to blends. Keep in mind that monitor color varies, and that to get a 100% accurate picture of our products, you need to look at a sample in person before you make any decisions.

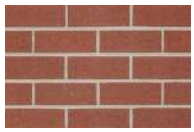
If you would like to see a sample, or have any other questions, please Contact Us.


141-145 Vertical


503-505 Smooth


830 Dart-Tex


Admiral Full Range Velour


Admiral Red Velour


Amherst Blend Dart-Tex


Arlington Blend Tumbled


Belcrest 500


Belcrest 530

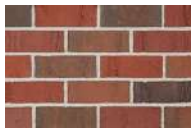

Belcrest 550

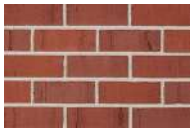

Belcrest 560

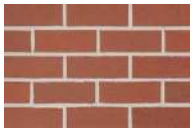

Belcrest 700


Belcrest 730


Belcrest 760

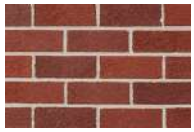

Berwick Blend

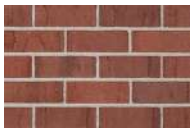

Berwick Red Range

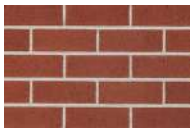

Bismarck Blend


Buckingham Clear

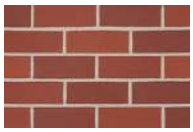

Buckingham Full Range


Burgundy Blend


Century Reds

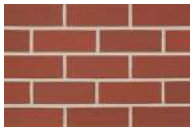

Cherry Velour

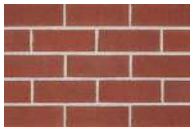

Colony Blend

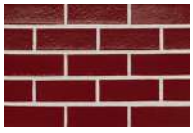

Colony Red Range


Commodore Full Range Smooth


Commodore Full Range Velour


Commodore Smooth


Commodore Velour

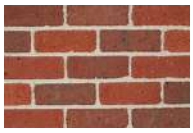

Cranberry Glaze


Garden Blend


Heritage Blend


Homestead Blend


Indian Full Range


Indian Full Range Tumbled

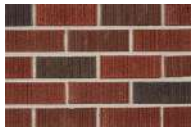

Indian Red Clear

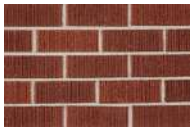

Kingsport Antique Colonial


Meadow Blend


Mohawk Blend


No 9 Blend Velour

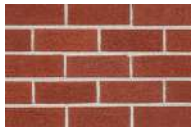

No 9 Blend Vertical


No 9 Red Range

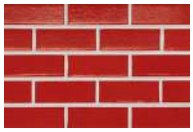

Provincial Blend


Queensport Blend

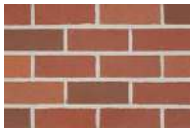

Rainbow Blend

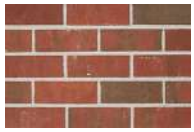

Rainbow Reds

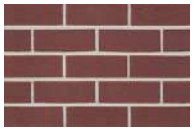

Red Flashed


Red Hot Glaze


Red Shale

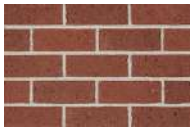

Regal Blend


Revere Blend

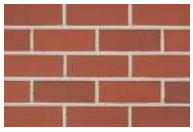

River Red Velour

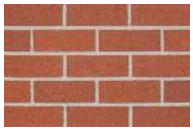

Rosewood Blend


Rosewood Clear

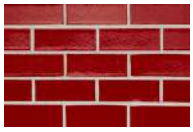

Royalty Red Clear

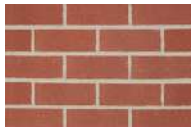

Rubigo Blend Velour

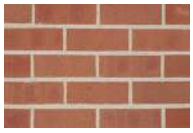

Rubigo Red Smooth


Rubigo Red Velour


Rum Raisin Velour


Scarlet Glaze


Simulated Belcrest 500


Simulated Belcrest 530

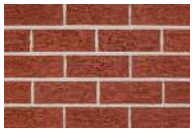

Simulated Belcrest 560


Simulated Belcrest 700


Simulated Belcrest 730


Simulated Belcrest 760


Tulip Blend

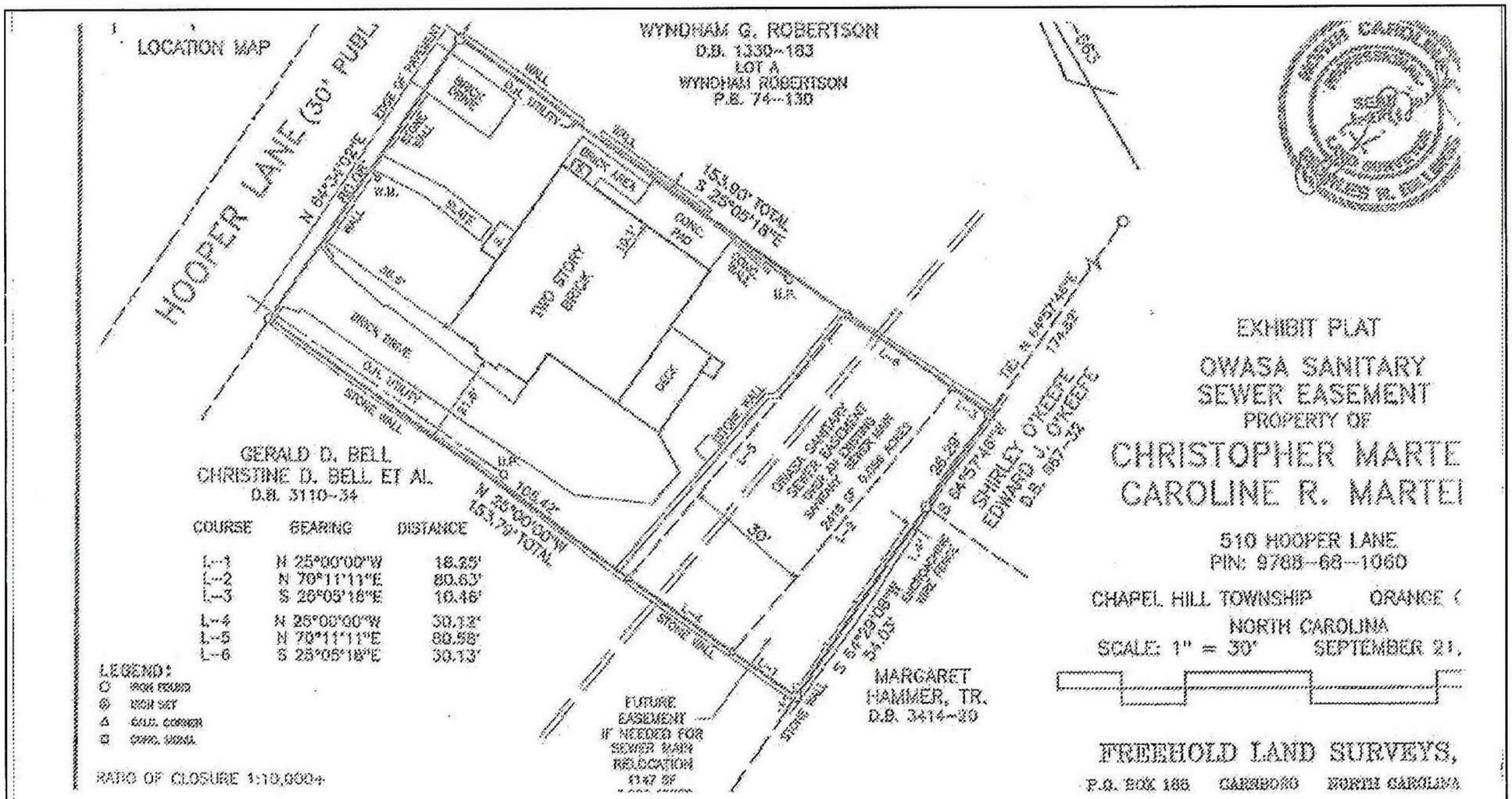

Tulip Reds


Winewood Blend

A SPECIAL NOTE ABOUT BRICK SIZES. Belden nomenclature differs from industry standards on certain or several brick sizes. Namely we use the term Jumbo instead of Engineer and the term Economo where the industry uses Closure.

Authorized Distributor Login
Quality Management System
Environmental Management System
Industrywide Environmental Product Declaration (EPD)
SDS for Brick
Prop 65 Warning
Technical Notes on Brick Construction
Site Map

The Belden Brick Company
700 Tuscarawas St. W.
Canton, OH 44702
Phone: 330-456-0031
Contact Us



PLAT MAP ADDENDUM

Borrower/Client Kenneth A Becker, Kimberly Lovell

Property Address 510 Hooper Ln

City Chapel Hill County Orange State NC Zip Code 27514

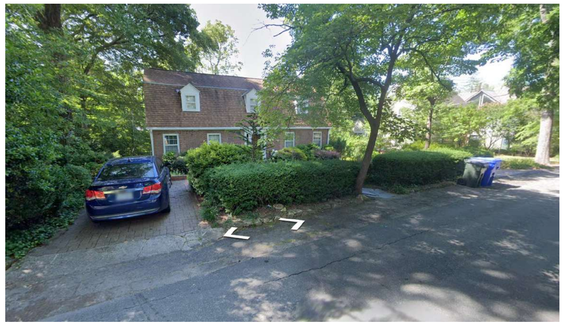
Lender Bank of America N.A.

File # 21665398

6/24/2021 10:59:22 AM

Front View

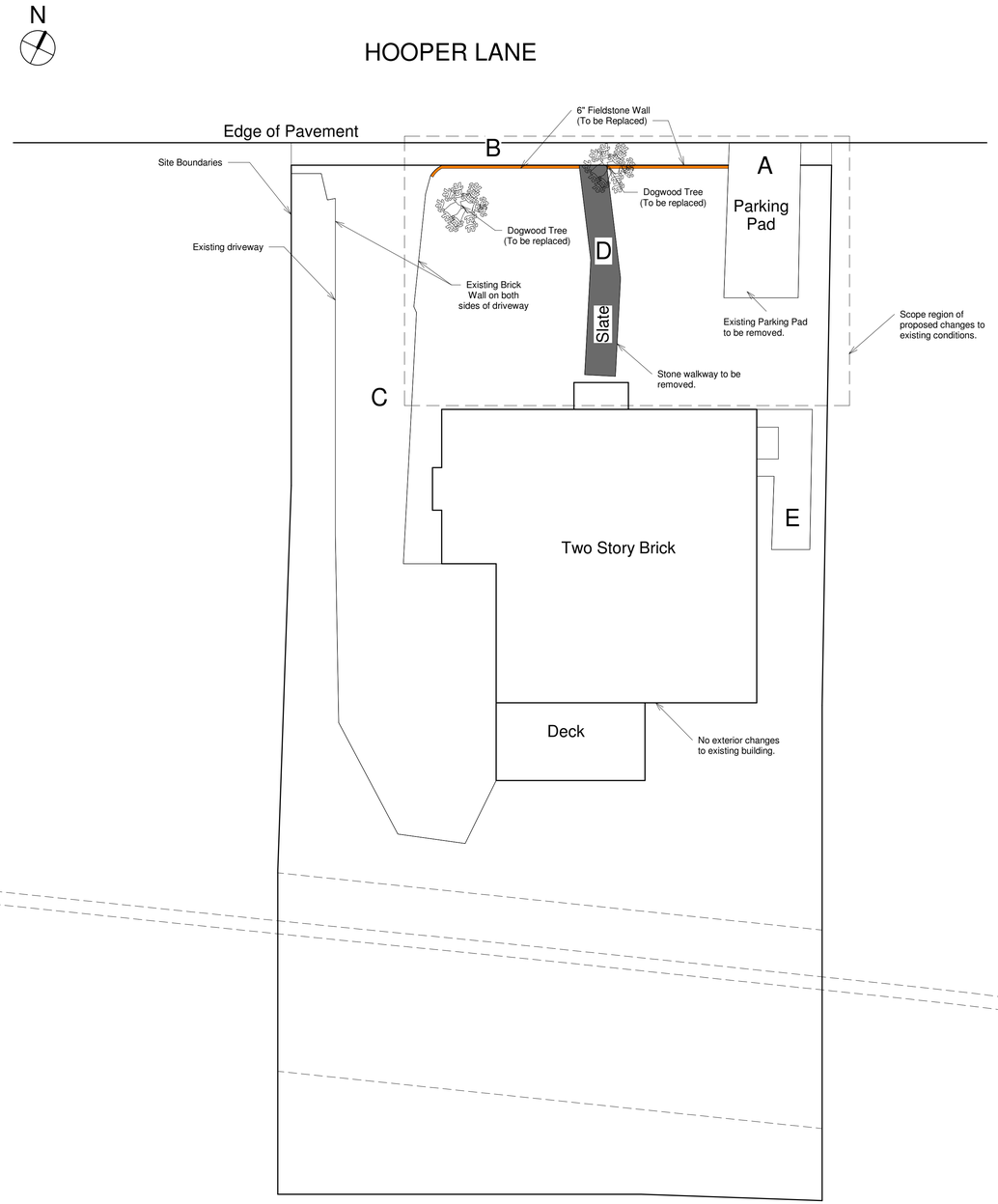
East Side View - Main Driveway



West Side View - Brick Parking Pad

Front View - Slate

Existing Hardscaping Impervious Schedule		
Code	**Description**	**Area**
A	Brick Parking Pad (Demolished)	271
B	Asphalt	252
C	Driveway	1,701
D	Walkway Slate	199
E	Side Brick Area	154
Total		**2,577**



1 Existing Conditions - SIte Plan
3/32" = 1'-0"

Kimmy

KIM LEVELL DESIGN
https://www.kimlevell.com

Revisions

No.	Description	Date
0.1	Issued for Approval	4/27/2021
0.2	Revision for COA Submission	5/23/2021
0.3	Revision For COA Submission	6/24/2021

Kim Levell
510 Hooper Lane, Chapel Hill,

STAGE: Construction Documentation

DISCIPLINE: Architecture

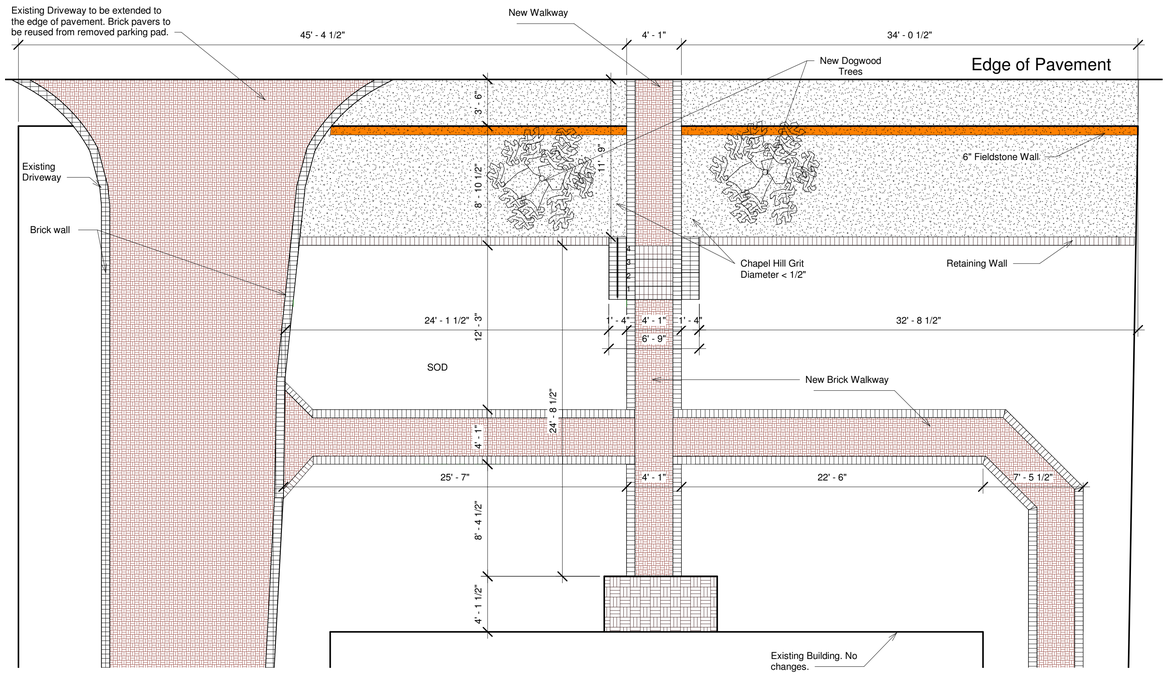
PROJECT NAME:
510 Hooper Lane

SHEET TITLE:
Site Plan - Existing Conditions

DRAWN BY: B.B.
TECHNICAL REVIEW BY: K.L.
APPROVED BY: K.L.
DATE: 6/24/2021
JOB NO. 5.2021
SCALE: As indicated

DRAWING NUMBER:
A2

SHEET NUMBER:
02 of 05

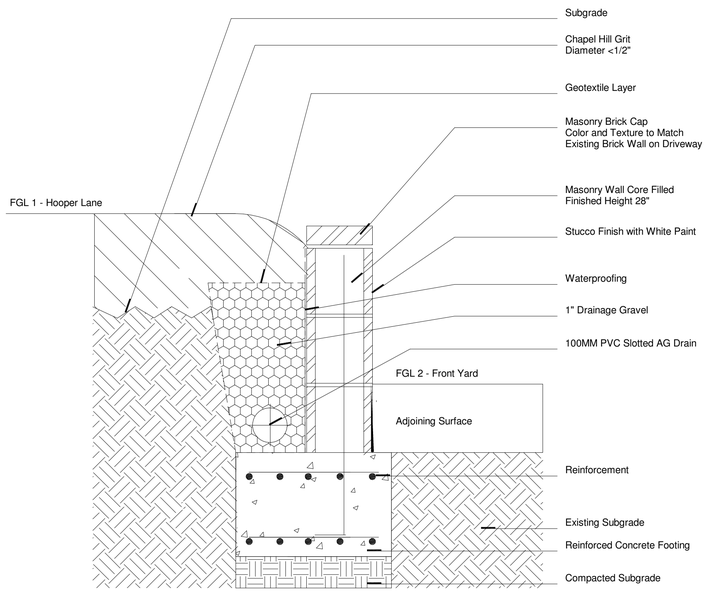


2 Proposed New Landscape Plan
3/16" = 1'-0"

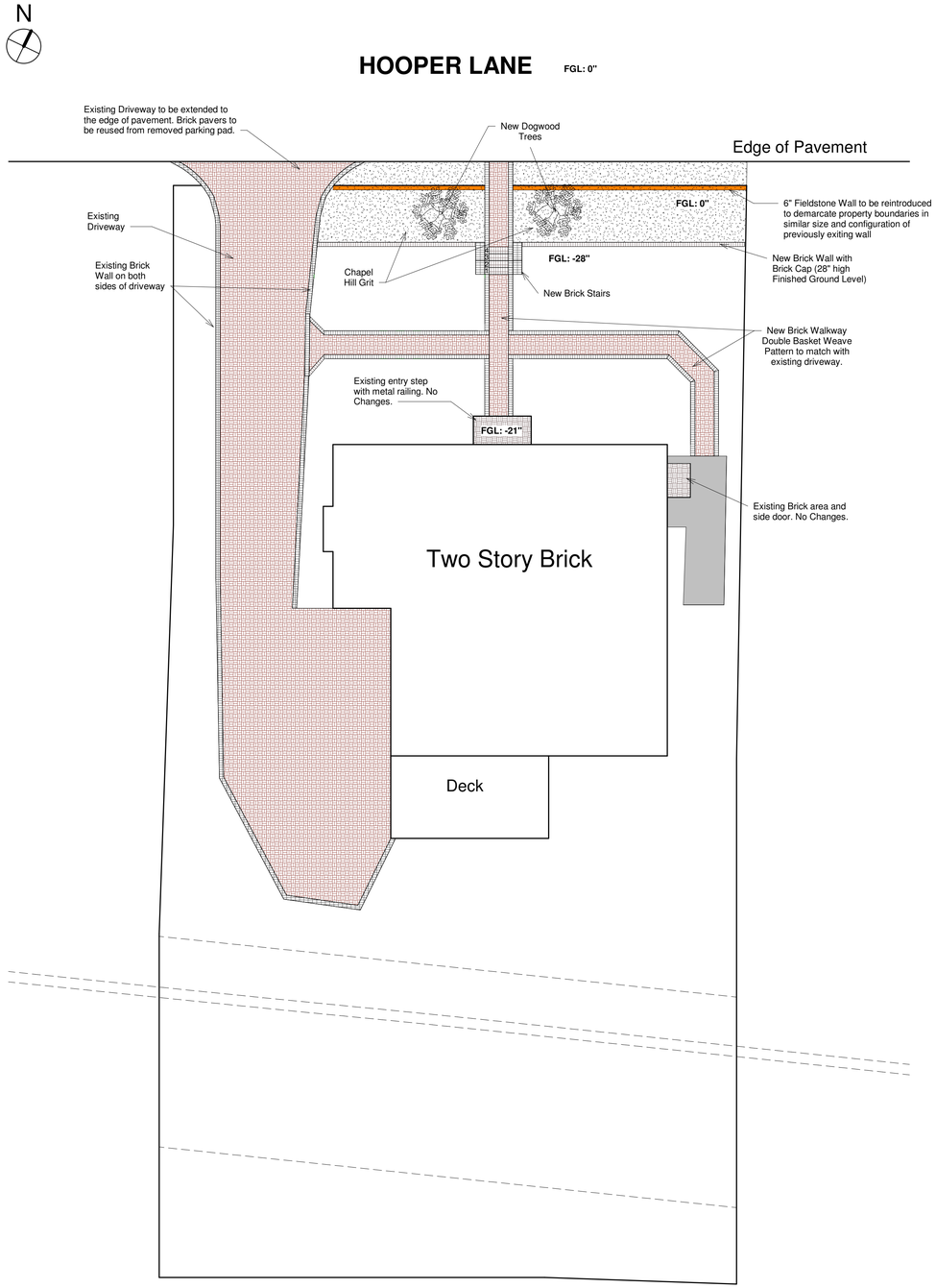
Notes:

1. New retaining wall to no be visible from the street.
2. Brick cap to only be visible from inside the property.
3. Stucco finish with white paint to match white tones of the property elements and to no be visible from street.
4. New fieldstone wall to match previously existing wall.
5. Dogwood trees to be located in similar position as previously existing trees.

Proposed Hardscaping Impervious Schedule		
Code	**Description**	**Area**
A	Existing Driveway	1,769
B	New Brick Walkway	579
Total		**2,348**



Proposed Retaining Wall Section
Not to Scale



1 Proposed New Landscaping - Site Plan
1" = 10'-0"

N

KIM LEVELL DESIGN
https://www.kimlevell.com

Revisions

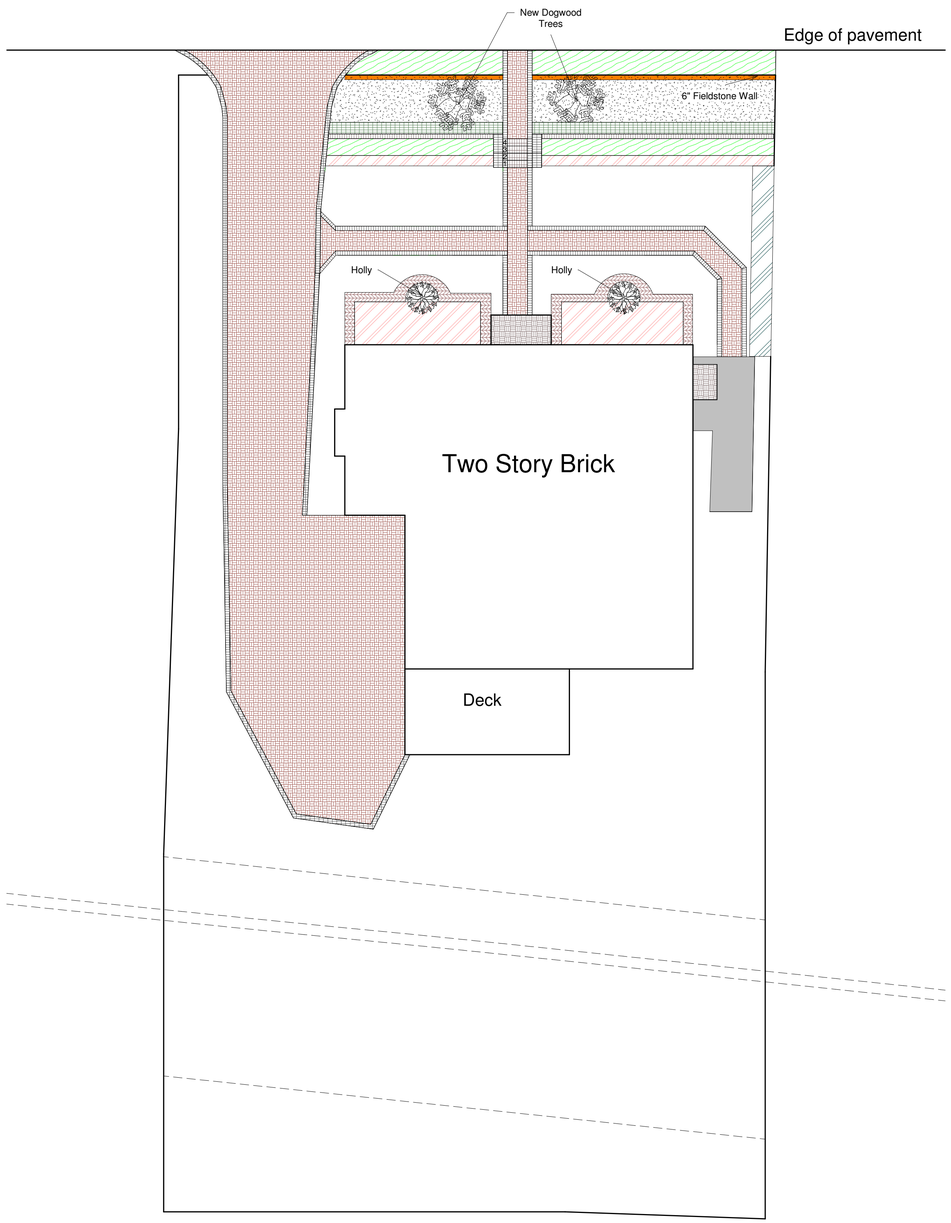
No.	Description	Date
0.1	Issued for Approval	4/27/2021
0.2	Revision for COA Submission	5/23/2021
0.3	Revision For COA Submission	6/24/2021

Kim Levell
510 Hooper Lane, Chapel Hill,
STAGE: Construction Documentation
DISCIPLINE: Architecture

PROJECT NAME: 510 Hooper Lane

SHEET TITLE: Proposed New Lansdcape System - Site Plan

DRAWN BY: B.B.
TECHNICAL REVIEW BY: K.L.
APPROVED BY: K.L.
DATE: 6/24/2021
JOB NO. 5.2021
SCALE: As indicated
DRAWING NUMBER: A3
SHEET NUMBER: 03 of 05



LEGEND:

- Dogwood Tree
- Holly
- Lirope
- 12" Boxwood
- Flowers
- Camellia
- 24" Boxwood Round
- Fieldstone Wall

Kimmy

KIM LEVELL DESIGN
https://www.kimlevell.com

Revisions

No.	Description	Date
0.3	Revision For COA Submission	6/24/2021

Kim Levell

510 Hooper Lane, Chapel Hill,

STAGE: Construction Documentation

DISCIPLINE: Architecture

PROJECT NAME:
510 Hooper Lane

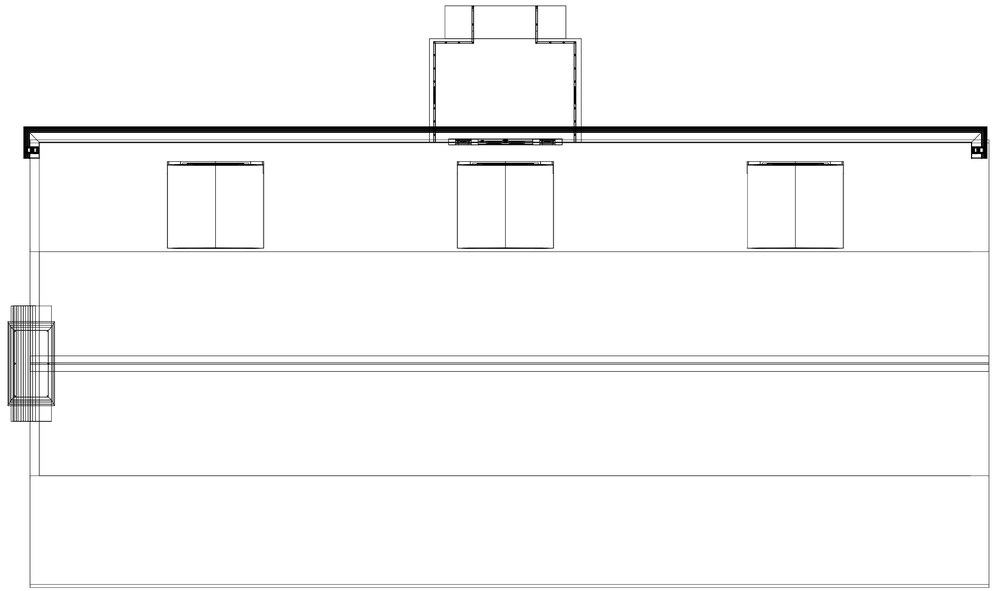
SHEET TITLE:
Proposed Landscaping Plan

DRAWN BY:	B.C.
TECHNICAL REVIEW BY:	K.L.
APPROVED BY:	K.L.
DATE:	06/24/21
JOB NO.	5.2021
SCALE:	As indicated

DRAWING NUMBER:
A4

SHEET NUMBER:
04 of 05

2 Front Elevation
3/16" = 1'-0"



1 Roof Plan
3/16" = 1'-0"

3 Side Elevation
3/16" = 1'-0"

KIM LEVELL DESIGN
https://www.kimlevell.com

Revisions

No.	Description	Date
0.1	Issued for Approval	4/27/2021
0.2	Revision for COA Submission	5/23/2021
0.3	Revision For COA Submission	6/24/2021

Kim Levell
510 Hooper Lane, Chapel Hill,
STAGE: Construction Documentation
DISCIPLINE: Architecture

PROJECT NAME:
510 Hooper Lane

SHEET TITLE:
Elevations and Roof Plan

DRAWN BY:	BC
TECHNICAL REVIEW BY:	KL
APPROVED BY:	KL
DATE:	6/24/2021
JOB NO.	5.2021
SCALE:	3/16" = 1'-0"

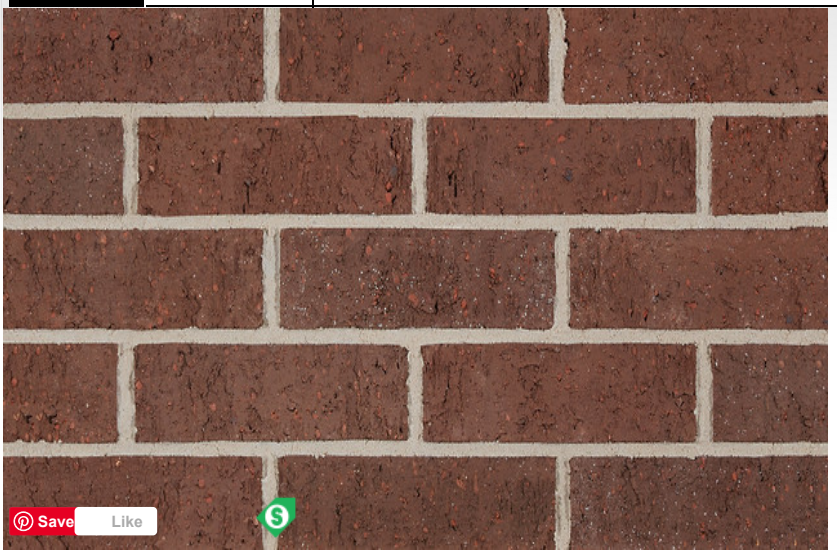
DRAWING NUMBER:
A5

SHEET NUMBER:
05 of 05

Red Bricks: 830 Dart-Tex

SPL ID: 00001620

	STANDARDS	TYPE	TEXTURE	COMP.	CW	IRA	TEST REPORT
PLANT 8 EXTRUDED	FACE BRICK C216, SW	FBS	Dart-Tex	15587	1.7400	4.4000	
	Cleaning Recommendation	Belden Brick recommends using Vanatrol® to clean this product. Alternatively, EaCo Chem NMD 80® can be used to clean any of our brick.					

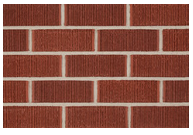


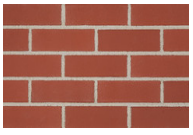
Hide Sizes

SIZES	WIDTH	HEIGHT	LENGTH	THIN FLAT BACK	THIN WITH BACK GEOMETRY	UNITS / SQ. FT.
Modular	3 5/8 " | 92mm	2 1/4 " | 57mm	7 5/8 " | 194mm	X	X	6.86
Economo Modular	3 5/8 " | 92mm	3 5/8 " | 92mm	7 5/8 " | 194mm	X	X	4.5
Roman	3 5/8 " | 92mm	1 5/8 " | 41mm	11 5/8 " | 295mm	X	X	6
Norman	3 5/8 " | 92mm	2 1/4 " | 57mm	11 5/8 " | 295mm	X	X	4.57
Utility	3 5/8 " | 92mm	3 5/8 " | 92mm	11 5/8 " | 295mm	X	X	3

Any size not listed is unavailable

Red Bricks:


141-145 Vertical


503-505 Smooth


830 Dart-Tex


Admiral Full Range Velour

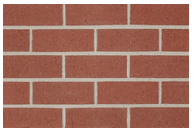

Admiral Red Velour

TABLE OF CONTENTS

FACE BRICK

Have a Question? Contact Us

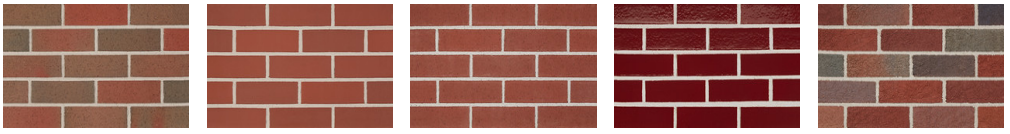
Red Bricks


Amherst Blend Dart-Tex | Arlington Blend Tumbled | Belcrest 500 | Belcrest 530 | Belcrest 550


Belcrest 560 | Belcrest 700 | Belcrest 730 | Belcrest 760 | Berwick Blend

Berwick Red Range | Bismarck Blend | Buckingham Clear | Buckingham Full Range | Burgundy Blend


Century Reds | Cherry Velour | Colony Blend | Colony Red Range | Commodore Full Range Smooth


Commodore Full Range Velour | Commodore Smooth | Commodore Velour | Cranberry Glaze | Garden Blend


Heritage Blend | Homestead Blend | Indian Full Range | Indian Full Range Tumbled | Indian Red Clear


Kingsport Antique Colonial | Meadow Blend | Mohawk Blend | No 9 Blend Velour | No 9 Blend Vertical


No 9 Red Range | Provincial Blend | Queensport Blend | Rainbow Blend | Rainbow Reds

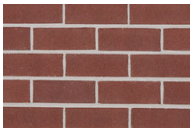

Red Flashed | Red Hot Glaze | Red Shale | Regal Blend | Revere Blend


River Red Velour | Rosewood Blend | Rosewood Clear | Royalty Red Clear | Rubigo Blend Velour


Rubigo Red Smooth | Rubigo Red Velour | Rum Raisin Velour | Scarlet Glaze | Simulated Belcrest 500


Simulated Belcrest 530


Simulated Belcrest 560


Simulated Belcrest 700


Simulated Belcrest 730


Simulated Belcrest 760


Tulip Blend


Tulip Reds


Winewood Blend

A SPECIAL NOTE ABOUT BRICK SIZES. Belden nomenclature differs from industry standards on certain or several brick sizes. Namely we use the term Jumbo instead of Engineer and the term Economo where the industry uses Closure.

Authorized Distributor Login
Quality Management System
Environmental Management System
Industrywide Environmental Product Declaration (EPD)
SDS for Brick
Prop 65 Warning
Technical Notes on Brick Construction
Site Map

The Belden Brick Company
700 Tuscarawas St. W.
Canton, OH 44702
Phone: 330-456-0031
Contact Us

Anya Grahn

From: Anya Grahn
Sent: Tuesday, April 27, 2021 7:01 AM
To: Kim Levell
Cc: Gene Poveromo
Subject: RE: Kim Levell phone call request

It is done now. Just be aware that you'll need to include it in your COA application for HDC approval. If the HDC does not approve the work, it may need to be replaced by another material; however, we can address that if/when it happens.

Anya

-----Original Message-----
From: Kim Levell <kimmylevell@gmail.com>
Sent: Monday, April 26, 2021 5:12 PM
To: Anya Grahn <agrahn@townofchapelhill.org>
Subject: Re: Kim Levell phone call request

External email: Don't click links or attachments from unknown senders. To check or report forward to reportspam@townofchapelhill.org

Ack!! Yes then I saw your email saying not a problem. The hardscape is part of the stabilization.

Sent from my iPhone

> On Apr 26, 2021, at 10:33 AM, Anya Grahn <agrahn@townofchapelhill.org> wrote:
>
> Kim,
>
> I just wanted to clarify that you are doing grading, and not installing any permanent hardscape. If you are putting in any permanent hardscape, such as sidewalks, driveways, stone walls, etc. you will need to wait until you have HDC approval. If you are doing grading and drainage only, that would be considered site stabilization work.
>
> Thanks,
> Anya
>
> -----Original Message-----
> From: Anya Grahn
> Sent: Monday, April 26, 2021 8:23 AM
> To: Kim Levell <kimmylevell@gmail.com>
> Cc: Gene Poveromo <gpoveromo@townofchapelhill.org>
> Subject: RE: Kim Levell phone call request
>
> I don't believe Gene and I have any issue with you completing the necessary work to stabilize the site until the HDC has time to review your plans for the site improvements.
>
> Anya
>

> -----Original Message-----
> From: Kim Levell <kimmylevell@gmail.com>
> Sent: Monday, April 26, 2021 7:51 AM
> To: Anya Grahn <agrahn@townofchapelhill.org>
> Subject: Re: Kim Levell phone call request
>
> External email: Don't click links or attachments from unknown senders. To check or report forward to reportspam@townofchapelhill.org
>
> I have the hard scape scheduled today. It has to go in for water to drain off the yard.
> This house cannot take on more water.
> I don’t know what to do about approval they hdc but is has to be done.
> I checked on the code violation end and has no problem with it.
> This is what I need to discuss.
> Thanks,
> Kim
>
> Sent from my iPhone
>
>> On Apr 26, 2021, at 7:35 AM, Anya Grahn <agrahn@townofchapelhill.org> wrote:
>>
>> Kim,
>>
>> I'd be happy to schedule a phone call with you. Would sometime tomorrow (Tuesday) work? Here are some times I'm available:
>> - 9am
>> -10:30am
>> -11am
>>
>> Thanks,
>> Anya
>>
>> -----Original Message-----
>> From: Kim Levell <kimmylevell@gmail.com>
>> Sent: Friday, April 23, 2021 12:11 PM
>> To: Anya Grahn <agrahn@townofchapelhill.org>
>> Subject: Kim Levell phone call request
>>
>> External email: Don't click links or attachments from unknown senders. To check or report forward to reportspam@townofchapelhill.org
>>
>> Hi Anya,
>> Do you have a number in which I can reach you or can you call me 813-810-5469 I would like to ask you a few questions.
>> Thanks,
>> Kim
>>
>> Sent from my iPhone
>>
>

Anya Grahn

From: Anya Grahn
Sent: Thursday, April 8, 2021 5:27 PM
To: Kim Levell
Cc: Gene Poveromo; Johnny Jacobs; Inspections Permits
Subject: RE: 510 Hooper Lane - site inspection?

Kim,

Thank you for providing an example of the type of trellis you are considering. I'm going to look into how we have treated these in the past, and I'll share an answer with you as soon as I can.

Per LUMO 3.6.2(b)(1):

> *No exterior portion of any building or other structure (including masonry walls, fences, light fixtures, steps and pavement, or other appurtenant features), or any aboveground utility structure, or any type of outdoor advertising sign shall be erected, altered, restored, moved, or demolished within the historic district until an application for a certificate of appropriateness as to exterior architectural features has been approved. For purposes of this article, "exterior architectural features" shall include the architectural style, general design, and general arrangement of the exterior of a building or other structure, including the kind and texture of the building material, the size and scale of the building, and the type and style of all windows, doors, light fixtures, signs, and other appurtenant fixtures. In the case of outdoor advertising signs, "exterior architectural features" shall be construed to mean the style, material, size, and location of all such signs.*

Given that the house was built c.1912 and retains its original brick, a limestone wash would change the materiality and appearance of the house. The Design Standards (pages 70-71) state that the details finishes, and surfaces of masonry features shall be preserved. It goes on to say that historic masonry features should not be concealed with a contemporary substitute material, paint, stucco, water repellants, or sealants, or other finishes that would create a false historical appearance. The HDC does not regulate paint color, but they do regulate finishes. If this is something you want to pursue, you'll need the HDC to approve a COA for the limestone wash.

I understand the need for replacing and upgrading the walkway; I wanted to clarify that it went beyond maintenance as it appears to do since there will be a change of material. Homeowners are not required to submit a ZCP application for digging a hole in their backyard. Per LUMO 4.9, single family development may be exempted from a ZCP if:

> *(1) The project adds less than five hundred (500) square feet of impervious surface area.*
> *(2) The project includes less than one thousand five hundred (1,500) square feet of land disturbance.*
> *(3) The project does not include grading or filling of soil.*
> *(4) The project is at least five (5) feet away from the nearest setback line and building height limitation.*

You have been doing some grading to address the drainage issues. A ZCP is not required for tree removal, nor does the HDC regulate vegetation such as landscaping; you can remove the pecan tree.

We are not arguing the necessity of the repair work to correct the drainage issues or the deteriorated walkways. We just need to make sure you are following the process. We want to work with you to resolve this issue and get you the applications and approvals you need to move forward.

Thanks,
Anya

From: Kim Levell <kim@kimlevell.com>
Sent: Thursday, April 8, 2021 1:11 PM
To: Anya Grahn <agrahn@townofchapelhill.org>
Cc: Gene Poveromo <gpoveromo@townofchapelhill.org>; Johnny Jacobs <jjacobs@townofchapelhill.org>; Inspections Permits <Permits@townofchapelhill.org>
Subject: Re: 510 Hooper Lane - site inspection?

Hi Anya,
We love it out here too. I have a client in Park City.
Thanks so much for information! This is helpful.
Yes I was planning on a small wood arbor but can use iron as seen throughout the historic district of entrance walkways in newly renovated homes which are well within 26'. I can provide addresses as to where these are located when I return.

The paint is actually a limestone wash which exposes some brick as seen on several UNC historic building on campus. Namely Old East as one example and Gerard ad another.
The slate with not be reset. The stone is uneven. My mother in-law had major heart issues and is now between a walker and a wheel chair. As covid has allowed for vaccines she can now visit and yet another issue we had to resolve quickly. That walk way material was not smooth and nor sufficient to safely transition as the stones uneven component is a constant trip hazard.
I will not be replacing the storm windows or storm door they are in my opinion an eye sore and definitely not a historic look on this home. We plan on reglazing and restoring the windows.
It is my understanding a certificate of appropriateness is if I am adding something structurally to the house that they have no bearing on color selections.
This house is being restored to a historic look versus the cheaper decimation caused by the previous homeowners. I do not intend to keep it stuck in it's 80's remodeled condition.

A zoning permit is required to remove soil?
So if someone digs a hole in their yard and removes the soil they need a zoning permit? I am afraid I had no choice but to address the drainage issue as it was life threatening to the potential damage to my home. While we are discussing this topic how does the town handle trees like the half rooted Pecan across the street from out home. I have had 2 arborists say it can and eventually will potentially fall on either my home or my neighbors due to the fact most of the weight over loaded over Hooper without support.

Thanks for helping me move this forward. Let me know if I am given an extension and I will do my best, however, I do believe I have cause to mitigate the issues I was experiencing and happy to send photos of the foundation being washed out from under our home.

Take care,
Kim

www.kimlevell.com

On Apr 8, 2021, at 9:07 AM, Anya Grahn <agrahn@townofchapelhill.org> wrote:

Kim,

Thank you so much for providing this information. I hope you are having a great vacation in Utah! I worked in Park City for +6 years before I moved here, and it's a great state to visit.

In reviewing your emails, it seems to me that the improvements you are making are all in an effort to ensure the longevity of the home and address drainage issues. I've reviewed your scope of work and I have a few clarifying questions:

- Will the slate walkway to the front door be reset with existing slate stone, or will you replace it with a new material?
- Where will the garden arbor be located on the plans? As it is a structure, it will need to comply with the Residential-2 setbacks which requires a 26 ft. street setback.
- Are you replacing the storm doors and windows with new ones or are you removing the storm doors and windows temporarily to repaint them?
- Are you proposing to paint the brick exterior of the house? This is not permitted by the Historic District Design Principles & Standards.

Any exterior changes to any portion of the building, structure, or site within the local historic districts requires a Certificate of Appropriateness (COA) approval from the Historic District Commission. [Please see Land Use Management Ordinance (LUMO) 3.6.2(b)(1).] I ask about the slate walkway and the storm doors and windows as a COA is *not required* for maintenance projects that do not involve a change in design, material, or outer appearance thereof. A Zoning Compliance Permit (ZCP) is also required for any excavation/removal of soil as well as alteration, renovation, or construction of any building or structure. (Please see LUMO 4.9.1.) I have attached both of these applications to this email for you. I am copying permits@townofchapelhill.org as they will be able to help us identify if any of the work requires a building permit.

We will need to take the COA application to the Historic District Commission (HDC). I would like to schedule you for the next available HDC meeting, May 13th. Items for this meeting are due this Friday, May 9th; however, I recognize given the late notice that you will not be able to submit an application by tomorrow, so I would like to work with you on an extension. The COA application (attached) does not reference the updated Historic District Design Principles & Standards, adopted by the HDC on March 18th. You will need to use these, rather than the Design Guidelines referenced in the application, in your submittal.

Again, we would like to work with you to bring you into compliance and move this project forward.

Thanks so much,

Anya Grahn, Senior Planner
Long-Range Planning Division | Planning Department
405 Martin Luther King Jr Blvd. | Chapel Hill NC 27514

Town of Chapel Hill | www.townofchapelhill.org

t: 919-969-5059 | agrahn@townofchapelhill.org

Thank you for contacting the Planning Department. We are working remotely at this time. Due to periodic high volume of email communication at this time, you may not receive an immediate response, depending on the urgency of your message. If you have not received a response within two business days and still have a question for us please resend your message with a reminder.

From: Kim Levell <kim@kimlevell.com>
Sent: Wednesday, April 7, 2021 4:08 PM
To: Gene Poveromo <gpoveromo@townofchapelhill.org>
Cc: Johnny Jacobs <jjacobs@townofchapelhill.org>; Anya Grahn <agrahn@townofchapelhill.org>
Subject: Re: 510 Hooper Lane - site inspection?

<image001.jpg>
I am sorry for this quick phone shot using mark up. As I stated to you over the phone I am on vacation/surgery in Utah.
The plan above the green line represents the retention partition which is not accurately placed on here yet is 12' from the street edge and property line.
The red x indicates the old parking pad removed.
The yellow represents the walkway being there but will be redone.
The purple indicates new walkway mid yard connecting driveway to side entrance.
Thank you,
Kim Levell

www.kimlevell.com

> On Apr 7, 2021, at 1:47 PM, Gene Poveromo <gpoveromo@townofchapelhill.org> wrote:
>
> Kim,
>
> Here are the pictures from today's site visit. Anya Grahn is the staff liaison to the Historic District. She will review your Scope of Work, today's photos and let us know about the approval/permitting process.
>
> Sincerely,

Gene

<image001.gif>
Gene Poveromo, Zoning/Code Enforcement Coordinator
Building and Development Services
405 Martin Luther King Jr Blvd. Chapel Hill, NC 27514-5705

Town of Chapel Hilll www.townofchapelhill.org
gpoveromo@townofchapelhill.org
t: (919) 969-5069, m: (919) 619-5389
Fax (919) 969-2014

From: Kim Levell [mailto:kim@kimlevell.com]
Sent: Wednesday, April 7, 2021 2:33 PM
To: Gene Poveromo <gpoveromo@townofchapelhill.org>
Cc: Johnny Jacobs <jjacobs@townofchapelhill.org>; Anya Grahn <agrahn@townofchapelhill.org>
Subject: Re: 510 Hooper Lane - time for a site inspection?

Hello Gene,
Thank you for reaching out.
The work being performed is responding to an urgent matter regarding drainage from the water run off to the west. All of the water from Franklin Street on down has been has been draining directly towards our home and most recently prompted this emergency work as the wall under our south west corner of our home began to cave in. The design of the home was apparently for all of the water to hit the house and filter into a crawl space under the first several feet to then be sump pumped out to then drain into a feeder area which I believe hits the creek at the bottom of the hill. No water has been taken in on site with exception of open flat space in our back yard. It was my plan to eventually correct the issue with the current project in place which does help
to take some more ground water on. In the event of extreme rains excess will still shed off.

The plan:

I have built a block wall to be level with Hooper Lane 12’ away from the street. The wall could have been using landscape block but as a landscape contractor I knew this would not hold over time therefore set the block on a 24”x24” footer enforced with rebar every 24” dialed into footer with cells poured solid. The wall was treated street side with masonary sealer.
The area from the block wall to the street will be then excavated to allow for on site drainage by removing 24-30” of soil and back filling with #57 stone with commercial weed fabric on top then Chapel Hill stone with 1” slope towards Hooper Lane with 2 drains to take on water into hold until #57 area has reached water capacity for dissipating back into ground water.

The original planned called for all of the area between Hooper and wall to use gravel pave with a #115 angular gravel for full retention but I did not feel the look of Carolina “options” of grey or red gravel would be in character with the Historic district thus opting for brass drains to #57 and using Chapel Hill stone on top which once compacted is less likely to be pervious.

There is a drain pipe placed as a hold for future uses like electrical, irrigation, etc...

The walkway to the home is being reset. It was uneven and life threatening to our elderly mother who could not safely transition on this extreme uneven path as well as we felt it was a liability for mail carriers etc...
The car park that was existing was removed and a new walkway will be installed from the driveway without a step up so that a walker can be used to safely navigate to our home and the side entrance which is also being reset. This is outlined in survey and I am trading one pervious are for the same or less. The area to the left side if facing the home will also all be removed and reset as it pertains to safety as well.
Other things to note are making sure there is proper railing to transition steps, a new garden arbor over walk way on the grade of street level not to exceed 4’ in depth and approximately 50” in width with clear line of site to the home to be painted in new trim color. This is a garden arbor.
We will remove storm door, storm windows, repair and paint the exterior with like colors to historic UNC buildings on campus in cream/beige with darker taupe accents as well as replace existing roof with like materials but in a color more in character with Chapel Hill University.
We will also be changing the gutters which are inadequate for drainage reasons with the exact material used on UNC historic buildings which is copper. The rear of the property will get dark brown due to cost limitations but looks like copper once turned.
The objective is to make this home more “historic“ looking in character with UNC, remove all water run off into the home essentially saving it, upgrade exterior colors as well as roof, and landscape the yard for beautification purposes.
The survey will be sent separately and I will make notes.
Please forward any questions you may have but this was essential
work that was a necessity to perform due to recent water intrusion and the caving in under the top two stories.

Sincerely,
Kim Levell

www.kimlevell.com

On Apr 7, 2021, at 11:26 AM, Gene Poveromo <gpoveromo@townofchapelhill.org> wrote:

Hello Johnny,

If you have a moment, can you swing by 510 Hooper Ln and take photos of the land disturbance/work that is happening in the front yard? I spoke to the property owner (copied in this email) and she is drafting a Scope of Work for us to review. Once we have time to review the photos and/or Scope of Work, we can decide if a Stop Work Order should be posted. Is this something you can do today?

Sincerely,

Gene

Gene Poveromo, Zoning/Code Enforcement Coordinator
Building and Development Services
405 Martin Luther King Jr Blvd. Chapel Hill, NC 27514-5705

Town of Chapel Hilll www.townofchapelhill.org
gpoveromo@townofchapelhill.org
t: (919) 969-5069, m: (919) 619-5389
Fax (919) 969-2014

-----Original Message-----
From: Anya Grahn
Sent: Wednesday, April 7, 2021 8:53 AM
To: Gene Poveromo <gpoveromo@townofchapelhill.org>
Subject: FW: 510 Hooper Lane

It looks like we might have a code enforcement issue at 510 Hooper Lane. I did not see any permits for work at this site. Could your team please look into it for us?

Thanks,
Anya

<Resized_2.jpg>
<Resized_2.jpg>
<Resized_2.jpg>
<Resized_2.jpg>
<Resized_2.jpg>
<Resized_2.jpg>
<Resized_2.jpg>

<COA Application and Suppl Requirements rev 7.28.17 (6).docx>
<Residential Zoning and Building Permit.pdf>

Anya Grahn

From: Nancy McCormick [redacted]
Sent: Wednesday, June 23, 2021 9:09 PM
To: Anya Grahn
Subject: Fw: Thank you

4 of 4

From: susan smith [redacted]
Sent: Tuesday, June 15, 2021 12:36 PM
To: Nancy McCormick [redacted]
Subject: Re: Thank you

Great. Thanks Nancy.
Have a great trip,

Warm regards,
Susan

Sent from my iPad

> On Jun 13, 2021, at 9:09 PM, Nancy McCormick [redacted] wrote:
>
> Susan,
>
> I apologize for my delay in responding--I'm leaving tomorrow for my first big trip and I'm an antsy traveler at the best of times. I'm not comfortable talking about HDC issues outside the public hearings, at least not now--I'm sure you understand.
>
> I have learned a lot from your testimony at several hearings and really appreciate your long-term perspective on the issues.
>
> Nancy
>
> ---
>
> **From:** susan smith [redacted]
> **Sent:** Saturday, June 12, 2021 2:50 PM
> **To:** Nancy McCormick [redacted]
> **Subject:** Re: Thank you
>
> Dear Nancy,

Regarding your email to Brian, it was late last night when I looked at it and because it came into my mailbox first, I did read it before I saw your request below.

Now I am confused. If I had your phone number, we might clarify this better by phone. Let me know if you want to do that. I think it would be helpful personally. You can call me at 919-968-1128 and leave a message with your phone number, if I'm not here to answer. Meanwhile, let me explain what I can via email.

I certainly did not think I was creating an ex parte communication with you and I apologize if I did. It was not my intention to cause concern. Please let me know what Brian said, if you sent that email, or correct me if I was in the wrong.

All the things I said in my email to you, related to the project on Hooper Lane, I had already stated plainly under oath during the hearing. My opinion of David's handling of the time allotted to the client's presentation was just my opinion having to do with procedure and that also doesn't fall under ex parte communication, in my opinion. I also wasn't saying anything to you that I wouldn't say directly to David, if and when the opportunity arises. Anyway maybe my personal opinion is what made you feel uncomfortable. My understanding about ex parte communication is that it pertains to a discussion among current commissioners about a specific project. I'd like to know if this extends to any member of the public or what it was that exactly alarmed you.

Looking forward to resolving this issue with you,
Susan

Sent from my iPad

On Jun 11, 2021, at 9:28 PM, Nancy McCormick <[redacted]> wrote:

Susan,

I accidentally send an email to Brian Ferrell to you. Please do not look at it, erase it, and forget. Very sorry.

Nancy McCormick

From: susan smith <[redacted]>
Sent: Friday, June 11, 2021 11:17 AM
To: Nancy McCormick <[redacted]>
Subject: Re: Thank you

Oh, Nancy, I didn't realize that you are a lawyer. That's so helpful for this HDC work! I was an early childhood educator for 16 years before I transitioned into landscape architecture later in life. So for the bulk of my career, children were the people I explained things to. It was quite a stretch for me to feel comfortable speaking in public. Having a good cause to stand up for gets me through it.

Have a good day and thank you for your service to our community. I know how much it takes to do this job well.

Susan

Sent from my iPad

On Jun 10, 2021, at 10:02 PM, susan smith <[redacted]> wrote:

It sure did. Good work and discussion tonight.

Sent from my iPad

On Jun 10, 2021, at 9:32 PM, Nancy McCormick <[redacted]> wrote:

Susan,

You're welcome--sometimes my lawyer nitpicky training comes in handy!

Nancy

From: susan smith <[redacted]>
Sent: Thursday, June 10, 2021 8:45 PM
To: Nancy McCormick <[redacted]>
Subject: Thank you

Dear Nancy,

Thank you for noticing and speaking up about the appropriate change of wording in the minutes from last month. I certainly wasn't "arguing over" what was an appropriate application, but we did disagree during our discussion.

After-the-fact COAs are the most difficult, but as Sean said, the job of the HDC is to try to treat each applicant fairly, even though no two properties are the same. That is expressed eloquently by David Owens in his book on Quasi-legal proceedings.

Thanks for all your hard work. It is quite unfortunate that the applicants who followed the rules were pushed off to the next meeting. I do hope that the HDC Rules of Procedure and the Replacement Photos can be reviewed at a separate meeting.

I disagree with David saying that each applicant has as long as they like to present their case, especially when at least half of what was presented was a repeat from last week and did not speak to the issues of incongruity in the plan they executed. Chapel Hill grit or gravel is considered by the town as an impervious surface because the lower layer does pack down over time and that's why much of the surface gravel washes away.

Have a good night,
Susan (Smith)

Sent from my iPad